

(No Model.)

C. A. BARNES.

PIPE CUTTER.

No. 365,564.

Patented June 28, 1887.

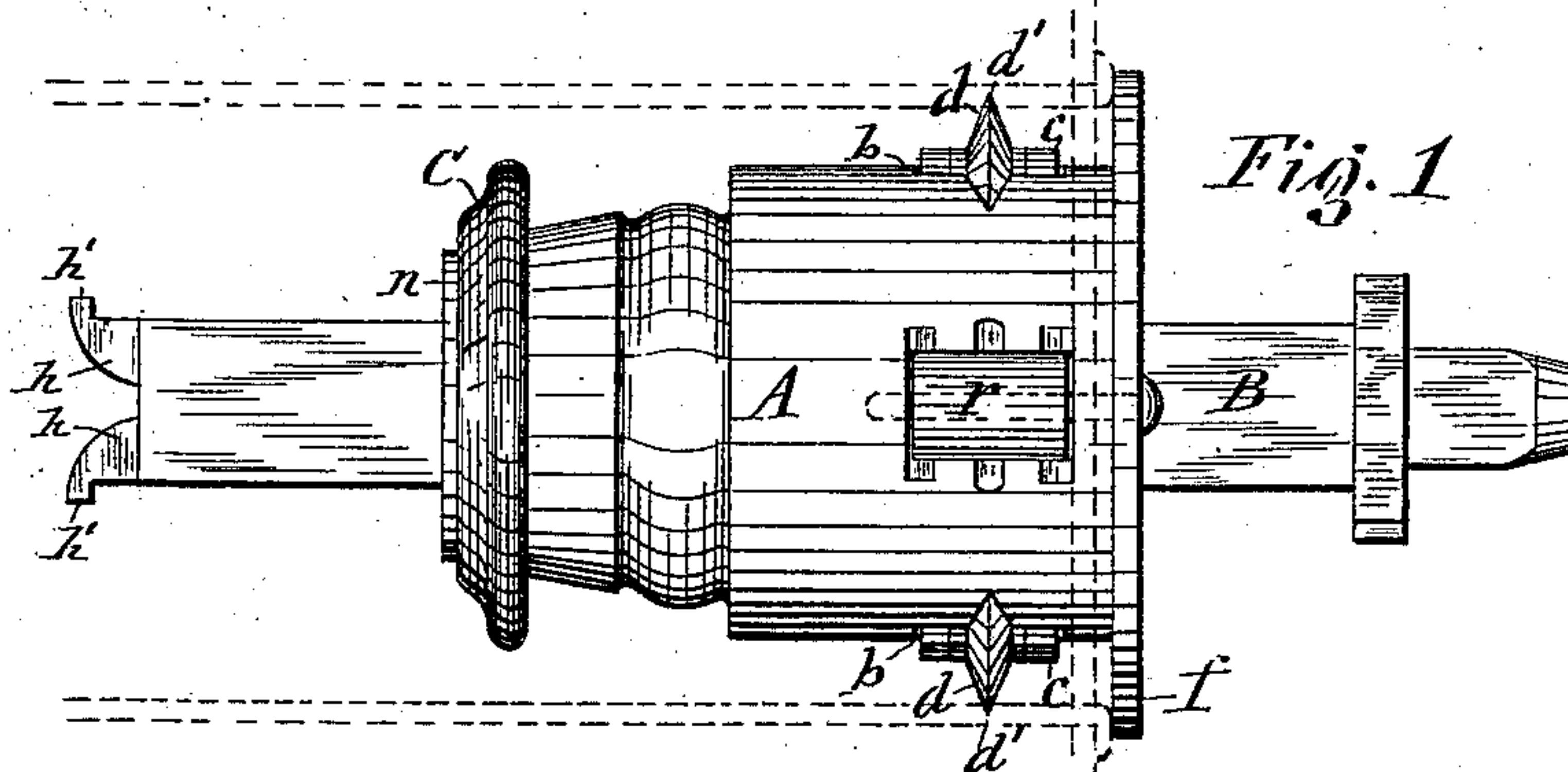


Fig. 1

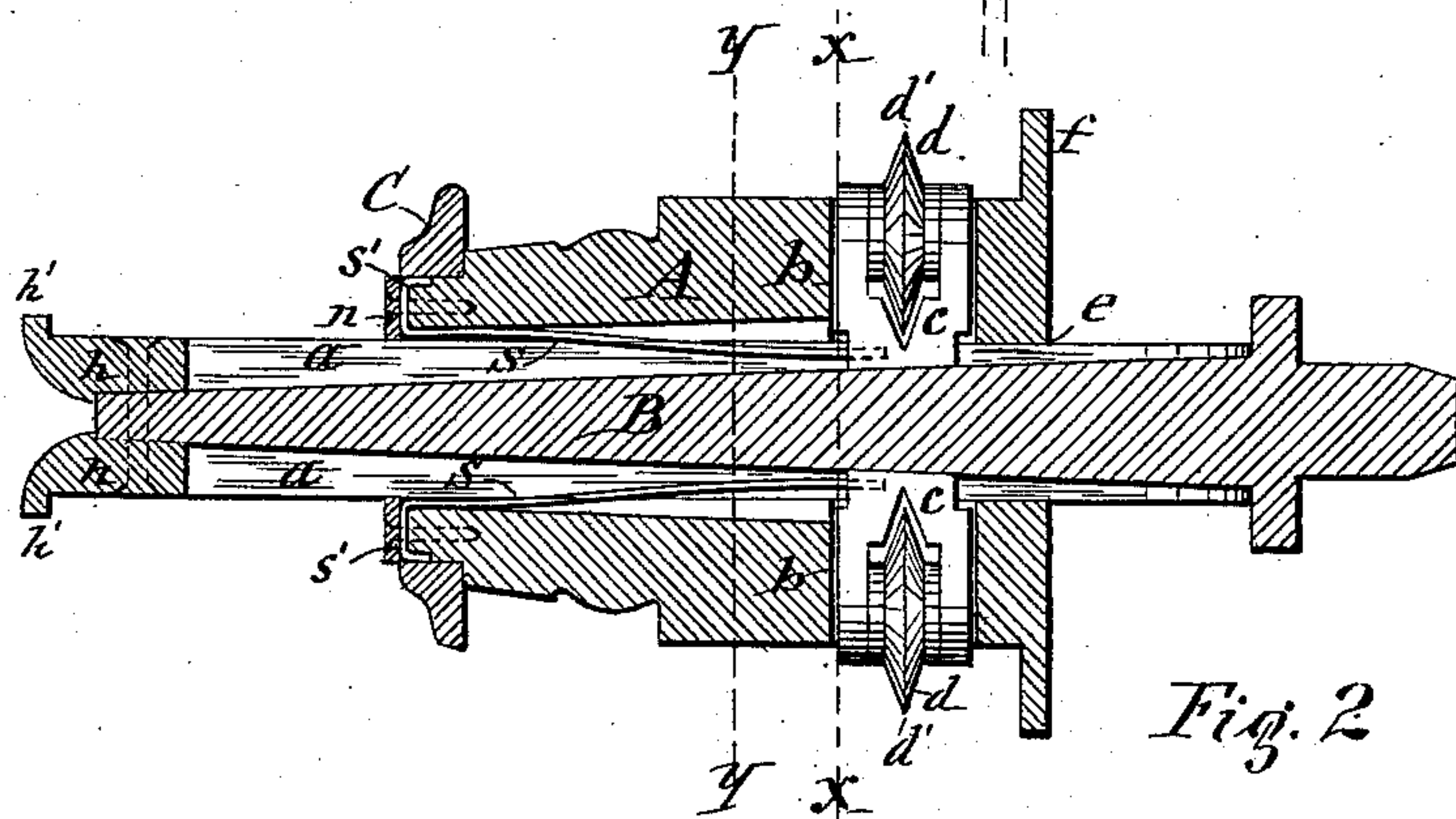


Fig. 2

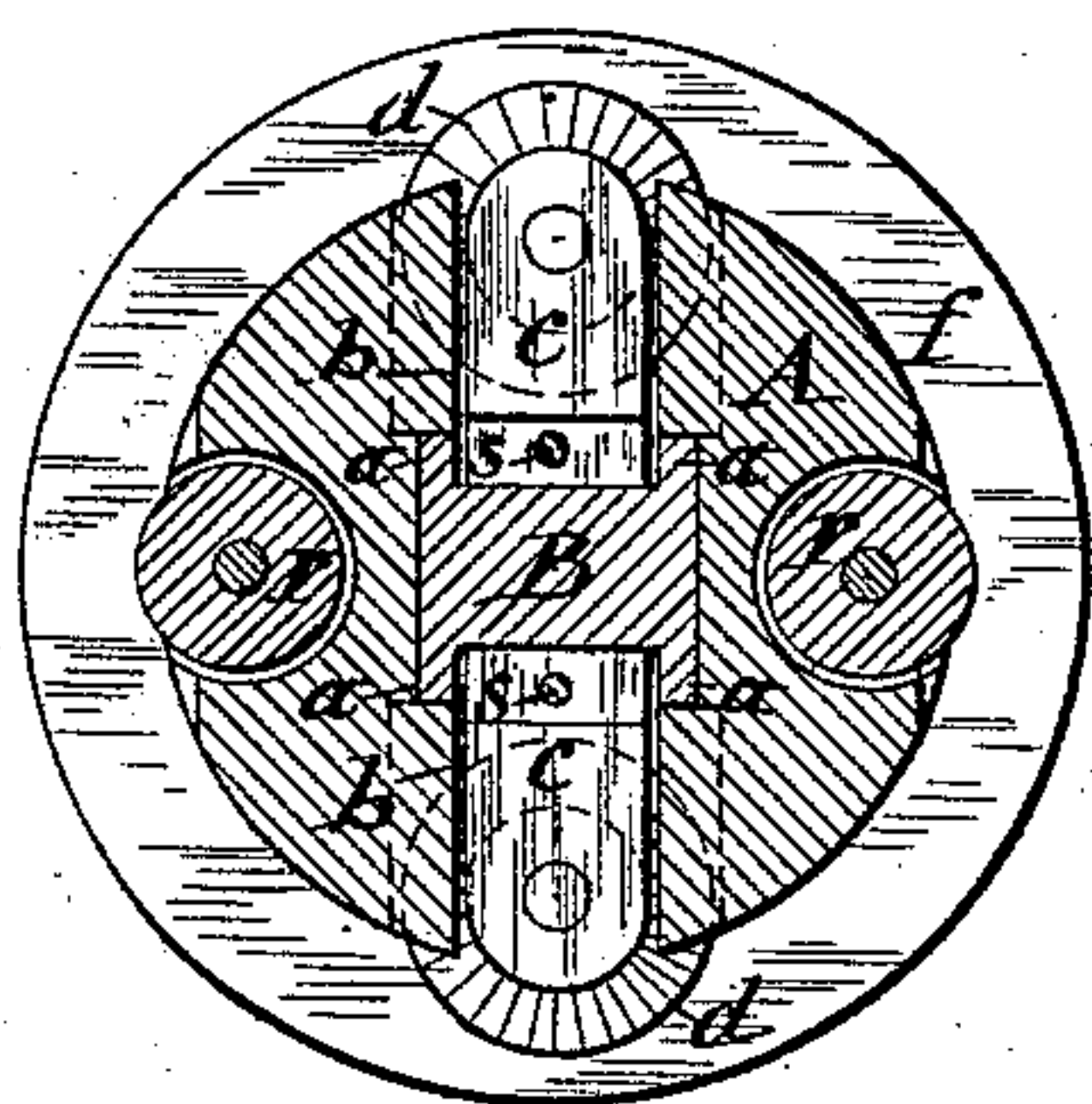


Fig. 3

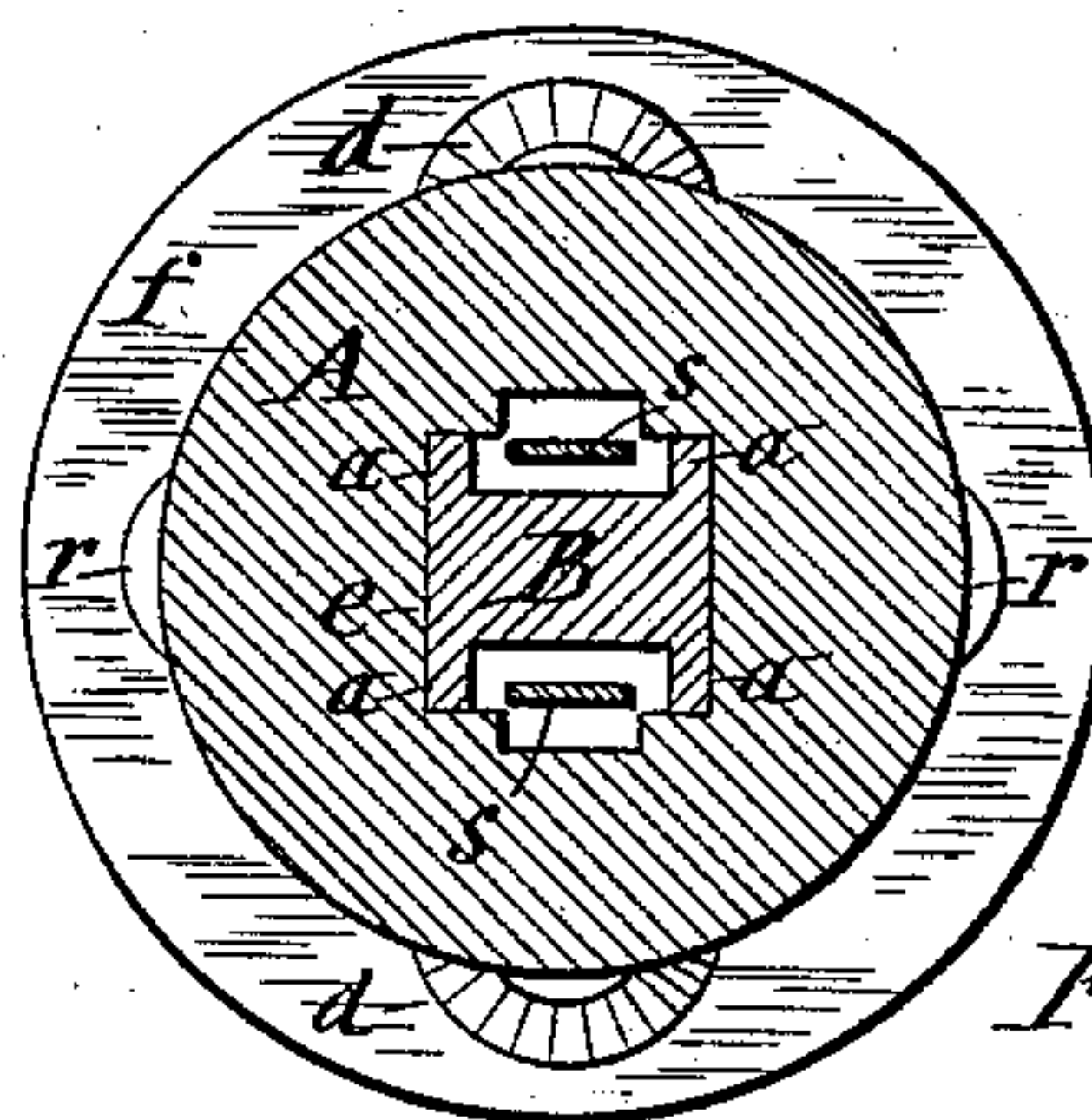


Fig. 4

WITNESSES:

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# UNITED STATES PATENT OFFICE.

CHARLES A. BARNES, OF LIVERPOOL, NEW YORK.

## PIPE-CUTTER.

SPECIFICATION forming part of Letters Patent No. 365,564, dated June 28, 1887.

Application filed February 12, 1887. Serial No. 227,361. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES A. BARNES, of Liverpool, in the county of Onondaga and State of New York, have invented new and useful Improvements in Tube-Cutters, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention consists in an improved construction of a tool by means of which the ends of boiler tubes or flues can be cut off inside of the boiler in a most convenient and most expeditious manner, and without danger of splitting or otherwise injuring the main portion of the tube.

The invention is fully illustrated in the annexed drawings, wherein—

Figure 1 is a side view of my improved tube-cutter, showing it in position for cutting the boiler-tube, which latter is represented by dotted lines. Fig. 2 is a longitudinal section of the same; and Figs. 3 and 4 are transverse sections taken on lines *x x* and *y y*, Fig. 2, respectively.

Similar letters of reference indicate corresponding parts.

A represents the cutter-head, preferably formed of cast steel or iron, and of a diameter to allow it to be introduced into the tube to be cut, as illustrated in Fig. 1 of the drawings. Said head is formed with a flange, *f*, by which it abuts against the end of the tube during the operation of cutting said tube. An eye, *e*, is formed through the axis of the head, which eye is angular or polygonal-shaped in cross-section and of uniform size throughout, for the purpose hereinafter explained. I prefer, however, to make the eye *e* either square or rectangular in cross-section.

Radially through the body A, preferably at diametrically-opposite points, are extended slots *b b*, which intersect the eye at its sides. In said slots are properly fitted the slides *c c*, which carry on their outer ends the cutters *d d*. These cutters I prefer to make in the form of small wheels pivoted on the slides *c c*, and provided with a sharp V-shaped cutting-edge, *d'*.

B denotes a wedge, which is inserted into the eye *e* and adapted to slide longitudinally therein, and is guided by longitudinal parallel flanges *a a* along opposite sides of the wedge,

which flanges have their bearings in the corners of the eye *e*, as best seen in Figs. 3 and 4 of the drawings. The wedge is thus so interlocked with the cutter-head as to compel the same to rotate with the wedge when the latter is being turned on its axis during the operation of cutting off the tube. By forcing the wedge inward while turning it, as aforesaid, the cutters *d d* are crowded outward and caused to travel with their cutting-edge around the interior of the tube, and in this manner sever said tube.

S S represent spring-plates which are arranged lengthwise between the flanges *a a* of the wedge, and are secured at one end to the cutter-head and connected at the opposite end to the cutter-carrying slides *c c* for the purpose of retaining the latter in the cutter-head when removed from the flue or tube.

In order to permit of readily repairing or renewing the spring *s* when required, I secure the same to the cutter-head by forming the attaching end of the spring with an outward-projecting hook *s'*, by which it hooks onto the end of the cutter-head. A collar, C, is slipped over the end of the cutter-head and binds thereon the return end portion of the hook *s'*, and a washer, *n*, is secured to the face of the cutter-head and laps over the aforesaid collar to confine the same in its position.

To the small end of the wedge B, between the flanges *a a* thereof, I detachably secure blocks *h h*, having lateral projections *h' h'*, adapted to engage the end of the cutter-head, so as to prevent the entire withdrawal of the wedge from the cutter-head. The said blocks can be detached from the wedge when found necessary to remove the wedge from the cutter-head.

In the sides of the cutter-head, between the cutters *d d*, I pivot rollers *r r*, which project with the convex sides from the sides of the cutter-head sufficiently to allow them to come in contact with the interior of the tube and steady the cutter-head therein when first introduced.

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

1. A tube-cutter composed of a cutter-head having an eye extending through its axis, radial slots intersecting said eye, slides in said



slots, cutters on the slides, and a wedge sliding longitudinally in the eye of the cutter-head and bearing against the inner ends of the slides, and interlocked with the cutter-head to compel the same to rotate with the wedge, substantially as set forth.

2. The combination of the cutter-head provided with an axial eye square or rectangular in cross-section, radial slots intersecting the said eye at the sides thereof, slides in said slots, cutters on the slides, and a wedge sliding in the eye of the cutter-head and formed with parallel flanges having their bearings in the corners of the aforesaid eye, substantially as described and shown.

3. A tube-cutter comprising a cutter-head having an axial eye, radial slots intersecting said eye, slides in said slots, cutters on the slides, a wedge sliding longitudinally in the eye of the cutter-head and interlocked with the cutter-head to compel the same to rotate with the wedge, and springs pressing the slides toward the wedge, as and for the purpose set forth.

4. The combination of the cutter-head having an axial eye of square or rectangular form in cross-section, and radial slots intersecting said eye at two opposite sides thereof, slides in said slots, cutters on said slides, a wedge sliding in the eye of the cutter-head, with the beveled sides of the wedge facing the aforesaid slides, and provided with longitudinal side flanges having their bearings in the corners of the eye of the cutter-head, and spring-plates arranged lengthwise between the flanges of the wedge and secured at one end to the cutter-head and connected at the opposite end to the cutter-carrying slides, substantially as described and shown.

In testimony whereof I have hereunto signed my name and affixed my seal, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 10th day of February, 1887.

CHARLES A. BARNES. [L. S.]

Witnesses:

HOWARD P. DENISON,  
JOHN J. LAASS.