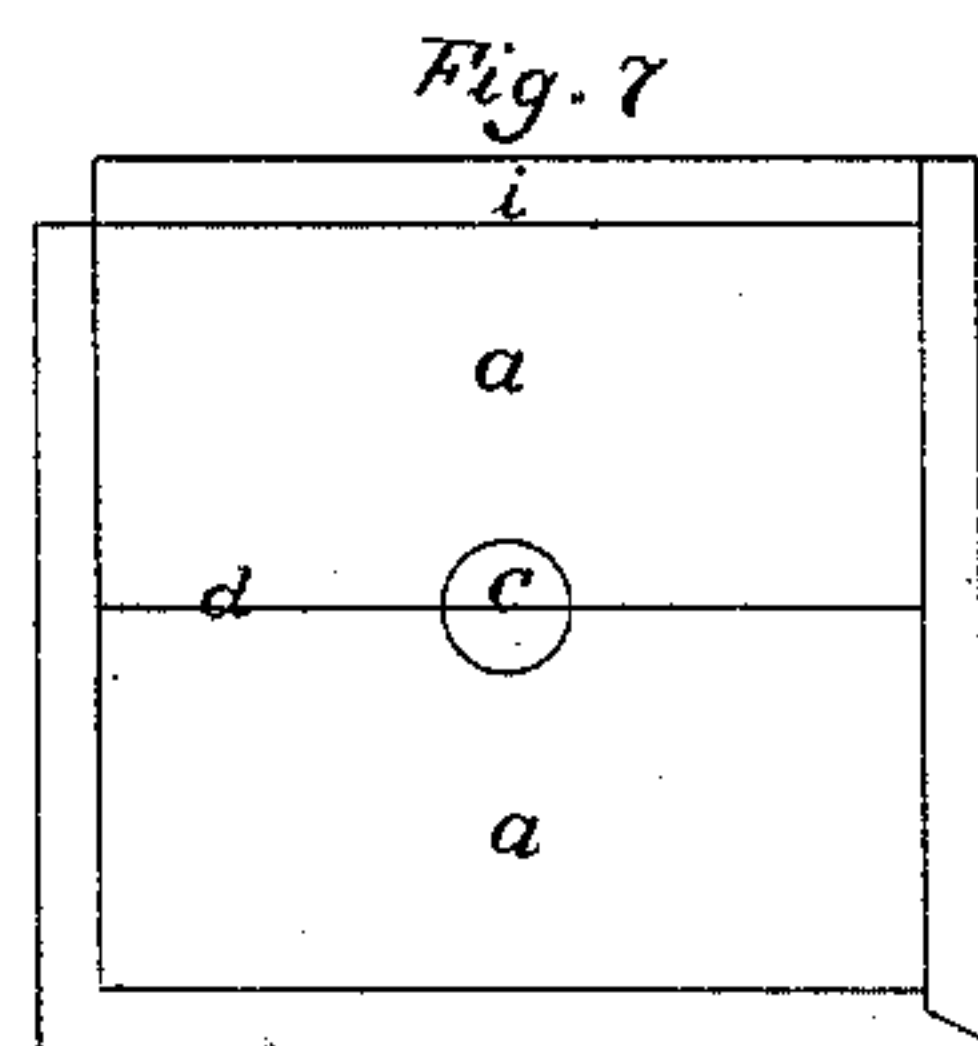
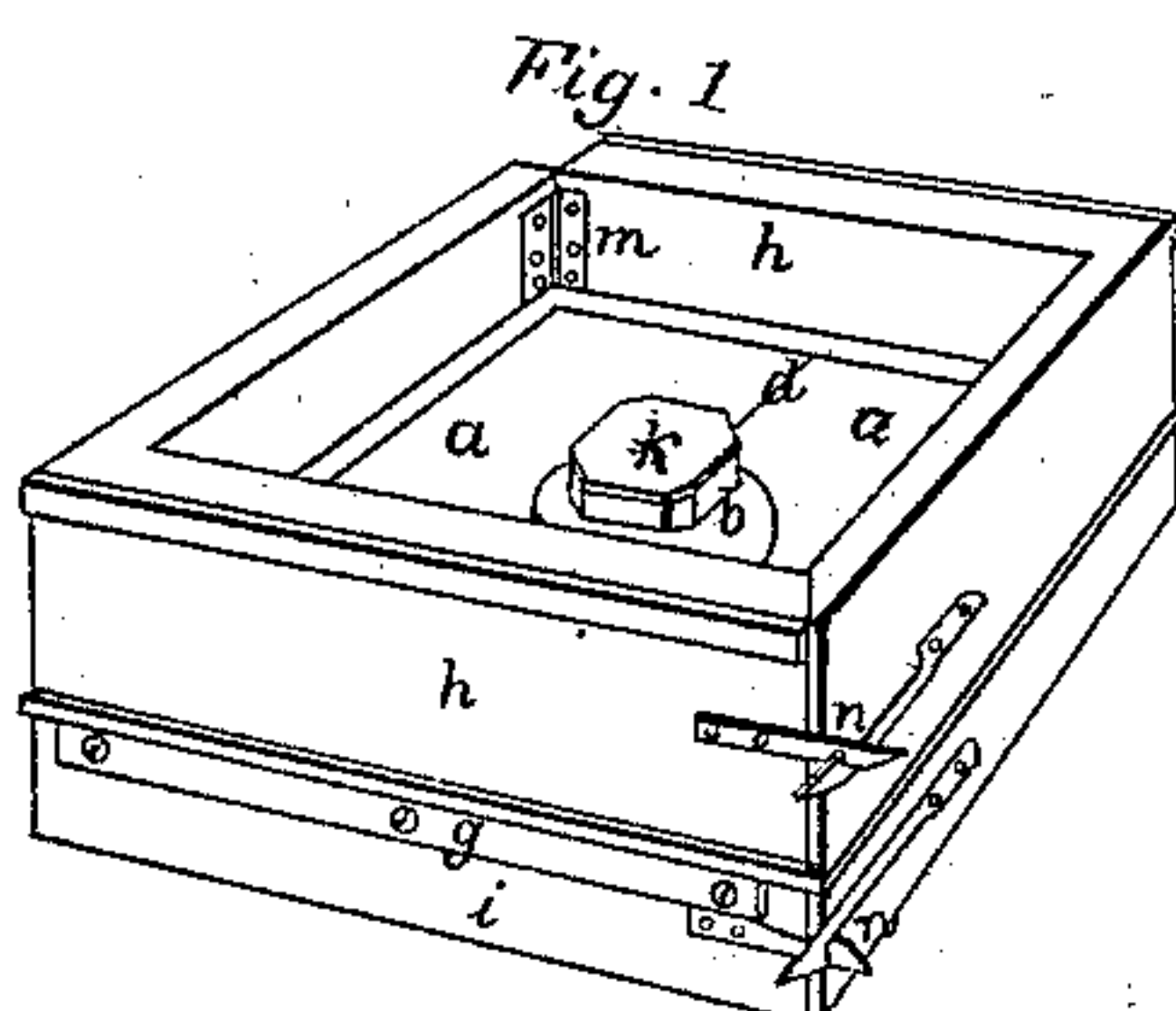
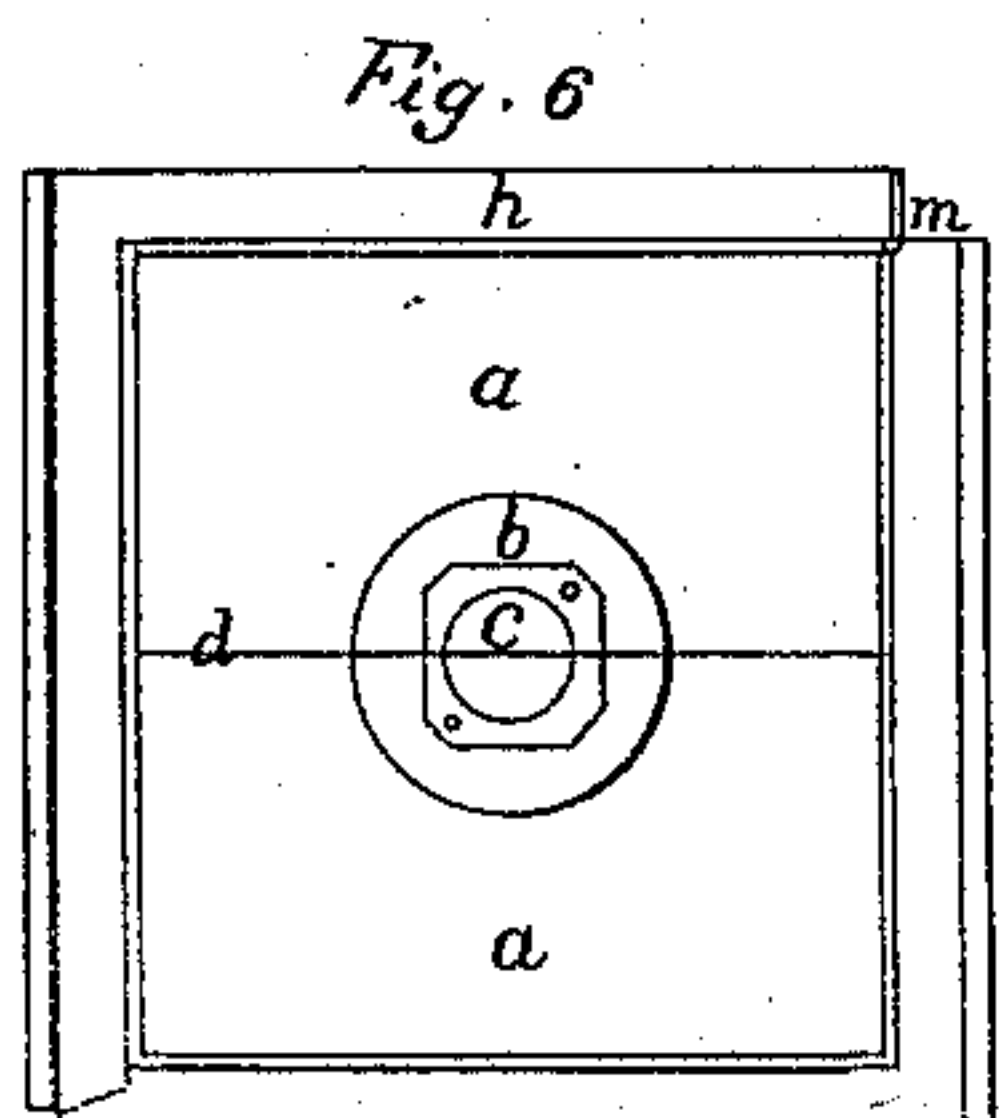
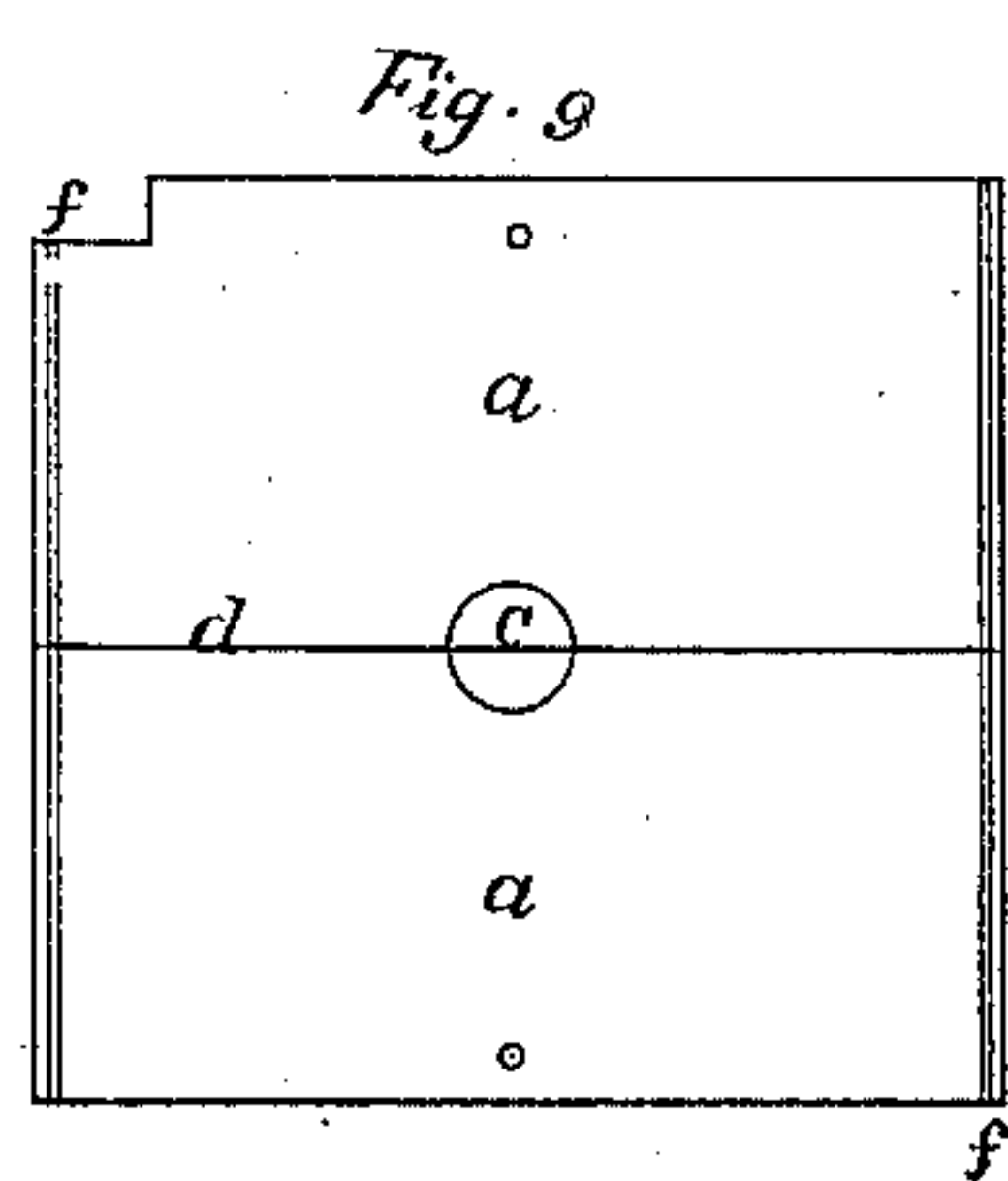
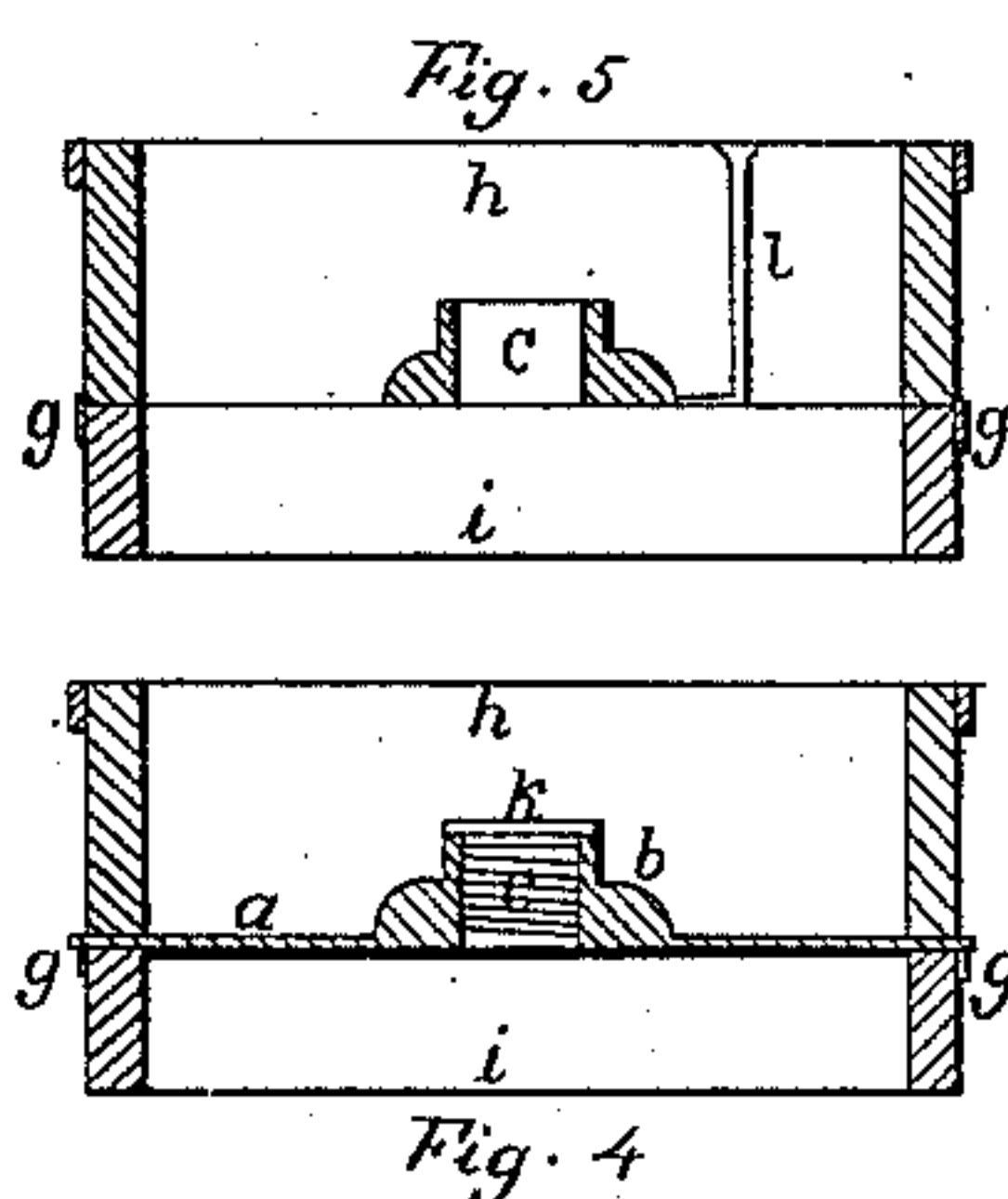
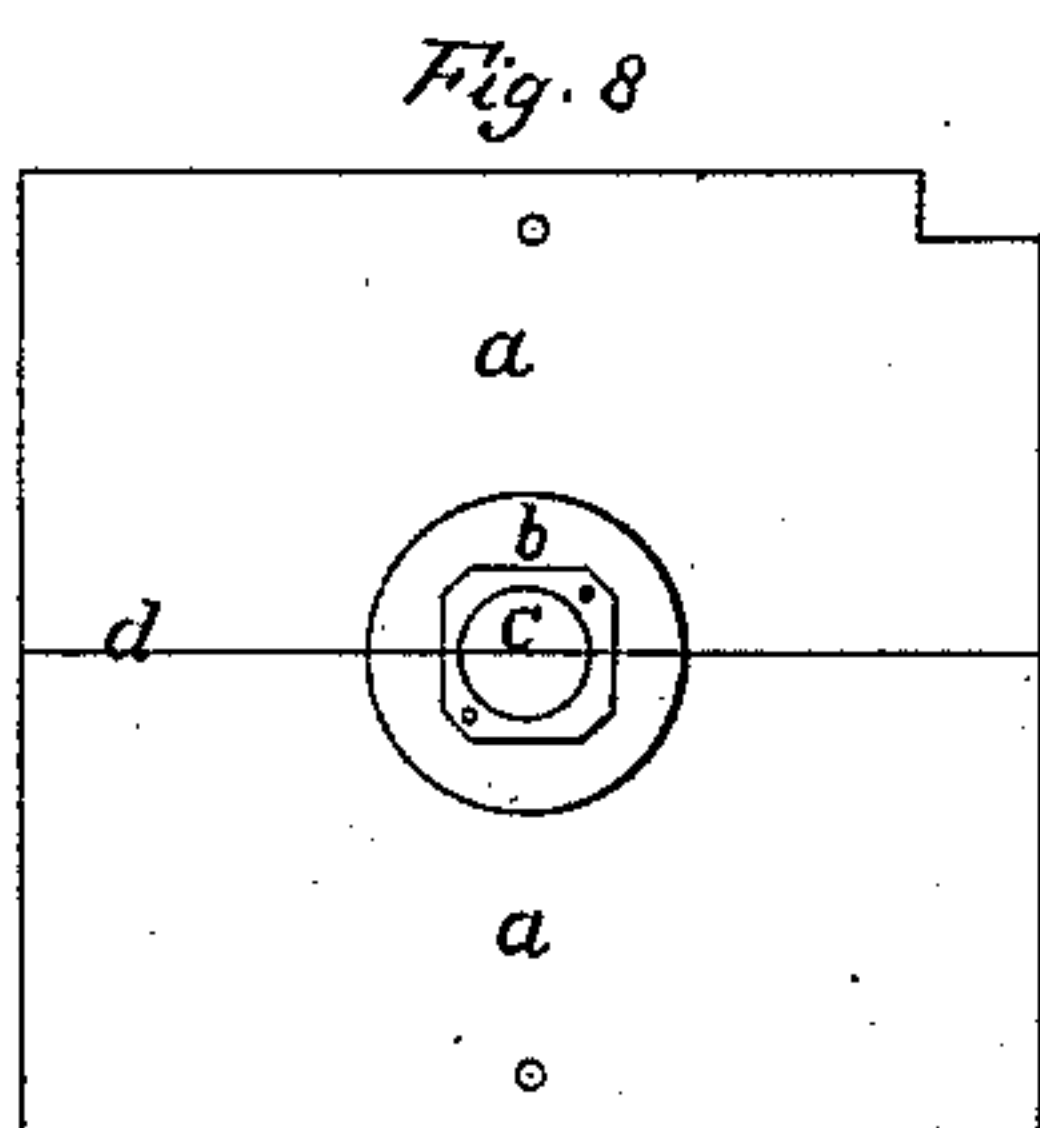
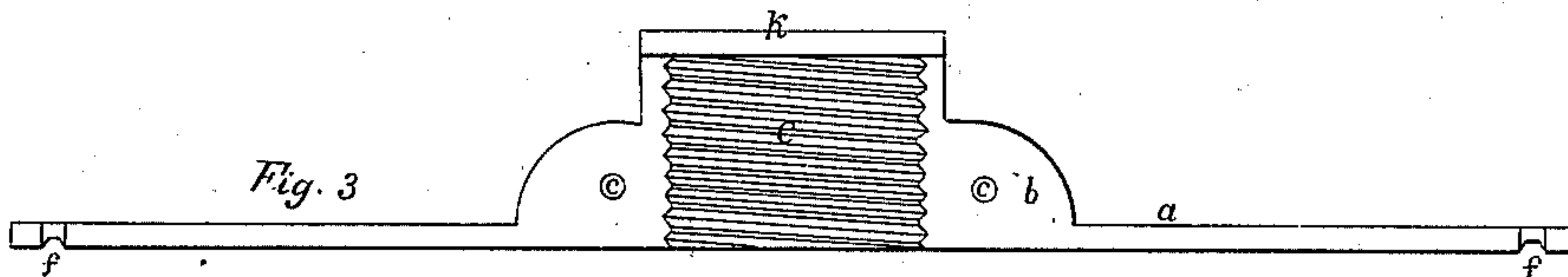
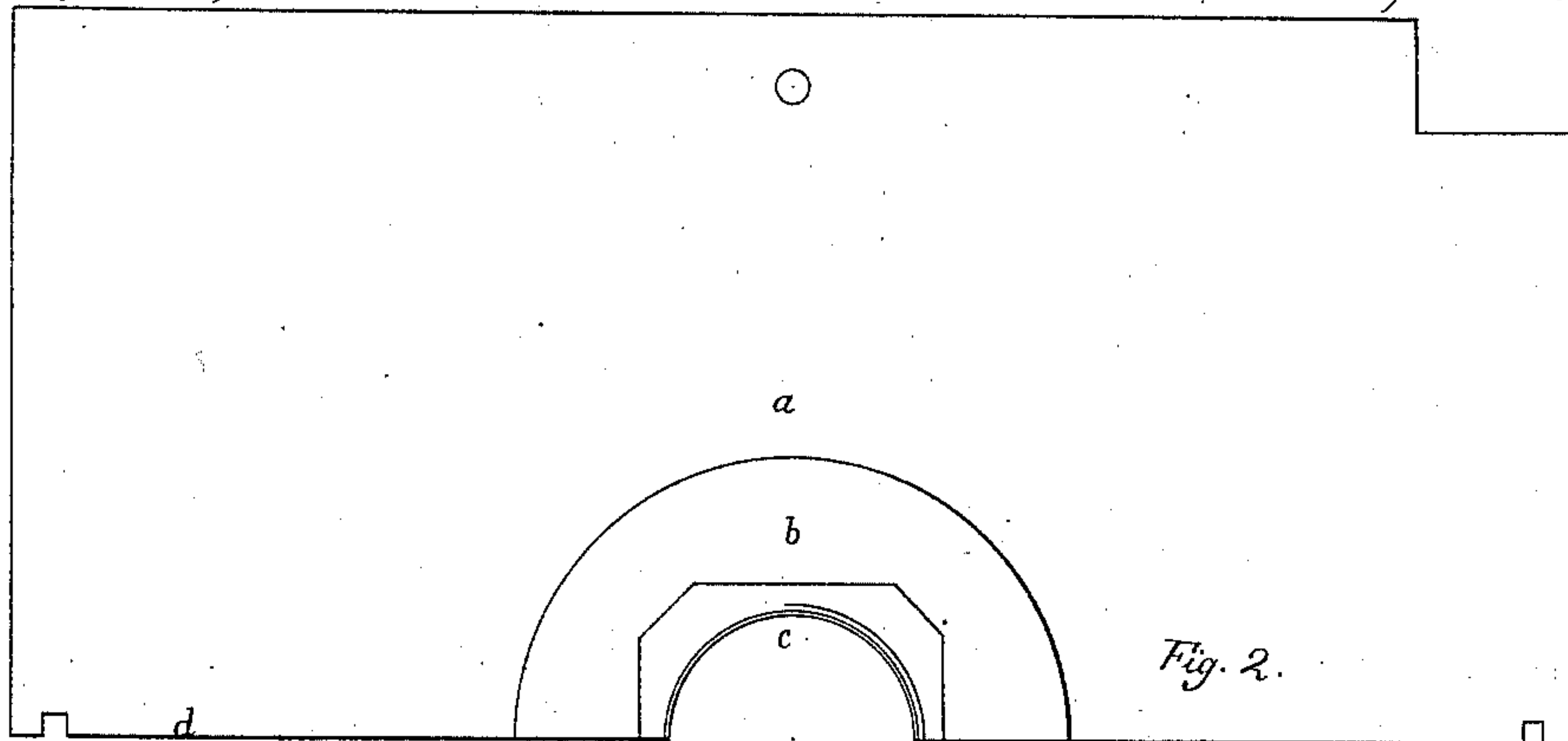


*Wood & Lamb,  
Molding Screws,*

*No 23,176,*

*Patented Mar. 8, 1859.*



*Witnesses  
Geol Bushey  
J. G. Estes*

*Inventor  
Samuel Wood  
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# UNITED STATES PATENT OFFICE.

E. L. LAMB AND SAM. WOOD, OF KEOKUK, IOWA.

## IMPROVEMENT IN MOLDING FEMALE SCREWS.

Specification forming part of Letters Patent No. 23,176, dated March 8, 1859.

*To all whom it may concern:*

Be it known that we, EDWARD L. LAMB and SAMUEL WOOD, of Keokuk, in the county of Lee and State of Iowa, have invented certain new and useful Improvements in Molding Female Screws; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, of which—

Figure 1 is a perspective view of a molding-flask with the improvement in place; Fig. 2, a plan of one-half of the match-plate, (full size;) Fig. 3, a section of the same at its line of division, (full size;) Fig. 4, section of flask with match-plates in place; Fig. 5, section of mold with match-plate removed and ready for reception of the metal; Fig. 6, plan of flask, "cope" side up; Fig. 7, plan of flask inverted, or "drag" side up; Fig. 8, plan of match-plate, cope side up; Fig. 9, plan of match-plate inverted, or drag side up.

In the manufacture of cast-iron axles or axle-arms with screws and nuts on their ends to hold on the wheels it is an important object to save the expense of cutting screws by machinery. Inasmuch as both right and left handed screws are required for this purpose, it involves a heavy outlay in complicated machinery to pursue the manufacture.

Methods have been contrived by which the male screws on the axle-arms have been molded and cast complete; but we are not aware of any plan having been hitherto practiced by which the female screw has been molded in sand with sufficient facility and exactness to obviate the liability of tearing away the sand from the sharp edges of the thread on withdrawing the pattern, which would render the casting useless.

The object of our invention is to provide a means of molding a nut with its female screw-thread complete, so that the nut when cast requires no subsequent finishing operation, and to perform the operation of molding with such facility and rapidity as to materially reduce the cost of manufacture.

Our improvement consists in the use of a plate, *a a'*, adapted to a molding-flask such as is commonly used for similar purposes, which has formed on and in one piece with it the pattern of the exterior of the nut *b*. A female screw, *c*, is formed within it, the exact counter-

part of the screw required to be cast in the nut. The plate is divided vertically along the center line, *d*, and has dowels *e e*, to cause the two halves *a a'* to match exactly when closed together. It also has parallel grooves *f f*, which rest on the ridges or guides *g g*, affixed to the opposite sides of the drag or lower part of the flask *i*, and which serve to guide the two halves of the match-plate *a a'* in placing them on the flask, and while withdrawing them laterally from the mold, insuring their meeting exactly, and laying flat and parallel when in place. A cap-plate, *k*, forms the upper part of the pattern, fitting onto the matched plate by dowels in the corners.

The uses of the several parts will be best understood by describing the process of molding a nut. The entire flask, with the match-plate, cap, &c., in place, as shown in Fig. 1, is set on the molding-floor, the "gate" print *l* set up, and the cope or upper part of the flask *h* filled with sand, rammed, and leveled. A board is then placed on it, and the whole is inverted, with the lower or drag side, *i*, up. The drag is then filled and rammed in like manner, a better quality of sand being used to fill the core or female screw *c*, and particular care being taken to insure the screw-thread being entirely and perfectly filled. The whole is then restored to its first position, with its cope side up. The cope, with its contained sand, is then lifted off, leaving the match-plate *a a'* resting on the lower part of the flask. The cap-plate *k* is then removed, and the two halves of the match-plate *a a'* are withdrawn by sliding them laterally in opposite directions on the ridges *g g*, thus removing them from the core, and leaving its thread perfect and uninjured. The cope is then replaced on the drag, the upper and lower surfaces of the sand, before separated by the thickness of the match-plate, now coming together and making a perfect junction. The top of the core *c* now reaches the top of the impression made by the cap *K*, which is made of the exact thickness of the match-plate *a*, in order to occupy the space above the core, which would otherwise be too long when the two halves of the mold are closed together.

The flask shown in the drawings is provided with hinges *m* in one of its corners, and is held together by spring-catches *n* at the oppo-



site corners. By releasing the catches *n*, the flask can be opened and removed, leaving the sand mold ready for the reception of the melted metal, while the flask is used for molding other nuts of the same kind.

It is obvious that many other articles having internal recesses, the cores of which cannot be removed vertically, may be molded by similar means, and it is contemplated to apply the invention to other articles, which it is unnecessary to enumerate.

The separate cap-plate *k* may be dispensed with in some cases, though we prefer to use it, as shown, when the core is to reach through the article, as in the nut described.

We do not intend to claim the practice of molding the corresponding parts of a pattern, which are arranged upon the opposite surfaces of a plate interposed between the joining parts of a two-fold flask, nor molding the two halves of the pattern upon separate plates, adapted,

respectively, to the upper and lower halves of the mold; but

What we claim, and desire to secure by Letters Patent, is—

The match-plate *a a'*, having both the exterior and interior of the pattern formed on it, when the same is divided vertically on a center line, and adapted to a suitable flask, and resting on guides on which the two halves of the plate can be withdrawn laterally in opposite directions from the core, substantially as described, for the purpose of molding female screws, or other articles which do not admit of having the pattern removed vertically from the core.

EDWARD L. LAMB.  
SAMUEL WOOD.

Witnesses:

JACOB BUSHEY,  
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