

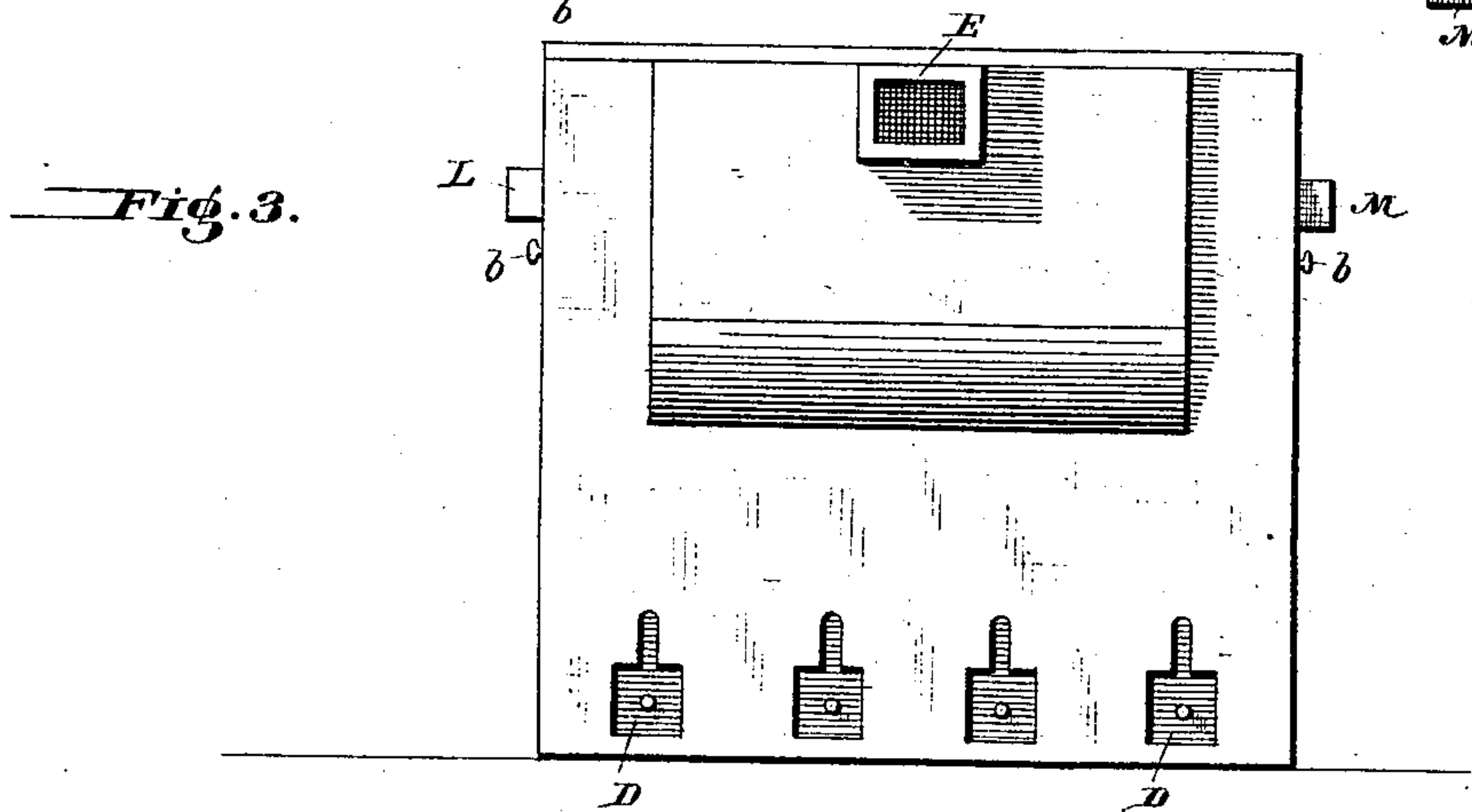
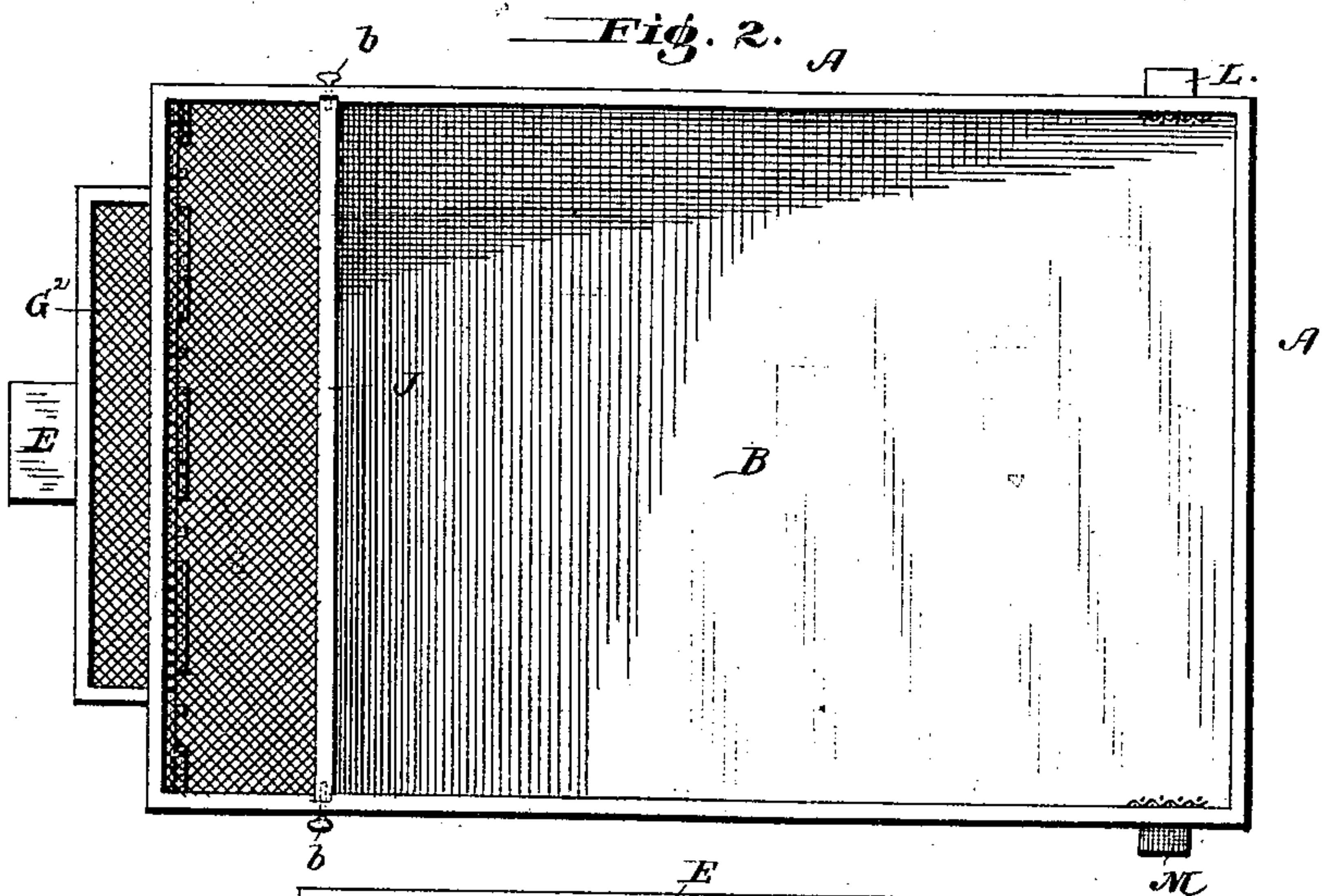
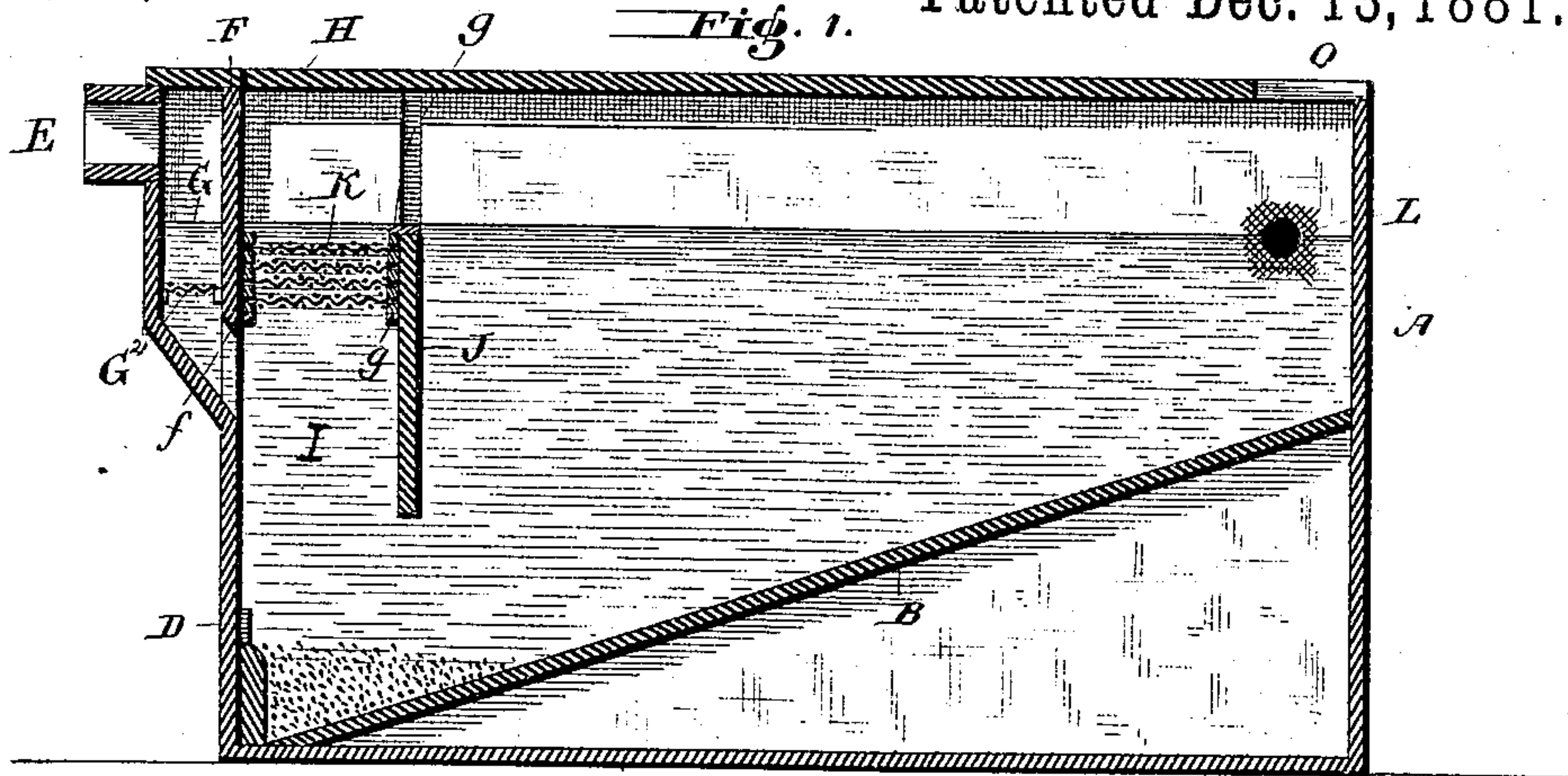
(No Model.)

T. N. DAVEY.

CONDENSER FOR METALLURGICAL FURNACES.

No. 250,716.

Patented Dec. 13, 1881.



Witnesses:

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UNITED STATES PATENT OFFICE.

THOMAS N. DAVEY, OF CARTHAGE, MISSOURI.

CONDENSER FOR METALLURGICAL FURNACES.

SPECIFICATION forming part of Letters Patent No. 250,716, dated December 13, 1881.

Application filed May 27, 1881. (No model.)

To all whom it may concern:

Be it known that I, THOMAS N. DAVEY, a citizen of the United States, residing at Carthage, in the county of Jasper and State of Missouri, have invented certain new and useful Improvements in Condensers for Metallurgical Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

The present invention has reference to an apparatus for condensing the fumes of metallurgical furnaces, which would otherwise be lost and disseminated in the atmosphere, to the detriment of health and the growth of vegetation.

Apparatuses for carrying out a like result have heretofore been proposed, the fumes in such instances being conducted through a water bath for precipitating volatilized metals contained in the same, and condensing or neutralizing the deleterious gases.

The object of the present invention is to furnish a simple, cheap, and effective apparatus possessing decided advantages over all other devices of an analogous nature heretofore known; and it consists in the construction and combination of parts, which will be hereinafter more fully described, and then set forth in the claims.

In the drawings, Figure 1 is a longitudinal sectional view of a condensing apparatus embodying my improvements. Fig. 2 is a plan or top view thereof, the cover being removed. Fig. 3 is an end view.

The letter A designates a casing or box, which constitutes a water-tank and condensing-chamber, and is provided with an inclined or sloping bottom, B. This bottom extends the entire length of the water-chamber, and at its lower end are located a series of gates, D, which are used for the purpose of drawing off the precipitated metals or sedimentary matters collected at the bottom of the condensing-chamber. The fumes passing from a lead, silver, or other smelting furnace enter the condensing apparatus through a pipe, E, located

at the upper end of an inlet chamber, G. This inlet-chamber is formed at the end of the main or condensing chamber by means of a board, F, depending from the cover H of the casing or box, or by extending the end wall of the apparatus the entire height thereof and constructing the chamber of a short outer wall and sloping bottom, which are both attached to the main end wall, as is shown in the drawings. The chamber G has a perforated bottom or diaphragm, G², and communicates thereat with a compartment or trunk, I, formed in the main chamber by means of a transverse board or partition, J, which is adjustably secured to the side walls of the main chamber and carries several superposed screens or foraminous plates, K. The board J is fitted in grooves made in the side walls of the apparatus, and it has a vertical row of holes, which receive locking-pins b, passed through said side walls, as is shown in Figs. 2 and 3. An outlet-opening, L, in the side wall of the apparatus permits the outflow of the water and maintains the proper level of water in the chamber, and an inlet water-pipe, M, is provided at any suitable point.

The operation of the apparatus is as follows: The fumes from a smelting or metallurgical furnace are forced into the inlet or distributing chamber by means of a blower or fan, and as said chamber communicates with the main water-chamber the water-level in the inlet-chamber is above the screen-bottom thereof. In this manner the fumes are exposed to a large water-surface and caused to enter the same before passing through the perforated bottom or first screen-plate. The function of the latter is to break or sift up the otherwise large globules of air and fumes before the entrance thereof into the screen-chamber. The submerged screens or submerged plates in this chamber cause the fumes to be thoroughly disseminated and brought into complete contact with the water in the tank, which will eliminate and condense the volatilized metals or other substances capable of being condensed or precipitated. The inodorous or purified gases or smoke pass out through an opening, O, at the rear of the apparatus. The water containing the particles of metal flows through the screen-chamber over the partition-plate to the back of the tank, and thence downward to the front, where

it deposits the sediment, consisting principally of metal particles. The pieces of charcoal or other fuel float on the top of the water, and are drawn or raked off from time to time. The
5 sediment or precipitated matter is drawn off, when desired, by raising the gates and allowing it to run into settling-tanks. In view of the strong tendency of the hot fumes to rise and force themselves through the nearest open-
10 ings, it follows that they are properly distributed over the entire surface of the under sides of the screens.

The partition-wall supporting one side of the screens is made vertically adjustable, as
15 described, so that the screens may be either horizontal or inclined at any desired angle. The screens are held between cleats or strips, *f* *g* on the end wall and adjustable board, as shown in Fig. 1.

20 I am aware that a condenser for smelting-furnaces has been provided with a sloping bottom for conducting the precipitated metals to a discharge-opening at the lower end thereof. I am also aware of the existence of a fume-
25 condenser having sieve-plates for retarding the passage of the fumes through the same. I disclaim these devices and confine myself to the particular construction and combination of

parts, whereby I attain better results than with any of the apparatuses heretofore known. 30

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a fume-condenser for metallurgical furnaces, the combination of a water-tank or main
35 condensing-chamber having a series of screens or foraminous plates and water inlet and outlet openings, and the inlet or distributing chamber having a perforated plate and bottom openings communicating with the main
40 chamber below the screen-plates thereof, as and for the purpose set forth.

2. The combination of the adjustable frame or transverse partition-board and the super-
45 posed screens carried thereby, with the water-tank or main chamber having a locking device for said frame, and the inlet or distributing chamber communicating with the main cham-
ber, as and for the purpose set forth.

In testimony whereof I affix my signature 50 in presence of two witnesses.

THOMAS N. DAVEY.

Witnesses:

PETER E. BLOW,
R. F. BULER.