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F. M. ENOS

1,730,495

REAMER AND BLADE ADJUSTING MEANS THEREFOR

Filed Dec. 10, 1927

Fig. 1.

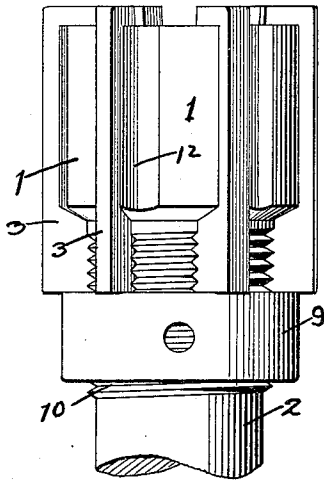


Fig. 2.

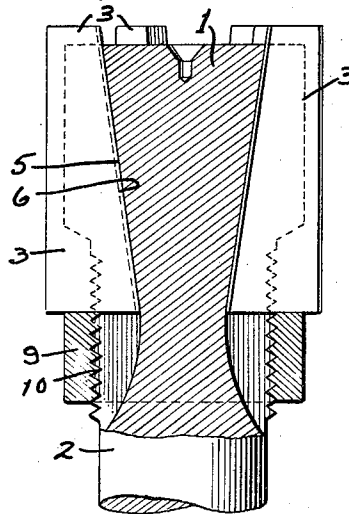


Fig. 3.

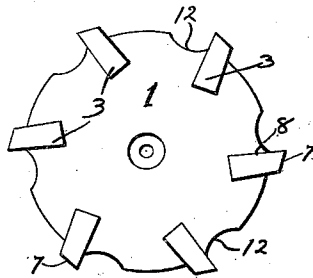


Fig. 4.

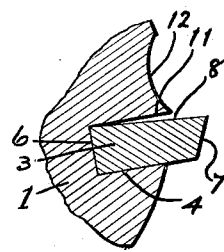


Fig. 5.

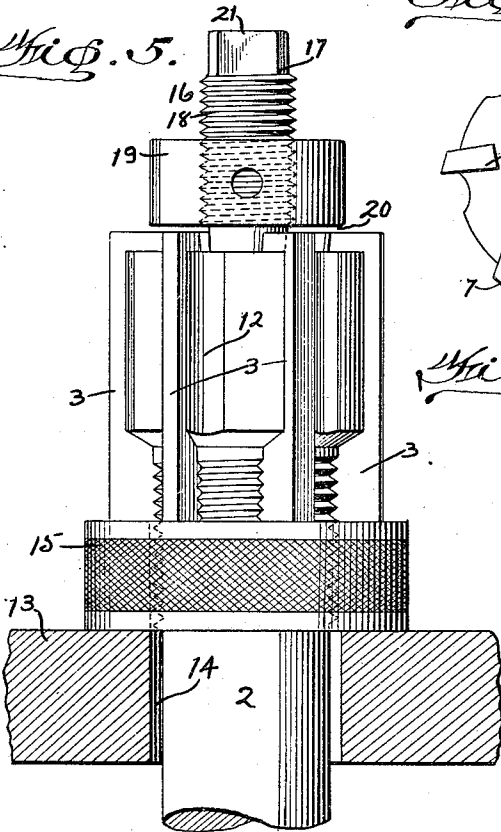
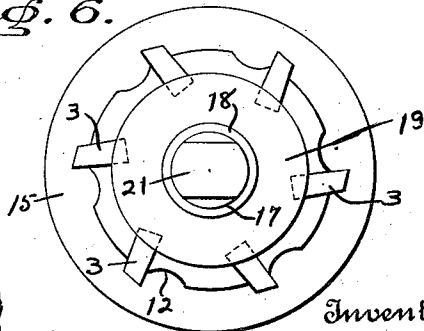


Fig. 6.



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REAMER AND BLADE-ADJUSTING MEANS THEREFOR

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My invention relates to adjustable reamers, the cutting blades whereof are longitudinally adjustable.

Many forms of adjustable reamers having inserted cutting blades have been built, but almost all of such tools have one or more serious disadvantages, the main one being the tendency of the blades to loosen while the reamer is in use.

The principal object of my invention is to provide an adjustable reamer in which the blades cannot loosen while the reamer is in use, the blade fastening means including the deformation of the metal of the blade holder against the side of the blade.

A further object of the invention includes means for longitudinally adjusting the cutting blades of the reamer by pressure applied at the blade ends. Other objects of the invention are mentioned and described herein.

The preferred embodiment of the invention is illustrated in the accompanying drawing, wherein Figure 1 is a side view of the reamer carrying inserted cutting blades secured in the holder according to my invention; Fig. 2 is a section taken longitudinally of Figure 1 through two of the blade slots; Fig. 3 is an end view of the blade holder section of the reamer; Fig. 4 is a fragmental transverse section through one of the blades, the blade slot and a fragment of the blade holder illustrating the condition of the blade slot wall and the metal in the blade holder prior to deformation thereof against the blade and while the blade is loosely arranged in its slot; Fig. 5 is a view similar to Fig. 1 and including the tool means for effecting blade adjustment; and Fig. 6 is an end view thereof.

Similar numerals of reference indicate like parts throughout the several views on the drawing.

Referring to the details of the drawing the numeral 1 indicates the cylindrical reamer body or blade holder which may be provided with the usual shank section 2 of reduced structure. The section 1 of the reamer is provided with a plurality of cutting blades 3, 3 which are longitudinally slidable in the blade slots 4, 4 formed in said section, each

of which slots has an inclined bottom sloping upwardly toward the forward or outer end of the reamer body 1 and extending there-through.

Each of the cutter blades is made of suitable material and has an inclined or sloping bottom or inner edge 5 corresponding with the angularity 6 of the bottom of the blade slots, a cutting edge 7 and a side wall 8 which is somewhat inclined or angular relatively to the opposite wall of the blade. An abutment collar 9 is screw threaded upon the holder section 10 and against which the inner ends of the blades normally rest, said collar serving to maintain the juxtaposition of the blades and to prevent retractive movement thereof.

The blade slots 4 are originally formed with parallel side walls to enable the insertion of the blades, and to rigidly fasten each blade within its slot the side wall 11, which is adjacent the inclined blade wall 8, is laterally deformed or pressed against the blade wall 8 by any means such as hammering, for example. To facilitate the lateral bending or deformation of the slot wall 11 a longitudinal groove or recess 12 is formed in the holder 1 adjacent the slot 4. This method results in a very rigid mount for the blades, one that effectually prevents loosening of the blades during the use of the reamer. Nevertheless the blades may be moved longitudinally in their slots for adjustment thereof by the application of pressure upon the blade ends, as hereinafter described.

The numeral 13 indicates an anvil element which is apertured at 14 which, when used in connection with the tool 16, enables the operator to apply pressure upon the blade ends of the reamer for adjustment thereof. The abutment collar 9 is removed from the reamer body and the collar 15 is loosely mounted thereon in its place, the bore of said collar being of larger diameter than the reamer body. The shank 2 is then thrust through the anvil opening 14 and suspended therein with the collar 15 resting upon said anvil. The tool 16 may comprise the stud 17 upon which the gauge collar 19 is screw threaded and longitudinally adjustable thereon there-

by, the screw threads 18 preferably terminating intermediate the stud extremities. The space 20 between the collar 19 and the outer ends of the blades 3 regulates the degree
5 of blade adjustment, and such adjustment may be readily made when pressure is applied to the upper or outer end 21 of the tool stud 17 when the opposite end of said stud is resting against the outer end of the blade
10 holder 1.

In such a manner and by the means described the blades 3 may all be simultaneously driven longitudinally in their slots, for adjustment, and against the face of the gauge
15 collar 19, the latter functioning as a stop element and which obviously may be set at any desired distance from the blade ends

I claim:

1. Means for longitudinally adjusting the
20 cutting blades of an adjustable reamer, comprising an anvil element adapted to be engaged by the inner ends of the cutting blades, and a tool adapted to exert pressure upon the outer end of the blade holder, said tool carrying a stop element to limit the movement
25 of the blades.

2. Means for longitudinally adjusting the cutting blades of an adjustable reamer, comprising an apertured anvil element adapted
30 to support the reamer by engagement of the inner ends of the blades therewith, a tool adapted to exert pressure upon the outer end of the blade holder axially of the latter, and a stop element adjustably mounted upon said
35 tool to limit the movement of the blades.

In witness whereof I have hereunto affixed my signature this 8th day of December, 1927.

FRED M. ENOS.

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