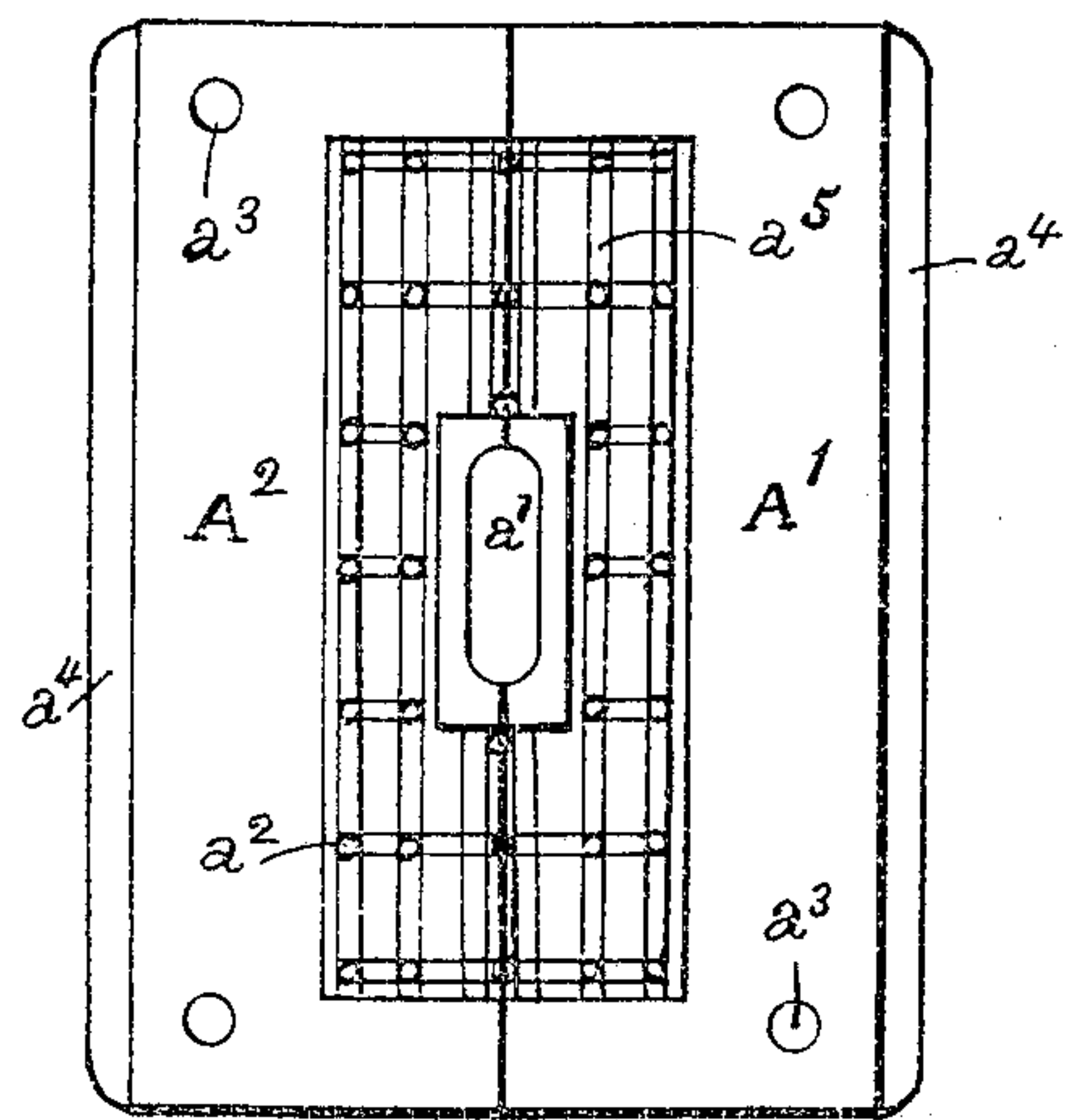
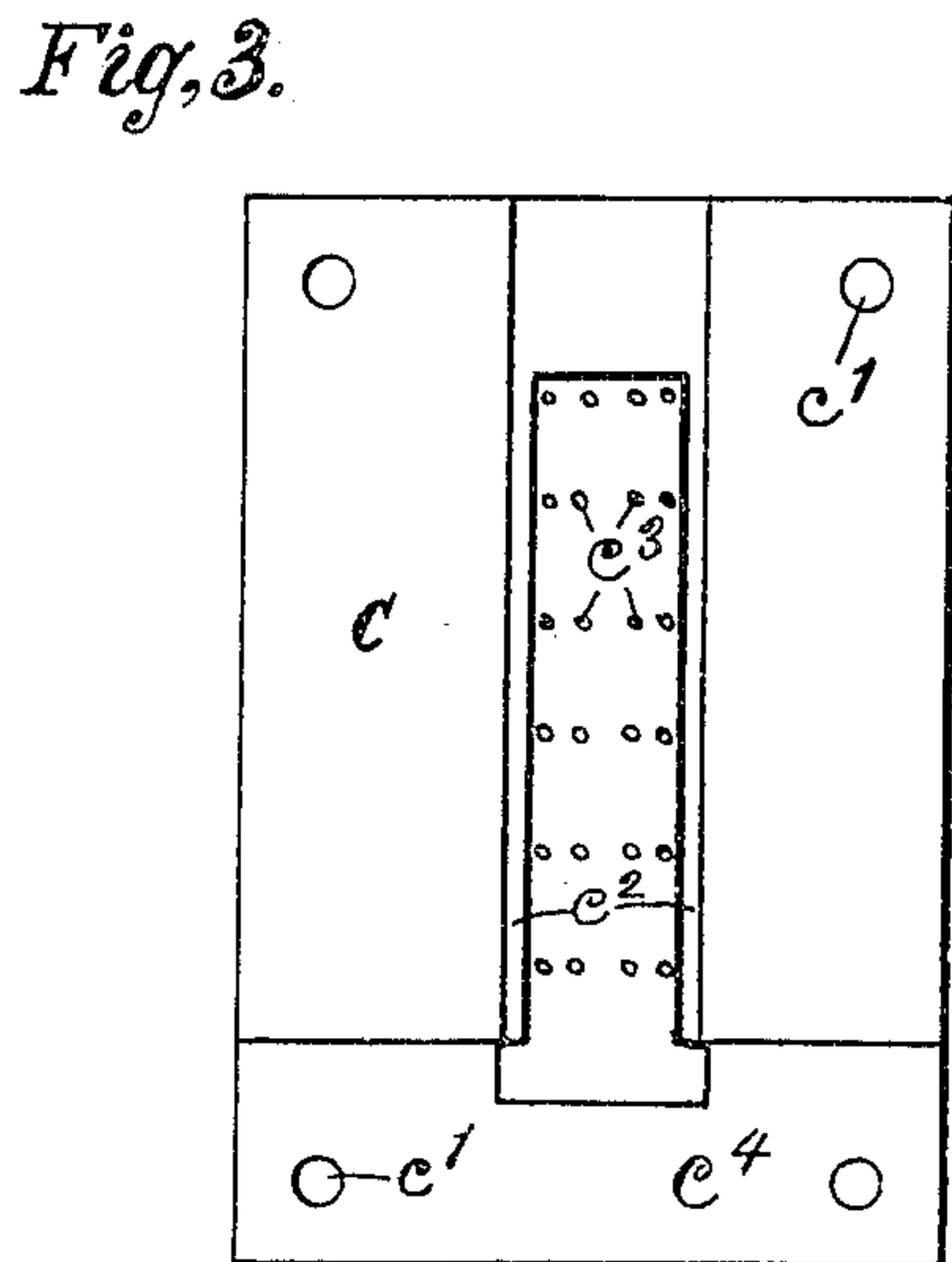
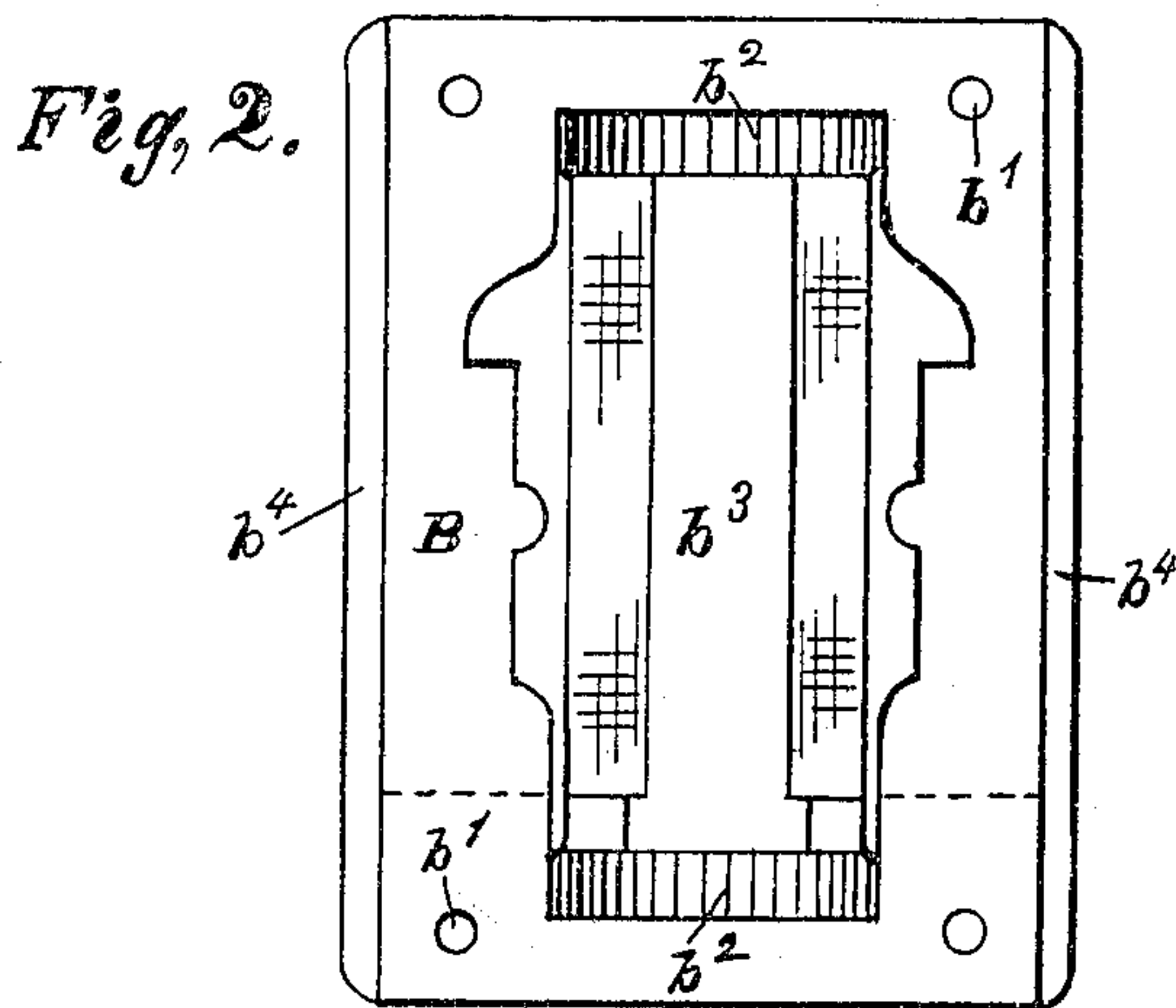
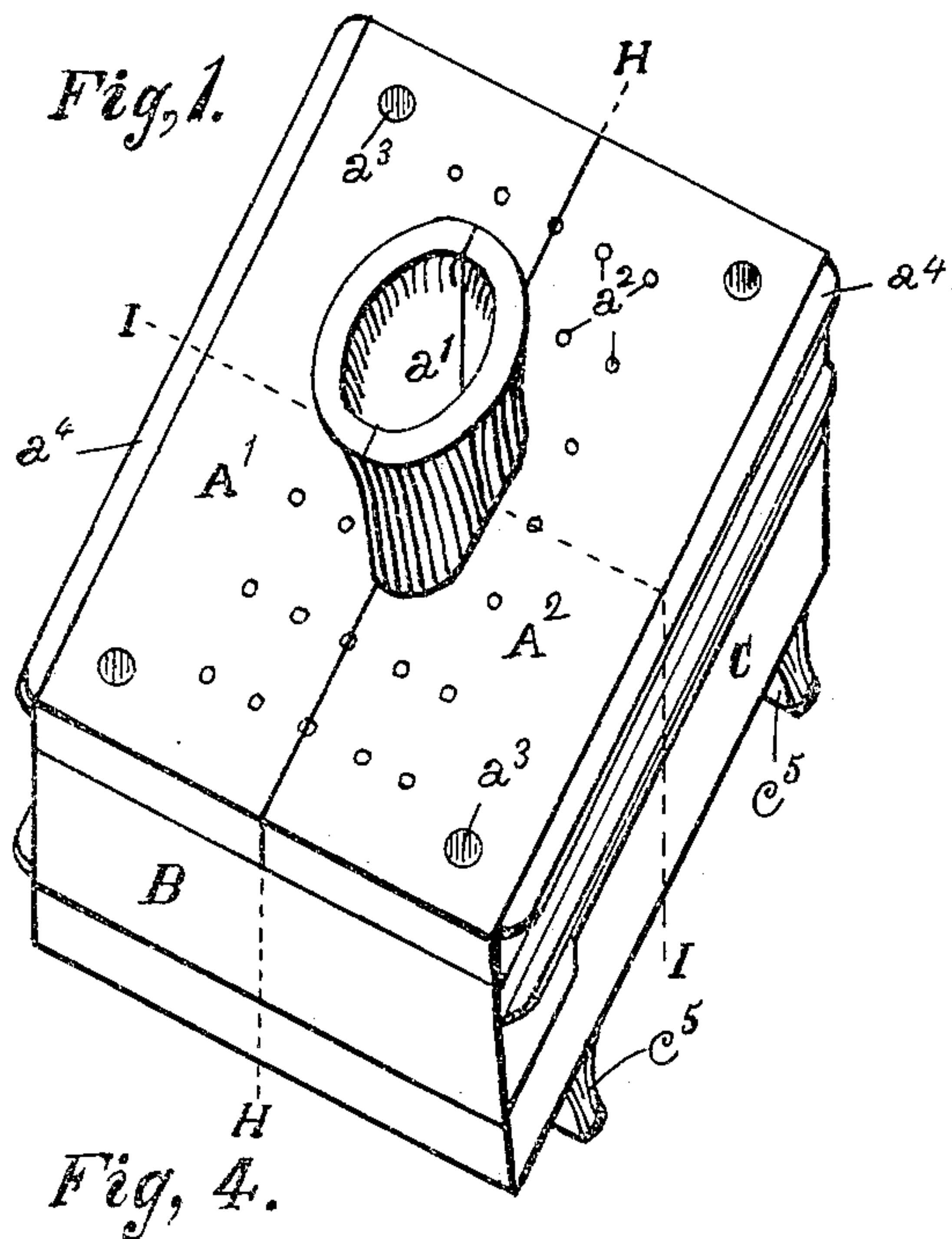


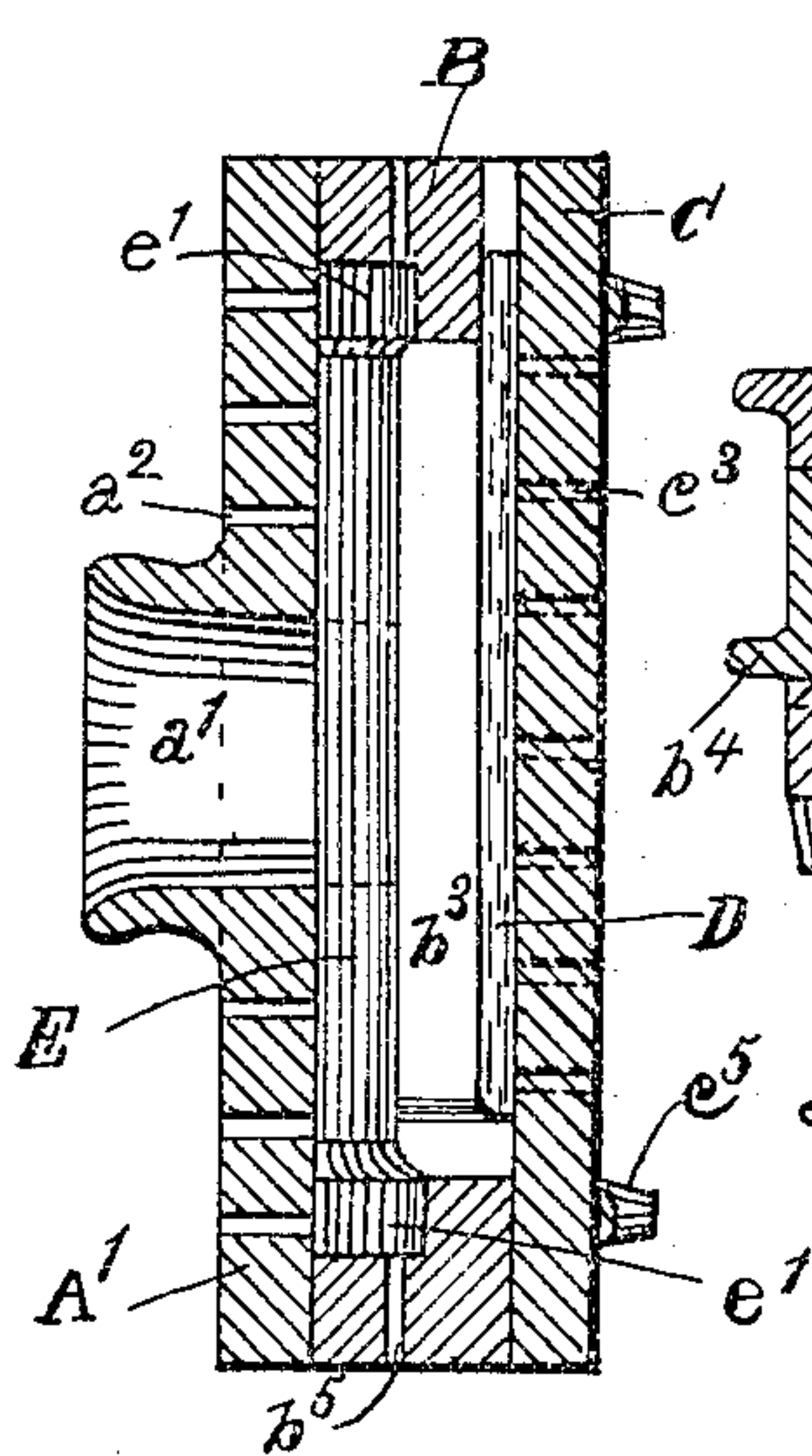
No. 793,067.

PATENTED JUNE 27, 1905.

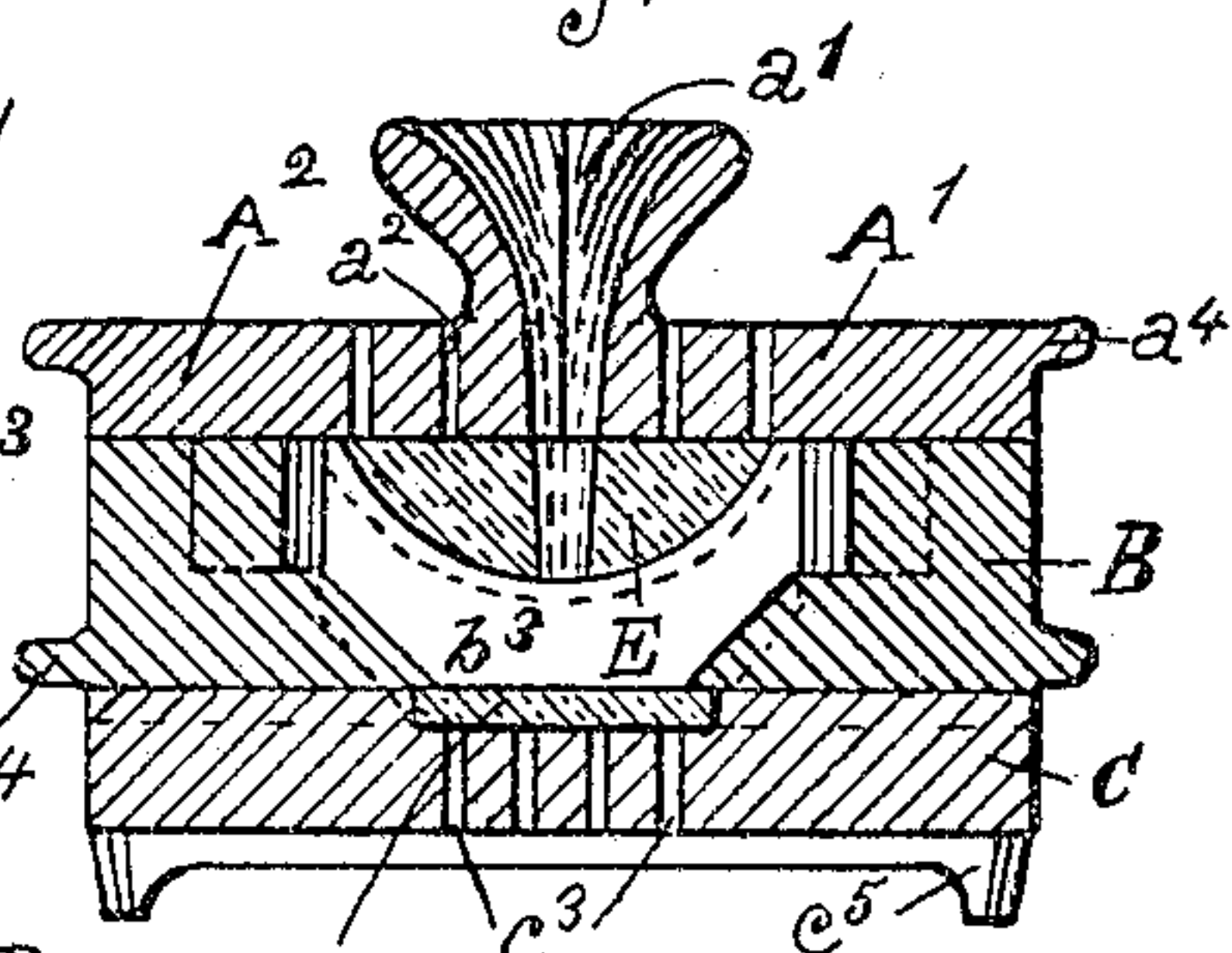
F. HAGGENJOS.  
METAL MOLD FOR MAKING BRASS CASTINGS.  
APPLICATION FILED MAY 5, 1904.



*Fig. 5.*



*Fig. 6.*



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# UNITED STATES PATENT OFFICE.

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## METAL MOLD FOR MAKING BRASS CASTINGS.

SPECIFICATION forming part of Letters Patent No. 793,067, dated June 27, 1905.

Application filed May 5, 1904. Serial No. 206,515.

*To all whom it may concern:*

Be it known that I, FRANK HAGGENJOS, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Metal Molds for Making Brass Castings; 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 metal molds for making brass castings, and it is more particularly applied to the use of making of brass car bearings or boxes, shells, &c., and I design it as an improvement on my previous application now pending, filed March 4, 1904, Serial No. 196,547; and the object of this improvement is to simplify the construction of the mold and to facilitate the operation of producing castings in the use of it and to produce better and more perfect castings. This knowledge I have obtained by my continued careful experimenting on this line, in which I have produced a better casting, decreased the cost of making and fitting up the molds, rid the castings of fins or ragged edges and gates on its exterior surface, and decreased the loss of melting of metal in the gates or sprues. I accomplish these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the mold complete. Fig. 2 is a top face view of the middle section or the cheek of the mold. Fig. 3 is a top face view of the lower or drag section of the mold. Fig. 4 is an under side view of the upper or cope section of the mold. Fig. 5 is a longitudinal center-cut section of the mold complete, taken on the broken line H H, Fig. 1. Fig. 6 is a center cross-section of the mold complete, taken on the broken line I I, Fig. 1.

In all of the views like letters refer to like parts.

In this construction of the mold I have entirely reversed the manner of gating and pouring the casting by turning the mold top side

down and bottom side up and placing the gate or sprue in the center of the mold, so that the molten metal is poured directly into the center of the casting-cavity of the mold. I also reserve the right in this construction and description to pour certain kinds of car-box castings through a center gate opening through the center of the mold on its back, entering the casting-cavity on the back of the box, where the letters and figures can be arranged to leave a clear space, which gives in either case the flowing molten metal a quick and unobstructed flow to all parts of the casting-cavity, so that the casting when the cavity is poured full is perfect to the shape of the mold or cavity on its outside and solid throughout in its body of metal. This mold in its construction is a three-part mold, consisting of a drag or bottom section, a cheek or middle section, and a cope or upper section, the three parts of which are made to register with each other by guide-pins or dowels.

Referring to the drawings, the mold complete is shown in Fig. 1, the joint between the cope or top section and the middle section being straight and plain, and the plate forming this cope or top section is cut in the center lengthwise, so as to free it from the gate or sprue after the casting is poured, and the joint between the middle or cheek section and the lower or drag section has an offset conforming to the thickness of the lower hard-sand filling, which offset is shown in Fig. 1 on the front side and in Fig. 2 in a broken line across the end of it and in Fig. 3 by a solid line across the end of it, and the faces of the three parts forming the two joints are all planed, so as to fit each other and make perfect joints when in position against each other.

Fig. 3 shows the inside face view of the drag or lower section C of the mold in which is shown the seating  $c^2$  for the lower hard-sand filling D with a series of vent-holes  $c^3$  in it, the dowel or pin holes  $c'$ , and the depressed offsetted portion  $c^4$ . The said vent-holes are covered by the hard-sand filling D when it is in position in setting up the mold to cast a box.

The middle or cheek section B is shown on its top face in Fig. 2, and this section is pro-



vided with the greater part of the internal casting-cavity of the mold  $b^3$  representing the opening through it which is covered by the hard-sand filling D lying in its seating  $c^2$  on the lower section C.

$b^2$   $b^2$  are prints in which the upper hard-sand filling E rests when it is in position in the mold, and  $b'$   $b'$  are pin or dowel holes which match the holes in the upper and lower sections, and  $b^4$   $b^4$  are ribs extending along the edges which form handles to lift the part by in using the mold.

Fig. 4 shows the under or joint side of the upper section, which is in two parts A' and A<sup>2</sup>, divided lengthwise. This is provided with a central gate or sprue opening  $a'$ , which extends up some distance above the top of the plate, as is shown in Fig. 1, which also is a riser to keep up the shrinkage in the casting as it cools. This gate or sprue opening extends also through the hard-sand filling E into the casting-cavity of the mold, as is shown in Fig. 6, and the object of this top section being in two parts is to free it from the gate or sprue after the casting is poured and must be taken from the mold. It is further provided with a series of vent-holes  $a^2$  in the intersection of a series of grooves  $a^5$  in the casting back of the hard-sand filling E; also, pin or dowel holes  $a^3$   $a^3$  and side strips, as ribs, which form handles  $a^4$   $a^4$ .

Fig. 5 is a longitudinal center-cut section through the three parts of the mold complete, showing also the hard-sand fillings in their positions in the mold and the manner in which they are held in position between the sections of the mold, the hard-sand filling D having its seating in the section C, having a solid backing against the plate and between its shoulders forming the seating, and is held in its position between this section C and the middle section B. The upper hard-sand filling E has its seating in the middle section B of the mold on the hard-sand-filling prints  $e'$   $e'$  lying in their seats  $b^2$   $b^2$ , (shown in Fig. 2 at each end of the casting-cavity and also in Fig. 6,) which is a center-cut cross-section of the mold complete with the hard-sand filling cut also on the same plane. This shows the manner in which the hard-sand filling E is held in position between the middle and upper sections.

In setting up the mold ready to pour a casting the hard-sand filling D is placed in its seating in the lower section C, and the middle section B is placed on it with the pins on the one entering the holes in the others. Then the hard-sand filling E is placed in its seating in the middle section B and the two parts of the cope or top section are placed in position with the pins of the one section in the holes in the other. Then the mold is ready to be filled with the molten metal.

In what is termed the "riser" or "gate" we have a sufficient amount of the molten metal extending above the level of the high-

est part of the casting to form a weight and pressure on the metal in the mold to keep up the shrinkage in the casting as it cools, so that it will be full and perfect, and by this sprue being in the center of the casting an even pressure is obtained on all parts of the mold and the best result is produced in the casting. The system of vent-holes are so distributed in the certain parts of the three sections back of the hard-sand fillings that they are all covered by the hard-sand fillings and form a perfect means of escape for all of the gas from the mold. These hard-sand fillings do not represent the natural system of cores in making castings, as the cores in making castings generally are to make internal cavities in the metal of the casting; but in this case they are to form certain parts of the exterior surface of the castings.

I am aware that prior to my invention sand molds and flasks and gating and venting of molds was common and that in the making of metal molds the same general plan had to be used by all. I therefore do not claim such a construction broadly.

Having carefully shown and described the various parts of my invention and their relation to each other and their functions in obtaining the result desired, what I claim as new, and desire to secure by Letters Patent, is—

1. In a metal mold for making brass castings the combination of a central mold-cavity section to which is jointed and pinned an upper and lower perforated core-cavity section provided with hard-sand fillings, the said upper section being divided through its central gate-opening to the mold, as shown and specified.

2. In a metal mold for making brass castings, a central mold-cavity section jointed and pinned to upper and lower perforated sections provided with hard-sand fillings, the said upper section being provided with a central gate-opening to the cavity of the mold, and divided centrally through said gate-opening, as specified.

3. In a metal mold for making brass castings the combination of a central mold-cavity section provided on its lower side with a perforated lower plate-section having a hard-sand filling in a seating therein and pinned to said central section, also provided on its upper side with a bisected perforated plate-section pinned thereto and covering a hard-sand filling, the said upper metal jointed section having a central gate-passage through it and its hard-sand filling to the mold-cavity, as shown and described.

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

FRANK HAGGENJOS.

Witnesses:

S. E. MARTIN,  
A. SCHREIBER.