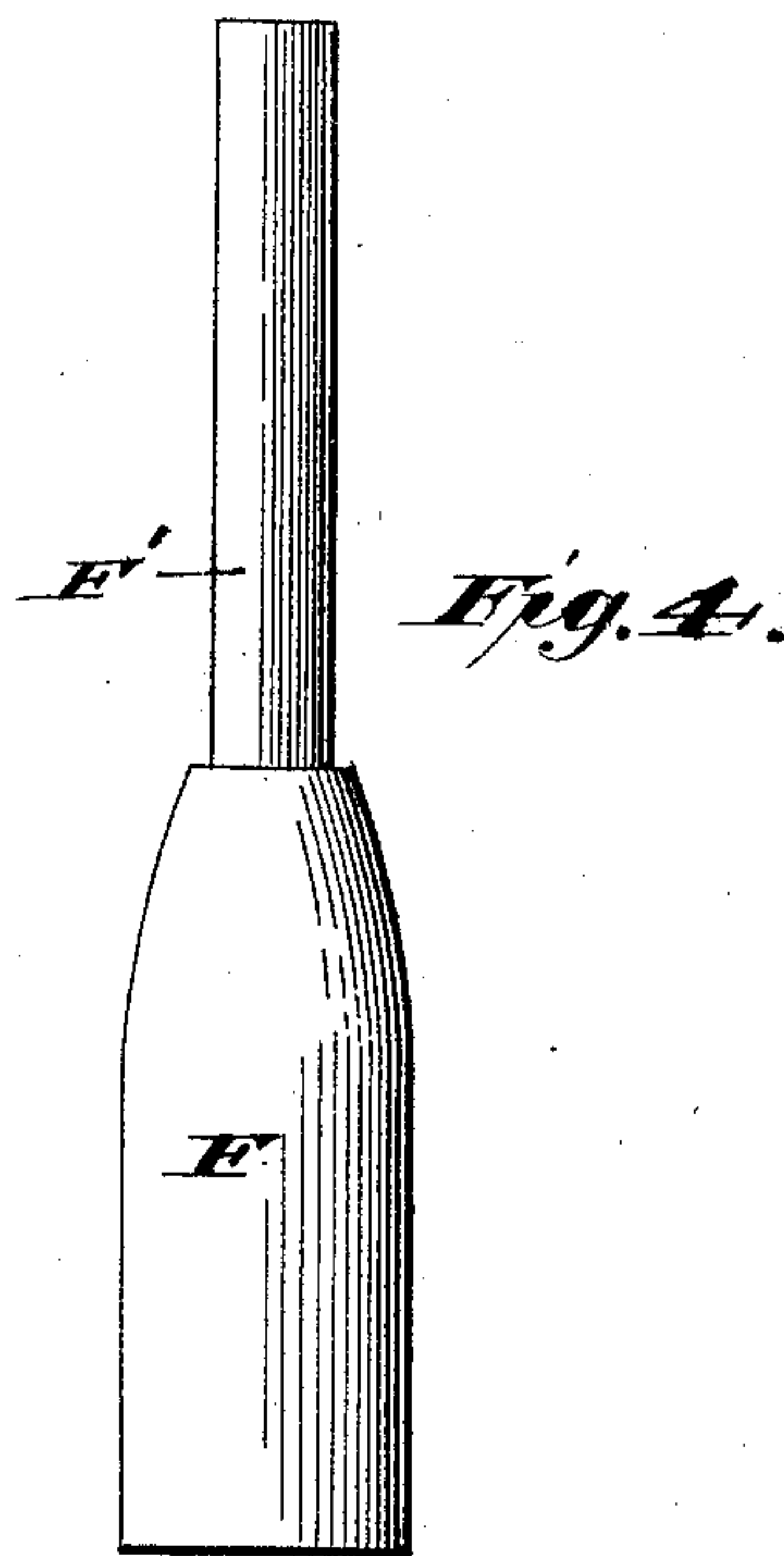
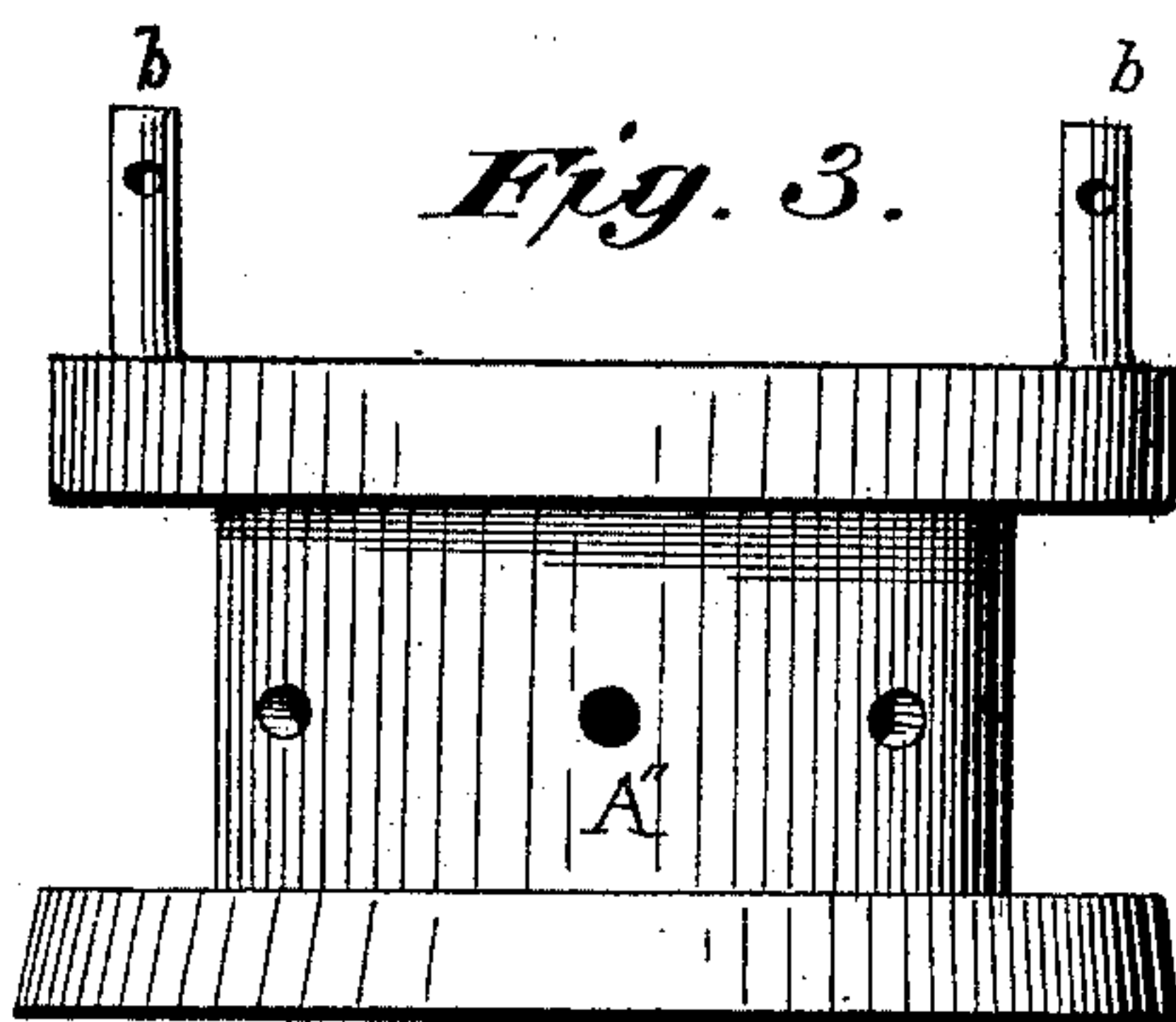
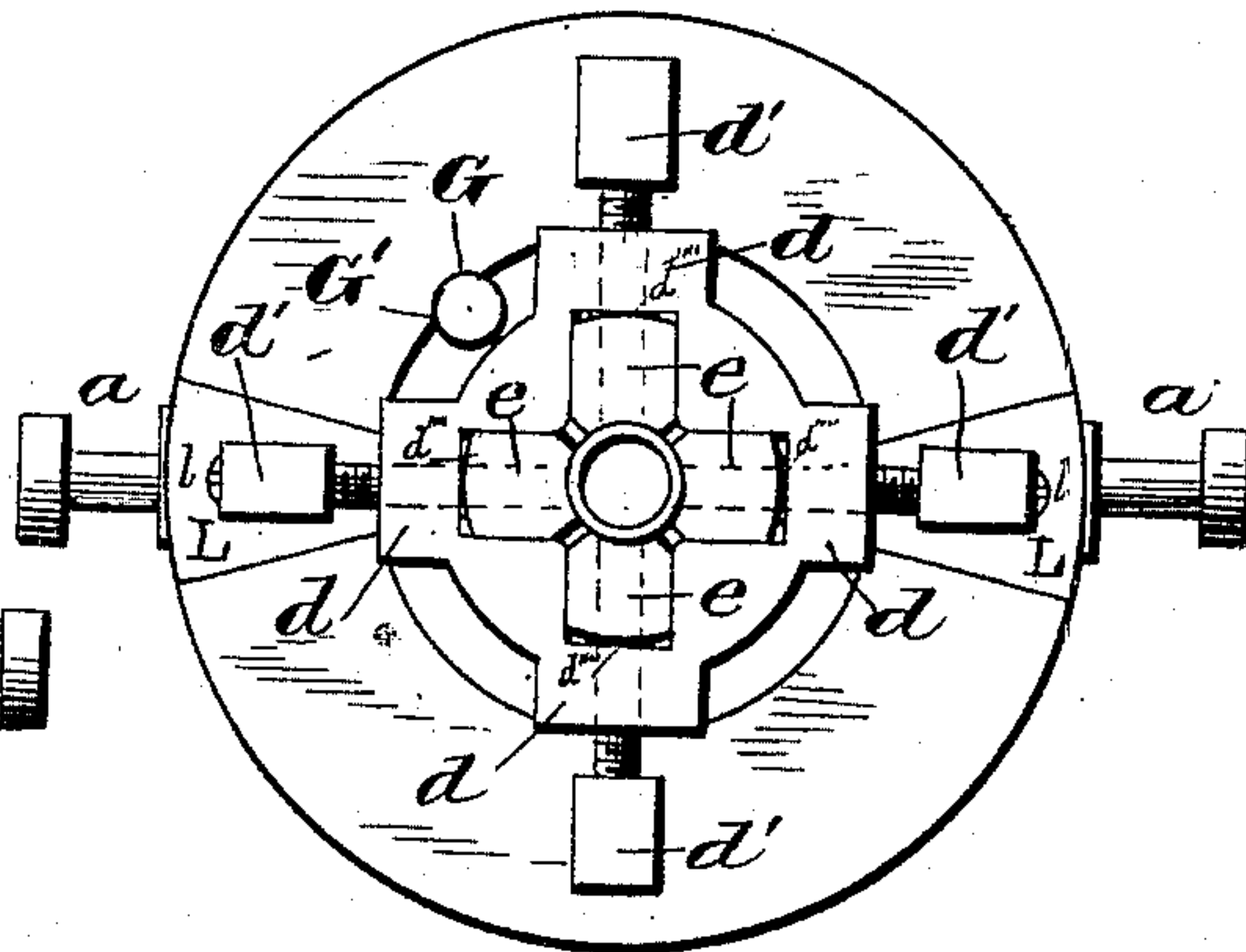


2 Sheets—Sheet 1.

No. 436,628.

Patented Sept. 16, 1890.



**WITNESSES:**

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(No Model.)

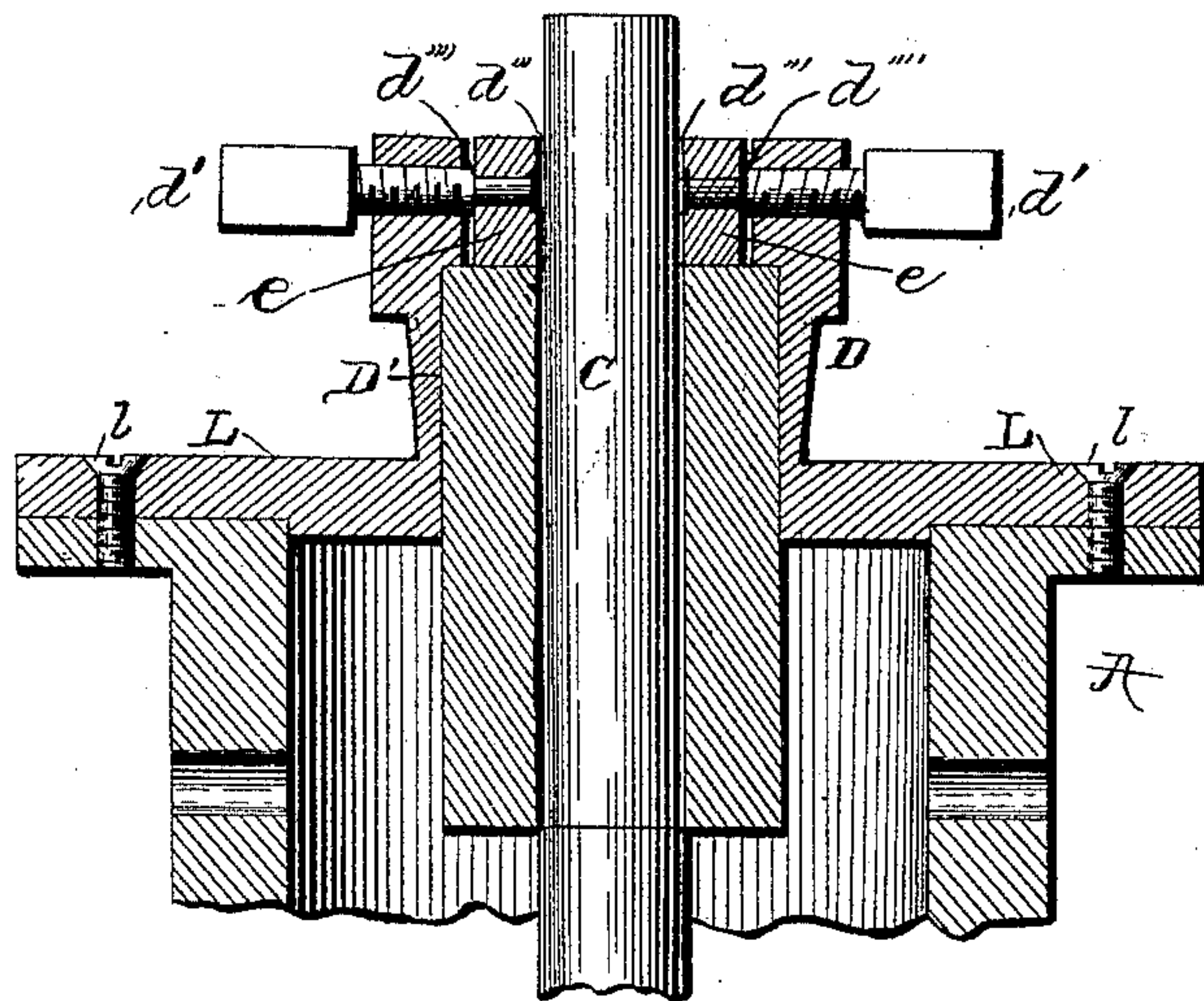
2 Sheets—Sheet 2.

W. E. HUGHES.  
FLASK FOR FOUNDRY PRACTICE.

No. 436,628.

Patented Sept. 16, 1890.

*Fig. 5.*



WITNESSES

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# UNITED STATES PATENT OFFICE.

WILLIAM E. HUGHES, OF WASHINGTON, DISTRICT OF COLUMBIA.

## FLASK FOR FOUNDRY PRACTICE.

SPECIFICATION forming part of Letters Patent No. 436,628, dated September 16, 1890.

Application filed June 14, 1890. Serial No. 355,460. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM E. HUGHES, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Flasks for Foundry Practice; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain improvements in flasks for foundry practice, which will be hereinafter more particularly described and pointed out.

In the accompanying drawings, forming part of this specification, Figure 1 is a vertical transverse section of the "cope" of a flask. Fig. 2 is a top view of the adjustable chuck. Fig. 3 is an elevation of the "drag" or second section of the flask. Fig. 4 is an elevation of a "core" for elongated shells. Fig. 5 is a partial vertical transverse section of the upper part of the flask, enlarged.

A is the shell of a cope, having on opposite sides of the exterior trunnions *a a*, by which the flask is made to turn over when necessary.

B is the base-plate, which is bedded in the floor and on which the flask is placed for use. *b b* are standing pins at opposite sides of the base, and secured to it over which the cope A is placed through holes *a' a'* in the lower flange A' of the cope, which are a little larger in diameter than the pins *b b* to admit of the proper adjustment of the flask by means of the chuck. The pins *b* have holes or grooves for keys *b'*, by which the flask is held firmly on the base-plate.

A steadying or standing pin or rod C is secured to the center of the base-plate B, as shown in broken lines, Fig. 1.

B' is a pattern of an elongated shell, for the casting of which this flask is especially designed.

D is an adjustable chuck composed of the following parts: D' is a hollow shank extending downwardly into the top of the cope A a convenient distance, with a central bore which is somewhat larger at the outer end than at the inner end. The chuck has at the top four projecting legs *d*, in which are threaded

holes for screws *d'*. These screws *d'* have either square heads with holes in them for a turning-pin or they may have milled heads. The inner ends *d''* of the screws are not threaded, but are cylindrical, and are fitted loosely in holes in the movable clamps *e*. The ends of these bolts have collars *d'''* to prevent their withdrawal from the clamps *e*, and also shoulders *d''''* at the end of the threads, so that when fitted in the clamps they must move laterally in or out, so as to clasp the rod C or release it. The shank D' is attached to the top of the shell A by means of the projecting arms L L, which are secured by screws *l l*, so that every movement of the chuck will be communicated to the flask. The purpose of this arrangement is to adjust the flask to a proper central position of the rod C with relation to the interior of the flask. By the movements of these clamps *e*, operated by the screws, the top end of rod C is placed and held centrally within the chuck D. The hole *c* in the chuck is not cylindrical, but has a larger diameter at the outer end than at the other end, which permits the very nice adjustment of the rod C to any reasonable amount which may be required for the position of the pattern in the cope.

The rod C is secured to the base-plate, or it may be cast with it, so that the bottom of the pattern cannot be moved by ramming the sand around it.

The pattern has a hole through it finished with a metal lining *f*.

The purpose of these improvements is to produce more perfect castings of elongated shells or similar work than by the present method, wherein it sometimes requires hours of labor to turn off the outside of a shell to have it true, and then the annulus is not concentric and as regular as it should be. This is accomplished by the flared hole in the chuck, as when the core is inserted its rod occupies the same position that the rod C of the pattern did.

The operation of this is conducted in the usual manner, by first placing the cope as in Fig. 1, and locating therein the pattern B'. Then by means of the screws *d'* the exact position of the pattern is adjusted. The rod G having been previously placed in the gate G',

the sand is then put in around the pattern and properly rammed from the top, and when completed the pins *b* are removed and the cope is lifted from the base B, and the drag  
5 or bottom section of the flask A'' is then put on the cope, the pins *b b* fitting into the holes *a* of the flange A', and are there secured. The sand is then rammed into the drag A'', as usual, and the drag is then removed. The  
10 pattern B' is taken from the cope and the rod F' of the core F is then inserted in the chuck D, and occupies the same position centrally that rod C did, and it gives the core the exact position wanted to insure the proper  
15 parallelism of the annulus. The rod G is removed from the gate G', and all is prepared

for the replacement of the drag. The flask as completed is then reversed and is ready for the metal.

I claim—

In a flask for foundry practice, the base B, having secured thereto the vertical rod C, in combination with an adjustable chuck D, having a flared central bore, and a flask-cope A and drag A'', substantially as and for the  
20 purpose described. 25

In testimony whereof I affix my signature in presence of two witnesses.

WM. E. HUGHES.

Witnesses:

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WM. R. SINGLETON.