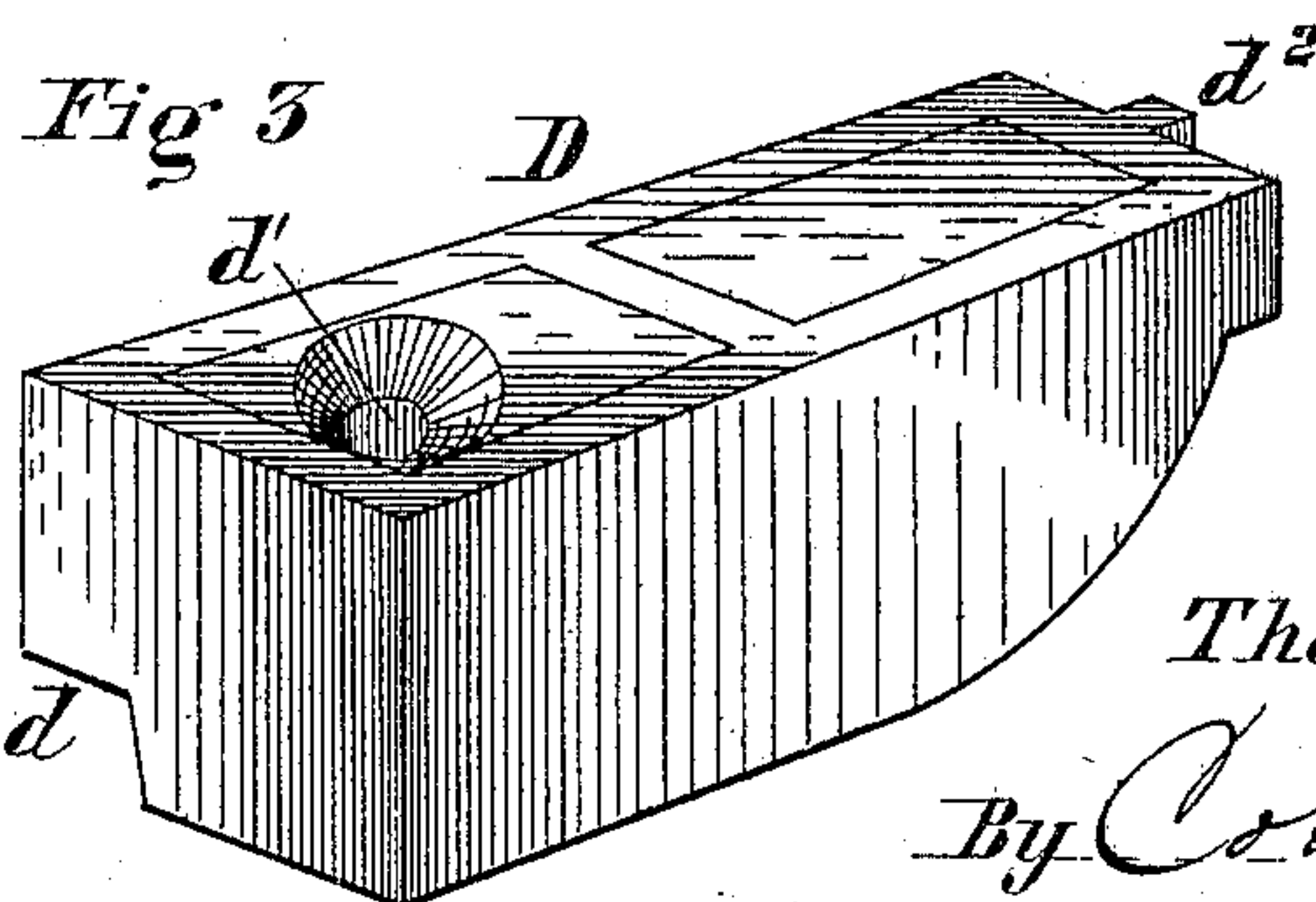
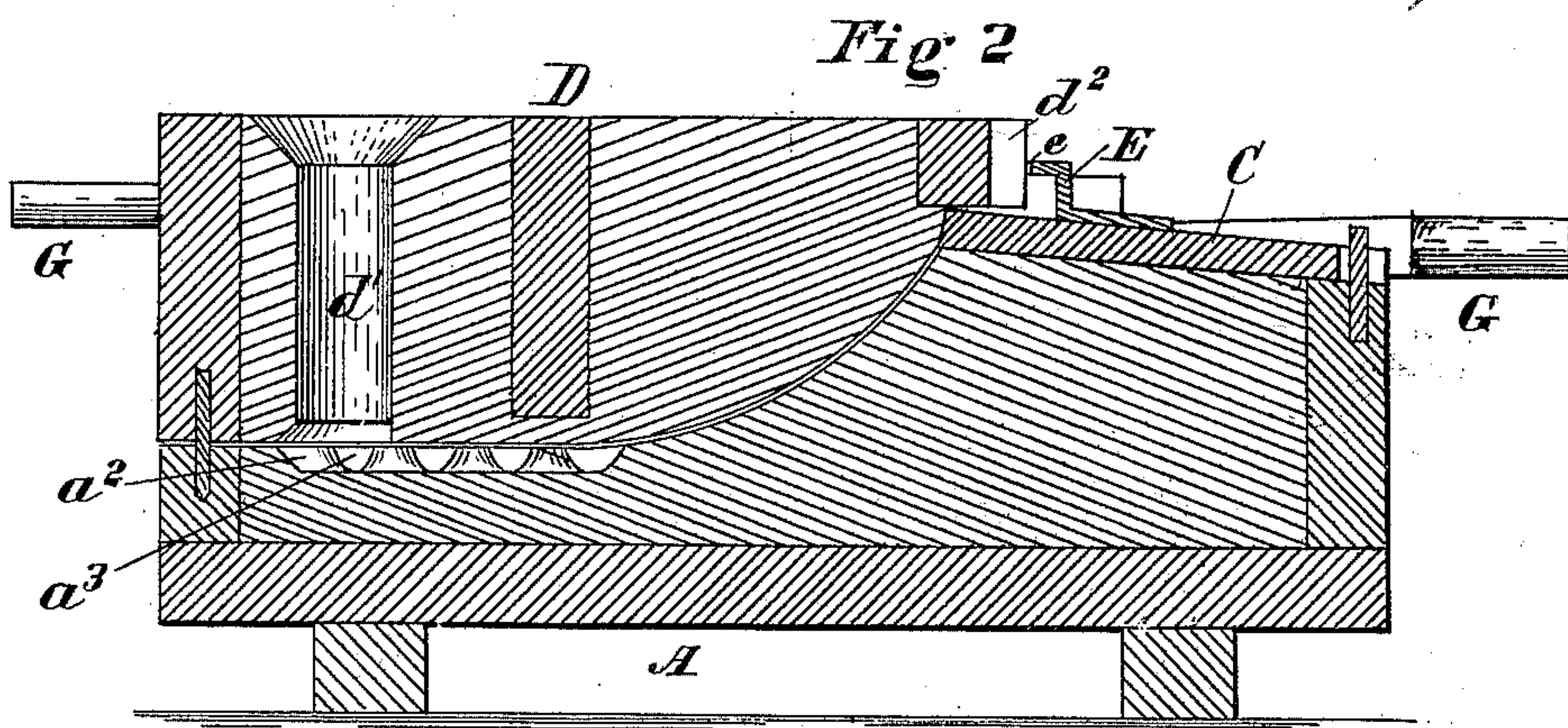
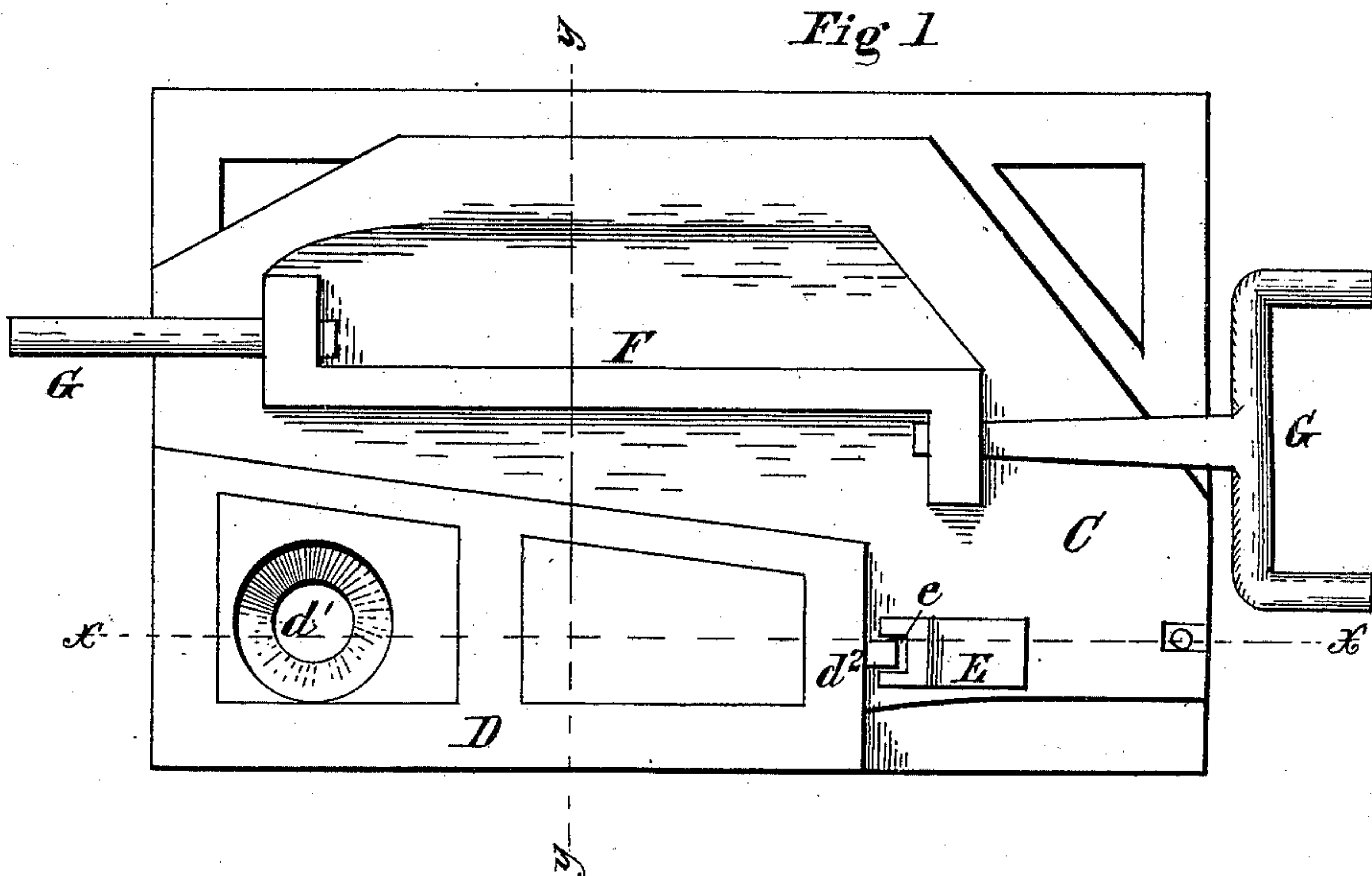


T. M. BISSELL.
Mold for Casting Metal on a Chill.

No. 227,607.

Patented May 18, 1880.



Witnesses

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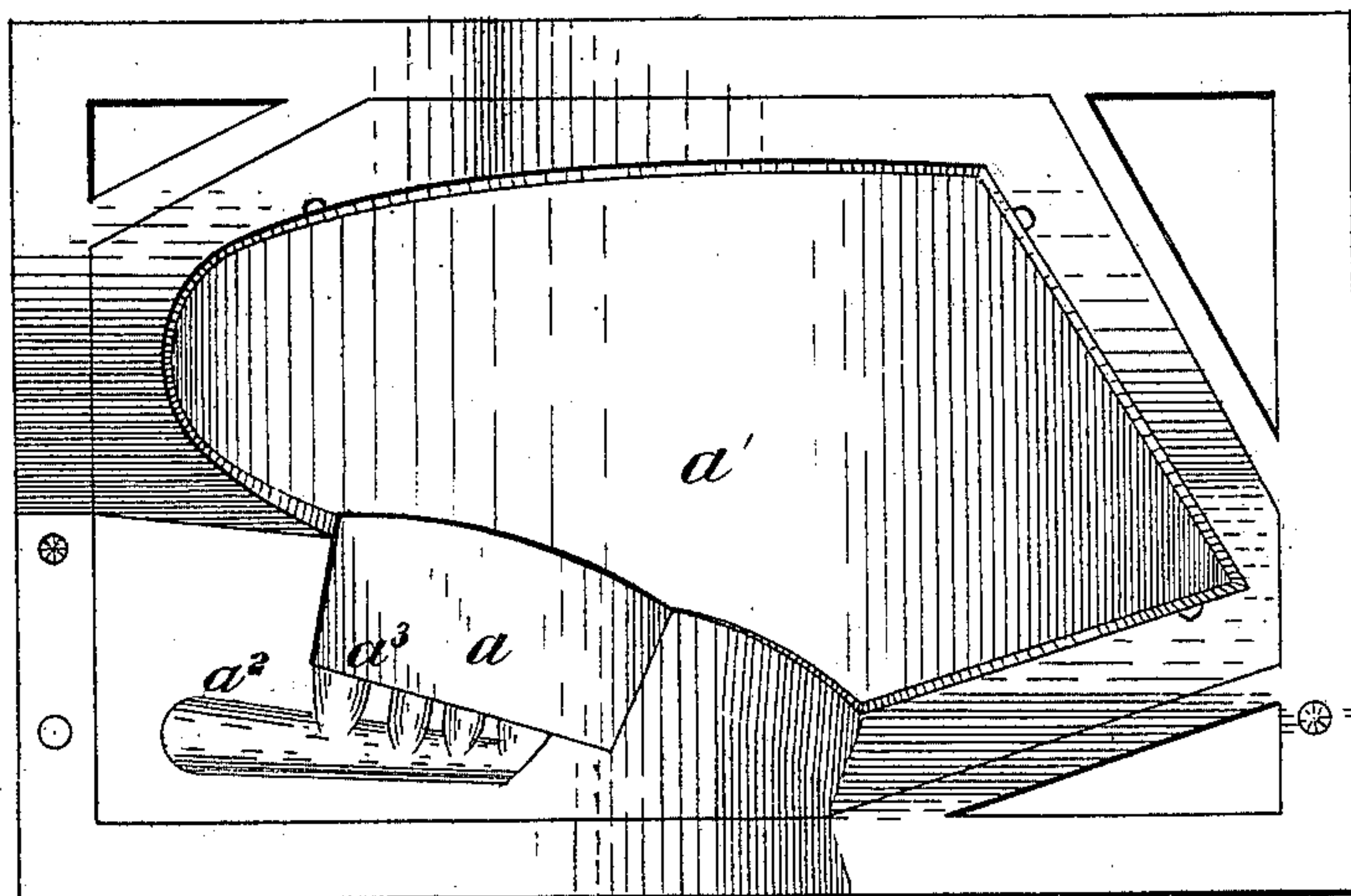


Fig 4

A

Fig 5

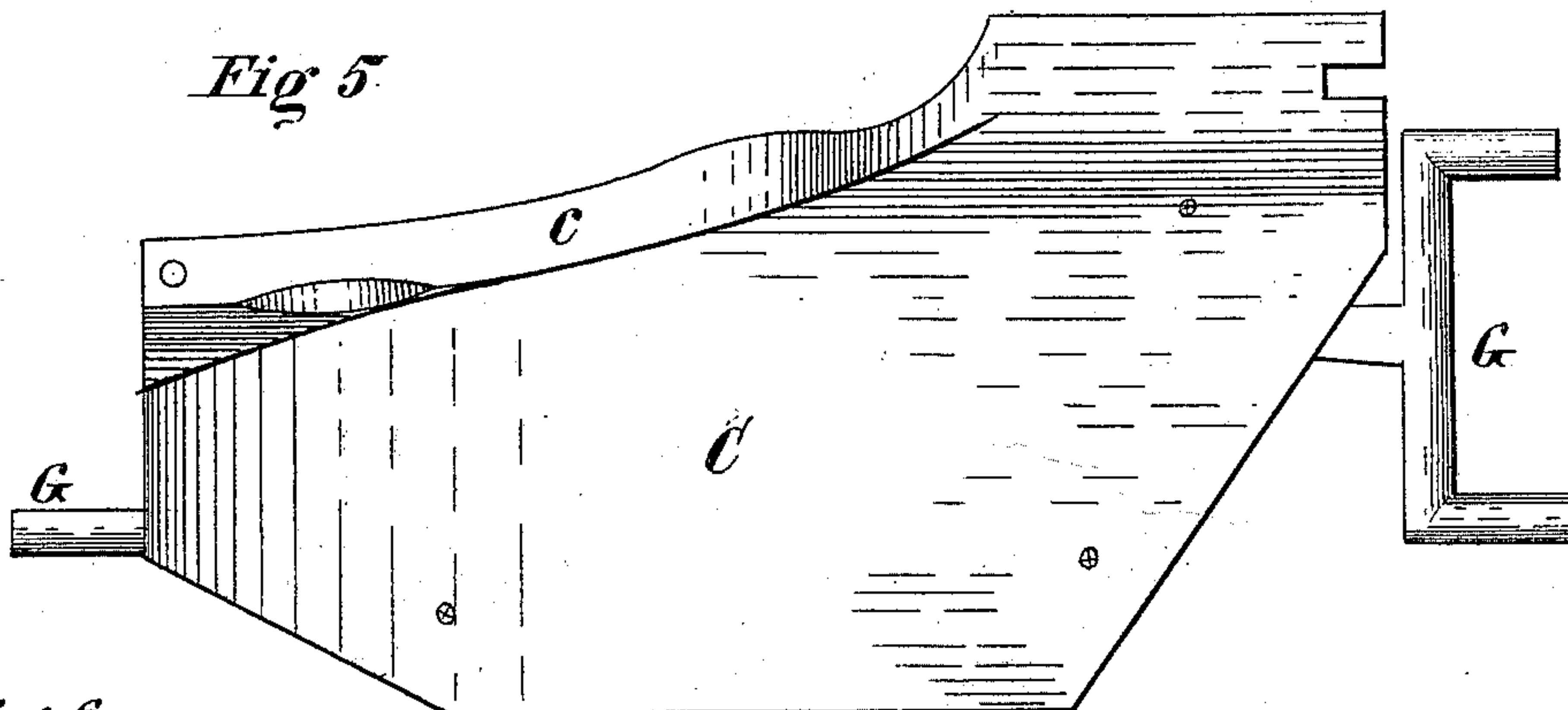


Fig 6

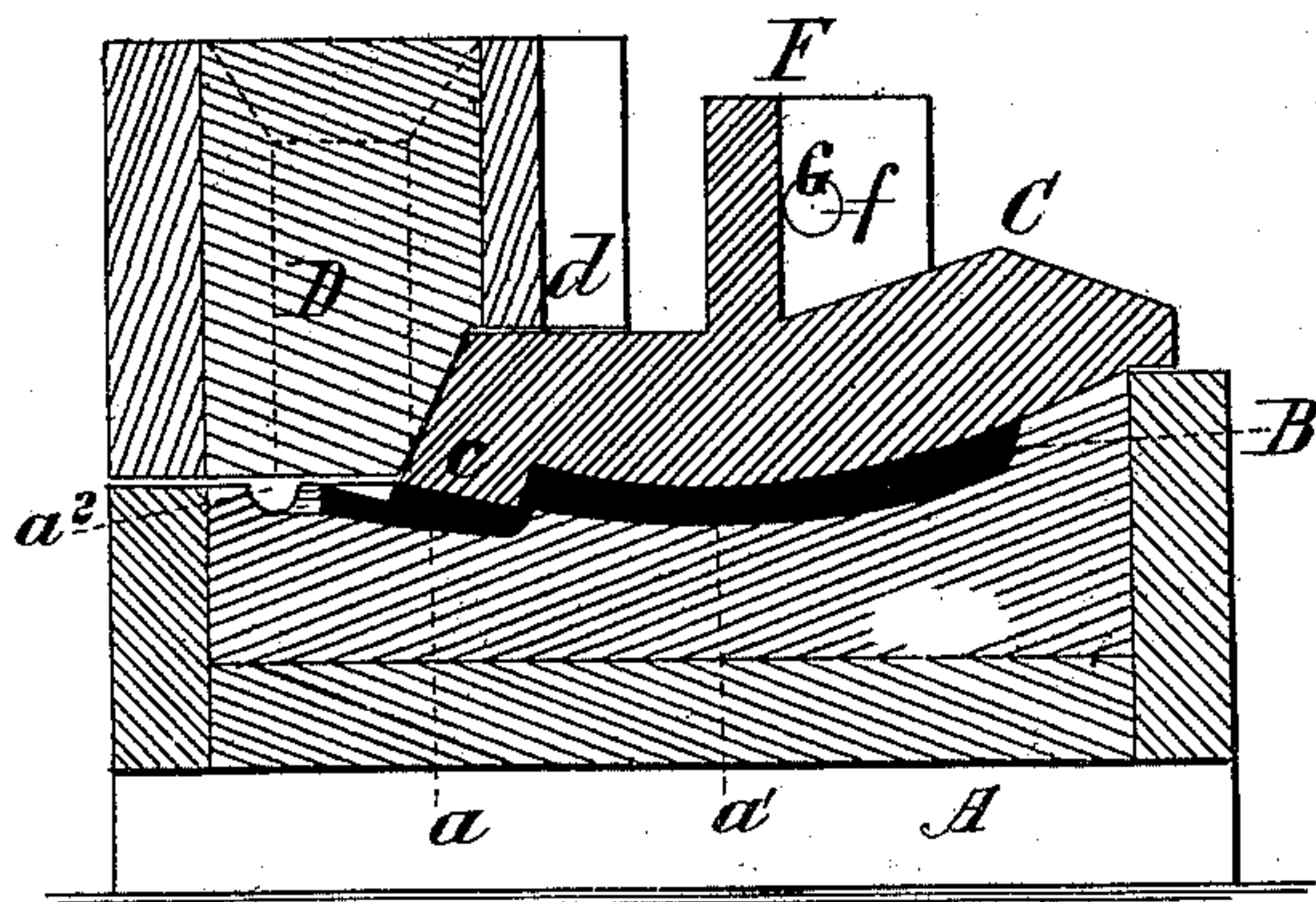
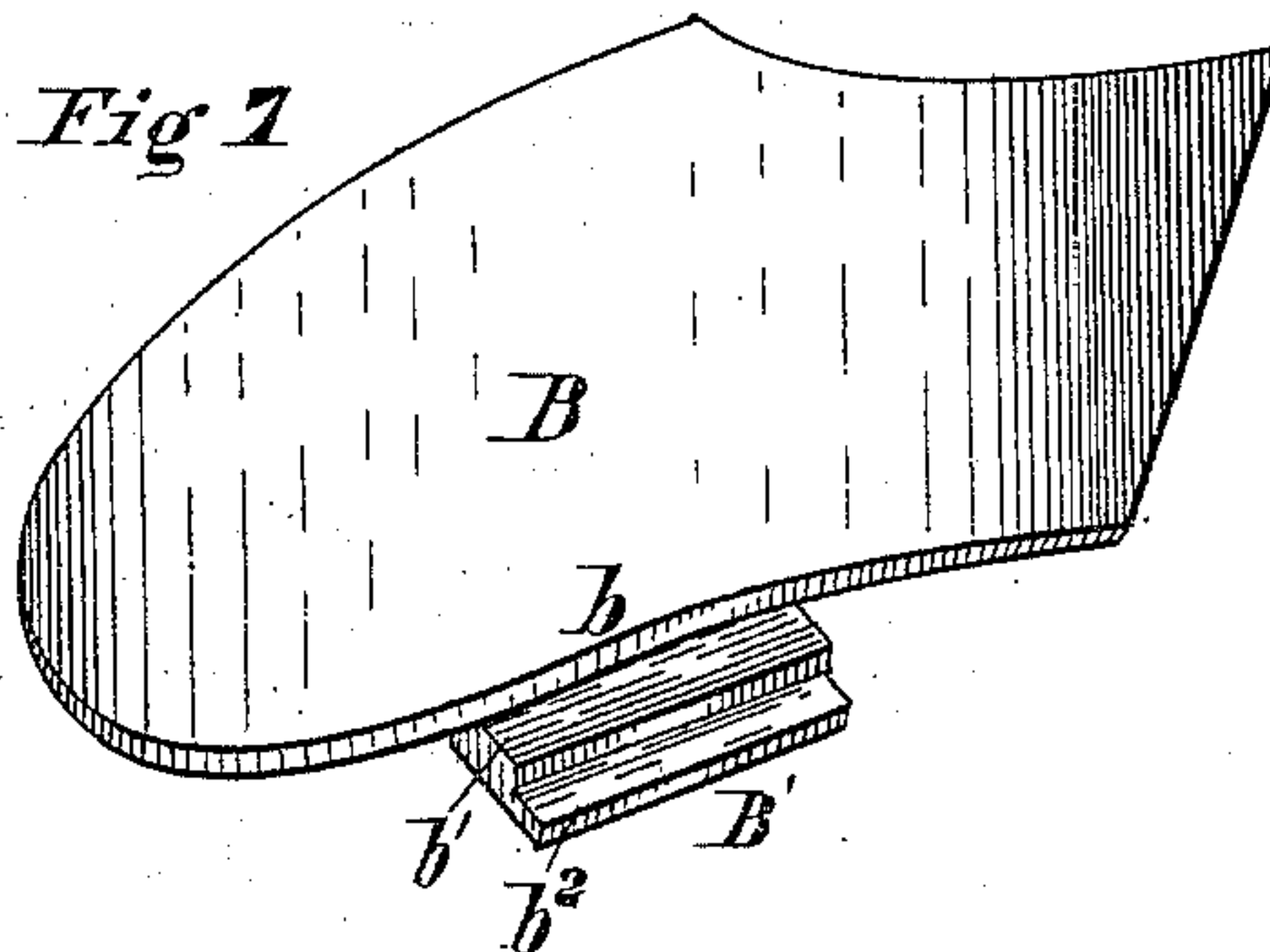


Fig 1



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UNITED STATES PATENT OFFICE.

THELUS M. BISSELL, OF SOUTH BEND, INDIANA.

MOLD FOR CASTING METALS ON A CHILL.

SPECIFICATION forming part of Letters Patent No. 227,607, dated May 18, 1880.

Application filed December 15, 1879.

To all whom it may concern:

Be it known that I, THELUS M. BISSELL, of South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Molds for Casting Metals on a Chill, which is fully described in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a plan view of a set of molds embodying my improvements; Fig. 2, a vertical section of the same, taken on the line $x x$, Fig. 1; Fig. 3, a perspective view of the cope detached; Fig. 4, a plan view of the lower part of the mold, the chill-plate being removed; Fig. 5, a bottom plan of the chill-plate; Fig. 6, a vertical section taken on the line $y y$, Fig. 1, and Fig. 7 a plan view of the pattern.

In flasks or molds constructed in the ordinary way for casting upon a chill the arrangement for pouring is usually such that the molten metal flows immediately across the edge of the chill-plate, which very soon cuts this edge so as to make it rough and uneven, thereby producing defective castings.

My invention is intended to obviate this difficulty, thereby making the chill-plate much more durable and enabling many more castings to be made from a single plate before it is worn sufficiently to occasion defects in the castings.

The improvement is especially applicable to the casting of mold-boards for plows, though it may also be used for other castings; and therefore I do not limit my invention to the production of the above-named castings only.

The invention consists in the devices and combinations of devices, all of which will be hereinafter more fully described, and pointed out definitely in the claims.

In the drawings, A represents the lower part of the flask or mold, which, in general features, is of ordinary construction, and adapted to the particular casting which it is desired to produce.

The mold shown in the drawings is adapted to the casting of mold-boards for plows. The pattern B is shown in the drawings of the form of an ordinary mold-board for plows, with this exception: At the edge b , which is the outer edge, or the one next to the sprue as it lies in the mold, there is provided a flange,

B', which is attached to the lower corner of the edge b , and projects outward, the first portion, b' , being of about the same thickness as the pattern, and the extreme outer portion, b^2 , thereof being of less thickness, the upper surface being cut away somewhat, as shown in Fig. 7 of the drawings. This flange is of sufficient width and thickness to produce a passage, a , in the mold large enough to accommodate the flow of molten metal. It is evident, also, that in preparing the mold with this pattern the passage a will be in the form of a recess or depression outside of and lower than the bottom of the recess a' , formed by the pattern for the mold-board proper, as shown in Fig. 6 of the drawings.

The chill-plate C is constructed generally like chill-plates in ordinary use, in this instance being of such form as to conform to the mold-board pattern B. It is wider than the pattern, and at the edge next to the sprue is provided with a rib or projection, c , along the under side, of a thickness equal to the thickness of the pattern, and of a width equal to the width of the first section, b' , of the flange on the pattern.

The cope D is made in separate and detachable form, so that it may be removed from the mold at pleasure. The back side of the cope is fitted to the thickened edge of the chill-plate, and is constructed with its upper part flanged or projecting inward over the top of the plate, as shown at d in Figs. 3 and 6 of the drawings. This cope is provided with a sprue, d' , which opens at its lower end into a longitudinal channel, a^2 , in the mold below, just outside of the passage a , with which it communicates by short openings or cross-passages a^3 .

At the inner end of the cope is a lug, d^2 , which is received by a slotted lug, E, on the chill-plate, provided with a slot or recess, e , for the lug on the cope. The outer end of the cope is held by a pin entering the mold-frame—an ordinary fastening in molds.

The chill-plate is provided with a strengthening rib or flange, F, running longitudinally along its upper surface, and which at each end is bent and provided with holes f for the reception of suitable handles G, by means of which the plate is lifted and carried from mold to mold in the process of casting with a single

chill-plate, to which process my improvement is adapted. In using but a single chill-plate the latter soon becomes heated, and the handles are therefore made detachable, so that
5 they may be kept cool to enable the plate to be easily handled.

Now, in the process of casting with my improved mold and chill-plate, it will be seen that when all the parts are in position and
10 ready for pouring, as shown in Figs 1, 2, and 6 of the drawings, and the molten metal is poured into the sprue, it will enter the channel a^2 , and pass thence through the opening a^3 into the passage a , through which it
15 flows underneath the ribbed outer edge of the chill-plate, and passes up into the chamber formed by the pattern proper.

It is evident that the metal in its hottest state will strike against the lower outer edge
20 of the chill-plate and flow underneath the rib c , by which it is cooled somewhat, so that cutting of the inner edge of this rib will be almost wholly avoided. This edge will therefore retain its sharpness and smoothness of outline,
25 thereby insuring similar characteristics in the adjacent edge of the mold-board, which is formed against this part of the chill, as shown in Fig. 6 of the drawings.

The roughening and cutting away of the extreme outer edge of the chill-plate will be of
30 no importance, as it will only affect the flange-piece B' , which is formed on the mold-board, when the casting is completed and taken out, the same as in the pattern. This flange-piece
35 is readily broken off from the casting, the edge of which may then be smoothed if necessary.

The chill-plate may be used repeatedly before the ribbed edge will be worn away sufficiently to impair the desired effect and occasion the defects in the castings which have
40 been mentioned above. In fact, more than

twice the number of perfect castings may be made with a single chill-plate than can be produced by chill-plates and molds constructed in the ordinary way.

As already stated, my improvement may be applied to molds for making other castings than mold boards, for it is evident that wherever it is desired to produce a sharp and smooth edge in a casting this improved construction of the chill-plate and mold may be made available.

The stepped form of the flange on the pattern is not a necessity, though I prefer it, as it affords a slight protection to the lower sharp edge of the chill-plate, causing the molten metal to flow up directly against the flat surface of the rib, as will be seen from the relative arrangement of these parts shown in Fig. 6 of the drawings.

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

1. The mold A, provided with the depressed passage a , longitudinal passage a^2 , and connecting-passages a^3 , in combination with the chill-plate C, provided with the rib c , and the detachable cope D, provided with a sprue, d' , substantially as and for the purpose set forth.

2. The combination of the mold A, provided with the depressed passage a , longitudinal passage a^2 , and connecting-passages a^3 , the chill-plate C, provided with the rib c and a slotted lug, E, the detachable cope D, provided with the sprue d' and the lug d^2 at its inner end, substantially as and for the purpose set forth.

THELUS M. BISSELL.

Witnesses:

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GEO. W. MATTHEWS.