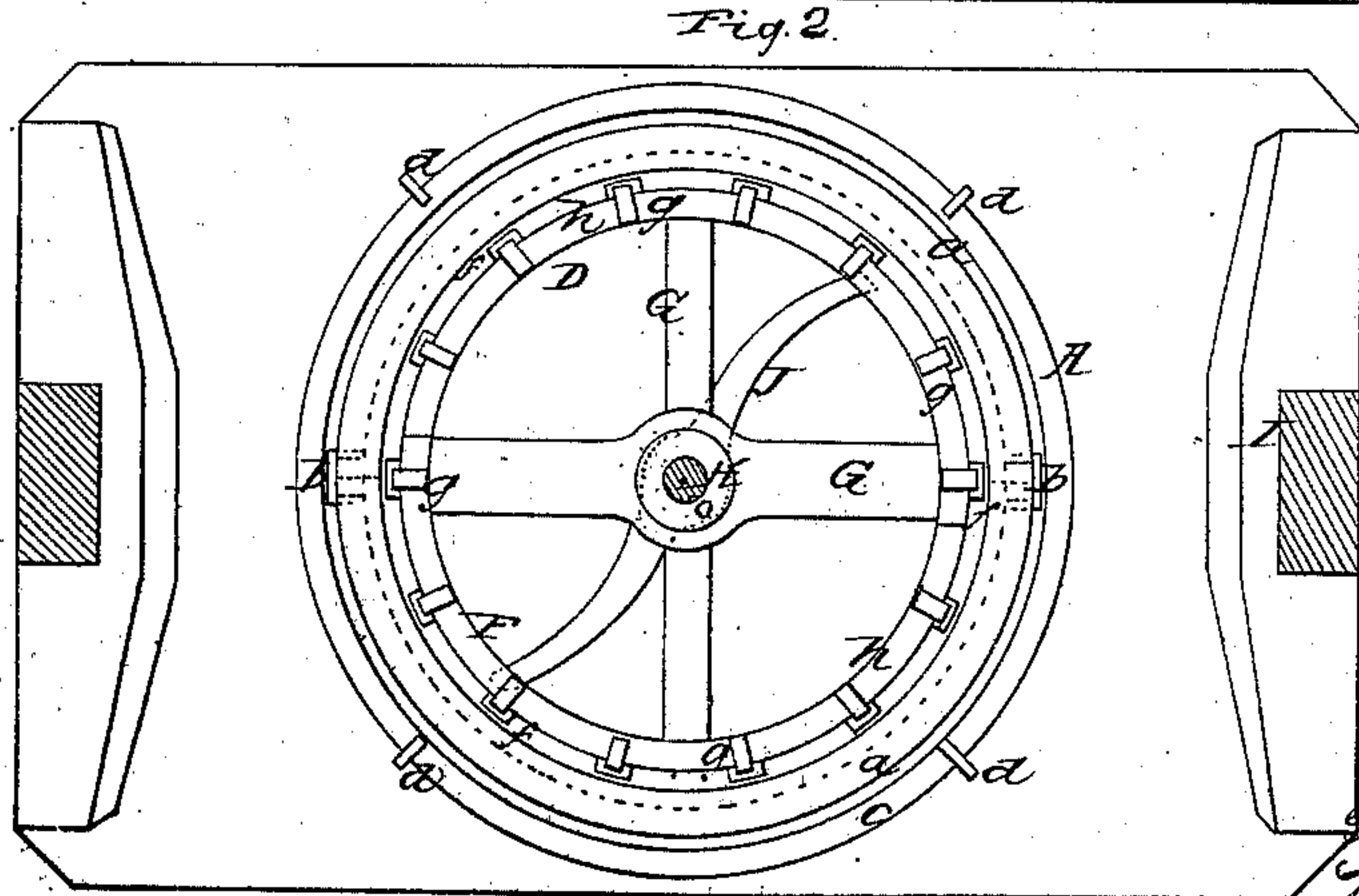
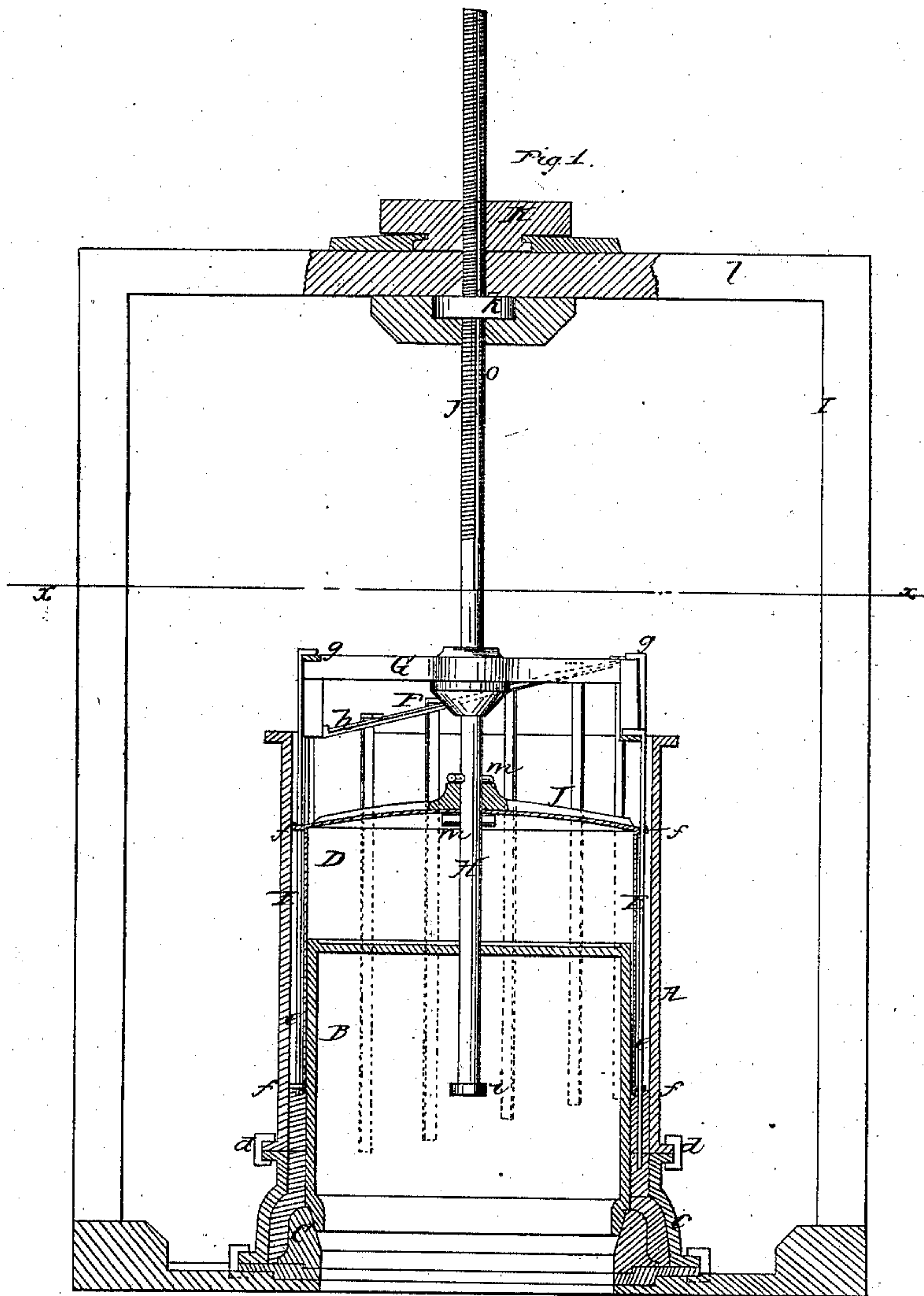


*S. Fulton,*  
*Molding Pipe.*

*N<sup>o</sup> 32,058.*

*Patented Apr. 16, 1861.*



*Witnesses*  
*J. W. Lamb,*  
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# UNITED STATES PATENT OFFICE.

SAMUEL FULTON, OF CONSHOHOCKEN, PENNSYLVANIA.

## IMPROVEMENT IN MOLDS FOR CASTING PIPES.

Specification forming part of Letters Patent No. 32,058, dated April 16, 1861.

*To all whom it may concern:*

Be it known that I, SAMUEL FULTON, of Conshohocken, in the county of Montgomery and State of Pennsylvania, have invented a new and useful Improvement in Forming Molds for Casting Pipes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a vertical central section of my invention; Fig. 2, a horizontal section of the same, taken in the line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts in the two figures.

The object of this invention is to facilitate the ramming of the sand in forming molds for casting pipes, thereby greatly expediting the work and chiefly dispensing with the tedious and imperfect manual operation.

The invention consists in the employment or use of a series of pestles or rammers and a movable pattern arranged within a suitable flask, to operate substantially as hereinafter described and effect the desired end.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a flask constructed of two equal longitudinal parts, *a a*, connected together by hooks *b*, and resting on a horizontal part, *c*, to which the parts *a a* are connected by hooks *d*.

B represents an iron pattern, which is fitted concentrically with the flask, the space *e* between the pattern and flask corresponding to the thickness of the sand mold.

C is a pattern which forms the hub portion of the mold, and is at the lower end of the flask within the part *c*, as shown clearly in Fig. 1.

D is a cylinder which is fitted over the pattern B, and is allowed to freely rise and fall thereon. This cylinder has a series of guides, *f*, attached to its outer side at equal distances apart, said guides being at the upper and lower parts of the cylinder D, and having pestles or rammers E fitted in them, said rammers extending all around the pattern B and fitting and working in the space *e* between said pattern and flask.

The upper ends of the rammers E are bent over in horizontal form, as shown at *g*, and

said parts *g* rest on a cam, F, which is formed of two inclined or spiral bars, *h h*, attached to the ends of cross-bars G G, which are attached to a vertical shaft, H, said shaft passing through the center of the top of cylinder D, and also through the center of the top of the pattern B, the lower end of the shaft having a head or button, *i*, on it, as shown in Fig. 1.

The upper part of the shaft H has a screw-thread, *j*, cut or formed on it, and this screw-thread works in a nut, *k*, which is fitted in a cross-piece, *l*, of a framing, I.

On the shaft H below the cam F there is placed a scraper, J. This scraper is directly over the cylinder D, and is formed simply of the curved arms, as shown in Fig. 2. The scraper J and the top of the cylinder D are placed on the shaft H, between two pins *m m*, as shown clearly in Fig. 1, said pins passing through the shaft H, as shown clearly in Fig. 1.

On the screw portion *j* of the shaft there is placed a pulley, K, which is provided with a feather that fits in a longitudinal groove, *o*, in the shaft H.

The operation is as follows: The parts *a a c* of the flask A are clamped together and the lower hub portion of the flask may be rammed by hand, as usual. The pattern B, with cylinder D and its rammers, are then lowered into the flask, the lower end of the pattern B resting on the pattern C, as shown in Fig. 1. The operator then throws the sand into the upper part of the flask A, and the shaft H is rotated by any convenient power. The sand falls on the top of cylinder D and is scraped therefrom, by the revolution of the scraper J, into space *e* between the pattern B and flask A, and the cam F, which rotates with shaft H, elevates the rammers E, which fall by their own gravity as they pass off the elevated end of the spiral bars and ram the sand in the space *e*. As the shaft H rotates it rises, owing to the screw J and nut *k*, and the cylinder D and rammers E rise with it to correspond with the gradually-increasing elevation of the sand in space *e*.

The cylinder D may be sufficiently loose on the pattern B to admit of it being slowly rotated by the friction attending the operation of the cam F on the rammers E, and thereby insure the sand being equally compacted in the space *e*.

When the cylinder D and the rammers E

have ascended a certain distance—nearly to the top of the pattern B—the head or button *i* of shaft H will have reached the head of the pattern B, and said pattern will rise within the flask A with the cylinder D and rammers E, and the pattern is thus drawn entirely through the flask.

By this arrangement it will be seen that the molding process is greatly expedited and the sand rammed or packed much more expeditiously and perfectly than can be done by the hitherto exclusively manual operation.

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

The pattern B, cylinder D, and rammers E, placed within a suitable flask, A, and arranged with a screw-shaft, H, to operate substantially as and for the purpose set forth.

SAMUEL FULTON.

Witnesses:

AUGS. SCHWARZ,

WM. W. DALBEY.