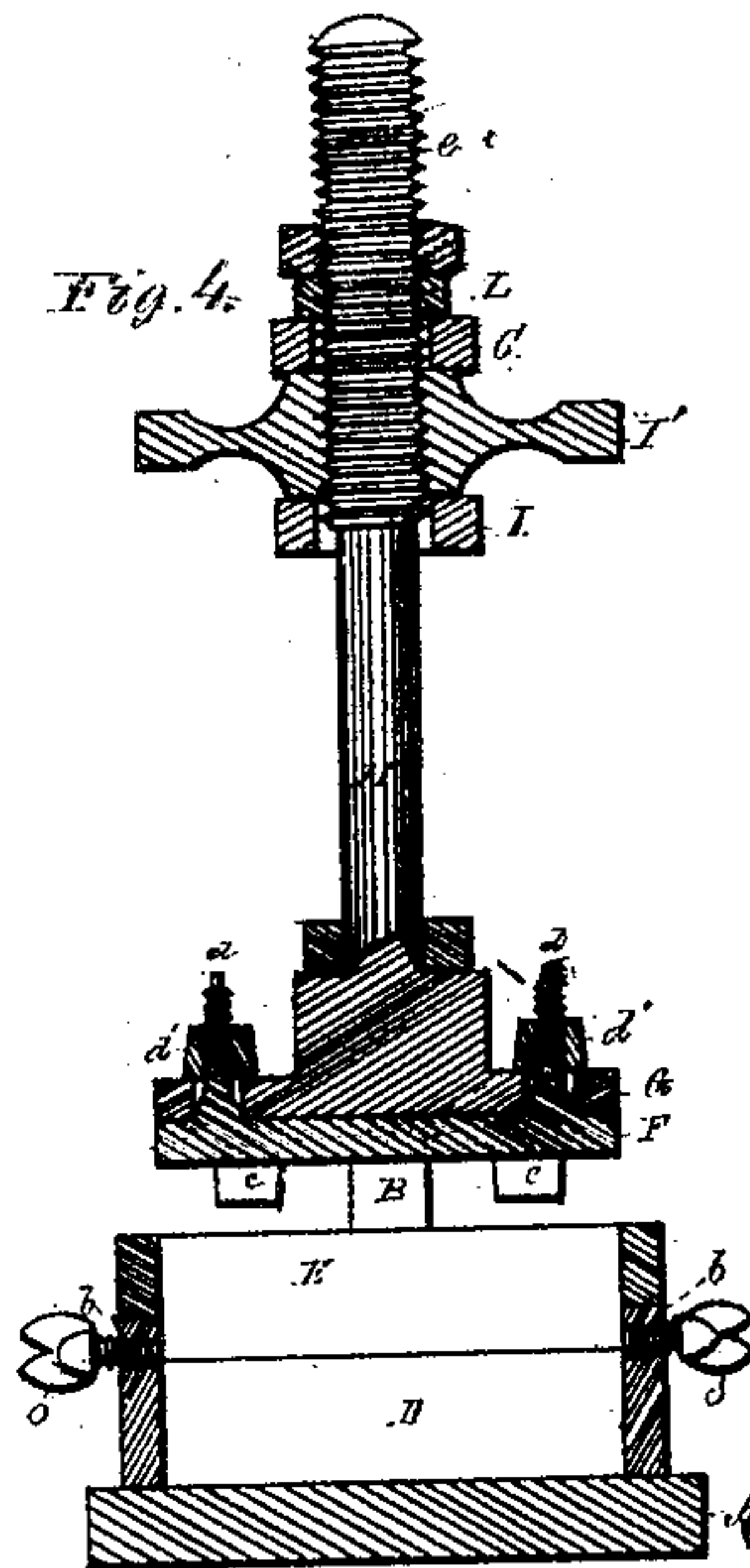
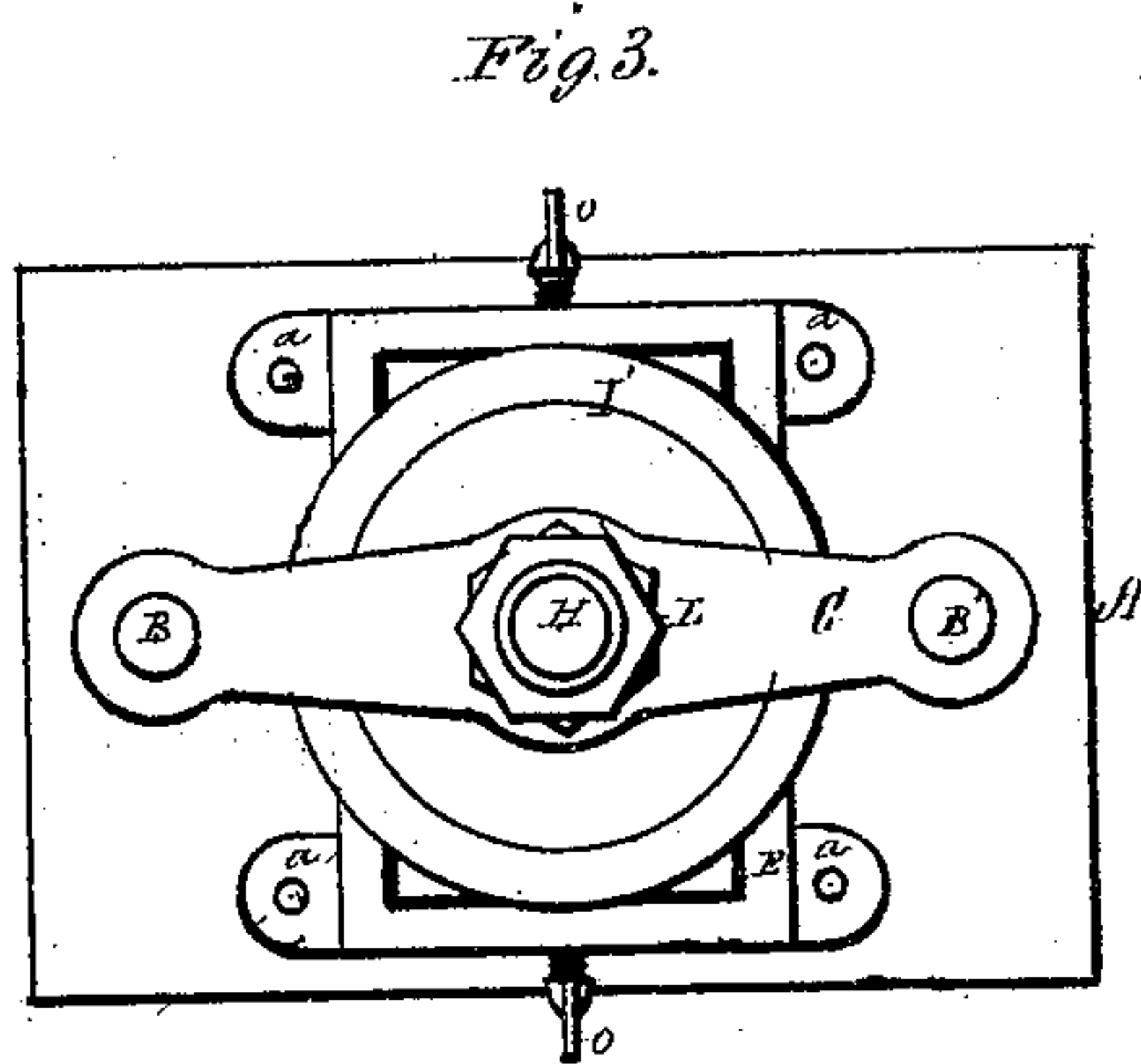
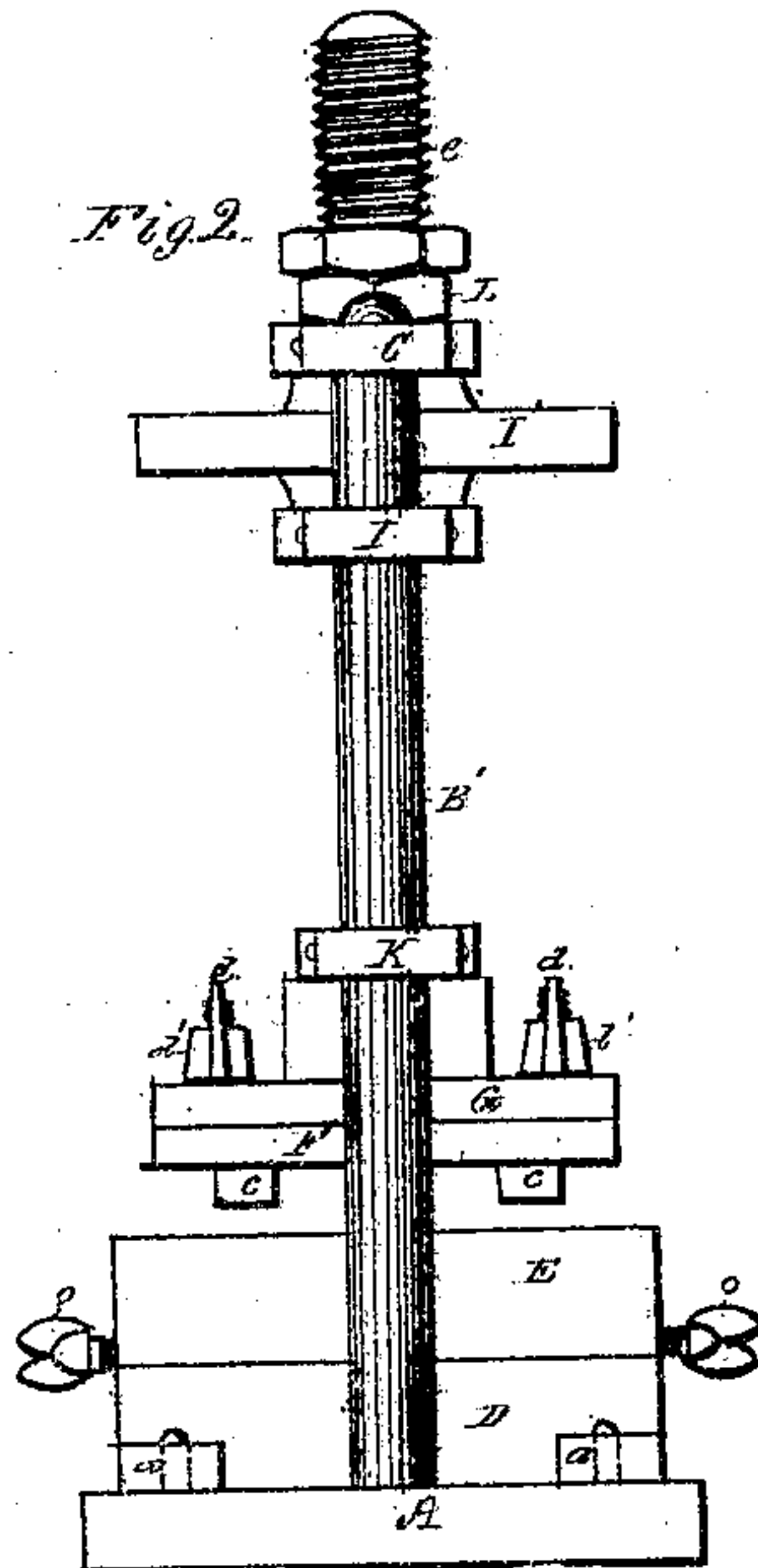
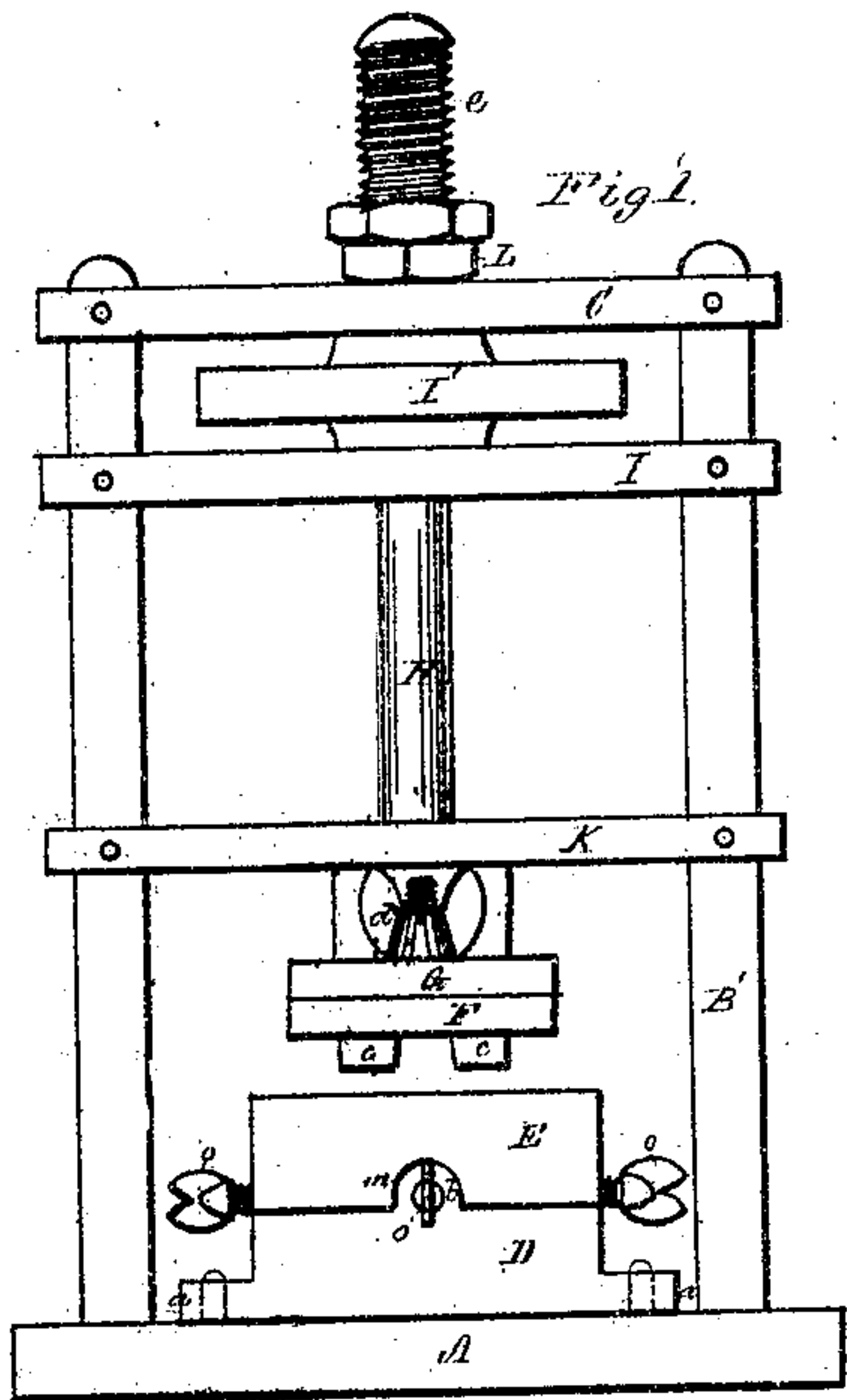


Peet & Sawyer,

Molding Mach.

No. 101,033,

Patented Mar. 22, 1870



Witnesses

George S. Jones
Thos. Ford

J. Peet and D. Sawyer

by their attorney

F. P. Hale

UNITED STATES PATENT OFFICE.

SAMUEL JOSEPH PEET AND DANIEL SAWYER, OF BOSTON, MASSACHUSETTS,
ASSIGNORS TO SAMUEL JOSEPH PEET.

IMPROVEMENT IN MACHINES FOR FORMING MOLDS.

Specification forming part of Letters Patent No. **101,033**, dated March 22, 1870.

To all persons to whom these presents may come:

Be it known that we, SAMUEL JOSEPH PEET and DANIEL SAWYER, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Machine or Apparatus for Forming Molds in Sand, Clay, &c.; and do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings.

Of the said drawings, Figure 1 denotes a front elevation of the said apparatus; Fig. 2, a side elevation of the same, and Fig. 3 a top view thereof. Fig. 4 is a vertical and central section taken longitudinally through the flask, the hopper, and the pattern-plate.

It is a fact well known that the method heretofore adopted for forming molds in sand, clay, &c., for the production of metallic castings has not only been attended with much labor and difficulty, and required a great amount of care and skill, but the molds so produced, although apparently perfect, were often found to be defective, and consequently the castings produced therefrom were imperfect. These defects in the molds arose principally from two causes—viz., the want of a sufficiently firm, uniform, and equable compression of the sand or material used in the formation of the mold, and the mode of separating the model or pattern from the matrix or mold, which not only caused an undue enlargement of the mold, but produced more or less fracture or breakage of the walls thereof.

To remedy these evils, and to produce a machine for the purpose above mentioned which shall not only be simple in construction and effective in operation, but be absolutely positive in its movements, are the objects of our invention.

In the said drawings, A denotes the base of the machine, from which two standards or posts, B B', extend vertically upward, and are surmounted by a cross head or bar, C. D is a metallic box or semi-flask, which is of a rectangular shape, and is open at both top and bottom. The said box rests upon the base A, and is provided with a series of projections or ears, *a*, by which the said box is firmly secured in position by means of pins extending through the ears and into the base A. The said box or semi-flask has also four segmental or other

proper-shaped projections, *b*, formed on its upper face, each of the same having a thumb-screw, *o*, extending horizontally through it. E is a hopper or box for the reception of the sand or material of which the mold is to be made. The said hopper is also of a rectangular shape, is open at the top and bottom, and corresponds in length, width, and in internal area with the semi-flask or box, on which it is placed; and, furthermore, there are four segmental cavities or sockets, *m*, formed in the under face of the hopper, to receive the flask-projections *b*, the same serving to maintain the hopper in its correct position upon the semi-flask while the machine may be in use. F is the model plate or carrier, to whose under surface the model *c*, to form the sand mold, is attached, the same being as shown in Figs. 1, 2, and 4. This plate should have a length and width nearly corresponding with the internal length and width of the hopper, within which it is to slide up and down. The said plate is connected with a piston-head or follower, G, by means of thumb-screws and nuts *d d'*, as seen in the drawings. Furthermore, the said plate is to be so connected with the follower or part G as not only to maintain a true and central position when firmly screwed thereto, but so as to permit the said plate, when the nuts are turned backward a little, to have both longitudinal and lateral movements imparted to it for the purpose of separating the embedded model or pattern from the mold after the same may have been made in the sand, and this without fracture or damage to the mold.

For effecting these results the bases or unthreaded part of the screws *d d'* are formed tapering, their larger diameters being at their lower ends, as shown in Fig. 4, the holes in the follower G to receive them having a corresponding taper, as seen in such figure.

H is a cylinder or rod, to which the follower G and the model-plate are attached. This rod extends upward vertically and centrally through the cross-heads C I K, which not only serve to strengthen the standards B B', but maintain the said rod while being elevated or depressed in its true axial line.

The rod H has a male screw, *e*, formed on its upper end, as seen in Figs. 1, 2, and 4. It

also has a check-nut, L, arranged upon it, for stopping the descent of the pattern or model plate when it may have reached its required point of depression.

I' is a rotary disk or screw-wheel, which is arranged upon the said male screw, and works horizontally between the two cross-heads C and I. By revolving this disk in one direction or the other, the model-plate and model may be either elevated or depressed, as circumstances may require.

Having described the construction of our machine, we will next describe its operation. If we suppose the box or semi-flask D and the hopper to be in the positions as shown in Figs. 1 and 2, and the pattern-plate to be elevated above the same, as therein shown, we first throw into the hopper a sufficient amount of sand, loam, or other molding material or materials to fill the semi-flask full, or flush with its top surface, after it may have been duly compressed. The model-plate is next to be depressed within the hopper and upon the sand therein, and the latter forced or crowded into the semi-flask or box until the same shall have been suitably compacted and the model shall have made its impress in the sand. The mold having thus been formed, the next operation is to withdraw the pattern or model from it without injuring the walls of the former.

The old method was to strike upon the model, or a pick or bar inserted therein, with a wooden mallet or other device until the model released its hold upon the sand. This often not only produced an undue and unequal enlargement of the mold, but fractured or broke its walls.

In removing the pattern or model from the mold in our improved manner, we first unscrew the thumb-nuts *d' d'*, so as to allow the model-plate to have slight longitudinal and lateral movements, and next elevate the follower G until it bears against the thumb-nuts *d d'*. As the bottom of the model-plate is flush with the top surface of the semi-flask, (having been stopped at this point by the check-nut L,) the points of the thumb-screws *o* are opposite the edges of the said plate. If, now, we turn one of the said screws up against such plate, the model (carried by the plate and embedded in the sand) will be moved, and will

move the opposite wall of the mold a small given distance. We next turn back the said screw to its former position, and then proceed in like manner with the opposite thumb-screw, and thus move the model back and against the opposite wall of the mold, and so as to force such wall outward the requisite distance. Thus by continuing a like operation with all the screws *o* we shall have slightly enlarged the mold on all its vertical sides, so that by simply turning back the thumb-nuts *d d'* the model-plate and the model will be restored to their normal central position, and the latter, by rotating the disk I', will be raised with ease out of the mold without impinging against or injuring the walls thereof.

The mold having thus been completed, the hopper is to be removed from the semi-flask or box D, which can then be readily removed and another or empty one put in its place.

From the above it will be seen that our machine is not only simple in construction, but positive and effective in all its movements.

We claim as our invention the following:

1. The combination of the semi-flask or box D and the hopper E with the pattern *c* and its plate F, the latter being provided with the mechanism described for elevating and depressing the same and the model, as and for the purpose set forth.

2. In combination with the mechanism for imparting to the model or its plate F vertical movements, as described, mechanism or means, substantially as specified, for giving to it or them horizontal movements, as and for the purpose set forth.

3. The above-described mode of attaching the pattern or model plate with the follower or part G, whereby the former may have both longitudinal and lateral movements, as and for the purpose set forth.

4. The above-described molding-machine, having its several parts constructed, arranged, and applied together, and so as to operate substantially as above set forth.

SAMUEL JOSEPH PEET.
DANIEL SAWYER.

Witnesses:

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DAVID CRANE.