E. A. MIDGLEY.

REAMER AND BURRER.

APPLICATION FILED FEB. 18, 1921.

1,414,480.

Patented May 2, 1922.

3 SHEETS—SHEET 1.

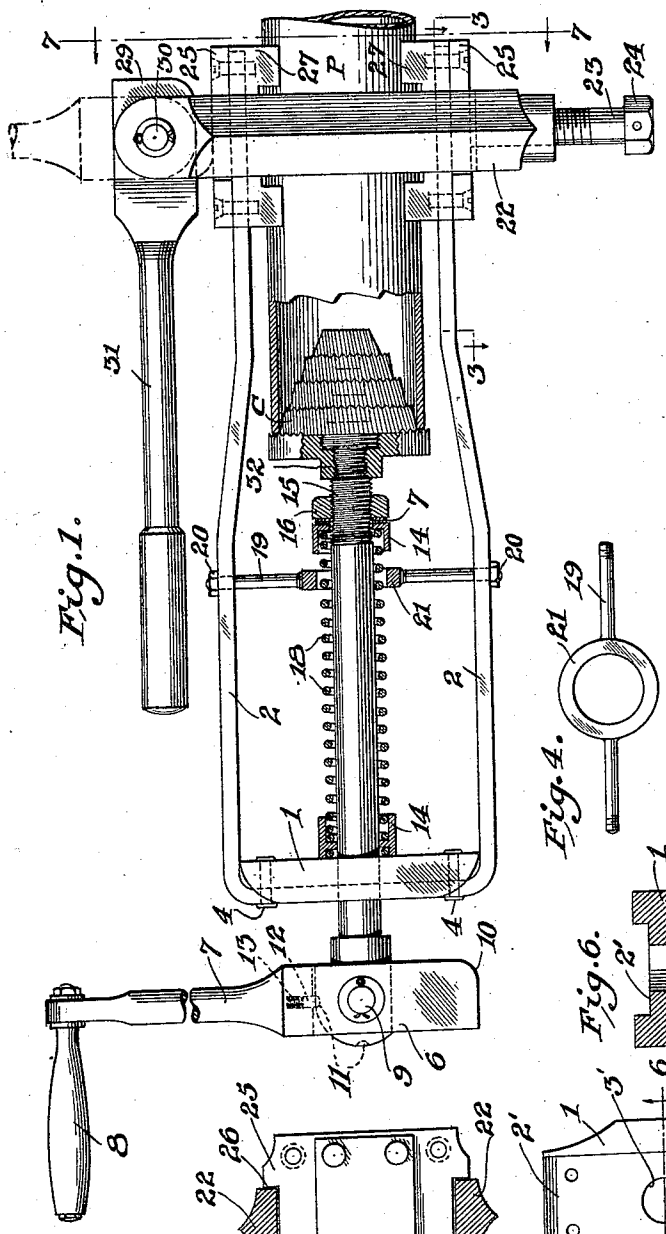


Fig. 1.

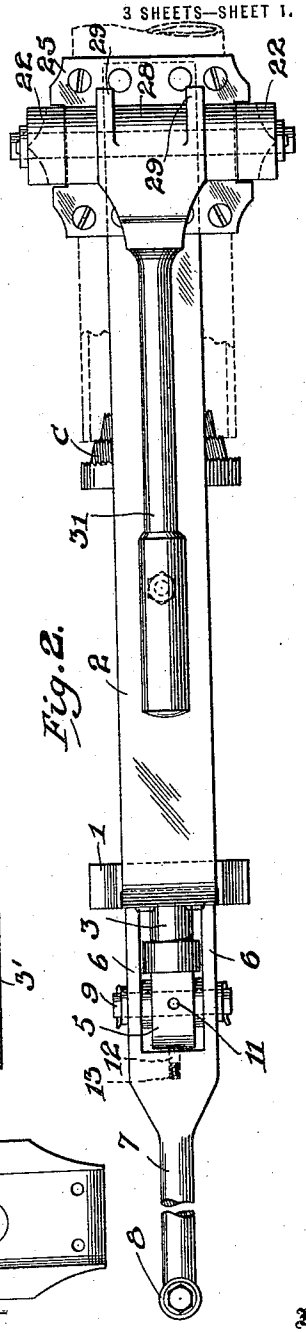


Fig. 2.

Fig. 4.

Fig. 6.

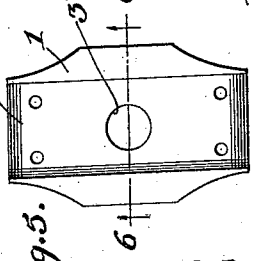


Fig. 5.

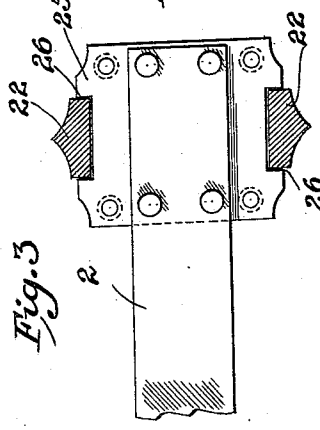


Fig. 3.

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3 SHEETS—SHEET 2.

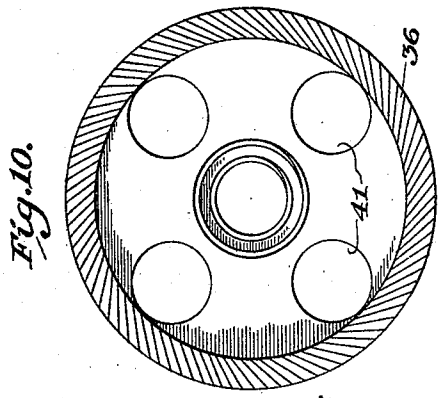


Fig.10.

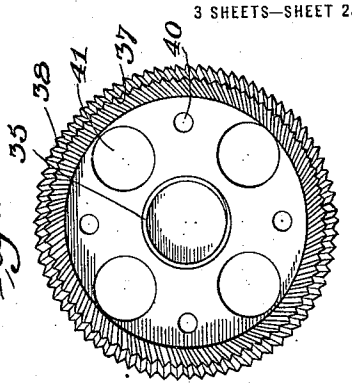


Fig.11.

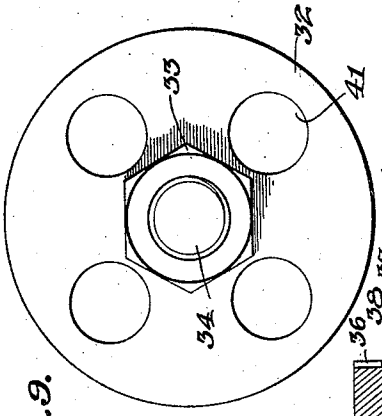


Fig.9.

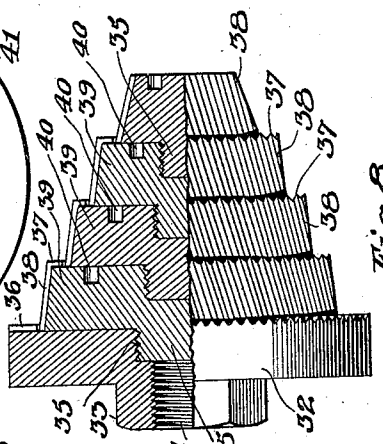


Fig.8.

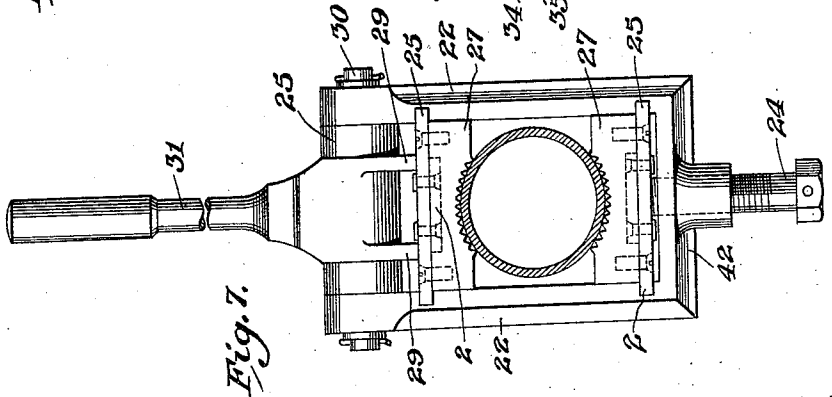


Fig.7.

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3 SHEETS—SHEET 3.

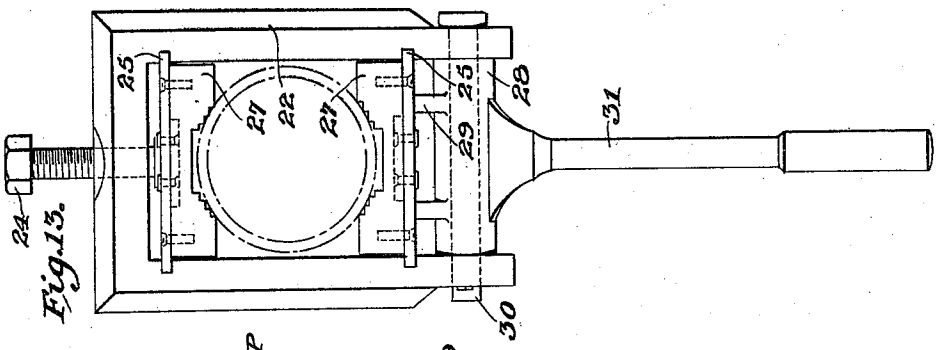


Fig. 13.

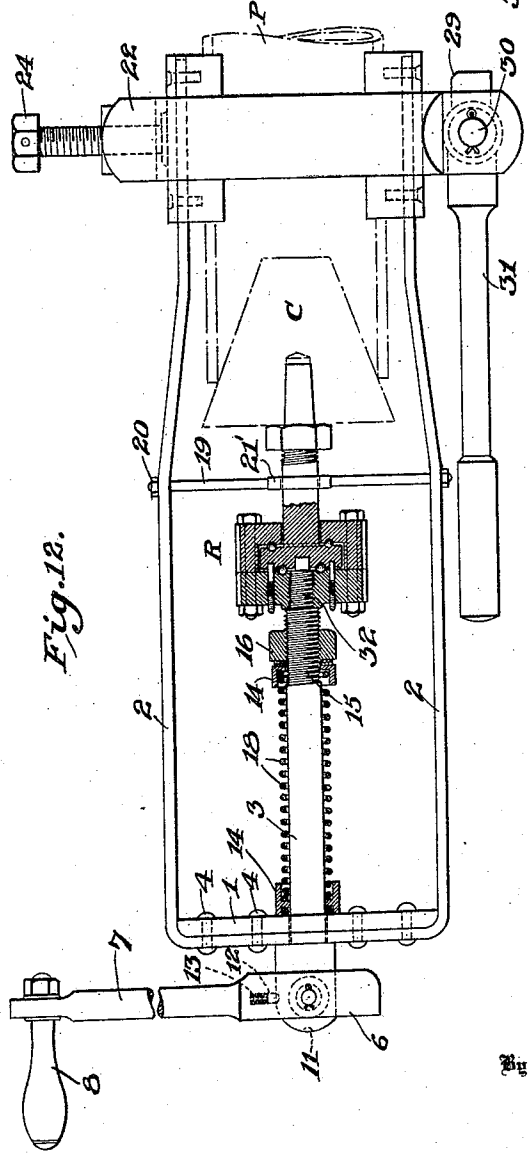


Fig. 12.

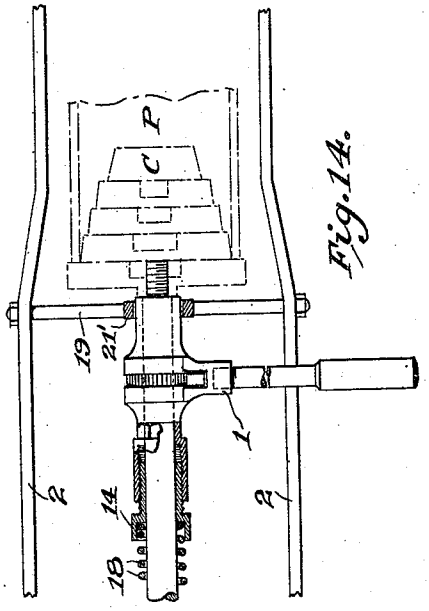


Fig. 14.

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REAMER AND BURRER.

1,414,480. Specification of Letters Patent. Patented May 2, 1922.

Application filed February 18, 1921. Serial No. 445,996.

To all whom it may concern:

Be it known that EPHRAIM A. MIDGLEY, citizen of United States of America, residing at Salt Lake City, in the county of Salt Lake and State of Utah, has invented certain new and useful Improvements in Reamers and Burrers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to tools for burring and reaming pipe. The object of the invention is to provide a simple and efficient tool, of the type indicated with improved facilities for applying the same to the work. A further object is to provide an improved expansible or sectional cutter for a device of this character.

The invention consists in the novel structure arrangement and combination of parts as hereinafter more fully described and claimed.

Three sheets of drawings accompany this specification as part thereof, in which like reference characters indicate like parts throughout.

Figure 1 is a side elevation, partly in section of a preferred type of my improved device.

Figure 2 is a top view of the device.

Figure 3 is a section taken on the line 3—3 of the Figure 1.

Figure 4 is a detailed view of the spacer.

Figure 5 is a detailed view of a part of the frame.

Figure 6 is a section on line 6—6 of Figure 5.

Figure 7 is an end view of the device.

Figure 8 gives a detailed view of the improved cutter assembled and partly in section.

Figure 9 is a back view of the end section.

Figure 10 is a front view of the end section.

Figure 11 is a front view of an intermediate section.

Figure 12 is a top view of a modified form of my improved device.

Figure 13 is an end view of Figure 12.

Figure 14 is a fragmentary view showing a further modification of my device.

Referring to the drawings, my improved device comprises a frame having side members 2—2 connected at one end by a bridge member 1, the back face of which is provided with a slot 2′ in which the metal strap from which the side members 2—2 are formed, is adapted to seat and is secured to the bridge member by suitable bolts or rivets 4—4. The bridge member 1 is provided with a suitable journal 3′ to receive a spindle 3 which extends midway between the frame members 2—2 and parallel therewith, provided with threads 15 and then reduced and threaded as at 32. The other end of the spindle 3 is provided with a flat portion 5, having circular face provided with notches 11. A lever 7 having spaced legs 6—6 is pivotally mounted on part 5 and is provided with a slidable pin 12 seated against a spring 13, in a suitable socket and adapted to engage detents 11, to hold the lever in its desired position. The legs 6—6 of lever 7 extend beyond the pivot 9 and are provided with cam faces 10, adapted to engage the back face of bridge member 1. Oppositely disposed collars 14—14 are placed upon the spindle 3 within the frame between which is disposed a spiral spring 18, which is held at desired tension by means of a nut 16 engaging with the threaded part 15. The cutter C is adapted to be mounted upon the reduced threaded extremity 32 of spindle 3. A spacing bar 19 provided with eye 21 adapted to surround spindle 3 and spring 18 is provided to give sufficient rigidity to frame members 2—2, which preferably have a certain amount of resiliency. At the end of each frame member 2 and secured to its outer face is a guide member 25 and seated against its inner face is a jaw member 27. The ends of the guide members 25 are rabbeted at as 26 to engage leg members 22—22 of a U-shaped frame member 42. A bolt 24 is threaded through the bottom of the frame member 42 by means of which the spacing of frame members 2—2 may be adjusted. Between the upper and free ends of legs 22, is pivotally mounted, as upon pin 30 a lever 31, having a transverse bearing part 28 provided with cams 29—29, adapted to engage and deflect the upper strap 2 with its jaw member 27 to engage with the pipe P, to be operated upon.

My improved cutter comprises a plurality of parts in any desired number and size. Each consists, generally, of a disc 39 having a threaded stud 35 projecting from its back face and a threaded socket centrally located on its front face together with a plurality

of sockets 41 to accommodate a spanner wrench. One end section is provided with a stud 33 having a threaded socket 34 and is provided with cutting teeth 36 arranged circumferentially of its face while the other end section is provided with a bevelled perimeter having cutting teeth 38. The intermediate sections are provided with cutting teeth both on their bevelled perimeters as at 38 and circumferentially on their outer faces as at 37. Obviously, these cutters may be made in interchangeable sets of different bevels, as desired.

In Figure 12 the bridge member 19 is provided with a modified eye 21 adapted to journal spindle 3 and a ratchet element R is introduced in the spindle 3.

In Figure 14 a further modification is shown, illustrating the adaptability of the device to a ratchet lever mounted upon spindle 3, permitting the use of the device in positions where such a lever is more convenient.

In operation, lever 7 is thrown from the position illustrated in Figure 1 into longitudinal alignment with spindle 3, bringing cam faces 10 of leg 6 into engagement with bridge member 1 and retracting spindle 3 against the tension of spring 18, so as to draw cutter C up into the frame of the tool. Pipe P is then introduced between clamp members 27—27 and lever 31 is thrown into the position illustrated in dotted lines in Figure 1, thus bringing cams 29 into engagement with strap 2 and forcing clamping jaw 27 into engagement with the pipe. Lever 7 is then thrown back into position shown in Figure 1, where it is held by the engagement of pin 12 with indent 11 and cutter C is forced by spring 18 into engagement with the end of the pipe to be burred. By means of my improved cutter varying sizes of pipe can be simultaneously burred and their ends squared in one operation.

Having thus fully described my invention, what I claim is:

1. An instrument of the class described comprising, in combination, a frame having resilient legs carrying clamping members, a spindle rotatably and slidably mounted in said frame, a tool carried by said spindle and means carried by said resilient legs for compressing said clamping members.

2. A burring tool comprising a U-shaped frame of resilient material, a cutter carrying spindle slidably and rotatably mounted within said frame, clamping jaws secured to the ends of the legs of said frame, a second U-shaped frame arranged in a plane perpendicular to that of the first and adjacent its free ends, means for guiding the free ends of the first frame upon the legs of the second frame, and means carried by the second frame for compressing the clamping jaws.

3. A burring tool comprising a frame having two resilient legs and carrying a slidable and rotatable spindle, clamping members secured to the ends of said resilient legs, guide members secured to the ends of said resilient legs, a U-frame adapted to receive the guides and clamping members and a cam member pivotally mounted between the legs of said U frame adapted to engage and compress the clamping members.

4. A burring tool having a frame carrying clamping members, a spindle slidably and rotatably mounted in said frame, means carried by said spindle tending to force the same toward said clamping members, a lever pivotally mounted on said spindle having a cam face adapted to engage the frame to retract the spindle and means for securing said lever in desired angular relation to said spindle.

In testimony whereof I affix my signature.

EPHRAIM A. MIDGLEY.