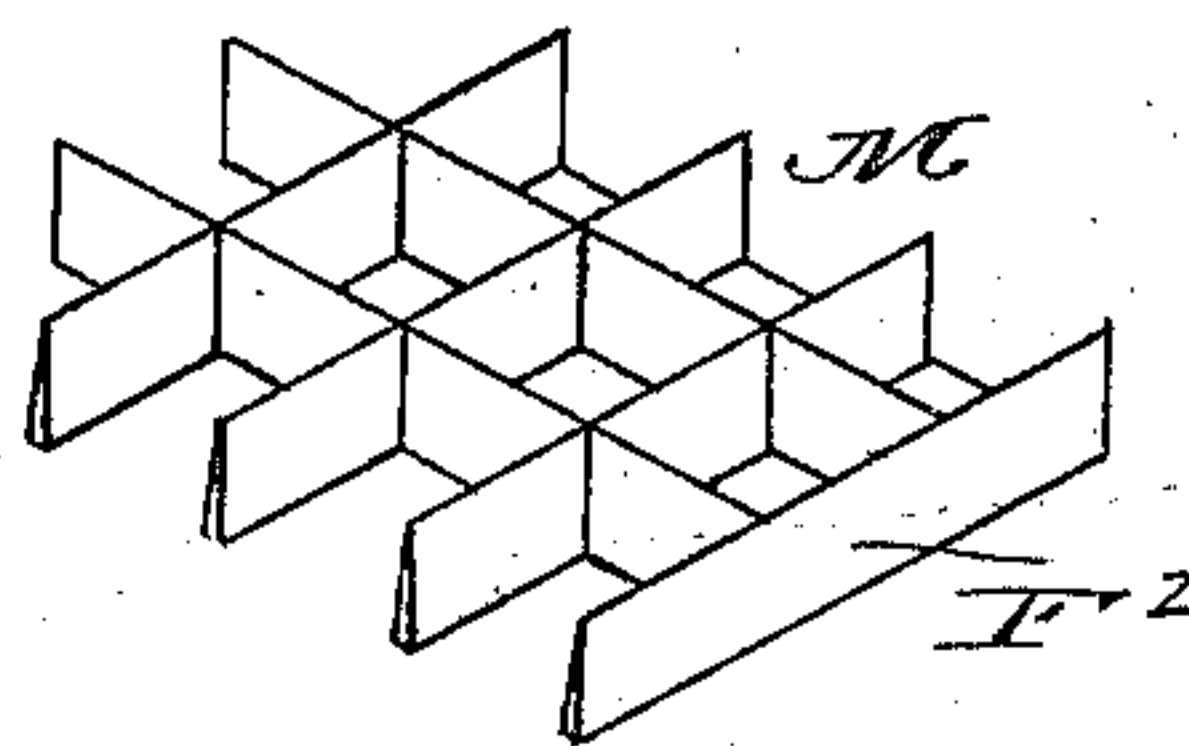
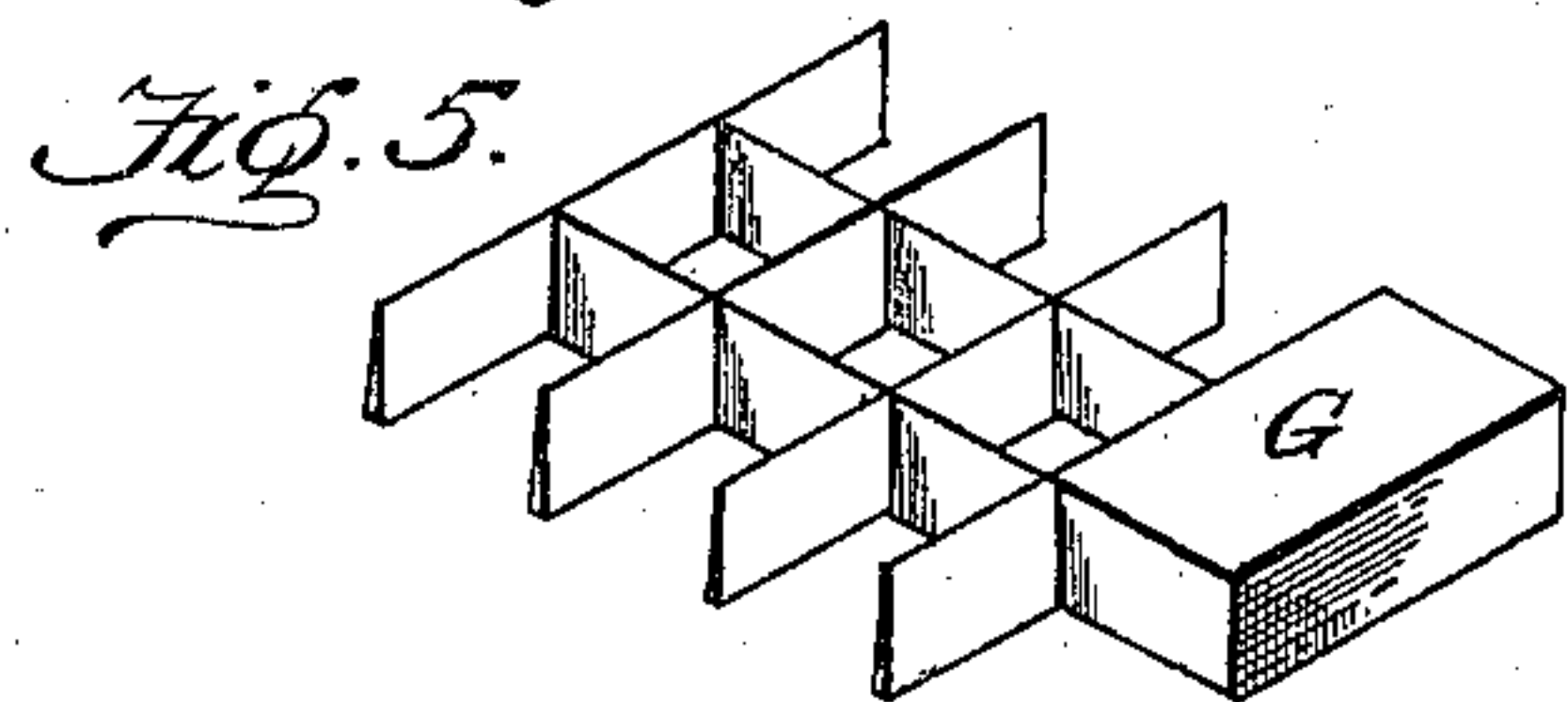
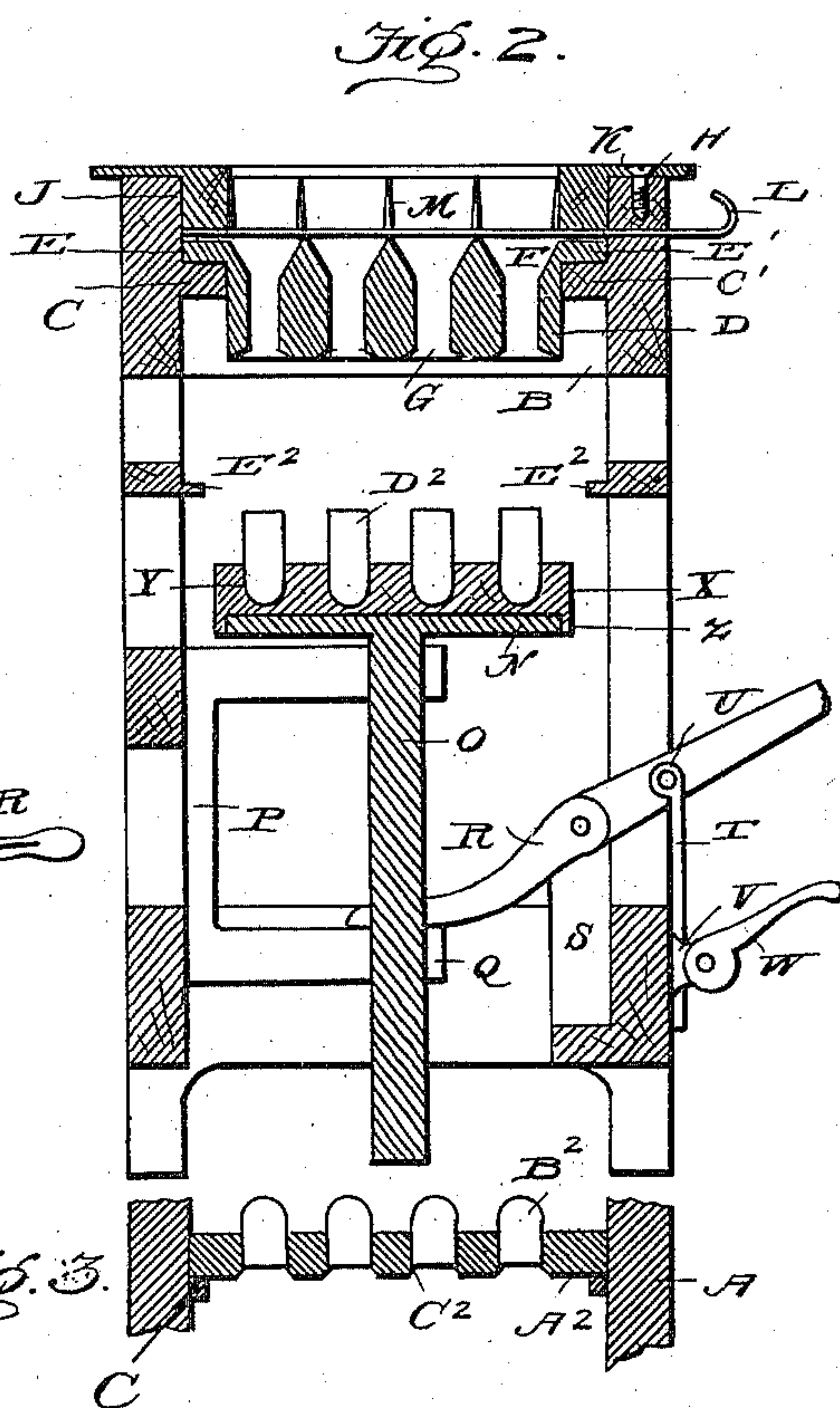
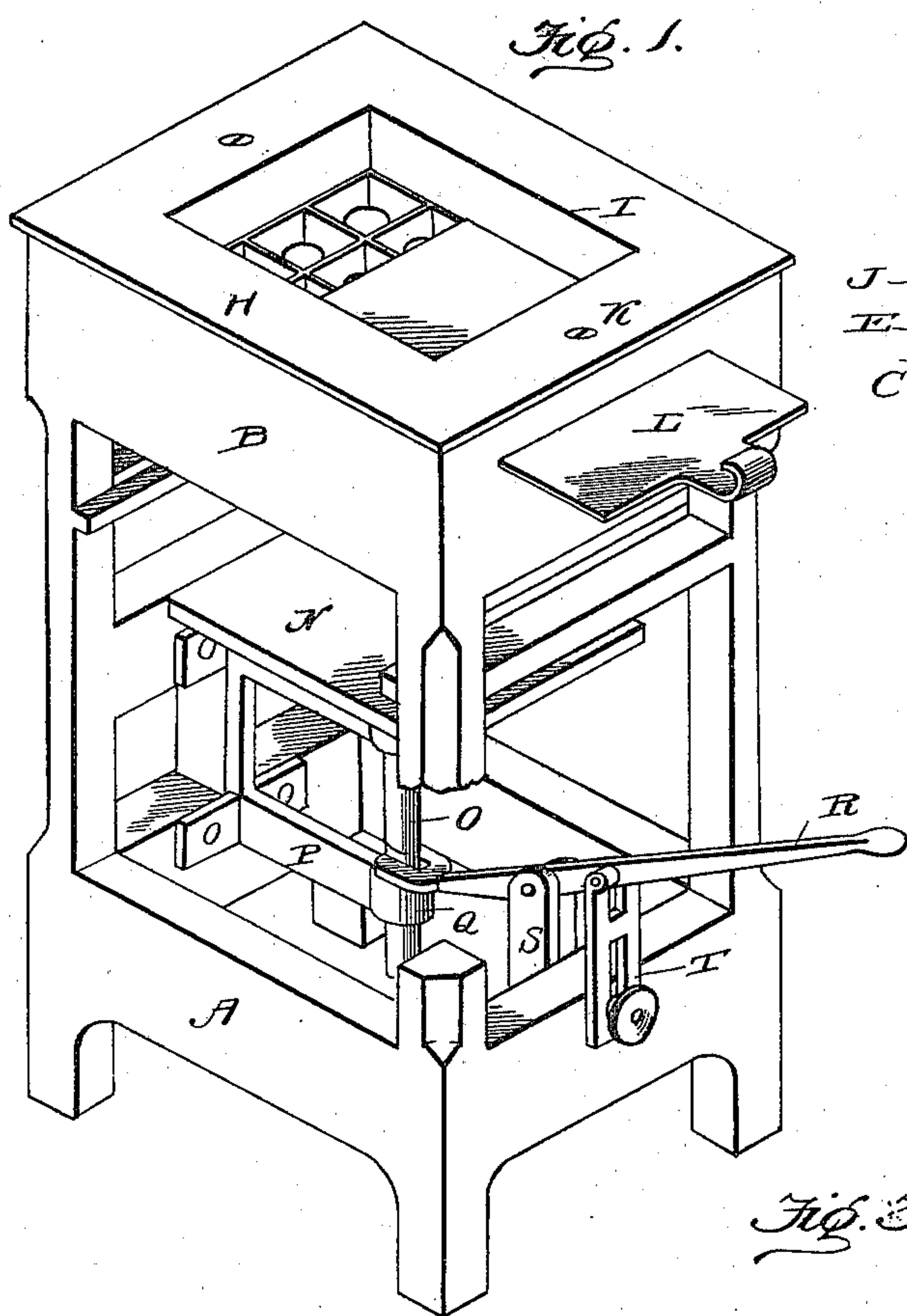


(No Model.)

F. B. GROVE.  
CAPSULE FILLING MACHINE.

No. 578,985.

Patented Mar. 16, 1897.



Witnesses:  
*Wm. P. Ashburn*  
*John Moore*

Inventor:  
*Frank B. Grove*  
By *Thomas E. Barrow*  
— Att'y.



# UNITED STATES PATENT OFFICE.

FRANK B. GROVE, OF MANSFIELD, OHIO, ASSIGNOR TO SARAH GROVE AND  
GEORGE MITCHELL, OF SAME PLACE.

## CAPSULE-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 578,985, dated March 16, 1897.

Application filed April 2, 1896. Serial No. 585,921. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK B. GROVE, a citizen of the United States, residing at Mansfield, in the county of Richland and State of Ohio, have invented certain new and useful Improvements in Devices for Filling Capsules and Capping the Same; and I do 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 the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in devices for filling capsules and capping the same; and the objects of my invention are, first, to provide a means to fill a given number of capsules at one motion of the machine and also cap the same; second, to so construct the device that the powder is equally divided, placed within the capsules, and caps placed upon the same; third, to construct and arrange paper cases for holding powders, divide the powder into equal parts, place the same into the cases, and cap them; fourth, to make a durable, practical, and efficient means for the purpose stated.

In the accompanying drawings, Figure 1 represents a perspective view of my machine for filling and capping capsules. Fig. 2 represents a vertical central sectional view thereof. Fig. 3 is a sectional view of the capsule-cap holder; and Figs. 4 and 5 represent detail views of two forms of dividing-racks.

Similar letters of reference indicate the several parts throughout the several views.

In the accompanying drawings, A indicates a hollow metal frame, the upper portion B inclosed upon the sides and ends to form a square box. The said box is provided upon the inside with the inwardly-projecting flanges C and C'. The object of the said flanges is to form a bearing for the perforated conduct-plate D. The said plate is provided upon each end with the outwardly-projecting flanges E and E'. The said flanges rest upon the flanges C and C', retaining the conduct-plate in position. The said plate is divided into twelve cells F, the said cells being square and of an equal size, tapering downward and intersect-

ing with the round holes G, which form the conducting-tubes, through which pass the powders, guiding the same into the capsules.

H indicates the lid or cap, provided in its center with a square opening I the size to conform to the series of cells. The said cap is provided with a square downwardly-projecting sleeve J. The said lid or cap is secured in position upon the top of the frame by the screws K.

L indicates a slide which passes through a slot formed in the end of the frame. The said slide passes over the face of the conduct-plate D.

M indicates the dividing rack or plate, which is composed of a number of strips halved together, the strips vertical edgewise forming a series of square cells, the strips tapered forming knife-edges, or may be made of a casting or pressed into the said form. Its object is to divide the powder placed within the box into twelve equal parts.

N indicates a platform or table provided in the center and upon the under side with the post O.

P indicates a U-shaped frame which is bolted to or forms part of the frame A. The said frame projects into the center of the frame. Central from each direction the ends are provided with bosses Q, through which are holes and in which is placed the post O.

R indicates a lever which is bifurcated at the lower end, the post O gained on each side to fit the bifurcated lever. The said lever is pivoted in the standard S'. The said standard may be secured to or form part of the frame A. The object of the said lever is for the purpose of operating the table N when in operation in filling capsules and placing the caps upon the same.

T indicates a clamping device for the purpose of holding the lever at any point required. The said clamp is composed of a plate bifurcated at each end, the upper ends provided with the bosses U. The said plate is pivoted to the lever. The lower end passes upon each side of the lug V, to which is journaled the eccentric lever W. It will be readily seen that a downward pressure upon the lever W will impinge the plate T between the lever and the wall of the frame, holding the lever



rigid and the table elevated until the capsules are filled.

X indicates a metal plate which is provided with the holes Y to conform to the holes in the conduct-plate. The said holes are made to suit the different sizes of capsules, a plate for each size. The holes are cup-shaped, rounded at the bottom to fit the rounded end of the capsule. The said plate is provided with flanges around the bottom to fit over the table N and is for the purpose of holding the plates in their proper position.

A<sup>2</sup> indicates the capsule-cap plate, which is provided with the same number of holes as the plate N, the holes from the upper side the diameter of the capsule-cap B<sup>2</sup>, which are shown in position in Fig. 3. The holes upon the under side are countersunk, forming a flange C<sup>2</sup> around each hole, the opening through the same being the diameter of the capsules D<sup>2</sup>. The object of the said flanges is for the purpose of preventing the caps from falling through the plate. Upon the inside of the frame a short distance below the box B are two inwardly-projecting flanges E<sup>2</sup>, one upon each inside end of the frame. The said flanges are to support the capsule-cap plate A<sup>2</sup> when in operation of placing the caps upon the capsules.

Fig. 4 illustrates the form of the dividing-rack M. The said rack rests upon the slide L, the cross-bar F<sup>2</sup> extending across the end next to opening for the slide. The object of the said bar is for the purpose of preventing the powder from drawing through the slot with the slide.

Fig. 5 illustrates a dividing-rack which has only ten compartments or cells. The two spaces filled with the solid block G dividers are provided for any number of capsules up to twelve. Machines can be made for any number required.

The operation to fill capsules or powder-cases: The capsules intact are placed in the perforations in the plate A<sup>2</sup>, the edge of the caps resting upon the flanges C<sup>2</sup>. The capsules are then withdrawn from the caps and placed in the receiver-plate X. The plate is then placed upon the table N. The powder is then placed within the box upon the slide L, the powder distributed of an even thickness. The dividing-rack M is placed upon the powder and pressed down. This divides the powder into equal parts. A downward pressure upon the lever R raises the table N, the ends of the capsules passing into the countersunk perforations centering the same. The lever W is then pressed downward, clamping the retainer T and holding the table rigid. The slide L is then removed, the powder passing downward through the conduct perforations into the capsules. The lever is then released, allowing the table to descend. The plate A<sup>2</sup> is then placed upon the bearings E<sup>2</sup>. The table is then again raised. The ends of

the capsules are guided by passing into the countersunk perforations in the bottom of the plate A<sup>2</sup>. The upward movement of the table forces the caps and plate upward until the round end of the caps pass into the countersinks upon the under side of the plate D. A still further movement forces the capsules into the caps. A downward movement of the table leaves the cap-plate A<sup>2</sup> resting upon the flanges E<sup>2</sup>, withdrawing the capsules from the plate X, leaving them suspended in the plate A<sup>2</sup>. The plate is then removed from the frame and the capsules forced upward, removing the same from the cap-plate.

I do not wish to limit myself to the exact construction or the manipulation of the same, for other forms may be used and not deviate from the essence of the invention.

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

1. In a device for filling and capping capsules a frame, having a box formed upon the top of the same, a recessed plate placed within the same the said recesses or depressions formed upon the upper side into square cells forming a knife-edge, the under side countersunk, to guide the ends of the capsules into line with the recesses or depressions, a slide placed above the said plate to retain the powder, a dividing-rack above the said recess or depression and adapted to divide the powder into equal parts, substantially as shown and described.

2. In a device for filling and capping capsules, a suitable frame provided upon the top with a recessed conducting-plate, a slide and a directing-rack located above the recessed conducting-plate, a table placed below the same operating in suitable guides and having a vertical movement, a capsule-plate having a number of cup-shaped recesses or depressions, a capsule-cap plate having a number of recesses or depressions, the said recesses or depressions reduced in size at or near the bottom and countersunk below the flanges, the capsule adapted to be filled by one movement of the machine, substantially as described and shown.

3. In a device for filling and capping capsules, perforated plates for receiving and spacing capsules, a plate for holding the caps, a suitable device to raise the capsules to be filled and held until filled, suitable flanges formed in the frame to support the cap-plate, the said plate adapted to guide the capsules into the caps, substantially as shown and described.

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

FRANK B. GROVE.

Witnesses:

SAML. MARRIOTT,  
EDITH WHEELER.