Dec. 21, 1926. 1,611,638

A. HABEL

EXPANSION REAMER

Filed March 3, 1925

Fig. 1.

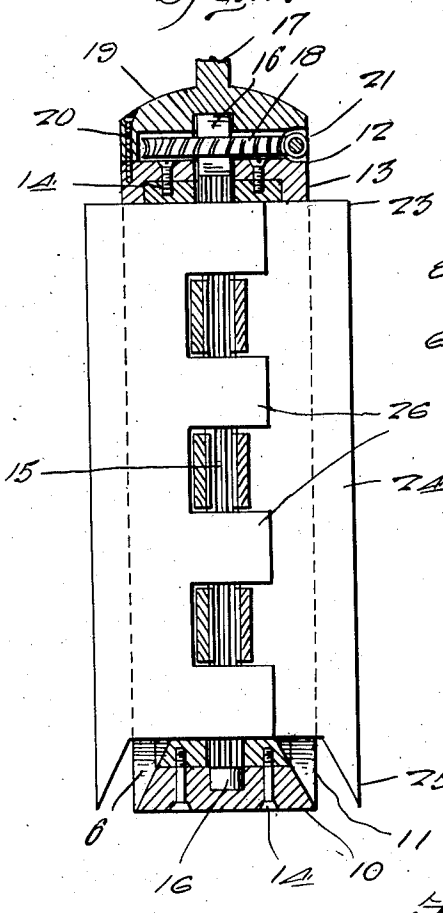


Fig. 3.

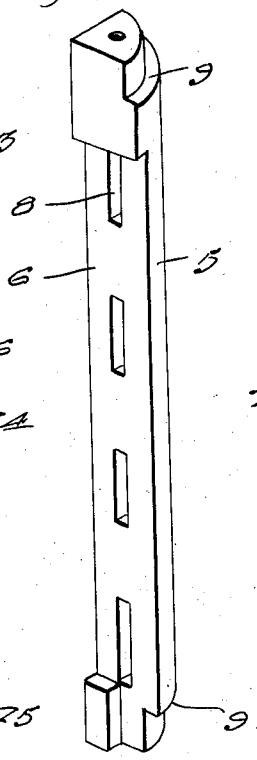


Fig. 4.

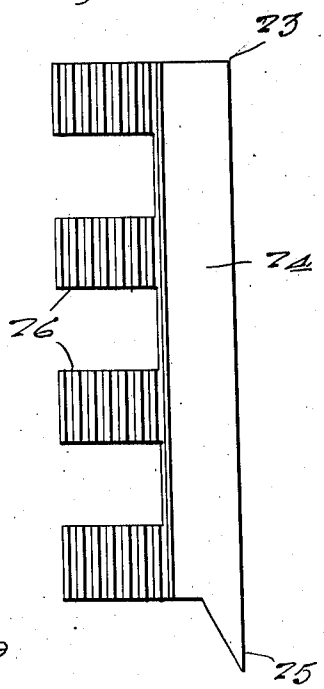
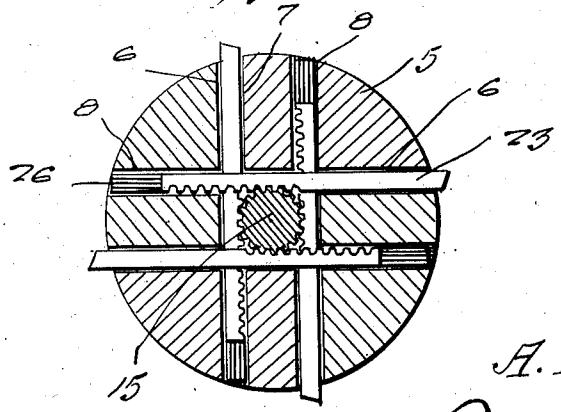


Fig. 2.



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UNITED STATES PATENT OFFICE.

ARTHUR HABEL, OF DUTTON, MONTANA.

EXPANSION REAMER.

Application filed March 3, 1925. Serial No. 12,840.

The present invention relates to a reamer and has for its principal object to provide a structure including a plurality of jaws which may be contracted or expanded easily and quickly as desired.

Another important object of the invention is to provide a reamer structure wherein a plurality of jaws are provided with rack extensions engageable with a single gear element in order that the gear element may be rotated for moving the jaws for expanding or contracting the reamer.

Another very important object of the invention is to provide a reamer of this nature which is possessed of a simple structure which is effective, efficient, and reliable in operation, one which is strong, durable, not liable to readily get out of order, easy to manipulate, light, and otherwise well adapted to the purpose for which it is designed.

With the foregoing and numerous other objects in view as will appear as the description proceeds, the invention resides in certain novel features of construction, and in the combination and arrangement of parts as will be hereinafter more fully described and claimed.

In the drawing—

Figure 1 is a longitudinol section through a reamer embodying the features of my invention,

Fig. 2 is a transverse section therethrough,

Fig. 3 is a detail perspective of one of the body segments, and

Fig. 4 is an elevation of one of the jaws.

Referring to the drawing in detail, it will be seen that the body of the reamer is formed with a plurality of segments 5 which when assembled together form a drum structure. Each segment 5 has a curved outer periphery and perpendicularly disposed inner walls 6 and 7. A series of slots 8 extend through the segments 5 transversely thereof and perpendicularly to the wall 6. The outer surface of the segment 5 is provided at each end with a shoulder 9. A bottom cap 10 receives the lower ends of the segments 5 and the angular flange 11 thereof engages the lower shoulders 9.

The upper cap 12 receives the upper end of the segments 5 and the annular flange 13 thereof, engages the upper shoulders 9. The ends of the segments 5 are held fixed to the caps 10 and 12 by bolts, screws, or other fastening elements 14. A gear shaft 15 extends longitudinally between the segments 5 and has its lower end journaled through the cap 12 and in the auxiliary cap 19, as at 16. A squared portion 17 is projected from the auxiliary cap 19 for engagement with any suitable rotating device. A worm gear 18 is fixed adjacent the end of the gear shaft 15 and is housed within the auxiliary cap 19 which is fastened to the top cap 12 by a bolt or other suitable fastening elements 20. A worm 21 is journaled in this auxiliary cap 19 and meshes with the worm gear 18 so that when the worm is revolved the worm gear 18 will be rotated to rotate the shaft 15. The shaft 15, at this time, will rotate independently of the body.

A plurality of jaws 23 are similarly constructed. Each jaw 23 includes an elongated body portion 24 terminating at one end in a pointed extension 25. From one edge of the body 24 there project rack extensions 26 for projecting through the slots 8 of the adjacent segment 5 and for meshing with the gear shaft 15. It will be understood that the jaws which are located at right angles to each other have these extensions 26 disposed so that they may be extended in between one another.

The outer edges of the body 24 of the jaws 26 are beveled as is indicated to advantage in Fig. 2. When the device is placed in the article being reamed, the worm gear 21 is rotated so as to expand the jaws in relation to the body until the beveled edges of the jaws engage the interior periphery of the article. The entire tool is then rotated by engaging the square shank 17 with a suitable rotating machine and from time to time the jaws are further expanded by operation of the worm 21.

It will be apparent from the above that I have devised a reamer in which the jaws thereof may be easily adjusted for expanding or contracting them and in which the parts thereof may be readily assembled or disassembled as desired.

It will be further apparent that the present embodiment of the invention, what I have described by way of example, attains all the features of advantage enumerated as desirable in the statement of the invention and the above description, and it is desired to point out that the numerous changes in the details of construction, and in the combination and arrangement of parts may be resorted to without departing from the spirit or scope of the invention as hereinafter

claimed or sacrificing any of its advantages.

Having thus described my invention, what I claim as new is:—

In a reamer of the class described, a body of cylindrical formation having a longitudinally extending bore and including a plurality of segments provided with outer curved surfaces and inner walls disposed at right angles to each other, each segment provided with a slot extending perpendicularly to one inner wall and through the segment, caps for holding the segments together, a plurality of jaws, one for each segment, each jaw provided with a rack extension slidably disposed in the slot of the adjacent segment of the body, a gear shaft disposed in the bore of the body and journaled in the caps, said gear shaft meshing with the rack extensions, an auxiliary cap having a squared projection, a worm gear in said auxiliary cap, and fixed to the shaft, a worm journaled in the auxiliary cap and meshing with the worm gear all in the manner and for the purpose specified.

In testimony whereof I affix my signature.

ARTHUR HABEL.