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TECHNICAL REPORT No. 141-45

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GERMAN FIFTY-TWO CENTIMETER "MAMMOTH PRESS" FOR
THE EXTRUSION OF ROCKET PROPELLANT

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File: A9-16(3)(LO/NS)

Serial: 00198

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From: Chief, U. S. Naval Technical Mission in Europe.
To : Chief of Naval Operations (OP-16-PT).
Subject: U. S. Naval Technical Mission in Europe Technical
Report No. 141-45, German Fifty-two Centimeter
"Mamouth Press" for the Extrusion of Rocket Pro-
pellant - Forwarding of.

Enclosure: (A)(HW) Copies of subject report.

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Harry D. Hoffman
HARRY D. HOFFMAN
Captain, USN
Acting.

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TECHNICAL REPORT No. 141-45

GERMAN FIFTY-TWO CENTIMETER "MAMOUTH PRESS" FOR
THE EXTRUSION OF ROCKET PROPELLANT

SUMMARY

This report contains information on a rocket solid propellant extrusion press reported to be the largest and only horizontal press in Germany. The press cylinder is approximately twenty inches in internal diameter and holds a four hundred forty pound charge of powder.

July 1945

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GERMAN FIFTY-TWO CENTIMETER "MAMOUTH PRESS" FOR
THE EXTRUSION OF ROCKET PROPELLANT

1. Introduction.

(a) The extrusion of rocket solid propellant in Germany has been accomplished principally by vertical presses with cylinders about nine (9) inches in internal diameter and capable of holding a powder charge of about sixty-five (65) pounds. These presses were generally installed in groups of four (4) to a large concrete house. Each press was separate from the others by concrete walls on three (3) sides so that the blast from an explosion could be directed in the chosen direction. These presses were loaded with carpet rolls of propellant and were evacuated to a pressure of about ten (10) millimeters of mercury. Extrusion was carried out at seventy (70) degrees to eighty (80) degrees centigrade.

(b) The presses so far mentioned were satisfactory for propellant for fifteen (15) and twenty-one (21) centimeter rockets but in order to increase the size of rockets driven by solid propellant it was felt necessary to increase the size of grains of rocket propellant and for this purpose a vertical press forty-one (41) centimeters in internal diameter with a two hundred eleven (211) pound charge was designed and put into use. However, the largest propellant extrusion press in Germany has been said to be the "Mamouth Press" at the Dynamit A.G. factory in Duneberg and is the subject of this report.

2. Source of Information.

L54 The information presented was obtained by the writer from questioning Mr. Meyer, director of the Dynamit Aktiengesellschaft factory at Duneberg, and his assistant Dr. Leunig, who supplied plans of the press. The press was inspected and found to be in good condition. Director Meyer stated that the press had functioned quite satisfactorily and for an unknown reason gave no trouble at all with air bubbles in the propellant extruded.

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3. Description of Press and Method of Operation.

(a) The dimensions of the "Mamouth Press" in millimeters are shown in the attached drawings, 1 and 2. A carpet roll of powder about fifty-one (51) centimeters in diameter and weighing about four hundred forty (440) pounds may be placed in the press. Solids grains twelve and one-half (12.5) inches in diameter and thirteen and one-tenth (13.1) feet long were extruded by this press for use in certain large rockets under development. The press is raised to seventy (70) to eighty (80) degrees centigrade by the circulation of hot water, and the press chamber is evacuated through two (2) exits in the piston collar shown in drawing 2. The press has three (3) oil pressure hydraulic systems: one raises the powder charge opposite the cylinder, one raises the press piston vertically and one drives the piston horizontally.

(b) The press was housed in a concrete building, Figure 1, containing a standard pair of rolls, a pair of rolls for preparing a carpet roll, a remote control room, and a continuous belt for carrying the grain extruded from the press,

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Arrangement of "Mamuthpresso" House
(not to scale)

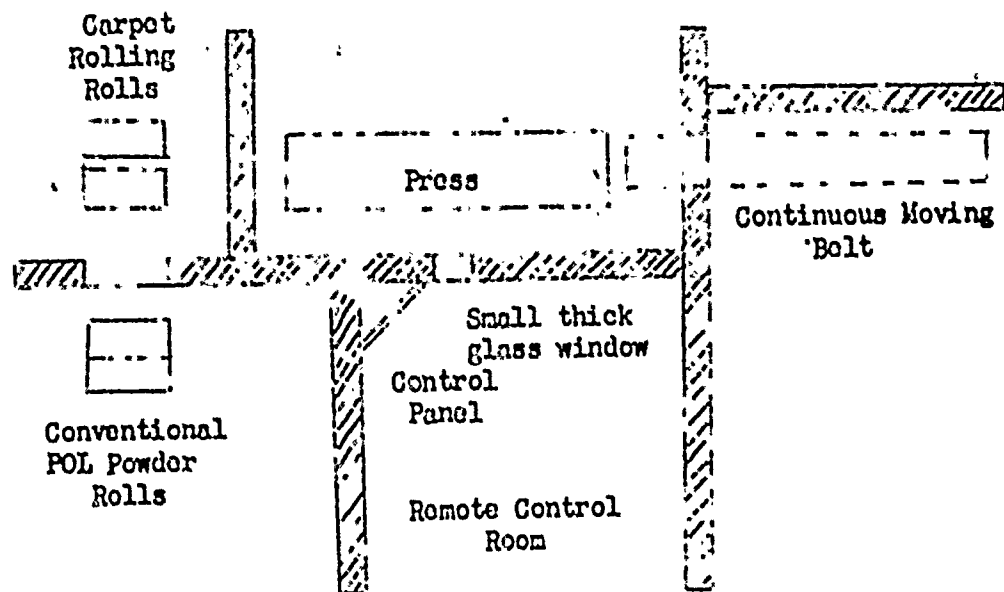


Figure 1

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3. Description of Press and Method of Operation (Cont'd.)

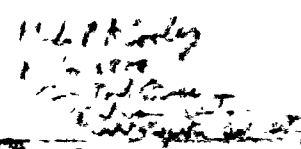
(c) Sheets of propellant brought to the "Mamouth Press" house were passed through the rolls and through an opening in the concrete partition to the carpet rolling rolls. As the continuous sheet of propellant came through the partition it was wound on a brass axle about eight (8) centimeters in diameter. When the desired diameter of roll was obtained the rolling was stopped and the brass axle was replaced by a solid cylinder of propellant.

(d) The carpet roll was then trucked by hand to the loading platform of the press. Workmen then left the press room and the remote control operator raised the charge to a position below the elevated piston and opposite the empty cylinder. A hydraulically operated arm then pushed the charge into the cylinder and the piston was lowered. The piston was then made to seal the cylinder which was evacuated to a pressure of about ten (10) millimeters of mercury. Finally the piston was forced through the cylinder and the extruded propellant was pushed onto a continuous belt moving a little faster than the propellant was being extruded. A knife for cutting the extrusion product was automatically operated. A special handling tool which supported the grain throughout its length was used to transport the thirteen (13) foot grains from the continuous belt.

(e) It was stated that this press could use the output of twelve (12) rolls whereas a normal size press could use only the output of two (2) rolls.

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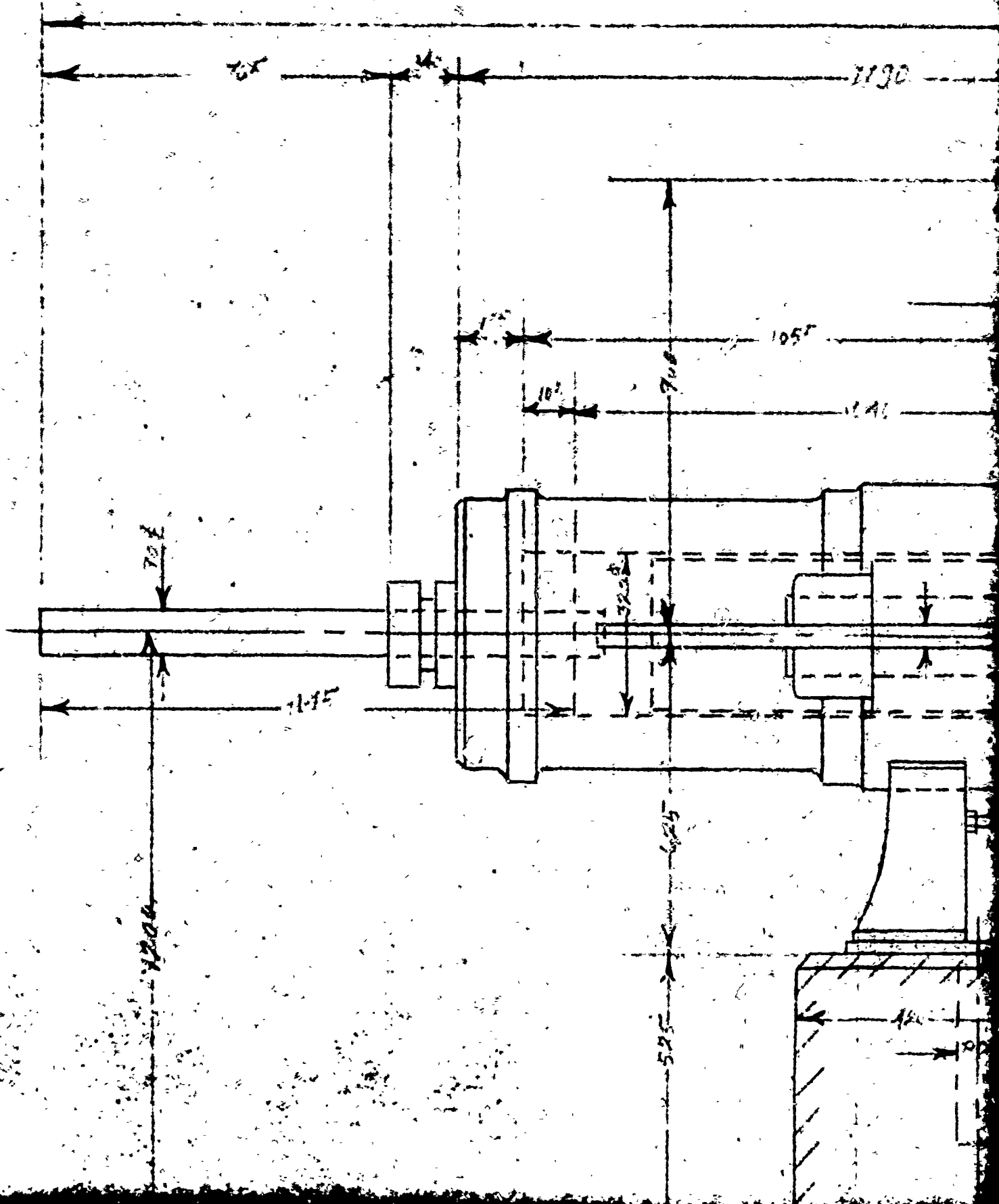
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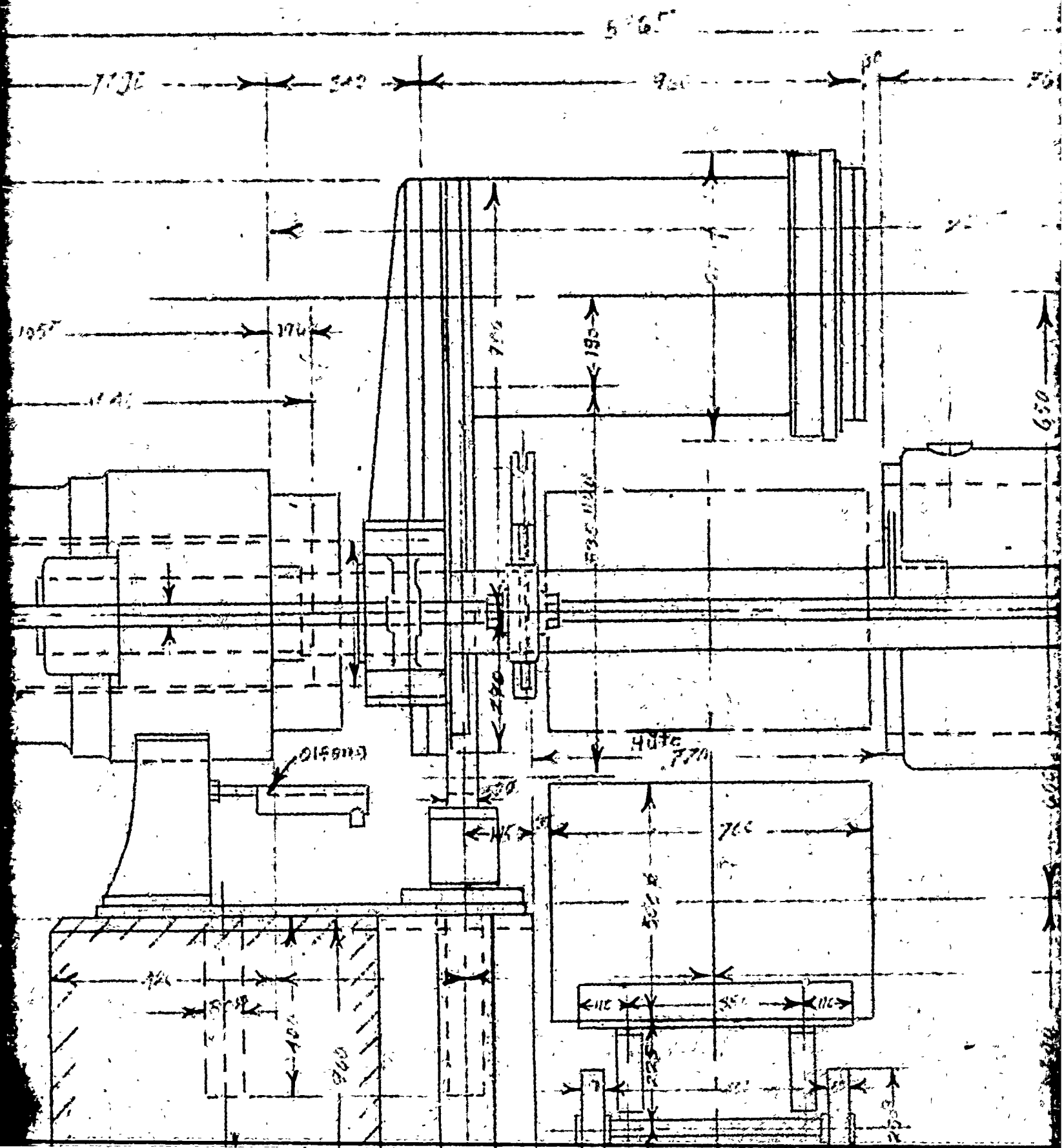
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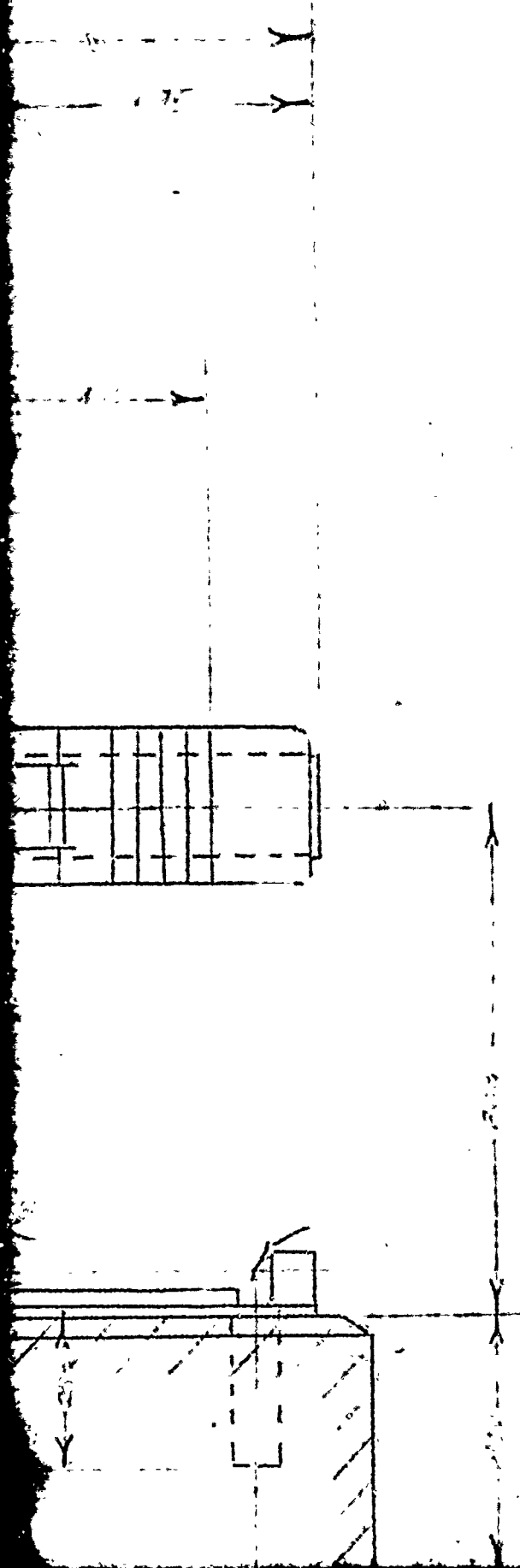


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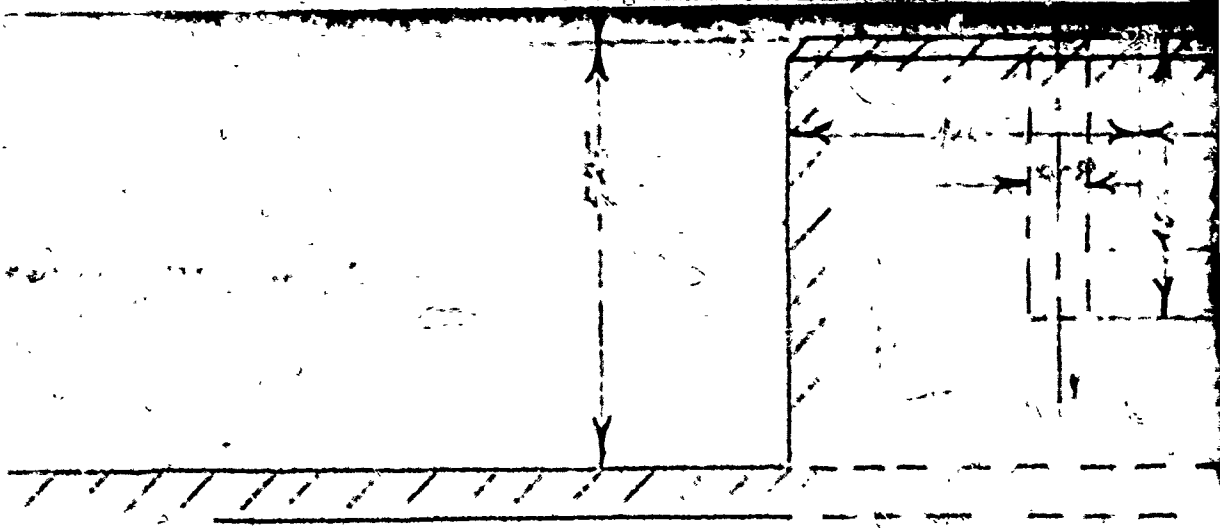


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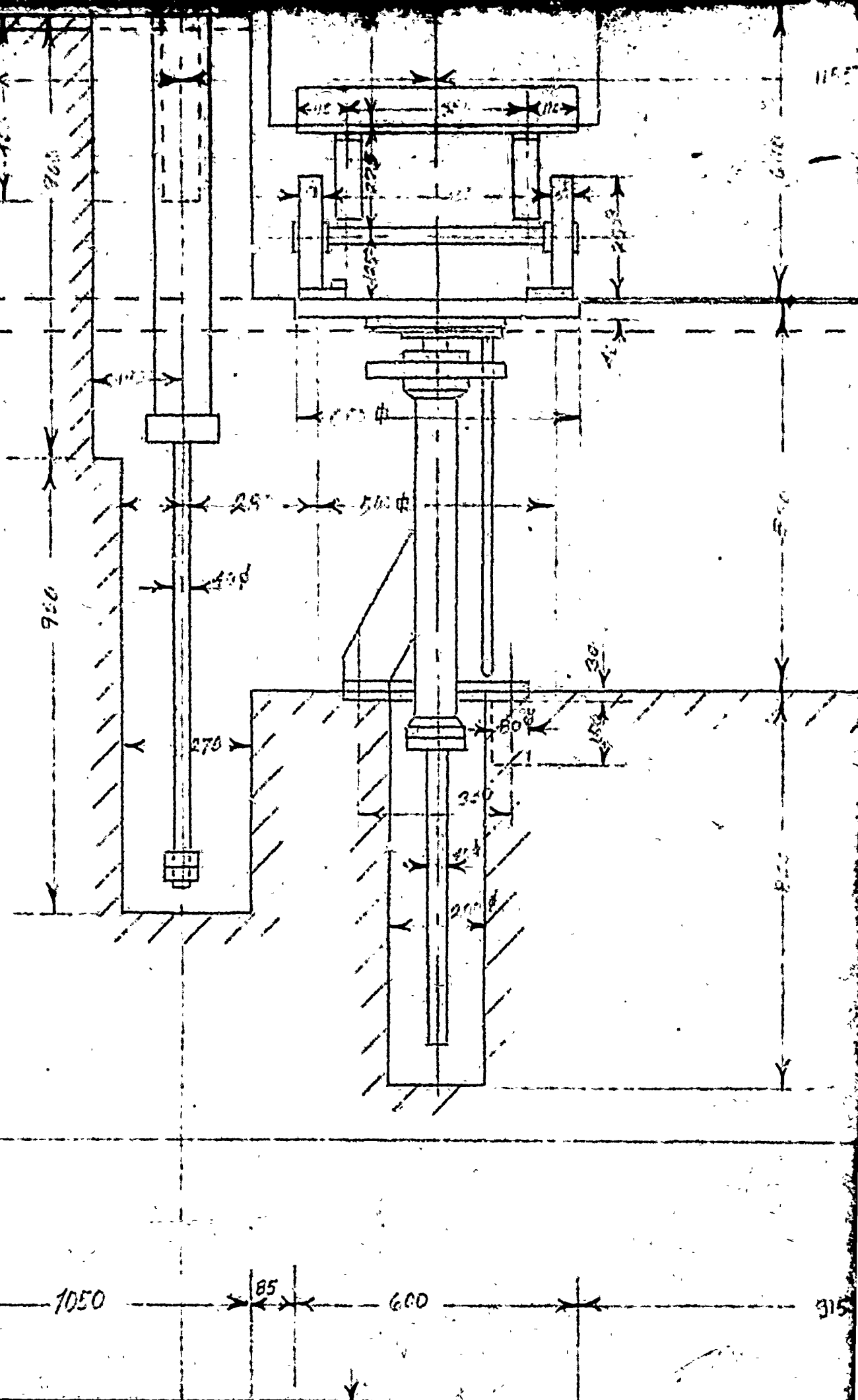


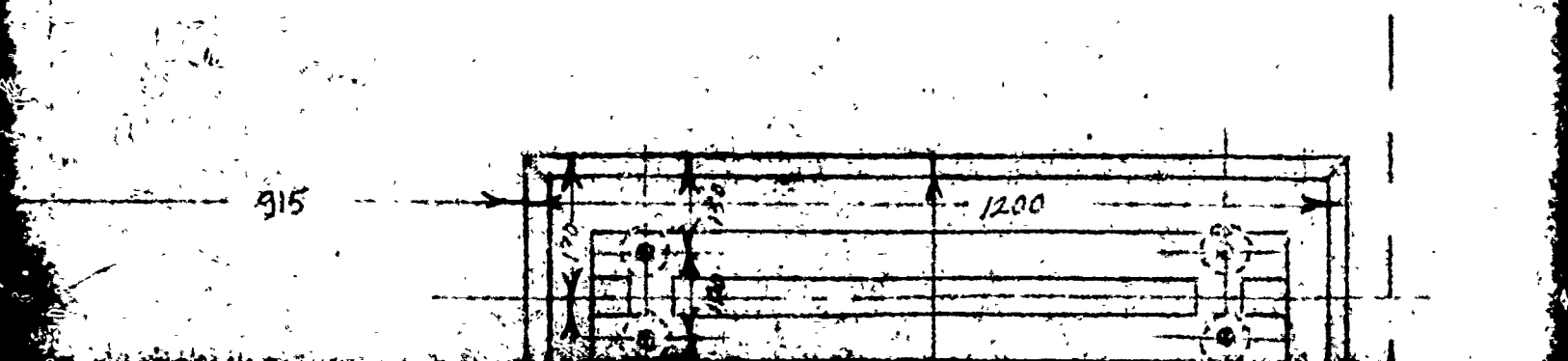
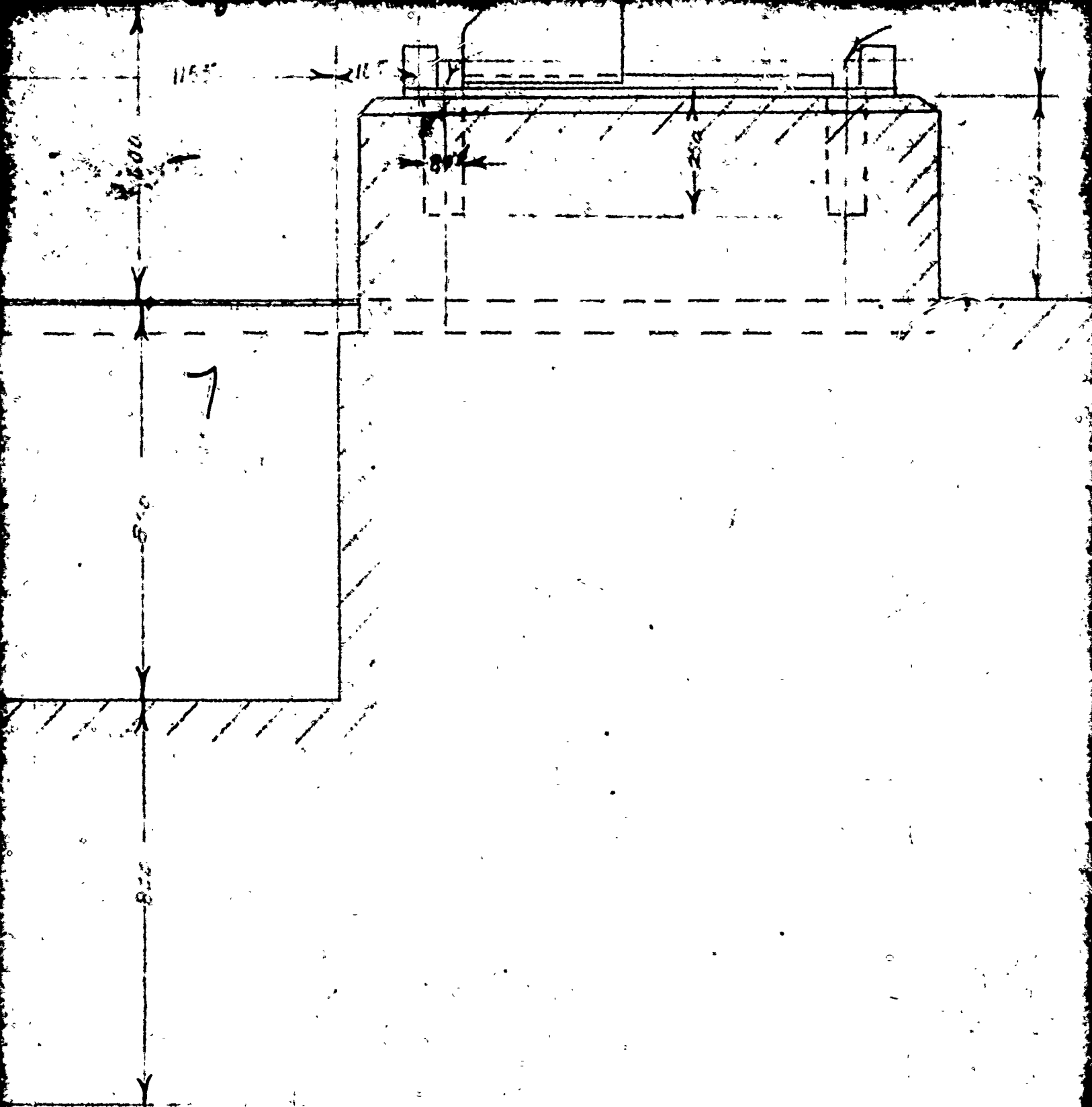
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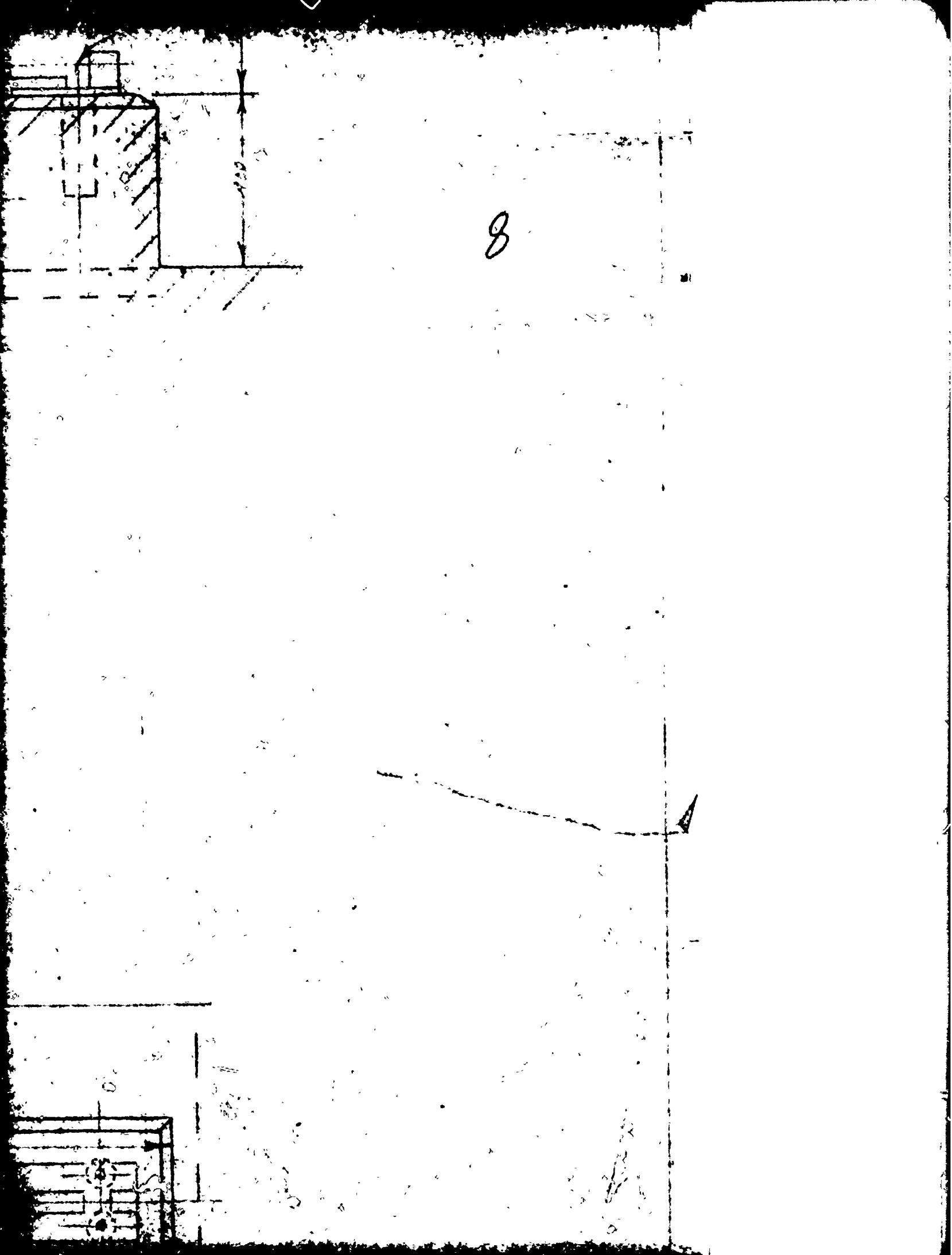


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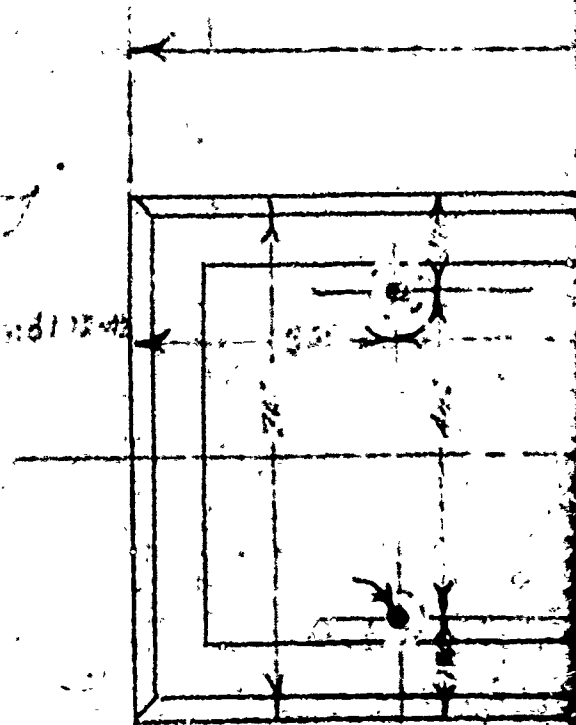
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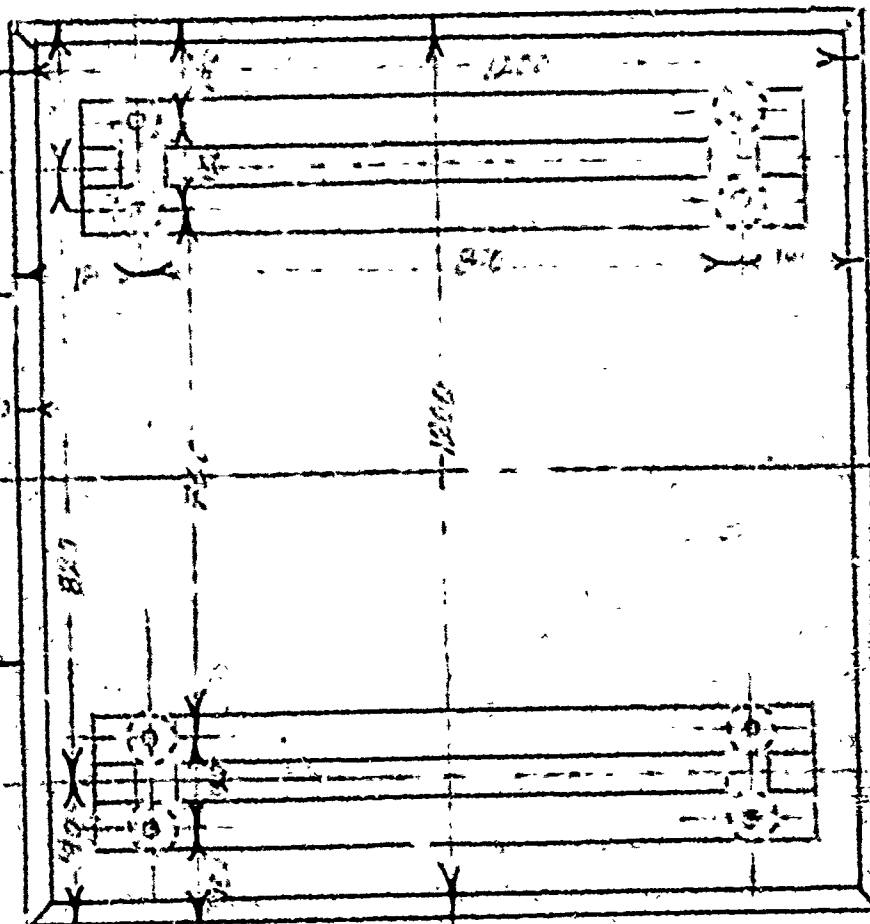
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ATI No:

US Classification:

OA No:

TITLE:

German Fifth- and Sixth-Grade Arithmetic for the

Extension of Robert H. Gage

AUTHOR(S):

Galley, R. A. On

OA:

Combined Intelligence Collection

Foreign Title:

Previously cataloged under No:

RO-35753 E/0103/XXI-82

Translation No:

Subject Division:

Section: