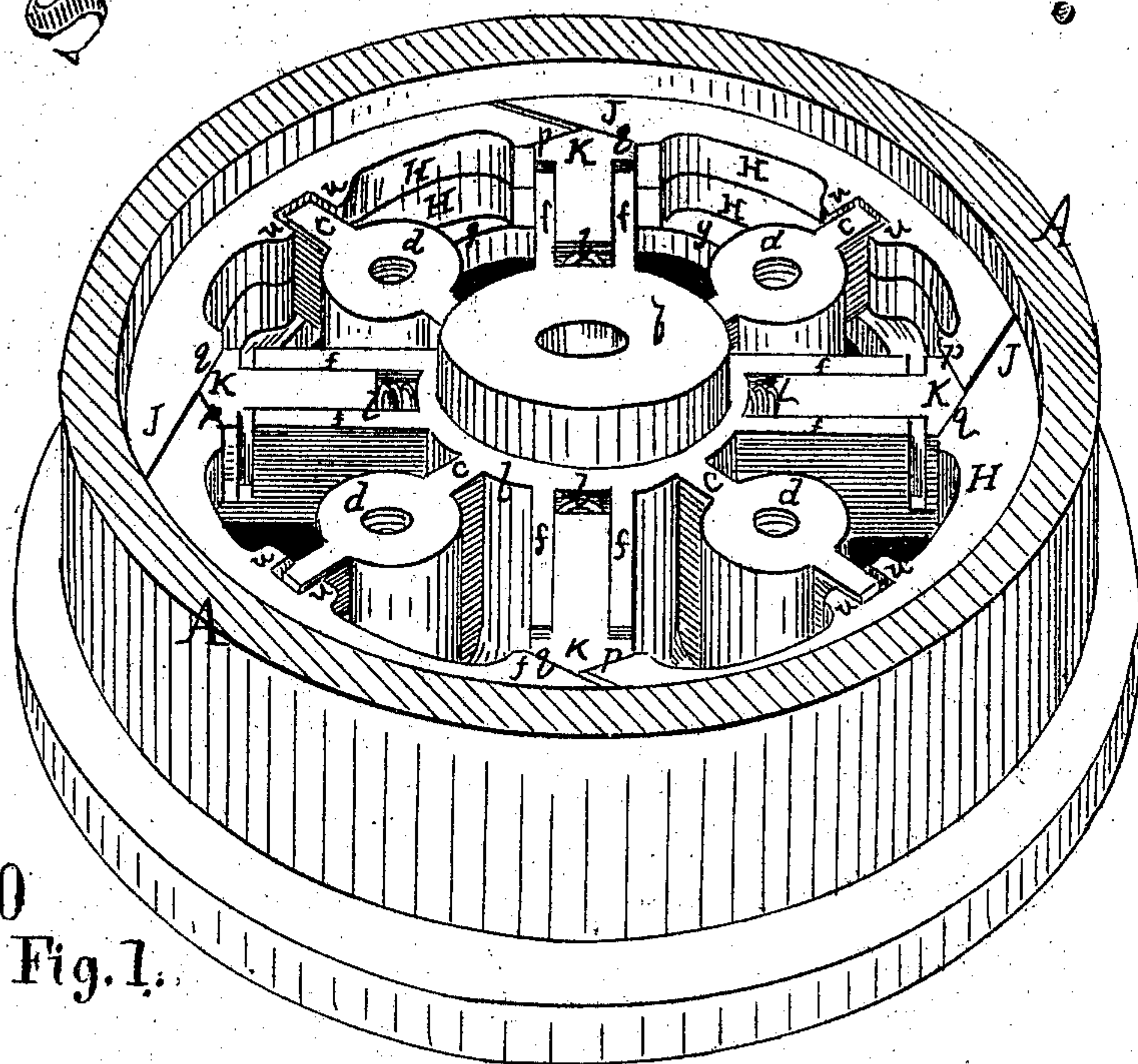


# STEAM PISTON.



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Fig. 1.

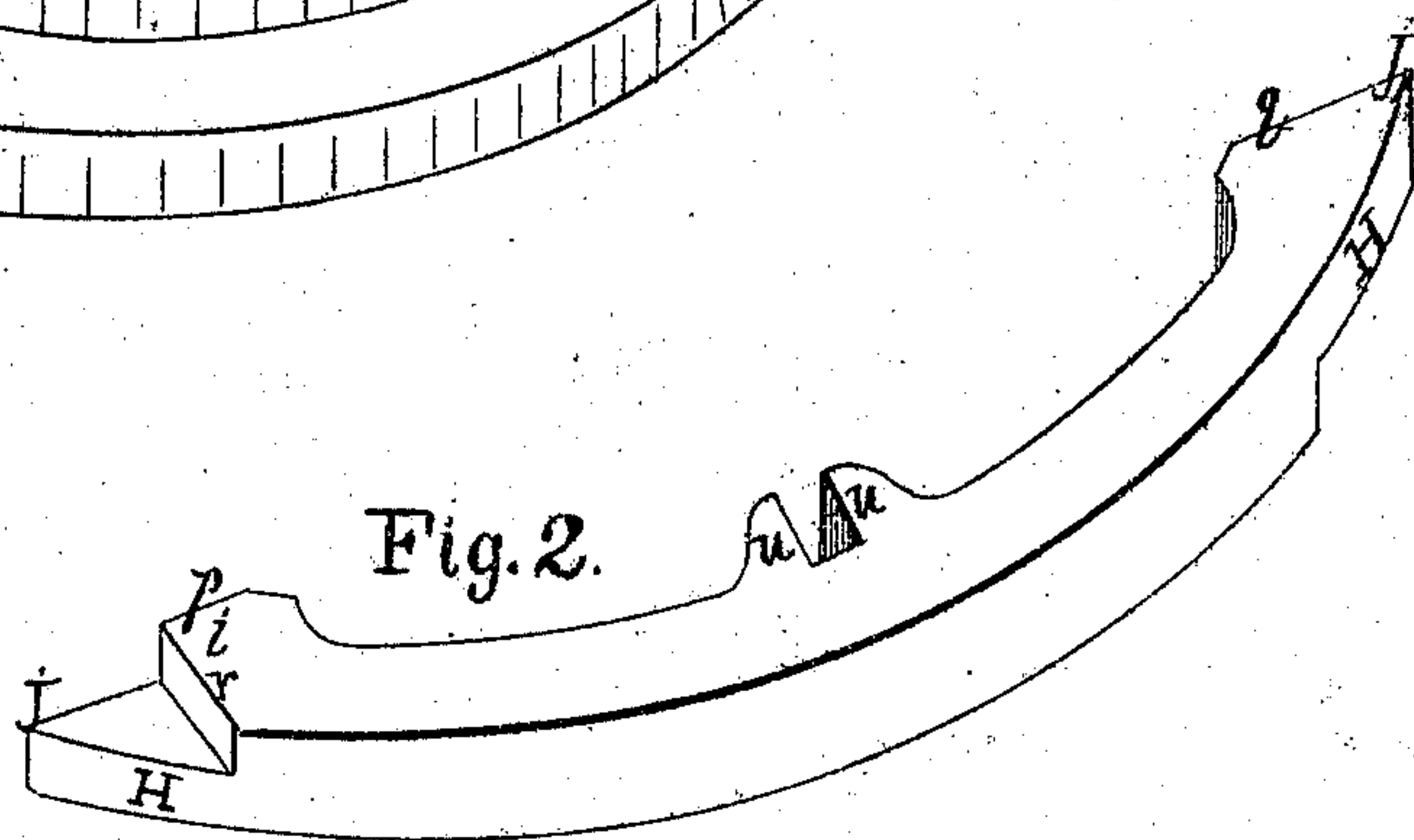


Fig. 2.

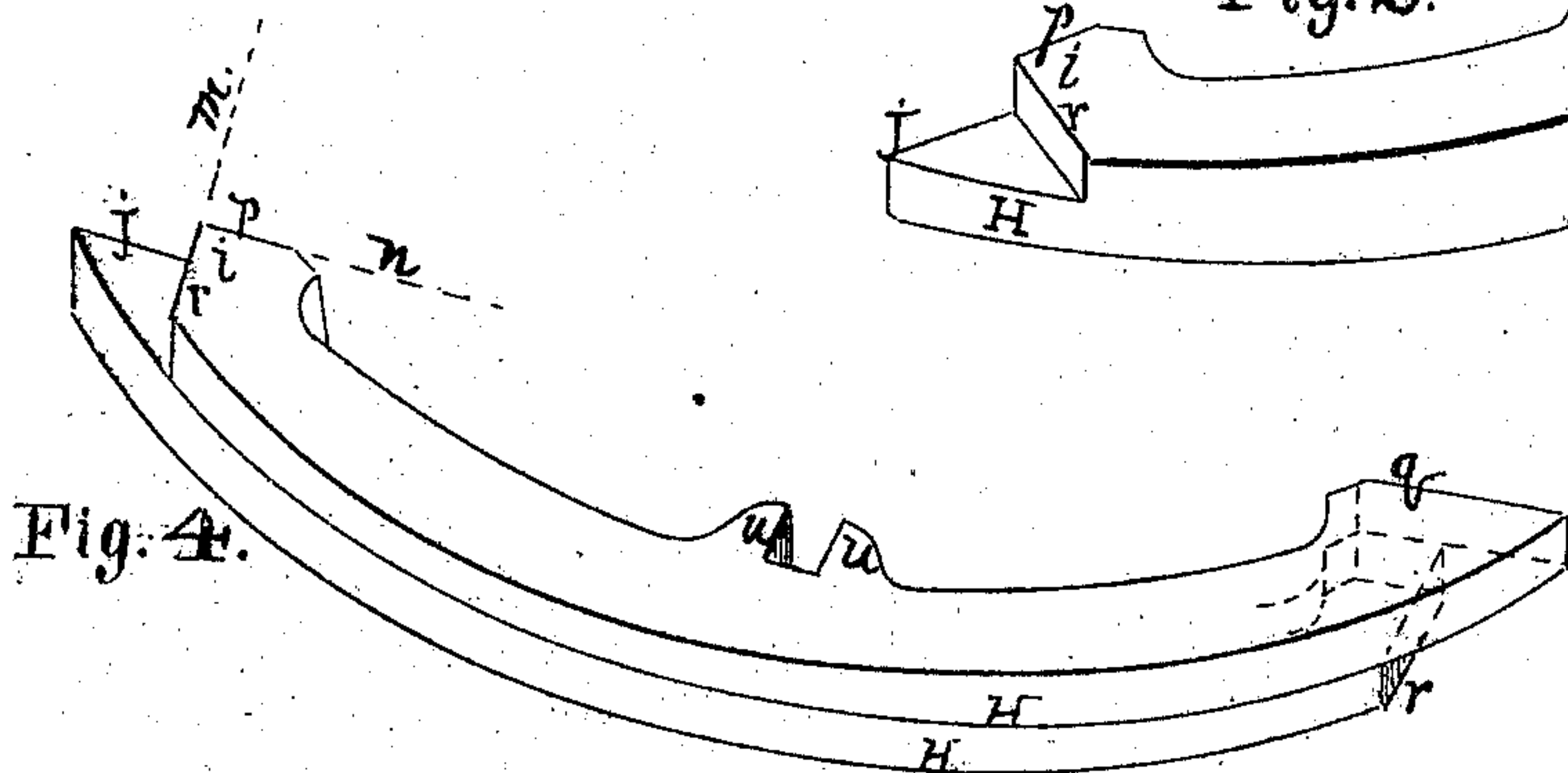


Fig. 3.

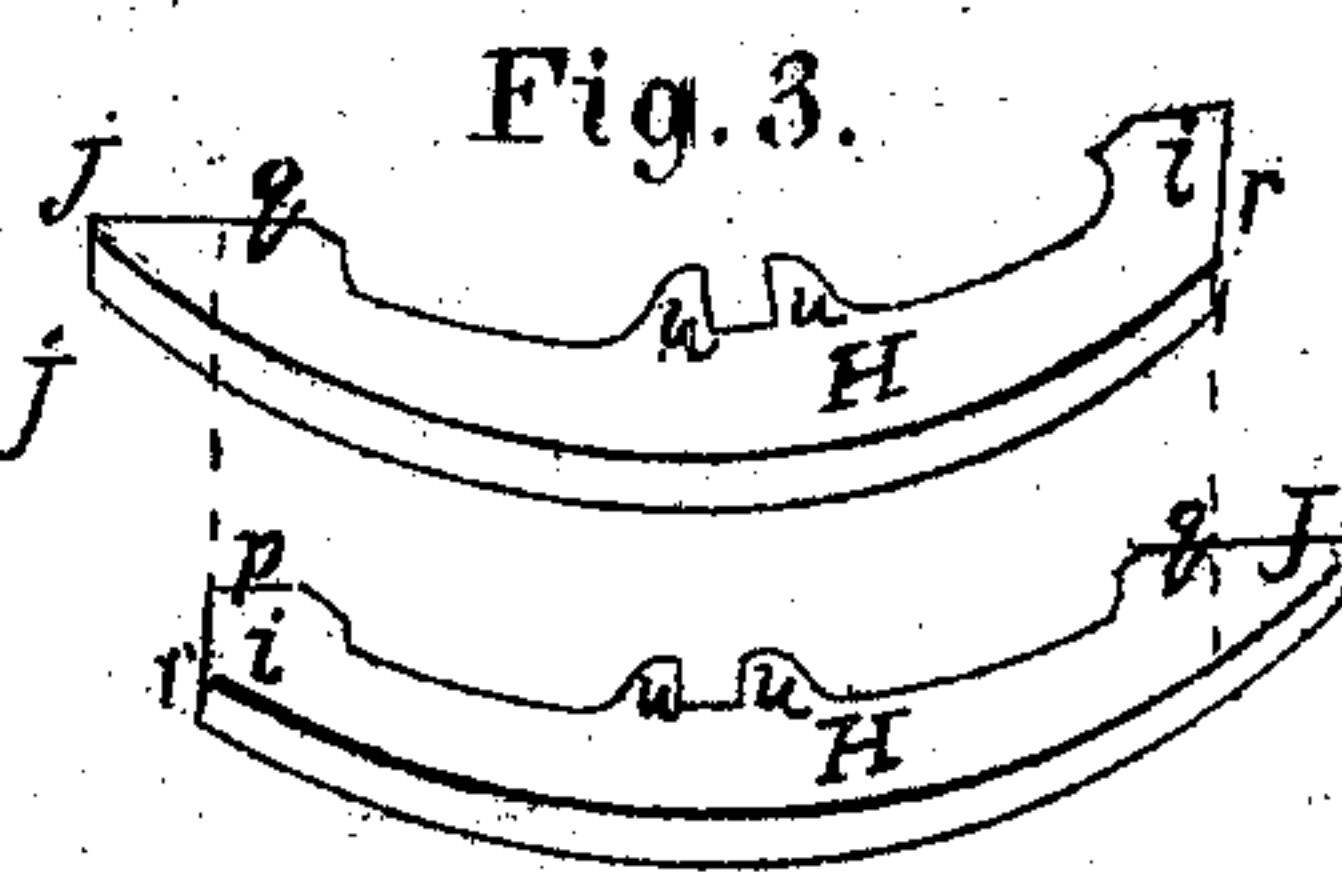


Fig. 4.

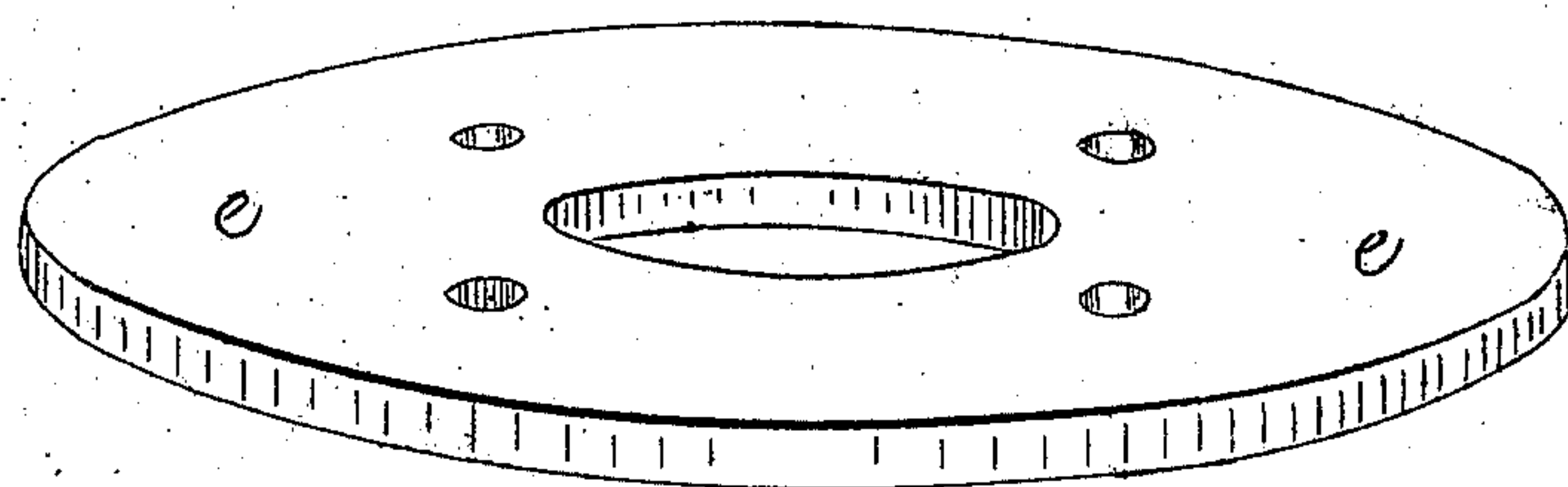


Fig. 5.

Witnesses.

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Inventors.

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*H. B. Chubbuck*



# United States Patent Office.

S. E. CHUBBUCK AND ISAAC Y. CHUBBUCK OF ROXBURY, MASSACHUSETTS, ASSIGNORS TO THEMSELVES AND S. E. CHUBBUCK, JR.

Letters Patent No. 74,750, dated February 25, 1868.

## IMPROVEMENT IN PISTONS.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that we, S. E. CHUBBUCK and ISAAC Y. CHUBBUCK, both of Roxbury, in the county of Norfolk, and State of Massachusetts, have invented certain new and useful Improvements in Pistons for Steam-Engines; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, these drawings making part of this specification. With reference to them—

Figure 1 is a perspective view of a piston exhibited in position within the section of a steam-cylinder, the follower having been removed from the piston to show the interior construction and arrangement.

Figure 2 is a perspective view of two of the packing-ring sections formed in one piece.

Figure 3 shows the same formed in two separate parts.

Figure 4 shows the same two parts of a packing-ring section adjusted together in their proper but separate relation.

Figure 5 is a perspective view of the piston's follower.

The nature of our improvement relates to the construction of the ring-sections and the devices for applying and adjusting them, and rendering them self-adjusting, substantially as I will proceed to describe.

A is a section of a steam-cylinder, and within it is shown the piston, having the usual back-face plate and centre hub, *b*, to receive the piston-rod, and upon these are cast, in the usual manner, the arms *c* and hubs *d*, to which the follower *e* may be secured by screw-bolts, the back plate and the follower embracing, in the usual manner, the packing-rings. In addition to these, in our improvement we cast a guiding-socket or box, *f*, open on the side next to the follower, and at the outer end, and radiating from the centre hub between the arms *c*. The back side of this socket extends radially to the rim *g* of the piston. This rim extends around the piston, and forms a surface to embrace the packing-rings upon the side opposite the follower, and may be directly on the back plate of the piston, or may be elevated somewhat from it, with space between, as shown, for lightness. The packing-rings are made up of the ring sections H. The peculiarity of these sections is found in the different and particular form of the two ends of each section, (see *i j*), and their arrangement, together with the spring-wedge K, (see fig. 1.) The form of this wedge K, with enlarged head, allowing it to recede only to a given point, and the application of a spring, *l*, to keep it pressed out radially against the peculiarly-formed ends of the ring-sections, will be readily understood from the drawing.

That the form of the different ends of sections H may be better understood, together with their utility, we will explain that the ends *j* are formed in a single angular line or plane, (see figs. 1, 3; 4,) while the other end, *i*, is formed in coincidence with two intersecting angular lines or planes, *n m*, the angles *p* and *q* each being formed to correspond with the angles of the heads of wedges K, and the angle *r* to match the extended angular end, *q j*, of the adjacent section when arranged together. The utility of this construction of the ends of the ring-sections consists in not allowing the wedge to pass through against the cylinder as the parts wear away, and in affording therewith the facility at the same time to break the direct communication of the steam through the joint when the sections are arranged in reverse order in the different circular series, as shown in figs. 4 and 2. These sections are also furnished with the lugs *u*, which, while they generally keep the rings from turning around, are so formed and fitted, with reference to the ends of arms *c*, that in a horizontal cylinder they support the two ring-sections, which come in a vertical position, from sliding down upon the wedges, so as to relieve the contiguous section from its action. Fig. 2 shows two sections in reverse order, and formed into one, yet embodying the same peculiarities, and acting, perhaps, in some cases quite as efficiently.

It will be observed that this construction affords perfect facility for examining the adjustment of the parts while in position for working. By removing the follower *e* the interior parts are exposed to view, without any disarrangement or disturbance of any of them.

Having described our improvements, what we claim as our invention, and desire to secure by Letters Patent, is as follows:

1. We claim the peculiar construction of the ring-sections H, substantially as described and shown.

2. We claim the open-sided radial grooves  $f f$ , in combination with the spring-wedge K, substantially as described.

3. We claim the lugs  $u$ , in combination with the arms  $e$ , to support those sections which work in a vertical or approximately vertical position, substantially as described.

S. E. CHUBBUCK,  
I. Y. CHUBBUCK.

Witnesses:

D. N. B. COFFIN, Jr.,  
IRA H. D. SPAULDING.