

C. B. McPHILLIPS.
ART OF FORMING CASTINGS.
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970,096.

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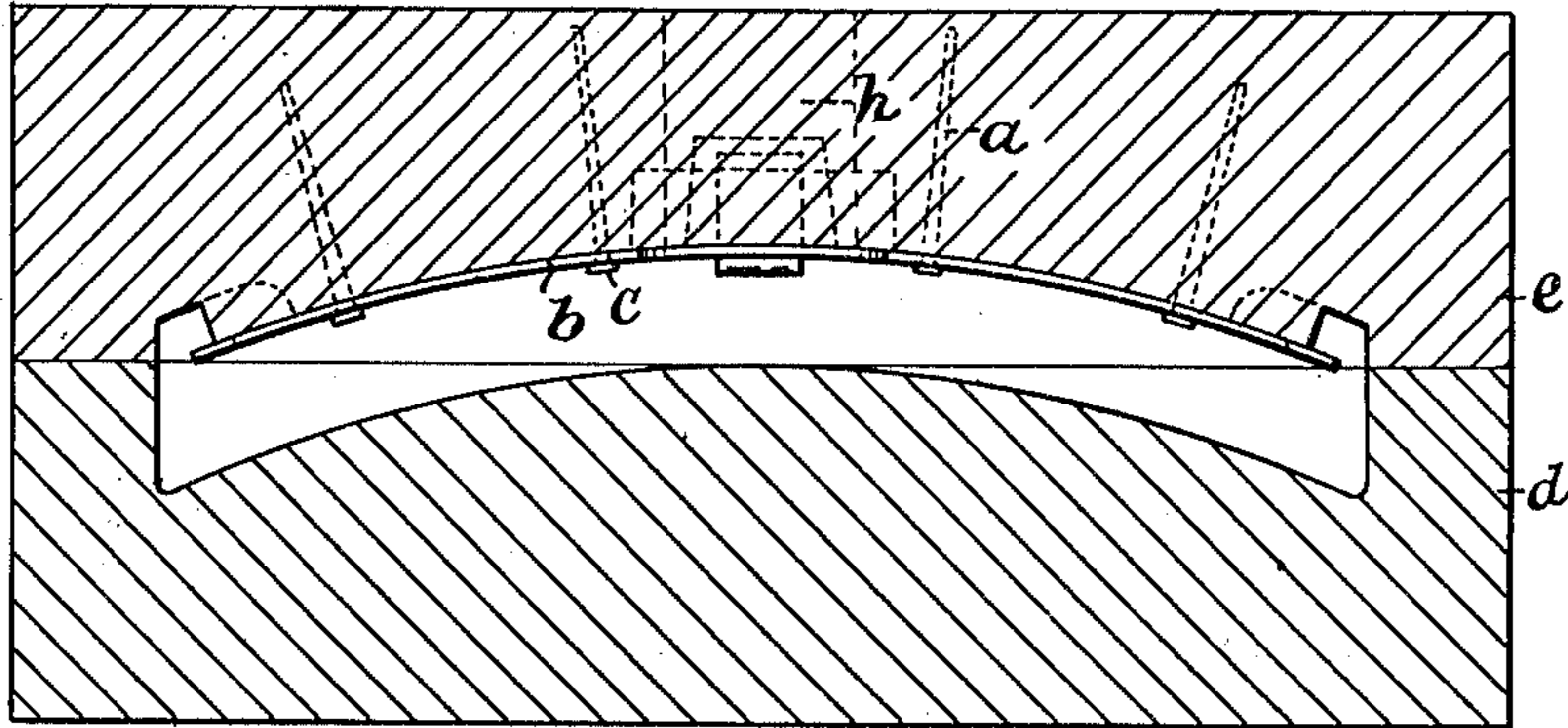


Fig. 1.

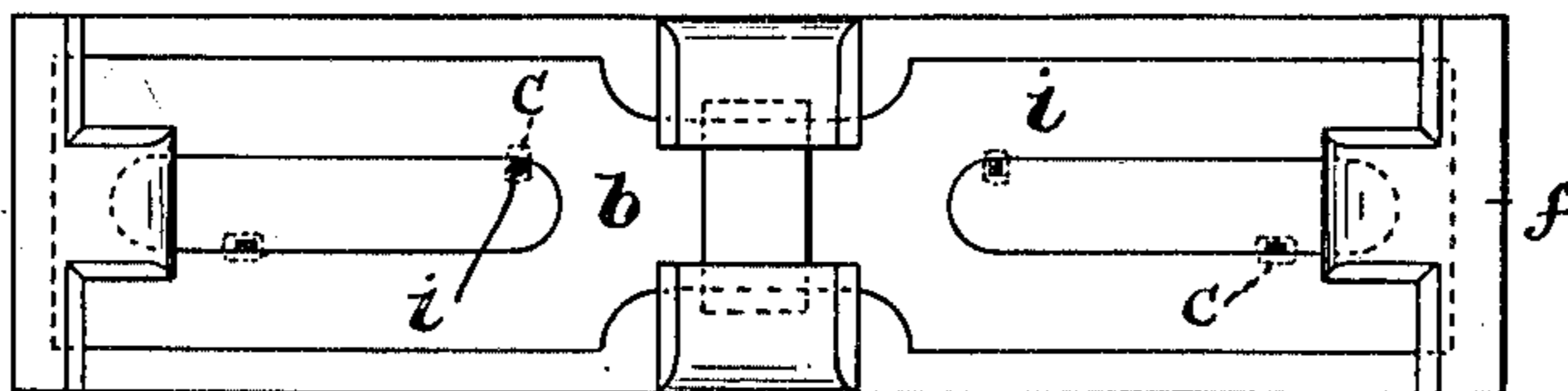
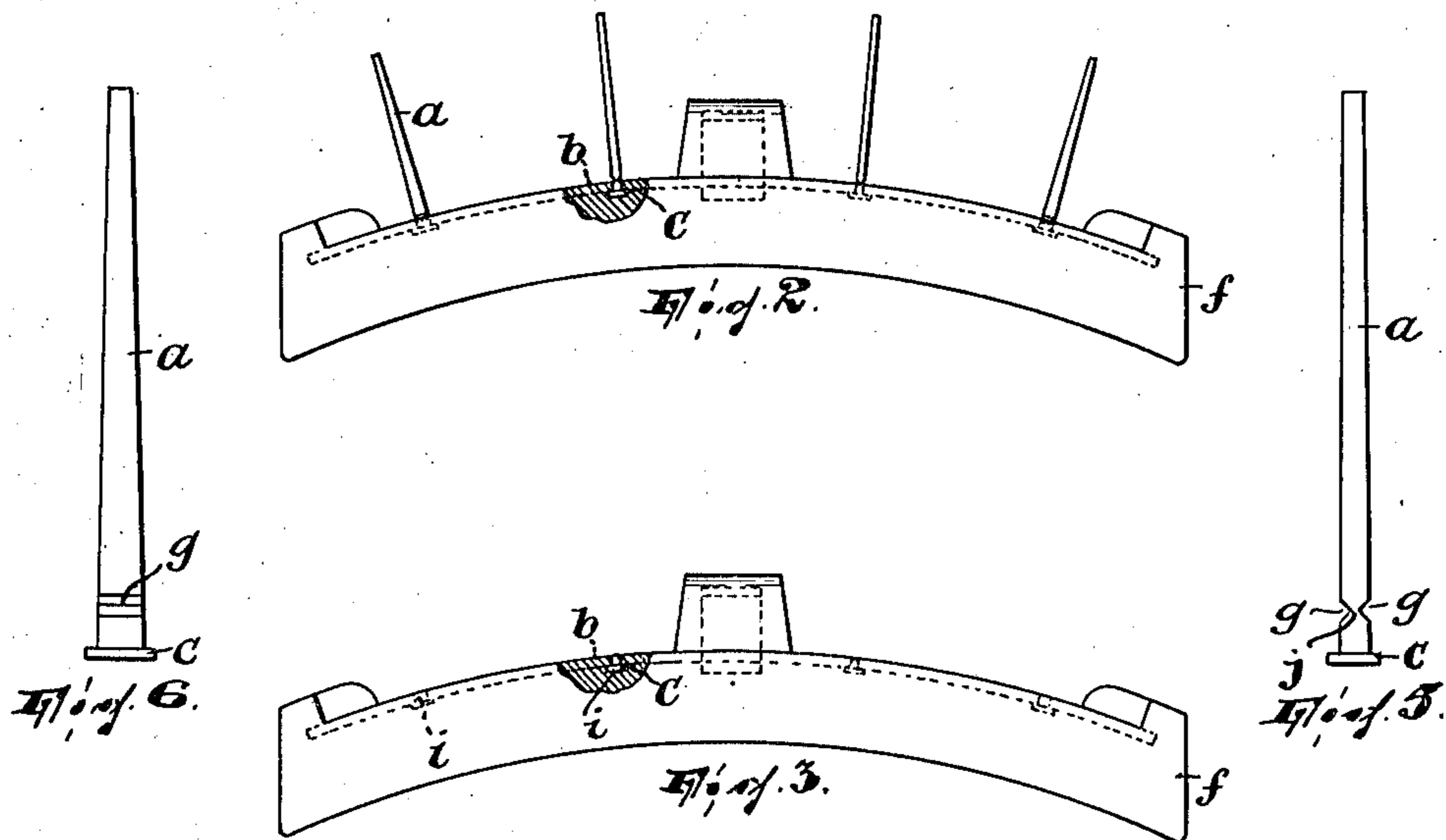


Fig. 4.

WITNESSES:

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UNITED STATES PATENT OFFICE.

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ART OF FORMING CASTINGS.

970,096.

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To all whom it may concern:

Be it known that I, CHARLES B. McPHILLIPS, a citizen of the United States, residing in Suffern, Rockland county, State of New York, have invented certain new and useful Improvements in the Art of Forming Castings; 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 drawing, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to the art of casting objects having previously-formed parts made to adhere to them in the molds, and particularly to that branch of this art in which the previously-formed part is attached to one of the complementary members of a separable mold by nails or the like engaged with said part and projecting into said mold member, as in the casting of railway brake-shoes having reinforcing backs. In the present practice of that branch of this art above alluded to, considerable expense which it is my purpose to eliminate, is undergone in the following respects: After the castings have been removed from the molds and cleaned in a tumbler they are one by one trimmed of the portions of the nails which project from them; since this operation requires a separate and distinct handling of the castings, it makes an item of considerable expense in itself, but in addition the workmen are frequently injured by the flying nail-ends. Again, during the cleaning operation in the tumbler, although the projecting nail-ends are usually all bent over before the castings are ready to be removed from the tumbler, they do not rest flat against the faces of the castings, but at best merely stand arched; since the nail-ends still project materially, therefore, not only is the cleaning operation rendered less perfect than it might be otherwise, but it is unduly protracted, it being obvious that the less room there is in the tumbler for individual movement of the castings the more slowly will the cleaning operation proceed.

According to my invention, the previously-formed parts are attached to their corresponding mold members by nails or the like devices having substantially uniform transverse dimension from end to end thereof in the same manner as heretofore, but each

nail is locally weakened in the portion thereof which projects from the previously-formed parts and near the relatively outer faces of the same. In consequence, I am enabled to eliminate the trimming operation as a distinct step entirely and the elements of expense and of injury to the workmen incident thereto. When the castings are removed from the molds they are introduced directly into the tumbler and while being cleaned therein the projecting ends of their nails become broken off at the weakening points by the continuous falling of the castings upon each other. Cleaner castings therefore not only result, but an obviously considerable saving in the cost of manufacture is secured.

I have illustrated my invention in the accompanying drawing, wherein,

Figure 1 is a longitudinal sectional view through the drag and cope of a mold for use in casting brake-shoes, showing a reinforcing backing for the brake-shoe next to be cast in the mold attached to the cope by nails formed in accordance with this invention; Fig. 2 shows a brake-shoe in side elevation, partly in section, after it has been removed from the mold but before its introduction into the tumbler; Fig. 3 shows the finished brake-shoe in side elevation, partly in section; Fig. 4 is a plan of the finished brake-shoe; and Figs. 5 and 6 are side elevations of the improved nail used in securing the backing to the cope of the mold.

The device usually employed to secure the previously formed part, such as the reinforcing backing in the manufacture of brake-shoes, temporarily to the cope or other member of the mold is a ten-penny wrought-iron nail, such as that marked *a* in the drawing, without the recesses *g*.

b in the drawing is the reinforcing backing (or other previously-formed part) which is to be made to adhere in the mold to the material to be poured into the same to form the casing.

d is the drag of the mold and *e* the cope. It is unessential to what member of the mold the previously-formed part is secured, of course, but for the purpose of illustration and in accordance with the usual practice in the casting of brake-shoes said part (the backing *b*) is attached to the cope *e* by the nails *a*, which project into the cope, preferably divergently, their heads *c* overlapping the part *b*.

The nails *a* are, in furtherance of my invention, formed with localized weakenings, which may be produced in any desired manner; in the preferred form these weakenings are produced by making V-shaped recesses therein at opposite points, the recesses (*g*) extending sufficiently far into the metal so that their apices are relatively close to each other. The weakened points thus produced in the nails are situated at a distance from the heads of the nails which will be sufficient, when the nails are introduced into the backing *b* with their heads abutting against the same, to bring them approximately in the plane of the outer face of the backing, as shown in Fig. 2. Having secured the backing *b* to the cope of the mold by nails so formed and assembled the cope, with the backing attached, with the drag or other member or members of the mold, the metal is poured into the mold, as through the gate *h*. When the casting *f* has set and sufficiently cooled it is removed from the mold, the backing now forming an integral part thereof. The casting is then introduced into a tumbler with others to undergo the cleaning operation. During this operation, as the castings are thrown about and fall against each other, the nails will be bent over sharply at their weakened points, either breaking off at once at said points or sooner or later in the tumbling operation.

When removed from the tumbler the castings will appear as in Figs. 3 and 4, the exposed ends of the butts *i* of the nails remaining in the casting lying substantially flush with the corresponding surface of the casting.

It will be observed that the recesses *g* affect only a limited portion of the nail and that they extend laterally into the broad sides or faces of the nail sufficiently so as to leave the relatively thin neck *j*. The projecting portions of the nails therefore break off more readily than they would were the

recesses less deep or if they affected a greater extent of the nails, and the breaks are cleaner; by entering the recesses at the broad sides of the nails, the latter will break off before they will bend (which they would not do if the recesses were entered at the narrow sides of the nails), a circumstance which I have found materially favors substantially complete removal of all of the projecting portions of the nails in the tumbling process.

Having thus fully described my invention, what I claim and desire to secure by Letters Patent is:

1. As an article of manufacture for use in securing a part adapted to form an integral casting to one of the members of the mold in which the casting is to be formed, an elongated device having two opposed broad, and two opposed narrow, faces having a head at one end thereof and also having oppositely disposed V-shaped recesses formed in the broad faces thereof in proximity to the head, substantially as described.

2. In combination, with one of the complementary members of a separable mold and a part adapted to form an integral portion of a casting to be formed in the mold, elongated devices each having the major portion thereof projecting into said mold member and securing said part thereto, each of said devices being of substantially uniform transverse dimension from end to end of the portion of said device which projects relatively from said part and being locally weakened in said portion in proximity to said part, substantially as described.

In testimony that I claim the foregoing, I have hereunto set my hand this 25th day of January, 1910.

CHARLES B. McPHILLIPS.

Witnesses:

JOHN W. STEWARD,
WM. D. BELL.