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Patented Mar. 18, 1902.

R. J. O'NEILL & T. BYRNE.

PIPE CUTTER.

(Application filed May 20, 1901.)

(No Model.)

2 Sheets—Sheet 1.

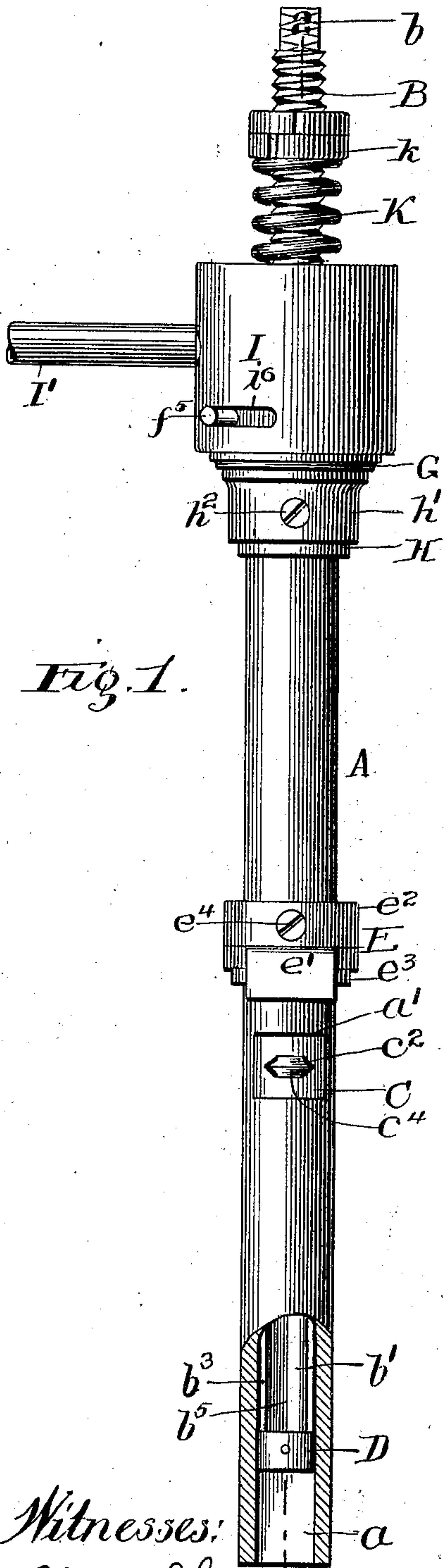


Fig. 1.

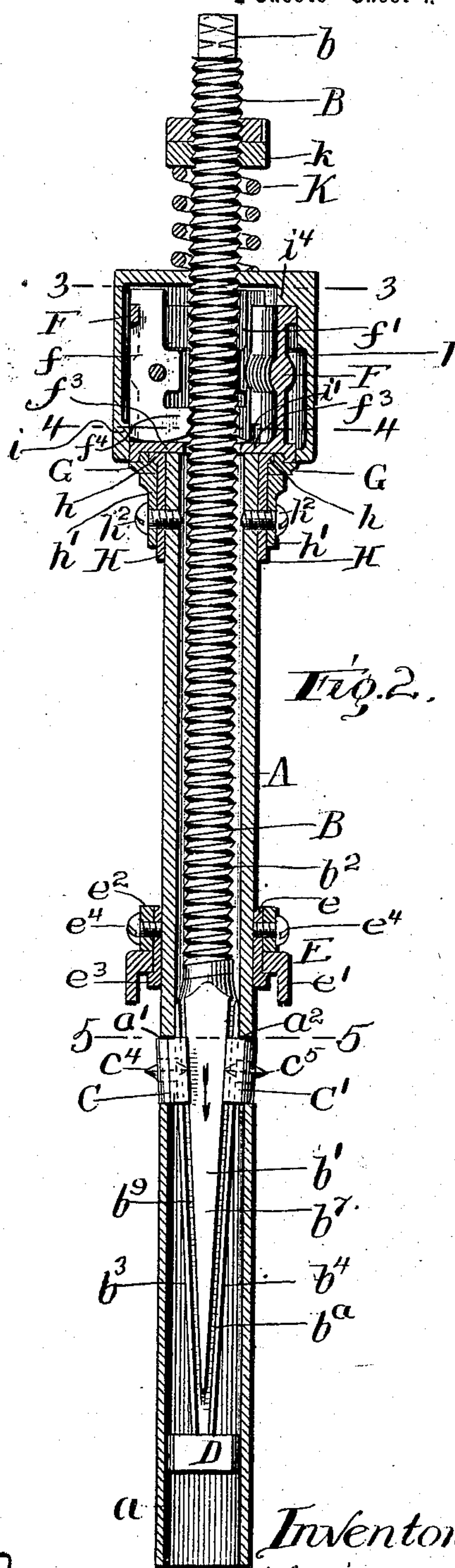


Fig. 2.

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UNITED STATES PATENT OFFICE.

RICHARD J. O'NEILL, OF LAFAYETTE, INDIANA, AND TIMOTHY BYRNE, OF BLOOMINGTON, ILLINOIS.

PIPE-CUTTER.

SPECIFICATION forming part of Letters Patent No. 695,482, dated March 18, 1902.

Application filed May 20, 1901. Serial No. 61,016. (No model.)

To all whom it may concern:

Be it known that we, RICHARD J. O'NEILL, residing at Lafayette, in the county of Tippecanoe and State of Indiana, and TIMOTHY BYRNE, residing at Bloomington, in the county of McLean and State of Illinois, citizens of the United States of America, have invented certain new and useful Improvements in Pipe-Cutters, of which the following is a specification.

Our invention relates to certain improvements in pipe-cutters designed especially for the cutting of pipes, boiler-flues, and the like from the inside where it is impossible to get at them from the outside.

To such end the invention relates to certain novel characteristics, a description whereof will be found in the following specification and the essential features more definitely pointed out in the claims.

In the drawings furnished herewith, Figure 1 is a side elevation, partly broken away, of the device in its preferred form. Fig. 2 is a vertical diametrical section in line 2 2 of Fig. 1. Fig. 3 is a detail horizontal section in line 3 3 of Fig. 2. Fig. 4 is a similar section in line 4 4 of Fig. 2. Fig. 5 is a similar section in line 5 5 of Fig. 2. Fig. 6 is a vertical diametrical section in line 6 6 of Fig. 5, and Fig. 7 is a perspective view of a cutter-carrier. Figs. 5 to 7, inclusive, are upon an enlarged scale.

Referring to the drawings, A represents a hollow casing in which is a feed-screw B, adapted to be reciprocated longitudinally within said casing to move the cutters to their work or detract them therefrom.

The feed-screw B is formed at one end with a squared head b for engagement with a wrench or the like and at its other end with a wedge b' for engagement with the cutter-carriers C C'. A non-circular guide-block D is secured upon the feed-screw below the wedge b' , which is guided in the longitudinal hole a in the casing. The threads b^2 of the feed-screw extend to within a short distance of the wedge, and the shape of the latter in cross-section is rectangular, except that the sides $b^3 b^4$ are hollowed out or con-

cave, as seen at $b^5 b^6$, to permit the cutter-disks to move in said concavities. The plane faces $b^7 b^8$ are formed with grooves b^9 running parallel with the edges of the wedge, and these grooves receive overhanging guide edges $c c'$ upon the cutter-carriers. (See Figs. 5 and 7.) These cutter-carriers are provided with openings $c^2 c^3$ to receive the cutter-disks $c^4 c^5$, which are journaled upon pins $c^6 c^7$, secured in the cutter-carriers. The wall of the casing A is formed with openings $a' a^2$ to receive the cutter-carriers, the latter being moved therein by the action of the wedge in the cutting of flues, &c.

Beyond the openings $a' a^2$ the casing has secured to it an adjustable stop E, comprising, substantially, a sleeve e , encircling the casing, a stop-plate e' , and a collar e^2 . The stop-plate e' is free to turn upon the sleeve e and is held between a flange e^3 upon the latter and the collar e^2 . The stop is fastened to the casing by screws e^4 , and by loosening said screws the stop may be moved along the casing to any desired point.

Upon the upper end of the casing A is secured a head F, turning freely thereon, in which are pivoted dogs $f f' f^2$, adapted for engagement with the feed-screw B to move the same longitudinally. This head has screwed upon its lower end a ring G, against which rests the flange h of a sleeve H, said flange being confined between the lower end f^3 of the head F and the ring G. A collar h' encircles the sleeve H and bears against the ring G, and said collar and sleeve are secured to the casing A by screws h^2 . The dogs $f f' f^2$ are pivoted between their ends to the head F and have laterally-projecting fingers f^4 threaded upon their ends for engagement with the threads upon the feed-screw B. They are held in engagement with the feed-screw by cams $i i' i^2$, Fig. 4, formed upon a cap I, which is slipped over the head F and is capable of a limited amount of independent movement about said head. Other cams $i^3 i^4 i^5$, Fig. 3, are formed upon the upper end of this cap for engagement with the upper ends of the dogs $f f' f^2$. The cams $i i' i^2$ and $i^3 i^4 i^5$ are so arranged with respect to each other that

when the cams $i\ i' i^2$ are in engagement with the lower edges of the dogs the upper cams will be out of the way, and vice versa. The cap is provided with a handle I' for its rotation and with a slot i^6 , riding over a pin f^5 in the head to limit its movement upon the latter.

A spring K is seated upon the cap I and bears against a nut k , threaded upon the feed-screw, and is adapted to partially withdraw the feed-screw to detract the cutter-disks from the work.

The operation of the device is as follows: The feed-screw having been withdrawn sufficiently to bring the cutter-disks within the face of the casing, the latter is inserted into the pipe or flue to be cut, so that the stop E rests against the boiler-head. The cap I is then moved into the position seen in Figs. 2, 3, and 4, in which the dogs are thrown into engagement with the feed-screw. The further rotation of the cap in the same direction carries the head F around with it, and because of the engagement of the dogs $f\ f' f^2$ with the feed-screw the latter is moved in the direction indicated by the arrow thereon in Fig. 2, thus forcing the cutter-carriers outward until the cutters come in contact with the pipe. A wrench or the like is then applied to the squared end of the feed-screw and the latter rotated, the disks cutting into the pipe and the head being held stationary by means of the handle I' , the disks being thus moved outward until the pipe is cut through. If now the handle I' be turned back slightly and then forward until the other end of the notch strikes the pin f^5 , the cams $i^3 i^4 i^5$ will engage the upper ends of the dogs and release the feed-screw, the spring K quickly withdrawing it and moving the cutters away from the severed pipe. The device may then be withdrawn and the operation repeated.

We claim as new and desire to secure by Letters Patent—

1. In a pipe-cutter, the combination with suitable cutter disks and carriers having overhanging guide edges, of a feed-screw and a wedge having guiding-grooves in engagement with the overhanging edges of the carriers and formed with grooves in its wedge-faces adapted to receive a portion of the cutter-disks to permit them to be moved to the end of the wedge; substantially as described.

2. In a pipe-cutter, the combination of a suitable casing, a cutter-disk and cutter-carrier guided transversely in said casing, means for moving said cutter-carrier transversely of said casing, a head upon the end of the casing rotatable thereon and adapted to be moved into working engagement with the cutter-carrier-moving element, whereby, when said head is held stationary and the cutter-carrier-moving means is rotated with respect thereto, said cutter-carrier will be moved out to its work and will be bodily rotated; substantially as described.

3. In a pipe-cutter, the combination of a casing, a cutter-disk, a cutter-carrier guided transversely in said casing, a feed-screw adapted to move said cutter-carrier transversely of the casing, a head free to turn upon the end of the casing and having suitable means in working engagement with the feed-screw, the rotation of the feed-screw with respect to said head serving to rotate the cutter-disks and move them transversely of the casing; substantially as described.

4. In a pipe-cutter, the combination of a casing, a cutter-disk and cutter-carrier guided transversely therein, a feed-screw adapted, by longitudinal movement with respect to said casing, to move the cutter-disks transversely of the casing, a head turning freely upon the end of said casing and adapted to be thrown into or out of engagement with said feed-screw, means for throwing said head into working engagement with the feed-screw, whereby, when said head is in working engagement with the feed-screw and the feed-screw is rotated with respect thereto, said cutter-disk will be bodily rotated and moved transversely of the casing; substantially as described.

5. In a pipe-cutter, the combination with cutter-disks, of a feed-screw adapted to advance said cutter-disks to their work, a pivoted dog, adapted for engagement with said feed-screw to move said feed-screw longitudinally; substantially as described.

6. In a pipe-cutter, the combination with cutter-disks and a feed-screw for advancing them to their work, of dogs having threaded fingers for engagement with the feed-screw, and devices for alternately engaging or disengaging said fingers from said feed-screw; substantially as described.

7. In a pipe-cutter, the combination with cutter-disks and a feed-screw for advancing them to their work, of pivoted dogs having threaded fingers adapted for engagement with the feed-screw, a rotatable cap and cams thereon adapted by the rotation of the cap in one direction to throw said dogs into engagement with the feed-screw; substantially as described.

8. In a pipe-cutter, the combination with a casing, cutter-disks and a feed-screw for advancing said disks to their work, of a head secured upon said casing, but free to turn thereon, dogs pivoted in said head, adapted for engagement with the feed-screw, a rotatable cap having two sets of cams for engagement with the dogs, whereby the partial rotation of the cap in one direction throws the dogs into engagement with the feed-screw, and in the opposite direction, throws them out of engagement therewith; substantially as described.

9. In a pipe-cutter, the combination with a cutter-advancing feed-screw, of means for advancing said feed-screw, and a spring adapted to withdraw said feed-screw when

the latter is released; substantially as described.

In witness whereof I have hereunto set my hand, at Lafayette, in the county of Tippecanoe and State of Indiana, this 4th day of May, A. D. 1901.

RICHARD J. O'NEILL.

Witnesses:

PATRICK L. FITZGERALD,
JOHN F. MCHUGH.

In witness whereof I have hereunto set my hand, at Bloomington, in the county of McLean and State of Illinois, this 11th day of May, A. D. 1901.

TIMOTHY BYRNE.

Witnesses:

WM. HORLGOTT,
JAMES LOWNY.