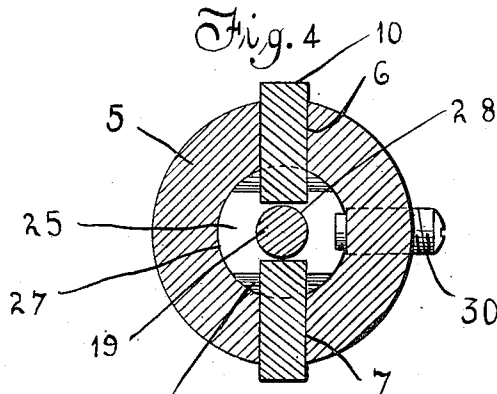
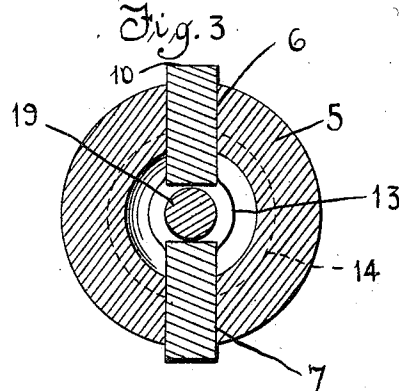
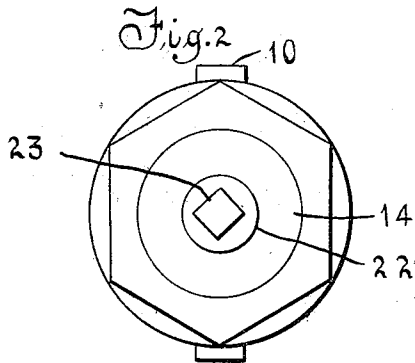
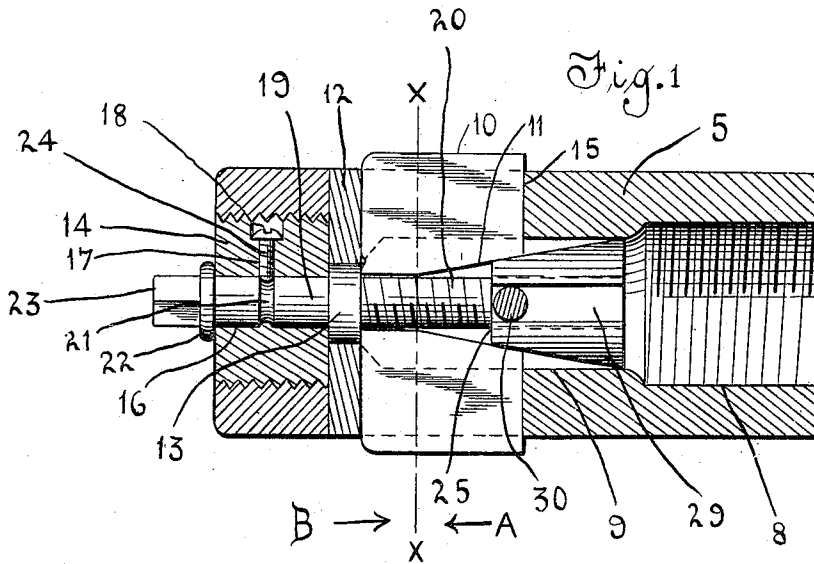


R. J. TULLY.
EXPANSION CUTTER HEAD.
APPLICATION FILED MAY 14, 1910.

981,502.

Patented Jan. 10, 1911.



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UNITED STATES PATENT OFFICE.

ROBERT J. TULLY, OF NEW CASTLE, PENNSYLVANIA.

EXPANSION CUTTER-HEAD.

981,502.

Specification of Letters Patent.

Patented Jan. 10, 1911.

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To all whom it may concern:

Be it known that I, ROBERT J. TULLY, a citizen of the United States of America, residing at New Castle, in the county of Lawrence and State of Pennsylvania, have invented certain new and useful Improvements in Expansion Cutter-Heads, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to expansion cutter heads, such as used on boring bars and similar devices for performing boring operations and the object thereof is to provide a cutter head of such class in a manner as hereinafter set forth embodying an adjusting screw and traveling wedge.

A further object of the invention is to provide an expansion cutter head with a traveling wedge and means engaging with the wedge whereby during the movement of the wedge to and from the cutters it will be held in place.

A further object of the invention is to provide an expansion cutter head with adjustable means in a manner as hereinafter set forth whereby the cutters are maintained in position.

Further objects of the invention are to provide an expansion cutter head which is simple in its construction and arrangement, strong, durable, efficient in its use, conveniently adjusted, inexpensive to manufacture, and quickly coupled with a boring tool.

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arrangement of parts as hereinafter more specifically described and illustrated in the accompanying drawings wherein is shown one form of the embodiment of the invention but it is to be understood that changes, variations and modifications can be resorted to which come within the scope of the claims hereunto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views: Figure 1 is a longitudinal sectional view of an expansion cutter head in accordance with this invention. Fig. 2 is an end view thereof. Fig. 3 is a section on line X—X looking in the direction of the arrow A, and, Fig. 4 is a section on line X—X looking in the direction of the arrow B.

Referring to the drawings in detail, the cutter head consists of a hollow cylindrical body-portion 5 having oppositely-disposed and longitudinally-extending slots, 6, 7. The inner face of the body-portion 5 for a portion of its length is provided with threads 8 whereby said body-portion can be coupled with a boring rod. The inner face of the body-portion 5 for a portion of its length is smooth as at 9 and of less diameter than the portion 8. The inner face of the body-portion 5 for a portion of its length is provided with threads 18, and the said portion is of greater diameter than the portions 8 or 9.

Mounted in the slots 6, 7, and of a length less than the length of either the slots 6, 7, are the cutters 10, each having a portion of its inner face beveled as at 11. The beveled portion 11 of one cutter opposes the beveled portion 11 of the other cutter. Arranged within the slots 6, 7, and interposed between one end wall thereof and the cutters 10 is a keeper 12 formed with a centrally-disposed apertured circular portion 13. The keeper 12 is removable. The keeper 12 is adapted to maintain the cutters 10 within the body-portion 5 and is adjustable through the medium of a nut 14 engaging with the threads 10 and abutting against the keeper 12. By screwing in the nut 14 any looseness of the cutters which is desired to be removed can be overcome. The shifting of the nut 14 inwardly forces the cutters 10 against the end walls 15 of the slots 6, 7, but the engagement of the cutters 10 with the end walls 15 is such as not to permit the adjusting of the cutters by being shifted outwardly in a manner as hereinafter referred to.

The nut 14 is formed with a centrally-disposed opening 16 and a right-angular disposed opening 17 which communicates at one end with the opening 16 and at its other end in a recess 18. Extending through the nut 14 is an adjusting screw comprising a shank 19 having a portion of its length threaded as at 20 and the smooth portion formed with a peripheral groove 21 and terminating in a head 22 having projecting therefrom a squared extension 23. The head 22 abuts against the outer end of the nut 14 when the adjusting screw is mounted in position. The adjusting screw when mounted in position extends through the circular portion 13 of the keeper 12 and between the cutters 10. For coupling the adjusting

screw with the nut 14 but at the same time to allow of the rotative movement of said adjusting screw when occasion so requires, a headed screw 24 extends through the opening 17 and has its inner end engaging in the groove 21. The head of the screw 24 is seated in the recess 18.

Arranged within the body-portion 5 is a traveling wedge consisting of a body-portion 25 having oppositely-disposed beveled sides 26 and oppositely-disposed curved sides 27. The curved sides 27 engage the portion 9 of the inner face of the body 5. The traveling wedge 25 is formed with a screw-threaded opening 28 in which engages the screw-threaded portion 20 of the shank 19 and the wedge when traveling in one direction is adapted to have its beveled sides engage the beveled portions 11 of the cutters for simultaneously shifting the cutters outward to expand the cutter head. One of the curved sides of the traveling wedge is formed with a longitudinally-extending groove 29 in which extends the inner end of a guide screw 30 which is seated in the body-portion 5 and through the medium of the inner end of the screw 30 the traveling wedge is maintained in position when shifted in either direction.

When the parts are in the position as shown in Fig. 1, and the adjusting screw revolved in one direction, the traveling wedge will be drawn between the cutters 10 shifting these latter outwardly to expand the cutter head whereby the cutters will be adjusted to the proper point. If the adjusting screw is revolved in the opposite direction, the traveling wedge will be shifted

from the cutters whereby the cutters can be moved inwardly.

What I claim is:

An expansion cutter head comprising a hollow body portion provided with longitudinally-extending slots, laterally shiftable cutters mounted in the slots and having beveled inner ends, a transversely-extending keeper projecting in said slots and abutting against the cutters for maintaining them in proximity to the upper wall of said slots, said keeper having an enlarged centrally disposed apertured portion arranged medially of the body portion, an adjusting screw extending through said circular portion and between the inner ends of the cutters, a traveling wedge engaging the beveled ends of the cutters and shifted by said screw whereby the cutters are adjusted laterally when the wedge is shifted in one direction, said screw provided with a peripheral groove, an adjusting nut surrounding the screw and abutting against the keeper for shifting the latter toward the upper ends of the slots whereby the cutters are maintained in position, said nut provided with a right-angularly disposed opening, and a hold-fast device extending through the right-angularly disposed opening in the nut and engaging in the groove of the screw for coupling the latter to the nut.

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

ROBERT J. TULLY.

Witnesses:

ROBERT J. LOWREY,
GEORGE R. B. HOUSTON.