No. 840,869. PATENTED JAN. 8, 1907.

R. RUDDY.

METHOD OF ASSEMBLING PATTERNS ON PATTERN PLATES.

APPLICATION FILED MAR. 1, 1906.

2 SHEETS—SHEET 1.

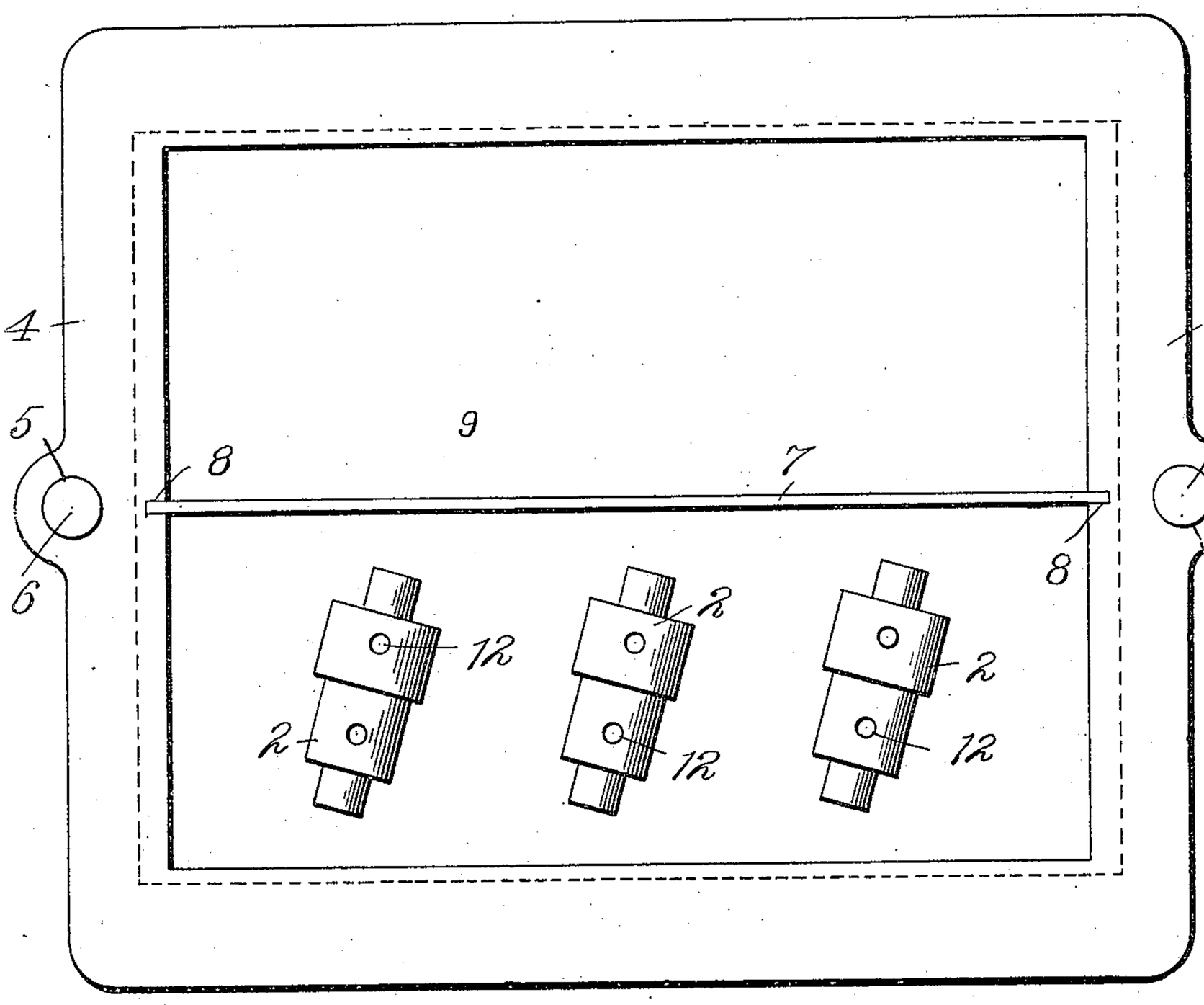

Fig. 1.

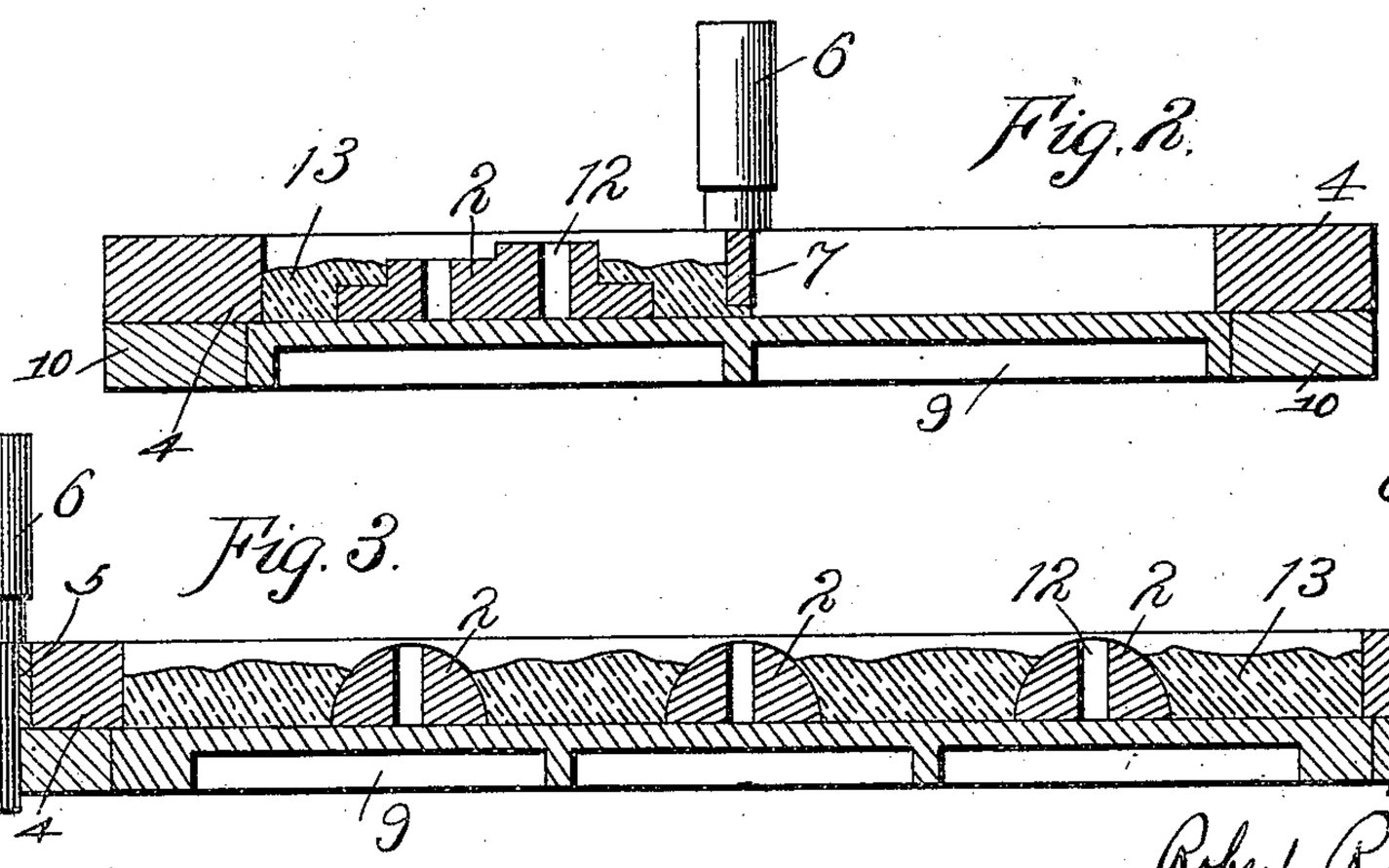

Fig. 2.

Fig. 3.

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2 SHEETS—SHEET 2.

Fig. 4.

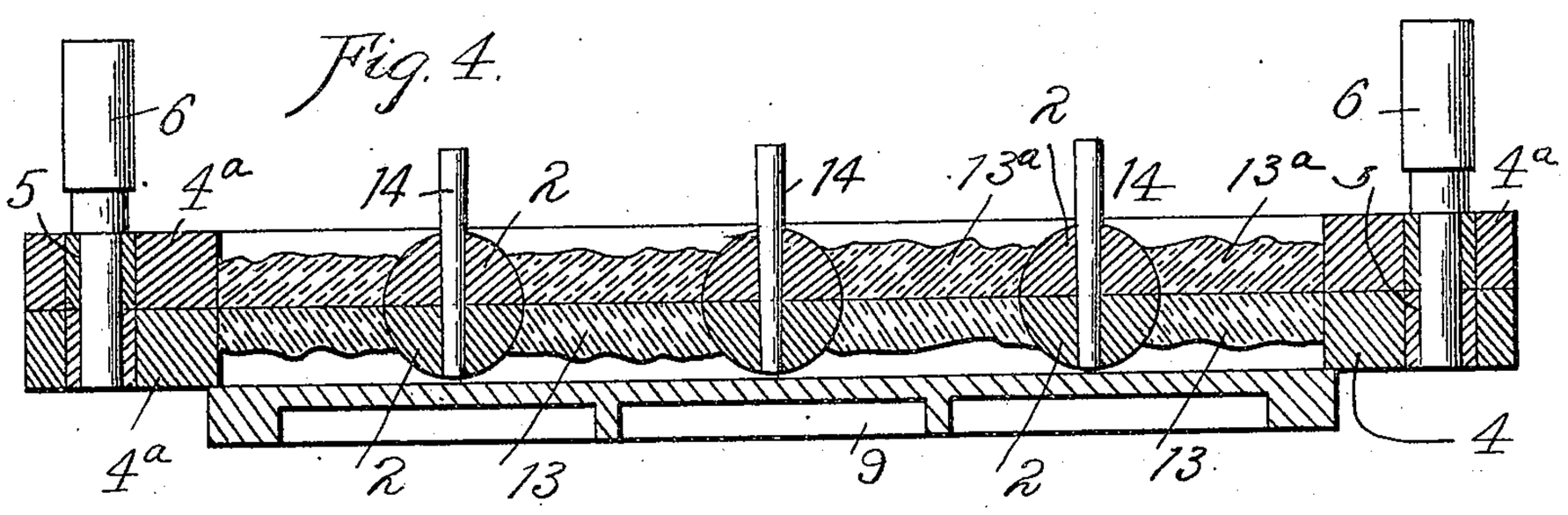


Fig. 5.

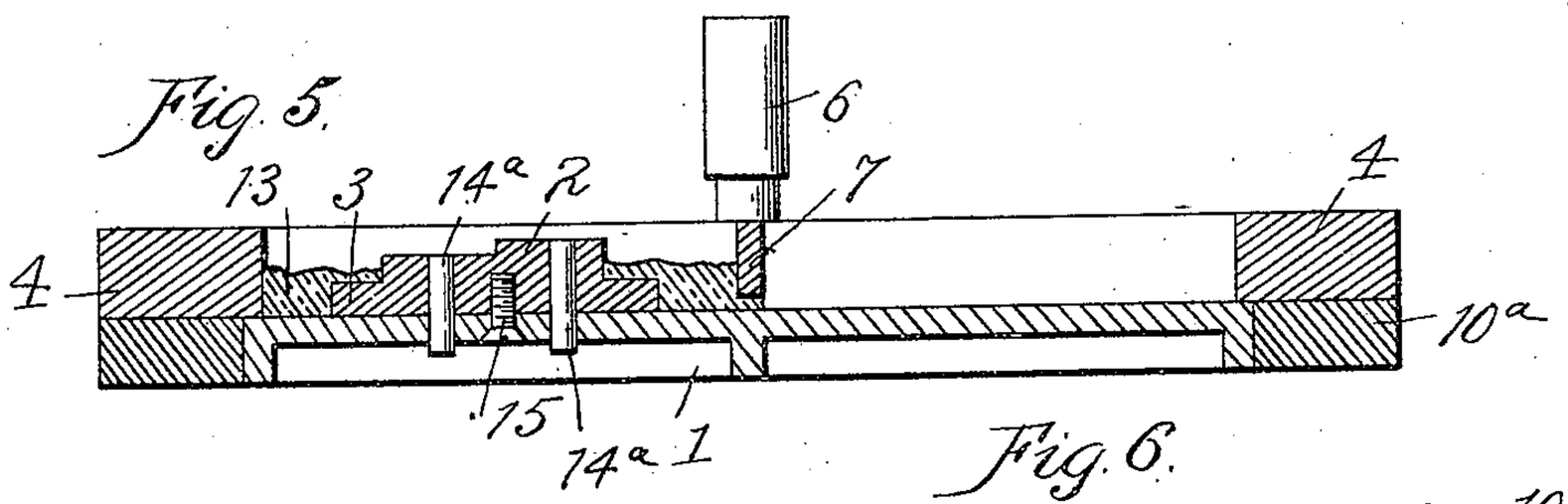
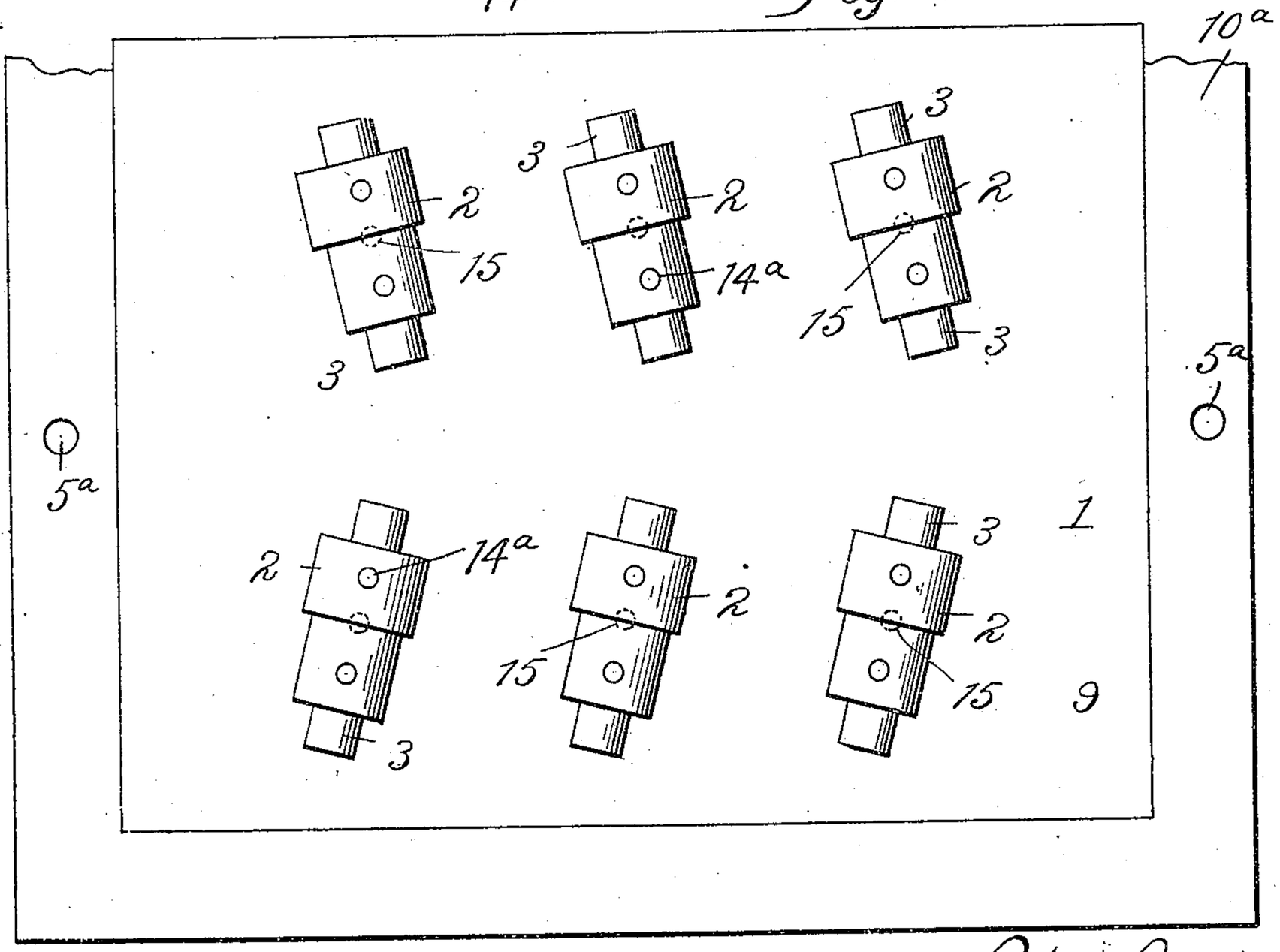


Fig. 6.



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UNITED STATES PATENT OFFICE.

ROBERT RUDDY, OF MOUNT VERNON, NEW YORK.

METHOD OF ASSEMBLING PATTERNS ON PATTERN-PLATES.

No. 840,869. Specification of Letters Patent. Patented Jan. 8, 1907.

Application filed March 1, 1906. Serial No. 303,717.

To all whom it may concern:

Be it known that I, ROBERT RUDDY, a citizen of the United States, and a resident of Mount Vernon, county of Westchester, State of New York, have invented certain new and useful Improvements in Methods of Assembling Patterns upon a Pattern-Plate, of which the following is a specification.

This invention relates to the improvement of the method of preparing pattern-plates for use in molding, the apparatus of form proposed for carrying out the invention being made the subject of a separate application, filed May 22, 1906, Serial No. 318,273. The present customarily-used methods of preparing such plates are slow and inaccurate, resulting in great expense in preparation of the plate and imperfections in the resulting castings.

The object of my invention is to enable the rapid preparation of a pattern-plate having the patterns arranged and fixed thereon with great accuracy, so that the separate parts of the mold formed thereby will be exactly coincident and the resulting castings therefrom free from imperfections, such as "shut-overs," the term applied when two halves of a casting do not coincide at their edges.

My invention will be described more particularly in its application to a system in which each half-mold contains on its two sides counterparts of the same pattern-print—that is to say, in which the patterns on one side of, say, the drag are counterparts of those on the other side of that half of the mold or flask; but the invention is not limited to such use. Also, as herein described and shown, the same pattern-plate is adapted to the printing of both the drag and the cope of the mold; but this is not essential, as the invention herein set forth is in its broadest application adapted for use in the fastening to the pattern or master plate of individual patterns of any nature and description. The invention will, however, be best understood as herein described, in which the half-molds of the drag and cope are made by the same pattern-plate, the corresponding parts of the mold being brought into proper relation when the cope of the flask is inverted onto the drag.

My invention involves the use, in connection with the pattern or master plate, of the pattern frame or frames, wherein the patterns are assembled and when assembled rigidly held in proper relation one to the other while being fastened upon the pattern-plate proper, and preferably I employ some plastic substance, such as plaster-of-paris, for holding the patterns in position until they are connected to the pattern-plate.

In the accompanying drawings, Figure 1 illustrates in plan view my pattern-assembling frame with patterns placed therein. Fig. 2 is a sectional view of the same on a supporting plate or table and illustrating the method of fixing the patterns in position by means of some suitable plastic hardening material, such as plaster-of-paris. Fig. 3 is a sectional view of the same parts, the plane of section being at right angles to that shown in Fig. 2. Fig. 4 is a view similar to Fig. 3 and showing both assembling-frames. Fig. 5 is a sectional view similar to Fig. 2, showing the method of applying the pattern to the pattern or master plate. Fig. 6 is a plan view of the pattern or master plate with patterns in position thereon.

The problem solved by this invention is the proper arranging upon the pattern or master plate 1, (shown in Figs. 5 and 6,) which is adapted to be used in the making of molds, of a series of patterns 2, in proper relation to each other, or if two pattern-plates are used for making the upper and lower halves of the mold then in proper relation on each plate to those patterns on the other plate which are used for making the other part of the mold, so that when the two parts of the mold made thereby are brought together the prints will be in exact coincidence and no shut-overs occur. As shown in Fig. 6, the pattern-plate has upon its two halves half-patterns, those on one half being counterparts of those on the other half, and it is intended that the same pattern-plate be used for making the prints in both halves of the mold, and it is therefore necessary that the pattern on one half of the pattern-plate shall be exactly positioned with regard to those on the other half, so that, for example, if the lower half of Fig. 6 were turned up and over onto the upper half the outlines of the patterns will be brought into exact coincidence. The patterns shown have core-prints 3; but this is merely by way of illustration. Also the fig-

ure illustrates but three whole patterns or six half-patterns, whereas it is often customary, and is especially easy with this invention, to place many times this number of patterns on a single pattern-plate.

It will be convenient to describe the method of operating the process as the apparatus used therein is described. In Figs. 1, 2, and 3 is shown an assembling-frame 4, preferably a rectangular frame of wood or metal having holes 5 at both ends (here shown exactly midway of the frame) to receive steady-pins 6 for accurately locating the two assembling-frames with relation to each other when the counterpart patterns are being assembled with relation to those already assembled and also for accurately placing the assembling-frame with relation to the pattern or master plate when the patterns are to be transferred thereto. When a series of small patterns, such as shown, are used, only one-half of the frame 4 is used at a time, and a dam 7 is placed in and removable from slots 8, midway of the frame and on the inner edges thereof. When larger patterns are used, the dam 7 is removed and the whole frame used. In employing the frame it is placed upon a plate or table 9, Figs. 2 and 3, which may have a surrounding frame 10, provided with holes 11, coincident with the holes 5 in the assembling-frame, or this plate or table may have lugs extending to receive said holes, or the entire table may be of size sufficient to receive them. The said pins 6 being inserted in the holes 5 11 hold the frame rigidly upon the table. This part of the operation, however, does not absolutely require that the frame 4 be held rigidly in place, and the table may dispense with the surrounding frame 10 and the fastening means. The dam 7 then being in position (see Figs. 1 and 2) the half-patterns 2 are laid upon the table 9 face down in one half of the frame, being disposed with relation to each other, so as to utilize the space as much as possible and with due reference to the provision of gates, &c. These patterns all have dowel-holes 12, as usual, corresponding to the dowel-holes of the other half-pattern. Cement of suitable material, such as plaster-of-paris, is now flowed into the half of the frame 4 into which the said patterns are placed, as shown at 13 in Figs. 2 and 3, and when it sets the patterns are held in fixed relation to each other in the frame. The frame 4 is then inverted upon the table, as shown in Fig. 4, the upper surface thoroughly oiled or otherwise protected from adhesion of cement thereto, and a similar frame 4^a fastened to it by the steady-pins 6. The several counterparts of the half-patterns 2 are now fixed to their respective patterns by dowel-pins 14, which preferably have a slight drift corresponding to that of the dowel-holes in the patterns. The counterpart patterns being thus assembled, the second frame 4^a is filled with plaster-of-paris or like cement, as shown at 13^a in Fig. 4, which when it sets holds the counterpart half-patterns in the frame 4^a. The dowel-pins 14 may now be removed and the two frames 4 4^a separated without disturbing the relation which both of their sets of half-patterns bear to the jig-holes 5 in the frames. The two frames may therefore be successively inverted, so as to bring their two sets of patterns on the two halves of the master-plate 1, as shown in Figs. 5 and 6. For example, the frame 4 is, as shown in Fig. 5, inverted upon the master-plate 1 and fastened thereto by the steady-pins 6, extending through jig-holes 5 in the edge of the frame 4 and into jig-holes 5^a in the edge of the master-plate or in the frame 10^a surrounding the same. The master-plate is then bored in line with the dowel-holes 12. Rivets or pins 14^a are placed therein and finished flush with the printing-surface of the pattern and extending slightly below the pattern-plate, so that they may be knocked loose when required, and (more especially with large patterns, but preferably with all) screw-holes are tapped through the master-plate and into each pattern and screws 15 inserted to hold the pattern rigidly to the pattern-plate. The cement is then knocked loose and the frame 4 removed, leaving the patterns fixed to the pattern-plate. The second frame 4^a, with the counterpart patterns, is then inverted upon the pattern-plate and fastened by the steady-pins 6 thereto and the same proceeding gone through with for the other half of the pattern-plate as has already been described with reference to the first half, this second frame being then removed, leaving its patterns attached to the pattern-plate, and the latter is ready for use, and it will be seen that by reason of the exact relation of the two halves of each pattern the half-molds printed thereby may be brought into perfect coincidence.

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

1. The method of assembling patterns upon a pattern-plate consisting in arranging patterns in a frame, fixing them therein by means of a suitable cement and then transferring them to the pattern-plate while held in such assembling-frame.

2. The method of assembling patterns upon a pattern-plate consisting in arranging half-patterns in a suitable frame, fixing them therein by means of suitable cement, arranging counterpart half-patterns upon the first patterns, fixing such counterpart patterns in

a second frame and then applying the two sets of halves to the pattern-plate successively.

3. The method of assembling patterns upon a pattern-plate consisting in arranging half-patterns in a suitable frame, fixing them therein by means of suitable cement, arranging counterpart half-patterns upon the first patterns, fixing such counterpart patterns in a second frame and then applying the two sets of halves to the pattern-plate.

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