

T. INSULL.
CASTING APPARATUS.

No. 175,993.

Patented April 11, 1876.

FIG. 1.

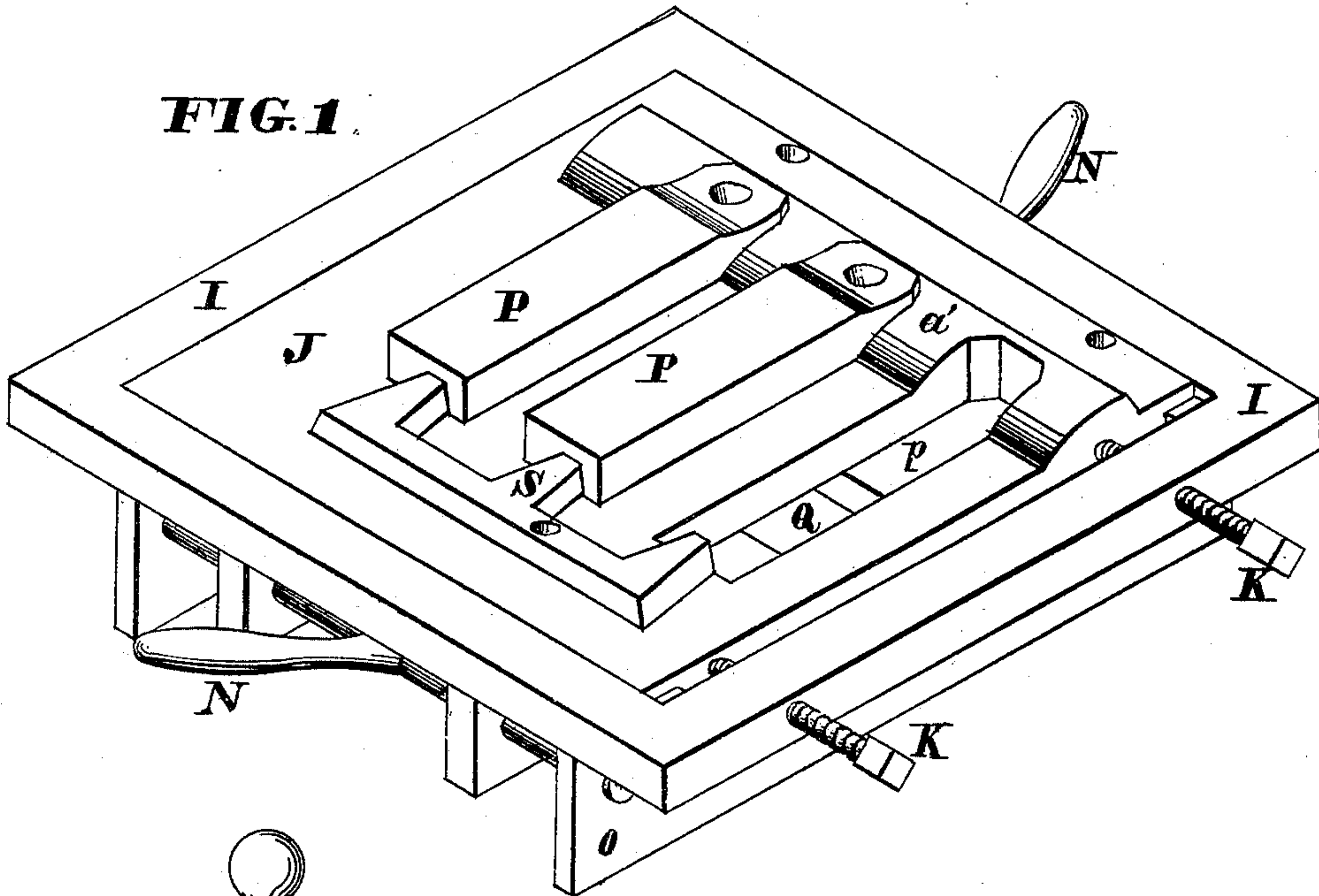


FIG. 2.

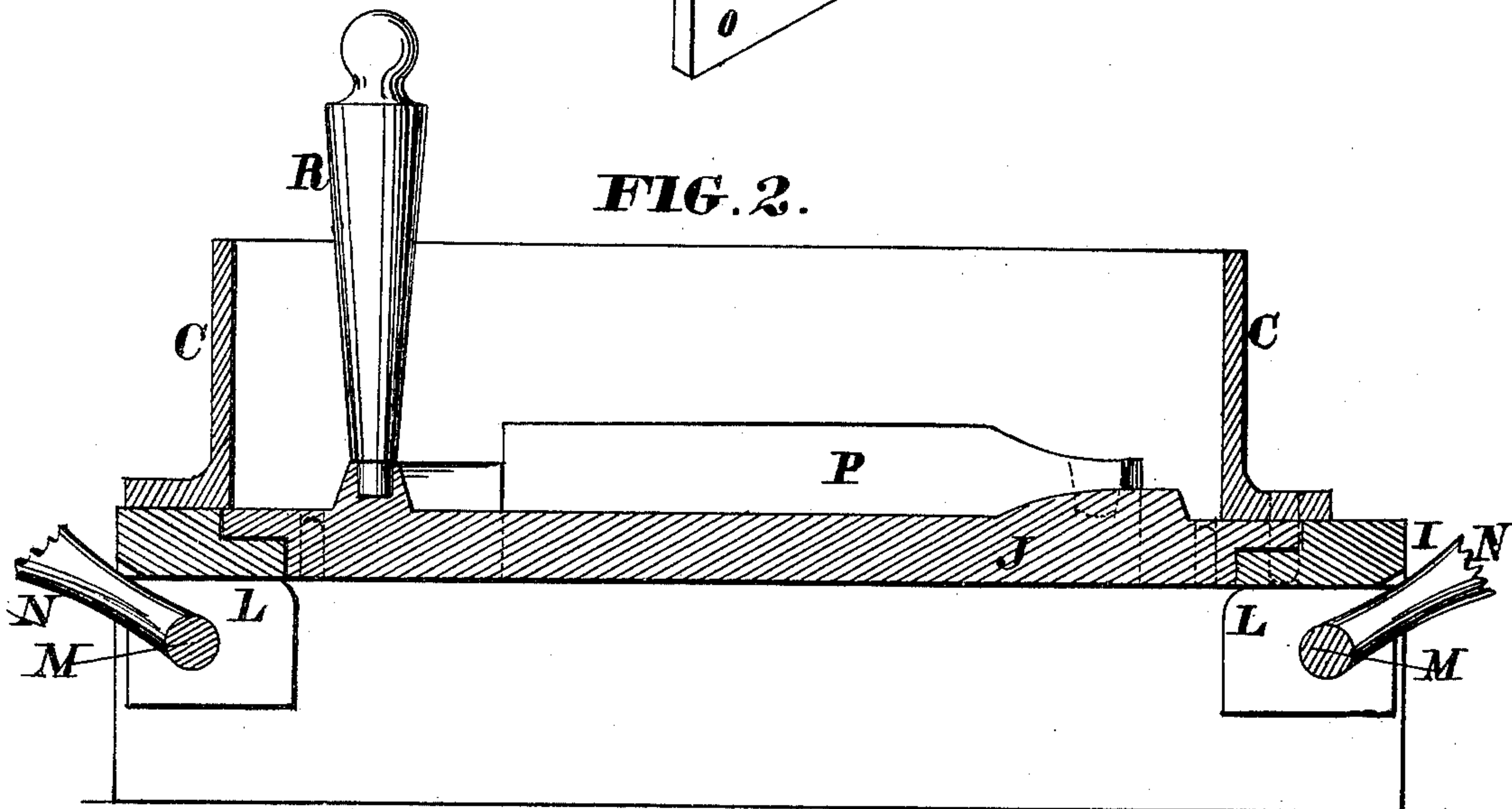
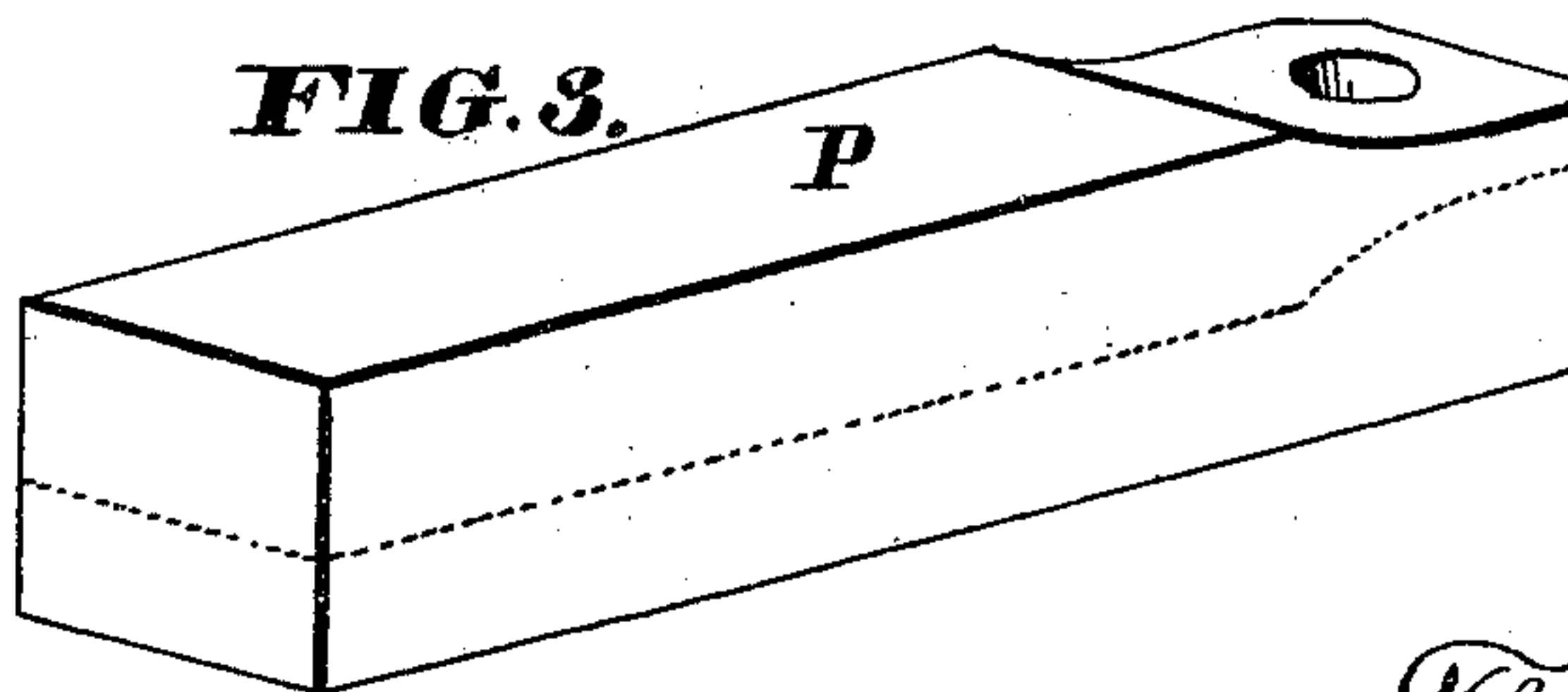


FIG. 3.



WITNESSES

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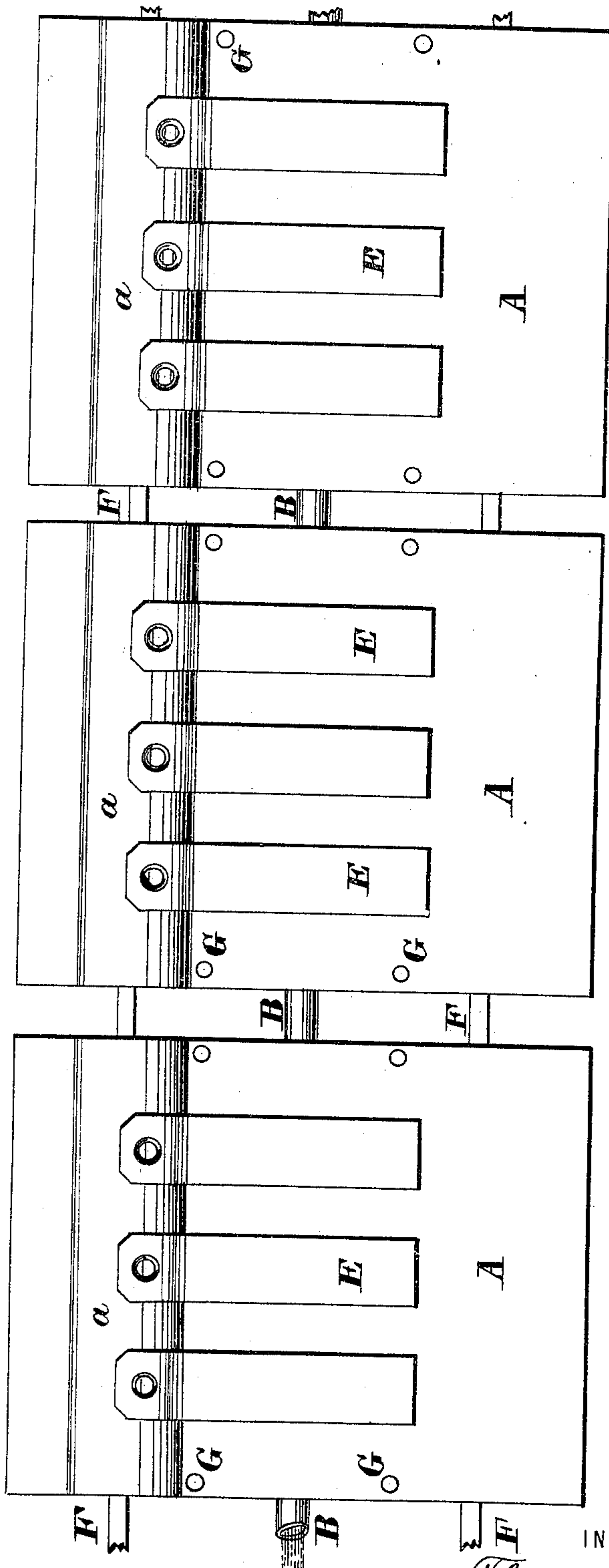
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FIG. 4.



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FIG. 5.

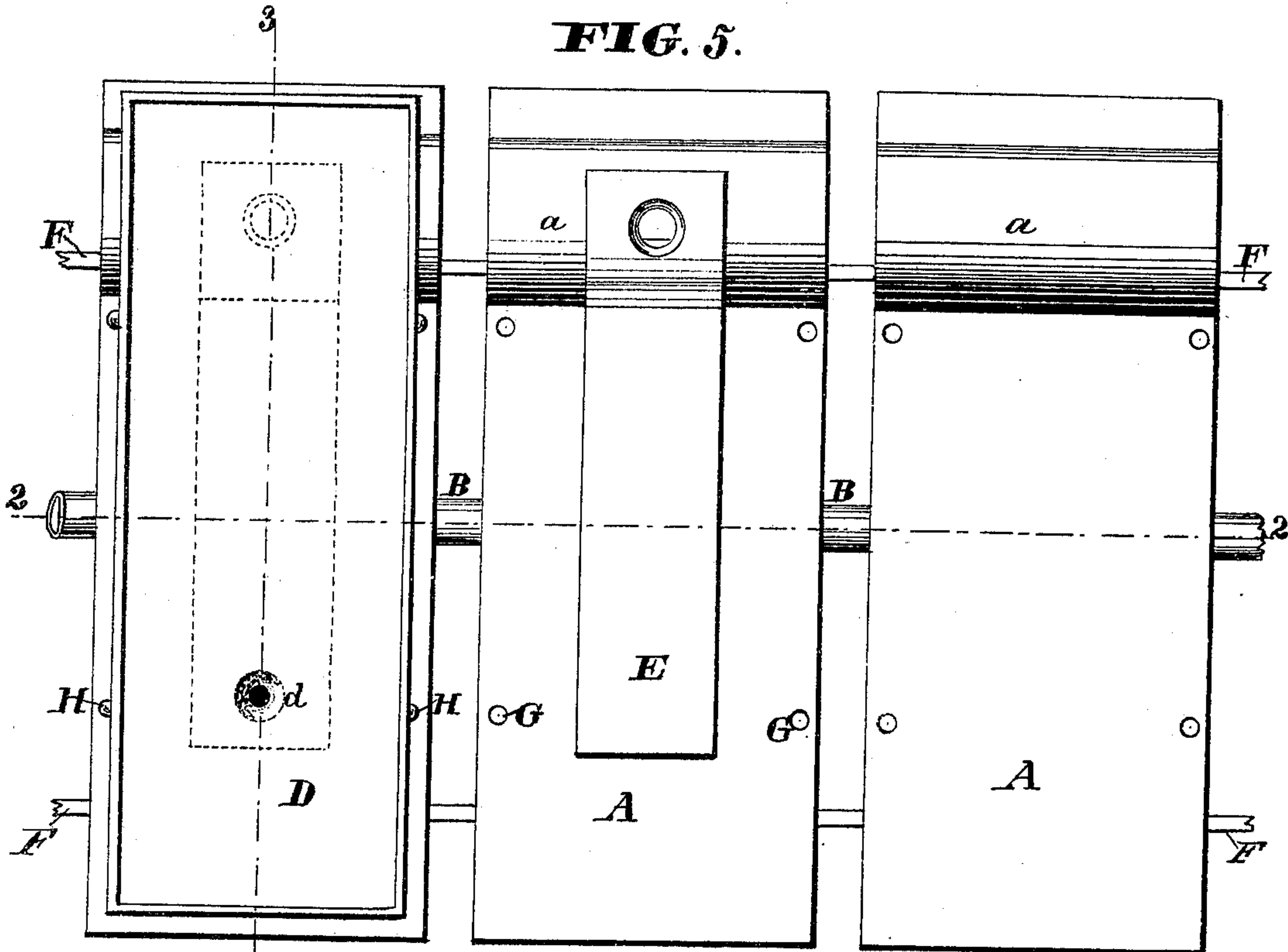


FIG. 6.

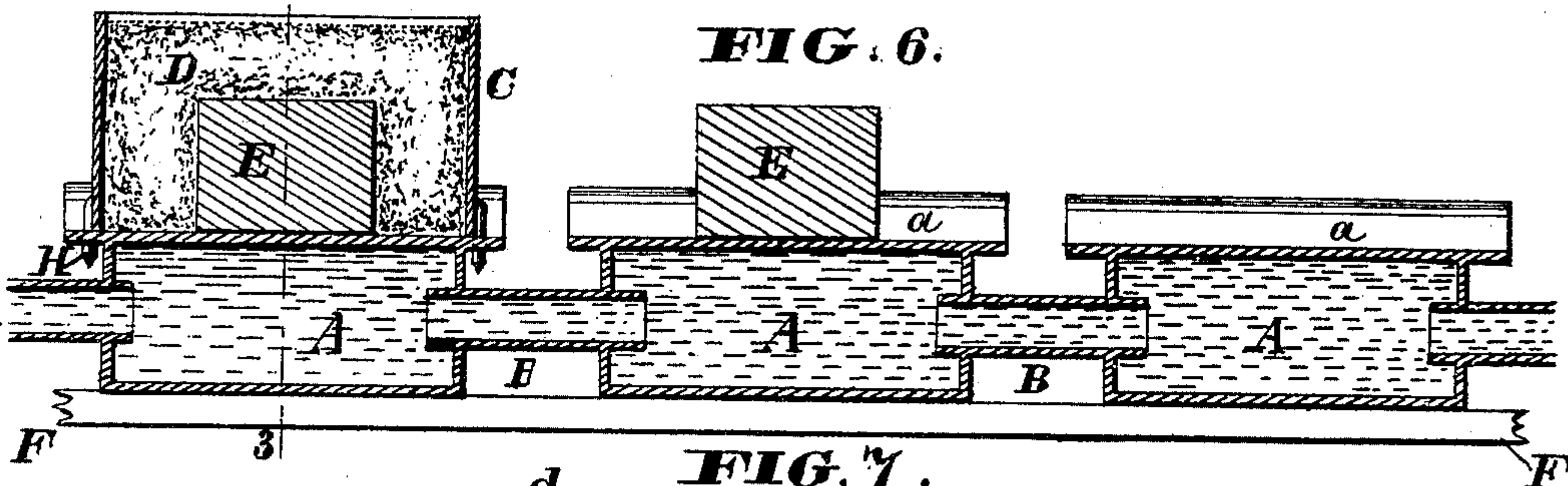
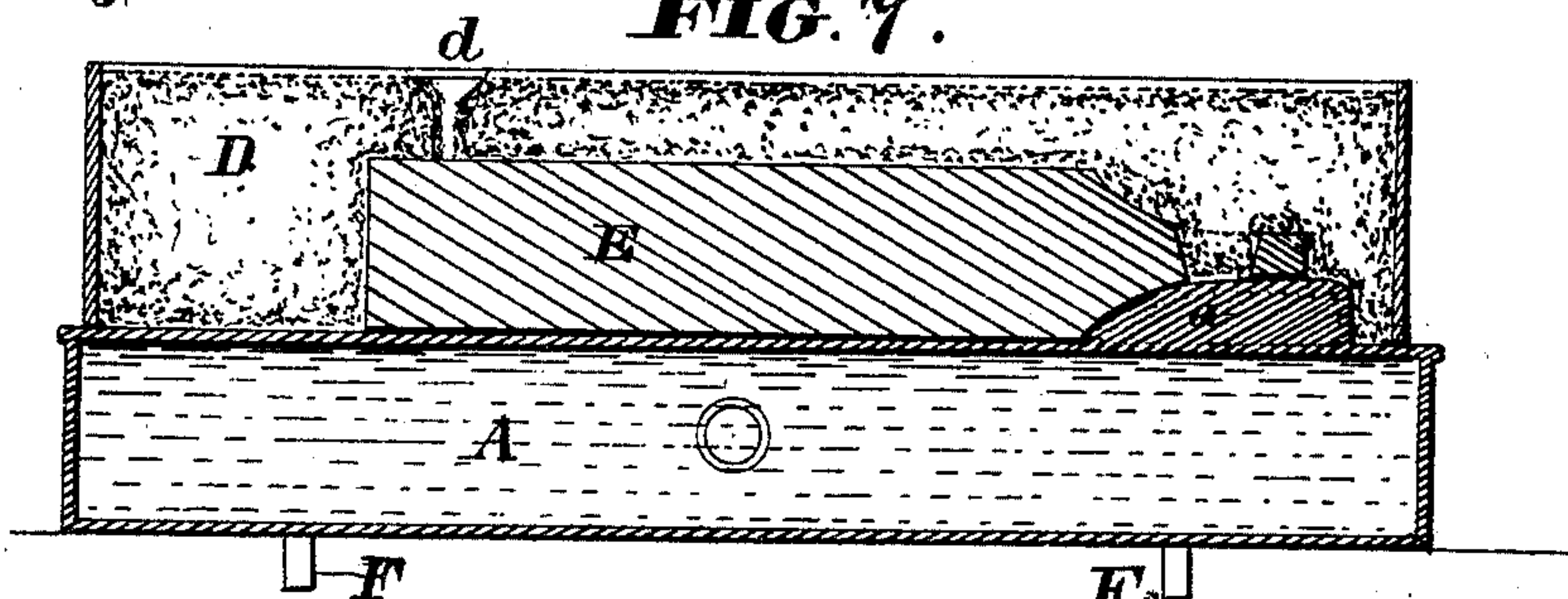


FIG. 7.



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UNITED STATES PATENT OFFICE.

THOMAS INSULL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF, JOHN J. DOVEY, AND JAMES F. DOVEY, OF SAME PLACE.

IMPROVEMENT IN CASTING APPARATUS.

Specification forming part of Letters Patent No. **175,993**, dated April 11, 1876; application filed January 21, 1874.

To all whom it may concern:

Be it known that I, THOMAS INSULL, of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in Casting Apparatus, of which the following is a specification:

My invention relates to means of producing such castings as admit of being made with one chilled face; and it consists in constructing the base of the apparatus of a connected series of chambered nowels, through which water is caused to circulate. The cope of the mold is formed with sand, preferably by the use of a movable joint-plate and cam-levers for elevating it, the primary object of the invention being to dispense with the necessity of forming more than one part of the mold at each operation.

In the accompanying drawing, Figure 1 is a perspective view of a molding-bed and joint-plate illustrating the application of the invention to the molding of three sash-weights in one flask, with two patterns in position and one pattern-seat vacant. Fig. 2 is a vertical longitudinal section of the same on a larger scale. Fig. 3 is a perspective view of a sash-weight pattern. Fig. 4 is a plan of three connected chills with three castings on each, such as will be produced in molds formed on the beds shown in Fig. 1. Fig. 5 is a plan of three connected chills adapted for forming one casting on each, on one of which the cope is shown in position, supposing the act of casting to have been just performed; in another the casting is shown after removal of the cope, while in the third the chill is shown alone. Fig. 6 is a vertical section of the same on the line 22, Fig. 5. Fig. 7 is a vertical section on the line 33, Figs. 5 and 6.

In Figs. 1 and 2, I represents a rigid frame containing the joint-plate J, which is fixed therein by means of screws K, so that a plate adapted for any description of castings may be applied. The present illustration shows a plate adapted for the molding of sash-weights P P being patterns for molding said weights, and p a vacant pattern-seat therefor.

The patterns P are so constructed that the

portion of each projecting above the surface of the joint-plate J in the lowest position of the latter, will correspond with the desired shape of the casting. This is illustrated in Fig. 3, where the dotted line indicates the surface of the joint-plate. The ridge *a'* forms a hollow in the sand to fit the ridge *a* on the chill, as shown in Fig. 4, which ridge, corresponding in curvature with one concave side of the neck of the sash-weight, adapts the said chill for the formation of one, two, three, or more of said weights at each operation.

The connected frame I and joint-plate J rest on cams L on shafts M, having hand-levers N, and journaled in the bed-frame O. The patterns P rest directly on the transverse bars Q of the bed-frame. C represents the cope or flask. S are the sprue patterns, and R the gate-pattern.

Referring to Figs. 4, 5, 6, and 7, A A A are a series of water-tight metallic boxes connected and supplied with water through pipes B B B. These boxes form the bases of the flasks, the top surface being made flat or of any shape to correspond with the desired form of one face of the castings to be produced. The present illustration shows the application of the invention to the production of sash-weights, projections *a a* being formed on the chills to impart the proper shape to the necks of the weights.

C represents the cope or upper part of one of the flasks, and D the sand, which is rammed into it in customary manner. *d* is the pouring-hole or gate in the sand produced by the gate pattern R. E E represent the castings. F F are rods on which the connected series of boxes may be supported for carrying them from place to place. Ten or any desirable number of the box-chills may be used in connection. Holes G are provided around the margins of the chills to receive dowels or pins H, by which the cope is held in place.

The operation is as follows: The boxes having been made with tops of proper shape to suit one face of the desired castings, and connected with water-pipes so that water may be circulated through them. When casting is

to be performed the patterns and joint-plate are placed in position within the frame I, on the bed O, either one or more patterns being arranged for each chill as their size or other circumstances may render most convenient. The cope C is then placed over the patterns and joint-plate and rammed with sand in the usual way. The levers N are then thrown down, elevating the cams L and lifting the joint-plate and cope clear of the patterns. The cope is then lifted off the plate J and placed on one of the chills A, and this operation is repeated until all the chills are supplied. The metal is then poured.

It will be understood that this mode of forming one entire face or side of the mold of a chill dispenses with the necessity of forming more than one part of green sand at each operation. The labor of molding is thus greatly reduced.

The connection of all the chills by pipes so that water may be circulated continuously through the whole series also affords great facility in producing castings in large numbers.

I am aware that the use of water-chills in casting is old and common. This, therefore, I do not claim.

I claim as new—

1. The combination of the movable joint-plate J, frame I, and screws K, with the bed-frame O, and elevating devices L M N, substantially as and for the purpose set forth.

2. The series of hollow chills A, constituting each one side or face of a mold, and connected by pipes B, permitting a continuous circulation of water throughout the series, substantially as herein described.

3. The combination of the hollow-chills A, connecting-pipes B, and metallic bosses a, with the sand-cope D, formed and applied substantially as and for the purpose set forth.

In testimony of which invention I hereunto set my hand this 19th day of January, 1874.

THOMAS INSULL.

Witnesses:

OCTAVIUS KNIGHT,
WALTER ALLEN.