

J. H. HARPER.

Attaching Patterns to their Supporting Plates.

No. 134,663.

Patented Jan. 7, 1873.

Fig. 1.

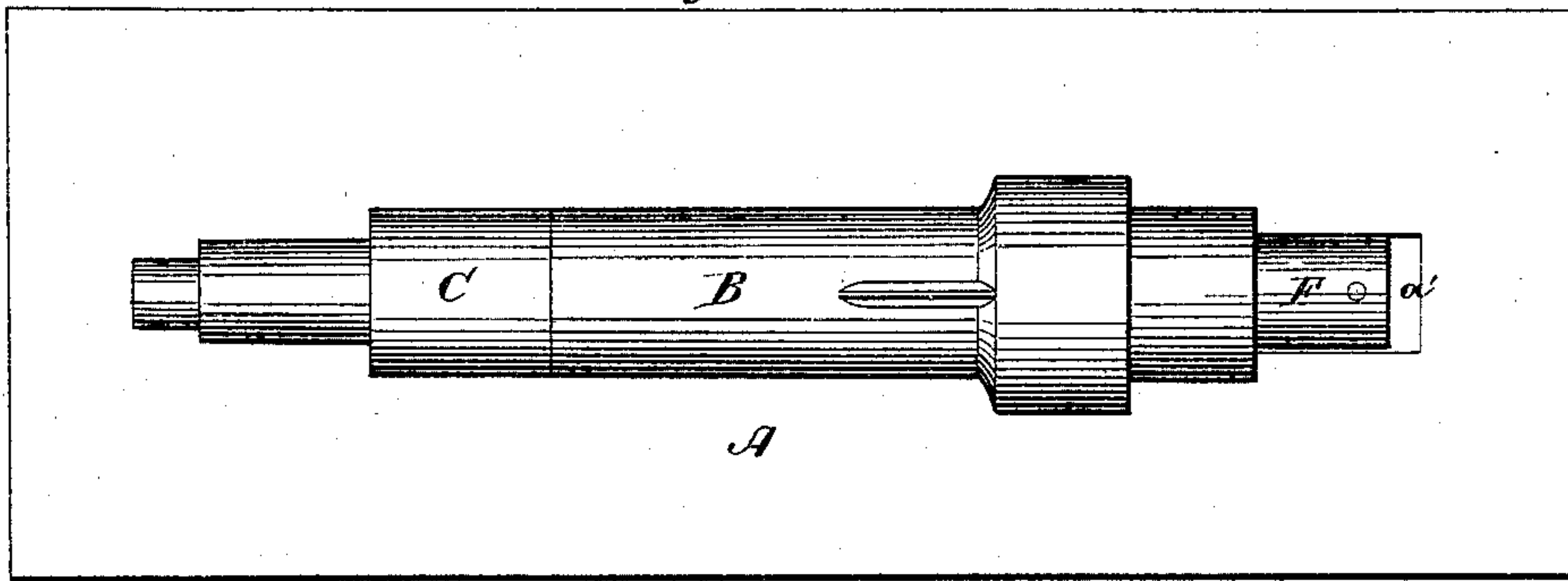


Fig. 2.

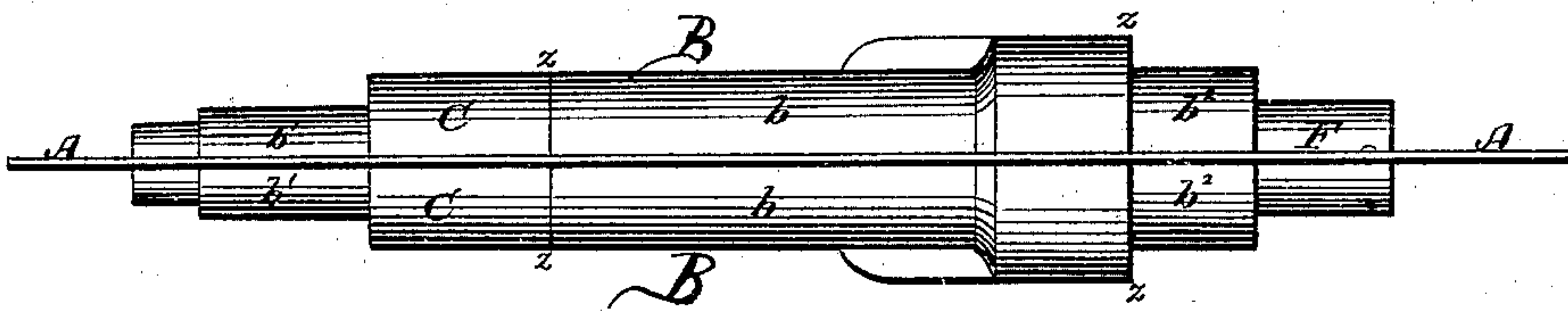


Fig. 3.

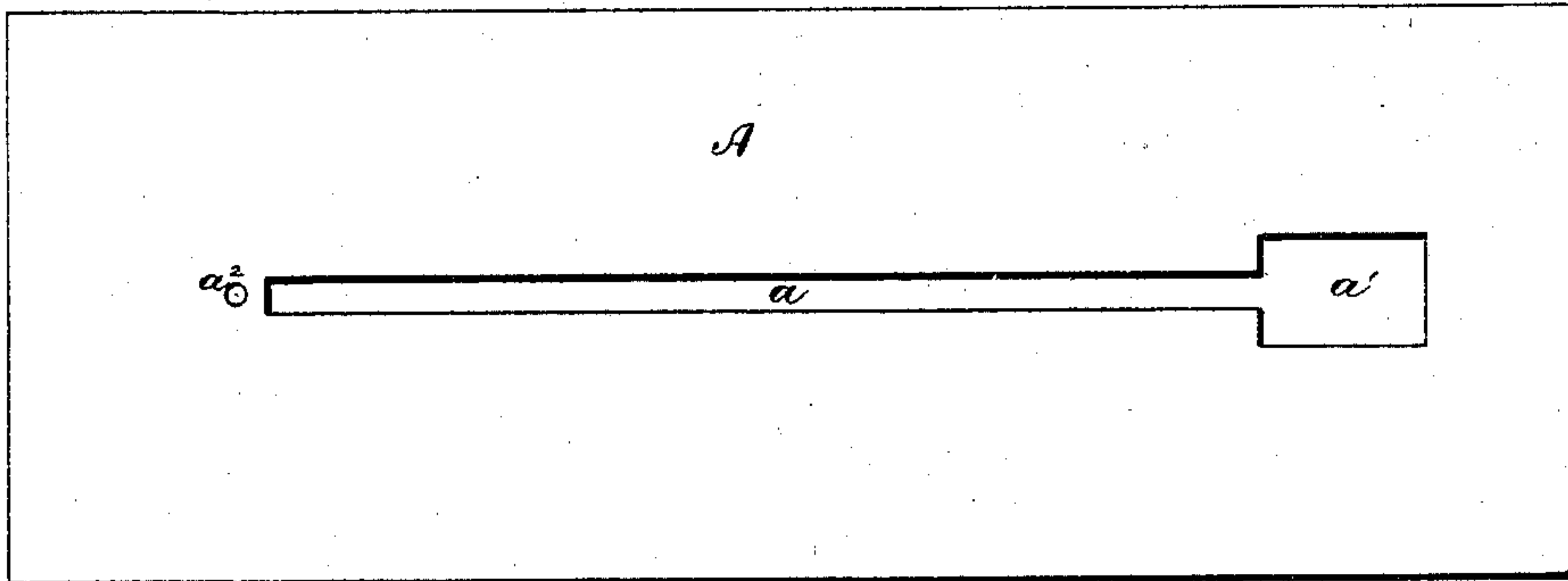


Fig. 4.



Fig. 5.

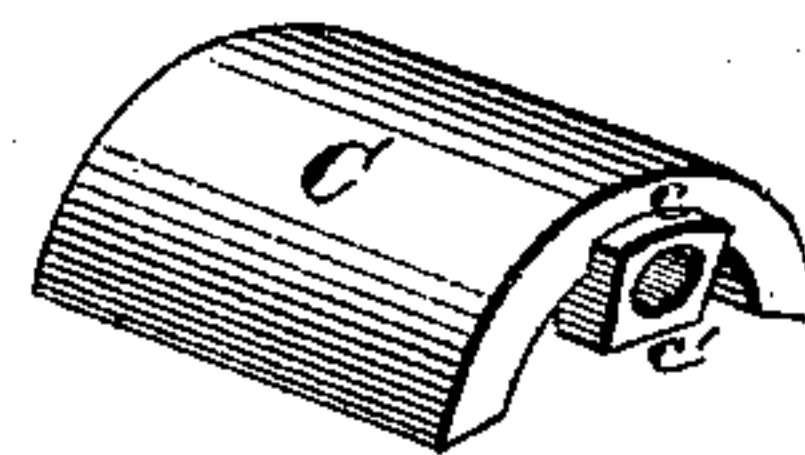
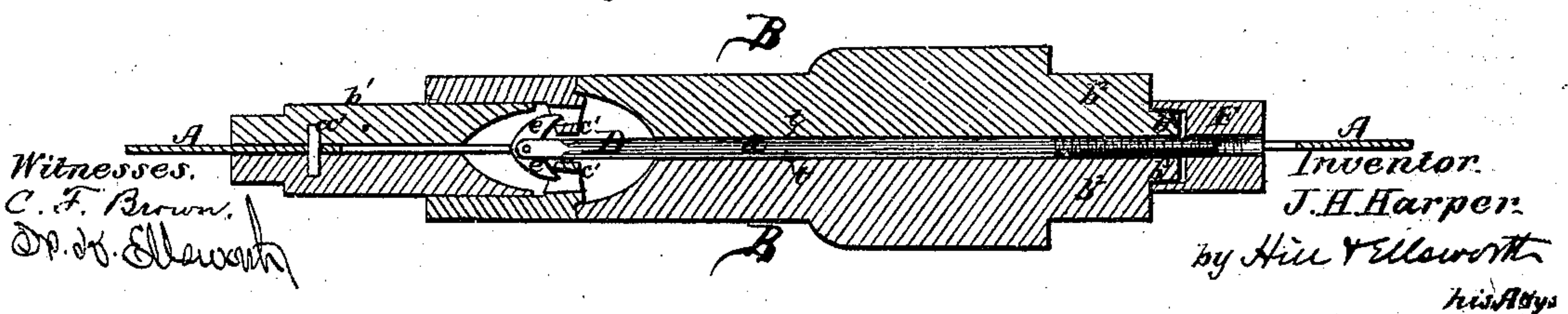


Fig. 6.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN ATTACHING PATTERNS TO THEIR SUPPORTING-PLATES.

Specification forming part of Letters Patent No. 134,663, dated January 7, 1873.

To all whom it may concern:

Be it known that I, JOHN H. HARPER, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and Improved Method of Attaching Patterns to their Supporting-Plates in Molding; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 is a top or bottom plan view of the parting plate or board with pattern attached; Fig. 2 is a side elevation of the same; Fig. 3 is a plan of the board with the pattern removed; Fig. 4 is a perspective view of the "anchor;" Fig. 5 is a similar view of one of the half-rings; and Fig. 6 is a longitudinal section of the pattern and board when ready for molding.

Similar letters of reference in the accompanying drawing indicate the same parts.

In molding and casting the practice heretofore has always been to rivet or otherwise fix the patterns to the parting-plate, so that the patterns and the plate are, to all practical purposes, permanently attached together, and may be regarded as constituting a single article. To whatever extent the patterns have to be multiplied, therefore, the same number of plates must be used, and the expense of fitting up a shop for making a general assortment of such castings is, in consequence, very great. Another difficulty growing out of the same cause is that the patterns, not being removable from the plate, cannot be varied so as to be enlarged or diminished in size without changing the plate, but there must be a pattern and plate for every different size of the article required.

The object of my invention is therefore, primarily, to enable the molder to use the same plate for all the different castings that can be molded in a flask of size corresponding to the plate; and, secondarily, to enable the molder to use the same plate, but to vary the size of the patterns attached to it. To these ends my invention consists, in the first place, in making the pattern detachable from the plate, and in employing an "anchor," as hereinafter described, to connect it to the plate and hold it in place, so that different patterns may be used with the same plate; and, in the second place,

it consists in making any part of said pattern attachable to and detachable from the plate, so that such part may be changed without changing the plate, for the purpose of varying the size of the article to be molded.

In the drawing, I have represented my invention as applied to the casting of pipe-boxes for carriage-wheels, and have shown both a detachable pattern and a detachable extension piece, thus illustrating both features of the invention.

Referring to said drawing, A is the plate or parting board; B B, the pattern; C C, the extension rings; and D, the anchor, by which the pattern is attached to the plate and the rings to the pattern. The plate is constructed with a long slot, *a*, enlarged at one extremity, *a*¹, and it is also provided with one or more holes, *a*², to accommodate pins *a*³ that hold the two parts of the pattern in position.

In casting pipe-boxes and other similar articles the patterns are made in counterpart sections, which are applied to the plate as shown in Fig. 6, each section being grooved along its center from one end nearly to the other, as represented at *t*, to accommodate the anchor. In the form of pattern shown in the drawing the portion *b*, extending from *z* to *z'*, is the pattern proper, which, with the extension rings, determines the shape of the castings, while the parts *b*¹ *b*² form the core-points, and the short tapering projection *b*³ serves to center and hold the nut attached to the anchor.

The extension rings are constructed in one or two sections, according as the pattern extends on one or both sides of the plate. Their object is to increase at pleasure the length of the pattern and the resulting casting. To this end they are made of various lengths, according to the length that may be desirable for the different castings, and their superficial design is such as may be necessary to complete the entire design of the pattern.

In casting pipe-boxes they are made to fit upon the cylindrical stem *b*¹, so as to abut closely against the end of the part *b*, and form an extension thereof. They are each provided with a projection, *c*, which catches under a shoulder or into a notch in the end of the part *b*, and they also have a loop, *c'*, or its equivalent, with which the anchor engages to hold

them in place. The projection *c* and loop *c'* may be combined in one, if preferred, as represented in the drawing. The anchor *D* has a long shank, *d*, and one or two flukes or barbs, *e*, which hook into the loops *c'*. A large nut, *F*, screws upon the outer end of the shank, as represented, said nut having a conical recess in its inner end which fits over the projection *b³* when the parts are screwed up, and thereby centers the shank and holds it securely in place. The nut may also be provided with holes or sockets to facilitate turning it up by means of levers, if necessary. The grooves *t* should be deepened along the region where the barbs *e* of the anchor are to operate, for the purpose of facilitating their movement, and, if deepened sufficiently, the notch or recess with which the projection *c* engages will thereby be properly formed.

The parts having been thus constructed, are employed as follows: For molding pipe-boxes, for example, I select a flask and plate of suitable dimensions, according to the size of the pipe-box required. I then select a pattern of the required diameter and design without regard to its length, and place the two counterparts properly together on opposite sides of the plate. I then select my extension rings according to the length of the casting required, said rings being made of all suitable dimensions, and I apply them to the part *b¹*, as represented, taking care that the spur *c* engages properly with the recess in the part *b*. The anchor *D*, having been introduced into the groove *t*, and caused to engage with the loop *c'*, and the nut *F* having been applied and properly centered, all I then have to do is to screw the nut up till the parts are all firmly bound together, after which the whole is ready for molding. The anchor holds the rings securely upon the pattern, and binds both them and the pattern firmly and immovably to the plate. By unscrewing the nut *F* the rings can be removed and others of different length applied in their place, to vary the length, diameter, form, or character of the castings. Thus the same plate may at one time have attached to it a pattern for molding pipe-boxes, and at other times patterns for molding parts of fence-posts, picket-heads, ornamental leaves, or any other small castings, it being only necessary that the pattern, of whatever character it may be, should have a loop or shoulder adapted

to engage with the barb or shoulder on the anchor to hold the pattern to the plate.

Where the extension rings are employed, as in molding pipe-boxes, it might be supposed that the molding of the shortest sizes would not require the use of the rings; but the rings will be found necessary in order to cover the slot in the part *b¹*, through which the loop *c'* extends. The patterns are therefore preferably constructed with the part *b* one-half inch shorter than the shortest pipe-boxes in use, and a half-inch ring is employed to cover the slots above referred to and properly fill out the pattern. One great advantage of this also is that in beveling the patterns the corners of the wooden part *b* are not likely to be worn off where they are thus protected by the short ring. If the corners of the short ring should after a while become worn, no harm is done, for new rings can easily be applied; and, besides, in turning up and finishing the casting the damage would always be repaired; but if the corners of the wood should be worn away, whenever the extension-rings were afterward applied a groove would be formed which would mold a projecting rib around the pipe-box and spoil the casting, so that the patterns would be absolutely useless as soon as their corners were worn off. All this is prevented by the construction referred to.

Of course the form of the anchor may be considerably modified without departing from the principle of my invention, and especially may other devices equivalent to the hooks and loops be used to connect the anchor and rings, or anchor and patterns, together. All such devices I regard as covered by my invention, although they may, if involving the exercise of inventive ingenuity, be in themselves patentable.

Having thus described my invention, what I claim is—

1. The detachable patterns *B*, connected to the plate by the anchor *D* or its equivalent, substantially as described, for the purposes set forth.

2. The extension rings or segments *C*, in combination with the patterns and the plate, substantially as described, for the purposes specified.

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