

No. 672,570.

Patented Apr. 23, 1901.

R. A. RUNG.  
FLUE CLEANER.

(Application filed Dec. 26, 1900.)

(No Model.)

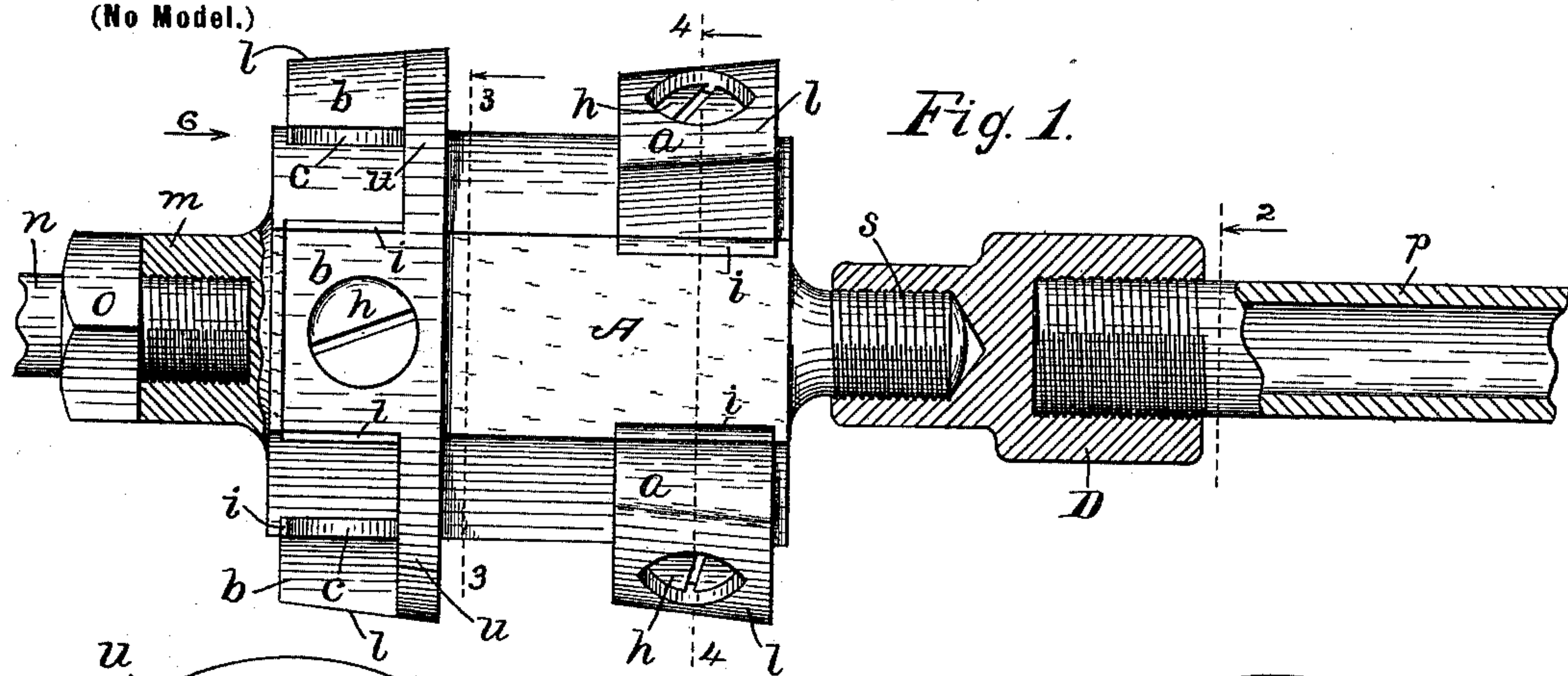


Fig. 1.

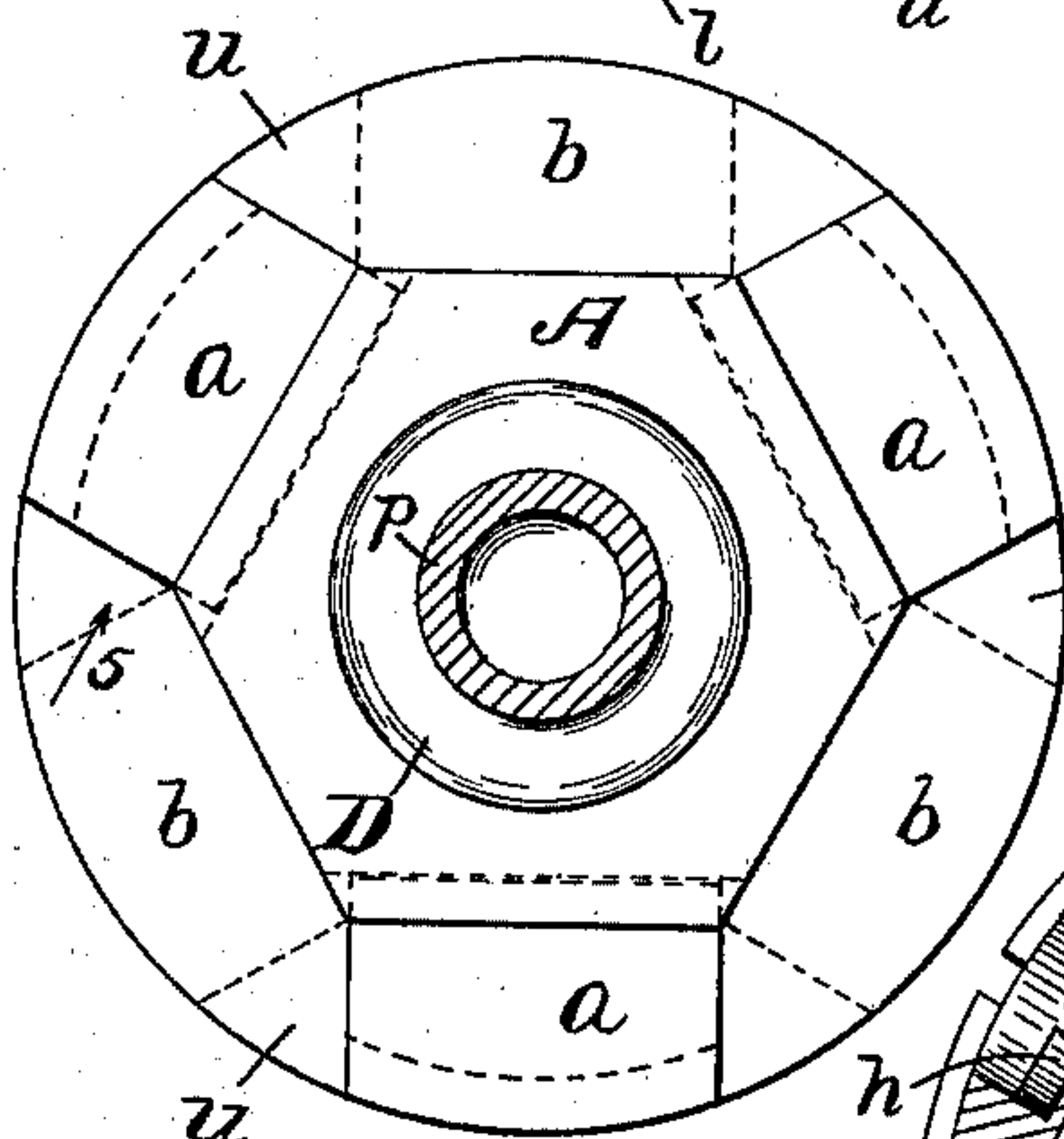


Fig. 2.

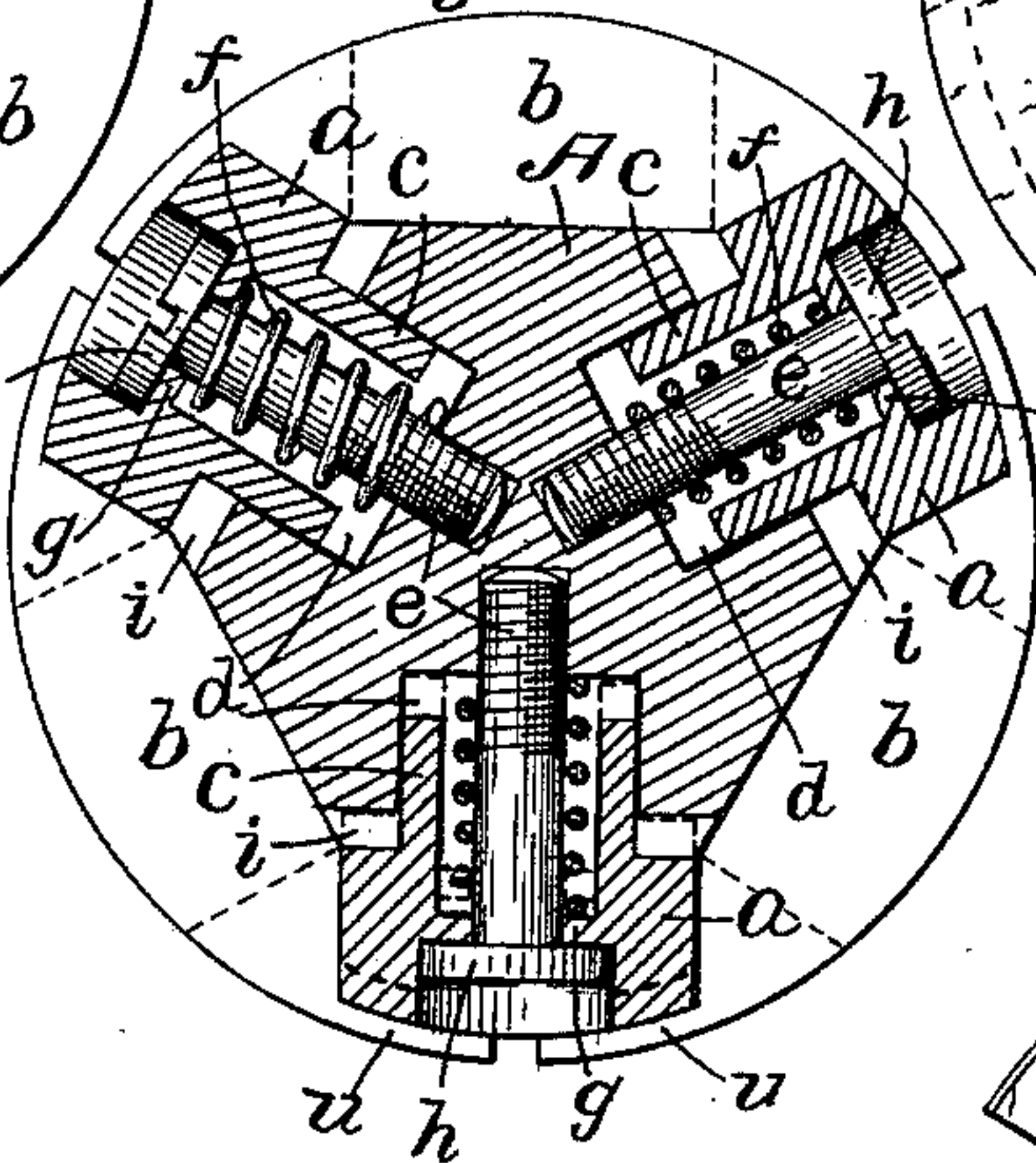


Fig. 3.

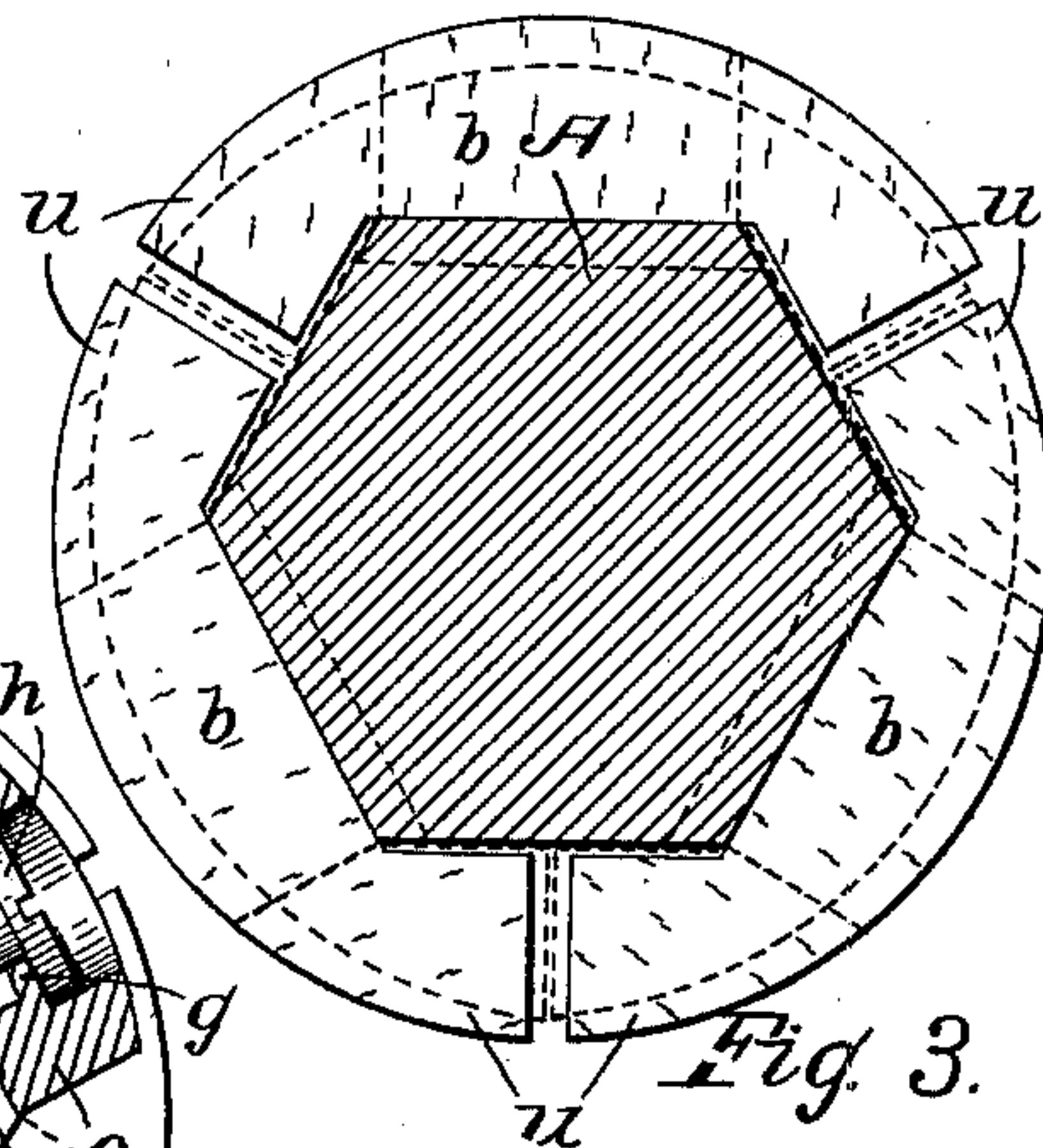


Fig. 4.

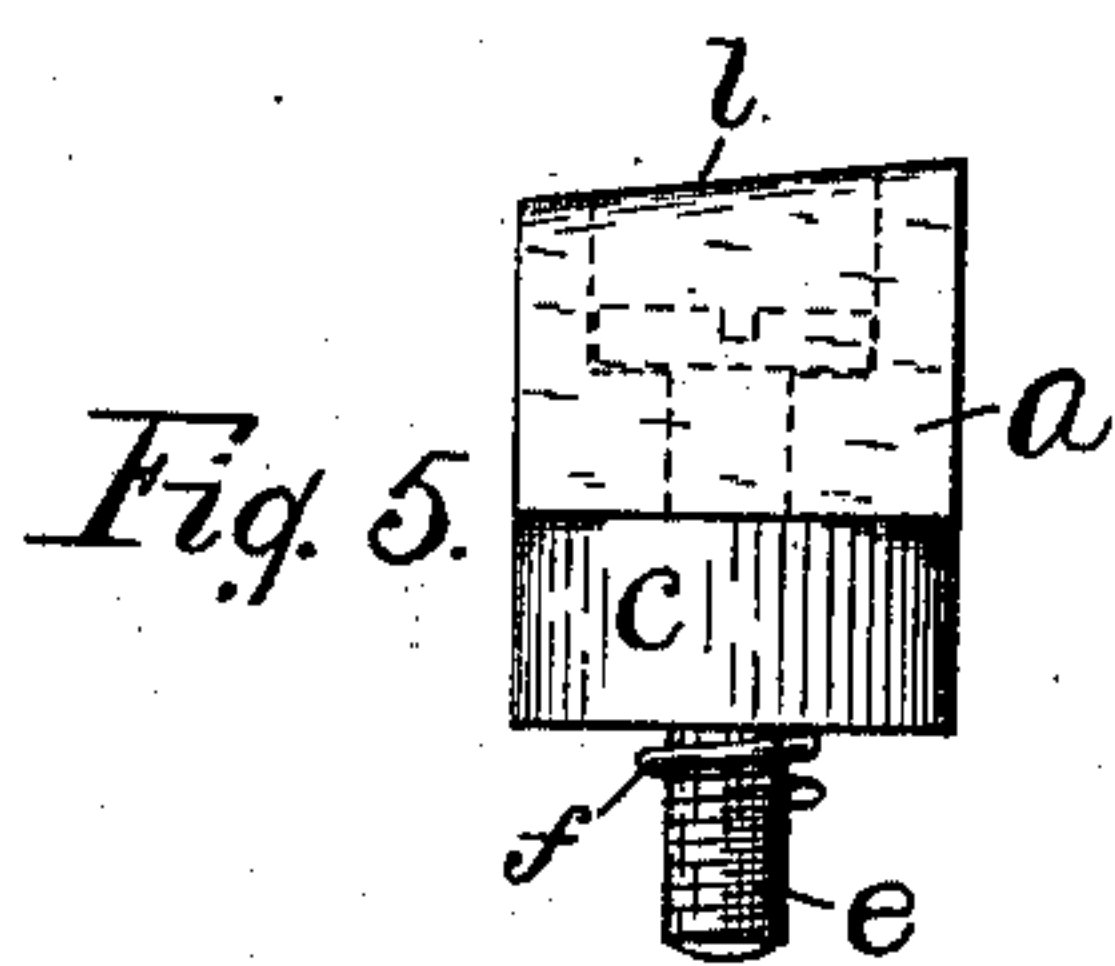


Fig. 5.

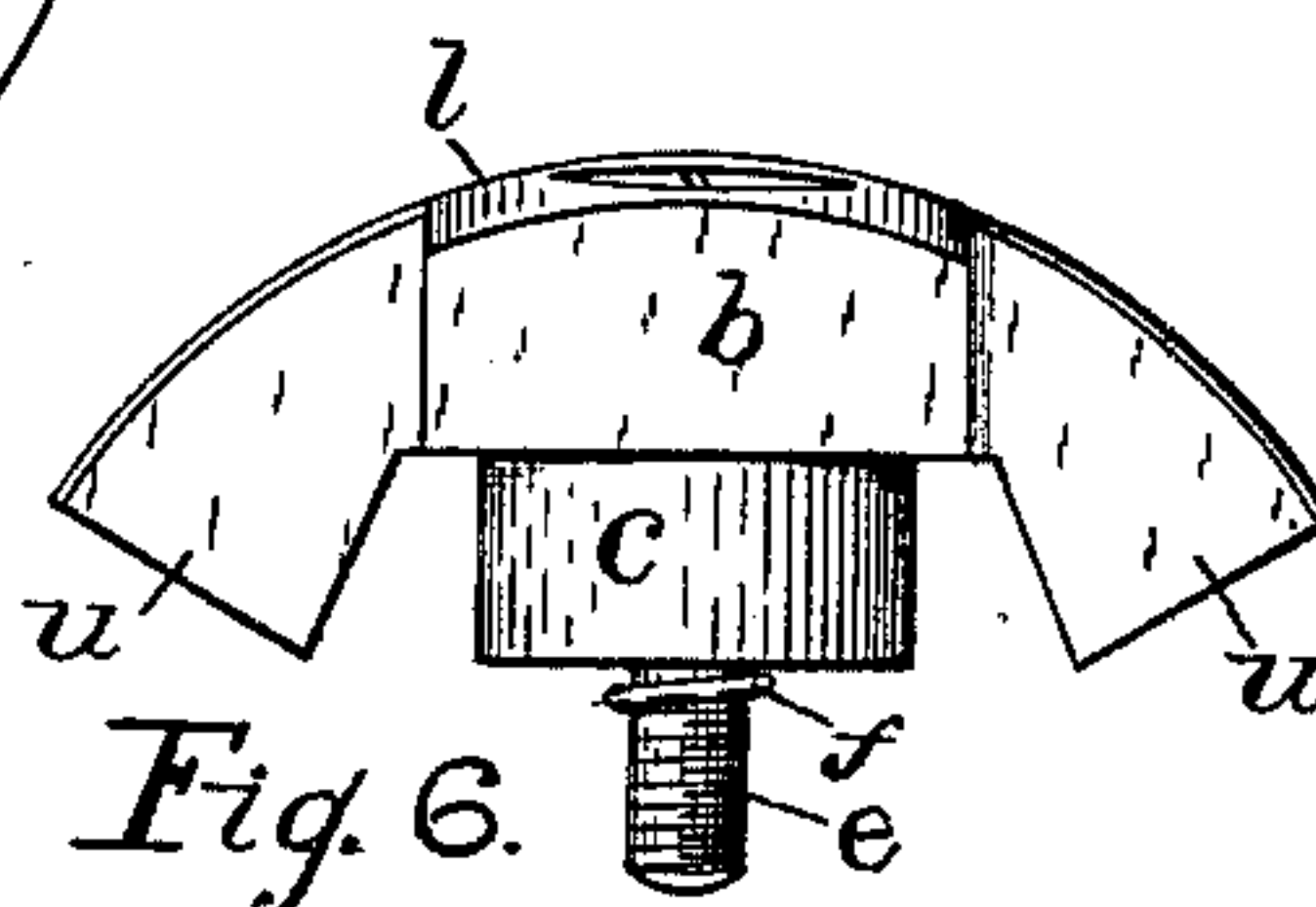


Fig. 6.

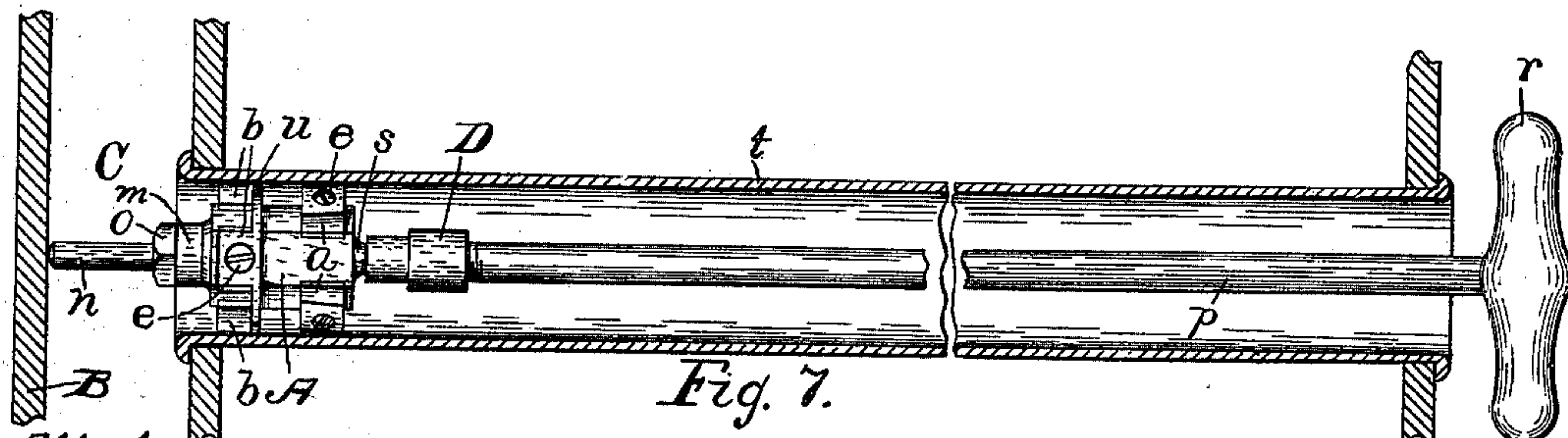


Fig. 7.

Attest:

M. L. Winston,  
P. A. Boeckel

Inventor:

R. A. Rung,  
R. E. B. Whitman, Atty.



# UNITED STATES PATENT OFFICE.

RUDOLPH A. RUNG, OF ROCHESTER, NEW YORK.

## FLUE-CLEANER.

SPECIFICATION forming part of Letters Patent No. 672,570, dated April 23, 1901.

Application filed December 26, 1900. Serial No. 41,144. (No model.)

*To all whom it may concern:*

Be it known that I, RUDOLPH A. RUNG, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Flue-Cleaners, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

My invention is a device for scraping or cleaning the interiors of boiler flues or tubes, the same being hereinafter fully described, and more particularly pointed out in the claims.

This invention is designed as a flue-cleaner having yielding scraper-sections for the purpose of removing salt incrustations (as in the case of marine boilers) and other solid substances that adhere rigidly to the interiors of the tubes.

Referring to the drawings, Figure 1 is a side elevation of the device with some parts in longitudinal section. Fig. 2 is an end elevation seen as indicated by arrow 2 in Fig. 1, the operating rod or stake being transversely sectioned, as on the dotted line at the point of the arrow. Fig. 3 is a cross-section through the body of the device on the dotted line 3 3 in Fig. 1, parts being shown in various positions by full and dotted lines. Fig. 4 is a transverse section on the dotted line 4 4 in Fig. 1. Fig. 5 is a side elevation of a scraper detached, seen as indicated by arrow 5 in Fig. 2. Fig. 6 is a rear elevation of a rear scraper detached, seen as indicated by arrow 6 in Fig. 1. Fig. 7, drawn to a smaller scale, shows the application of the device.

A is the head or body of the device, which may be, as a matter of convenience, hexagonal in cross-section, as shown, with six equal longitudinal faces. This prismatic body is provided with a series of forward scrapers *a a* and a series of rear scrapers *b b b*, each series being in a plane at right angles to the axis of the body. There are six scrapers, one projecting laterally or radially from each face of the body A, the forward scrapers alternating with the rear scrapers, as shown. Each scraper is formed with a cylindrical part or neck *c*, Figs. 4, 5, and 6, these necks occupying circular radial cavities *d* in the various faces of the body A. The several scrapers are held to place by radial headed studs *e*,

threaded in the body A, the scrapers being adapted to move in radial directions on the studs. The studs are made rigid by turning them into the threaded sockets in the body A, so as to bottom or have their inner ends pressed firmly against the body, as shown in Fig. 4. The heads *h* of the studs are made comparatively thin and sunk considerably below the outer inclined surfaces *l* of the respective scrapers, as shown. The scrapers are made hollow, in the interiors of which are placed spiral springs *f*, coiled around the respective holding-studs *e*. The springs bear at their inner ends against the body A at the bottoms of the respective cavities *d* and at their upper ends against inwardly-projecting shoulders *g* of the scrapers, acting to hold the latter normally outward against the heads of the studs *e*.

Beneath each scraper *a b* the body A is cut away to form cavities *i*, Figs. 1 and 4, so that when pressed from without the scrapers may move inward or toward the axis of the body against the action of the coiled springs *f*, the cavities *d* having sufficient depth to admit of this inward motion of the scrapers.

The outer ends or surfaces *l* of the several scrapers, Figs. 1, 5, and 6, are slanted backward, as shown, to permit the device to be more readily entered into the end of the flue *t*, Fig. 7, the scrapers all yielding inward against the springs as the device is pushed into the flue. Thus constructed the edges of the several scrapers when in the flue are pushed by the springs against the inner surface of the flue, serving to scrape the latter clean when moved within it.

The rear end of the body A is formed with a projection *m*, Fig. 1, forming a rest, into which is threaded an axial projecting stem *n*, constituting a stop, as shown in Fig. 7, to prevent the body or head A being pushed out of the rear end of the flue. The free end of this stem coming in contact with the opposite wall or plate B of the vertical flue C prevents the device from being pushed out of the tube or flue *t*. The stem *n* is removable from the body A, which admits of other stems of different lengths being inserted, so as to adapt the device to boilers or steam-generators of different construction. I usually form these stems with polygonal heads *o* to receive an



ordinary wrench for turning them into or out of the body A.

The device may be operated by means of an axial rod or stale *p*, Figs. 1 and 7, either solid or tubular, provided at the outer end with some suitable handle *r*. As shown, a simple socket-coupling *D* is employed, threaded onto a projecting part *s* of the body A, the stale *p* being threaded into the opposite end of the coupling. The construction is preferably such that both threaded parts *s* and *p* entering the coupling may be turned firmly against the bottoms of the respective sockets in the coupling, as shown, so as to be firm and rigid and not be readily loosened or detached.

In using this device it is first pushed backward into the tube *t* to the rear end thereof, as shown in Fig. 7, after which it is worked forward and backward through short distances by alternated motions, being turned in the meantime slightly one way and then the other to cause the scrapers to come in contact with all parts of the inner surface of the tube.

All the scrapers may be in the form of the forward ones, *a*; but I prefer in some cases to form those at the rear, *b*, with laterally-projecting wings *u*, Figs. 1 and 6, the ends of the adjacent wings nearly meeting, as shown. Thus constructed the three extended scrapers together constitute substantially a circular disk in a plane at right angles with the axis of the body A. These wings, like the scrapers, are inclined on their convex edges and serve to draw or carry the loose scale and other matter out of the flue as the body A is worked to the front end of the latter, leaving the flue or tube practically clear of foreign matter.

What I claim as my invention is—

1. A flue-cleaner comprising a prismatic body having circular radial cavities, scrapers having cylindrical necks movable in said cavities, radial headed studs threaded into the body and passing loosely through the necks of the scrapers, and springs arranged around said studs between the inner ends of the sockets and outer walls of the scrapers against which latter the heads of the studs bear, substantially as described.

2. A device for cleaning boiler-flues, consisting of a body having longitudinal faces, and a scraper projecting laterally from each of said faces, said scrapers being yieldingly mounted and constituting two transverse series near the respective ends of said body, the scrapers at one end of the body alternating with those at the other end of the body and those at the rear being provided with laterally-extending wings, substantially as shown and described.

3. A device of the kind described, consisting of a prismatic body having longitudinal faces, and a scraper projecting laterally from each face, said scrapers being in two transverse planes near the respective ends of said body, the scrapers at one end of the body alternating with the scrapers at the other end of the body, and some of the scrapers being formed with laterally-extended parts or wings, substantially as and for the purpose specified.

In witness whereof I have hereunto set my hand, this 1st day of August, 1900, in the presence of two subscribing witnesses.

RUDOLPH A. RUNG.

Witnesses:

RICHARD B. SMITH,  
DOROTEO GARCIA LAGOS.