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Inventor Richard M. Farnsworth

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1 Attorney Docket No. 78194

2
3 AUTOMATIC MESSAGE FILING SYSTEM

4
5 STATEMENT OF GOVERNMENT INTEREST

6 The invention described herein may be manufactured and
7 used by or for the government of the United States of America
8 for governmental purposes without the payment of any royalties
9 thereon or therefor.

10
11 BACKGROUND OF THE INVENTION

12 (1) Field of the Invention

13 This invention generally relates to an automatic message
14 filing system. More particularly, the invention relates to an
15 automatic message filing system in which message traffic
16 received via a submarine broadcast or the like is processed
17 for display and long term storage.

18 (2) Description of the Prior Art

19 In present submarine communication systems, incoming data
20 is routed from a receiver to a teletype (TTY). As data is
21 received, the TTY prints and stores this data in memory. The
22 TTY's memory is limited and will eventually replace old data
23 with new data received. Therefore, the current system does
24 not support long term message file storage. Instead, files

1 are printed from the TTY and these paper copies are stored in
2 a very limited space.

3 There are various makeshift equipment lineups and
4 modifications currently in the fleet that make this process
5 somewhat automated. There does not appear, however, to be any
6 written standard configuration that documents the equipment,
7 wiring configurations, material required or describe the
8 software functionality to automatically process naval messages
9 in a computer for future use and long term storage. The
10 Automated Message Filing System (AMFS) of the present
11 invention would resolve this long term file storage problem
12 while providing a very efficient method of handling Naval
13 messages.

14 Thus, earlier systems were not available for the intended
15 purpose of the present invention and therefor do not address
16 the difficulties identified above.

17 The following patents, for example, disclose the use of
18 teletype machines and in some instances a computer, but do not
19 disclose a combined system including a teletype machine linked
20 to a computer via a converter so as to enable retrieval,
21 dissemination and/or long term storage of data.

22 U.S. Patent No. 3,166,636 to Rutland et al.

23 U.S. Patent No. 3,200,192 to Auwaerter et al.

24 U.S. Patent No. 3,414,888 to Gehrman et al.

1 U.S. Patent No. 3,416,140 to Cassidy, Jr. et al.

2 U.S. Patent No. 3,567,858 to Ecklin

3 U.S. Patent No. 3,896,381 to Wozencraft

4 U.S. Patent No. 4,330,847 to Kuseski

5 U.S. Patent No. 4, 419,736 to Christensen et al.

6 U.S. Patent No. 4,491,966 to Morecerf et al.

7 U.S. Patent No. 4,520,452 to Loskorn

8 Specifically, Rutland et al. disclose a data composer for
9 a teletype, the device having CRT display and drum storage.

10 No network is disclosed and no indication appears to be made
11 as to whether the storage is long term or short term.

12 Auwaerter et al. disclose a system for redistribution of
13 teletype messages. This is a logic controlled electro-
14 mechanical system, and is not computer based as in the present
15 invention.

16 Gehrmann et al. disclose a group storage for
17 communications messages to be re-transmitted. The reference,
18 however, does not seem to show a general purpose computer.

19 Cassidy, Jr. et al. disclose a magnetic recorder
20 transmitter distributor with temporary storage of teletype
21 messages on a magnetic drum. The device does not show long
22 term storage.

23 Ecklin discloses a computer input from a teleprinter.
24 There is no disclosure directed to communications.

1 Wozencraft discloses a radio-teletype coding system for
2 tactical use. There is no disclosure of disc storage of
3 messages.

4 Kuseski discloses a data communications apparatus with
5 storing and forwarding of text. The device is not specific as
6 to radio teletype.

7 Christensen et al. disclose a teleprinter terminal with
8 plural microprocessors. The device, however, does not appear
9 to describe storing and forwarding of messages.

10 Morecerf et al. disclose a shipboard system with plural
11 transmitters and receivers connected to computer and teletype
12 units. Distribution of messages from a teletype to a computer
13 is not disclosed.

14 Loskorn discloses a line adaptor for data communication
15 and appears to discuss only temporary buffering, not long term
16 storage.

17 It should be understood that the present invention would
18 in fact enhance the functionality of the above patents by
19 networking the teletype device with a computer via a converter
20 thereby providing a simplified and structurally sound system.

21
22 SUMMARY OF THE INVENTION

23 Therefore it is an object of this invention to provide an
24 automatic message filing system.

1 Another object of this invention is to provide an
2 automatic message filing system in which a teletype machine is
3 linked with a computer via a converter.

4 Still another object of this invention is to provide an
5 automatic message filing system in which incoming detected
6 data is displayed and/or stored for further processing
7 options.

8 A still further object of the invention is to provide an
9 automatic message filing system which is simple to implement
10 and easy to use.

11 In accordance with one aspect of this invention, there is
12 provided an automatic message filing system including a
13 teletype machine having an input for receiving data and at
14 least one port member for enabling a bidirectional transfer of
15 the received data. A computer is also provided having at
16 least one port member for enabling a bidirectional transfer of
17 data, a display, and a data storage area. A converter links
18 the at least one port of the teletype machine with the at
19 least one port of the computer, the converter enabling a
20 bidirectional conversion of teletype data with computer data.

21 Accordingly, data received by the teletype machine is
22 converted by the converter into data readable and storable by
23 the computer.

1 BRIEF DESCRIPTION OF THE DRAWINGS

2 The appended claims particularly point out and distinctly
3 claim the subject matter of this invention. The various
4 objects, advantages and novel features of this invention will
5 be more fully apparent from a reading of the following
6 detailed description in conjunction with the accompanying
7 drawings in which like reference numerals refer to like parts,
8 and in which:

9 FIG. 1 is a block diagram of a basic signal flow for an
10 automatic message filing system according to a preferred
11 embodiment of the present invention;

12 FIG. 2 is a block diagram of basic computer functions for
13 the system shown in Figure 1; and

14 FIG. 3 is a hardware wiring diagram for use with the
15 present invention.

16
17 DESCRIPTION OF THE PREFERRED EMBODIMENT

18 In general, the present invention is directed to an
19 automated message filing system in which incoming messages are
20 downloaded off of a teletype machine and input into a
21 computer. A reverse situation is also available whereby the
22 computer is able to supply an approved outgoing message to the
23 teletype machine for dissemination.

24 Advantages of the inventive automated message filing
25 system include the ability to implement a paperless message
26 management system on board a ship or in any comparable

1 situation where incoming messages are intercepted by a
2 teletype machine and outgoing messages are sent by a teletype
3 machine. The method will dramatically increase the efficiency
4 of shipboard and other similar communications. In addition,
5 the method is very inexpensive to implement due to utilization
6 of current shipboard equipment including the teletype and
7 computer.

8 Referring now to FIGS. 1 and 2, the automated message
9 filing system is best illustrated by the use of block diagrams
10 as shown and includes a teletype machine 10 and a computer 12
11 with a monitor 14 as basic components of the system. In order
12 to convert data received by the teletype machine 10 into
13 compatible data for the computer 12, a converter 16 is
14 disposed to receive data from the teletype machine 10 and
15 convert the data prior to input into the computer 12.

16 By way of example, the computer 12 is shown as an IBM
17 compatible computer which utilizes a Windows '95 or Windows
18 3.1 operating system, as manufactured by Microsoft
19 Corporation. The converter 16 is shown as an RS232/MIL 188C
20 converter. The selection of the converter is intended to be
21 compatible to the teletype machine 10 being used, in this
22 instance, the teletype machine 10 processes a MIL-STD-188C
23 signal, thus requiring selection of a compatible converter.

1 In the development of computer software, hardware, teletype
2 machinery, and the like, it should be understood that
3 variations and modifications may be made to the equipment
4 illustrated herein and those advancements in the industry are
5 intended to be included within the scope of this invention.

6 The basic signal flow for the automated message filing
7 system is shown in detail in FIG. 1. In particular, incoming
8 data, represented by solid lines, is received by the teletype
9 machine 10. The teletype machine 10 includes a message
10 forward (MSG FWD) function which automatically routes data to
11 the converter 16. At the converter 16, the MIL-188C signal is
12 converted to a RS232C signal and then routed to a port on the
13 rear of the computer 12. The particular connections will be
14 described in further detail in association with FIG. 3.

15 Outgoing data, represented by dotted lines, is sent from
16 computer 12 to converter 16 where the RS232C signal is
17 converted to a MIL-188C signal. The signal is then routed to
18 teletype machine 10 for transmission. At the time of
19 receiving incoming data or as data is retrieved from computer
20 12 for transmission, the computer 12 displays the data on
21 monitor 14.

22 Referring now in detail to the flow diagram of FIG. 2,
23 the sequence of events is best described as a series of steps
24 shown in FIG. 2, though the diagram is not of a conventional
25 flow chart model. Any data in the form of files can be
26 retrieved at step 100 for printing, copying, transmission,

1 deletion, or other file management functions. Data being
2 processed for transmission is passed to the teletype at step
3 110 and data may also be stored for later use or long term
4 storage at step 120.

5 A primary purpose, of course is the automated processing
6 of an incoming message. In that instance, the data is
7 received into the teletype machine 10 at step 110. The
8 software of the computer 12 detects incoming data at step 130.
9 The data received by the computer 12 at step 130 may either be
10 directly displayed on the computer monitor 14 at step 140,
11 scanned for pertinent message data at step 150 or both
12 displayed and scanned. Once the messages have been displayed
13 and/or scanned, the incoming data is sorted into appropriate
14 files at step 160 and forwarded to step 100 for performance of
15 file management functions such as storage at step 120. As
16 shown in the diagram, the incoming message or data can also be
17 immediately stored as data files at step 110 without
18 processing the same through the software at steps 130 through
19 160.

20 In addition to the receive function, the automated
21 message filing system is capable of transmitting data,
22 represented by the dotted lines in FIG. 1. When an outgoing
23 message has been completed, a radio operator can use the file
24 management function of the software of the computer 12 at step
25 100 to extract an ASCII formatted message from a disk, and
26 route the signal to the desired teletype machine 10 via the

1 converter 16. When the message is in the teletype machine 10,
2 the message can then be routed by conventional means to a
3 transmitter (not shown) for transmission.

4 Referring now to the hardware wiring diagram of FIG. 3,
5 the teletype machine 10 processes an MIL-STD-188C signal as
6 explained. Teletype 10 has DB25 female connector 18 which, in
7 the prior art, would be connected directly to DB25 male I/O
8 connector 20. Connector 18 supports two data ports. Port 1
9 allows for normal I/O connection and Port 2 allows for message
10 forwarding, e.g., forwarding messages to or from another
11 teletype. To implement the current invention, Y-cable 22 is
12 inserted between connectors 18 and 20. Y-cable 22 has mating
13 connectors 22a and 22b which mate with connectors 18 and 20,
14 respectively. Leg 22c of Y-cable 22 connects Port 1 to I/O
15 connector 20. Leg 22d of Y-cable 22 connects Port 2 to
16 converter 16 first I/O connector 16a via third mating
17 connector 22e. Computer 12 connects to second I/O connector
18 16b of converter 16.

19 The teletype machine 10 processes incoming data from a
20 receiver via TTY Port 1. Using the TTY's message forward (MSG
21 FWD) function, the incoming data is sent out TTY Port 2, and
22 then routed through the converter 16 to change the MIL-188C
23 signal to RS232C. The computer 12 receives the RS232C signal
24 where it is processed by the software.

25 The software monitors each character as it is received by
26 the computer 12 for specific information pertinent to naval

1 messages, i.e., Start of Message (SOM), End of Message (EOM)
2 and Classification. The computer will then file all messages
3 classified as SECRET and below to a hard disk. If a TOP
4 SECRET message is detected, the software user is prompted to
5 delete it or save it to a floppy diskette.

6 The messages that are saved can be retrieved for
7 printing, deleting, viewing, electronic copying to diskette,
8 and other file manipulation functions well known in the
9 computer art. If there is a network available, the messages
10 can be placed on a network for paperless dissemination of the
11 message files.

12 There is also the capability to electronically transfer
13 ASCII formatted outgoing messages from the computer 12 to
14 teletype machine 10. Messages that are to be transmitted from
15 the ship can be drafted on a computer, routed for editing on a
16 diskette or LAN, transferred from the computer 12 to the
17 teletype machine 10 via the converter 16 and transmitted.
18 This capability is a very efficient way of preparing messages
19 for transmission and dissemination since word processing
20 software, standard with typical computers, can be used to
21 draft the messages.

22 Accordingly, as the incoming data (represented by solid
23 lines in FIG. 1) is received by the teletype machine 10, using
24 the teletype machine 10's message forward function, the data
25 is automatically routed to the converter 16 where the MIL-188C
26 signal is converted to RS232C and then routed to the computer

1 12. At this point the software detects the incoming data and
2 displays it on the computer monitor. When the end of message
3 (EOM) is detected, the software automatically files this
4 message to the computers hard disk. In addition to the
5 receive function, the automated message filing system is also
6 capable of transmitting data (represented by dotted lines as
7 shown in FIG. 1). When an outgoing message has been approved
8 for release by the Commanding Officer, the radio operator can
9 use the software to extract the ASCII formatted message from
10 disk, route the signal to the desired TTY via the RS232C, to
11 the MIL-88C converter. When the message is in the TTY, the
12 message can then be routed by conventional means to a
13 transmitter for transmission.

14 An advantage of the invention is the ability to simplify
15 dissemination and storage of data incoming over a teletype
16 machine, in whatever environment the teletype machine is used.

17 By the present invention, automated message retrieval in
18 a paperless environment with extended storage capabilities is
19 conducted in a manner not previously conceived in the art, and
20 as a result the system has a wide range of uses and
21 implementation potential. In particular, it should be
22 appreciated that the invention need not be limited to
23 shipboard use, but may be used in virtually any environment
24 where there is a teletype machine, converter, and computer
25 available for linking as described. The disclosure directed
26 to the Navy and shipboard use is by way of example only.

1 This invention has been disclosed in terms of certain
2 embodiments. It will be apparent that many modifications can
3 be made to the disclosed system and apparatus without
4 departing from the invention. Therefore, it is the intent
5 to cover all such variations and
6 modifications as come within the true spirit and scope of this
7 invention.

1 Attorney Docket No. 78194

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3 AUTOMATIC MESSAGE FILING SYSTEM

4

5 ABSTRACT OF THE DISCLOSURE

6 An automated message filing system includes a teletype
7 machine having an input for receiving data and at least one
8 port member for enabling a bidirectional transfer of the
9 received data. A computer is also provided having at least
10 one port member for enabling a bidirectional transfer of data,
11 a display, and a data storage area. A converter links the at
12 least one port of the teletype machine with the at least one
13 port of the computer, the converter enabling conversion of
14 teletype data to computer data. Accordingly, data received by
15 the teletype machine is converted by the converter into data
16 readable and storable by the computer.

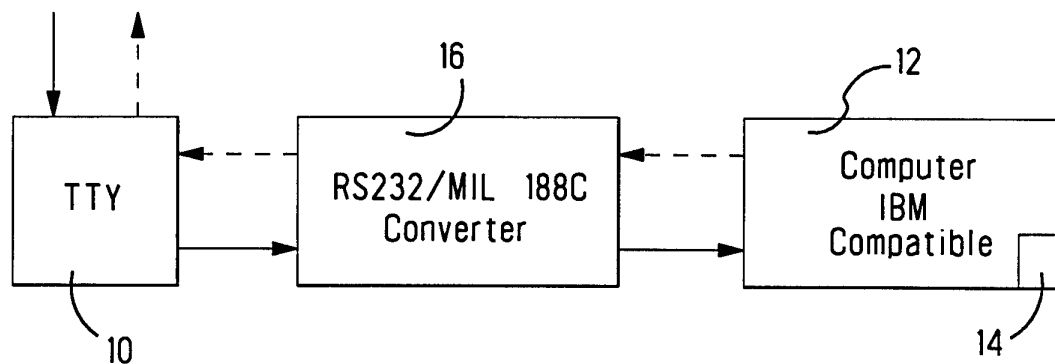


Fig. 1

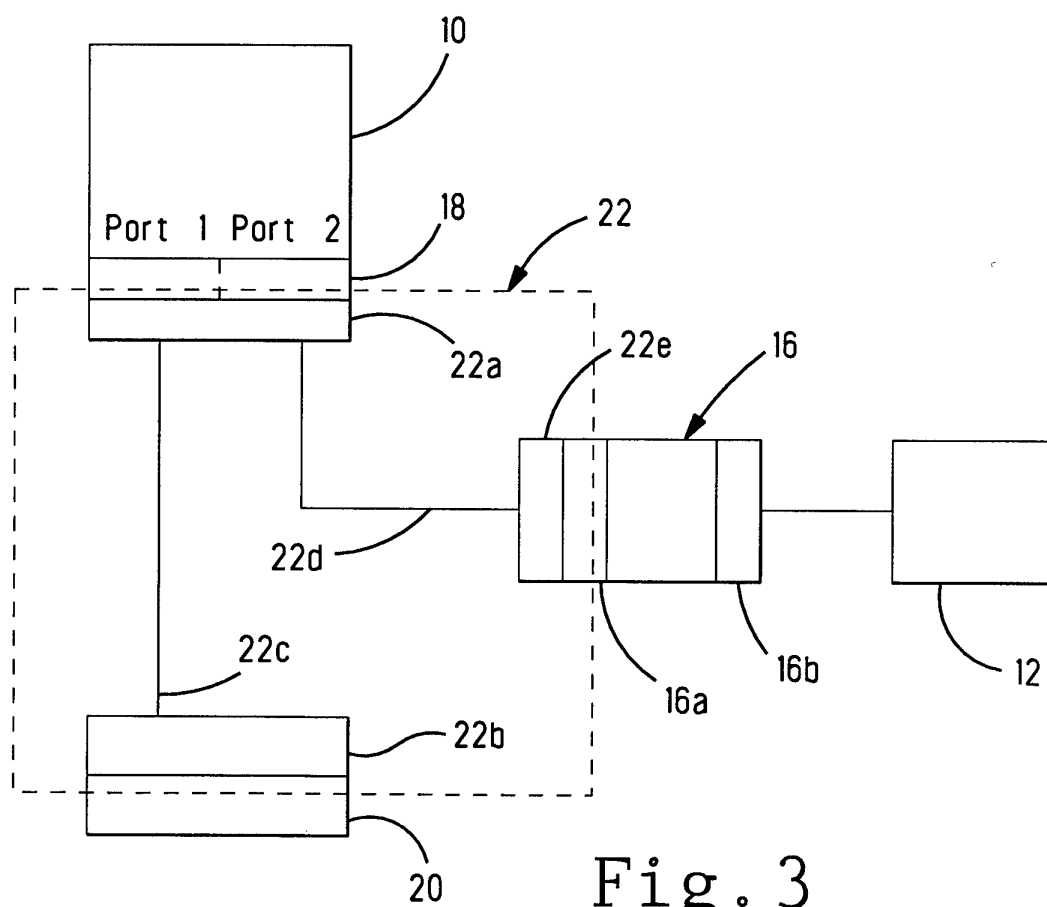


Fig. 3

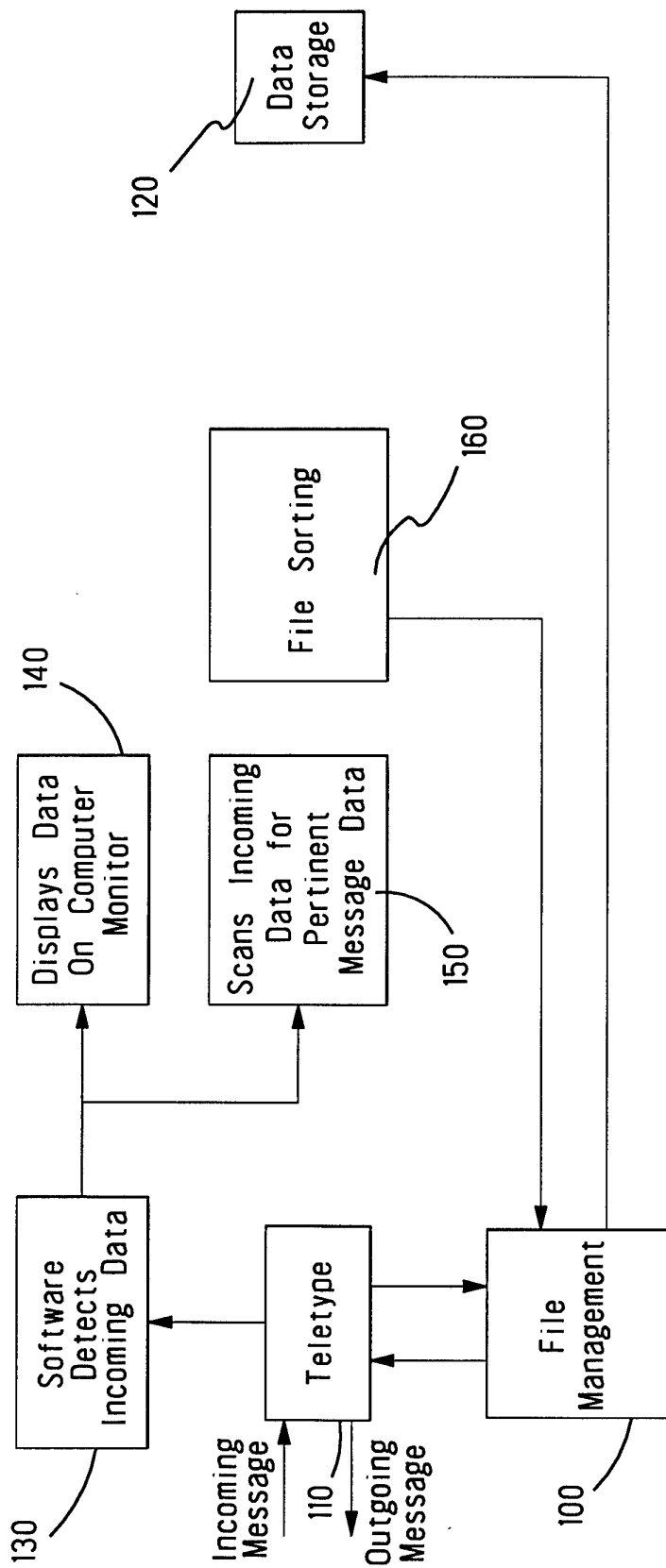


Fig. 2