W. FLANAGAN.

FLUE OR TUBE CUTTER.

APPLICATION FILED FEB. 27, 1915.

1,204,148.

Patented Nov. 7, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

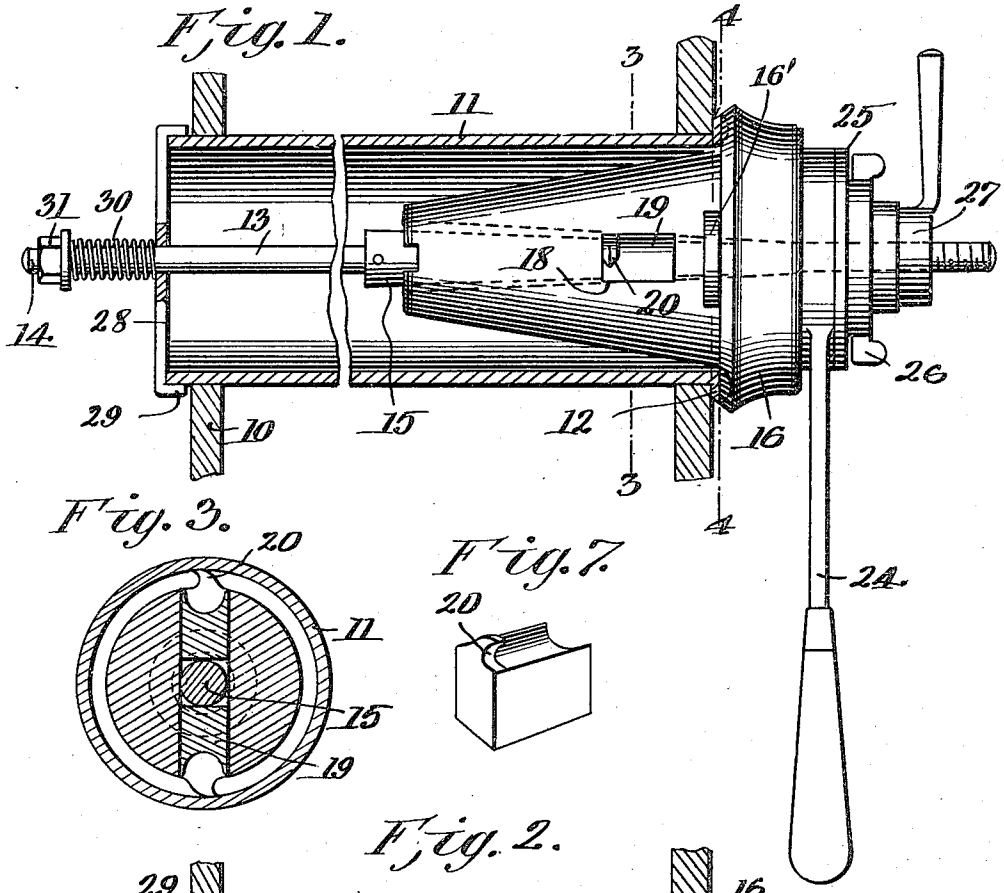
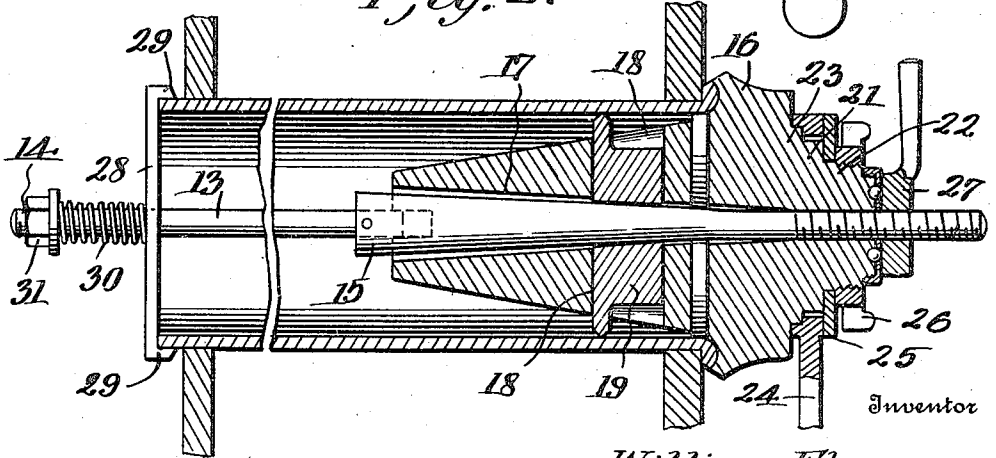


Fig. 3.

Fig. 7.

Fig. 2.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 5.

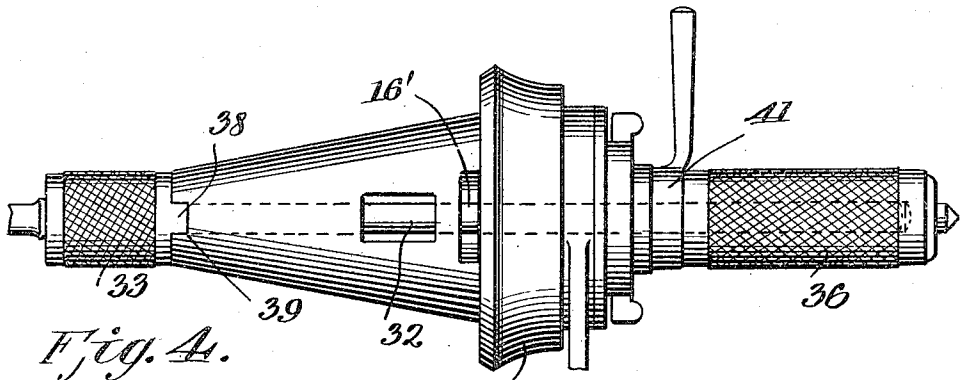


Fig. 4.

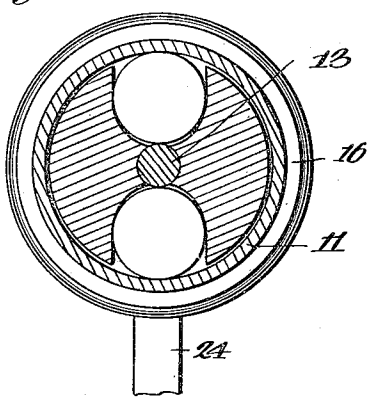
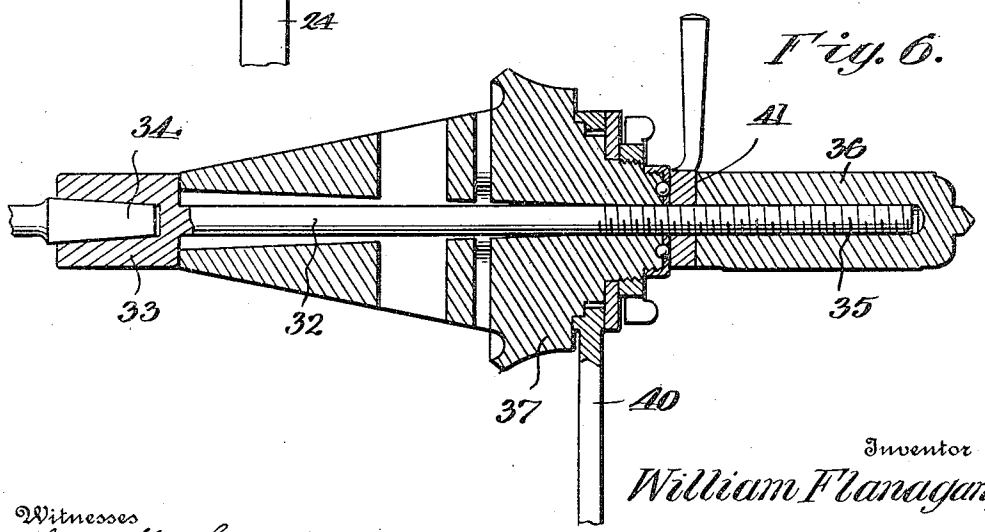


Fig. 6.



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UNITED STATES PATENT OFFICE.

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FLUE OR TUBE CUTTER.

1,204,148. Specification of Letters Patent. Patented Nov. 7, 1916.

Application filed February 27, 1915. Serial No. 11,023.

To all whom it may concern:

Be it known that I, WILLIAM FLANAGAN, a citizen of the United States, residing at Leland, in the county of Washington and State of Mississippi, have invented new and useful Improvements in Flue or Tube Cutters, of which the following is a specification.

The invention relates to a flue or tube cutter, comprehending specifically certain detail improvements upon Letters Patent No. 990039, issued to me on April 18, 1911.

The primary object of the present invention is to mount within the flue beader and expander shown and described in said Letters Patent a cutter mechanism so as to provide an implement having a materially added utility as compared with the construction described in the patent.

Another object of the invention is the provision of a tool of this character wherein the construction thereof is novel in form so that it can be readily used for a tube cutter or for the purposes as recited in the Letters Patent above mentioned.

Other objects will be in part obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the claims hereunto appended.

In the accompanying drawings: Figure 1 is a side elevation illustrating the device constructed in accordance with the invention in position for cutting a tube; Fig. 2 is a vertical longitudinal sectional view through the device; Fig. 3 is a sectional view on the line 3—3 of Fig. 1; Fig. 4 is a sectional view on the line 4—4 of Fig. 1; Fig. 5 is a side elevation showing the device for use as a ratchet drill; and Fig. 6 is a vertical longitudinal sectional view thereof. Fig. 7 is a perspective view of one of the cutters.

Similar reference characters indicate corresponding parts throughout the several views of the drawings.

Referring particularly to the accompanying drawings, in Figs. 1 to 4 thereof, 10 designates a portion of the tube sheet and 11 one of the tubes or flues, and in Figs. 1 and 2 of the drawings, the said tube 11 is beaded at 12 along the outer side of the sheet 10, the beads 12 having been formed or rolled by the device as constructed in Patent No. 990039, issued to me on or about April 18, 1911.

The present improved device comprises a main stem 13 formed at one end with threads 14, while on its other end and suitably secured thereto or integral with the same is a wedge shaped sleeve 15, the latter being suitably tapered to the required degree, preferably as here shown. Loosely surrounding the stem of the sleeve 15 is a beading hub 16, the same being provided with a centrally tapered bore 17 in which is adjustably fitted the said stem 13, and intersecting the said bore at diametrically opposite points are suitable radial openings 18 in which are mounted tube cutters 19. The cutters comprise rectangular shaped bodies adapted to fit within the recesses 18 and have their outer projecting ends shaped to provide cutting noses or blades 20. As the tube cutters are adapted to bear upon the conical portions of the wedge shaped sleeve 15 on the stem 13 it is obvious that in the longitudinal movement of the said stem in one direction said cutters are fed outwardly or, in other words, the cutting elements are forced to their work so that the tube 11 can be cut thereby. The hub 16 is provided with an externally threaded reduced end 21 formed with stepped shoulders 22 and 23, the latter being engaged by the circular end portion of a ratchet handle 24 so that on the rotation of the handle 24 in one direction it will lock with the hub for causing it to rotate therewith in the same direction, thereby actuating the cutters for the cutting of the tube 11. Surrounding the reduced externally threaded end 21 is a washer 25 frictionally engaged with a winged binding nut 26 detachably engaging the threaded end 21 of the hub, whereby the ratchet handle 24 is held connected to the hub for rotation thereon. Mounted on the threaded end 14 of the stem 13 adjacent to the nut 26 is a tail nut 27 which serves to move the stem 13 longitudinally through the hub 16 whereby its wedging sleeve 15 will be brought into position for action upon the cutters 19 to spread the same for action upon the tube 11 when the device is operated.

Mounted on the stem 13 is a bridge piece 28, the latter being provided with inturned right angular ends 29 which frictionally engage the tube 11, while working against the said bridge piece 28 and surrounding

the stem 13 is a coiled expansion spring 30, the latter acted upon by means of an adjusting nut 31 threaded on the other end 14 of the said stem, and this spring is designed to hold the hub 16 against the bead 12 on the tube 11 when the device is in position to be operated.

In Figs. 5 and 6 the device is shown for use as a ratchet drill, and in this instance the stem 32 is substituted for the stem 13 and is formed at one end with a chuck 33 in which fits the head 34 of the drill bit, as usual, while the opposite end of the stem 32 is threaded at 35 to receive a feed sleeve 36. Between the chuck 33 and the sleeve 36 and surrounding the stem 32 is the beading head 37 which is locked with the chuck 33 through the medium of the lugs 38 engaging in each notch 39 formed in the smaller end of the head 37, while supported on the opposite end of the head 37 is the ratchet feed handle 40 which is similarly constructed to the handle 24 hereinbefore described. Adjustably engaged on the threaded end 35 of the stem 32 is the tail nut 41 which locks the beading head 37 with the chuck 33.

In the operation of the device the hub 16 is placed in the end of the tube 11 as shown in Figs. 1 and 2 of the drawing, the nut 27 being partially unscrewed and the bolt 13 slackened back sufficiently to allow the reduced end carrying the expander rollers 16′ to freely slide into the said tube 11 when the device is being placed therein. The nut 27 is screwed up, drawing upon the bolt 13 which forces the cross piece 29 placed at the other end of the tube 11 in position under the action of the spring 30, which is adjustably tensioned by the nut 31 engaged on the threaded end 14 of the said bolt 13. This spring 30 will permit longitudinal movement of the bolt 13 when operating the nut 27 to draw the wedge 15 into the hub 16 which acts upon the cutters 19 so as to force the same outwardly through the opening 18 in the hub for the feeding thereof. When manipulating the handle or lever 24 the hub can be successively turned for causing movement to be imparted to the cutters 19 for the severing of the tube 11, as will be clearly apparent.

When the tool is used for a ratchet drill the drill shank is placed within the chuck 33, it being understood, of course, that the hub is removed from the tube 11 for the use of the tool as a drill. On operation of the handle or lever 40 the hub 37 will be rotated for the turning of the drill and the sleeve 36 is used as a grip for the tool when employed for drilling purposes.

In the operation of the device as a ratchet drill the bit 34 is rotated by manipulating the handle 40, while the sleeve 36 feeds the bit to the work as the sleeve is gripped by the operator of the drill, and as it works outwardly on the threaded end 35 of the stem 32 the drill bit is advanced to the work.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily apparent, and a more extended explanation has, therefore, been omitted.

Having thus described my invention, I claim:

1. In combination with a bolt, of a wedging member securely mounted upon the bolt, a hub surrounding the wedge member and having a tapering bore receiving the wedge and also provided with a transverse opening intersecting said bore, a cross pin loosely supported on the bolt and adapted to engage one end of a tube while the hub engages the other end thereof, a spring surrounding the bolt and acting against the cross piece, a nut adjustably engaged on the bolt and working against the spring, a nut engaged on the end of the wedging member and working against the hub, means for rotating the hub, and cutters within the transverse opening and acted upon by the wedge.

2. The combination with a bolt, of a wedging member securely mounted upon the bolt, a hub surrounding the wedge member and having a tapering bore receiving the wedge and also provided with a transverse opening intersecting said bore, a cross piece loosely supported on the bolt and adapted to engage one end of a tube while the hub engages the other end thereof, a spring surrounding the bolt and acting against the cross piece, a nut adjustably engaged on the bolt and working against the spring, a nut engaged on the end of the wedging member and working against the hub, cutters within the transverse opening and acted upon by the wedge, and a lever connected with the hub for rotating the same.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM FLANAGAN.

Witnesses:
J. E. Best,
W. E. Ruther.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."