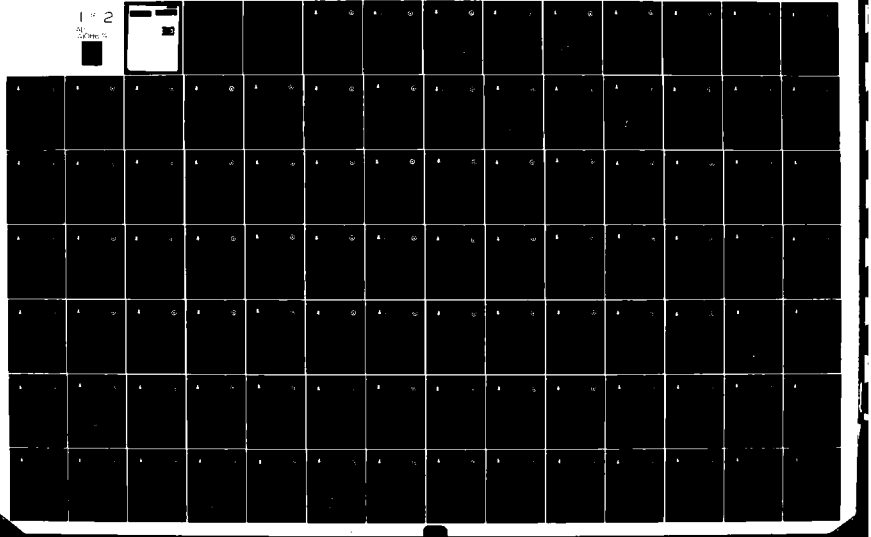
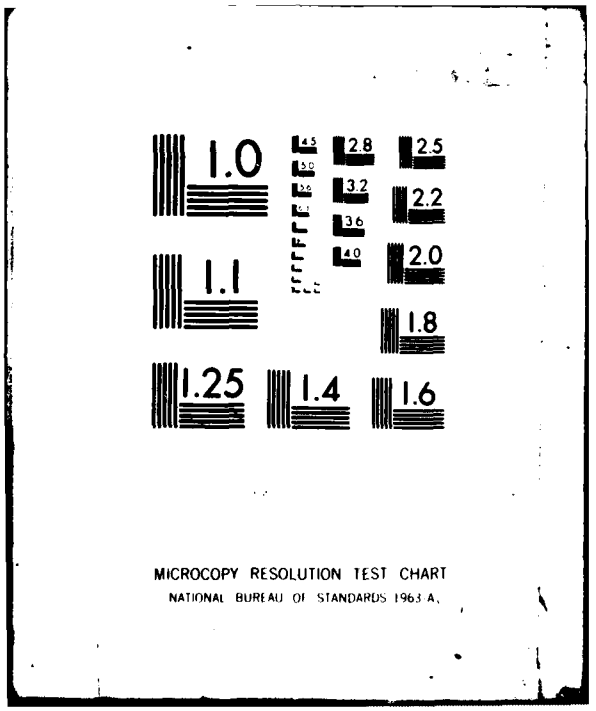
AD-A108 674 AIR FORCE SYSTEMS COMMAND WASHINGTON DC F/G 5/2
PATENT ABSTRACT DIGEST. VOLUME III.(U)
SEP 81 F A LUKASIK
UNCLASSIFIED AFSC-TR-81-67 NL

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AFSC-TR-81-67

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LEVEL III

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SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

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18. SUPPLEMENTARY NOTES

19. KEY WORDS *(Continue on reverse side if necessary and identify by block number)*

Patents, Inventions, Discoveries

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

One page summaries of new technology generated under Air Force programs and protected by issued U.S. patents. Air Force owned patents are available for licensing under AFR 110-33.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

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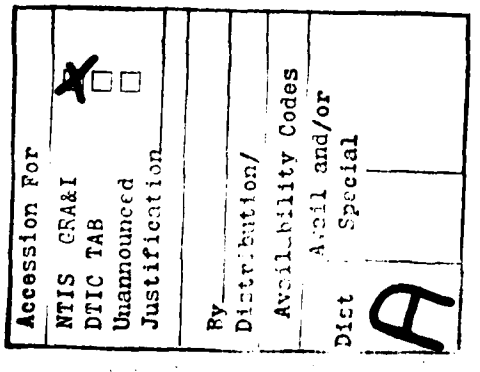
FOREWORD

THE PATENT ABSTRACT DIGEST IS DESIGNED TO PROVIDE INFORMATION ON PATENTED INVENTIONS DEVELOPED BY AIR FORCE RESEARCH AND DEVELOPMENT PROGRAMS. THE DIGEST PULLS TOGETHER ONE-PAGE SUMMARIES OF NEW TECHNOLOGY PROTECTED BY ISSUED U.S. PATENTS. THE MAJOR PURPOSE FOR PUBLISHING THE PATENT ABSTRACTS IS TO SHARE THE TECHNOLOGY WITH OTHER AGENCIES, CONTRACTORS AND MEMBERS OF THE PUBLIC. AEROSPACE SPINOFFS RARELY OCCUR AUTOMATICALLY. THEY ARE AN OUTGROWTH OF DYNAMIC INTERACTIONS OF PEOPLE . . . FROM SPACE SCIENTISTS AND INVENTORS TO THE ULTIMATE USERS IN INDUSTRY. THE PATENT ABSTRACTS ARE INTENDED TO PROVIDE A VIABLE LINK BETWEEN THE PRODUCERS OF TECHNOLOGY AND ITS POTENTIAL USERS, IN EFFECT "CATALYZING" THE TRANSFER PROCESS.

NEW GOVERNMENT REGULATIONS ARE DESIGNED TO PROMOTE FASTER COMMERCIAL USE OF GOVERNMENT GENERATED TECHNOLOGY BY ENABLING PATENT LICENSES TO BE GRANTED. AIR FORCE REGULATION 110-33 PRESCRIBES THE POLICIES, ADMINISTRATIVE REQUIREMENTS, PROCEDURES, TERMS AND CONDITIONS FOR LICENSING AIR FORCE INVENTIONS. SECTION C. PARAGRAPH 11, REQUIRES THE AIR FORCE TO PUBLISH A LIST OF INVENTIONS AVAILABLE FOR LICENSING IN THE FEDERAL REGISTER, THE OFFICIAL GAZETTE OF THE U.S. PATENT AND TRADEMARK OFFICE, AND AT LEAST ONE OTHER PUBLICATION. WE CONCLUDED THAT BARE NOTIFICATION BY TITLE IN THE FEDERAL REGISTER WOULD NOT GO VERY FAR IN STIMULATING COMMERCIAL USERS OF AIR FORCE GENERATED INVENTIONS. THE PATENT ABSTRACT IS THE NEXT STEP UP THE PROMOTIONAL LADDER SUGGESTED IN THE 1971-1972 ANNUAL REPORT ON GOVERNMENT PATENT POLICY AND AIR FORCE REGULATION 110-33.

RECENT LEGISLATION HAS ADDED ADDITIONAL GOVERNMENT EMPHASIS ON THE DISSEMINATION OF GOVERNMENT GENERATED TECHNOLOGY. WE BELIEVE THAT DISSEMINATION OF THE RESULTS OF AIR FORCE R&D PROGRAMS DESCRIBED IN THESE ISSUED U.S. PATENTS WILL HELP REDUCE THE POSSIBILITY OF "RE-INVENTING THE WHEEL" AND THUS SAVE GOVERNMENT R&D FUNDS.



GORDON A. GINSBURG
BRIGADIER GENERAL, USAF
STAFF JUDGE ADVOCATE

PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Safranko et al.

[11] 4,194,924

[45] Mar. 25, 1980

[54] PROCESS FOR RECLAIMING AIRCRAFT FUEL TANK PURGING FLUIDS

[75] Inventors: John W. Safranko, Carmichael; Craig R. Burnett, Folsom; James E. Kilburn, Roseville, all of Calif.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 968,894

[22] Filed: Dec. 13, 1978

[51] Int. Cl.[2] B08B 7/04; B08B 9/08

[52] U.S. Cl. ..... 134/12; 134/22 R; 134/40; 203/39; 203/DIG. 14; 208/366

[58] Field of Search ..... 134/12, 22 R, 40; 208/366; 196/114; 203/39, 91, 92, 95, DIG. 14; 210/23 R

[56] References Cited

U.S. PATENT DOCUMENTS

2,805,981	9/1957	Cavin et al.	196/114 X
3,505,176	4/1970	Buchsbaum et al.	203/DIG. 14
3,960,719	6/1976	Bresson	210/23 R
3,992,290	11/1976	Cook	210/23 R

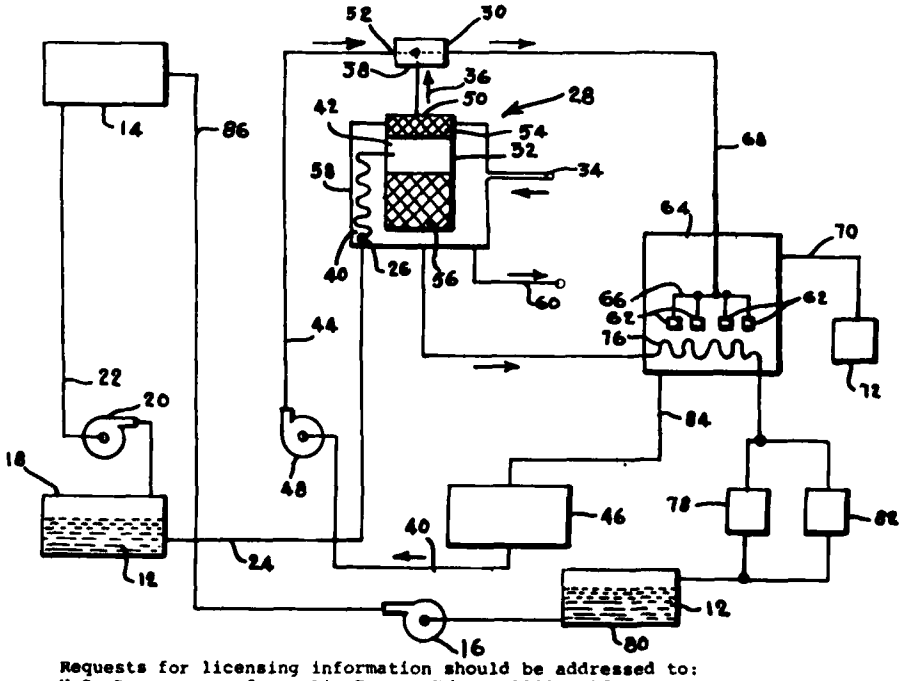
Primary Examiner—Marc L. Caroff

Attorney, Agent, or Firm—Joseph E. Rusz; William J. O'Brien

[57] ABSTRACT

A system for reclaiming the individual constituents of a fuel-contaminated purging fluid by subjecting the fluid to a continuous, closed, flash distillation technique under vacuum coupled with a coalescing oil-water separation procedure.

3 Claims, 1 Drawing Figure



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U.S. Department of the Air Force AF/JACP 1900 Half Street S.W.
Washington, D.C. 20324

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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Phillips, Jr.

[11] 4,196,435

[45] Apr. 1, 1980

[54] RADAR PULSE PHASE CODE SYSTEM

[75] Inventor: Calvert F. Phillips, Jr., Cape St. Claire, Md.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 662,194

[22] Filed: Aug. 21, 1967

[51] Int. Cl.[2] G01S 9/233

[52] U.S. Cl. ..... 343/17.2 PC

[58] Field of Search ..... 343/17.1, 17.2, 17.5, 343/17.2 R, 17.2 PC

[56] References Cited

U.S. PATENT DOCUMENTS

3,366,955	1/1968	Mattern	343/17.2 X
3,371,343	2/1968	Sones	343/17.2

Primary Examiner—T. H. Tubbesing

Attorney, Agent, or Firm—Joseph E. Rusz; Julian L. Siegel

[57] ABSTRACT

A radar system for reducing the effective width of a transmitted pulse without increasing power utilizing coded phase shifting. Discrete parts of the transmitted pulse are phase shifted 180° and upon return to the receiver the pulse is decoded by a sequence of delay lines and phase shifters positioned in accordance with a predetermined code rendering all the discrete parts in phase which are then summed.

1 Claim, 6 Drawing Figures

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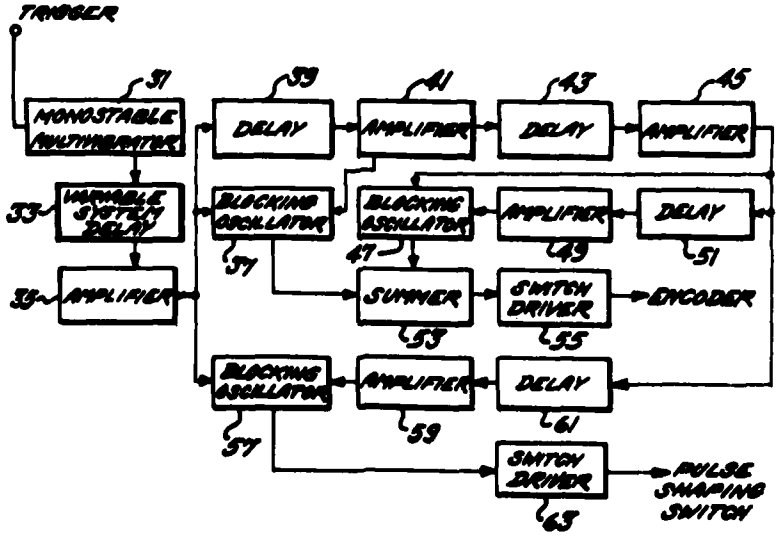


PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Wirtanen et al.

[11] 4,198,759

[45] Apr. 22, 1980

[54] OPTICAL PLUMMET AZIMUTH REFERENCE ASSEMBLY

[75] Inventors: Theodore E. Wirtanen, Nashua, N.H.; Ronald M. Hitchcock, Bedford, Mass.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 936,980

[22] Filed: Aug. 25, 1978

[51] Int. Cl.[2] G01C 1/00; G01C 15/00

[52] U.S. Cl. 33/281; 33/290

[58] Field of Search 33/290, 291, 276, 281, 33/282, 285, 297, 298, 299, 227; 356/139, 142, 147

[56] References Cited

U.S. PATENT DOCUMENTS

494,876	4/1893	Merrill	33/290
761,219	5/1904	Goodwin	33/290
2,235,898	3/1941	Niemeyer	33/281
3,783,524	1/1974	Ciani, et al.	33/285

OTHER PUBLICATIONS

"Applied Optics" vol. 11, No. 2, Feb. 1972, pp. 323-325.

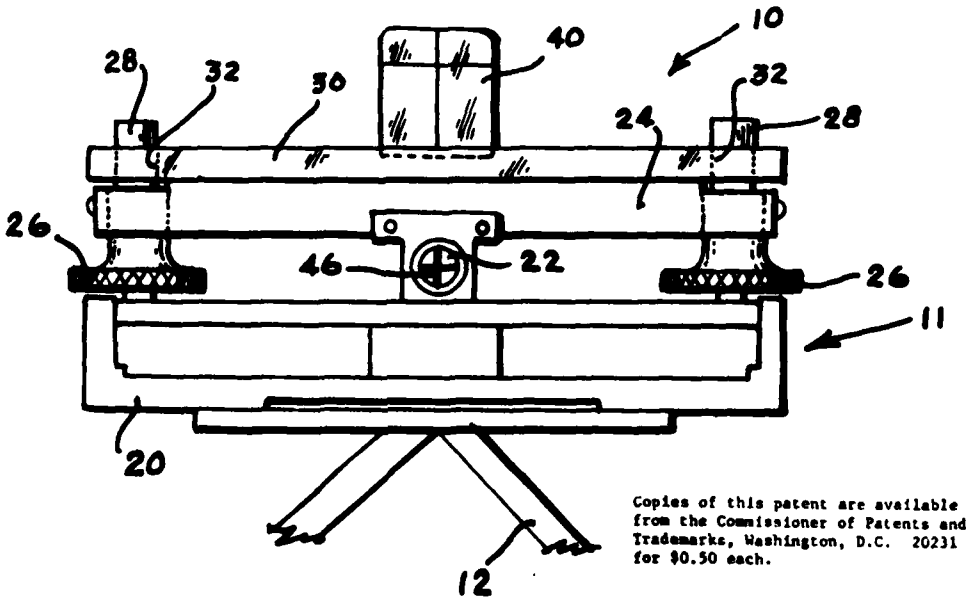
Primary Examiner—Willis Little

Attorney, Agent, or Firm—Joseph E. Rusz; Jacob N. Erlich

[57] ABSTRACT

An optical plummet azimuth reference assembly having a rigid, horizontal support containing a centerline inscribed therein and a pair of upstanding elements mounted on the support located at each end of the centerline. Each upstanding element has a vertical reticle co-planar with the centerline and a horizontal reticle, the vertical and horizontal reticles forming a cross therebetween. By mounting the azimuth reference assembly directly on an optical plummet with the centerline of the azimuth reference assembly co-planar with the centerline reticle of the optical plummet, the azimuth reference line of an object aligned with the centerline reticle of the optical plummet can be accurately and quickly ascertained.

5 Claims, 3 Drawing Figures



PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Huling

[11] 4,198,877
[45] Apr. 22, 1980

[54] CONTROL CABLE FAIL SAFE DEVICE

[75] Inventor: Don W. Huling, Kent, Wash.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 922,603

[22] Filed: Jul. 7, 1978

[51] Int. Cl.² F16C 1/10
[52] U.S. Cl. ..... 74/501 R; 74/501.5 R; 74/96
[58] Field of Search ..... 74/469, 470, 501 R, 74/501.5 R

[56] References Cited

U.S. PATENT DOCUMENTS

Re 23,933	2/1955	Cushman	74/501.5
2,581,080	1/1952	Cushman	74/501.5
2,591,011	4/1952	Rose et al.	74/501.5
2,810,300	10/1957	Pigford	74/501.5
3,599,507	8/1971	Exton	74/469
4,170,147	10/1979	Durno et al.	74/96

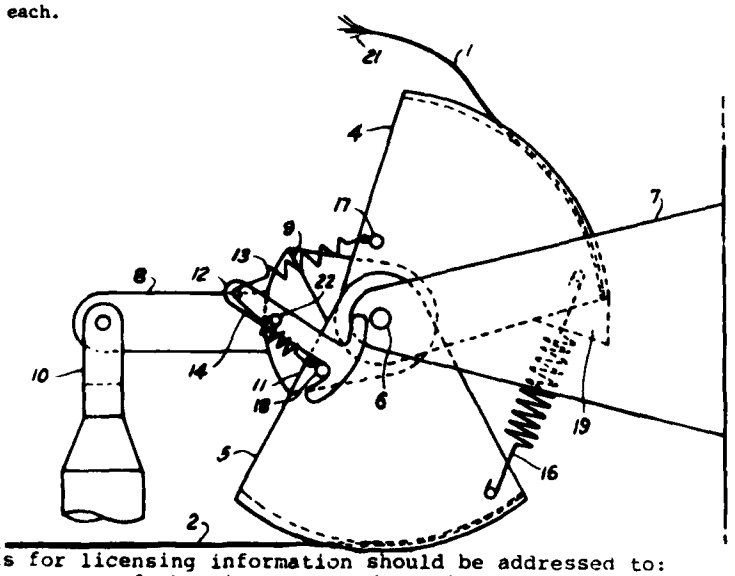
Copies of this patent are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231 for $0.50 each.

Primary Examiner—Louis Rimrodt
Attorney, Agent, or Firm—Joseph E. Rusz; Casimer K. Salys

[57] ABSTRACT

A mechanical apparatus for retaining actuator control in the event of a failure in one of the two cables used to regulate a two cable quadrant type actuator. In response to a cable failure the mechanism transforms the dual cable system into a tension loaded single cable configuration. Operationally, the failure of a cable releases its associated quadrant, which then rotates in response to a tension device acting between the two quadrants until it is driven against a fixed stop. The onset of the quadrant rotation actuates a quadrant lock device to prevent relative motion between the operable quadrant and the output actuation means. The tension device connecting the two quadrants now acts between the inoperable quadrant, resting against a fixed stop, and operable quadrant, such that the operable quadrant has a force tending to rotate it whenever the control cable tension is not balanced by the effects of the tension device.

5 Claims, 6 Drawing Figures



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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Higgins et al.

[11] **4,198,990**

[45] **Apr. 22, 1980**

[54] **MOUTH MOUNTED ACCELEROMETER PACK**

[75] Inventors: **Aubin M. Higgins**, Earlington, Ky.; **James A. Fowler, Jr.**, Xenia; **Roger W. Mercer**, Fairborn, both of Ohio; **Gunter H. Krob**, Manching, Fed. Rep. of Germany

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **17,624**

[22] Filed: **Mar. 5, 1979**

[51] **Int. Cl.**[2] **A61B 5/10**

[52] **U.S. Cl.** **128/782**; 73/493; 340/573

[58] **Field of Search** 128/782, 777, 774, 631; 73/488, 493; 340/573, 574, 576

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,297,021	1/1967	Davis et al.	128/777
3,955,562	5/1976	Farrar, Jr.	128/782
3,972,038	7/1976	Fletcher	73/493 X

Primary Examiner—Kyle L. Howell

Attorney, Agent, or Firm—Joseph E. Rusz; Richard J. Killoren

[57] **ABSTRACT**

An apparatus, for measuring head accelerations of a test subject, having a mouthpiece which includes metal clips for securing the mouthpiece to the upper teeth of the test subject. Three accelerometers are secured to a mounting block which is attached to the mouthpiece. The three accelerometers have their active axis located along three orthogonal axis through the mounting block. The mounting block, the accelerometers and the accelerometer leads are embedded in an electrically insulating material.

3 Claims, 6 Drawing Figures

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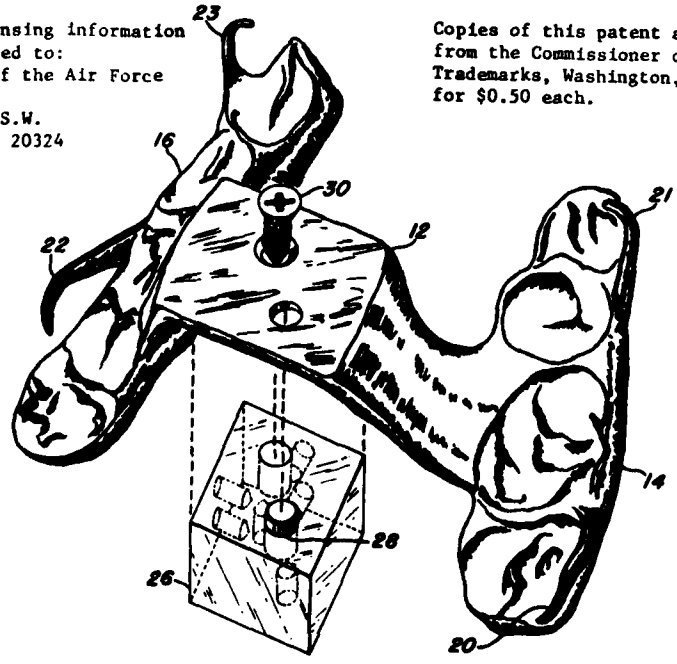


PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Oloff et al.

[11] 4,199,079
[45] Apr. 22, 1980

[54] MICROSPHERE LOADING DEVICE

[75] Inventors: Clarence M. Oloff; Willi J. Buehring, both of Dayton; Kevin J. Greenlees, Fairborn, all of Ohio

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 929,469

[22] Filed: Jul. 31, 1978

[51] Int. Cl.[2] G01F 11/02
[52] U.S. Cl. 222/1; 222/47
[58] Field of Search ..... 222/135, 145, 148, 440, 222/452, 47; 73/425.6, 423 A; 128/218 G, 218 C, 215, 218 R, 214 R

[56] References Cited

U.S. PATENT DOCUMENTS

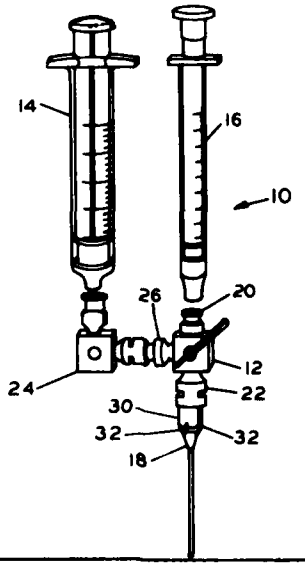
2,496,559	2/1950	Piechaczek	128/214 B
3,067,915	12/1962	Shapiro et al.	222/309 X
3,817,425	6/1974	Liston	222/145 X

Primary Examiner—Stanley H. Tollberg
Attorney, Agent, or Firm—Joseph E. Rusz; Richard J. Killoren

[57] ABSTRACT

A loading device for transferring radioactive microsphere suspensions from a storage container to test apparatus having a three way stopcock including three connectors. A 1 ml syringe is connected to one of the stopcock connectors with a 5 ml syringe being connected to a second stopcock connector. A two inch cannula hypodermic needle is connected to the third stopcock connector. The hypodermic needle has airflow passages cut in the connector portion adjacent the needle.

2 Claims, 5 Drawing Figures



PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Pankune

[11] 4,199,175
[45] Apr. 22, 1980

[54] RIBBED FLANGE MODIFIED SEAL

[75] Inventor: Arthur J. Pankune, Hobe Sound, Fla.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 980,950

[22] Filed: Apr. 28, 1978

[51] Int. Cl.[2] F16L 23/00
[52] U.S. Cl. 285/405; 285/412; 285/330
[58] Field of Search 285/363, 368, 405, 412, 285/330; 277/193

[56] References Cited

U.S. PATENT DOCUMENTS

790,767	5/1905	Walsh	285/368
1,993,927	3/1935	Gavin	285/368
2,108,151	2/1938	Teetor	285/368
2,328,031	8/1943	Risley	285/368
3,336,055	8/1967	Pall	285/368

Primary Examiner—Robert I. Smith
Attorney, Agent, or Firm—Joseph E. Rusz; Arsen Tashjian

[57] ABSTRACT

The cylindrical sections of a gas turbine engine are provided with flanges at each end for bolting the sections to one another. Each flange includes a series of strengthening ribs of arcuate configuration extending axially outward from the center of the wall thereof between the several bolts needed to join the adjacent sections together. The ribs serve to eliminate the need for at least 2 out of 3 bolts while effectively maintaining the required stiffness and sealing capability.

2 Claims, 3 Drawing Figures

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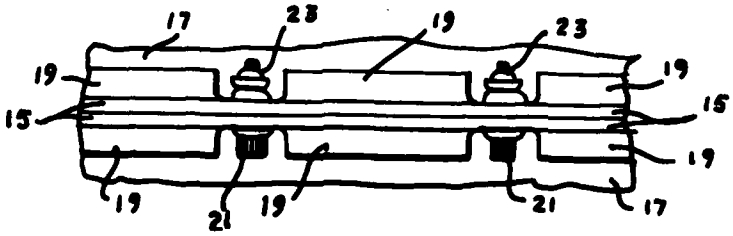

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JAT 00207

PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Yannoni

[11] 4,199,223
[45] Apr. 22, 1980

[54] PORTABLE OPTICAL FIBER COUPLING DEVICE

[75] Inventor: Nicholas F. Yannoni, Newton, Mass.
[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 891,876
[22] Filed: Mar. 30, 1978
[51] Int. Cl.² G02B 2/14
[52] U.S. Cl. 350/96.21; 219/123
[58] Field of Search ..... 350/96.20, 96.21; 65/4 A, 4 B, 152; 219/121 R, 123

[56] References Cited

U.S. PATENT DOCUMENTS

3,634,649	1/1972	Rager	219/137 R
3,960,531	6/1976	Kohanzadeh	350/96.21

OTHER PUBLICATIONS

T. Kohanzadeh "Hot Splices of Optical Waveguide Fibers" Applied Optics, vol. 15, No. 3, Mar. 1976, pp. 793–795.

Primary Examiner—Rolf G. Hille
Attorney, Agent, or Firm—Joseph E. Rusz; Henry S. Miller

[57] ABSTRACT

A portable device for coupling optical fibers consisting of an insulative block so designed as to allow a number of optical fibers to come together, a piezoelectric generating means secured to the block and connected to the piezoelectric generator so that optical fibers will be brought together at a point between the electrodes. Electricity generated causes an arc across the electrodes which generates sufficient heat to join the optical fibers.

5 Claims, 2 Drawing Figures

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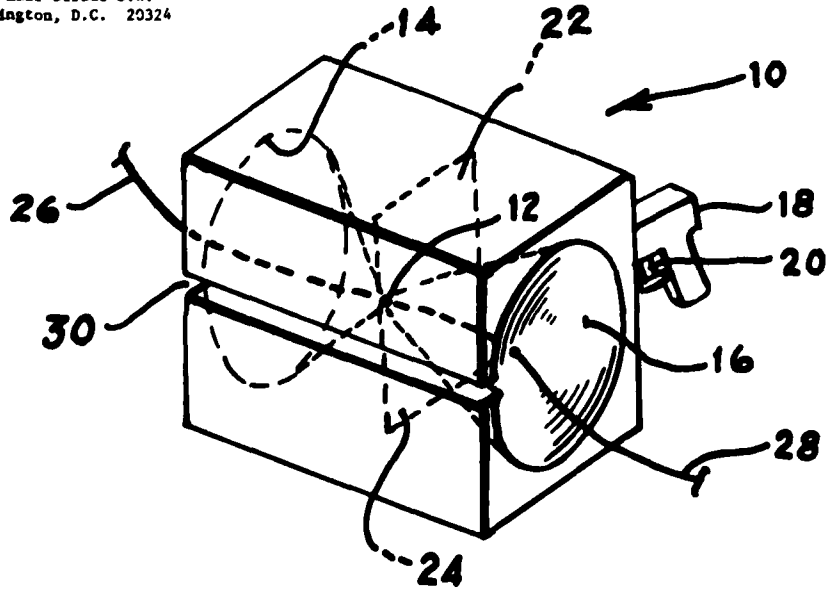

JAT 00208

PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Zulch et al.

[11] 4,199,759
[45] Apr. 22, 1980

[54] SYSTEM FOR CORRELATING ELECTRONIC DISTANCE MEASUREMENT AND AERIAL PHOTOGRAPHY FOR THE EXTENSION OF GEODETIC CONTROL

[75] Inventors: Donald I. Zulch, Oneida; Robert Brock, Marcellus, both of N.Y.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 932,813

[22] Filed: Aug. 10, 1978

[51] Int. Cl.[2] G01S 9/02
[52] U.S. Cl. ..... 343/6 R
[58] Field of Search ..... 343/6 R

[56] References Cited

U.S. PATENT DOCUMENTS

2,655,649	10/1953	Williams	343/6 R
3,183,478	5/1965	Slawsky et al	343/6 R X
3,469,260	9/1969	Holt et al.	343/6 R
3,680,093	7/1972	Brown	343/6 R X
3,766,552	10/1973	Hajduk	343/6 R

Primary Examiner—T. H. Tubbesing
Attorney, Agent, or Firm—Joseph E. Rusz; Henry S. Miller

[57] ABSTRACT

A system for correlating electronic distance measurement and aerial photography where an airborne electronic location station is photographed as it passes over an area to be surveyed. The position of the airborne station is precisely measured as it moves and this information is included in the final image processing.

1 Claim, 3 Drawing Figures

Requests for licensing information should be addressed to:
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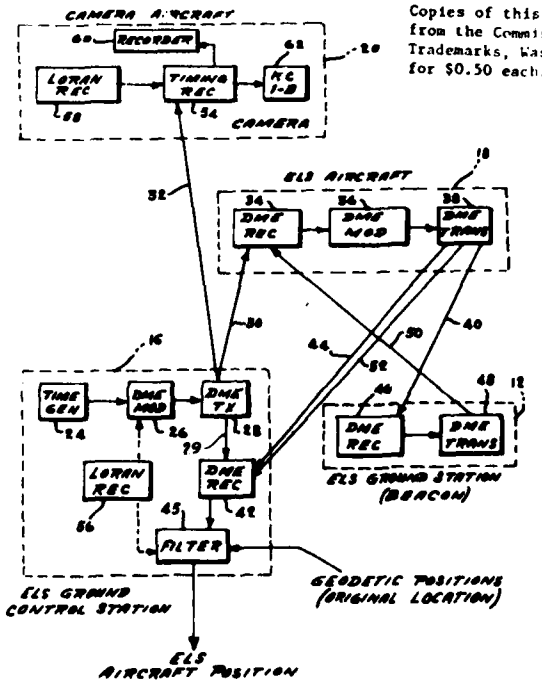
Copies of this patent are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $0.50 each.



PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Tsui

[11] 4,200,840

[45] Apr. 29, 1980

[54] **DUAL DETECTION SCHEME FOR COMPRESSIVE RECEIVERS**

[75] Inventor: **James B. Y. Tsui**, Centerville, Ohio

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **949,284**

[22] Filed: **Oct. 6, 1978**

[51] **Int. Cl.**[2] **H04B 17/00**

[52] **U.S. Cl.** ..... **455/226**; 324/77 B; 343/5 SA

[58] **Field of Search** ..... 325/67, 332, 333, 335, 325/336, 337, 363; 324/77 B, 77 C, 77 CS; 343/5 SA, 17.7

[56] **References Cited**

U.S. PATENT DOCUMENTS

2,882,395	4/1959	White	325/332
3,879,661	4/1975	Collins	324/77 B
3,955,137	5/1976	Harrington et al.	324/77 B
4,005,417	1/1977	Collins	343/5 SA
4,131,852	12/1978	Holland-Moritz	343/5 SA

Primary Examiner—John C. Martin
Assistant Examiner—Jin F. Ng
Attorney, Agent, or Firm—Joseph E. Rusz; Casimer K. Salys

[57] **ABSTRACT**

Undesired spurious noise signals appearing in the dispersive delay line (DDL) of a compressive receiver are suppressed and the dynamic range of the receiver is significantly increased by utilizing parallel channels of processing in combination with a signal comparator. Each channel contains a different weighting filter which accordingly modifies the signal passing therethrough. The weighting filters are selected to produce a reversal as to the signal having the largest relative amplitude at a time nearly coincident with the main lobe of the DDL created pulse. Thereby, the comparator produces a square wave form pulse which is nearly coincident in time with the main lobe of the DDL pulse, yet suppresses the adjacent spurious side lobes of the signal being processed in the receiver.

4 Claims, 7 Drawing Figures

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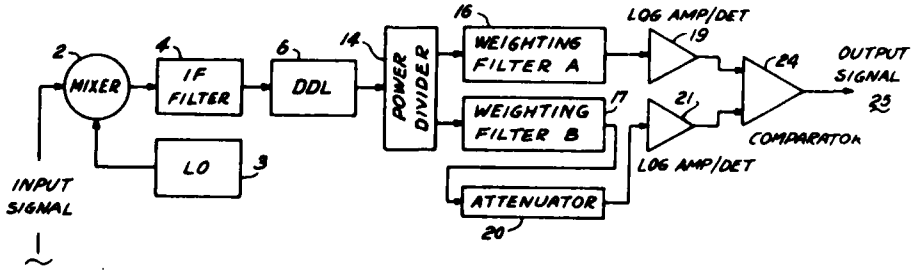

JAT 00210

PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Sifferlen et al.

[11] 4,200,872
[45] Apr. 29, 1980

[54] DOPPLER COMPENSATED DIGITAL NON-LINEAR WAVEFORM GENERATOR APPARATUS

[75] Inventors: Thomas P. Sifferlen; Fritz Stendel, both of Sudbury, Mass.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 968,895

[22] Filed: Dec. 13, 1978

[51] Int. Cl.[2] G01S 9/02; G01S 7/28
[52] U.S. Cl. ..... 343/7.5; 343/17.2 PC
[58] Field of Search ..... 343/7.5, 7.7, 8, 17.2 PC

[56] References Cited

U.S. PATENT DOCUMENTS

3,680,105	7/1972	Goldstone	343/17.2 PC
3,992,709	11/1976	Watanabe et al.	343/7.5
4,028,700	6/1977	Carey et al.	343/17.2 PC

OTHER PUBLICATIONS

E. L. Key et al., Lincoln Laboratory Mit, Tech Report #207, 8-1959, 343-17.2 PC.

Primary Examiner—S. C. Buczinski
Attorney, Agent, or Firm—Joseph E. Rusz; William Stepanishen

[57] ABSTRACT

A non-linear digital waveform generator apparatus utilizing a variable clock to produce a predistorted transmission signal which is opposite to the distortion that is produced by the target's velocity.

4 Claims, 6 Drawing Figures

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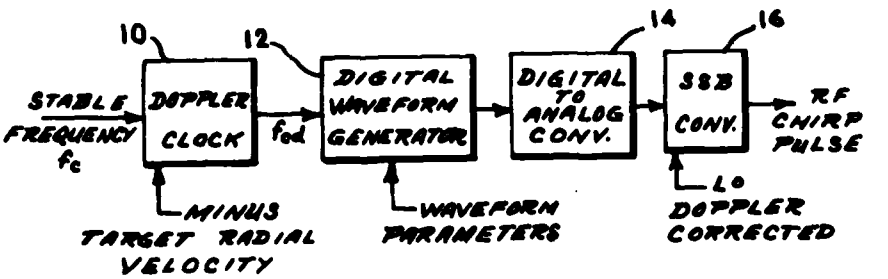

JAT 00211

PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Galanos

[11] 4,200,875
[45] Apr. 29, 1980

[54] APPARATUS FOR, AND METHOD OF, RECORDING AND VIEWING LASER-MADE IMAGES ON HIGH GAIN RETROREFLECTIVE SHEETING

[75] Inventor: Demosthenes G. Galanos, Ft. Walton Beach, Fla.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 929,468

[22] Filed: Jul. 31, 1978

[51] Int. Cl.[2] G01D 15/00
[52] U.S. Cl. ..... 346/1.1; 346/76 L
[58] Field of Search ..... 346/1, 76 L, 108; 219/121 L, 121 LM; 350/105; 40/582, 583, 453, 454; 355/44, 77

[56] References Cited

U.S. PATENT DOCUMENTS

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4,032,861	6/1977	Rothrock	331/94.5 C
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4,082,426	4/1978	Brown	350/105

OTHER PUBLICATIONS

3M Co. Product Bulletin, Sep. 15, 1970.
3M Co. Price List, May 1, 1971.

Primary Examiner—Michael L. Gellner
Assistant Examiner—W. J. Brady
Attorney, Agent, or Firm—Joseph E. Rusz; Arsen Tashjian

[57] ABSTRACT

Apparatus for, and method of, recording with radiation from a laser light beam a preselected pattern, that is transparent and/or opaque, on a target made of high gain retroreflective sheeting of the exposed-lens type, with the target inclined at a previously chosen angle; and, thereafter, viewing the recorded image of the pattern (which is recorded on the target by structural alteration, i.e., modification, of the target material that is caused by the laser light beam radiation), solely with the naked eye and in ambient light. The recorded image can be seen only when the target is inclined at the same angle at which the target was positioned when the pattern was recorded by the laser light beam radiation on the target.

7 Claims, 5 Drawing Figures

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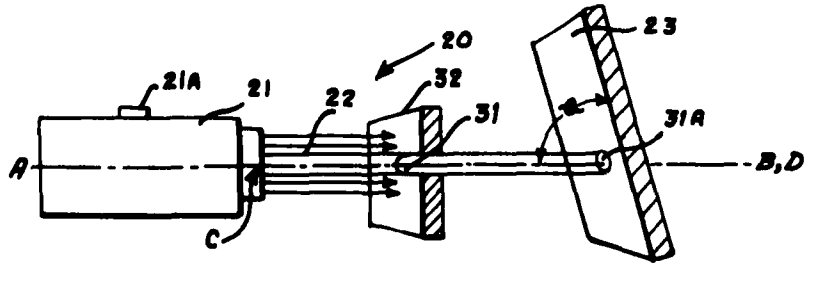

JAT 00212

PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Stover

[11] **4,201,611**

[45] **May 6, 1980**

[54] **CARBON/CARBON COMPOSITE FOR RE-ENTRY VEHICLE APPLICATIONS**

[75] Inventor: **Edward R. Stover, Wayne, Pa.**

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force, Washington, D.C.**

[21] Appl. No.: **896,861**

[22] Filed: **Apr. 17, 1978**

[51] Int. Cl.[2] **B32B 5/12; B32B 31/26; B32B 33/00; B64G 1/30**

[52] U.S. Cl. **156/155;** 102/105; 156/272; 156/296; 239/265.11; 427/249; 427/296; 427/379; 428/113; 428/332; 428/337; 428/368; 428/401; 428/902; 264/29.5

[58] Field of Search 102/105; 156/82, 155, 156/180, 272, 296; 239/265.11; 427/224, 249, 296, 380, 381, 379; 428/113, 332, 337, 368, 401, 902; 264/29.5

[56] **References Cited**

U.S. PATENT DOCUMENTS

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3,603,260	9/1971	Johnson	102/105
3,616,140	10/1971	Copeland et al.	102/105 X
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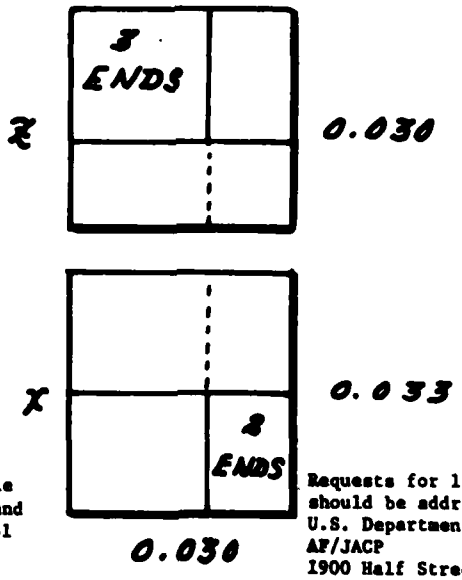
3,853,600	12/1974	Hou	428/401 X
3,949,126	4/1976	Crawford	428/113
4,103,055	7/1978	Levy	428/902 X

Primary Examiner—John T. Goolkasian
Assistant Examiner—Robert A. Dawson
Attorney, Agent, or Firm—Joseph E. Rusz; William J. O'Brien

[57] **ABSTRACT**

A fine textured, high density, three directional, carbon-carbon fiber composite material with an axially to laterally oriented fiber ratio of 1.5 to 1 or higher and a density of 185 g/cm^3 or higher.

1 Claim, 2 Drawing Figures



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JAT 00213

PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Castleman

[11] 4,201,654
[45] May 6, 1980

[54] ANODE ASSISTED SPUTTER ETCH AND DEPOSITION APPARATUS

[75] Inventor: B. Wayne Castleman, Kenneth City, Fla.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 949,167

[22] Filed: Oct. 6, 1978

[51] Int. Cl.² C23C 15/00

[52] U.S. Cl. ..... 204/298; 204/192 R; 204/192 E

[58] Field of Search ..... 2 1/192 R, 298, 192 E

[56] References Cited

U.S. PATENT DOCUMENTS

3,451,917	6/1969	Moseson	204/298
3,487,000	12/1969	Hajzak	204/298
3,507,774	4/1970	Muly, Jr.	204/298
3,583,899	6/1971	Aronson	204/298
3,669,871	6/1972	Elmgren et al.	204/298
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4,096,055	6/1978	Johnson	204/298

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L. I. Maissel and R. Glang; *Handbook of Thin Film Technology*; McGraw Hill, 1970; Chapter 4 pp. 4-1 through 4-9.

L. I. Maissel; *Physics of Thin Films*, vol. 3, Academic Press, 1966.

Primary Examiner—John H. Mack
Assistant Examiner—William Leader
Attorney, Agent, or Firm—Joseph E. Rusz; Jacob N. Erlich

[57] ABSTRACT

An anode assisted sputter etch and deposition apparatus having an electron source, a first anode adjacent the electron source and a second anode adjacent a negatively charged article to be sputter etched or sputter target in an ionizable gas atmosphere. Upon production of the electrons from said electron source a plasma is formed between the electron source, the first anode and the second anode, the plasma adjacent the second anode being capable of desorbing gases and other absorbed vapors from the surface of the article or target while positive ions from the plasma bombard the article or target with sufficient energy to eject material from the surface thereof.

9 Claims, 3 Drawing Figures

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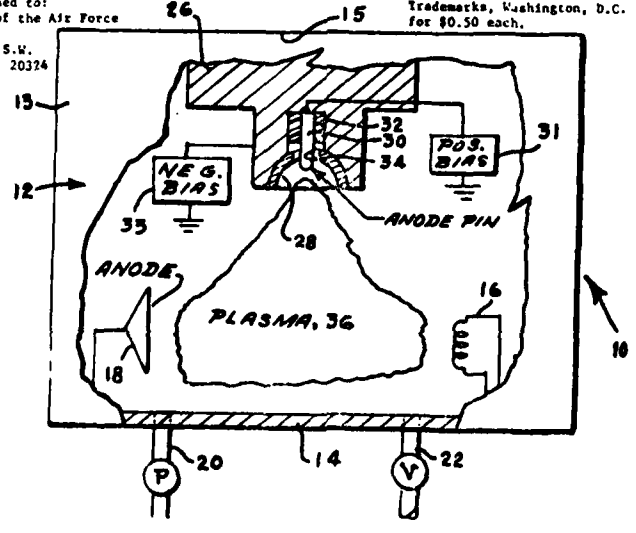

PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19] [11] **4,201,876**
Griffin [45] **May 6, 1980**

[54] **FLUORINE CONTAINING POLYETHERS**

[75] Inventor: **Warren R. Griffin**, Dayton, Ohio

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **748,582**

[22] Filed: **Dec. 8, 1976**

[51] **Int. Cl.**[2] **C07C 43/02**
[52] **U.S. Cl.** ..... **568/677**; 260/544 F; 260/545 R; 260/546; 560/192; 562/596
[58] **Field of Search** ..... 260/535 H, 484, 615 BF, 260/615 F; 568/677

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,452,103	6/1969	Trischler	260/615 BF
3,492,374	1/1970	Le Bleu et al.	260/615 F
3,699,145	10/1972	Sianesi et al.	260/535 H

Primary Examiner—Paul J. Killos
Attorney, Agent, or Firm—Joseph E. Rusz; Cedric H. Kuhn

[57] **ABSTRACT**

A fluorinated polyether is synthesized by (1) reacting perfluoroglutryl chloride and 1,5-hexafluoropentane diol to provide a fluorinated polyester and (2) converting ester groups of the polyester to ether groups by SF_4 reduction. The product obtained is a thermally stable polyether which is particularly useful in providing an elastomeric material for aircraft fuel tank sealants, tire valves, O-rings, hose, gaskets, and the like.

3 Claims, No Drawings

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JAT 00215

PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Viravec et al.

[11] 4,202,369

[45] May 13, 1980

[54] **GAS RELIEF VALVE DESIGN FOR LOW TEMPERATURE**

[75] Inventors: Joseph T. Viravec, Renton; Maurice A. Hoyt, Redmond, both of Wash.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 916,824

[22] Filed: Jun. 16, 1978

[51] Int. Cl.² F16K 31/12

[52] U.S. Cl. 137/908; 137/469; 137/513.5

[58] Field of Search 137/513.5, 469, 474, 137/508

[56] References Cited

U.S. PATENT DOCUMENTS

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2,931,385	4/1960	Carlisle et al.	
3,050,078	8/1962	Hooper	137/508 X
3,272,218	9/1963	Johnson	
3,431,028	3/1969	Yoder	137/513.5 X

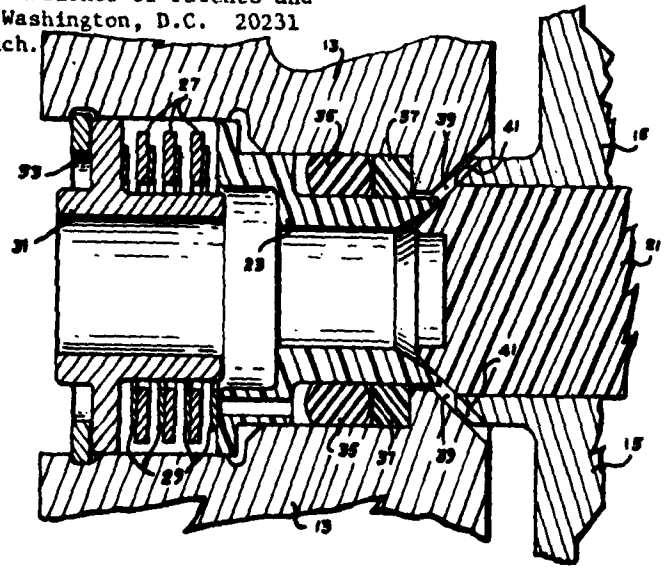
Primary Examiner—Harold W. Weakley

Attorney, Agent, or Firm—Joseph E. Rusz; Arsen Tashjian

[57] ABSTRACT

A relief valve is provided with slots across the end of the valve stem where contact is made with the valve body to eliminate gas pressurization in the annular area bounded by circumferential contact between the valve stem and the body and a smaller diameter circumferential contact between valve seat/seal members. This construction prevents any leakage gas from becoming trapped between the valve stem and the container which would lower the design cracking pressure thereby adversely affecting the operation of the relief valve.

1 Claim, 4 Drawing Figures



JAT 00216

PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Benser

[11] 4,202,516

[45] May 13, 1980

[54] ELECTRONIC TRIPOD TECHNIQUE

[75] Inventor: Earl H. Benser, Bloomington, Minn.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 921,140

[22] Filed: Jun. 30, 1978

[51] Int. Cl.[2] F42B 15/00

[52] U.S. Cl. 244/3.15

[58] Field of Search ..... 244/3.1, 3.15, 3.19, 244/3.21; 73/178 R

[56] References Cited

U.S. PATENT DOCUMENTS

2,824,710	2/1958	Hall	244/3.19
2,869,804	1/1959	Muinch et al.	244/3.15
2,981,500	4/1961	Carlton	244/3.15
3,167,276	1/1965	Moosbrugger et al.	244/3.15

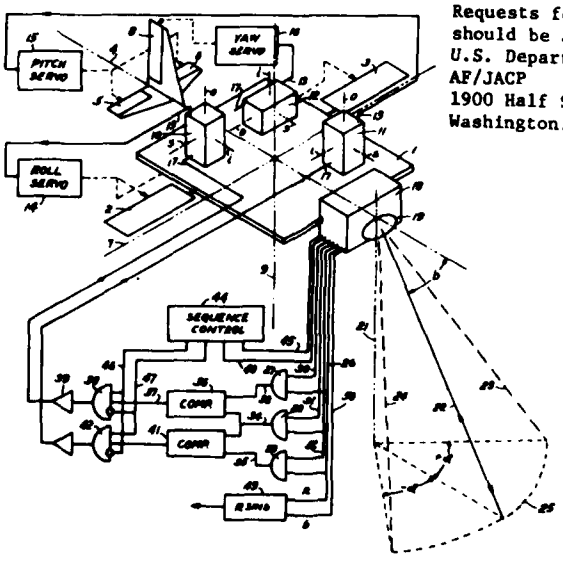
Primary Examiner—Charles T. Jordan

Attorney, Agent, or Firm—Joseph E Rusz; James S. Shannon

[57] ABSTRACT

An electronic tripod technique for postlaunch alignment of the roll and pitch gyros of a missile inertial guidance system. Prior to launch, missile gyros are spun up and caged to the missile airframe axes. At launch, gyros are uncaged and slant range to ground measured over an azimuthal sweep symmetrical to the plane of the missile's roll and yaw axes. A roll error signal proportional to the difference between the slant ranges at the sweep extremes is generated and used to torque the roll gyro, resulting in a rotation of the missile about its roll axis until the error signal is zero. This establishes a new roll reference at the roll gyro that is normal to the local vertical. A pitch error signal is then generated that is proportional to the difference between the slant range at either sweep extreme and the slant range at 0° azimuth. Similarly, this signal is used to torque the pitch gyro and establish a new pitch reference normal to the local vertical, thus completing the alignment of the roll and pitch gyros to the local vertical.

2 Claims, 5 Drawing Figures



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PATENT ABSTRACT
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United States Patent [19]

Hauloser et al.

[11] 4,203,285
[45] May 20, 1980

[54] **PARTIAL SWIRL AUGMENTOR FOR A TURBOFAN ENGINE**

[75] Inventors: Kurt J. Hauloser, North Palm Beach; Raymond J. Bracher, Lake Park; James T. Gill, Jr., North Palm Beach, all of Fla.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 875,664

[22] Filed: Feb. 6, 1978

[51] Int. Cl.[2] F02K 3/10
[52] U.S. Cl. 60/261; 60/749
[58] Field of Search ..... 60/261, 262, 39.72 R; 239/265.17, 127.3

[56] References Cited

U.S. PATENT DOCUMENTS

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3,930,370	1/1976	Markowski et al.	60/261
3,931,707	1/1976	Vdoviak	60/39.72 R

Primary Examiner—Douglas Hart
Attorney, Agent, or Firm—Joseph E. Rusz; Jacob N. Erlich

[57] ABSTRACT

A partial swirl augmentor for a turbofan engine having an annular duct for directing hot gases into the augmentor combustion chamber. Located within the combustion chamber is a piloted vee-gutter flameholder system which has a circumferential pilot located at the outer edge of the swirling hot turbine exhaust gas stream. As a result thereof, the partial swirl augmentor can attain state-of-the art engine after burning thrust levels with an increased altitude blow-out limit.

5 Claims, 2 Drawing Figures

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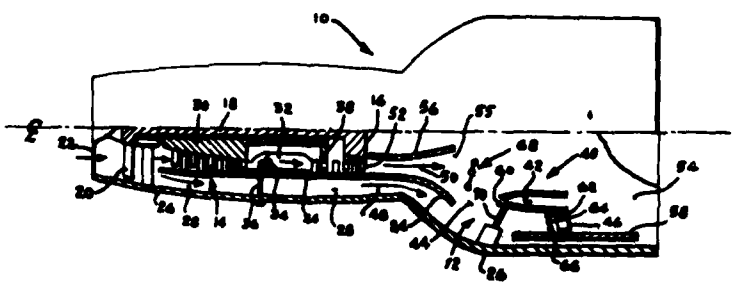

JAT 00?18

PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Warburton

[11] **4,203,286**

[45] **May 20, 1980**

[54] **COOLING APPARATUS FOR AN EXHAUST NOZZLE OF A GAS TURBINE ENGINE**

[75] Inventor: **Robert E. Warburton, Lake Park, Fla.**

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force, Washington, D.C.**

[21] Appl. No. **956,305**

[22] Filed: **Oct. 30, 1978**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 718,271, Aug. 27, 1976, abandoned.

[51] **Int. Cl.**[2] **F02K 1/12**

[52] **U.S. Cl.** **60/266**; 60/271; 239/265.17; 239/265.39

[58] **Field of Search** 60/266, 271; 239/265.17, 265.37, 265.39, 265.41

[56] **References Cited**

U.S. PATENT DOCUMENTS

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4,000,612	1/1977	Wakeman et al.	60/266
4,043,509	8/1977	McHugh et al.	239/265.41
4,074,523	2/1978	Holler et al.	60/266
4,081,137	3/1978	Sutton et al.	239/265.39

Primary Examiner—Robert E. Garrett
Attorney, Agent, or Firm—Joseph E. Rusz; William Stepanishen

[57] **ABSTRACT**

A cooling control system for a convergent-divergent gas turbine exhaust nozzle which permits automatic ducting of cooling air during the augmented mode of engine operation. The convergent flaps of the nozzle have longitudinal ducts embedded therein with a pair of openings near the aft extreme of each of the convergent flaps and openings located in the forward half of the convergent flaps. The convergent seals overlap the convergent flaps and are slideably mounted for positioning over the aft openings on the flaps. A positive pressure is generated under the convergent flap liner and seal liner when the convergent seal is opened to allow cooling air to be ducted through the flap. The positive pressure forces the convergent flap and seal liners up toward the center line of the nozzle.

7 Claims, 8 Drawing Figures

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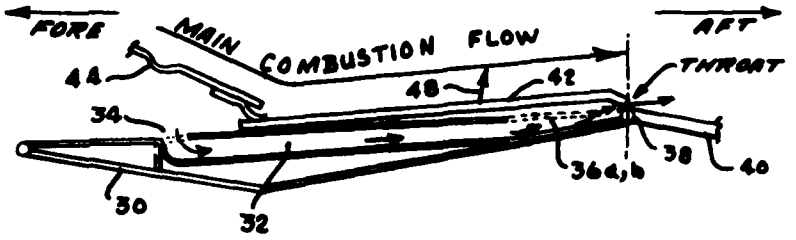


PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Minard et al.

[11] 4,203,642

[45] May 20, 1980

[54] ADJUSTABLE CONNECTOR

[75] Inventors: James V. Minard, Lake St. Louis County; Loeb J. Goldman, St. Louis; Dale R. Foss, St. Charles, all of Mo.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 42,471

[22] Filed: May 25, 1979

[51] Int. Cl.[2] H01R 13/62

[52] U.S. Cl. ..... 339/75 MP; 339/176 MP

[58] Field of Search ..... 339/75 R, 75 MP, 176 MP, 339/75 M, 74 R, 255 P; 324/158 F

[56] References Cited

U.S. PATENT DOCUMENTS

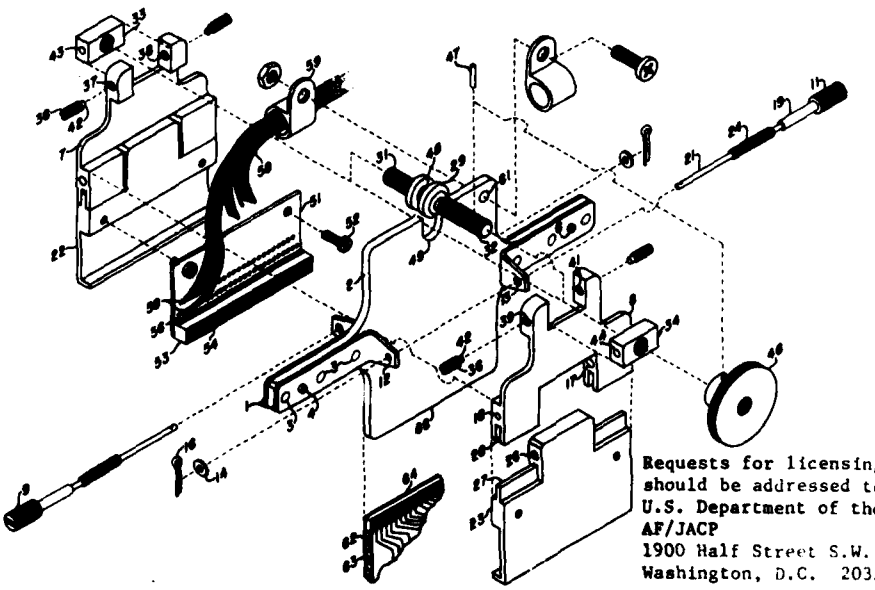
4,068,170	1/1978	Chayka	339/74 R X
4,069,403	1/1978	Beaudette	339/75 MP

Primary Examiner—Joseph H. McGlynn
Assistant Examiner—John S. Brown
Attorney, Agent, or Firm—Joseph E. Rusz; Casimer K. Salva

[57] ABSTRACT

An adjustable cardedge connector for use with two-sided printed circuit (pc) boards, which connector is capable of individual adjustments to align the contacts on each side of the pc board with corresponding connector contacts, and positive actuation to symmetrically clamp the connector onto the pc board with sufficient contact pressure to insure electrical continuity. On either side of a center board structure are pivotally attached clamping arms. At one end both clamping arms are actuated by a symmetrically disposed screw device referenced to the center board and attached to each clamping arm. The opposite ends of the clamping arms have segments which translate parallel to the pivot axis so that the connector contacts can be aligned with the pc board contacts. Attached to each translating segment is a block having multiple electrical contacts. When the connector and board are aligned and the screw device is actuated, the contacts on both blocks are compressively joined to the corresponding contacts on the two sides of the pc board.

4 Claims, 2 Drawing Figures



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JAT 00220

PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Ellis

[11] **4,203,654**

[45] **May 20, 1980**

[54] **LINE-OF-SIGHT STABILIZATION REFLECTOR ASSEMBLY**

[75] Inventor: Herbert B. Ellis, La Canada, Calif.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 962,741

[22] Filed: Nov. 21, 1978

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 850,327, Nov. 10, 1977, abandoned.

[51] Int. Cl.[2] G02B 7/18

[52] U.S. Cl. 350/285

[58] Field of Search 350/16, 6.5-6.91, 350/285

[56] References Cited

U.S. PATENT DOCUMENTS

3,544,201	12/1970	Fowler et al.	350/285
3,765,631	10/1973	Herbst et al.	350/16
3,981,566	9/1976	Frank et al.	350/285

FOREIGN PATENT DOCUMENTS

2557814 4/1977 Fed. Rep. of Germany 350/6.6

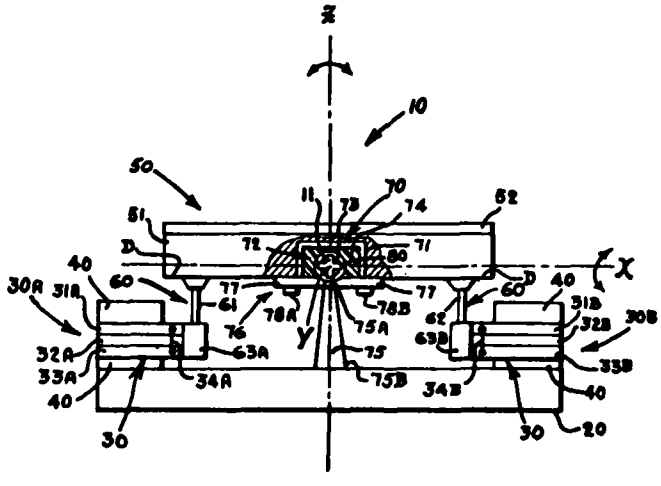
Primary Examiner—Jon W. Henry

Attorney, Agent, or Firm—Joseph E. Rusz; Anna Tashjian

[57] ABSTRACT

An assembly for stabilizing the line-of-sight to a mirror in an optical system. The assembly includes a gimballed mirror that can be driven in angular rotation, so as to compensate for angular motions of the optical system, which would otherwise deleteriously affect line-of-sight stabilization of and to the mirror. The reflecting surface of the mirror maintains the desired position in the optical system during such driven compensatory rotations, as well as being unaffected by imposed undesired mechanical vibrations. The assembly has a high natural rotational frequency, minimal and uniform pivot friction, a selected degree of damping, uniform performance over the operating temperature range, as well as long life.

4 Claims, 1 Drawing Figure



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PATENT ABSTRACT
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United States Patent [19]
Helminiak et al.

[11] **4,207,407**
[45] **Jun. 10, 1980**

[54] **AROMATIC HETEROCYCLIC POLYMER ALLOYS AND PRODUCTS PRODUCED THEREFROM**

[75] Inventors: **Thaddeus E. Helminiak, Dayton; Charles L. Benner, Fairborn; Fred E. Arnold, Centerville; George E. Husman, Xenia, all of Ohio**

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force, Washington, D.C.**

[21] Appl. No.: **903,425**

[22] Filed: **May 3, 1978**

[51] Int. Cl.[2] **C08L 79/06; C08L 79/04**
[52] U.S. Cl. **525/425; 525/432; 525/435; 525/536; 525/540**

[58] Field of Search ..... 260/823, 857 PA, 860; 528/211

[56] **References Cited**

FOREIGN PATENT DOCUMENTS

1122925 8/1968 United Kingdom 260/823

Primary Examiner—Wilbert J. Briggs, Sr.
Attorney, Agent, or Firm—Joseph E. Rusz; Cedric H. Kuhn

[57] **ABSTRACT**

Rod-like aromatic heterocyclic polymers are used as reinforcement in coil-like heterocyclic polymer matrices to provide composites at the molecular level that are analogous to chopped fiber composites.

12 Claims, No Drawings

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PATENT ABSTRACT

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United States Patent [19]

Poirier

[11] 4,207,560

[45] Jun. 10, 1980

[54] **R F AREA INTRUDER DETECTION AND TRACKING SYSTEM**

[75] Inventor: **J. Leon Poirier, Chelmsford, Mass.**

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force, Washington, D.C.**

[21] Appl. No.: **936,160**

[22] Filed: **Aug. 23, 1978**

[51] **Int. Cl.**[2] **G08B 13/24**

[52] **U.S. Cl.** **340/552**; 340/525; 333/237; 343/771

[58] **Field of Search** 340/552, 525, 524, 541, 340/24; 343/771; 333/237

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,660,847	5/1972	Danamer	340/24
3,794,992	2/1974	Gehman	340/552
3,806,908	4/1974	Bound et al.	340/525
3,922,678	11/1975	Frenkel	340/24
4,135,185	1/1979	Rotman et al.	340/552

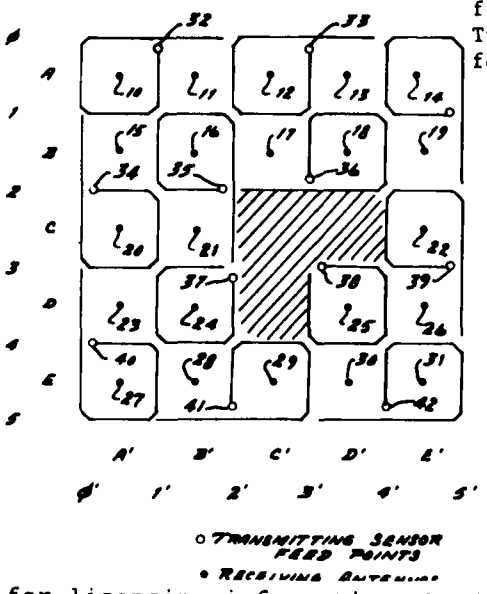
Primary Examiner—Glen R. Swann, III

Attorney, Agent, or Firm—Joseph E. Rusz; Sherman H. Goldman

[57] **ABSTRACT**

The detection, location and tracking of an intruder in an area to be protected is accomplished by dividing the area into a multiplicity of discrete regions, transmitting r.f. signals from transmitting transducers that comprise lengths of transmission lines deployed along the boundaries of the discrete regions, and receiving intrusion occurrence signals from receiving transducers located within each region. Violation of a boundary by an intruder results in an intrusion signal from the receiving transducers of as many as four possible adjacent regions thereby indicating an intrusion event. A coincidence logic circuit indicates which boundary has been violated. Intrusion occurrence signals are stored for suitable periods of time while past and current intrusion events are indicated on a display in order to locate and track intruders.

3 Claims, 7 Drawing Figures



JAT 00223

PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Spencer

[11] 4,208,129

[45] Jun. 17, 1980

[54] **SENSITIVE LASER SPECTROSCOPY MEASUREMENT SYSTEM**

[75] Inventor: **Donald J. Spencer**, Torrance, Calif.

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **921,137**

[22] Filed: **Jun. 30, 1978**

[51] **Int. Cl.**[2] **G01J 3/46**; G01J 3/42

[52] **U.S. Cl.** **356/425**; 356/325; 356/435

[58] **Field of Search** 356/323, 325, 425, 435, 356/437; 250/575

[56] **References Cited**

U.S. PATENT DOCUMENTS

2,858,727	11/1958	Stamm et al.	356/435
3,443,089	5/1969	Sundstrom	356/323
3,583,813	6/1971	Shibata et al.	356/325
3,782,828	1/1974	Alfano et al.	356/323
3,810,696	5/1974	Hutchins, Jr.	356/435
3,871,771	3/1975	Scott	356/114
3,966,328	6/1976	Wirlund	356/138

OTHER PUBLICATIONS

"Fluorine Pressure Change Monitor for a Reacting System"; Schard et al; Rev. Sci. Inst.; vol. 43 #11; Nov. '72, p. 1717-1718.

"Initial Performance of a CW Chemical Laser"; Spencer et al; Opto-Electronics; vol. 2, pp. 155-160, 1970.

"Numerical Study of a Diffusion Type Chemical Laser"; King et al; AIAA Paper No. 72-146, presented at 10th Aerospace Sciences Meeting, San Diego, Ca. 17-19 Jan. 1972.

"Boundary Layer Effects in Chemical Laser Nozzle Inlet"; Mirels et al; The Aerospace Corp. Report Samso-TR-77-211 11/8/77.

"CL X1 Nozzle F_2 Absorption Experiment" Samso-TR-77-107, 6/15/77; published 7/6/77.

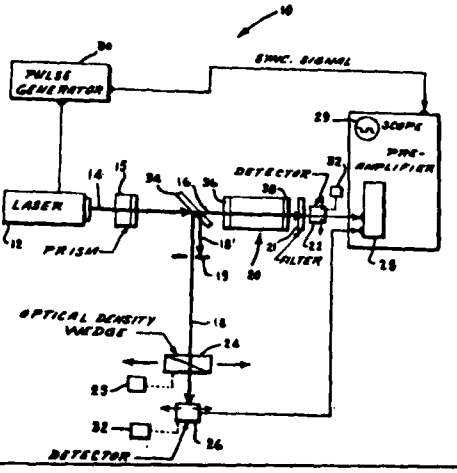
Primary Examiner—Vincent P. McGraw

Attorney, Agent, or Firm—Joseph E. Rusz; Jacob N. Erlich

[57] **ABSTRACT**

A sensitive laser spectroscopy measurement system having a laser radiation source and a dual beam and detection scheme that allows for the measurement of small intensity differences between a probe beam and a reference beam resulting from the absorption, gain or scattering of the probe beam by a medium placed in its optical path. The system attains measurement sensitivities of less than 10^{-4} when the laser radiation source for the probe and reference beams is modulatable. Further included within the system is a prism placed in the optical path of the laser beam before the beam splits into the probe and reference beams and a detector for each beam. The detectors are electrically connected to a sensitivity differential amplifier and an oscilloscope for displaying the intensities of the beams.

10 Claims, 1 Drawing Figure



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PATENT ABSTRACT

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United States Patent [19]

Forsberg

[11] **4,215,634**

[45] **Aug. 5, 1980**

[54] **MECHANICAL MUNITION FLIGHT ENVIRONMENT SENSOR**

[75] Inventor: **John D. Forsberg, Wayzata, Minn.**

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force, Washington, D.C.**

[21] Appl. No.: **928,329**

[22] Filed: **Jul. 26, 1978**

[51] Int. Cl.[2] F42C 15/12

[52] U.S. Cl. 102/228

[58] Field of Search 102/228, 229, 226, 225, 102/244, 246, 208

[56] **References Cited**

U.S. PATENT DOCUMENTS

2,949,783	8/1960	Butler	73/514
3,670,656	6/1972	Donahue et al.	102/228
3,842,743	10/1974	Zittle	102/228
3,961,577	6/1976	O'Steen	102/208
4,015,532	4/1977	Morrow	102/244

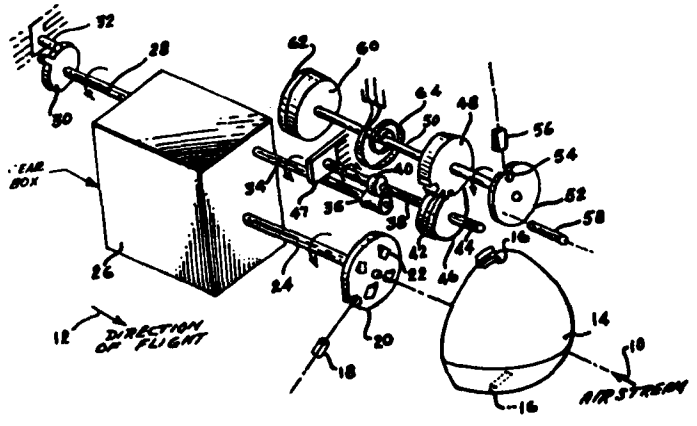
Primary Examiner—Charles T. Jordan

Attorney, Agent, or Firm—Joseph E. Rusz; Henry S. Miller

[57] **ABSTRACT**

An environment sensing system that prevents rotation of a grooved rotor surface mounted on a shaft, with a ball, until a deceleration force causes the ball to climb an inclined surface, a bias spring causes the detent grooves to maintain alignment with the ball.

3 Claims, 5 Drawing Figures



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PATENT ABSTRACT

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United States Patent [19]

Shaffstall et al.

[11] 4,215,712

[45] Aug. 5, 1980

[54] **READY PRESSURE ATTACHMENT FOR EXISTING ANTI-G VALVES**

[75] Inventors: **Robert M. Shaffstall**, San Antonio; **Russell R. Barton**, Stockdale; **Jamy L. Jaggars**, San Antonio, all of Tex.

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **966,680**

[22] Filed: **Dec. 5, 1978**

[51] Int. Cl.[2] F16K 17/36

[52] U.S. Cl. ..... 137/39; 128/1 A

[58] Field of Search ..... 2/2.1 A; 128/1 A; 137/38, 39

[56] **References Cited**

U.S. PATENT DOCUMENTS

2,591,030	4/1952	Versoy	137/39
2,952,264	9/1960	Burns	137/39
3,734,078	5/1973	Cramer	137/38 X
3,956,772	5/1976	Cox	2/2.1 A

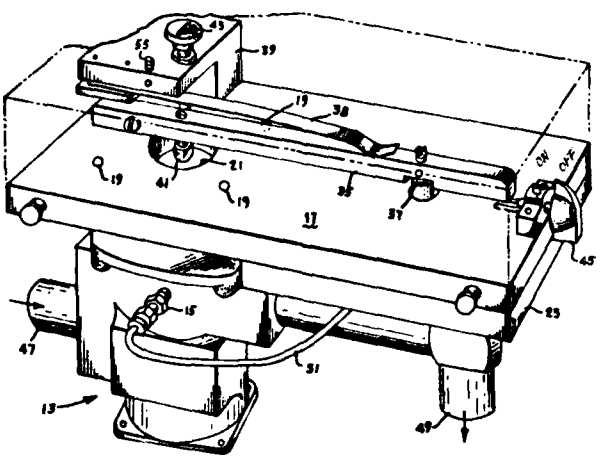
Primary Examiner—Robert G. Nilson

Attorney, Agent, or Firm—Joseph E. Rusz, Arsen Tashjian

[57] **ABSTRACT**

An attachment for use with an anti-G valve to substantially decrease the inflation time of an anti-G garment. A spring loaded, adjustable tension lever arm provides a downward force on a pressure valve causing the anti-G garment to partially inflate. The increasing garment pressure is applied to a diaphragm which causes the lever arm to rise and balance the force of the spring which is normally adjusted to maintain the pressurized suit at 0.2 psig "Ready Pressure". The garment remains partially inflated until the anti-G valve operating in the conventional manner causes the garment to inflate in response to external G-forces.

4 Claims, 2 Drawing Figures



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United States Patent [19]

Wedgwood

[11] **4,215,835**

[45] **Aug. 5, 1980**

[54] **ARM NET SYSTEM FOR EJECTION SEATS**

[76] Inventor: **Gordon J. Wedgwood, 36, Sandy La., Little Sandhurst, Crowthorne, Berkshire, England**

[21] Appl. No.: **909,152**

[22] Filed: **May 24, 1978**

[51] Int. Cl.² **B64D 25/10**

[52] U.S. Cl. ..... **244/122 AG; 244/141; 297/466**

[58] Field of Search ..... **244/122 R, 122 A, 122 AB, 244/122 AG, 122 AH, 121, 141; 297/384, 390, 464, 466**

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,083,938	6/1963	Brinkworth et al.	244/122 AH
4,081,156	3/1978	Idmkar	244/122 AG

FOREIGN PATENT DOCUMENTS

2653369 6/1977 Fed. Rep. of Germany ... 244/122 AG

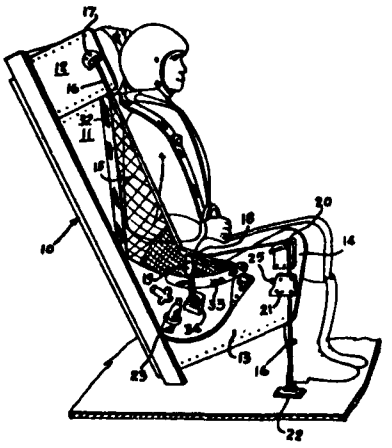
Primary Examiner—Barry L. Kelmachter

Attorney, Agent, or Firm—Joseph E. Rusz; Sherman E. Goldman

[57] **ABSTRACT**

A seat mounted arm restraint net system for restraining a crewmen's arms during an ejection sequence wherein a pair of nets, mounted with one on each side of the seat, are deployable by separate static lines passing through rubber boxes to frangible anchorages on the vehicle floor. Each static line is releasably attached to a separate swinging arm rotatably secured to its seat side such that the swinging arms throw the free net sides laterally outwards and then release the nets to close over the crewmen's arms.

13 Claims, 4 Drawing Figures



RIGHTS OF THE GOVERNMENT

The invention described herein may be manufactured and used by or for the Government of the United States for all government purposes without the payment of any royalty.

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PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19] [11] **4,216,338**
Schack et al. [45] **Aug. 5, 1980**

[54] **SYNTHESIS OF FLUOROCARBON ESTERS**

[75] Inventors: **Carl J. Schack, Chatsworth; Karl O. Christe, Calabasas, both of Calif.**

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force, Washington, D.C.**

[21] Appl. No.: **47,558**

[22] Filed: **Jun. 8, 1979**

[51] **Int. Cl.**[2] **C09F 7/00; C11C 3/00**
[52] **U.S. Cl.** **560/227; 260/408**
[58] **Field of Search** 560/227; 260/408

[56] **References Cited**

U.S. PATENT DOCUMENTS

2,792,406	5/1957	Acker	260/408
3,248,419	4/1966	Hauptschein	260/487
3,255,228	6/1966	Hauptschein	260/456
3,268,571	8/1966	Mitsch	260/456
3,291,843	12/1966	Fritz	260/408

Primary Examiner—John F. Niebling
Attorney, Agent, or Firm—Joseph E. Rusz; William J. O'Brien

[57] **ABSTRACT**

A method for synthesizing perfluoroesters by effecting a reaction at subambient temperatures between a perfluorocarbon acid, or its derivatives, and a halogen fluorosulfate to produce an intermediate perfluoroacyl hypohalite which in turn is reacted with a suitable olefinic reactant to produce a perfluoroester.

3 Claims, 1 Drawing Figure

United States Patent [19]

Giladett

[11] **4,216,723**

[45] **Aug. 12, 1980**

[54] **BOMBLET FUZE**

[75] Inventor: Leo V. Giladett, Santa Cruz, Calif.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 801,715

[22] Filed: May 31, 1977

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 538,840, Jan. 8, 1975, abandoned.

[51] Int. Cl.[2] F42C 5/00

[52] U.S. Cl. 102/223; 102/229

[58] Field of Search 102/73, 76, 81, 81.2, 102/7.2, 223, 229

[56] References Cited

U.S. PATENT DOCUMENTS

2,965,105	5/1961	Rabinow et al.	102/81.2
3,613,595	11/1971	Blomgren et al.	102/81.2
3,678,859	7/1972	Wesson et al.	102/76 R
3,802,344	4/1974	Laepple	102/7.2
3,842,743	10/1974	Zittle	102/81.2
3,973,501	8/1976	Briggs	102/76 R

FOREIGN PATENT DOCUMENTS

2306572	8/1974	Fed. Rep. of Germany	102/76

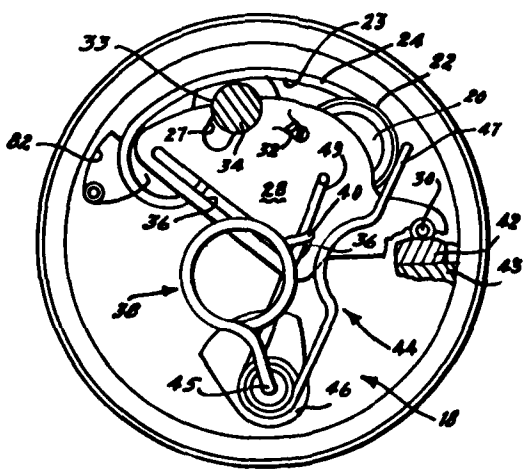
Primary Examiner—Harold J. Tudor

Attorney, Agent, or Firm—Joseph E. Rusz; Jacob N. Erlich

[57] ABSTRACT

A miniature fuze for use with a bomblet munition having an arming and firing mechanism located adjacent one another within the fuze housing. The arming mechanism has no stored energy therein and relies upon a plurality of distinct operations to take place before cocking of the fuze begins. After cocking, the fuze is capable of being armed and can thereafter be detonated upon impact.

8 Claims, 8 Drawing Figures



PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Radovich

[11] 4,217,026

[45] Aug. 12, 1980

[54] ELLIPTIC CYLINDRICAL BAFFLE ASSEMBLY

[75] Inventor: Danilo Radovich, Torrance, Calif.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 937,018

[22] Filed: Aug. 25, 1978

[51] Int. Cl.[2] G02B 11/04

[52] U.S. Cl. ..... 350/58; 350/276 SL

[58] Field of Search ..... 350/58, 59, 17, 28, 350/319, 276 SL, 8, 293; 358/228, 229

[56] References Cited

U.S. PATENT DOCUMENTS

2,670,656	3/1954	Braymer	350/276 SL
3,699,471	10/1972	Mulready et al.	350/276 SL
3,905,675	9/1975	McCracken	350/17

FOREIGN PATENT DOCUMENTS

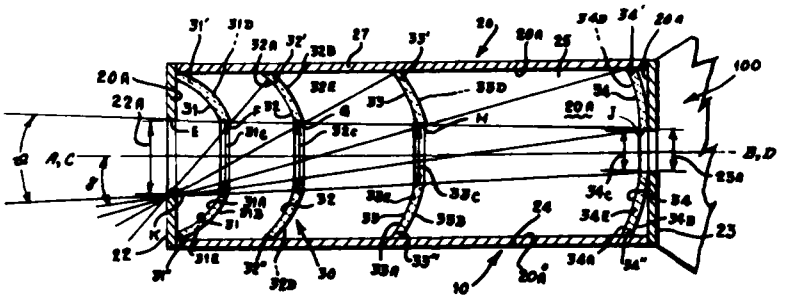
213315 9/1909 Fed. Rep. of Germany 350/78

Primary Examiner—John K. Corbin
Assistant Examiner—B. Wm. de los Reyes
Attorney, Agent, or Firm—Joseph E. Rusz; Arsen Tashjian

[57] ABSTRACT

An assembly for baffling an associated optical system from off-axis radiation and, at the same time, reducing the thermal load by minimizing radiation absorption within the assembly. In its most basic embodiment, the assembly comprises: a rectangularly-shaped box-like housing having a specular internal surface; and, specular baffles that are sections of surfaces of hollow elliptic cylinders and that are positioned within the housing in spaced-apart relationship to each other and in a one-behind-the-other arrangement, and also are perpendicular to the sides of the housing.

5 Claims, 2 Drawing Figures



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PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Lohmann

[11] 4,218,928

[45] Aug. 26, 1980

[54] DOUBLE ACTING DELAY MECHANISM

[75] Inventor: Arthur M. Lohmann, Hopkins, Minn.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 1,329

[22] Filed: Jan. 5, 1979

[51] Int. Cl.³ G05G 17/00
[52] U.S. Cl. 74/3.52
[58] Field of Search 74/3.52; 102/256

[56] References Cited

U.S. PATENT DOCUMENTS

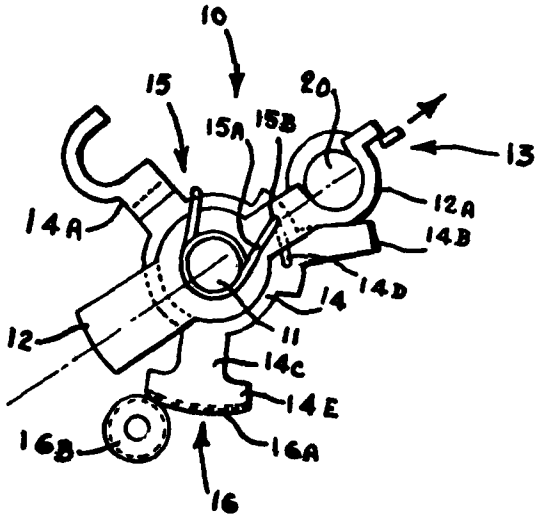
1,942,599	1/1934	Hirsch	74/3.52 X
3,100,961	8/1963	Bassett	74/3.52 X

Primary Examiner—Allan D. Herrmann
Attorney, Agent, or Firm—Joseph E. Rusz; Arsen Tashjian

[57] ABSTRACT

A mechanical, rotary, spring driven, snap action mechanism which has two snap positions, with an intervening intermittent delay.

5 Claims, 3 Drawing Figures



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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Jaggars

[11] 4,219,039

[45] Aug. 26, 1980

[54] MULTIVARIABLE ANTI-G VALVE

[75] Inventor: Jesse L. Jaggars, San Antonio, Tex.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 949,188

[22] Filed: Oct. 6, 1978

[51] Int. Cl.³ F16K 17/36

[52] U.S. Cl. ..... 137/38; 128/1 A; 137/81.1

[58] Field of Search ..... 128/1 A; 137/38, 39, 137/81

[56] References Cited

U.S. PATENT DOCUMENTS

2,509,295	5/1950	Glass	137/85 X
2,820,452	1/1958	Gregg	128/1 A
3,586,027	6/1971	Fitzgerald	137/87
3,780,723	12/1973	Van Patten	128/1 A

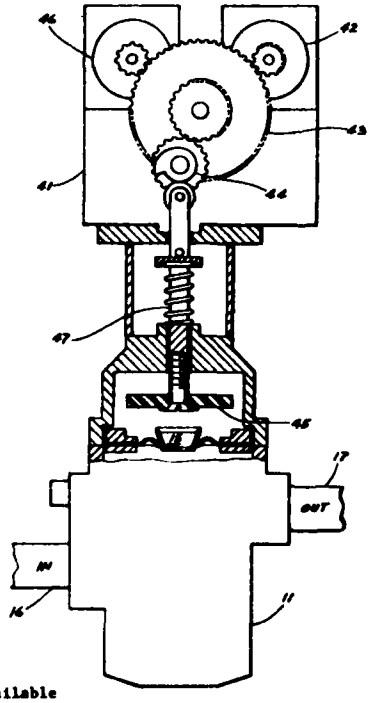
Primary Examiner—Robert G. Nilson

Attorney, Agent, or Firm—Joseph E. Rusz; Robert Kern Duncan

[57] ABSTRACT

An anti-G valve and control system for providing a multivariable, multi-profile, pressurization of aircrew anti-G garments are disclosed. The ramp characteristic, the ramp onset level, a step onset, the step level, a limit pressure, are all controllable over the normal operating range. In addition, an optional ready pressure control is provided to just fill the anti-G suit volume and greatly decrease inflation time required to reach higher pressures.

2 Claims, 10 Drawing Figures



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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Hersman

[11] **4,219,745**

[45] **Aug. 26, 1980**

[54] **BACKLASH FILTER APPARATUS**

[75] Inventor: Michael S. Hersman, Santa Monica, Calif.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl No.: 915,709

[22] Filed: Jun. 15, 1978

[51] Int. Cl.[2] H03K 5/20; H03K 5/08

[52] U.S. Cl. 307/358; 328/167; 328/171; 307/237

[58] Field of Search 307/352, 353, 358, 359, 307/237; 328/151

[56] References Cited

U.S. PATENT DOCUMENTS

3,526,786	9/1970	Snyder	307/352
3,696,577	8/1972	Frohauf	328/151
3,694,668	9/1972	Foerster	307/359
3,708,678	1/1973	Kreda	307/358 X
3,838,346	9/1974	Cox	328/151

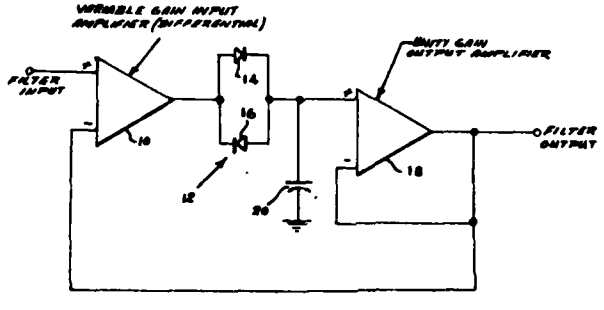
Primary Examiner—John S. Heyman

Attorney, Agent, or Firm—Joseph E. Rusz; William Stepanishen

[57] **ABSTRACT**

A backlash filter apparatus for the removal of spurious electrical components of a pre-established amplitude level from a voltage signal. The filter apparatus provide a backlash window to which the input signal comprising a desired signal and its spurious noise component is applied. The spurious noise component is removed in the backlash window, thus providing a jitter-free filter output.

6 Claims, 2 Drawing Figures



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JAT 00233

PATENT ABSTRACT

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United States Patent [19]

Rogel et al.

[11] 4,219,774

[45] Aug. 26, 1980

[54] **AUTOMATIC EDDY CURRENT SURFACE PROBE FOR FASTENER HOLES**

[76] Inventors: **Albert P. Rogel**, 2655 Ellenbrook Dr., Rancho Cordova, Calif. 95670; **Joseph J. Scalese**, 5531 Laird Way, Loomis, Calif. 95650

[21] Appl. No.: **937,020**

[22] Filed: **Aug. 25, 1978**

[51] **Int. Cl.**[2] **G01R 33/00**

[52] **U.S. Cl.** **324/262**; 324/228; 324/234; 324/238

[58] **Field of Search** 324/226, 228, 233, 234, 324/235-240, 262; 408/150, 151

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,109,139	10/1963	Branher	324/240
3,218,855	2/1973	Rogel et al.	324/234
3,831,084	8/1974	Scalese et al.	324/219
4,095,181	6/1978	Harris et al.	324/238

FOREIGN PATENT DOCUMENTS

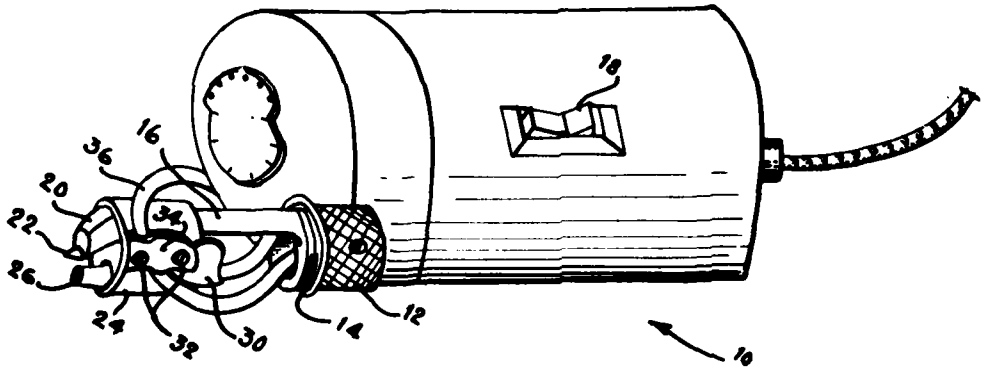
296032	1/1971	U.S.S.R.	324/228

Primary Examiner—Rudolph V. Rolinec
Assistant Examiner—Walter E. Snow
Attorney, Agent, or Firm—Joseph E. Rusz; Henry S. Miller

[57] **ABSTRACT**

An eddy current flaw detector is held in a mounting block by a spring bias, the mounting block is selectively rotatable about a shank member for varying the radius of the detector as the shank rotates about a pivot point, turned by an electric drive mechanism.

4 Claims, 3 Drawing Figures



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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Gibbons et al.

[11] 4,219,845

[45] Aug. 26, 1980

[54] SENSE AND INJECT MOVING TARGET INDICATOR APPARATUS

[75] Inventors: Martin D. Gibbons, Camillus; Richard W. Aldrich, Liverpool, both of N.Y.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 29,585

[22] Filed: Apr. 12, 1979

[51] Int. Cl.³ H04N 3/14

[52] U.S. Cl. ..... 358/105; 250/211 J; 357/24; 358/213

[58] Field of Search ..... 358/105, 212, 213; 357/24; 250/211 J

[56] References Cited

U.S. PATENT DOCUMENTS

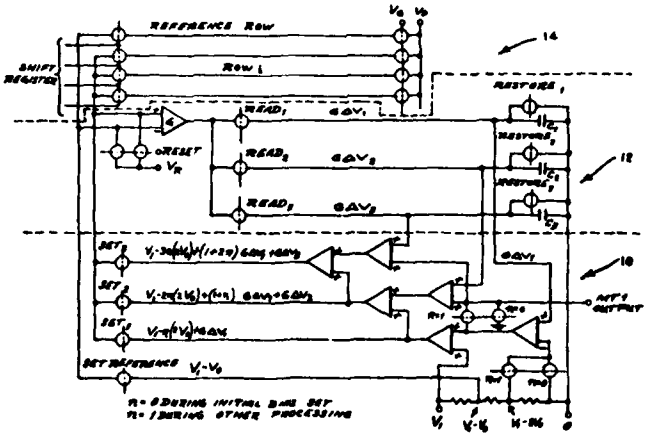
3,856,989	12/1974	Weimer	307/221 D
3,904,818	9/1975	Kovac	358/213
4,064,533	12/1977	Lampe et al.	307/221 D

Primary Examiner—Robert L. Richardson
Assistant Examiner—Joseph A. Orsino, Jr.
Attorney, Agent, or Firm—Joseph E. Rusz; William Stepanishen

[57] ABSTRACT

A moving target indicator apparatus utilizing charge injector device (CID) sensors to detect the presence or absence of a moving target. A signal from a possible target site in the sensor array is measured during a flow scan and is processed with the signal return from a second scan to determine absence or presence and direction.

5 Claims, 1 Drawing Figure



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JAT 00235

PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Bridges

[11] 4,219,936

[45] Sep. 2, 1980

[54] HOLE ANGULARITY GAGE

[75] Inventor: Thomas N. Bridges, Marietta, Ga.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 77,235

[22] Filed: Sep. 19, 1979

[51] Int. Cl.³ G01B 3/22

[52] U.S. Cl. ..... 33/174 Q; 33/172 R; 33/172 D

[58] Field of Search ..... 33/174 Q, 172 D, 169 C, 33/172 R, 173, 174 F

[56] References Cited

U.S. PATENT DOCUMENTS

2,700,224	1/1955	Johnson	33/174 Q
3,114,978	12/1963	Porter	33/174
3,162,953	12/1964	Porter	33/174
3,206,858	9/1965	Bernard	33/174 F
3,392,453	7/1968	Snoddy	33/174 F

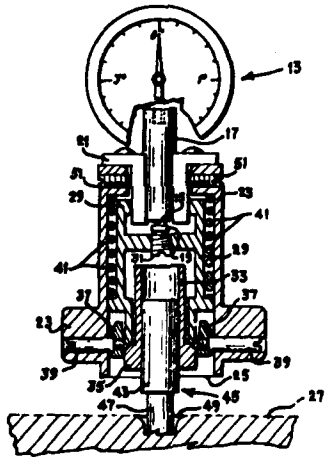
Primary Examiner—Willis Little

Attorney, Agent, or Firm—Joseph E. Rusz; Arsen Tashjian

[57] ABSTRACT

A gage for measuring the angularity of the centerline of straight and/or tapered holes with respect to a flat surface. A tapered pin is inserted into the tapered hole and the gage is placed over the pin and pushed against the surface of the material with the hole in it. A dial indicator provides a direct reading of the angle that the centerline of the hole varies from being perpendicular to the surface. For straight holes, an expanding collet is first inserted into the hole and then the tapered pin is inserted into the collet causing the collet to expand against the sides of the hole and provide an accurate reading on the indicator.

7 Claims, 1 Drawing Figure



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JAT 00236

PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Schloesberg

[11] 4,220,399

[45] Sep. 2, 1980

[54] NEAR MILLIMETER WAVELENGTH ELECTROMAGNETIC FILTER

[76] Inventor: Howard R. Schloesberg, 4811 Hercules Ct., Annandale, Va. 22003

[21] Appl. No.: 960,194

[22] Filed: Nov. 13, 1978

[51] Int. Cl.[2] G02B 5/28

[52] U.S. Cl. 350/163; 350/1.1

[58] Field of Search 350/163, 164, 166, 1.1, 350/1.6, 1.7; 356/346, 352

[56] References Cited

U.S. PATENT DOCUMENTS

3,499,699	3/1970	Ayrts et al.	350/163
3,575,490	4/1971	Reisman	350/163
3,614,655	10/1971	Bolger	350/163
3,799,654	3/1974	Donne	350/166

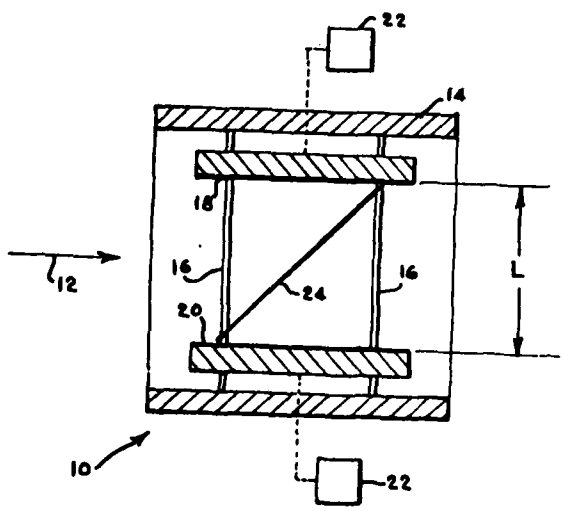
Primary Examiner—Jon W. Henry

Attorney, Agent, or Firm—Joseph E. Rusz; Jacob N. Erlich

[57] ABSTRACT

A near millimeter wavelength electromagnetic filter having a pair of substantially parallel mirrors and a beamsplitter interposed therebetween. The mirrors are spaced apart a distance equal to an integer times half the preselected (near millimeter) wavelength thereby producing a resonant condition. At this resonant condition substantially all the preselected wavelength radiation is reflected by the beamsplitter while other wavelengths pass therethrough thereby removing the preselected wavelength radiation from a beam of radiant energy.

10 Claims, 2 Drawing Figures



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The invention described herein may be manufactured and used by or for the Government of the United States for all government purposes without the payment of any royalty.

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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Reinhardt et al.

[11] **4,220,750**

[45] **Sep. 2, 1980**

[54] **THERMALLY STABLE AROMATIC ENYNE POLYIMIDES**

[75] Inventors: **Bruce A. Reinhardt**, New Carlisle; **Fred E. Arnold**, Centerville, both of Ohio

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **32,809**

[22] Filed: **Apr. 24, 1979**

[51] **Int. Cl.**[2] **C08G 73/10**; C08G 73/12

[52] **U.S. Cl.** **528/172**; 528/125; 528/128; 528/185; 528/188; 528/189; 528/226; 528/228; 528/229; 528/352; 528/353

[58] **Field of Search** 528/128, 172, 185, 188, 528/189, 226, 228, 229, 352, 393, 125

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,879,349	4/1975	Bilow et al.	528/188
3,926,913	12/1975	Jones et al.	528/353
3,987,003	10/1976	Loughran et al.	528/188
4,045,409	8/1977	Arnold et al.	528/172
4,075,171	2/1978	D'Alelio	528/188

Primary Examiner—Lester L. Lee

Attorney, Agent, or Firm—Joseph E. Rusz; Cedric H. Kuhn

[57] **ABSTRACT**

High molecular weight aromatic enyne polyimide thermoplastics are prepared by reacting an aromatic dianhydride with (E)-3,3'-(1-buten-3-ynylene) dianiline alone or in admixture with an aromatic diamine. Because of the presence of the enyne moiety in the polymer backbone, the polymers can be lightly crosslinked to provide solvent-resistant thermoplastics. The polymers are particularly useful in fabricating graphite-reinforced, thermoplastic composites for structural applications.

7 Claims, No Drawings

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PATENT ABSTRACT

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United States Patent [19]

Kuhn, Jr.

[11] 4,220,933

[45] Sep. 2, 1980

[54] BAFFLE/NOZZLE ARRAY FOR CYLINDRICAL LASERS

[75] Inventor: Ralph F. Kuhn, Jr., Calabasas, Calif.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 926,471

[22] Filed: Jul. 20, 1978

[51] Int. Cl.² H01S 3/02

[52] U.S. Cl. ..... 331/94.5 D; 331/94.5 G

[58] Field of Search ..... 331/94.5 D, 94.5 G, 331/94.5 PE, 94.5 T; 330/4.3

[56] References Cited

U.S. PATENT DOCUMENTS

4,011,522 3/1977 Falk ..... 331/94.5 G

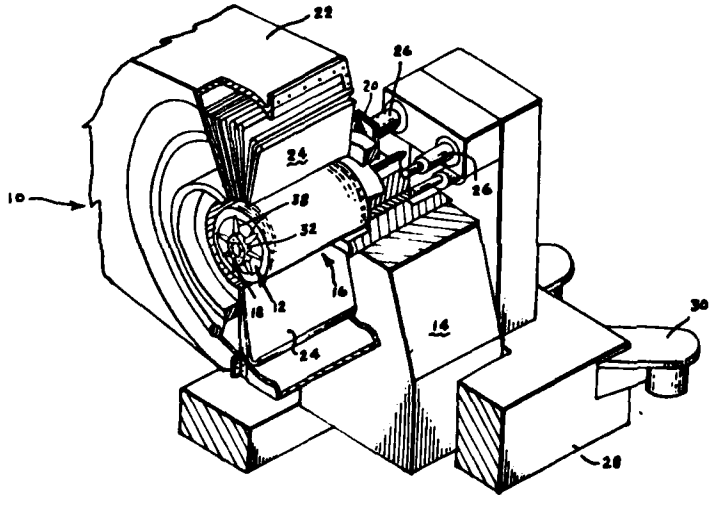
Primary Examiner—James W. Davie

Attorney, Agent, or Firm—Joseph E. Rusz; Jacob N Erlich

[57] ABSTRACT

A nozzle/baffle array for use within the gain generator of a cylindrical laser. The nozzle/baffle array is made of a nozzle assembly and a plurality of baffles. The baffles extend in the radial direction from the centerbody of the cylindrical laser supporting the nozzle assembly circumferentially about the centerbody. As a consequence of the novel arrangement and design of the baffles, the baffles provide a spring support for the nozzle assembly while simulataneously supporting the nozzle assembly in great alignment accuracy permitting adequate thermal growth to take place between the nozzle assembly and the centerbody of the laser.

10 Claims, 5 Drawing Figures



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PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Cloyd

[11] 4,222,745
[45] Sep. 16, 1980

[54] **INDICATOR FOR DETECTION OF SO_2 LEAKAGE**

[75] Inventor: James S. Cloyd, Dayton, Ohio

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 958,929

[22] Filed: Nov. 8, 1978

[51] Int. Cl.[2] G01N 21/06; G01N 21/12
[52] U.S. Cl. ..... 23/230 L; 23/230 R; 23/232 R; 252/408; 429/90; 116/206
[58] Field of Search ..... 252/408; 23/230 L, 230 R, 23/232 R; 429/90

[56] References Cited

PUBLICATIONS

G. D. Patterson, Jr. et al., Anal. Chem., 24(10), 1586–1590 (Oct. 1952).

Primary Examiner—Sidney Marantz
Attorney, Agent, or Firm—Joseph E. Rusz; Vrftiv H. Kuhn

[57] ABSTRACT

A composition of matter comprising a mixture of (1) finely divided silica containing adsorbed potassium dichromate and (2) a polymeric adhesive material. The composition is particularly useful as an indicator for detecting the leakage of sulfur dioxide from cells and batteries.

6 Claims, No Drawings

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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Schack et al.

[11] 4,222,968

[45] Sep. 16, 1980

[54] **METHOD FOR SYNTHESIZING FLUOROCARBON HALIDES**

[75] Inventors: **Carl J. Schack, Chatsworth; Karl O. Christe, Calabasas, both of Calif.**

[73] Assignee: **United States of America as represented by the Secretary of the Air Force, Washington, D.C.**

[21] Appl. No.: **46,898**

[22] Filed: **Jun. 8, 1979**

[51] **Int. Cl.**[3] **C07C 19/08**

[52] **U.S. Cl.** **260/653**

[58] ***Field of Search*** 260/653, 653.3

[56] **References Cited**

U.S. PATENT DOCUMENTS

2,176,181	10/1939	Hunsdieker et al.	260/487
3,072,730	1/1963	Twelves	260/653.7
3,555,100	1/1971	Garth et al.	260/653
3,822,323	7/1974	Leverkusen et al.	260/653
4,087,475	5/1978	Jordan	260/653
4,098,806	7/1978	Commeyras et al.	260/405.5

Primary Examiner—C. Davis

Attorney, Agent or Firm—Joseph E. Rusz; William J. O'Brien

[57] **ABSTRACT**

A method for synthesizing fluorocarbon halides by effecting a reaction at ambient temperatures between a fluorocarbon acid or its derivative and a halogen fluorosulfate.

5 Claims, No Drawings

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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Stadnick

[11] **4,224,388**

[45] **Sep. 23, 1980**

[54] **HYDRAULIC SEAL BATTERY TERMINAL**

[75] Inventor: Steven J. Stadnick, Redondo Beach, Calif.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 70,384

[22] Filed: Aug. 28, 1979

[51] Int. Cl.³ H01M 2/30

[52] U.S. Cl. ..... 429/181; 429/183; 429/185; 174/152 R

[58] Field of Search ..... 429/181-185, 429/171-174, 101; 174/18, 23 R, 77 R, 152 R

[56] **References Cited**

U.S. PATENT DOCUMENTS

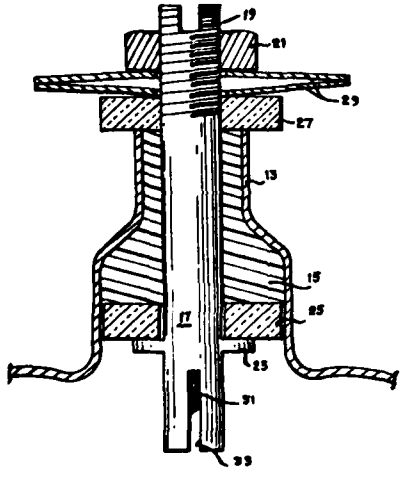
1,796,818	3/1931	Woodbridge	429/184 X
1,914,904	6/1933	West	429/183
3,370,989	2/1968	Vigmini	429/183
3,427,205	2/1969	Platt et al	429/184 X
3,678,178	7/1972	Hubbauer et al	429/181

Primary Examiner—Anthony Skapars
Attorney, Agent, or Firm—Joseph E. Rusz; Arsen Tashjian

[57] **ABSTRACT**

A self-sealing battery terminal including a hydroformed Inconel outer case, a low shear strength sealant material, and a central post in the form of a bolt which acts as both a conductor and transmits the preload from a pair of Belleville washers to a lower ceramic washer. The lower ceramic washer acts like a piston to compress the sealant when the nut on the central post is tightened. The Belleville washers serve to maintain a minimum tension on the central post. A top ceramic washer is held in place by the tension in the central bolt as long as the tension exceeds a minimum value.

3 Claims, 1 Drawing Figure



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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Terrell

[11] **4,224,515**

[45] **Sep. 23, 1980**

[54] **HIGH ACCURACY OPTICAL SHAFT ENCODER SYSTEM**

[75] Inventor: Mark C. Terrell, Burlington, Mass.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 955,295

[22] Filed: Oct. 27, 1978

[51] Int. Cl.[2] G01D 5/34

[52] U.S. Cl. ..... 250/231 SE; 318/640

[58] Field of Search ..... 324/175, 161, 166; 250/231 SE; 340/347 P; 318/640

[56] References Cited

U.S. PATENT DOCUMENTS

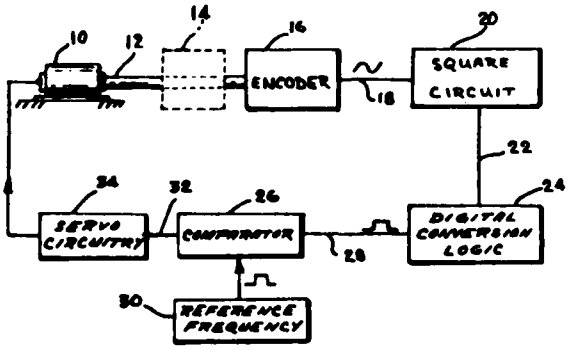
3,706,048 12/1972 Johnston 324/161

Primary Examiner—David C. Nelms
Assistant Examiner—Darwin R. Hostetter
Attorney, Agent, or Firm—Joseph E. Rusz; Henry S. Miller, Jr.

[57] ABSTRACT

An optical shaft encoder system for measuring electrically powered motor shaft speed, including a system for increasing the sinusoidal encoder output waveforms by a multiplication factor, converting the product of the multiplied waveforms to square waves, comparing the waveforms to a reference waveform and generating a correction signal which is fed back to the motor through servo circuitry, thereby correcting errors in motor shaft rotational speed.

4 Claims, 2 Drawing Figures



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FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

O'Connell

[11] **4,224,548**

[45] **Sep. 23, 1980**

[54] **SINGLY ROTATED CUT OF Y-AXIS BOULE LEAD POTASSIUM NIOBATE, $Pb_2KNb_5O_{15}$, FOR SURFACE ACOUSTIC WAVE APPLICATIONS**

[75] Inventor: **Robert M. O'Connell, Arlington, Mass.**

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force, Washington, D.C.**

[21] Appl. No.: **43,984**

[22] Filed: **May 31, 1979**

[51] Int. Cl.³ **H01L 41/18**

[52] U.S. Cl. ..... **310/360; 310/313 R**

[58] Field of Search 310/313, 360; 333/193, 333/150, 154

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,001,767	1/1977	Slobodnick, Jr. et al.	310/360
4,109,172	8/1978	O'Connell	310/313
4,109,173	8/1978	O'Connell	310/313

OTHER PUBLICATIONS

Strong Electromechanical Coupling of SAW on a $Pb_2KNb_5O_{15}$ Single Crystal, by H. Yamanchi, Applied Physics Letters, vol. 32, #10, May 15, 1978.

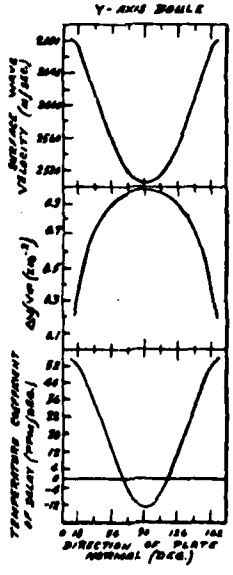
Primary Examiner—Mark O. Budd

Attorney, Agent, or Firm—Joseph E. Rusz; William J. O'Brien

[57] **ABSTRACT**

A lead potassium niobate substrate having a Y-axis boule crystallographic orientation defined by the Euler Angles Lambda = 90.0°, Mu = 66.6° and Theta = 0.0°.

1 Claim, 2 Drawing Figures



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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

O'Connell

[11] **4,224,549**

[45] **Sep. 23, 1980**

[54] **LEAD POTASSIUM NIOBATE SUBSTRATE MEMBER FOR SURFACE ACOUSTIC WAVE APPLICATIONS**

[75] Inventor: Robert M. O'Connell, Arlington, Mass.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 43,985

[22] Filed: May 31, 1979

[51] Int. Cl.[2] H01L 41/18

[52] U.S. Cl. ..... 310/360; 310/313 R

[58] Field of Search 310/360, 313; 333/193, 333/150, 154

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,001,767	1/1977	Slobodnick, Jr. et al.	310/360
4,109,172	8/1978	O'Connell	310/313
4,109,173	8/1978	O'Connell	310/313

OTHER PUBLICATIONS

Strong Electromechanical Coupling of SAW on a $Pb_2KNb_5O_{15}$ Single Crystal, by H. Yamauchi, Applied Physics Letters, vol. 32, #10, May 15, 1978.

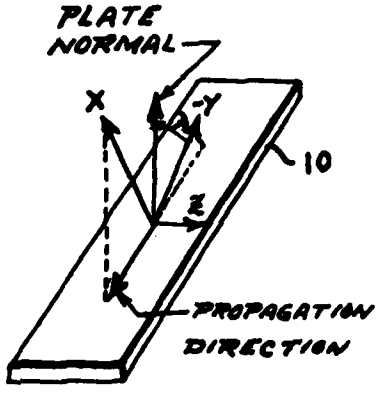
Primary Examiner—Mark O. Budd

Attorney, Agent, or Firm—Joseph E. Rusz; William J. O'Brien

[57] **ABSTRACT**

A lead potassium niobate substrate having a singly rotated cut of the Z axis cylinder with a crystallographic orientation defined by the Euler Angles Lambda = 74.4°, Mu = 90.0° and Theta = 0.0°.

1 Claim, 2 Drawing Figures



Z-AXIS CYLINDER

$\lambda = 74.4°$

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PATENT ABSTRACT

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United States Patent [19]

Hays

[11] **4,224,558**

[45] **Sep. 23, 1980**

[54] **SELECTABLE SERVO RATIO AND DUAL SPEED CONTROL SYSTEM FOR LARGE CENTRIFUGE UNITS**

[75] Inventor: **Wilbur L. Hays, Alamogordo, N. Mex.**

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force, Washington, D.C.**

[21] Appl. No.: **868,354**

[22] Filed: **Jan. 10, 1978**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 621,327, Oct. 10, 1975.

[51] Int. Cl.[2] H02P 5/16

[52] U.S. Cl. 318/314; 318/318; 318/592

[58] Field of Search 318/314, 326, 327, 328, 318/341, 594, 592; 310/168; 307/106

[56] **References Cited**

U.S. PATENT DOCUMENTS

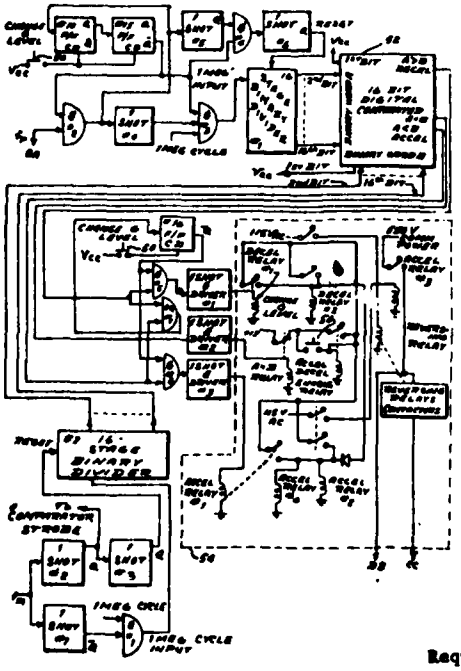
3,207,970	9/1965	Branco	318/314
3,895,278	7/1975	Picunko	318/327
3,953,774	4/1976	Sato et al.	318/594
3,971,995	7/1976	Eielberger	310/168 UX

Primary Examiner—David Smith, Jr.
Assistant Examiner—M. Mutter
Attorney, Agent, or Firm—Joseph E. Rusz; William Stepanishen

[57] **ABSTRACT**

A selectable servo ratio and dual speed centrifuge control apparatus utilizing a plurality of phase-lock loops with selected gain increments to provide motor control from coarse to fine in conjunction with an automatic acceleration and deceleration circuit.

1 Claim, 11 Drawing Figures



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PATENT ABSTRACT

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United States Patent [19]

Denney

[11] 4,224,768

[45] Sep. 30, 1980

[54] APPARATUS FOR, AND METHOD OF, PLUNGE GRINDING

[75] Inventor: James J. Denney, Carmel, Ind.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 877,937

[22] Filed: Dec. 5, 1978

[51] Int. Cl.³ B24D 7/06; B24B 1/00

[52] U.S. Cl. ..... 51/209 R; 51/325

[58] Field of Search ..... 51/209 R, 325; 269/7

[56] References Cited

U.S. PATENT DOCUMENTS

1,743,604	1/1930	Hoagland	51/209 R
1,868,492	7/1932	Buchenter	51/209 R
2,083,492	12/1936	DeLeeuw	51/209 R X
3,128,090	4/1964	Andersen	269/7
3,171,237	3/1965	Howard	51/209 R
3,181,281	5/1965	Hensley	51/209 R
3,672,032	6/1972	Witherspoon	269/7 X

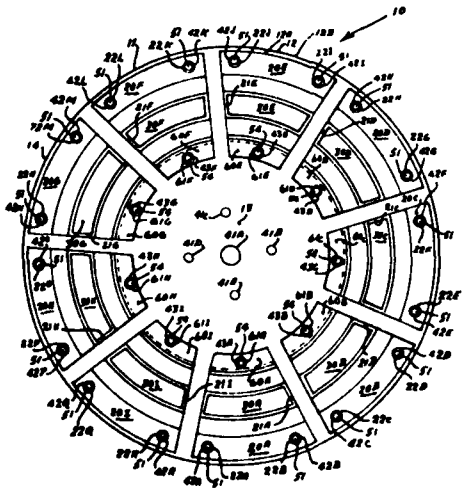
Primary Examiner—Gary L. Smith

Attorney, Agent, or Firm—Joseph E. Rusz; Arsen Tashjian

[57] ABSTRACT

An apparatus for, and a method of, forming annular grooves in a workpiece by plunge grinding. The preferred embodiment of the apparatus includes: a segmental grinding wheel chuck which further includes a circumferential chuck plate to which a plurality of arcuate-shaped, equally-spaced grinding wheel segment holders are releasably connected, and, grinding wheel segments that are removably attached, by and with the use of eutectic material, to the grinding wheel segment holders. The method sets forth the steps of removably attaching the grinding wheel segments for the holders with eutectic material.

2 Claims, 4 Drawing Figures



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PATENT ABSTRACT

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United States Patent [19]

Kilian et al.

[11] 4,225,016

[45] Sep. 30, 1980

[54] **HYDRAULIC DECELERATOR WITH SEGMENTED CYLINDER**

[75] Inventors: **John P. Kilian**, Ineirlik, Turkey; **John A. Brown**, Kettering, Ohio

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **15,382**

[22] Filed: **Feb. 26, 1979**

[51] **Int. Cl.**[3] **F16F 57/00**

[52] **U.S. Cl.** **188/38**; 188/33

[58] **Field of Search** ..... 188/1 R, 2 R, 5, 33, 188/38, 8, 270, 282; 114/145 A, 145 R

[56] **References Cited**

U.S. PATENT DOCUMENTS

1,065,506	6/1913	Constantin	188/270 X
2,844,220	7/1958	Muehlner	188/38

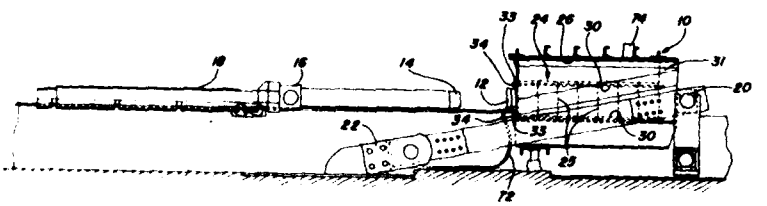
Primary Examiner—Duane A. Reger

Attorney, Agent, or Firm—Joseph E. Rusz; Richard J. Killoren

[57] **ABSTRACT**

A hydraulic decelerator having a waterbrake cylinder positioned within a reservoir wherein the cylinder is made up of a plurality of cylinder segments which are secured to a solid block member with four rods. The interfaces of the segments are ground and polished to provide a smooth close fit. Each segment includes bore holes in a predetermined pattern in the top and two sides with orifice or plug inserts being threaded into the holes. Internally threaded captive ring members are held between semicircular channels at the adjoining surfaces of the channels. Transition orifice inserts are threaded into the ring members. A frangible membrane is secured between the first segment and piston guide assembly secured to the first segment. The reservoir is filled with water, including a rust inhibiter, to a level of about ¼ inch above the segmented waterbrake cylinder such as to completely fill the cylinder with water.

4 Claims, 9 Drawing Figures



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PATENT ABSTRACT
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United States Patent [19]

Brown

[11] **4,225,101**

[45] **Sep. 30, 1980**

[54] **AIRCRAFT EJECTION SYSTEM COLLISION AVOIDANCE SYSTEM**

[75] Inventor: **Herbert R. Brown**, Monroe County, N.Y.

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force, Washington, D.C.**

[21] Appl. No.: **2,163**

[22] Filed: **Jan. 9, 1979**

[51] **Int. Cl.**[3] **B64D 25/10**

[52] **U.S. Cl.** ..... **244/122 AE; 244/122 AH; 244/141**

[58] **Field of Search** ..... 244/122 R, 122 A, 122 AB, 244/122 AC, 122 AD, 122 AE, 122 AH, 122 AG, 141, 147

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,311,330	3/1967	Hofferberth et al.	244/141
3,416,755	12/1968	Knoll et al.	244/122 R
3,862,731	1/1975	McIntyre	244/141

Primary Examiner—Charles E. Frankfort
Attorney, Agent, or Firm—Joseph E. Rusz; Richard J. Killoren

[57] **ABSTRACT**

A collision avoidance system having a seat parachute deployment system secured to the pilot's seat. The seat parachute deployment system has a flap member secured to the survival kit on the side remote from the pilot. The flap member drops down to prevent entanglement of the seat parachute or suspension lines with the pilot's legs. The seat parachute is stowed in an elongated sleeve on the flap and is drawn from the sleeve during seat separation. The suspension lines are stowed in a conventional manner. A connecting line, connected between the suspension lines and seat attachment lines, is stowed in elongated sleeves on the flap.

3 Claims, 5 Drawing Figures

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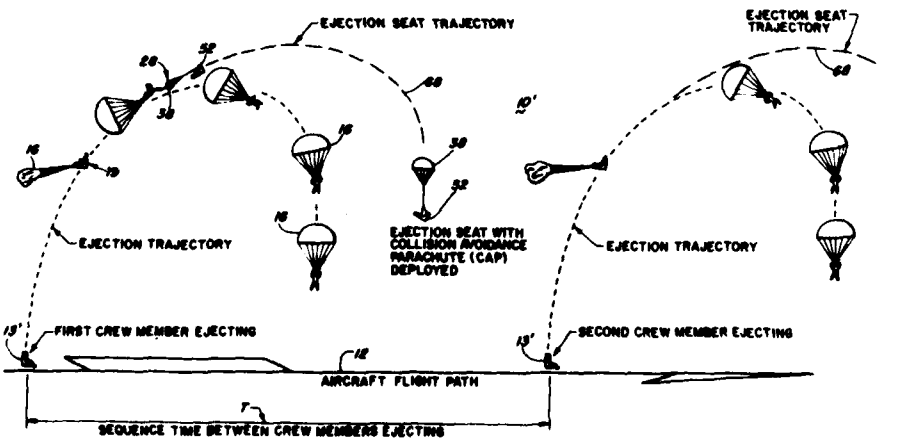

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United States Patent [19]

Picklesimer

[11] 4,226,800

[45] Oct. 7, 1980

[54] **SYNTHESIS OF ACETYLENE-TERMINATED COMPOUNDS**

[75] Inventor: **Lewellyn G. Picklesimer**, Dayton, Ohio

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **48,322**

[22] Filed: **Jun. 14, 1979**

[51] **Int. Cl.**[3] **C07C 43/20**; C07C 121/75; C07C 147/06; C08F 138/00

[52] **U.S. Cl.** ..... **260/465 F**; 525/502; 528/86; 528/171; 528/210; 528/219; 568/636; 568/638; 568/641; 568/651; 568/654; 568/720; 568/723; 568/766; 568/33; 568/48

[58] **Field of Search** ..... 260/465 F, 607 AR, 609 F; 568/636, 641, 654; 525/502

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,141,921 2/1979 Karrer 568/636

OTHER PUBLICATIONS

Fletcher et al., J. Amer. Chem. Soc., vol. 65, pp. 1431–1432 (1943).
Hay et al., Polymer Letters, 8, pp. 97–99 (1970).

Primary Examiner—Dolph H. Torrence
Attorney, Agent, or Firm—Joseph E. Rusz; Cedric H. Kuhn

[57] **ABSTRACT**

Phenolic materials containing propargyl groups are prepared by reacting a polyhydric, phenolic material with propargyl bromide, the reaction being conducted in an aqueous sodium hydroxide solution. The products can be thermally polymerized to polymers which are useful as adhesives and as matrix resins in the fabrication of composites.

13 Claims, No Drawings

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PATENT ABSTRACT

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United States Patent [19]

McNamara et al.

[11] 4,227,187

[45] Oct. 7, 1980

[54] **HIGH SPEED REAL TIME QUANTIZER AND ANALOG/DIGITAL CONVERTER**

[75] Inventors: **John V. McNamara**, Rome; **Paul Van Etten**, Clinton, both of N.Y.

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **25,413**

[22] Filed: **Mar. 30, 1979**

[51] **Int. Cl.**³ **H03K 13/00**

[52] **U.S. Cl.** ..... **340/347 P**; 313/372; 340/347 M; 340/796; 315/378; 358/252

[58] **Field of Search** ..... 340/347 AD, 347 M, 347 P, 340/360, 794–797; 313/372; 358/252; 315/378

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,071,762	1/1963	Morgan	340/347 P
3,360,672	12/1967	Marshall	358/252 X
3,400,391	9/1968	Rantsch et al.	340/347 P X
3,581,102	5/1971	Nagao	313/372 X
3,873,868	3/1975	Robinder	358/252 X
4,034,363	7/1977	Van Etten et al.	340/347 P

FOREIGN PATENT DOCUMENTS

2155077 5/1973 Fed. Rep. of Germany .... 252/301.4 F

Primary Examiner—Thomas J. Sloyan

Attorney, Agent, or Firm—Joseph E. Rusz; Willard R. Matthews

[57] **ABSTRACT**

A system for performing real time quantization and analog/digital conversion of an analog waveform operating with analog input signals over one gigahertz bandwidth is realized by utilizing a CRT type device in which the electron beam is deflected by the analog input waveform. The deflected electron beam strikes a fast phosphor screen and an externally positioned target consisting of light sensitive elements arranged in a discrete pattern detects and quantizes the signal. The output of the detectors feed an encoder resulting in a binary digital output waveform. The device accepts both unipolar and bipolar video waveform and has parallel output channels such that further circuitry to be employed can operate with reduced bandwidths.

4 Claims, 7 Drawing Figures

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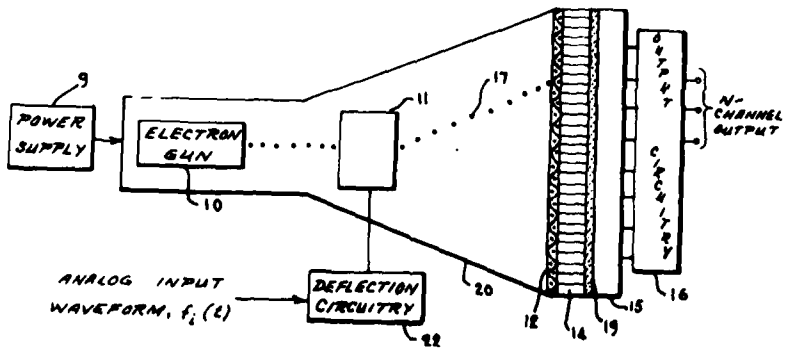

PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Goode

[11] 4,227,232

[45] Oct. 7, 1980

[54] CLUTCH PROTECTION CIRCUIT

[75] Inventor: Jonathan M. Goode, Lexington, Mass.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 18,696

[22] Filed: Mar. 8, 1979

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 806,434, Jun. 14, 1977, abandoned.

[51] Int. Cl.³ H02H 3/24

[52] U.S. Cl. 361/191; 361/189

[58] Field of Search ..... 361/191, 192, 193, 194, 361/189, 166, 187, 92, 111, 110, 114; 307/113, 115, 130; 274/4 D, 11 D; 340/147 R, 147 LP

[56] References Cited

U.S. PATENT DOCUMENTS

1,481,377	1/1924	Laude	361/92
1,958,161	5/1934	Crago et al	361/191 X
2,556,220	6/1951	Rosenberger	361/191 X
2,699,507	1/1955	Schnarz	361/191 X
2,796,575	6/1957	Arnot	361/92 X
2,814,732	11/1957	McFarland	361/191 X
3,636,375	1/1972	Armstrong	361/191 X
3,860,910	1/1975	Hudson	361/194 X
3,962,611	6/1976	Miller	361/194

Primary Examiner—Patrick R. Salce
Attorney, Agent, or Firm—Joseph E. Rusz; Henry S. Miller

[57] ABSTRACT

A circuit for the protection of devices from power line transients and accidental shut-down requiring operator performance for restart including a push button switch for resetting holding relays to operate the apparatus.

6 Claims, 2 Drawing Figures

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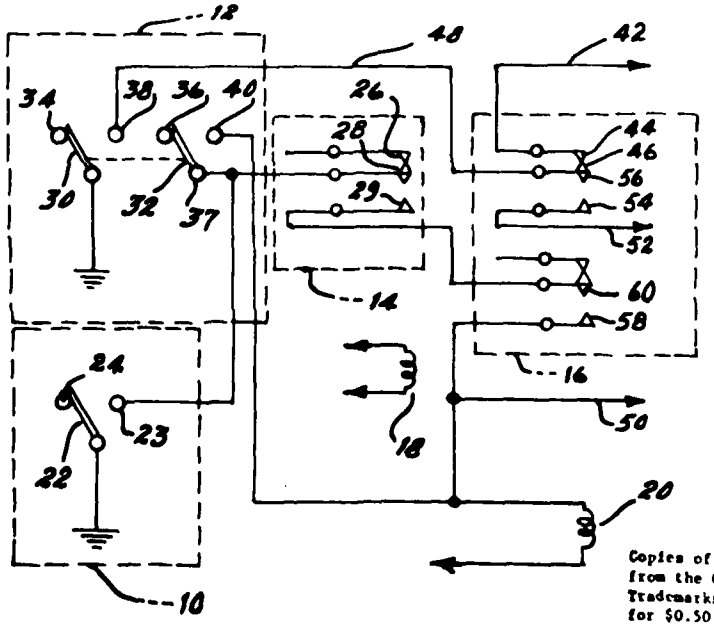

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FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Nevin

[11] 4,228,435

[45] Oct. 14, 1980

[54] RADAR SENSITIVITY TIME CONTROL USING RANGE GATED FEEDBACK

[75] Inventor: Robert L. Nevin, New Hartford, N.Y.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 5,885

[22] Filed: Jan. 23, 1979

Related U.S. Application Data

[63] Contin. ation-in-part of Ser. No. 813,572, Jul. 7, 1977, abandoned.

[51] Int. Cl.³ G01S 13/00

[52] U.S. Cl. ..... 343/5 SM; 343/7 A; 343/7 AG

[58] Field of Search ..... 343/5 SM, 7 AG, 7 A

[56] References Cited

U.S. PATENT DOCUMENTS

3,149,333	9/1964	Campbell	343/7 AG
3,196,355	7/1965	Berry et al.	343/7 AG
3,392,370	7/1968	Neitzel	340/15.5 R
3,464,022	8/1969	Locheed, Jr. et al.	340/15.5 GC
3,719,942	3/1973	Herman et al.	343/7 A
3,778,829	11/1973	Longuemare, Jr. et al.	343/7 AG
4,058,809	11/1977	Chudleigh, Jr.	343/7 AG
4,159,477	6/1979	Le Beyec	343/7 A

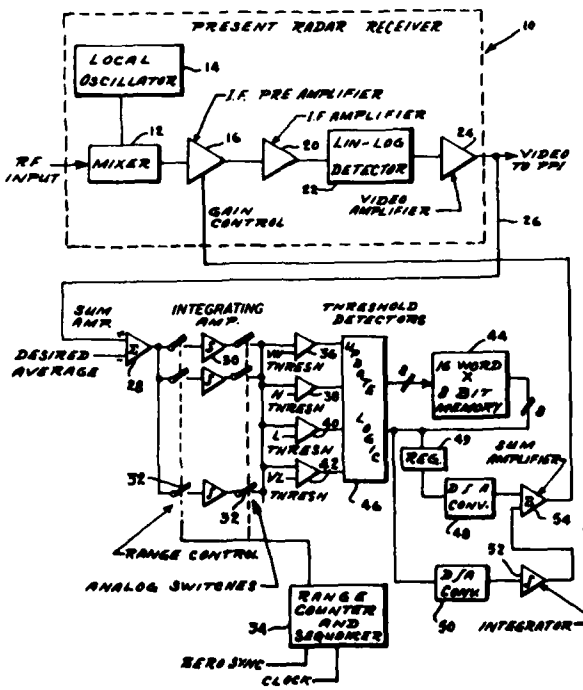
Primary Examiner—S. C. Buczinski

Attorney, Agent, or Firm—Joseph E. Rusz; Willard R. Matthews, Jr.

[57] ABSTRACT

A sensitivity time control circuit for radar receivers, using range gated feedback where the video signal is sampled and compared to a desired signal at intervals based upon range sweep; as the radar antenna is reversing direction, integrated averages of the video signal are used to update the sensitivity time controlled waveform.

2 Claims, 7 Drawing Figures



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PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Evers et al.

[11] 4,229,566

[45] Oct. 21, 1980

[54] **ARTICULATED PARA-ORDERED AROMATIC HETEROCYCLIC POLYMERS CONTAINING DIPHENOXYBENZENE STRUCTURES**

[75] Inventors: **Robert C. Evers**, Dayton; **Fred E. Arnold**, Centerville; **Thaddeus E. Helminiak**, Dayton, all of Ohio

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: 69,476

[22] Filed: Aug. 24, 1979

[51] Int. Cl.[2] C08G 73/18; C08G 73/22; C08G 75/32

[52] U.S. Cl. 528/185; 528/172; 528/179; 528/207; 528/208; 528/210; 528/211

[58] Field of Search 528/172, 185, 179, 207, 528/208, 210, 211

[56] References Cited

U.S. PATENT DOCUMENTS

2,904,537	9/1959	Brinker et al.	528/185
3,260,700	7/1966	Rudner et al.	528/185
3,306,876	2/1967	Kantor et al.	528/185
3,620,999	1/1971	Marvel	528/185
3,864,310	2/1975	Saferstein	528/185
4,051,108	9/1977	Helminiak et al.	528/185

Primary Examiner—Lester L. Lee
Attorney, Agent, or Firm—Joseph E. Ruaz; Cedric H. Kuhn

[57] ABSTRACT

Para-ordered aromatic heterocyclic polymers characterized by having p-benzbisoxazole, p-benzbisthiozole or p-benzbisimidazole units and containing diphenoxybenzene structures. The diphenoxybenzene structures function as "swivels" in the polymer chains, imparting flexibility thereto and making it possible to cast strong films from solutions of the polymers.

13 Claims, No Drawings

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United States Patent [19]

Rolinski et al.

[11] **4,231,248**

[45] **Nov. 4, 1980**

[54] **LASER TENSILE TEST SAMPLE HOLDER**

[75] Inventors: **Edmund J. Rolinski**, Dayton, Ohio; **Bernard Laub**, Cupertino, Calif.

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **48,875**

[22] Filed: **Jun. 15, 1979**

[51] **Int. Cl.**[3] **G01N 3/08**

[52] **U.S. Cl.** **73/15.6**; 73/147; 73/856

[58] **Field of Search** ..... 73/432 R, 15.6, 147

[56] **References Cited**

U.S. PATENT DOCUMENTS

2,917,920	12/1959	Robinette	73/15.6
4,114,018	9/1978	Allmen	73/432 L

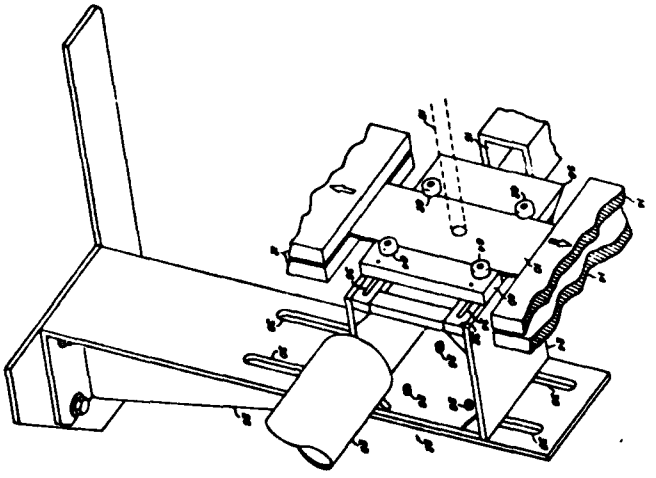
Primary Examiner—S. Clement Swisher

Attorney, Agent, or Firm—Joseph E. Rusz; Richard J. Killoren

[57] **ABSTRACT**

A test sample support for flat plate test samples used in the simultaneous laser, wind tunnel and tensile machine testing having a cantilever box frame member supported on the tensile machine with an adjustable sample alignment member and a stationary sample alignment member supported on the box frame member. Test sample backing members are adjustably supported on box frame member adjacent the stationary sample alignment member and on the adjustable sample alignment member. Two sample retainer buttons are secured to the stationary sample alignment member and two sample retainer buttons are secured to the adjustable sample alignment member. The stationary sample support member is positioned upstream of the test sample and has a sharp leading edge to provide a well defined flow field over the test sample.

4 Claims, 4 Drawing Figures



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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Dahn et al.

[11] **4,231,293**

[45] **Nov. 4, 1980**

[54] **SUBMISSILE DISPOSAL SYSTEM**

[75] Inventors: **C. James Dahn**, Chicago; **Douglas R. Morita**, Morton Grove; **Allen J. Tulis**, Addison, all of Ill.

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **847,468**

[22] Filed: **Oct. 26, 1977**

[51] **Int. Cl.**[1] **F42B 25/16**

[52] **U.S. Cl.** **102/7.2**; 102/68

[58] **Field of Search** 102/7.2, 68, 67, 37.6, 102/37.7, 34.4

[56] **References Cited**

U.S. PATENT DOCUMENTS

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2,304,060	12/1942	Bayler	102/68
2,604,043	7/1952	Frisch et al.	102/7.2
3,016,011	1/1962	Brown	102/7.2
3,611,931	10/1971	Bessey et al.	102/7.2
3,865,034	2/1975	Boulter et al.	102/7.2
3,956,990	5/1976	Rowe	102/67 X
4,112,847	9/1978	Thomanek	102/67

FOREIGN PATENT DOCUMENTS

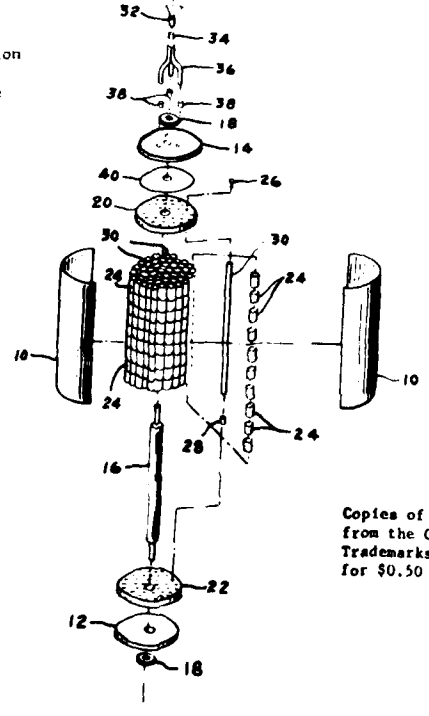
249765	4/1926	United Kingdom	102/68
764292	12/1956	United Kingdom	102/7.2

Primary Examiner—David H. Brown
Attorney, Agent, or Firm—Joseph E. Rusz; William J O'Brien

[57] **ABSTRACT**

A system for dispersing submissiles from a cluster type weapons system comprising a multiplicity of hex-peaks cylindrical submissiles which have interstitial spaces between adjacent submissiles filled with a cylindrically shaped explosive charge.

2 Claims, 3 Drawing Figures



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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Durig

[11] 4,231,533

[45] Nov. 4, 1980

[54] **STATIC SELF-CONTAINED LASER SEEKER SYSTEM FOR ACTIVE MISSILE GUIDANCE**

[75] Inventor: **Richard F. Durig**, Xenia, Ohio

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **593,597**

[22] Filed: **Jul. 9, 1975**

[51] **Int. Cl.**[3] **F42B 15/02**; F41G 7/24; F41G 7/26

[52] **U.S. Cl.** **244/3.16**; 356/5

[58] **Field of Search** ..... 244/3.13, 3.15, 3.16; 340/5 H

[56] **References Cited**

U.S. PATENT DOCUMENTS

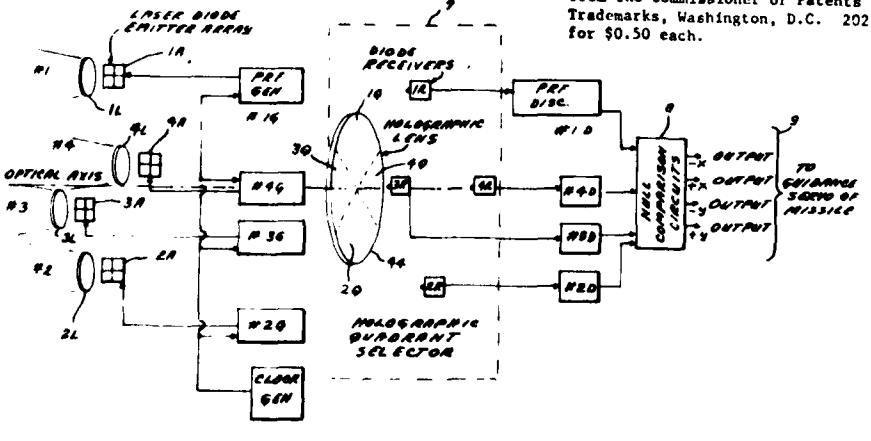
3,398,918	8/1968	Girault	244/3.13
3,680,041	7/1972	Smith, Jr.	340/5 H
3,691,517	9/1972	Riggs	340/5 H
3,841,585	10/1974	Evers-Euterneck	244/3.15
3,860,199	1/1975	Dunne	244/3.13

Primary Examiner—Charles T. Jordan
Attorney, Agent, or Firm—Joseph E. Rusz; Robert Kern Duncan

[57] **ABSTRACT**

Four pulse-repetition-frequency coded laser diode arrays emit four beams in quadrature relationship having a central optical axis coinciding with the missile axis. The returned reflected energy from a target impinges upon an optically centered holographic quadrant selector detection system which provides quadrature output signals. These quadrature output signals are passed through respective pulse-repetition-frequency discriminators corresponding to the quadrature prf coded transmitted beams. The outputs from the discriminators are processed through a null comparison circuit to provide output signals for actuating the servo guidance system of the missile to center the optical axis, which is also the missile axis, on the target so that the missile continuously seeks and eventually flies into the target.

1 Claim, 4 Drawing Figures



PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Lintell et al.

[11] 4,231,534
[45] Nov. 4, 1980

[54] ACTIVE OPTICAL TRACKING SYSTEM

[75] Inventors: Robert J. Lintell, Altadena; James D. Campbell, Pasadena, both of Calif.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 850,101

[22] Filed: Nov. 4, 1977

[51] Int. Cl.³ F42B 15/02
[52] U.S. Cl. ..... 244/3.16; 250/203 R
[58] Field of Search ..... 244/3.16; 350/16; 250/203 R

[56] References Cited

U.S. PATENT DOCUMENTS

3,698,790	10/1972	Berry	350/16
4,087,061	5/1978	Burt	244/3.16
4,105,174	8/1978	Blomgvist et al.	244/3.16

Primary Examiner—Charles T. Jordan
Attorney, Agent, or Firm—Joseph E. Rusz; Henry S. Miller, Jr.

[57] ABSTRACT

An active optical tracking system for air-to-air type missiles of relatively small dimensions having a pulsed laser transmitter operating through a gimbaled mirror system and a reflection receiving system connected to the guidance and control unit of the missile to direct it to a target.

1 Claim, 2 Drawing Figures

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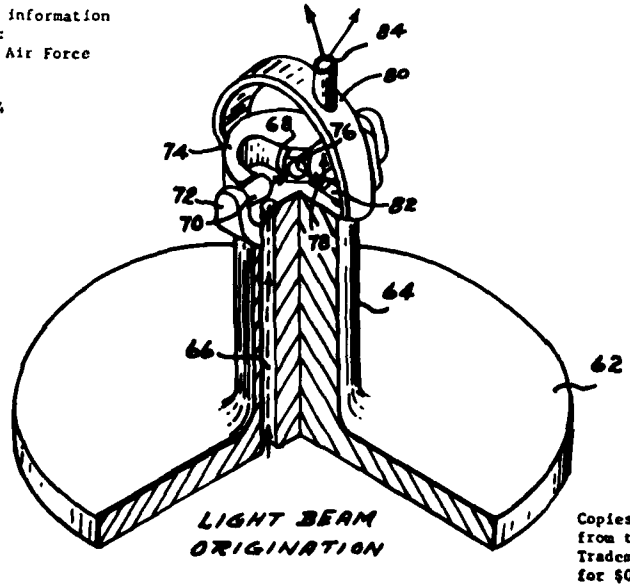

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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Phillippi

[11] **4,231,663**

[45] **Nov. 4, 1980**

[54] **DEVICE FOR CALIBRATING THE PHOTOMETRIC LINEARITY OF OPTICAL INSTRUMENTS**

[76] Inventor: **Conrad M. Phillippi**, 7420 Brantford Rd., Dayton, Ohio 45414

[21] Appl. No.: **21,142**

[22] Filed: **Mar. 16, 1979**

[51] **Int. Cl.**[3] **G01N 21/01**

[52] **U.S. Cl.** **356/432**; 250/573; 350/314

[58] **Field of Search** 356/432-444, 356/370, 235, 256; 250/343, 573; 350/314

[56] **References Cited**

U.S. PATENT DOCUMENTS

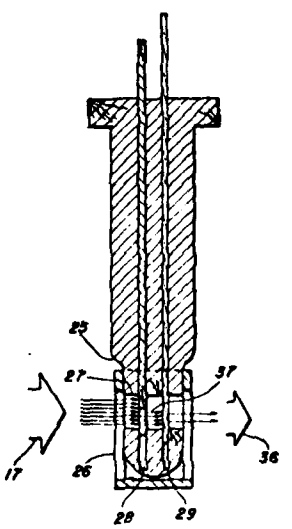
4,059,357 11/1977 Klein 356/432

Primary Examiner—John K. Corbin
Assistant Examiner—Bruce Y. Arnold
Attorney, Agent, or Firm—Joseph E. Rusz; Casimer K. Salys

[57] **ABSTRACT**

A device and method are disclosed for checking photometric linearity of intensity measuring optical instruments which operate by passing a beam of light through samples undergoing analysis. Variable and step attenuators in optical series are introduced into the path of the light beam used by such instruments. The variable attenuator completely obstructs a segment of the light beam and the area of this segment is manually adjustable. The step attenuator, of known accuracy, homogeneously attenuates the full area of the remaining beam. To use the device, the instrument is first adjusted to respond correctly at zero and full scale. The variable attenuator is then inserted into the beam to its selected location and the output response of the instrument is recorded. The output response is again recorded after the step attenuator is inserted into the remaining or unobstructed segment of the light beam. Linearity is checked by comparing output response at diverse settings of the variable attenuator with and without the presence of the step attenuator. The ratios of output response with and without the step attenuator should remain constant irrespective of the variable attenuator setting and will correspond in value to the accurately known effect of the step attenuator in a linear instrument. If sought, an accurate input-output response can be reconstructed by an iterative sequence which begins at the full scale point. From that point the input magnitudes are repetitively reduced by the known effects of the step attenuator, while the output magnitudes are repetitively reduced by smoothed values of the apparent steps obtained during the linearity analysis.

4 Claims, 8 Drawing Figures



PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Knoski

[11] 4,231,670

[45] Nov. 4, 1980

[54] EASY CHANGE WHEEL ASSEMBLY

[76] Inventor: Jerry L. Knoski, 1695 Emerald Ct., Newark, Ohio 43055

[21] Appl. No.: 20,302

[22] Filed: Mar. 14, 1979

[51] Int. Cl.³ F16D 1/00

[52] U.S. Cl. 403/11; 403/13; 403/324; 403/355; 403/361; 301/121; 474/902

[58] Field of Search ..... 403/106, 109, 306, 355, 403/361, 11, 13, 324; 301/1, 9 S, 111, 112, 113, 114, 120, 121, 122, 9, 9 DN, 9 DP; 74/230.01, 548, 813 R, 813 L; 269/69, 70

[56] References Cited

U.S. PATENT DOCUMENTS

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2,619,389	11/1952	James	301/1
2,640,729	6/1953	Niven	301/9 DN
3,844,666	10/1974	Coope	403/355

Primary Examiner—H. Grant Skaggs

Attorney, Agent, or Firm—Joseph E. Rusz; Arsen Tashjian

[57] ABSTRACT

A wheel assembly adaptable for use with a motor vehicle, a light aircraft, and the like, or in a pulley system or gear train. The wheel assembly comprises an axle or spindle-retained hub member, and a removable wheel member that is releasably connected by unique snap/-lock pins. The hub member is made of a more dense material than the material of which the wheel member is made. In the adaption for use with a motor vehicle, light aircraft, and the like, the wheel member (with a tire mounted on it) is significantly lighter than the conventional rim-mounted tire, because of the absence of the hub portion; and, therefore, the wheel member can be easily changed or removed by even the weak, the aged, and the handicapped. Additionally, because the customary bolt/nut or lug/lug nut fastening combinations are not used, the wheel member is easy to change or remove, and, as importantly, the need for a "lug wrench" is eliminated.

4 Claims, 5 Drawing Figures

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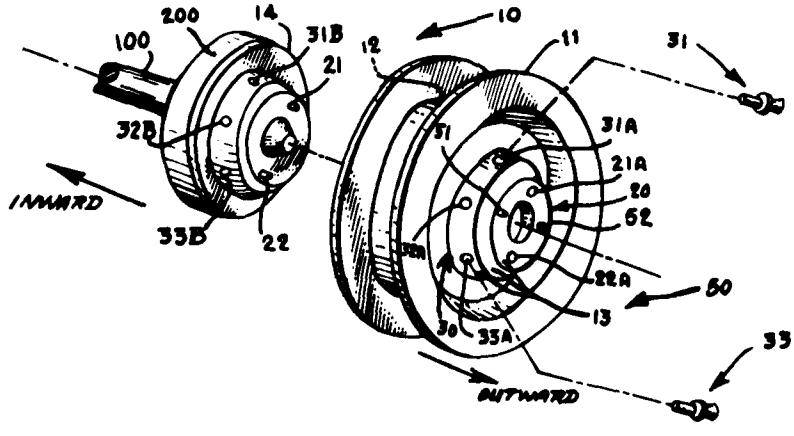

PATENT ABSTRACT
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United States Patent [19]

Millea et al.

[11] 4,232,221

[45] Nov. 4, 1980

[54] METHOD AND APPARATUS FOR TRIMMING IR/CCD MOSAIC SENSORS

[75] Inventors: Michael F. Millea, Manhattan Beach; David H. Seib, Costa Mesa, both of Calif.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 5,111

[22] Filed: Jan. 22, 1979

[51] Int. Cl.³ G01N 23/00; H01J 37/00

[52] U.S. Cl. ..... 250/311; 250/492 A

[58] Field of Search ..... 250/306, 307, 396, 397, 250/398, 492 A, 492 B; 324/158 D; 357/91, 59

[56] References Cited

U.S. PATENT DOCUMENTS

2,931,931	4/1960	Lubszynski et al.	250/307
3,448,377	6/1969	Seiwatz et al.	250/306
3,531,716	9/1970	Tarui et al.	250/307
3,772,520	11/1973	Varker	250/307

Primary Examiner—Bruce C. Anderson
Attorney, Agent, or Firm—Joseph E. Rusz; William Stepanishen

[57] ABSTRACT

A method and apparatus for trimming IR/CCD mosaic sensors by establishing a threshold level for the input gates of the CCD unit and then setting all the input gates of the device to the same threshold level.

5 Claims, 2 Drawing Figures

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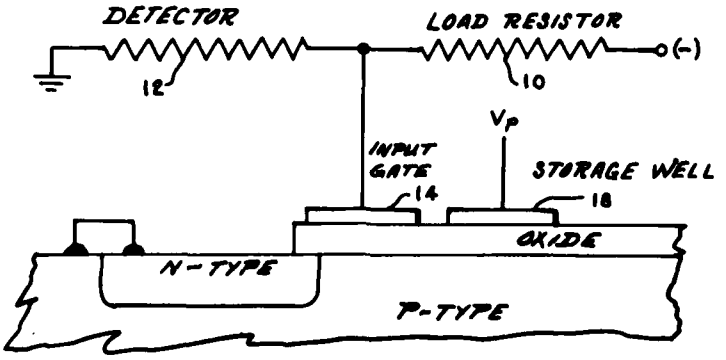

PATENT ABSTRACT
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United States Patent [19]
O'Connell

[11] **4,232,240**
[45] **Nov. 4, 1980**

[54] **HIGH PIEZOELECTRIC COUPLING X-CUTS OF LEAD POTASSIUM NIOBATE, $PB_2KNB_5O_{15}$, FOR SURFACE ACOUSTIC WAVE APPLICATIONS**

[75] Inventor: **Robert M. O'Connell, Arlington, Mass.**

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force, Washington, D.C.**

[21] Appl. No.: **43,982**

[22] Filed: **May 31, 1979**

[51] **Int. Cl.**[3] **H01L 41/18**
[52] **U.S. Cl.** ..... **310/313 A**; 310/360
[58] **Field of Search** 310/360, 313; 333/193, 333/150, 154

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,001,767	1/1977	Slobodnik, Jr. et al.	310/360
4,109,172	8/1978	O'Connell	310/313
4,109,173	8/1978	O'Connell	310/313

OTHER PUBLICATIONS

Strong Electromechanical Coupling of SAW on a $Pb_2KNb_2O_{15}$ Single Crystal by H. Yamauchi, Applied Physics Letters 32(10), May 15, 1978.

Primary Examiner—Mark O. Budd
Attorney, Agent, or Firm—Joseph E. Rusz; William J. O'Brien

[57] **ABSTRACT**

A series of lead potassium niobate substrates having X-cut crystallographic orientations defined by the Euler Angles Lambda = 90.0°, Mu = 90.0° and Theta from −10.6° to +10.6°.

3 Claims, 2 Drawing Figures

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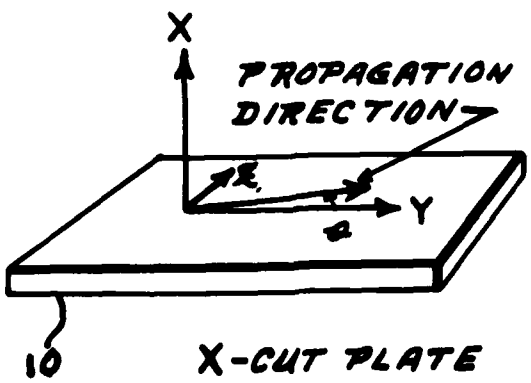

θ FROM -10.6° TO +10.6°

PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Gawronski et al.

[11] **4,232,278**

[45] **Nov. 4, 1980**

[54] **HIGH POWER MICROWAVE INTEGRATED CIRCUIT RECEIVER PROTECTOR WITH INTEGRAL SENSITIVITY TIME CONTROL**

[75] Inventors: **Michael J. Gawronski**, Baltimore; **Harry Goldie**, Randallstown, both of Md.

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **55,423**

[22] Filed: **Jul. 6, 1979**

[51] **Int. Cl.**[3] **H01P 1/15; H04B 1/10**

[52] **U.S. Cl.** ..... **333/13**; 333/17 L; 333/247; 455/80

[58] **Field of Search** ..... 333/13, 17 L, 246, 247, 333/262, 81 A; 325/22-24, 362; 343/175, 180

[56] **References Cited**

U.S. PATENT DOCUMENTS

2,798,186 7/1957 Caithness ..... 333/13 UX

3,452,299 6/1969 Angel ..... 333/13 X

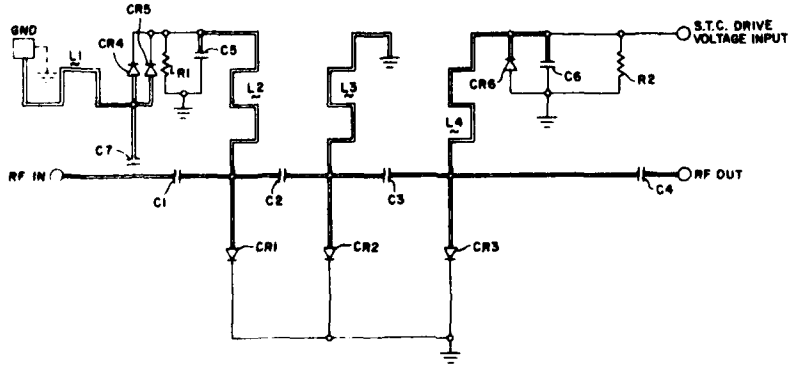
Primary Examiner—Paul L. Gensler

Attorney, Agent, or Firm—Joseph E. Rusz; Robert Kern Duncan

[57] **ABSTRACT**

PIN diodes of decreasing base region thicknesses, wherein the thickest base region diode functions as a quasi-active limiter with turn-on bias supplied by detected RF current in a Schottky barrier diode with a discharge resistor providing fast recovery; and the thinnest base region PIN diode being a zero bias punch-through type, with a dc sensitivity time control, functioning as a passive limiter during transmit and controlled attenuator during receive provides an improved radar receiver protector circuit. The operation of the PIN diode is enhanced by a unique mounting on a gold-plated copper puck in the circuit board and tuning the signal leads to the diode.

3 Claims, 10 Drawing Figures



PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Woods et al.

[11] 4,232,446

[45] Nov. 11, 1980

[54] **GAGE FOR MEASURING DECREASE IN DIMENSION OF TEST SPECIMEN IN TENSILE TEST**

[75] Inventors: **Don F. Woods**, North Ogden; **Ronald F. Larsen**, Willard, both of Utah

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **25,412**

[22] Filed: **Mar. 30, 1979**

[51] **Int. Cl.**³ **G01B 3/20**; G01B 7/06

[52] **U.S. Cl.** ..... **33/143 L**; 33/DIG. 11; 73/860

[58] **Field of Search** ..... 33/143 R, 143F, 143 L, 33/147 R, 147 D, 147 N, 172 E, DIG. 11; 73/781, 788, 855, 860

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,142,907	8/1964	Reef	33/147 R
3,238,626	3/1966	White	33/143 R
3,895,446	7/1975	Orlov et al.	33/174 L
3,950,855	4/1976	Peonski	33/143 L

FOREIGN PATENT DOCUMENTS

103015	5/1899	Fed. Rep. of Germany	33/143 F

Primary Examiner—Richard R. Stearns
Attorney, Agent, or Firm—Joseph E. Rusz; Casimer K. Salys

[57] **ABSTRACT**

A test gage for measuring the decrease in one dimension of a test specimen having a frame member with a sliding member positioned within the frame member. The test apparatus is adapted to receive a test specimen between the sliding member and one side of the frame member. The sliding member is held in contact with the test specimen by a spring. A proximity measuring device senses the position of the sliding member with respect to the frame member and provides an output signal proportional to displacement. Elastic bands are used to support the test gage on a tensile test machine which is used to apply a stress to the test specimen.

1 Claim, 3 Drawing Figures

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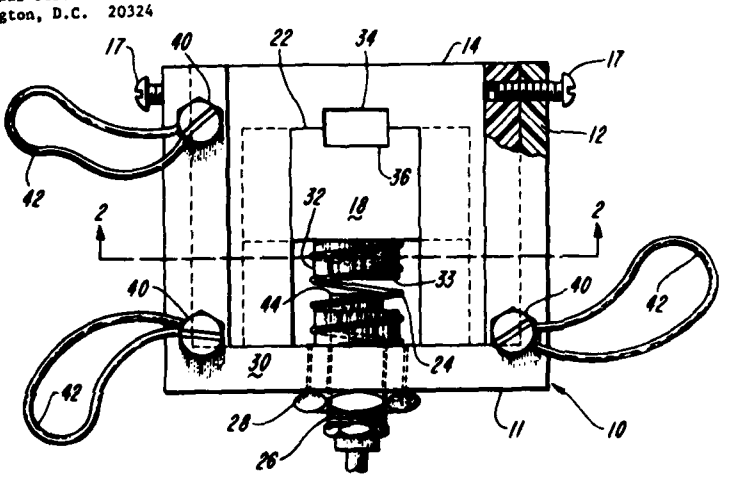

PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Stoffer

[11] 4,232,996

[45] Nov. 11, 1980

[54] LIGHT WEIGHT FAN ASSEMBLY

[75] Inventor: Lewis J. Stoffer, Cincinnati, Ohio

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 949,368

[22] Filed: Oct. 6, 1978

[51] Int. Cl.³ F04D 29/34

[52] U.S. Cl. ..... 416/191; 416/195; 416/218; 416/230 R; 416/241 A

[58] Field of Search ..... 416/189, 190, 191, 192, 416/195, 189 R, 218, 230, 241 A

[56] References Cited

U.S. PATENT DOCUMENTS

3,556,675	1/1971	Howald et al.	416/190
3,601,500	8/1971	Palfreyman	416/195
3,737,250	6/1973	Pilpel et al.	416/241 A
3,754,839	8/1973	Bodman	416/218
3,765,796	10/1973	Stargardter et al.	416/218
3,849,023	11/1974	Klompas	415/172 A
4,017,209	4/1977	Bodman	416/218

FOREIGN PATENT DOCUMENTS

611006	12/1960	Canada	416/195
2027861	12/1971	Fed. Rep. of Germany	416/218
2558689	7/1976	Fed. Rep. of Germany	416/218
835117	5/1960	United Kingdom	416/195

Primary Examiner—Everette A. Powell, Jr.
Assistant Examiner—A. N. Trausch, III
Attorney, Agent, or Firm—Joseph E. Rusz; Richard J. Killoren

[57] ABSTRACT

A fan for use as a front fan or in the lift fan system with aircraft jet engines having blades supported by a segmented hub platform and a segmented tip platform which are supported by hub support hoops and tip support hoops. The blades are secured to the hub platform segments and tip platform segments by composite pre-preg pin stock which is inserted in holes in the tip platform, the hub platform and fan blades. The pins are placed under axial compression to expand the pin diameter to provide a precise fit. Channel members are provided between the tip hoops and the blades. Some of the channels have extensions which form seals.

3 Claims, 12 Drawing Figures

Requests for licensing information should be addressed to:
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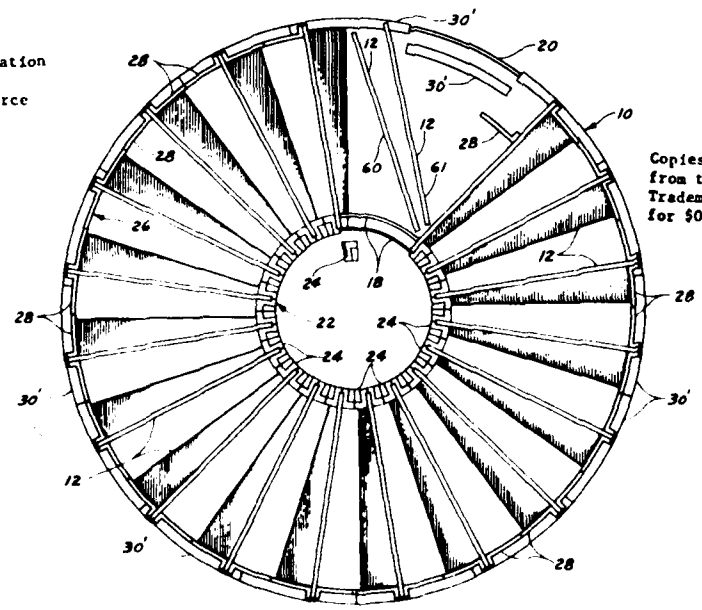

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PATENT ABSTRACT
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United States Patent [19]

Grakauskas

[11] 4,233,250

[45] Nov. 11, 1980

[54] **PROCESS FOR SYNTHESIZING THE ALKALI METAL SALTS OF DINETROMETHANE**

[75] Inventor: **Vytautos Grakauskas**, Arcadia, Calif.

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **33,610**

[22] Filed: **Apr. 26, 1979**

[51] **Int. Cl.**[3] **C07C 76/02**

[52] **U.S. Cl.** **568/926**; 260/465.1; 560/156; 568/842; 568/852

[58] **Field of Search** 260/465.1, 644; 560/156

[56] **References Cited**

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3,378,596	4/1968	Toops, Jr. et al.	260/644
3,387,044	6/1968	Grakauskas et al.	260/644
3,706,808	12/1972	Bachman et al.	260/644

Primary Examiner—Leland A. Sebastian
Attorney, Agent, or Firm—Joseph E. Rusz; William J. O'Brien

[57] **ABSTRACT**

A process for synthesizing the alkali metal salts of dinitromethane by effecting the saponification of methyl cyanodinitroacetate previously prepared by the nitration of methyl cyanooximinoacetate.

4 Claims, No Drawings

Requests for licensing information should be addressed to:
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AF/JACP
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Washington, D.C. 20324

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PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Charette et al.

[11] 4,234,144

[45] Nov. 18, 1980

[54] **BASE VENT ASSEMBLY FOR ENTRY SPACE VEHICLES**

[75] Inventors: Ray O. Charette, Fountain Valley; Elmer J. Yates, Irvine, both of Calif.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 955,062

[22] Filed: Oct. 24, 1978

[51] Int. Cl.³ B64G 1/62

[52] U.S. Cl. ..... 244/160; 220/366; 244/117 A

[58] Field of Search ..... 244/160, 162, 163, 117 A, 244/129.4, 129.1; 102/105; 62/DIG. 5, 241; 220/366; 89/30; 137/334; 52/302; 98/1.5

[56] References Cited

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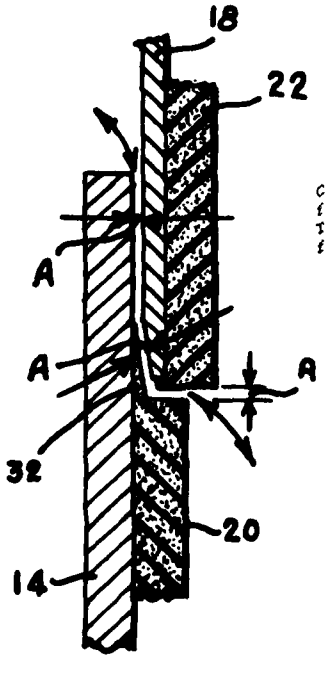
3,188,961	6/1965	Scruggs et al.	102/105
3,260,204	7/1966	Wilkey	102/105

Primary Examiner—Barry L. Kelmachter
Attorney, Agent, or Firm—Joseph E. Rusz; Jacob N. Erlich

[57] ABSTRACT

A base vent assembly for entry space vehicles having an access cover utilized in conjunction with a plurality of spaces and deflector member so as to establish a labyrinth vent adjacent the access opening of the entry vehicle. The labyrinth vent is created by carefully forming a passageway between the edge of the access opening and the access cover using spacers and carefully shaping of the innerface therebetween. Consequently a decrease in weight over a non-vented structure is created.

4 Claims, 4 Drawing Figures



PATENT ABSTRACT
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United States Patent [19]

Sellers

[11] 4,234,309
[45] Nov. 18, 1980

[54] DENTAL TWIST LOCK PIN AND WRENCH

[76] Inventor: Wm. Ralph Sellers, 35B Codd Blvd., Langley AFB, Va. 23665

[21] Appl. No.: 51,316

[22] Filed: Jan. 22, 1979

[51] Int. Cl.³ A61C 5/04
[52] U.S. Cl. ..... 433/225; 433/174; 433/127; 279/1 S
[58] Field of Search ..... 433/225, 174, 127; 279/1 S

[56] References Cited

U.S. PATENT DOCUMENTS

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FOREIGN PATENT DOCUMENTS

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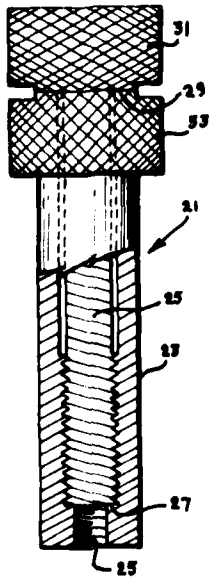
"Leakage around various types of retention pins", J. of Prosthetic Dent., Feb., 1975, p. 192, Chan et al.

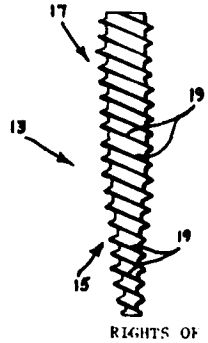
Primary Examiner—Louis G. Mancene
Assistant Examiner—John J. Wilson
Attorney, Agent, or Firm—Joseph E. Rusz; Arsen Tashjian

[57] ABSTRACT

A twist-lock pin for improving the retention and resistance characteristics of plastic dental restorative materials and a wrench for providing positive control over the pin during insertion into the opening in the tooth. The pin is partially screwed counter-clockwise into a left-hand threaded metal cylinder, the wrench body. After two revolutions, the pin bottoms out against a flat ended, right-hand limiting screw which is inserted clockwise from the opposite end of the wrench body and which is limited by two lands, one a flat area in the wall of the wrench body and the other at the end of the wrench body. After the wrench has been utilized to insert the pin into the tooth structure, it is removed by relieving the pressure on the pin and unscrewing the wrench from the pin.

2 Claims, 2 Drawing Figures





PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Green

[11] 4,236,819

[45] Dec. 2, 1980

[54] IMAGERY WITH CONSTANT RANGE LINES

[75] Inventor: Leland D. Green, Sierra Madre, Calif.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 494,009

[22] Filed: Jul. 29, 1974

[51] Int. Cl.[3] G01C 3/08; H04N 7/00

[52] U.S. Cl. 356/5; 356/4; 356/371; 358/96; 358/107; 358/108; 358/109

[58] Field of Search ..... 356/4, 5, 28, 371; 178/7.3 D, 7.5 D, DIG. 34, DIG. 36; 358/75, 60, 96, 107, 108, 109

[56] References Cited

U.S. PATENT DOCUMENTS

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3,527,533	9/1970	Hook et al.	356/5
3,565,528	2/1971	Witte	356/5
3,634,614	1/1972	Geusic	358/60
3,743,418	7/1973	Heflinger	356/5
3,879,133	4/1975	Mathieu	356/169
3,897,150	7/1975	Bridges et al.	356/5

Primary Examiner—Stephen C. Buczinski
Attorney, Agent, or Firm—Joseph E. Rusz; James S. Shannon

[57] ABSTRACT

Method and apparatus for showing the relative range from an active line scan sensor to a target, the changes in range being shown on a recording medium as an alternate series of bright and dark lines. In particular, a modulated laser beam having high frequency components is utilized to illuminate the target, the reflected energy received at the sensor having the same modulation frequency but phase modified by the transit time required to make the roundtrip from the sensor to the target and return. The phase difference between the received energy and the transmitted, or reference, energy is shown on the recording medium by directing a portion of the reference energy to a detector which is also responsive to the received energy.

Points in the image formed on the recording medium where the phase angles are the same can be made to appear white while the points where the phase angles differ by 180° can be made to appear black. The difference in the range between two black lines is equal to a specific sub-interval of the wavelength of the effective laser modulation frequency, the sub-interval being 1/n where n is the harmonic of the effective laser modulation frequency.

The scanning laser may be a mode locked laser, thereby providing a light output having high frequency components and precise frequency and phase stability.

1 Claim, 3 Drawing Figures

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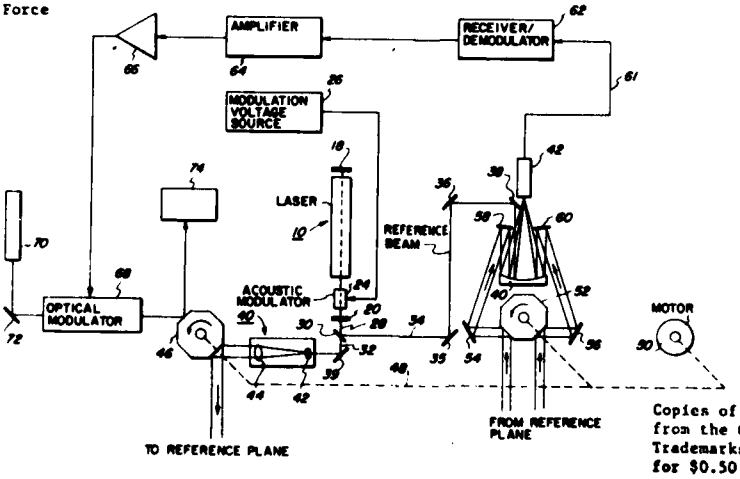

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PATENT ABSTRACT
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United States Patent [19]

Eisentraut et al.

[11] 4,238,197

[45] Dec. 9, 1980

[54] ANALYSIS OF LUBRICATING OILS FOR IRON CONTENT

[75] Inventors: Kent J. Eisentraut, Xenia; William D. Ross, Eaton; William J. Hillan, Kettering; Joseph J. Brooks, Centerville, all of Ohio; Thomas G. Duffy, Jacksonville, Fla.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 29,586

[22] Filed: Apr. 12, 1979

[51] Int. Cl.³ G01N 31/22; G01N 33/28

[52] U.S. Cl. ..... 23/230 HC; 23/230 M; 422/61; 422/68

[58] Field of Search ..... 23/230 HC, 230 M

[56] References Cited

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Davis. L. L., "Examination of Used Crankcase Oil", Refiner & Natural Gasoline Manufacturer, vol. 21, No. 4, Apr. 1942, pp. 63-66 & 82.

Primary Examiner—Barry S. Richman
Attorney, Agent, or Firm—Joseph E. Rusz; Cedric H. Kuhn

[57] ABSTRACT

A method for analyzing a used lubricating oil for iron wear metal content in which all of the iron in a sample of the oil is extracted into an oil immiscible layer, buffering and reducing agents are added, and the iron in the solution is reacted with a chelating agent to forma red complex indicative of the iron content. Apparatus for carrying out the method comprises six containers, one for a lubricating oil sample and each of the other five being for a separate reagent. Also included are a reaction chamber, means for transferring oil sample and reagents from the containers to the reaction chamber which may also function as a test cell.

4 Claims, 17 Drawing Figures

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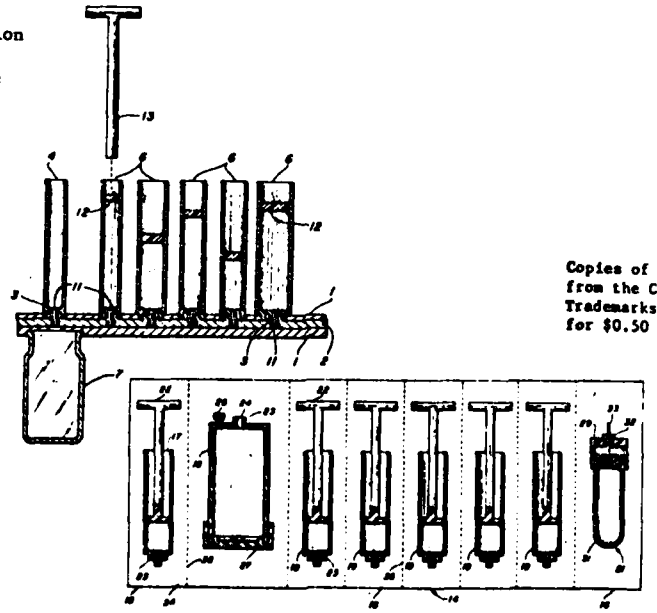

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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Liburdy

[11] 4,238,327

[45] Dec. 9, 1980

[54] ELECTRIC RESONANCE CHROMATOGRAPHY

[76] Inventor: Robert P. Liburdy, 54 Pomeroy Ave., Pittsfield, Mass. 01201

[21] Appl. No.: 52,177

[22] Filed: Jun. 25, 1979

[51] Int. Cl.³ B01D 15/08

[52] U.S. Cl. 210/656; 210/198.2

[58] Field of Search ..... 210/31 C, 198; 55/67, 55/386

[56] References Cited

U.S. PATENT DOCUMENTS

3,341,732	9/1967	Malvin et al	55/386 X
3,782,078	1/1974	Jerpe	210/198 C

FOREIGN PATENT DOCUMENTS

50-152194	12/1975	Japan	210/31 C

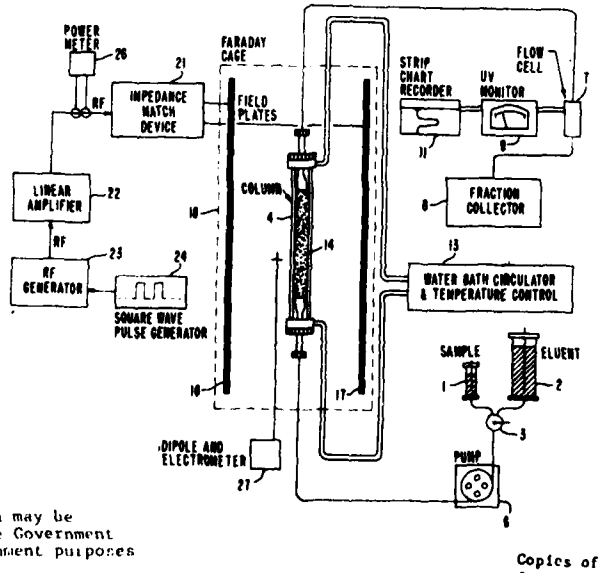
Primary Examiner—John Adee

Attorney, Agent, or Firm—Joseph E. Rusz; Casimer K Salys

[57] ABSTRACT

A process and apparatus for enhancing the separation of molecules, such as cells or proteins, into distinct populations based on their interactions with an externally imposed varying electric field during liquid gel chromatography (LGC). An electric field, at radio frequency (RF), is created between two plates of a capacitor structure and impressed through the gel media column situated between the plates. The varying field interacts with the molecules through polarization events that alter the molecular vibration and rotation motions. The induced changes cause the molecules to exhibit elution characteristics distinct from those normally obtained during LGC. Thereby, molecules can be further and more selectively partitioned according to their distinct polarization properties.

8 Claims, 9 Drawing Figures



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PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Griffin

[11] 4,238,602

[45] Dec. 9, 1980

[54] FLUORINE CONTAINING POLYETHERS

[75] Inventor: Warren R. Griffin, Dayton, Ohio

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 33,609

[22] Filed: Apr. 26, 1979

Related U.S. Application Data

[62] Division of Ser. No. 748,582, Dec. 8, 1976.

[51] Int. Cl.³ C08G 63/68; C07C 69/74; C07C 41/00

[52] U.S. Cl. 528/299; 528/401; 560/125; 568/683

[58] Field of Search 528/299, 401; 560/125; 568/683

[56] References Cited

U.S. PATENT DOCUMENTS

3,452,103	6/1969	Trischler	260/37 R X
3,492,374	1/1970	Bleu et al.	260/29.4 R X
3,699,145	10/1972	Sianesi et al.	204/158 R X
3,898,196	8/1975	Keck	528/299

Primary Examiner—Lucille M. Phynes
Attorney, Agent, or Firm—Joseph E. Rusz; Cedric H. Kuhn

[57] ABSTRACT

A fluorinated polyether is synthesized by (1) reacting perfluoroglutaryl chloride and 1,5-hexafluoropentane diol to provide a fluorinated polyester and (2) converting ester groups of the polyester to ether groups by SF_4 reduction. The product obtained is a thermally stable polyether which is particularly useful in providing an elastomeric material for aircraft fuel tank sealants, tire valves, O-rings, hose, gaskets, and the like.

2 Claims, No Drawings

PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Green

[11] 4,239,388

[45] Dec. 16, 1980

[54] **TIME DOMAIN LASER RECONNAISSANCE TECHNIQUE**

[75] Inventor: **Leland D. Green**, Sierra Madre, Calif.

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **494,008**

[22] Filed: **Jul. 29, 1974**

[51] **Int. Cl.**[3] **G01C 3/08**; H04N 7/00

[52] **U.S. Cl.** **356/5**; 356/4; 356/371; 358/96; 358/107; 358/108; 358/109

[58] **Field of Search** ..... 356/4, 5, 120, 371; 178/7.3 D, 7.5 D, 6.8, DIG. 34, DIG. 36; 358/60, 75, 96, 107, 108, 109

[56] **References Cited**

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3,533,697	10/1970	Hughes	356/5
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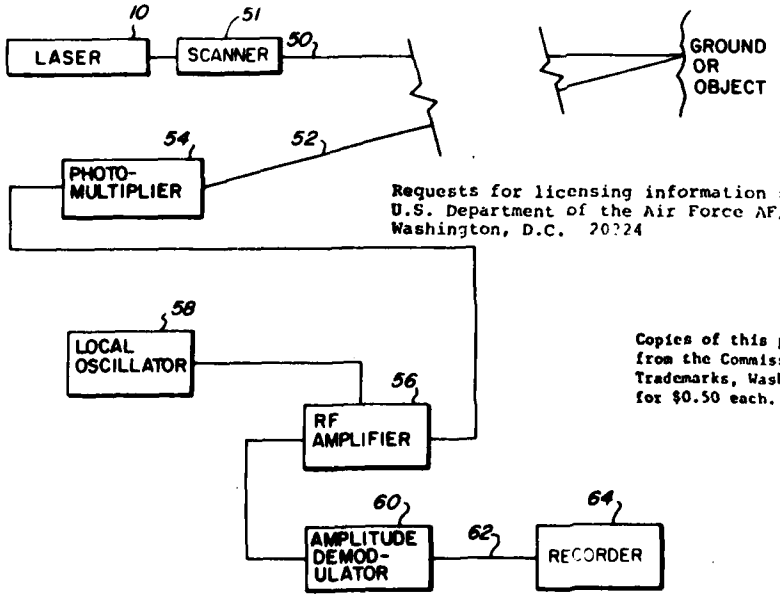
3,743,418	7/1973	Heflinger	356/5
3,790,287	2/1974	Cuthbert et al.	356/120
3,879,133	4/1975	Mathieu	356/169
3,897,150	7/1975	Bridges et al.	356/5

Primary Examiner—Stephen C. Buczinski
Attorney, Agent, or Firm—Joseph E. Rusz; James S. Shannon

[57] **ABSTRACT**

Method and apparatus for producing imagery of an object having distinct vertical geometry characteristics located at a reference plane remote from a scanning laser. In particular, a laser beam is utilized to scan objects at the reference plane and the optical signal reflected therefrom, corresponding to the reflectivity of the objects and background, is detected. An electrical signal, corresponding to the detected reflectivity signal, is coupled to an RF amplifier, the output of the RF amplifier being applied to an amplitude demodulator. The output of the amplitude demodulator, corresponding to the reflectivity and vertical geometry characteristics of the object at the reference plane, is applied to a recording device to produce the aforementioned imagery.

1 Claim, 5 Drawing Figures



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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19] [11] **4,239,392**

Pohle [45] **Dec. 16, 1980**

[54] **GRATING OUTPUT WAVEFRONT SAMPLING SYSTEM**

[75] Inventor: **Richard H. Pohle**, Monta Vista, Calif.

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **922,602**

[22] Filed: **Jul. 7, 1978**

[51] **Int. Cl.**[2] **G01B 9/02; G02B 5/18**

[52] **U.S. Cl.** ..... **356/354**; 350/162 R

[58] **Field of Search** 356/354

[56] **References Cited**

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Erikson, K. E., "Investigation Monitoring and Control of Large Telescope Performances", NASA CR118, N7119019, Sep. 1970.

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Harris, J. S., "Diffraction Grating Development", AFWL-TR-74218, ADA008199, Jul. 1974.

"Laser Wavefront Analyzer Using Frequency Offset Interferometry", Report AFWL-TR-74-26, AD922980, Jul. 1974.

Primary Examiner—John K. Corbin

Assistant Examiner—Scott J. Sugarman

Attorney, Agent, or Firm—Donald J. Singer; Jacob N. Erlich

[57] **ABSTRACT**

A grating output wavefront sampling system having a plurality of weak gratings located on the last mirror of a beam expander utilized in conjunction with a quasi-monochromatic light source. The gratings diffract a portion of the projected beam of light to a plurality of wavefront sensors, one sensor being utilized for each grating. Knowledge of the direction of the diffracted beams obtained from the wavefront sensors give information about the direction of the projected beam by virtue of conventional grating equations and Hartmann-subaperture tilt analysis. Consequently, if the wavelength and grating spacing are known, tilt and wavefront accuracy of the projected ray or beam are readily attainable.

10 Claims, 3 Drawing Figures

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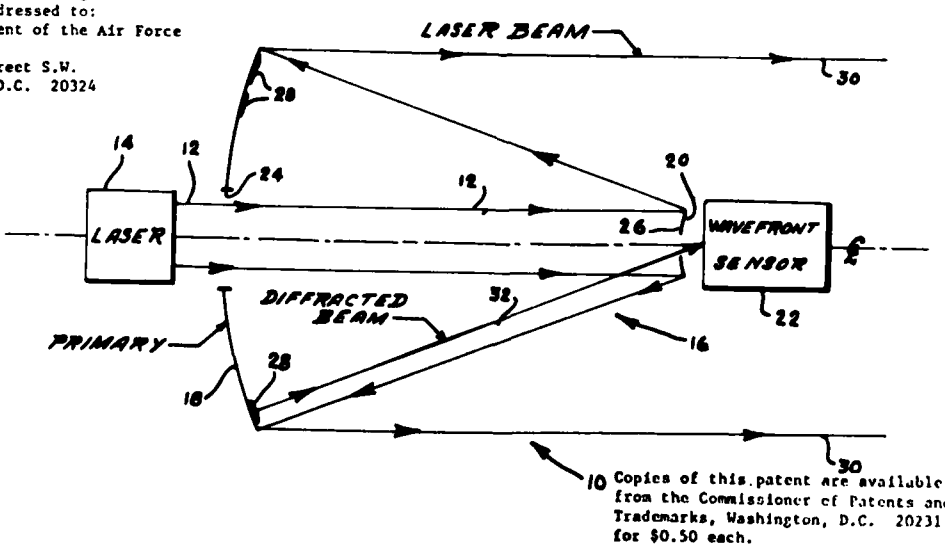

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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Fritts et al.

[11] 4,242,179

[45] Dec. 30, 1980

[54] **METHOD OF FABRICATING CADMIUM ELECTRODES**

[75] Inventors: **David H. Fritts**, Dayton; **John F. Leonard**, Xenia; **Thirumalai G. Palanisamy**, Fairborn, all of Ohio

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **61,558**

[22] Filed: **Jul. 27, 1979**

[51] **Int. Cl.**³ **C25D 9/08; C25B 1/16**

[52] **U.S. Cl.** ..... **204/2.1; 204/56 R**

[58] **Field of Search** ..... 204/2.1, 56 R

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,335,033	8/1967	Kober	204/56 R
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3,873,368	3/1975	Pickett	204/2.1
4,120,757	10/1978	Seiger et al.	204/56 R
4,132,606	1/1979	Crespy	204/56 R
4,139,423	2/1979	Pensabene et al.	204/2.1

Primary Examiner—Tufariello, T. M.

Attorney, Agent, or Firm—Donald J. Singer; Robert Kern Duncan

[57] **ABSTRACT**

The fabrication of porous cadmium electrodes is disclosed in which high cadmium loading without surface buildup is obtained by using a relatively low current density (approximately 0.2 amperes per square inch of plaque area) and period current reversals of time durations approximately equal to 15% of the forward time durations at a current density substantially equal to the forward current density.

5 Claims, 1 Drawing Figure

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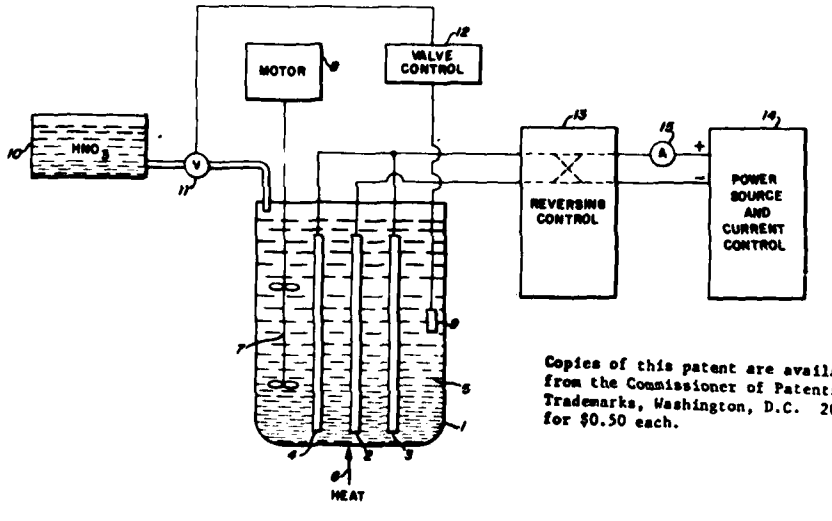
Washington, D.C. 20324



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PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Burns

[11] 4,242,635
[45] Dec. 30, 1980

[54] APPARATUS AND METHOD FOR INTEGRATED CIRCUIT TEST ANALYSIS

[75] Inventor: Daniel J. Burns, Rome, N.Y.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 6,839

[22] Filed: Jan. 26, 1979

[51] Int. Cl.³ G01R 31/22

[52] U.S. Cl. ..... 324/158 R; 324/73 R; 324/96; 350/331 R; 350/347 E

[58] Field of Search ..... 324/158 F, 158 R, 73 R, 324/158 D, 96; 350/331, 347, 331 R, 347 E

[56] References Cited

U.S. PATENT DOCUMENTS

3,889,053 6/1975 Lloyd et al. ..... 324/158 R

3,934,199 1/1976 Channin ..... 324/158 D

Primary Examiner—Ernest F. Karlsen
Attorney, Agent, or Firm—Donald J. Singer; William Stephanishen

[57] ABSTRACT

An integrated circuit test analysis apparatus for visually interpreting voltage changes of active circuit components uses the electro-optic display effect of circuit electric field upon the liquid crystal layer which is applied over the circuit being tested. The normal state duty cycles in a repeating sequence of test states of the integrated circuit is modified by causing the integrated circuit to pause or maintain a particular state at one or more specific time periods for a predetermined time interval to permit the display to be recorded.

2 Claims, 8 Drawing Figures

Requests for licensing information should be addressed to:
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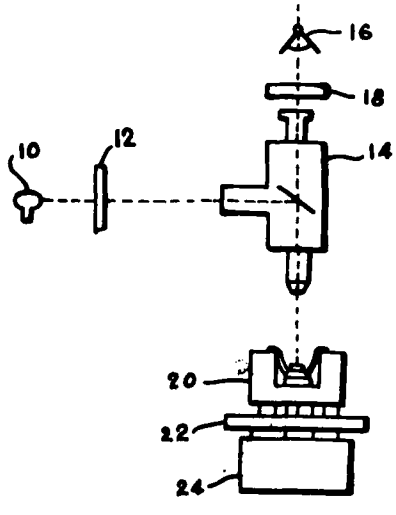

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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Raymond

[11] 4,242,899

[45] Jan. 6, 1981

[54] THERMOCLAMPS

[75] Inventor: Roger S. Raymond, Redondo Beach, Calif.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 17,623

[22] Filed: Mar. 5, 1979

[51] Int. Cl.³ B21J 1/06

[52] U.S. Cl. 72/342

[58] Field of Search 72/342; 148/130, 131

[56] References Cited

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3,383,900	5/1968	Van Hartesveldt	72/342
3,934,441	1/1976	Hamilton et al.	72/342
3,974,673	8/1976	Fosness et al.	72/342

Primary Examiner—Lowell A. Larson

Attorney, Agent, or Firm—Donald J. Singer; Arsen Tashjian

[57] ABSTRACT

Apparatus for heat flattening and/or forming titanium sheet material under heat and pressure using thermoclamps fabricated of materials having different thermal expansion properties. Upper and lower dies are made of one alloy having a large thermal expansion while tie bars between the two dies are made of an alloy having low thermal expansion. During heat cycles, the difference in expansion causes the tie bars to close the gap between the dies and apply pressure to the titanium sheet between. In an alternate arrangement, the thermal clamping action coins a bead into a diaphragm to make a vacuum tight seal so that the atmospheric pressure in the oven produces the forming or flattening of the sheet.

4 Claims, 2 Drawing Figures

Requests for licensing information should be addressed to:
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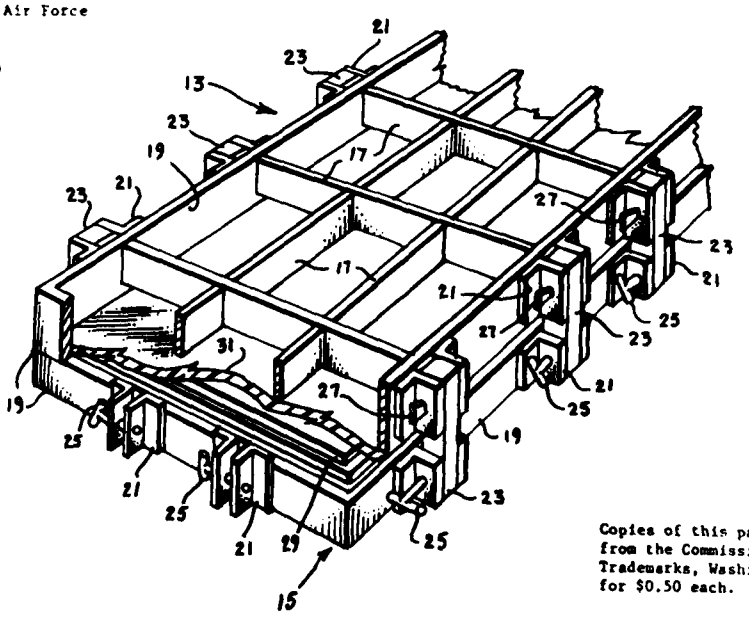
1900 Half Street S.W.
Washington, D.C. 20324



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PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Glass et al.

[11] **4,243,697**

[45] **Jan. 6, 1981**

[54] **SELF BIASED FERRITE RESONATORS**

[75] Inventors: **Howard L. Glass**, Orange; **Jiin-Herny W. Liaw**; **Tsutomo Kobayashi**, both of Placentia, all of Calif.

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **20,299**

[22] Filed: **Mar. 14, 1979**

[51] **Int. Cl.**[3] **C04B 35/26**; H01F 1/10; B05D 5/12

[52] **U.S. Cl.** **427/47**; 252/62.57; 252/62.58; 252/62.63; 252/62.64; 423/593; 427/126.6; 427/127; 428/539; 428/900

[58] **Field of Search** 428/538, 539, 900; 252/62.64, 62.58, 62.57, 62.63; 423/593; 427/47, 127, 126

[56] **References Cited**

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4,189,521	2/1980	Glass et al.	428/539

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IEEE Transactions on Magnetics, Glass et al., Sep. 1977, vol. Mag-13, No. 5, pp. 1241-1243.

Primary Examiner—Harold Ansher
Attorney, Agent, or Firm—Donald J. Singer; William J. O'Brien

[57] **ABSTRACT**

A method for preparing M-type hexagonal ferrite single crystals for use as self-biased ferrite resonators. M-type ($BaO.6Fe_2O_3$) ferrite crystals are grown on a [111] Mg $(In, Ga)_2O_4$ substrate using liquid phase epitaxial techniques. The substrate is immersed into a solute of (BaO, Fe_2O_3 and ZnO) dissolved in a molten flux of molten (BaO and B_2O_3) maintained in a supersaturated condition.

1 Claim, 1 Drawing Figure

Requests for licensing information should be addressed to:
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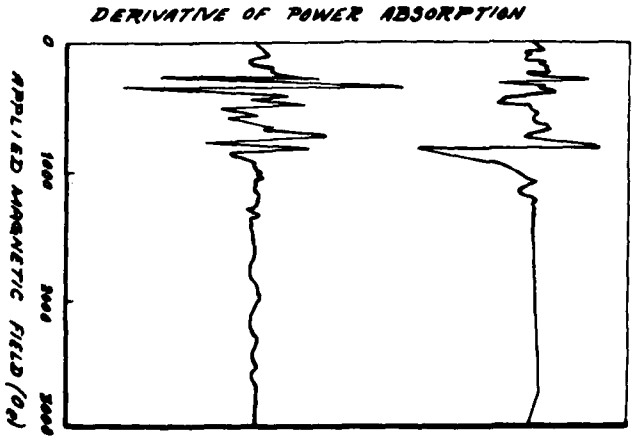

PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Clinch et al.

[11] 4,244,053

[45] Jan. 6, 1981

[54] PRIVACY COMMUNICATION METHOD AND SYSTEM

[75] Inventors: Marvin R. Clinch, Oneida, N.Y.; Calvin R. Graf; Paul E. Martin, both of San Antonio, Tex.; Robert B. Fenwick, Palo Alto, Calif.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 73,812

[22] Filed: Sep. 10, 1970

[51] Int. Cl.³ H04K 1/00

[52] U.S. Cl. ..... 455/29; 179/1.5 FS; 455/26

[58] Field of Search ..... 325/32; 179/1.5 R, 1.5 F; 331/177, 178, 179; 375/1; 455/26, 29

[56] References Cited

U.S. PATENT DOCUMENTS

1,571,005	1/1926	Hartley	179/1.5 F
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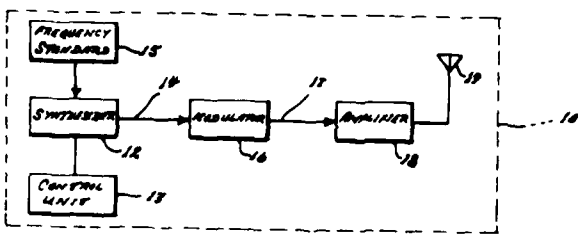
3,681,708	8/1972	Olmstead	178/22
4,066,964	1/1978	Costanza et al.	455/29

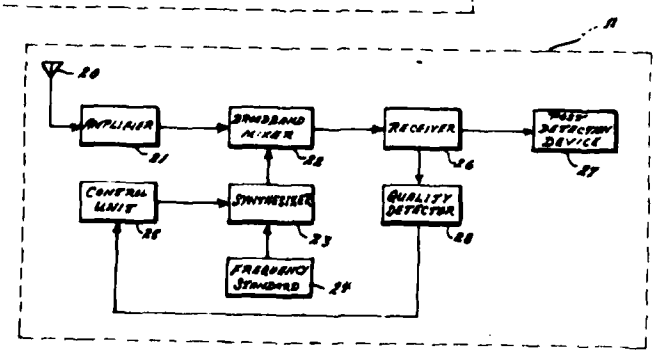
Primary Examiner—Howard A. Birmiel
Attorney, Agent, or Firm—Joseph E. Rusz; George Fine

[57] ABSTRACT

A privacy communication method and system which utilizes coherent, continuously changing frequencies for keyed, pulsed, and voice communications. A synthesized swept frequency or "chirp" signal imparts a privacy or secure communications capability to the communications signal by virtue of the random or pseudo-random nature of the transmitted signals which is programmed.

6 Claims, 28 Drawing Figures





PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Bliamptis

[11] **4,244,189**

[45] **Jan. 13, 1981**

[54] **SYSTEM FOR THE MULTIPURPOSE UTILIZATION OF SOLAR ENERGY**

[76] Inventor: **Emmanuel Bliamptis**, 20 Phinney Rd., Lexington, Mass. 02173

[21] Appl. No.: **950,117**

[22] Filed: **Oct. 10, 1978**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 738,976, Nov. 4, 1976, abandoned

[51] **Int. Cl.**[3] **F03G 7/02**

[52] **U.S. Cl.** **60/641**; 60/675; 60/715; 126/433; 126/450

[58] **Field of Search** 60/641, 675, 698, 715; 126/270, 271; 202/234; 203/DIG. 1

[56] **References Cited**

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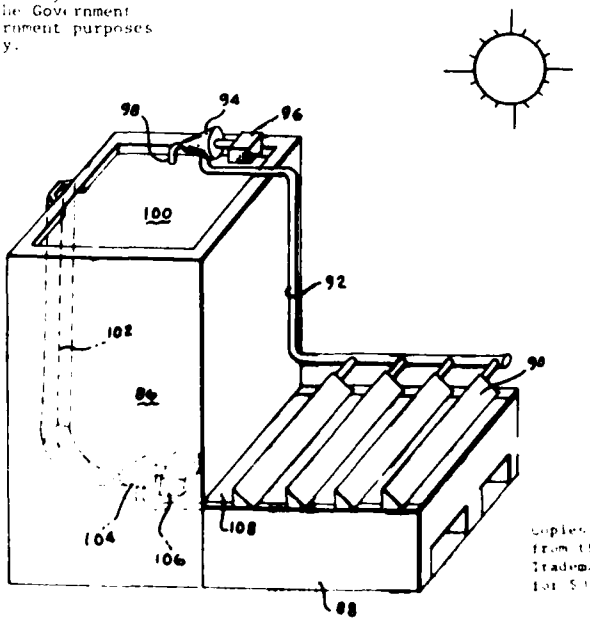
2458457	7/1975	Fed. Rep. of Germany	60/641
2441770	3/1976	Fed. Rep. of Germany	126/270
917312	1/1947	France	60/641

Primary Examiner—Allen M. Ostrager
Assistant Examiner—Stephen F. Husar
Attorney, Agent, or Firm—Donald J. Singer; Henry S. Miller

[57] **ABSTRACT**

A solar energy system where the incident solar radiation evaporates a quantity of water in a distillation pond; the water vapor/air mixture rises buoyantly through a duct to a high elevation where it drives a wind turbine to produce electricity; the water is condensed out of the mixture and stored in a high elevation reservoir, where it is used to drive hydro-electric turbines; spent water is stored at a low elevation and is used for drinking, irrigation or recycling to the distillation pond.

1 Claim, 7 Drawing Figures



PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Stignani

[11] 4,244,212

[45] Jan. 13, 1981

[54] **FLUIDIC PRESSURE RATIO SENSOR**

[75] Inventor: **David A. Stignani**, Shafer, Minn.

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **42,470**

[22] Filed: **May 25, 1979**

[51] **Int. Cl.**³ **G01F 7/00**

[52] **U.S. Cl.** **73/115**; 73/861.32; 73/700

[58] **Field of Search** ..... 73/194 B, 202, 212, 73/115, 700, 205

[56] **References Cited**

U.S. PATENT DOCUMENTS

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3,279,251	10/1966	Chanaud	73/194
3,559,482	2/1971	Baner et al	73/202
3,616,693	11/1971	Burgess	73/194
3,774,447	11/1973	Fitch	73/205
3,792,609	2/1974	Blair et al.	73/205
3,890,838	6/1975	Paetzold	73/194
3,937,082	2/1976	Schilling	73/208

Primary Examiner—Herbert Goldstein
Attorney, Agent, or Firm—Donald J. Singer; Casimer K. Salys

[57] **ABSTRACT**

A pressure ratio detector having a housing with a flow channel through the housing. A plug, having helical grooves, is positioned in the flow channel. A sudden expansion region is provided in the flow channel downstream of the plug which induces a nutation in the flow. The acoustic nutational frequencies are measured with a piezoelectric transducer to provide an output signal proportional to the pressure ratio across the device. An orifice device is provided in the inlet to adapt the device for measuring pressure ratios greater than 2.0.

2 Claims, 4 Drawing Figures

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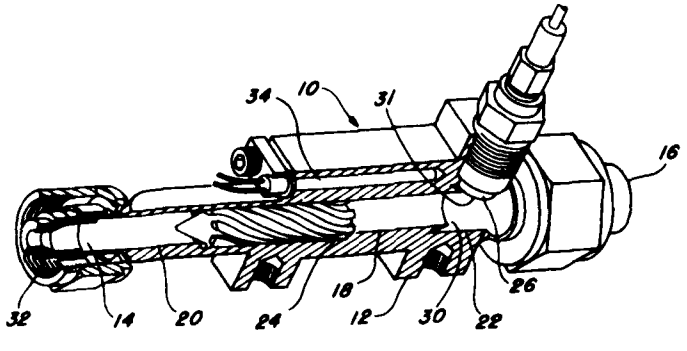
Washington, D.C. 20324



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PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Gaboriault

[11] **4,244,271**

[45] **Jan. 13, 1981**

[54] **AMMUNITION FEED TIMING MECHANISM**

[75] Inventor: **Roger E. Gaboriault**, Williston, Vt.

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **2,280**

[22] Filed: **Jan. 10, 1979**

[51] **Int. Cl.**[3] **F41D 10/22**

[52] **U.S. Cl.** ..... **89/33 BB**

[58] **Field of Search** ..... 89/33 R, 33 BA, 33 BB, 89/33 BC, 33 CA, 34

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,618,454	11/1971	Christenson	89/33 BB
3,696,704	10/1972	Backus et al.	89/33 BB

Primary Examiner—Stephen C. Bentley
Attorney, Agent, or Firm—Donald J. Singer; Arsen Tashjian

[57] **ABSTRACT**

The entrance and exit units to an ammunition feed system are provided with a foolproof timing arrangement wherein the units and drum are both in timed position when being mated together and also when being disengaged. The exit and/or entrance units are held in timed position by a spring loaded lever while disconnected and the lever is automatically released when the unit is mounted to the drum, allowing the shafts to turn with the drum. The drum may be held in timed position when the entrance and/or exit units are disconnected or may be allowed to rotate by releasing spring loaded mounting pins.

2 Claims, 3 Drawing Figures

Requests for licensing information should be addressed to:
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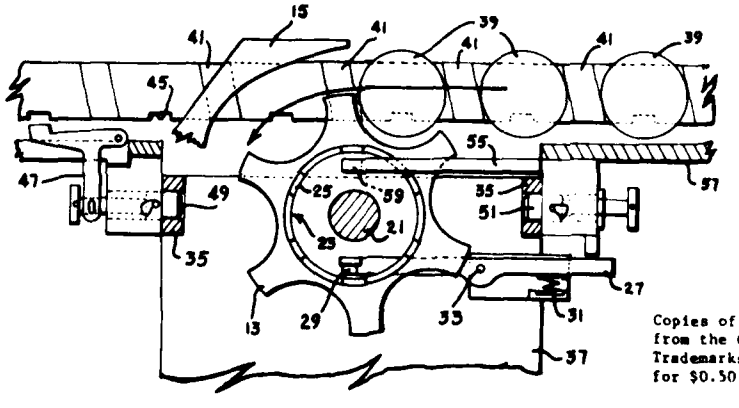
AF/JACP
1900 Half Street S.W.
Washington, D.C. 20324



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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Glode et al.

[11] 4,245,477

[45] Jan. 20, 1981

[54] **INTERNAL HEATER MODULE FOR CRYOGENIC REFRIGERATORS AND STIRLING HEAT ENGINES**

[75] Inventors: **John B. Glode**, Santa Monica; **George P. Lagodmos**, Rancho Palos Verdes, both of Calif.

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **58,418**

[22] Filed: **Jul. 18, 1979**

[51] **Int. Cl.**³ **F25B 9/00**; F01B 29/10; F02G 1/04

[52] **U.S. Cl.** **62/6**; 60/523

[58] **Field of Search** 62/6, 60/517, 523

[56] **References Cited**

U.S. PATENT DOCUMENTS

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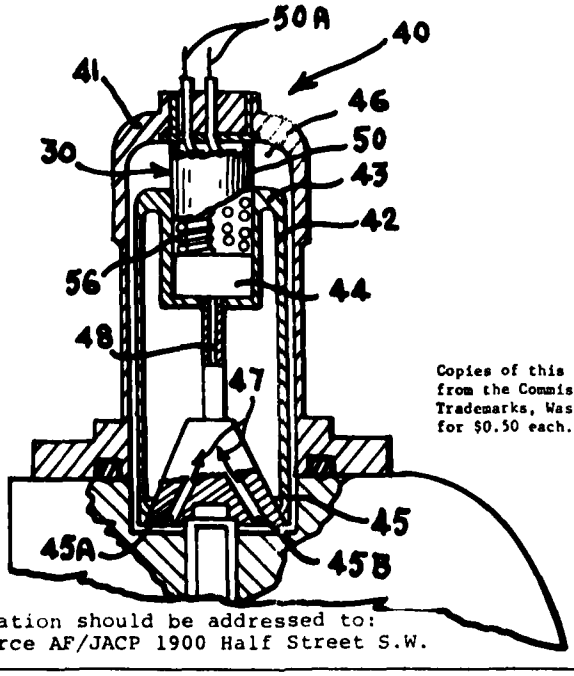
3,853,437	12/1974	Horn et al.	62/6
3,862,546	1/1975	Daniel	62/6
3,892,102	7/1975	Leo	62/6
3,991,585	11/1976	Mulder	62/6

Primary Examiner—Lloyd L. King
Attorney, Agent, or Firm—Donald J. Singer; Arsen Tashjian

[57] **ABSTRACT**

Heat energy is supplied to the hot volume of a Vuilleumier cycle cryogenic refrigerator, or to a Stirling cycle heat engine, with and by the inventive heater module which is disposed within the hot working volume of the machine. The heater module is in contact with the working fluid within the hot volume, thereby more efficiently supplying heat energy to the machine. This invention accomplishes heat input to the most optimum place, namely: inside the hot volume. A preferred embodiment and a variation are taught.

3 Claims, 6 Drawing Figures



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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Hinds

[11] **4,245,860**

[45] **Jan. 20, 1981**

[54] **MISSILE HOISTING SLING**

[75] Inventor: **Farley T. Hinds**, Fort Walton Beach, Fla.

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **35,580**

[22] Filed: **May 3, 1979**

[51] **Int. Cl.**[3] **B64C 1/22**

[52] **U.S. Cl.** ..... **294/74**; 244/137 R

[58] **Field of Search** ..... 294/74, 67 DC, 67 DE, 294/78 R, 78 A, 79, 80, 82 R; 414/626; 244/137 R

[56] **References Cited**

U.S. PATENT DOCUMENTS

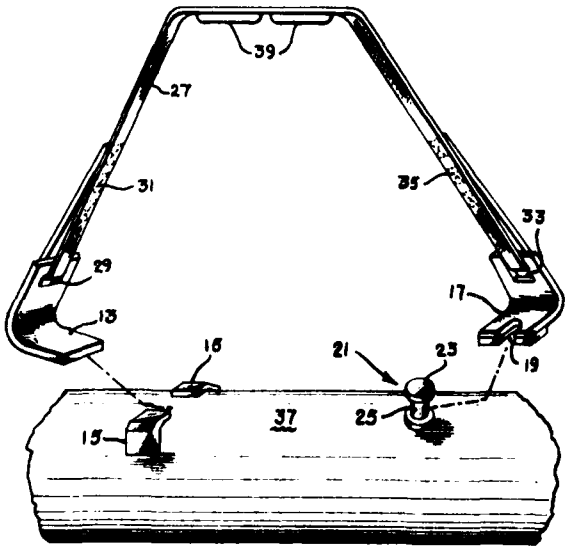
3,355,114	11/1967	Motz	294/74
3,712,567	1/1973	Ruggeri	244/137 R
4,124,244	11/1978	Bryant	294/74

Primary Examiner—James B. Marbert
Attorney, Agent, or Firm—Donald J. Singer; Arsen Tashjian

[57] **ABSTRACT**

A hoisting sling for handling a missile by its mounting lugs wherein the aft lugs include a matched pair of inwardly facing spaced apart angled members fixedly attached to the body of the missile and the forward lug includes an upwardly extending headed pin element. The sling consists of a heavy flat textile tape with a forward slotted grip on one end for engaging the forward headed lug and an angled grip on the other end for sliding engagement with the rearward spaced lugs on the missile so that the missile can be lifted and transported by engagement with a standard fork lift truck.

1 Claim, 1 Drawing Figure



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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Steinbrenner

[11] **4,245,911**

[45] **Jan. 20, 1981**

[54] **ECONOMICAL FAST SCAN SPECTROMETER**

[75] Inventor: **Ernest W. Steinbrenner**, Lancaster, Calif.

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **14,519**

[22] Filed: **Feb. 23, 1979**

[51] **Int. Cl.**³ **G01J 3/06**; G01J 3/18

[52] **U.S. Cl.** **356/328**; 356/334

[58] **Field of Search** ..... 356/308, 309, 328, 332-334; 350/162 R

[56] **References Cited**

U.S. PATENT DOCUMENTS

Re. 26053	7/1966	Cary	356/334 X
3,090,863	5/1963	McPherson	356/334 X
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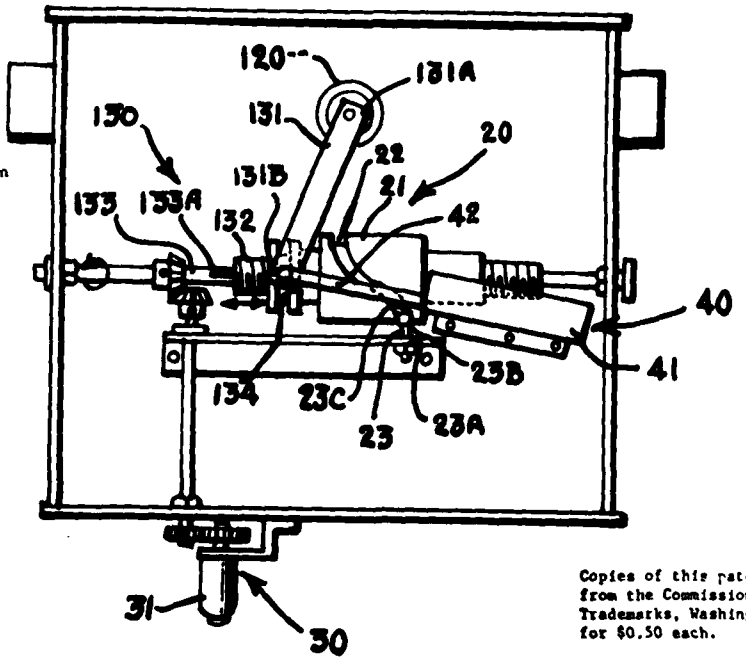
3,490,848	1/1970	McPherson	356/328 X
3,627,427	12/1971	Johnson et al.	350/162 R X
3,822,941	7/1974	Roche et al.	350/162 R X
4,003,657	1/1977	Sovicka	356/334
4,081,673	3/1978	Swindell et al.	350/162 SF X

Primary Examiner—F. L. Evans
Attorney, Agent, or Firm—Donald J. Singer; Arsen Tashjian

[57] **ABSTRACT**

A slow scan, frequency limited spectrometer having a screw mechanism for driving a rotatable grating is improved by incorporating and interlinking the following new constituent members with the screw mechanism: a cylindrical cam member with a groove and a constraint to attain a predetermined pitch, so that rapid scanning of a preselected wavelength range is achieved with the grating; a high torque, variable speed, direct current electric motor, so that the rapid scanning may be varied in speed; and, a liner potentiometer with a sliding contact, so that a remote wavelength readout of the variable rapid scanning can be obtained. Cylinder cam members of various pitches are also disclosed for use in scanning different wavelength ranges. At a low cost for improvements, the resulting spectrometer provides a variable fast scan, and is frequency selective.

9 Claims, 11 Drawing Figures



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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

McDermott et al.

[11] 4,246,252

[45] Jan. 20, 1981

[54] GAS GENERATING SYSTEM FOR CHEMICAL LASERS

[75] Inventors: William E. McDermott; David J. Benard; Nicholas R. Pchelkin; Ronald R. Bousek, all of Albuquerque, N. Mex.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 29,955

[22] Filed: Apr. 13, 1979

[51] Int. Cl.³ C01B 13/02

[52] U.S. Cl. ..... 423/579; 331/94.5 G

[58] Field of Search 423/579

[56] References Cited

U.S. PATENT DOCUMENTS

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3,959,741	5/1976	Meinzer	331/94.5 G
4,102,950	7/1978	Pilipovich et al.	423/579

OTHER PUBLICATIONS

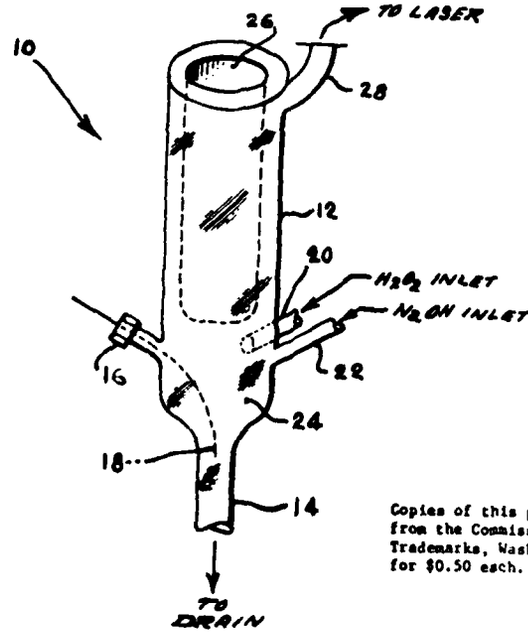
Zalesskii, Sov. Phys., JETP, vol. 40, No. 1, pp. 14-17, (1975).

Primary Examiner—Earl C. Thomas
Assistant Examiner—Wayne A. Langel
Attorney, Agent, or Firm—Donald J. Singer; William J. O'Brien

[57] ABSTRACT

A method for generating electronically excited oxygen by effecting a chemical reaction between chlorine and basic hydrogen peroxide.

2 Claims, 1 Drawing Figure



PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Mailloux

[11] **4,246,585**

[45] **Jan. 20, 1981**

[54] **SUBARRAY PATTERN CONTROL AND NULL STEERING FOR SUBARRAY ANTENNA SYSTEMS**

[75] Inventor: **Robert J. Mailloux, Wayland, Mass.**

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force, Washington, D.C.**

[21] Appl. No.: **73,584**

[22] Filed: **Sep. 7, 1979**

[51] **Int. Cl.**[3] **H01Q 3/28; H01Q 3/46**
[52] **U.S. Cl.** **343/854; 343/754**
[58] **Field of Search** ..... 343/778, 853, 854, 754, 343/100 SA

[56] **References Cited**

U.S. PATENT DOCUMENTS

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3,911,442	10/1975	Hatch	343/854
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OTHER PUBLICATIONS

Chapman, Adaptive Arrays and Sidelobe Cancellers, Microwave Journal, Aug. 1977, pp. 43-46.
Tang, Survey of Time-Delay Beem Steering Techniques, Proceedings of the 1970 Phased Array Antennas Symposium, Artech House Inc. pp.254-260.

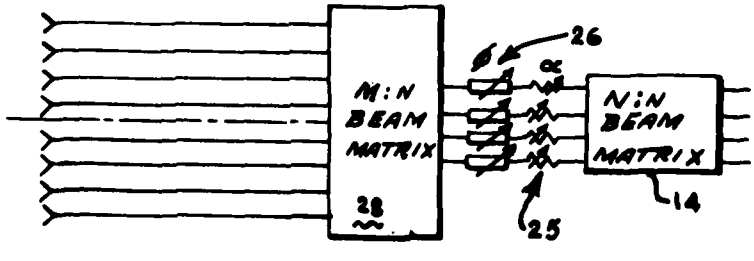
Primary Examiner—Eli Lieberman
Attorney, Agent, or Firm—Donald J. Singer; Willard R. Matthews, Jr.

[57] **ABSTRACT**

Improved performance of an electronically scanned subarray antenna system is realized by tailoring the subarray pattern in a manner that reduces the undesirable effects of illumination truncation at the edge of the main array. This is accomplished by introducing variable attenuators into individual feed elements to effect an illumination intensity taper of the feed element array output. The improvement permits effective utilization of deterministic and adaptive nulling at both the main array and the subarray levels and further provides a system ability to scan over wide spatial angles with wide bandwidths and low sidelobes. The technique is adaptable to both space fed and constrained subarray antenna systems.

9 Claims, 15 Drawing Figures

Requests for licensing information should be addressed to:
U.S. Department of the Air Force
AF/JACP
1900 Half Street S.W.
Washington, D.C. 20324



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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Chen

[11] 4,249,177

[45] Feb. 3, 1981

[54] **TARGET DISCRIMINATION APPARATUS**

[75] Inventor: **Pin-Wei Chen**, Sunnyvale, Calif.

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **35,743**

[22] Filed: **May 3, 1979**

[51] **Int. Cl.**³ **G01S 7/30**

[52] **U.S. Cl.** ..... **343/7 A; 343/5 CF**

[58] **Field of Search** ..... 343/5 CF, 7 A

[56] **References Cited**

U.S. PATENT DOCUMENTS

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3,680,095	7/1972	Evans	343/7 A X
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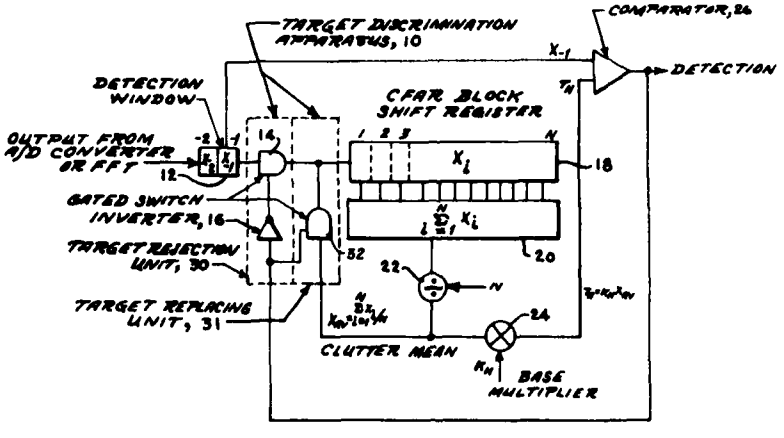
4,104,633	8/1978	Donahue et al.	343/7 A

Primary Examiner—T. H. Tubbesing
Attorney, Agent, or Firm—Donald J. Singer; William Stepanishen

[57] **ABSTRACT**

The target discrimination apparatus utilizes logic circuit which is positioned between the detection window and the clutter averaging cells of a conventional constant false alarm rate (CFAR) radar detector to provide better estimation of the clutter average and therefore better target detection in the multiple target environment

6 Claims, 1 Drawing Figure



Requests for licensing information should be addressed to: U.S. Department of the Air Force AF/JACP 1900 Half Street S.W. Washington, D.C. 20324

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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Pearson

[11] **4,249,411**

[45] **Feb. 10, 1981**

[54] **ZERO-G MASSMETER**

[75] Inventor: **Jerome Pearson**, Dayton, Ohio

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **43,983**

[22] Filed: **May 31, 1979**

[51] **Int. Cl.**[3] **G01N 9/00**

[52] **U.S. Cl.** **73/12**; 73/167

[58] **Field of Search** ..... 73/167, 12; 244/158, 244/1 R

[56] **References Cited**

U.S. PATENT DOCUMENTS

2,993,372	7/1961	Bleakney et al.	73/167
3,379,974	4/1968	Dryden	73/167
3,605,482	9/1971	Humes	73/12
4,131,012	12/1978	Courtiol	73/167

Primary Examiner—Donald O. Woodiel

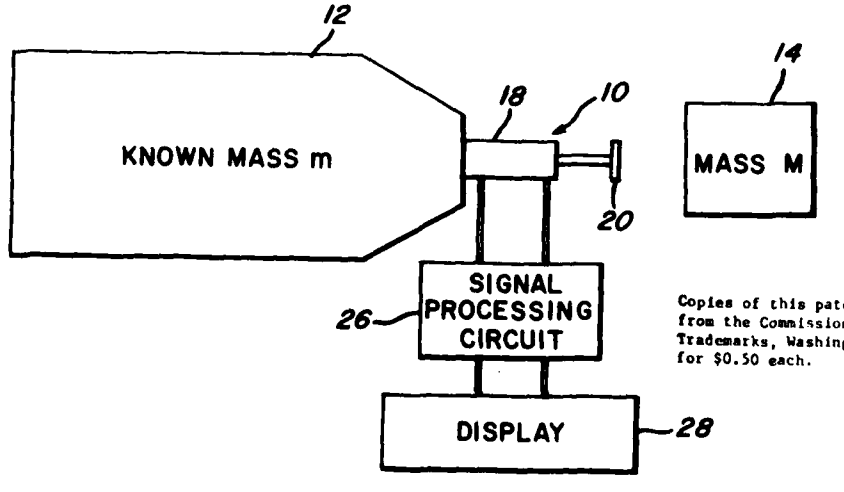
Attorney, Agent, or Firm—Donald J. Singer; Richard J. Killoren

[57] **ABSTRACT**

An apparatus for determining the mass of an unknown object in a zero gravity environment having an impact plate connected at one end of a spring with the other end connected to an object of known mass, such as a space vehicle. A movement of the impact plate acts to close a switch which is again opened at the end of the impact time. With the spring constant k and the known mass m the mass M of the unknown object can be determined from the duration of impact t by using the expression

$$M = \frac{kt^2}{\pi^2 \frac{kt^2}{m}}$$

5 Claims, 4 Drawing Figures



PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Task

[11] 4,249,823
[45] Feb. 10, 1981

[54] **WINDSCREEN ANGULAR DEVIATION MEASUREMENT DEVICE**

[75] Inventor: **Harry L. Task**, Dayton, Ohio

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **85,453**

[22] Filed: **Oct. 16, 1979**

[51] **Int. Cl.**[3] **G01N 21/41**
[52] **U.S. Cl.** ..... **356/128**; 250/237 G; 356/239
[58] **Field of Search** ..... 356/239, 128-137, 356/399-401; 250/237 G

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,688,235 8/1972 Migeotte 356/239

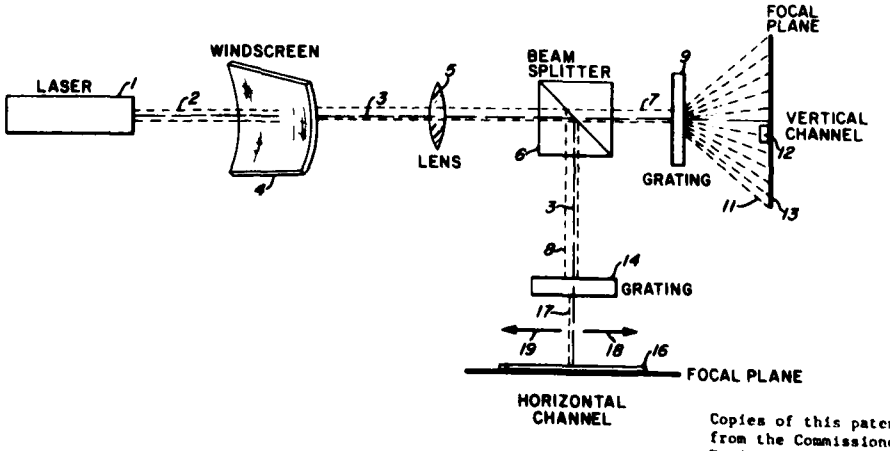
Primary Examiner—John K. Corbin
Assistant Examiner—Bruce Y. Arnold
Attorney, Agent, or Firm—Donald J. Singer; Casimer K. Salys

[57] **ABSTRACT**

An apparatus for detecting the angular deviation from an axis imparted to a ray when passing through a transparent medium, for resolving the angular deviation into its components, and for generating electrical signals accurately representing the magnitudes of such components. A laser beam is projected along an optical axis through the medium and focussed by a displacement compensation lens. The beam is divided into channels with a beam splitter, each channel being incident upon a transmission diffraction grating. Each grating, characterized by fine parallel lines of substantially random size and spacing, generates a fan-shaped region of luminous energy. At a distance equal to the focal length of the lens, the fan-shaped regions cross detector arrays aligned parallel to the grating lines. A change in the angular deviation proportionally translates the crossing point along the detector array.

7 Claims, 4 Drawing Figures

Requests for licensing information should be addressed to:
U.S. Department of the Air Force
AF/JACP
1900 Half Street S.W.
Washington, D.C. 20324



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PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19] [11] **4,250,608**
Mulkey [45] **Feb. 17, 1981**

[54] **LABEL INSERT AID**

[76] Inventor: **Donna J. Mulkey**, 5741 Sunset Rd., Fort Worth, Tex. 76114

[21] Appl. No.: **17,622**

[22] Filed: **Mar. 5, 1979**

[51] **Int. Cl.**[3] **B25B 27/14**
[52] **U.S. Cl.** **29/278**; 40/359; 40/360
[58] **Field of Search** ..... 29/278, 270; 81/3 R; 24/255 R, 259 R, 259 FS, 49 C, 81 MC, 81 PC, DIG. 8; 40/23 A, 360

[56] **References Cited**

U.S. PATENT DOCUMENTS

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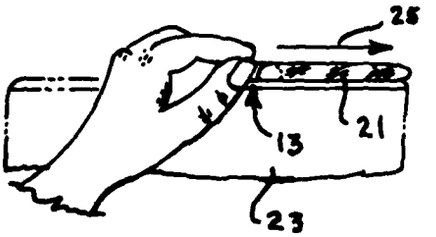
488,510	12/1892	Unbehend	29/278
510,014	12/1893	Fairchild .	
1,584,238	5/1926	Menger	40/360
1,757,122	5/1930	Hunter	40/360
2,567,181	9/1951	Bye	29/270

Primary Examiner—James L. Jones, Jr.
Attorney, Agent, or Firm—Donald J. Singer; Arsen Tashjian

[57] **ABSTRACT**

A device for inserting a typed or printed label into a label holder on the upper edge of a file folder including two, thin, flat, elongated, juxtaposed clamping blades and a handle on one end. The blades possess some spring action to normally urge them together and are of unequal lengths to facilitate their insertion into the label holder. The label extends slightly beyond the outer ends of the blades to permit grasping the label and holding it in position during withdrawal of the device.

3 Claims, 3 Drawing Figures



PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Rathbun

[11] **4,251,721**

[45] **Feb. 17, 1981**

[54] **PATTERN AND THRESHOLD SPEED CALCULATOR**

[76] Inventor: **Charles D. Rathbun,** 1005 Mistletoe, Ft. Worth, Tex. 76126

[21] Appl. No.: **66,357**

[22] Filed: **Aug. 14, 1979**

[51] **Int. Cl.**[3] **G06C 27/00;** G06C 3/00

[52] **U.S. Cl.** ..... **235/78 R;** 235/78 N; 235/88 N

[58] **Field of Search** .... 235/61 NV, 70 A, 77–78 RC, 235/85 R, 88 R–88 RC

[56] **References Cited**

U.S. PATENT DOCUMENTS

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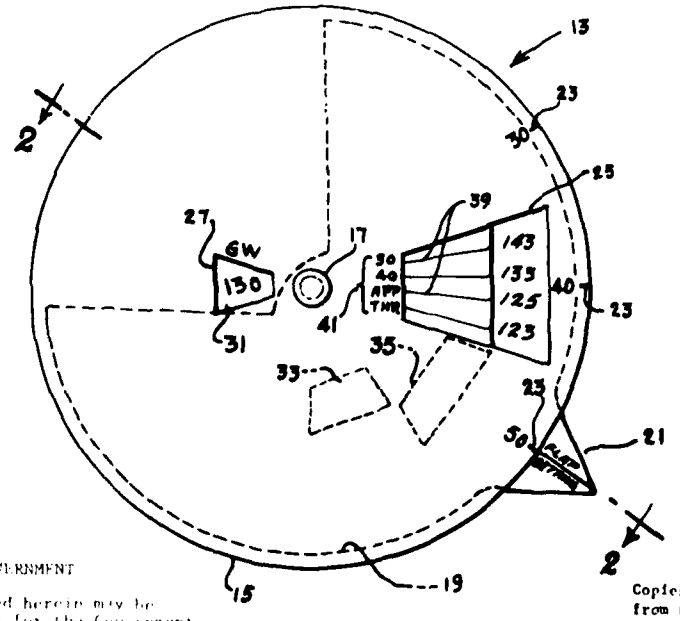
3,010,650	11/1961	Aubert	235/88 RC
3,929,279	12/1975	Dibley	
4,011,987	3/1977	Cheek	
4,134,006	1/1979	Gordon	235/78 N

Primary Examiner—L. T. Hix
Assistant Examiner—Benjamin R. Fuller
Attorney, Agent, or Firm—Donald J. Singer; Arsen Tashjian

[57] **ABSTRACT**

A circular disk type calculator for determining the proper approach speed for a particular aircraft within a specified range of gross weights and flap settings. The calculator includes three superposed circular disks pivoted for independent rotation about their centers. A third lower disk is imprinted with appropriate speed and weight information. A second intermediate disk includes cut-outs and windows to expose certain readings on the lower disk and also includes a flap setting marker extending outwardly from its outer edge. A first upper disk is provided with appropriate windows and markings relating to the other disks thereby indicating the desired information including pattern and threshold air speed for the gross weight and flap setting of the aircraft.

3 Claims, 4 Drawing Figures



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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Hwang et al.

[11] 4,251,738

[45] Feb. 17, 1981

[54] **BALANCED INPUT ZERO DIFFERENTIAL DETECTOR**

[75] Inventors: **Ying C. Hwang**, Liverpool; **John W. Lunden**, Camillus, both of N.Y.

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No. 932,815

[22] Filed: Aug. 10, 1978

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 751,238, Dec. 16, 1976, abandoned.

[51] Int. Cl.³ H03K 5/153

[52] U.S. Cl. 307/231; 307/286; 307/354; 328/150

[58] Field of Search 307/354, 355, 322, 363, 307/286, 231; 328/150, 115, 114

[56] *References Cited*

U.S. PATENT DOCUMENTS

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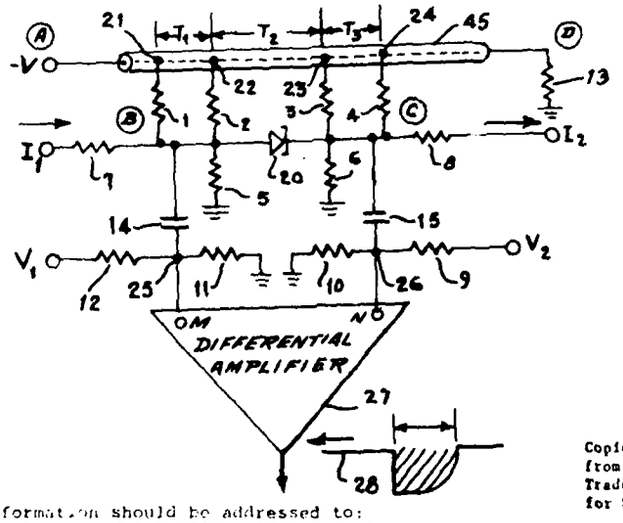
3,187,273	6/1965	Chasek	332/1
3,348,068	10/1967	Miller	307/354
3,436,560	4/1969	Marchais	307/322
3,459,963	8/1969	Saari	307/355
3,553,496	1/1971	Weiss	307/286
3,560,763	2/1971	Downey et al.	307/354

Primary Examiner—John Zazworsky
Attorney, Agent, or Firm—Donald J. Singer; Willard R. Matthews

[57] **ABSTRACT**

A sensitive and precise detector is described for application in determining the "Centroid" of the video pulse of a radar return echo. A tunnel diode, connected and biased in a balanced configuration with respect to ground and selected taps on a signal delay line, is the key element of the circuit. The sum and/or difference of the tapped signals are formed in such a manner that a precise zero crossing, corresponding to the "centroid" of the pulse, may be determined. The special characteristics of the tunnel diode are utilized to achieve additional objects, base line noise immunity, multiple echo self resetting, and high speed-precision response. The tunnel diode is positioned in relation to four (or more) input signals and ground such that with no signal on the delay line, it is biased - at a stable low-current-high-voltage state. An incoming signal causes a series of state changes designed to "switch" the diode to a second state at the time of zero crossing, resulting in the occurrence of a voltage step which, in turn, causes the differential amplifier connected to the tunnel diode to also change state - with amplification.

3 Claims, 4 Drawing Figures



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AD-A108 674 AIR FORCE SYSTEMS COMMAND WASHINGTON DC F/G 5/2
PATENT ABSTRACT DIGEST. VOLUME III.(U)
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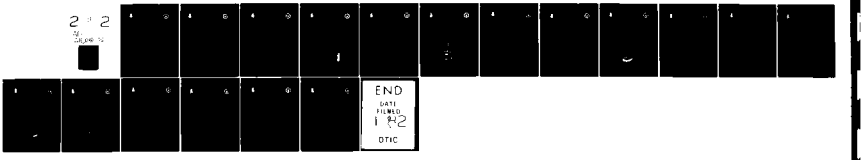
UNCLASSIFIED AFSC-TR-81-67 NL



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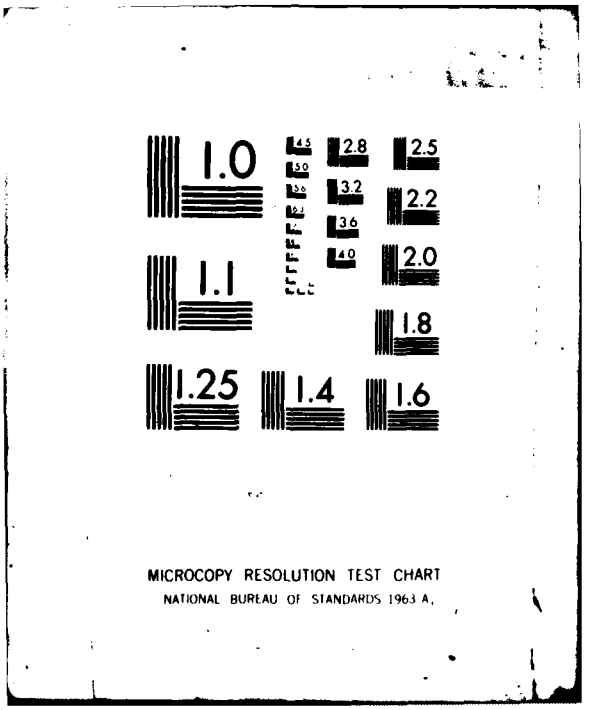
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NATIONAL BUREAU OF STANDARDS 1963 A.

PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Gardenghi et al.

[11] 4,251,741

[45] Feb. 17, 1981

[54] HIGH POWER PULSER

[75] Inventors: Robert A. Gardenghi; Edward H. Hooper, both of Catonsville, Md.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 10,204

[22] Filed: Feb. 8, 1979

[51] Int. Cl.³ H03K 3/57

[52] U.S. Cl. ..... 307/260; 307/246; 307/268; 307/252 Q; 328/65

[58] Field of Search ..... 328/65; 307/246, 260, 307/268, 252 Q

[56] References Cited

U.S. PATENT DOCUMENTS

3,578,986	5/1971	McGuffin et al.	307/246
3,772,601	11/1973	Smith	328/65
3,772,613	11/1973	Smith	328/65 X
4,058,742	11/1977	O'Brien	307/260
4,090,140	5/1978	Carter	328/65

FOREIGN PATENT DOCUMENTS

1260967	1/1972	United Kingdom	328/65

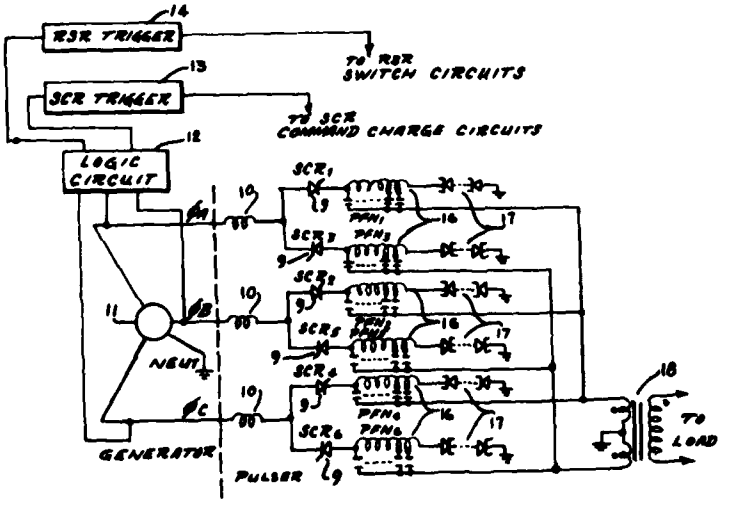
Primary Examiner—John S. Heyman

Attorney, Agent, or Firm—Donald J. Singer; Willard R. Matthews, Jr.

[57] ABSTRACT

A high power pulser, suitable for high energy laser and radar applications, that provides both uniform loading on the source and power combining to achieve high peak power output pulses while eliminating the customary transformer-rectifier power supply is realized by connecting a number of conventional line type AC resonant charging pulsers together in a manner that allows them to be sequentially charged from a polyphase A.C. generator and, upon command, simultaneously discharged into a load.

6 Claims, 5 Drawing Figures



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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19] [11] **4,251,765**

Mears [45] **Feb. 17, 1981**

[54] **AIRCRAFT ELECTRICAL SYSTEM TESTER**

[75] Inventor: **Shawn P. Mears, Dover, Del.**

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force, Washington, D.C.**

[21] Appl. No.: **10,109**

[22] Filed: **Feb. 7, 1979**

[51] **Int. Cl.**[3] **G01R 31/02**

[52] **U.S. Cl.** ..... **324/51; 324/73 R**

[58] **Field of Search** ..... 324/51, 73 R, 415

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,002,972	1/1977	Konrad et al.	324/51
4,015,201	3/1977	Chaffee	324/51
4,118,664	10/1978	Fields	324/51

Primary Examiner—Michael J. Tokar
Attorney, Agent, or Firm—Donald J. Singer; Henry S. Miller

[57] **ABSTRACT**

A portable tester for trouble shooting aircraft electrical systems, particularly condition warning systems including a housing having a plug, adapted to connect a wiring harness from the master controlling display unit, and circuitry which simulates various conditions causing the display panel to react in a known manner. Failure of the display panel to react correctly indicates electrical malfunction.

1 Claim, 2 Drawing Figures

Requests for licensing information should be addressed to:
U.S. Department of the Air Force AF/JACP 1900 Half Street S.W.
Washington, D.C. 20324

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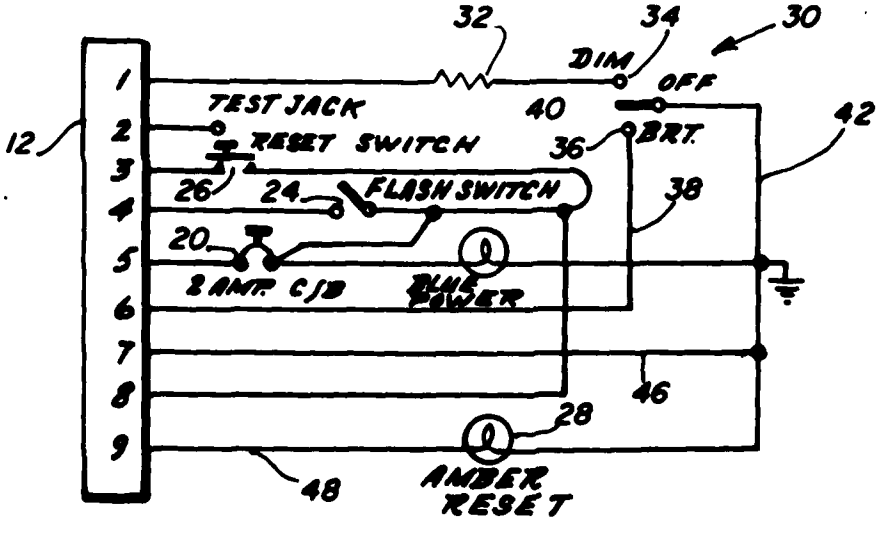


PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Montana

[11] **4,251,767**

[45] **Feb. 17, 1981**

[54] **DUAL CHANNEL CAPACITANCE MEASUREMENT DEVICE**

[76] Inventor: **Donald M. Montana**, 27 Woodberry Rd., New Hartford, N.Y. 13413

[21] Appl. No.: **937,021**

[22] Filed: **Aug. 25, 1978**

[51] **Int. Cl.**[3] **G01R 27/26**
[52] **U.S. Cl.** ..... **324/60 C**
[58] **Field of Search** ..... **324/60 C, 61 R, 60 CD, 324/60 R**

[56] **References Cited**

U.S. PATENT DOCUMENTS

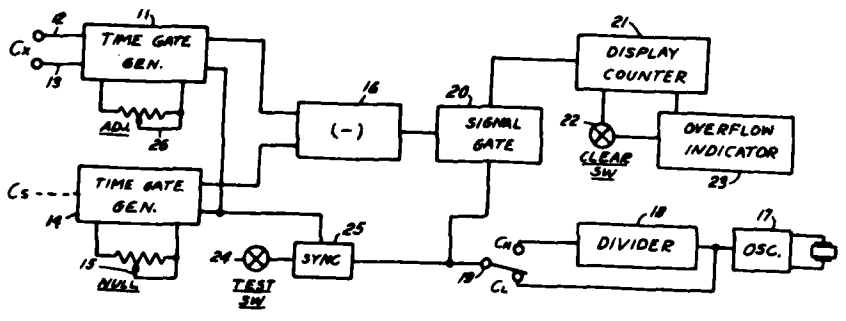
4,065,715 12/1977 Jaffe et al. ..... 324/60 CD

Primary Examiner—Ernest F. Karlsen
Attorney, Agent, or Firm—Donald J. Singer; Robert Kern Duncan

[57] **ABSTRACT**

The capacitance of an unknown capacitor is determined by counting the cycles of a known frequency contained within a time gate whose time duration is determined by subtracting a gate whose length is equivalent to the stray measuring capacitance from a gate whose length is determined by the capacitance of the unknown capacitor plus the unavoidable stray measuring capacitances.

1 Claim, 12 Drawing Figures



PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Goldie et al.

[11] 4,251,786

[45] Feb. 17, 1981

[54] **STEPPED-ROD FERRITE MICROWAVE LIMITER HAVING WIDE DYNAMIC RANGE AND OPTIMAL FREQUENCY SELECTIVITY**

[75] Inventors: **Harry Goldie**, Randallstown; **Steven N. Stitzer**, Ellicott City, both of Md.

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **55,425**

[22] Filed: **Jul. 6, 1979**

[51] **Int. Cl.**[3] **H01P 1/218; H01P 1/23**

[52] **U.S. Cl.** ..... **333/17 L; 333/219**

[58] **Field of Search** ..... 333/17 L, 24.2, 219

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,500,256 3/1970 Carter et al. ..... 333/17 L

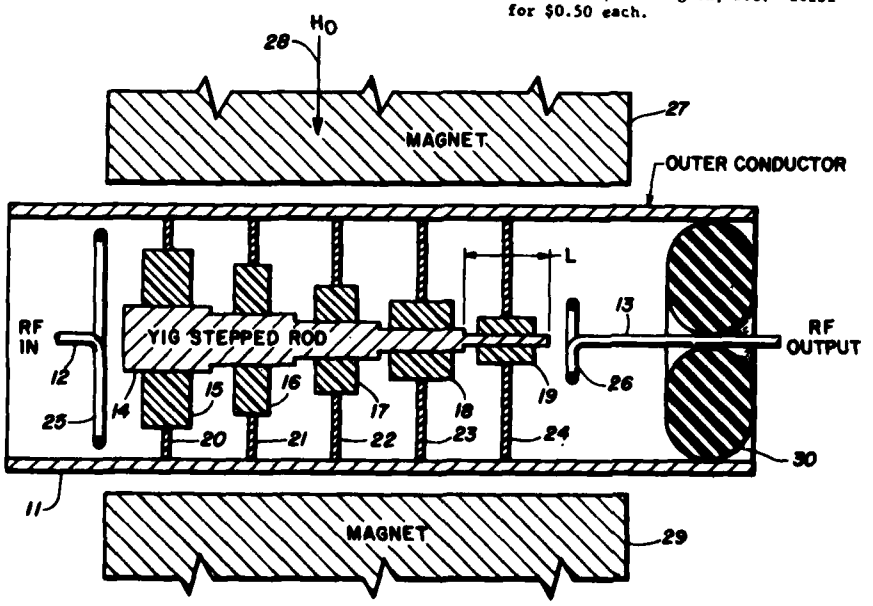
Primary Examiner—Paul L. Gensler

Attorney, Agent, or Firm—Donald J. Singer; Robert Kern Duncan

[57] **ABSTRACT**

A coaxial line, wide dynamic range, ferrite limiter having optimal frequency selectivity for microwave frequencies is provided by a stepped ferrite rod with disks of varying volumes and dielectric constants controlling the operating frequency and threshold level for each step segment.

5 Claims, 1 Drawing Figure



PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Marvel et al.

[11] 4,252,937

[45] Feb. 24, 1981

[54] **POLYAROMATIC ETHER-KETO-SULFONES AND THEIR SYNTHESIS**

[75] Inventors: Carl S. Marvel, Tucson, Ariz.; Richard L. Frentzel, St. Petersburg, Fla.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 47,528

[22] Filed: Jun. 8, 1979

[51] Int. Cl.³ C08G 65/40; C08G 75/23

[52] U.S. Cl. 528/126; 528/125; 528/128; 528/173

[58] Field of Search 528/125, 126, 128, 173

[56] References Cited

U.S. PATENT DOCUMENTS

3,935,167	1/1976	Marvel et al.	528/125
3,956,240	5/1976	Dahl et al.	528/125
4,065,437	12/1977	Blinne et al.	528/125

Primary Examiner—Lester L. Lee
Attorney, Agent, or Firm—Donald J. Singer; Cedric H. Kuhn

[57] ABSTRACT

Polymers having pendant phenylethynyl groups are obtained by reacting phenylacetylene with a bromine-containing polymer prepared by reacting bis-p-phenoxy-4,4'-(2,2'-dibromodiphenyl)ketone or 2,2'-dibromodiphenyl-4,4'-dicarbonyldichloride with isophthaloyl dichloride and 4,4'-bis-p-phenoxydiphenylsulfone. Because the polymers cure without the evolution of volatiles and have softening points higher than their cure temperatures, they are especially suitable for use in fabricating fiber-reinforced composites.

13 Claims, 3 Drawing Figures

Requests for licensing information should be addressed to:
U.S. Department of the Air Force
AF/JACP
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PATENT ABSTRACT

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FROM THE AIR FORCE SYSTEMS COMMAND

United States Patent [19] [11] **4,254,688**

Richter [45] **Mar. 10, 1981**

[54] **LOW FRICTION SERVO VALVE**

[75] Inventor: **Robert F. Richter**, Rolling Hills Estates, Calif.

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **35,574**

[22] Filed: **May 3, 1979**

[51] **Int. Cl.**[3] **F15B 13/16**
[52] **U.S. Cl.** **91/365**; 91/359
[58] **Field of Search** 91/365, 359

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,171,329	3/1965	Rasmussen	91/365
3,257,911	6/1966	Garnjost et al.	91/365
3,464,318	9/1969	Thayer et al.	91/365

Primary Examiner—Paul E. Maslousky

Attorney, Agent, or Firm—Donald J. Singer; Jacob N. Erlich

[57] **ABSTRACT**

A low friction servo valve having a housing which contains therein an input shaft, a pair of slidably mounted valve spools and an actuator. Mechanical input is received by the input shaft in order to provide rotational displacement thereof. This displacement is transferred to a flapper portion on the input shaft which operates in conjunction with a pair of jet nozzles. Movement of the flapper causes pressure buildup in one of the jet nozzles which in turn causes sequential movement of the pair of valve spools to take place. Operation of the actuator is dependent upon movement of one of the valve spools, with this valve spool also being connected to the input shaft for assisting in the rotational displacement thereof as well as being connected to a feedback spring which forces the flapper to assume its neutral position thereby reducing the pressure buildup in one of the jet nozzles.

10 Claims, 8 Drawing Figures

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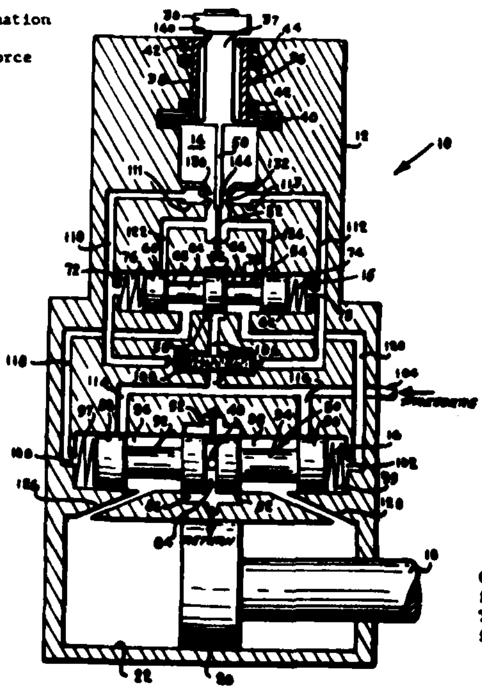

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PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Crane

[11] 4,255,478

[45] Mar. 10, 1981

[54] COMPOSITE STRUCTURES

[75] Inventor: Robert L. Crane, Dayton, Ohio

[73] Assignee: The United States of American as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 20,301

[22] Filed: Mar. 14, 1979

Related U.S. Application Data

[63] Continuation of Ser. No. 909,151, May 24, 1978, abandoned.

[51] Int. Cl.³ B32B 5/12

[52] U.S. Cl. 428/113; 428/109; 428/110; 428/112; 428/114; 428/902; 416/230

[58] Field of Search ..... 428/113, 114, 366, 367, 428/109, 110, 112, 902; 416/230, 230 A; 244/123

[56] References Cited

U.S. PATENT DOCUMENTS

3,672,936	6/1972	Ehrenreich	428/366
3,676,200	7/1972	Rembold et al.	428/366
3,700,535	10/1972	McCoy et al.	428/367
3,768,760	10/1973	Jensen	428/367
3,853,610	12/1974	Byrne	428/367
3,956,564	5/1976	Hillig	428/367

Primary Examiner—George F. Lesmes
Assistant Examiner—E. Rollins Buffalow
Attorney, Agent, or Firm—Donald J. Singer; William J. O'Brien

[57] ABSTRACT

A composite structure is fabricated from fiber-reinforced tape, segments of the tape being stacked one upon another so as to form a plurality of plies. A boron fiber is positioned adjacent to or along an edge of each of the tape segments. Because of the X-ray opacity of the boron fiber's tungsten boride core and because the boron fiber will break when a ply is damaged, damage to the composite structure can be detected by radiographic examination.

5 Claims, 2 Drawing Figures

Requests for licensing information should be addressed to:
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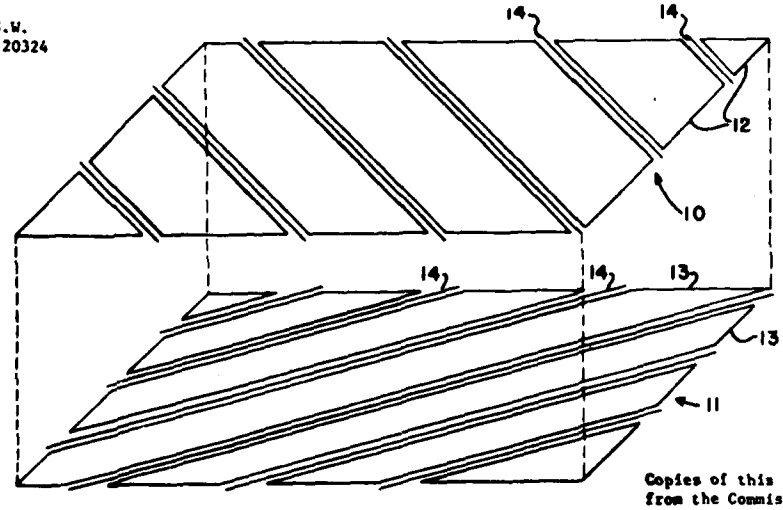
AF/JACP
1900 Half Street S.W.
Washington, D.C. 20324



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PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Briones

[11] **4,256,363**
[45] **Mar. 17, 1981**

[54] **SPECKLE SUPPRESSION OF HOLOGRAPHIC MICROSCOPY**

[75] Inventor: **Robert A. Briones**, Monterey Park, Calif.

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **932,986**

[22] Filed: **Aug. 8, 1978**

[51] **Int. Cl.**³ **G03H 1/22**
[52] **U.S. Cl.** **350/3.86**; 350/12; 350/273
[58] **Field of Search** 350/3.81, 3.82, 3.83, 350/3.85, 3.86, 6.2, 12, 16, 268, 273, 320

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,490,827	1/1970	Van Ligten et al.	350/3.85
3,511,554	5/1970	Osterberg et al.	350/12
3,677,617	7/1972	Upatnieks	350/3.83
3,754,814	8/1973	Leith	350/3.81 X
3,799,643	3/1974	Mailer	350/3.81
3,867,009	2/1975	Pawluczyk	350/3.67
3,877,776	4/1975	Okino et al.	350/3.67
4,043,653	8/1977	Croce et al.	355/2
4,155,630	5/1979	Ih	350/3.85 X

Primary Examiner—John K. Corbin
Assistant Examiner—John D. Lee
Attorney, Agent, or Firm—Donald J. Singer; Arsen Tashjian

[57] **ABSTRACT**

An apparatus for, and a method of, reconstructing and viewing a speckled holographic image through a microscope, with the result that the speckle of the holographic image is significantly reduced, without loss of resolution of the image. A finely-structured and transparent light diffuser is interposed thru the aerial image formed by a hologram or an image formed or relayed by a lens system such as a microscope objective prior to the eyepiece. This diffuser is moved in its plane with a rotary or vibratory motion to suppress the speckle.

7 Claims, 1 Drawing Figure

Requests for licensing information should be addressed to:
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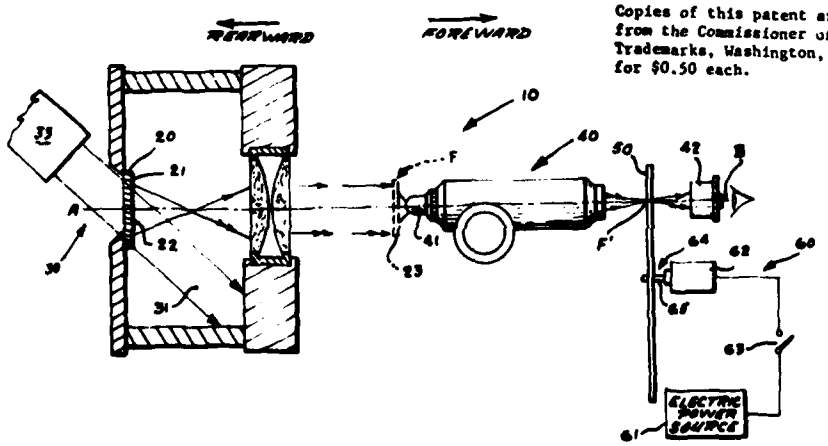

PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Task et al.

[11] 4,257,164

[45] Mar. 24, 1981

[54] OPTICAL PROTRACTOR

[75] Inventors: Harry L. Task, Dayton; Ross J. Gafvert, Enon, both of Ohio

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 959,050

[22] Filed: Nov. 9, 1978

[51] Int. Cl.³ G01B 11/26

[52] U.S. Cl. ..... 33/1 N; 350/112; 356/138; 356/247

[58] Field of Search ..... 33/1 N; 356/138, 247; 350/112

[56] References Cited

U.S. PATENT DOCUMENTS

3,463,593 8/1969 Horan 356/142

Primary Examiner—William D. Martin, Jr.
Attorney, Agent, or Firm—Joseph E. Rusz; Casimer K. Salys

[57] ABSTRACT

An optical device for measuring the angles formed between a line-of-sight and the normal to a planar surface intersected thereby. A solid piece of optically transparent material having a relatively large index of refraction is geometrically shaped to have a planar base surface, with a reference mark theron, and a curvilinear viewing surface with scale marks to designate angular orientations. The exterior surfaces are optically polished to create mirrored surfaces for internal reflection. To accentuate contrast, the planar surface containing the reference mark is coated with a layer of contrasting opaque material. Angles are measured by placing the planar base surface of the device on the planar surface intersected by the line-of-sight and aligning the reference mark with the point of intersection. When viewed from the observation point defining the line-of-sight, an image of the reference mark appears on the scaled surface at a location representing the line-of-sight angle.

10 Claims, 10 Drawing Figures

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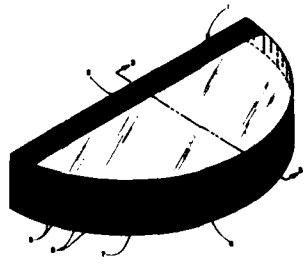

PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Ashbee

[11] **4,257,265**

[45] **Mar. 24, 1981**

[54] **SELF-STRESSED MODE 1 FRACTURE MECHANICS TEST PIECE**

[75] Inventor: **Kenneth H. G. Ashbee, Bristol, England**

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force, Washington, D.C.**

[21] Appl. No.: **76,720**

[22] Filed: **Sep. 19, 1979**

[51] Int. Cl.³ G01N 3/08

[52] U.S. Cl. ..... 73/150 A; 73/785; 73/799

[58] Field of Search ..... 73/760, 827, 834, 785, 73/849, 850, 821, 799, 150 A; 29/407

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,151,480	10/1964	Schultz	73/141
3,572,091	3/1971	McFarland .	
3,649,127	3/1972	Kersch et al.	356/109
3,842,664	10/1974	Conway, Jr. .	
3,979,949	9/1976	Smith .	
4,107,980	8/1978	Crane et al. .	

Primary Examiner—Jerry W. Myracle
Attorney, Agent, or Firm—Donald J. Singer; Arsen Tashjian

[57] **ABSTRACT**

Two radial cuts are made in a disc-shaped solid, the wedge (or sector) thereby produced is removed, and the exposed faces of the radial cuts are forced into contact with each other. By bonding (or welding) together the faces of the radial cuts, a self-stressed disc, capable of propagating a pure mode 1 crack, is created.

7 Claims, 4 Drawing Figures

Requests for licensing information should be addressed to:
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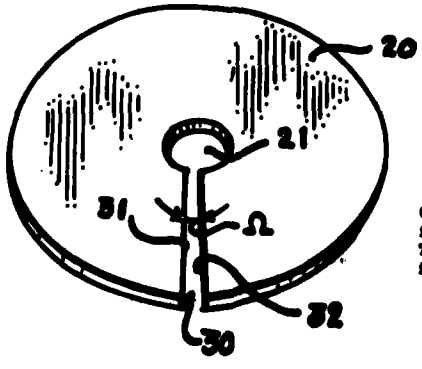

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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Kennel

[11] 4,258,578

[45] Mar. 31, 1981

[54] **FLOATED, INTERNALLY GIMBALLED PLATFORM ASSEMBLY**

[75] Inventor: **John M. Kennel**, Santa Ana, Calif.

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **913,160**

[22] Filed: **Jun. 6, 1978**

[51] **Int. Cl.**[3] **G01C 19/20**; F16M 11/12

[52] **U.S. Cl.** **74/5.34**; 33/321; 33/327; 248/183; 248/184

[58] **Field of Search** 74/5.34, 5.5; 73/504; 33/321, 327; 248/183, 184, 179

[56] **References Cited**

U.S. PATENT DOCUMENTS

2,853,287	9/1958	Draper et al.	264/1
2,896,455	7/1959	Bishop et al.	33/327 X
2,949,785	8/1960	Singleton et al.	74/5.34
2,958,522	11/1960	Slater	74/5.34 X
2,959,059	11/1960	Jorgensen	74/5.34 X
3,163,039	12/1964	Newman et al.	73/178
3,296,872	1/1967	Bosch et al.	74/5.34

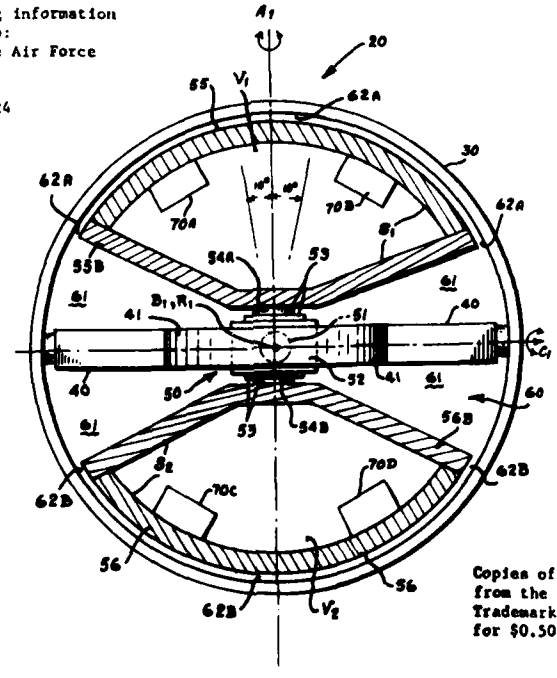
Primary Examiner—Rodney H. Bonck

Attorney, Agent, or Firm—Donald J. Singer; Arsen Tashjian

[57] **ABSTRACT**

The azimuth shaft of an internally gimballed, gyro-stabilized platform assembly is maintained rigid by keeping the uniquely structured inertial instrument-mounting components neutrally buoyant in a flotation liquid that is captive within a spherical shaped outermost gimbal member. Unlike the prior art, this internally gimballed, gyro-stabilized platform assembly can be used for precision, and high-"g", applications.

4 Claims, 3 Drawing Figures



PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Stoner

[11] 4,258,965

[45] Mar. 31, 1981

[54] **ADJUSTABLE ELECTRONIC CIRCUIT CARD SUPPORTER**

[75] Inventor: **Harry I. Stoner**, Aloha, Oreg.

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **63,872**

[22] Filed: **Aug. 3, 1979**

[51] **Int. Cl.**[3] **A47B 49/00**; A47B 91/00

[52] **U.S. Cl.** **312/266**; 312/24; 312/280

[58] **Field of Search** 312/208, 266, 280-282, 312/313, 183, 24; 108/97, 99; 248/646; 211/47, 72, 79; 5/429, 430

[56] **References Cited**

U.S. PATENT DOCUMENTS

1,824,822	9/1931	Kradolfer	108/97
1,934,370	11/1933	Mirabella	312/266
2,211,199	8/1940	Corken	312/280
3,857,623	12/1974	Schneller	312/266

Primary Examiner—Casmir A. Nunberg
Attorney, Agent, or Firm—Donald J. Singer; Casimer K. Salys

[57] **ABSTRACT**

An adjustable circuit card support structure having a base support member having a hook flange for supporting the base support member on a cross bar member between circuit card sections of an electronic cabinet. A shelf is secured to the base support member with four link members. An adjustable support arm is pivotably supported on the base support member. A pair of lever members on the adjustable support arm have a center boss shaft pivotably supported between them. A rod member is threaded into the center boss to rotate the support arm around the pivotable support on the base member to raise and lower the shelf member. Two thumb screws permit leveling the base support member. An adjustable extension is provided on the shelf.

2 Claims, 2 Drawing Figures

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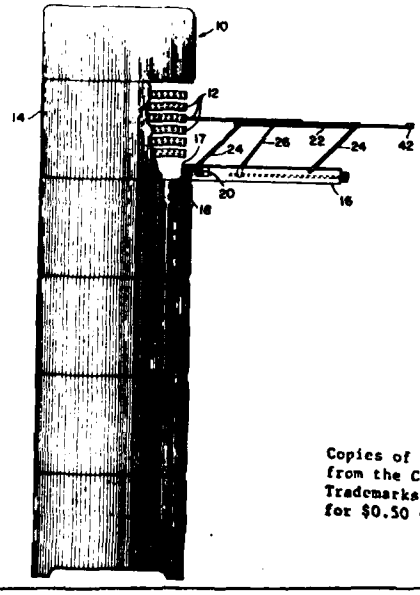
Washington, D.C. 20324



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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Task

[11] 4,258,994

[45] Mar. 31, 1981

[54] HIGH CONTRAST OPTICAL FINGERPRINT RECORDER

[76] Inventor: Harry L. Task, 5513 Snowbank Cir., Dayton, Ohio 45431

[21] Appl. No.: 63,875

[22] Filed: Aug. 3, 1979

[51] Int. Cl.³ G03B 29/00

[52] U.S. Cl. 354/75; 355/71

[58] Field of Search 355/40, 43, 39, 18, 355/71; 354/105, 109, 75

[56] References Cited

U.S. PATENT DOCUMENTS

2,579,961	12/1951	Popma	354/109 X
3,422,446	1/1969	Riggles, Jr.	355/39 X
3,482,498	12/1969	Becker	354/75
3,702,731	11/1972	Wood, Jr.	354/105 X

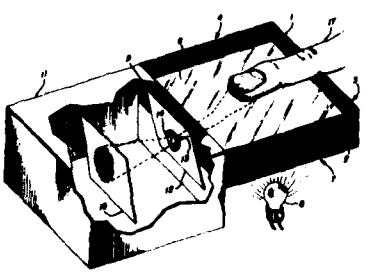
Primary Examiner—Richard A. Wintercorn

Attorney, Agent, or Firm—Donald J. Singer; Casimer K. Salys

[57] ABSTRACT

An apparatus for detecting contact between an object and the surface of a body, by utilizing various indices of refraction so that electromagnetic energy reaches a detector system only when there is optical contact. A body of transmissive material is irradiated with electromagnetic energy. That portion of the energy which enters the body through a first boundary surface is refracted, thereby striking the body surface leading to the detection system at angles of incidence sufficient to cause total reflection at that surface. Similarly, electromagnetic energy which passes through the body, strikes the object on the opposite side, and reenters the body is refracted upon reentry and totally reflected at the surface leading to the detector system. Contact between the object and the contact detecting surface produces diffusive reflection within the body at all points of actual contact. The incidence angle between the diffusive electromagnetic energy at each point of contact and the surface leading to the detection system is sufficiently low to permit passage of electromagnetic energy outward through surface and onto the detection system. Since the contact points and the detection system are geometrically related, contact locations or patterns may be recognized when they are being sought.

8 Claims, 6 Drawing Figures



PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Conway

[11] 4,259,546

[45] Mar. 31, 1981

[54] ELECTRICAL FEEDTHROUGH SYSTEM FOR PRESSURIZED CONTAINERS

[75] Inventor: Harry E. Conway, Baltimore, Md.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 90,385

[22] Filed: Nov. 1, 1979

[51] Int. Cl.³ H01B 17/30

[52] U.S. Cl. ..... 174/153 R; 174/18

[58] Field of Search ..... 174/18, 52 S, 151, 152 R, 174/153 R; 339/94 A, 126 RS

[56] References Cited

FOREIGN PATENT DOCUMENTS

746296	3/1956	United Kingdom	174/151
879855	10/1961	United Kingdom	174/52 S
1015677	1/1966	United Kingdom	174/153 R

Primary Examiner—Laramie E. Askin

Attorney, Agent, or Firm—Donald J. Singer; Willard Matthews, Jr.

[57] ABSTRACT

An electrical feedthrough system for pressurized containers comprising a 'T' shaped flexible member adapted to pass through an opening in a container and an epoxy used as a secondary seal and support. A conductor passes through the 'T' shaped member which maintains a seal around the conductor. Electrical connections are made to terminals at either end of the conductor.

3 Claims, 2 Drawing Figures

Requests for licensing information should be addressed to:
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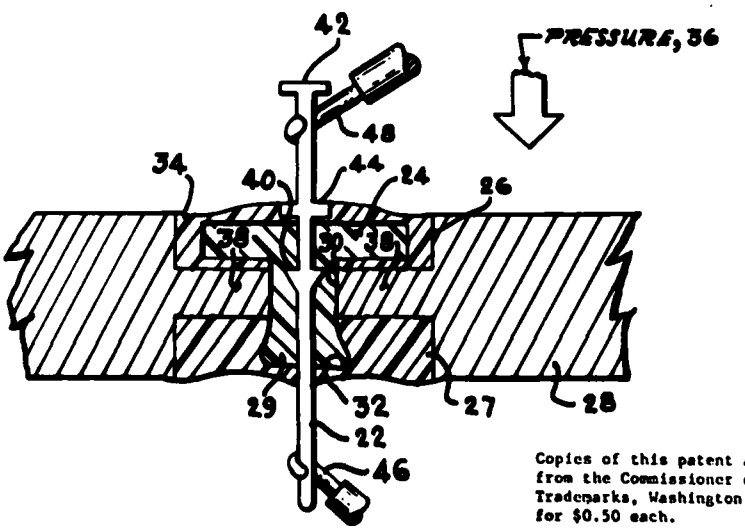

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PATENT ABSTRACT
FROM THE AIR FORCE SYSTEMS COMMAND

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United States Patent [19]

Geary

[11] 4,259,579
[45] Mar. 31, 1981

[54] WAVEGUIDE LINE SPREAD FUNCTION ANALYZING APPARATUS

[75] Inventor: Joseph M. Geary, Edgewood, N. Mex.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl No.: 90,384

[22] Filed: Nov. 1, 1979

[51] Int. Cl.³ G01T 1/20
[52] U.S. Cl. 250/368; 250/367; 250/320
[58] Field of Search ..... 250/460, 486, 368, 367, 250/320, 323, 363 R

[56] References Cited

U.S. PATENT DOCUMENTS

3,207,899	9/1965	Leishman	250/368
3,928,767	12/1975	Röeck	250/323
4,132,654	1/1979	Braun	250/320

Primary Examiner—Alfred E. Smith
Assistant Examiner—Carolyn E. Fields
Attorney, Agent, or Firm—Donald J. Singer; William Stepanishen

[57] ABSTRACT

A waveguide line spread function analyzing apparatus utilizing a scanning optical slab waveguide that is sandwiched between two opposing x-ray fluorescent screens to provide access to the fluorescent light which is trapped between the two screens.

5 Claims, 2 Drawing Figures

Requests for licensing information should be addressed to:
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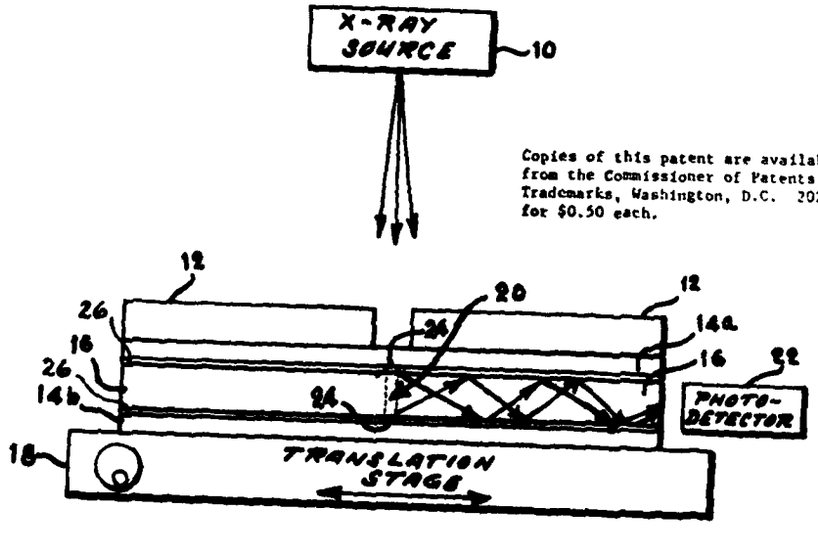

PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Swanson

[11] 4,261,535

[45] Apr. 14, 1981

[54] STREAMLINE AFTERBODY FOR AN EJECTION SEAT

[75] Inventor: Douglas E. Swanson, Seattle, Wash.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 82,353

[22] Filed: Oct. 5, 1979

[51] Int. Cl.³ B64C 7/00

[52] U.S. Cl. ..... 244/130; 244/122 A; 244/141; 102/4; 102/34.1; 296/1 S

[58] Field of Search ..... 244/130, 122 A, 122 AE, 244/141, 140, 2, 5, 49, 87, 3.27; 102/4, 34.1; 296/1 S

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Primary Examiner—Galen L. Barefoot

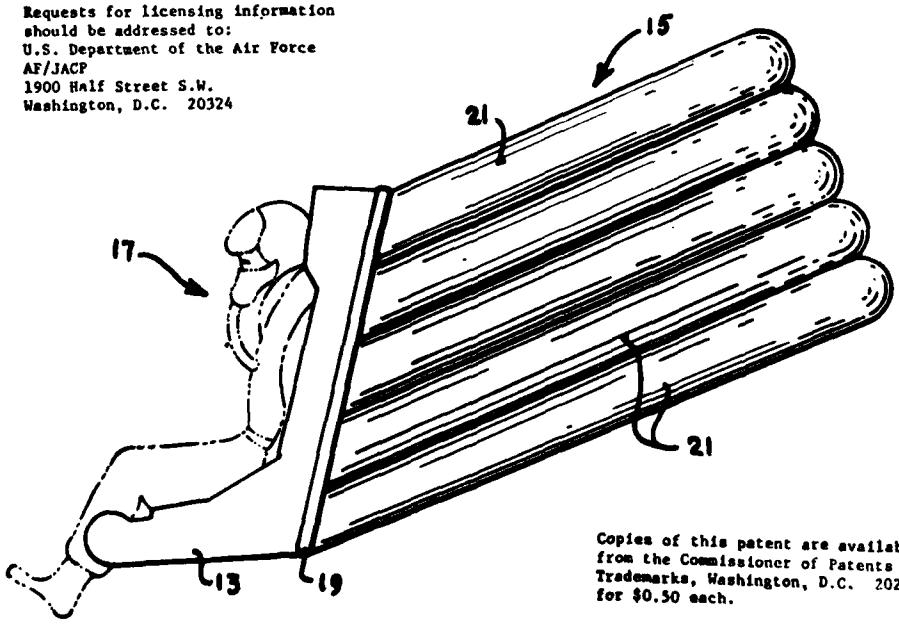
Attorney, Agent, or Firm—Donald J. Singer; Arsen Tashjian

[57] ABSTRACT

The ejection seat on a high performance aircraft is provided with a plurality of inflatable air bags on the back of the seat. The air bags are generally elliptical in cross-section and arranged one above the other in two parallel vertical rows on a supporting pallet attached to the seat back. Suitable gas generators cause the air bags to inflate in sequence top-to-bottom as the seat ejects from the aircraft to produce a rearwardly extending generally streamline afterbody thereby reducing aerodynamic drag and stabilizing the seat with its occupant after emergency ejection.

3 Claims, 7 Drawing Figures

Requests for licensing information should be addressed to:
U.S. Department of the Air Force
AF/JACP
1900 Half Street S.W.
Washington, D.C. 20324



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PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Cory et al.

[11] 4,262,359

[45] Apr. 14, 1981

[54] FIVE V INSERTION UNIT

[75] Inventors: William E. Cory, San Antonio; Allen B. Cunningham, Bellaire, both of Tex.

[73] Assignee: The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

[21] Appl. No.: 827,666

[22] Filed: Jul. 16, 1959

[51] Int. Cl.[2] H04L 9/00

[52] U.S. Cl. 375/2

[58] Field of Search ..... 178/22; 179/1.5, 69 G; 197/4

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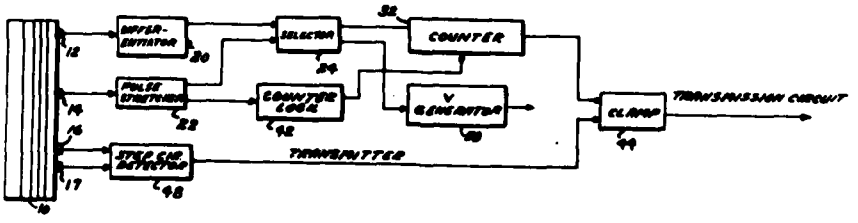
Primary Examiner—Howard A. Birmiel

EXEMPLARY CLAIM

2. For use with a cryptographic teletype transmission system having a relay for transferring teletype characters to an encyphering transmitter, a decyphering receiver and a teletype printer, a security system comprising a generator for producing an auxiliary teletype character, circuit means responsive to the failure of transfer of a valid teletype character to said transmitter to activate said generator to supply an auxiliary character to said transmitter, a clamp circuit responsive to activation of said generator to inhibit transfer of a valid character to said transmitter until said auxiliary character has been completed, a transfer system for transferring the decyphered characters from the receiver to the printer, storage means for storing a plurality of successive teletype characters, a recognition circuit responsive to the presence of said auxiliary teletype character in said storage means for inhibiting printing of said auxiliary teletype character.

5 Claims, 9 Drawing Figures



PATENT ABSTRACT

FROM THE AIR FORCE SYSTEMS COMMAND

PROVIDES INFORMATION ON PATENTS GENERATED BY AIR FORCE SPONSORED PROGRAMS

United States Patent [19]

Reinhardt et al.

[11] **4,263,461**

[45] **Apr. 21, 1981**

[54] **POLYPHENYL ETHER COMPOUNDS**

[75] Inventors: **Bruce A. Reinhardt**, New Carlisle; **Fred E. Arnold**, Centerville, both of Ohio

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force**, Washington, D.C.

[21] Appl. No.: **88,505**

[22] Filed: **Oct. 26, 1979**

[51] **Int. Cl.**[3] **C07C 43/275**; C07C 43/285

[52] U.S. Cl. .... **568/636**; 544/353; 544/354; 252/188.3 R

[58] **Field of Search** 568/636

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,756,982 9/1973 Korshak et al. .... 568/636 X

Primary Examiner—Bernard Helfin

Attorney, Agent, or Firm—Donald J. Singer; William J. O'Brien

[57] **ABSTRACT**

Acetylene-substituted aromatic ethers having very low glass transition temperatures. The compounds are useful as reactive diluents for high Tg, acetylene-terminated phenylquinoxaline oligomers. When mixed with the oligomers, the resulting compositions have a lowered Tg and the necessary flow for melt processing.

3 Claims, No Drawings

Requests for licensing information should be addressed to:
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