

W. H. HOOPER.
PORTABLE MOLDING APPARATUS.

Patented Jan. 26, 1897.

Fig: 1

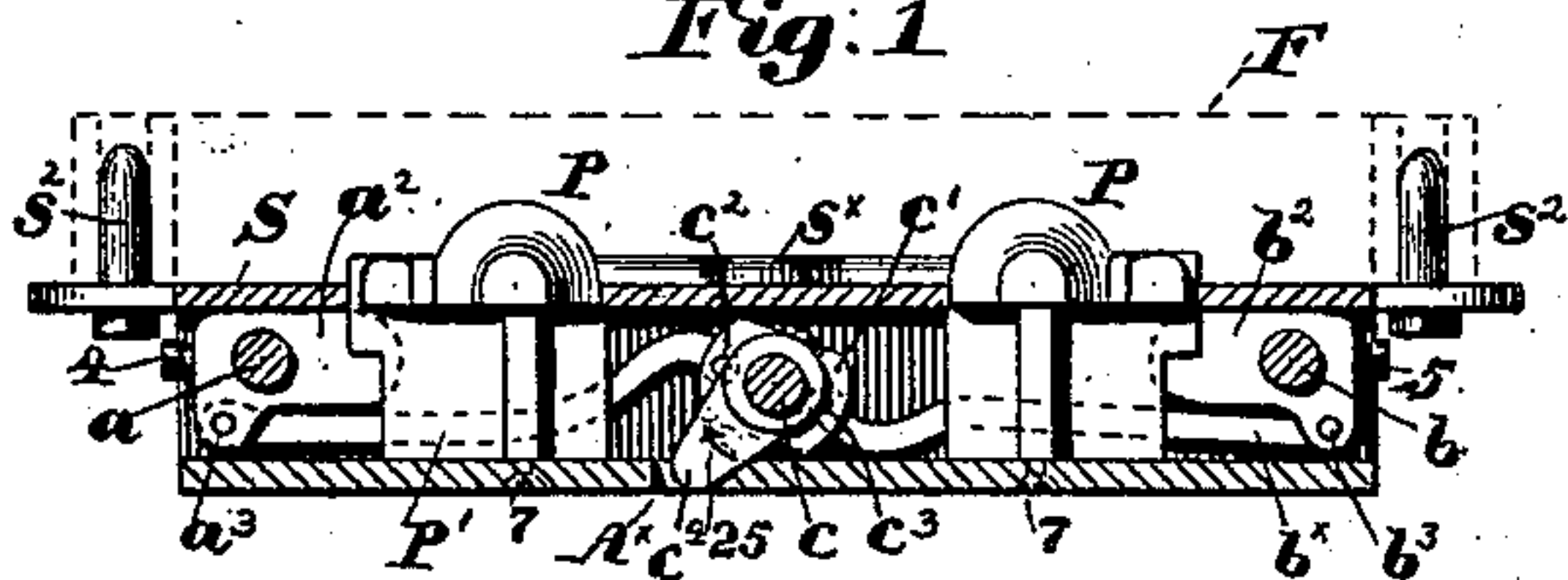


Fig. 2.

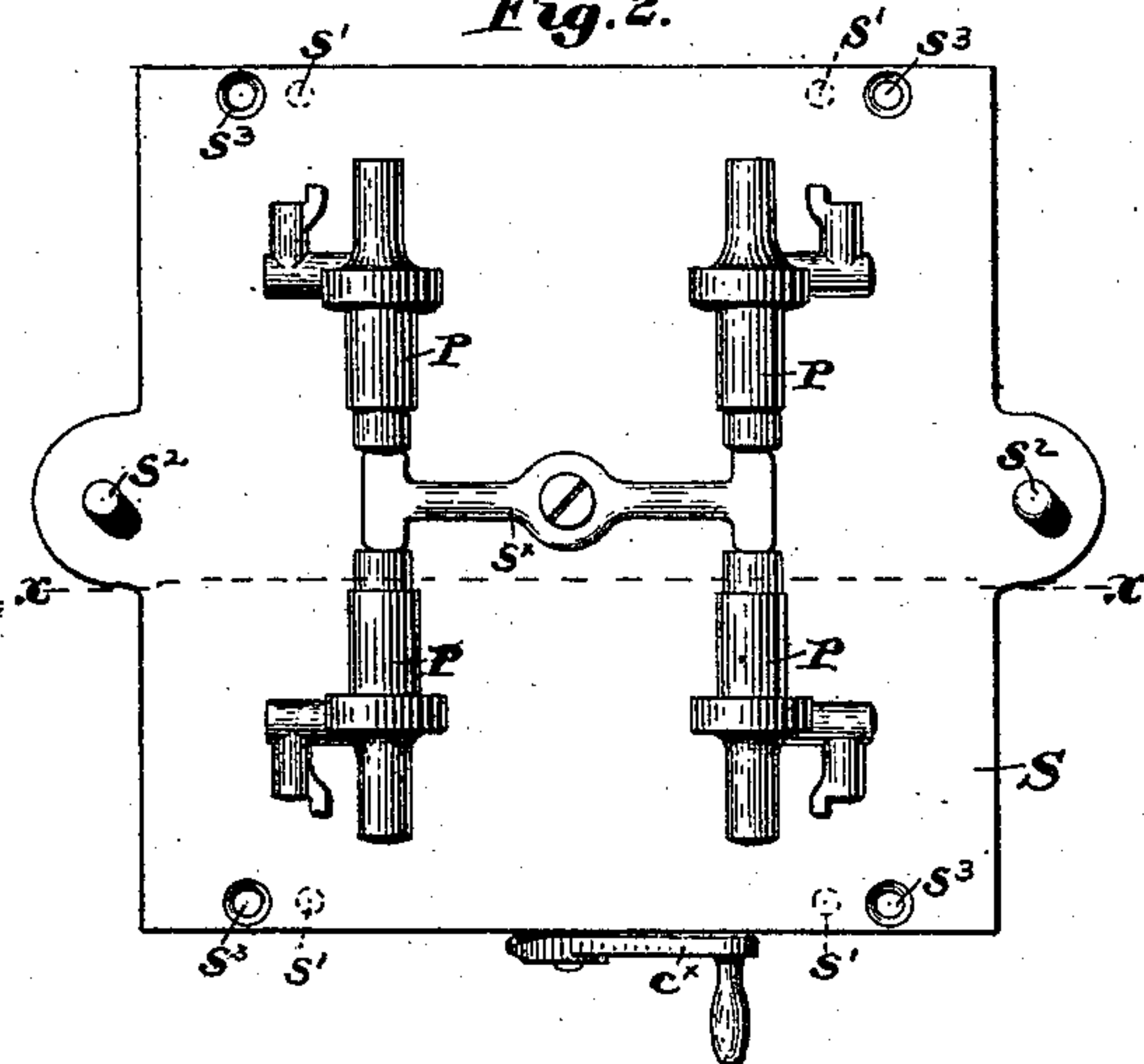


Fig. 3

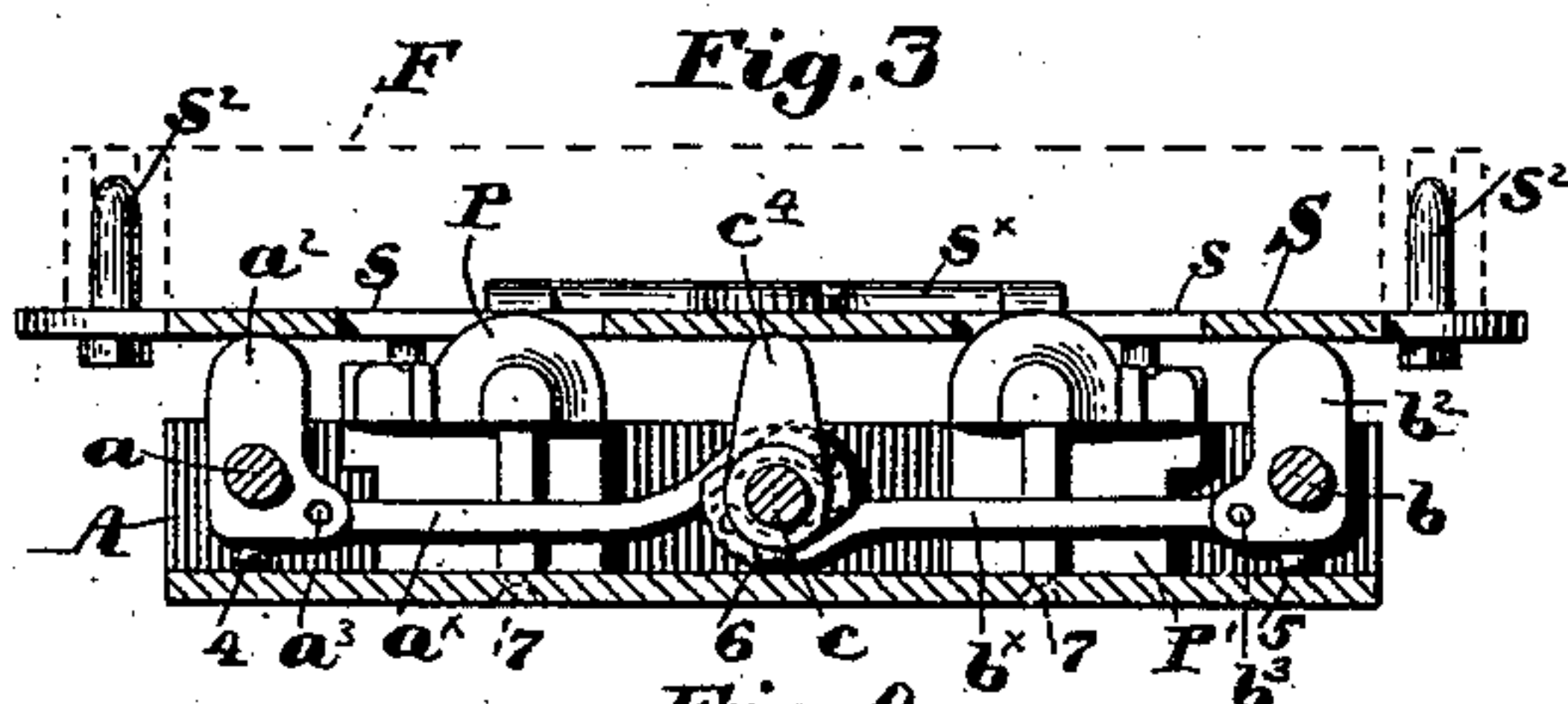
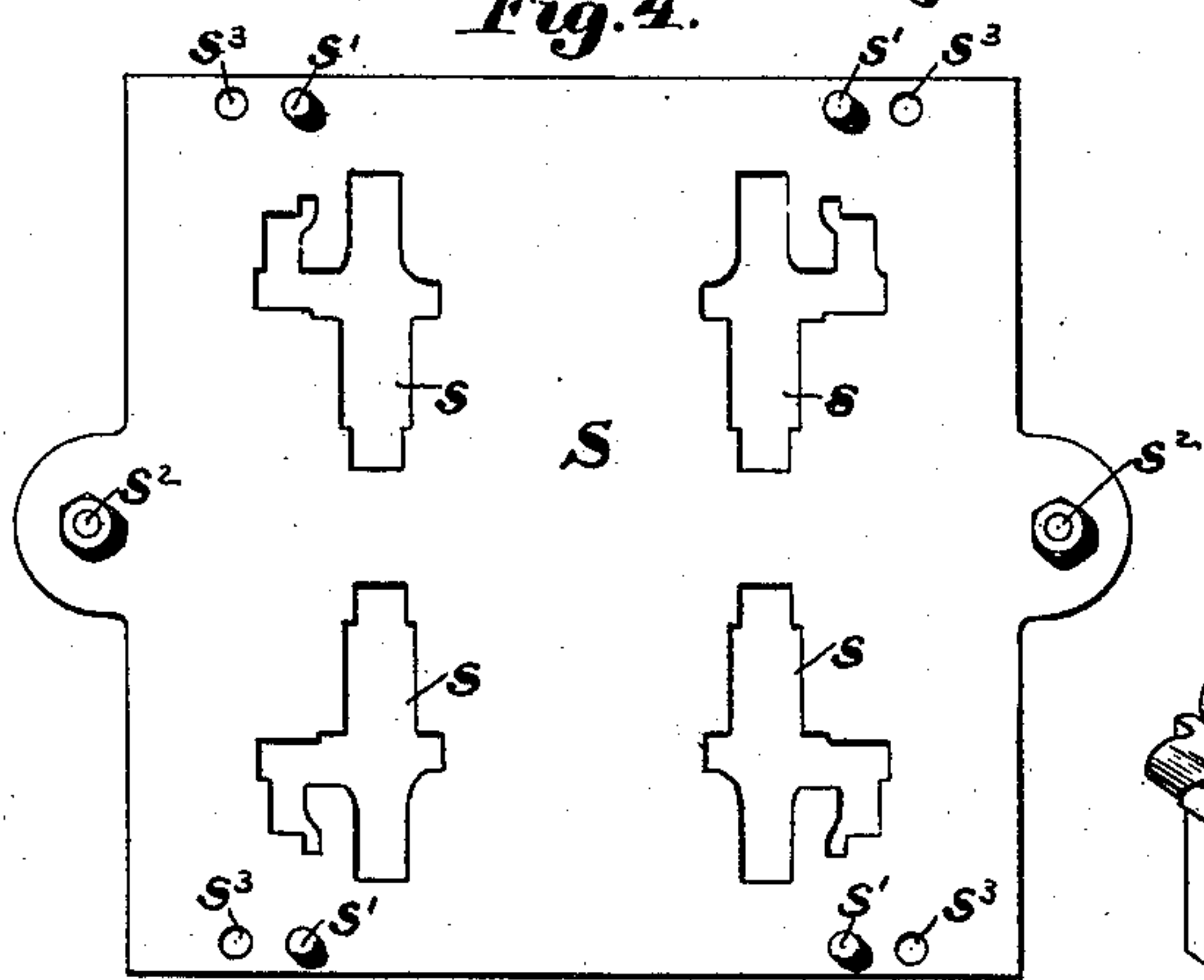


Fig. 4.



Witnesses: S
Walter E. Lombard.
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Fig. 5.

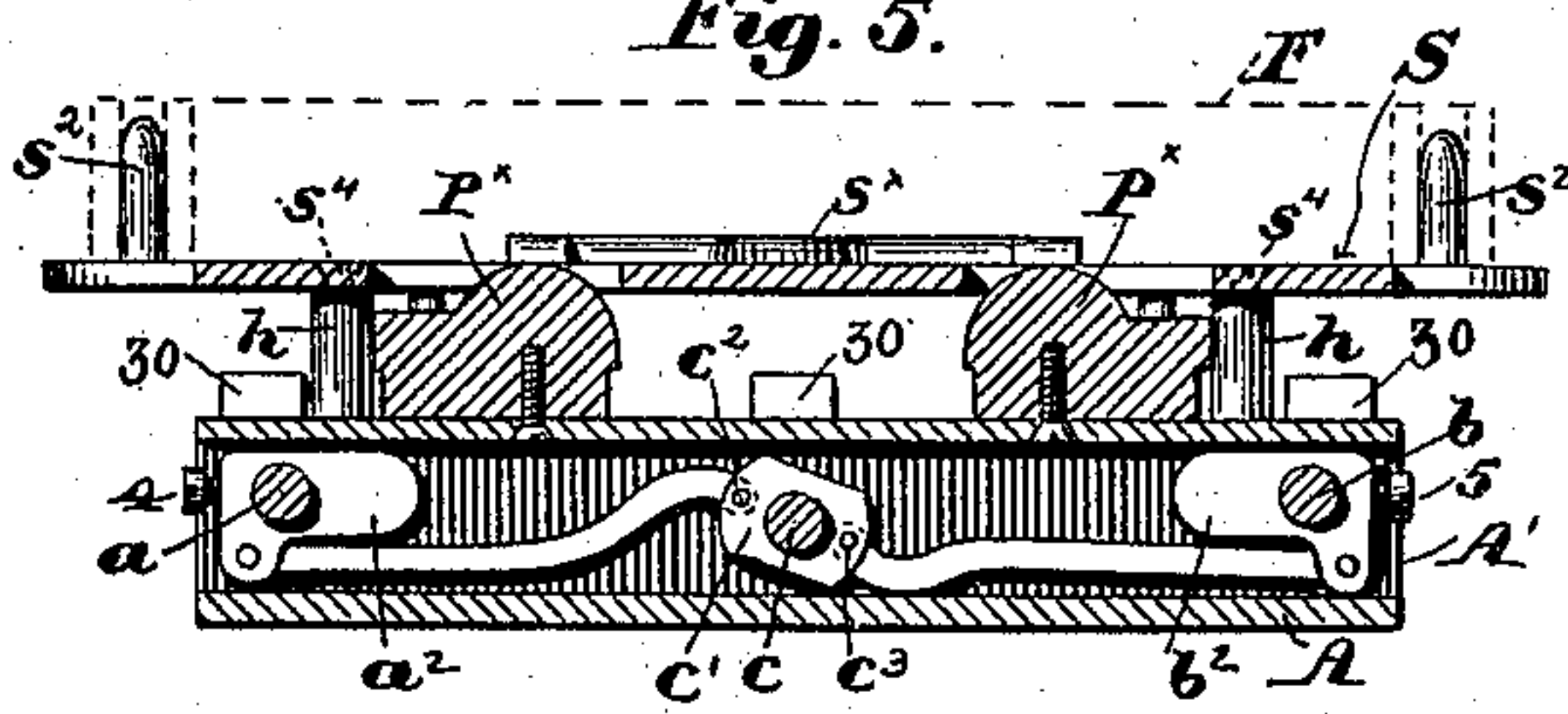


Fig. 6

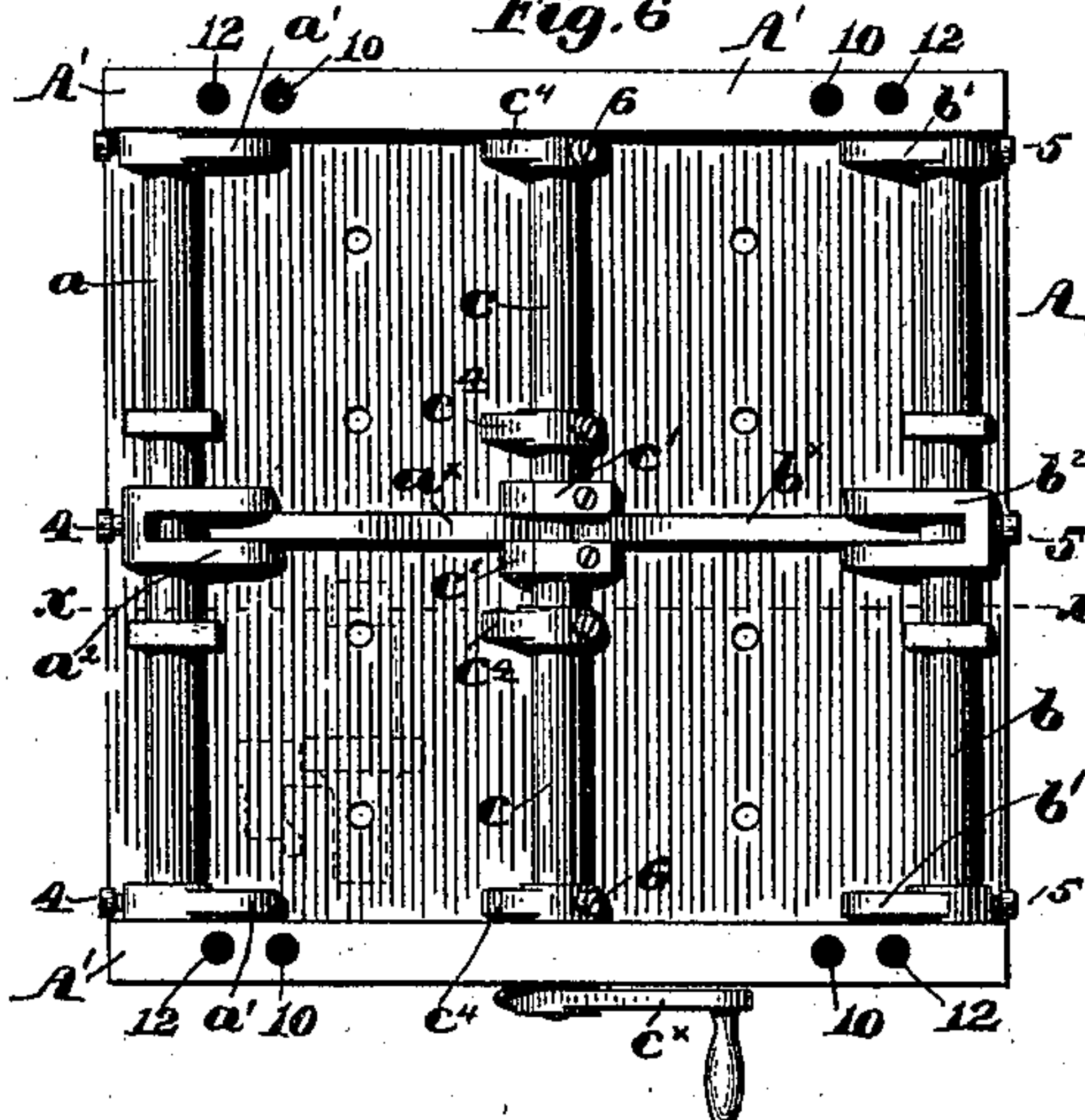


Fig. 7

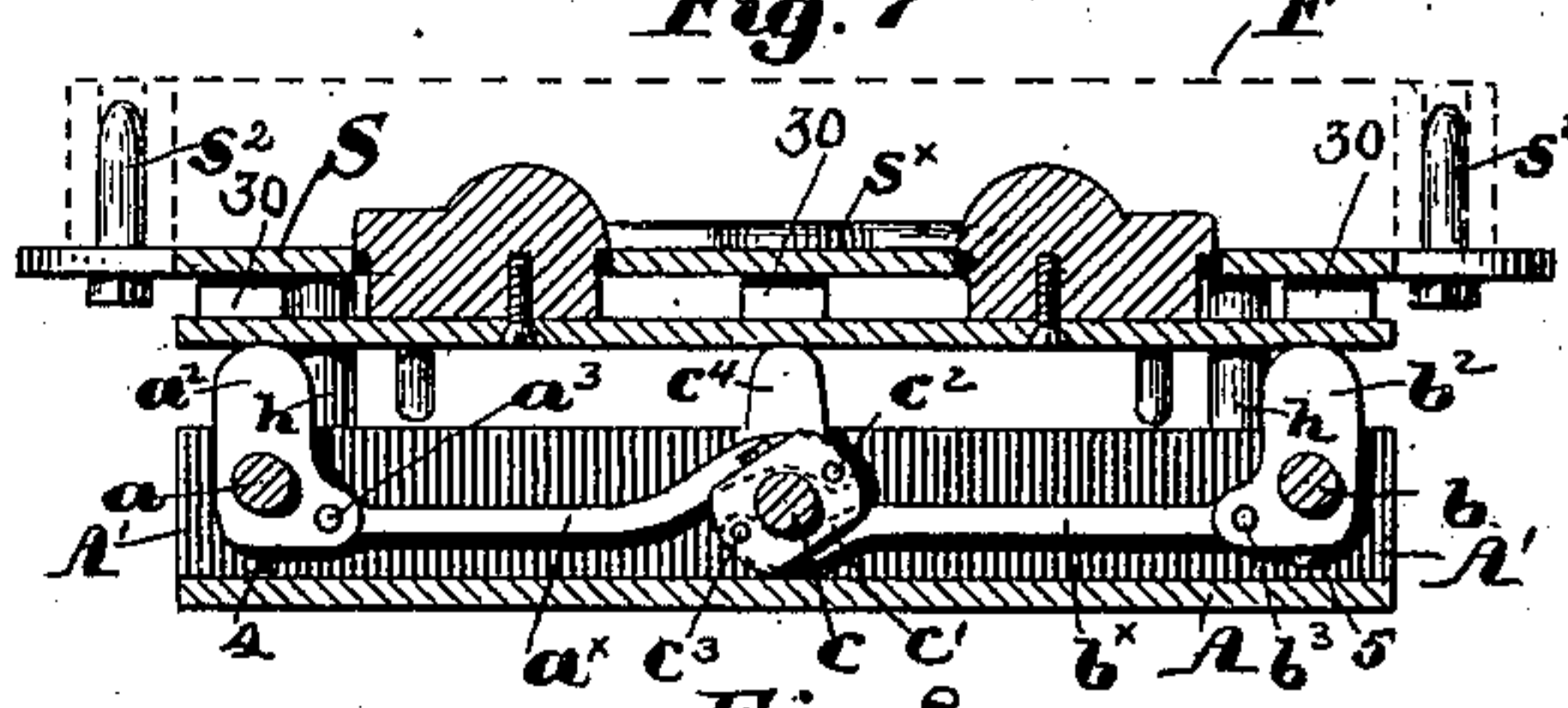
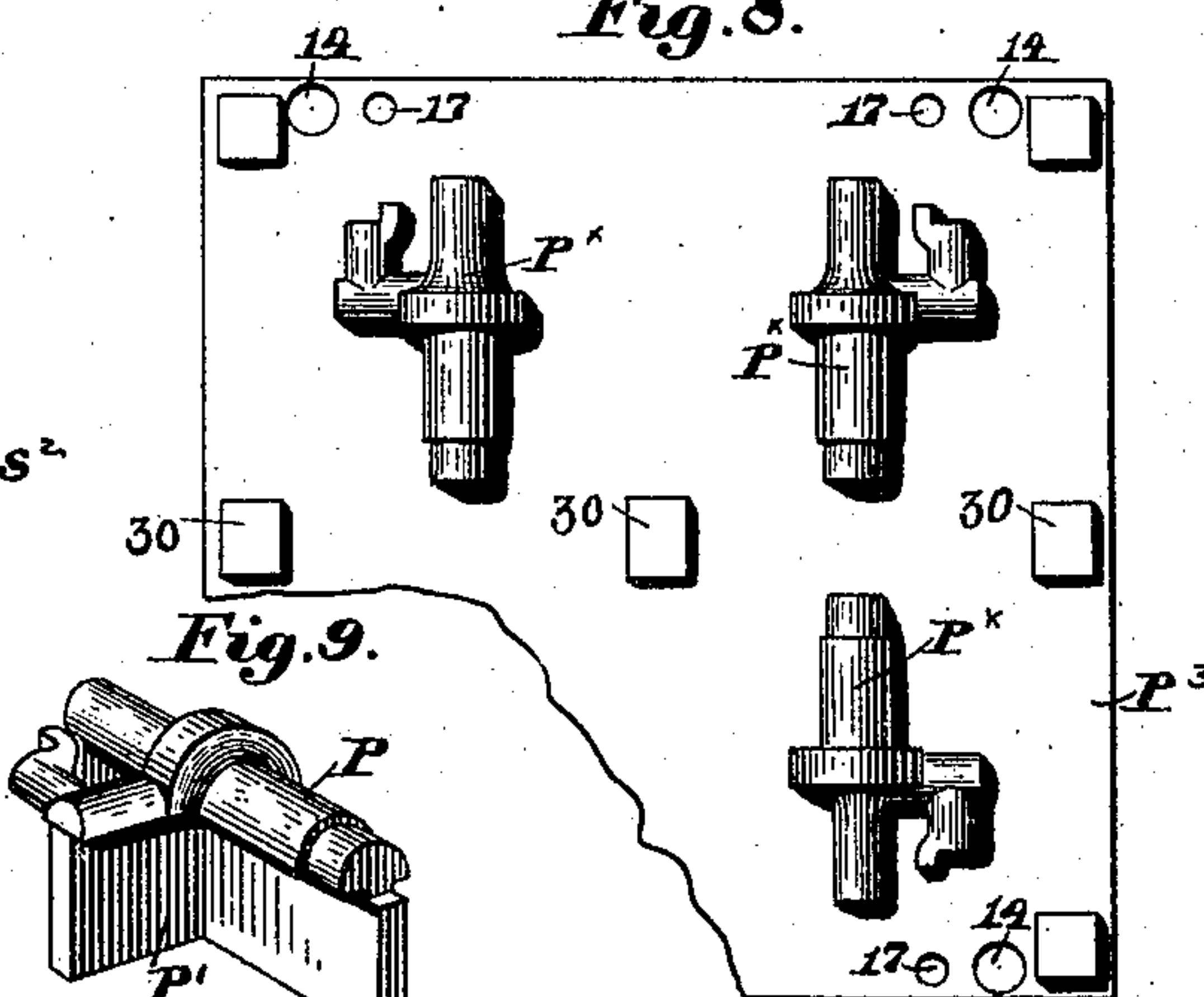


Fig. 8.



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UNITED STATES PATENT OFFICE.

WILLIAM H. HOOPER, OF HOPEDALE, MASSACHUSETTS.

PORTABLE MOLDING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 575,891, dated January 26, 1897.

Application filed June 8, 1896. Serial No. 594,748. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. HOOPER, of Hopedale, county of Worcester, and State of Massachusetts, have invented an Improvement in Portable Molding Apparatus, of which the following description, in connection with the accompanying drawings, is a specification; like letters and figures on the drawings representing like parts.

This invention has for its object the production of a portable molding apparatus, particularly adapted to bench-molding, for use in preparing molds for casting, whereby either the stripper-plate or the pattern with which it coöperates may be moved the one relatively to the other, to thereby strip the pattern from the mold.

Apparatus of this general character have been connected with and are a part of a large and heavy base or molding-press rigidly secured to the floor of the room in which the molds are made.

The flask is mounted on the stripper-plate, the pattern projecting through an opening therein, and the sand is rammed or pressed into a flask, and when the flask has been filled the pattern is lowered below the upper surface of the stripper-plate by mechanism in the base.

Such apparatus is not portable and is very large and cumbersome, causing inconvenience when not in use by taking up common bench or molding-press room, which is often needed for molding other patterns not adapted to such apparatus.

In my present invention I have devised a compact, readily-portable molding apparatus of such construction that the actuating mechanism mounted on the base is adapted to move either the pattern relative to the stripper-plate, or vice versa, with a minimum of labor and time on the part of the molder. It is adapted to tight or snap flasks and can be placed on an ordinary rammer-bench or a molding-press and can be rammed or pressed by hand or by power.

When my molding apparatus is not needed, it can be taken from the rammer-bench or molding-press, leaving the same ready for use on other patterns which may be needed.

Figure 1 is a partial vertical section, on the line x x , Fig. 2, of a molding apparatus em-

bodimenting my invention, the stripper-plate being shown as movable relatively to the pattern. Fig. 2 is a top or plan view of the apparatus shown in Fig. 1. Fig. 3 is a view similar to Fig. 1 with the stripper-plate raised to strip the pattern from the mold. Fig. 4 is an underside view of the stripper-plate. Fig. 5 shows my apparatus with the pattern movable relatively to the stripper-plate, the parts being in position to strip the pattern. Fig. 6 is a plan view of the base and actuating mechanism mounted thereon. Fig. 7 is a view similar to Fig. 5 with the parts in position to have the mold prepared. Fig. 8 is a top view, partly broken out, of the pattern-plate shown in Figs. 5 and 7; and Fig. 9 is a perspective view of a pattern such as shown in Figs. 1, 2, and 3.

The base A is shown as having upturned sides A' , in which are mounted two parallel rock-shafts a b , near the ends of the base, and having adjustably secured thereto, as by set-screws 4 5, controlling-cams a' a^2 b' b^2 , respectively.

An actuating-shaft c is mounted in the base between the rock-shafts and extended at one end through the side A' , a suitable handle c^x , attached to the extended end, providing means for turning the shaft c in one or the other direction. The actuating-shaft c is herein shown as provided with cheek-pieces c' , to which are pivotally connected at c^2 c^3 , on opposite sides of the shaft c , rods or links a^x b^x , which at their outer ends are pivoted at a^3 b^3 to the ears of the cams a^2 b^2 , respectively, said links being shown as oppositely bent at their inner ends to lie close to the shaft c when in their contracted position, Figs. 3 and 7. Controlling-cams c^4 are also secured to the shaft c by set-screws 6, and it will be seen by reference to Figs. 3 and 7 that when the links a^x b^x are drawn in the various controlling-cams a' , a^2 , b' , b^2 , and c^4 will be upturned vertically over their respective shafts, with their upper ends in the same plane. When the actuating-shaft c is turned to extend the links, all the controlling-cams will be depressed (see Figs. 1 and 5) below the tops of the sides A' , the cams c^4 acting as stops at such times and partially entering recesses a^x shown only in Fig. 1, in the base A.

Any desired number of cams may be se-

cured to the actuating and rock shafts, according to the size of the base or the weight of the parts to be lifted by the actuating mechanism.

5 When the apparatus is to be used, as shown in Figs. 1, 2, and 3, the patterns are secured to the base A, one of such patterns being shown separately in Fig. 9, the pattern P shown therein forming one half or side of the mold
10 for a spindle-bolster base.

The pattern P is mounted on a stand P' of such a height that when secured to the base A by suitable means, as by screws 7, exactly the proper portion of the pattern P will be
15 exposed above the stripper-plate when in the position shown in Fig. 1. Four of such patterns may be mounted on the base, as it is herein illustrated, though it will be understood that the particular number or repetitions of the pattern forms no part of the invention.

A stripper-plate S has one or more openings
s therethrough of the exact contour of and to fit over the pattern, so that when the stripper-
25 plate is lowered the pattern P will project above it to form exactly one-half of the mold, as in Figs. 1 and 2, and in Fig. 2 I have shown a piece of metal s^x secured to the top of the
30 stripper-plate to form the runners or channels therein. Upon its under side the stripper-plate has secured thereto guide pins or studs s' , which loosely enter holes 10 in the base sides A', four such guides and holes being
35 shown, to connect the stripper-plate and base telescopically. Flask-pins s^2 extend from the top of the stripper-plate to enter the usual register holes or recesses in the flask F, (shown in dotted lines, Figs. 1, 3, 5, and 7,) the flask
40 resting on the stripper-plate while the sand is being rammed into place.

Supposing the apparatus to be as shown in Fig. 1, with the pattern P exposed, the flask F is put in position on the stripper-plate and the
45 sand rammed home, after which the actuating mechanism in the base is operated by turning the shaft c in the direction of arrow 25, Fig. 1, thereby raising the controlling-cams, as described. The stripper-plate S and flask
50 F, containing the mold, are thus lifted and the pattern P is stripped from the mold, after which the flask can be removed and is ready to be set up with its fellow, completing the mold.

55 Any sand which may escape through the openings in the stripper-plate falls into the base and can be readily removed therefrom through its open ends.

60 Instead of moving the stripper-plate relatively to the pattern, as described, I can, if desired, reverse the operation by moving the pattern relatively to the stripper-plate, the base, actuating mechanism mounted thereon, and the stripper-plate being the same as described. The pattern P^x, however, Figs. 5,
65 7, and 8, is mounted on a plate P³, which is

adapted to rest on and be moved by the controlling-cams, removable guide-studs h being screwed into holes 12 in the sides of the base and extending freely through holes 14 in the
70 plate P³ to guide the pattern-plate in its rising-and-falling movement.

Holes s^3 are made in the stripper-plate S to receive suitable screws s^4 , which enter threaded holes in the tops of the studs h, to thereby
75 firmly secure the stripper-plate above the base, as shown in Figs. 5 and 7, the pattern-plate P³ being movable between the base and the stripper-plate, the pattern-plate having holes 17 to receive the guide-pins s' of the
80 stripper-plate.

When ready to receive the flask F, the actuating mechanism is operated to lift the pattern-plate P³, as in Fig. 7, and the mold is made as hereinbefore described, after which
85 the pattern-plate is lowered, as in Fig. 5, stripping the pattern from the mold, the operation of the stripper-plate and pattern being thus the reverse of that shown in Figs. 1 and 3.

To positively position the pattern relatively
90 to the stripper-plate when the apparatus is ready for use, I provide the pattern-plate P³ with stops 30 on its upper surface, which prevent undue extension of the pattern through the stripper-plate. Furthermore, this construction prevents any accumulation of sand
95 between the plates from disarranging their relative positions on account of the space between them.

The actuating mechanism is so constructed
100 that when the controlling-cams are elevated the direction of pressure will be in vertical lines extending through the centers of their supporting-shafts.

By means of the apparatus herein described
105 I secure a simple, very compact, and readily-portable molding apparatus adapted to be quickly changed from one manner of operation to another, according to the circumstances of the case.

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

1. In a molding apparatus, a base, a pattern, a cooperating stripper-plate, rock-shafts
115 at opposite sides of the apparatus, and an intermediate actuating-shaft, said rock-shafts and intermediate shaft each being provided with a plurality of controlling-cams, said
120 cams standing vertically over their shafts when in supporting position, and links to rock said rock-shafts and cams over toward each other out of supporting position, said links being pivoted to said cams and to said intermediate shaft, substantially as described.

2. In a molding apparatus, a base, a pattern, a cooperating stripper-plate, rock-shafts
125 at opposite sides of the apparatus, and an intermediate actuating-shaft, said rock-shafts and intermediate shaft each being provided
130 with a plurality of controlling-cams, said cams standing vertically over their shafts

when in supporting position, and links to rock said rock-shafts and cams over toward each other out of supporting position, said links being pivoted to said cams and to said intermediate shaft, one or more recesses A^x being formed in said base to receive said intermediate cams as stops therefor, substantially as described.

3. In a molding apparatus, a base, a pattern, a cooperating stripper-plate, rock-shafts at opposite sides of the apparatus, and an intermediate actuating-shaft, said rock-shafts each being provided with a plurality of controlling-cams, said cams standing vertically over their shafts when in supporting position, and links to rock said rock-shafts and cams over toward each other out of supporting position, said links being pivoted to said cams and to said intermediate shaft and oppositely bent to extend in substantial alinement when

in said supporting position, substantially as described.

4. In a portable molding apparatus, a box-like base having an open top, rock-shafts mounted therein, controlling-cams adjustably secured to the rock-shafts, an external operating device for said shafts, a removable stripper-plate having guide-studs on its under side, a removable pattern-plate, and detachable supports for the stripper-plate, adapted to form guides for the pattern-plate, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM H. HOOPER.

Witnesses:

GEORGE OTIS DRAPER,
EARLE E. HOWARD.