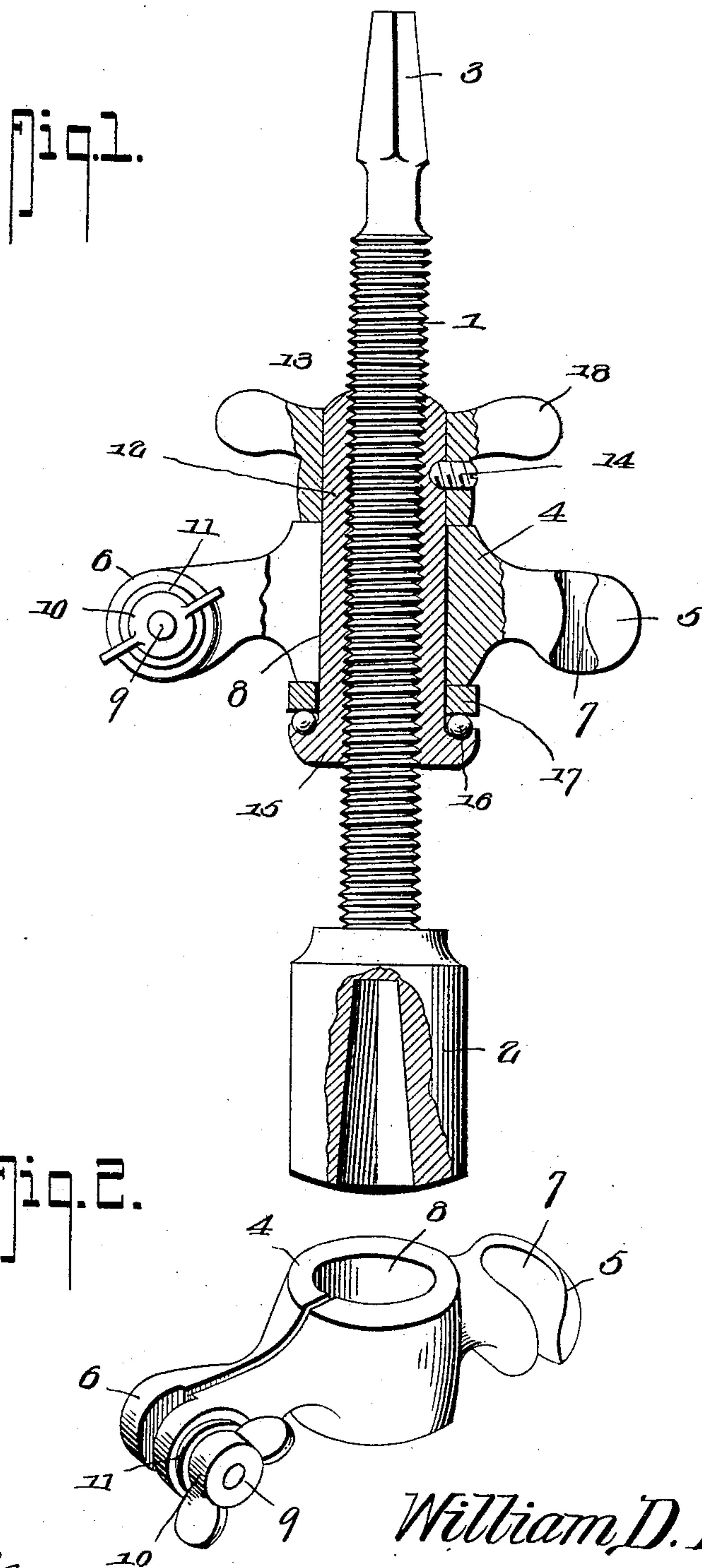


No. 795,450.

PATENTED JULY 25, 1905.

W. D. RANKINS.
DRILLING APPARATUS.
APPLICATION FILED JULY 30, 1904.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM D. RANKINS, OF MODESTO, CALIFORNIA.

DRILLING APPARATUS.

No. 795,450.

Specification of Letters Patent.

Patented July 25, 1905.

Application filed July 30, 1904. Serial No. 218,919.

To all whom it may concern:

Be it known that I, WILLIAM D. RANKINS, a citizen of the United States, residing at Modesto, in the county of Stanislaus and State of California, have invented a new and useful Drilling Apparatus, of which the following is a specification.

This invention relates generally to drilling apparatus, and particularly to that class adapted to be operated by a bit-brace, wrench, or other suitable implement and embodying means for causing automatic feed of the drill without any pressure being applied on the part of the operator.

The object of the invention is to simplify the construction and render more efficient and sensitive the means for increasing or diminishing the friction between the parts of the feed mechanism, thus to secure better regulation of the speed of the feed, which will result in the prevention of breaking of drills, due to excessive and unnecessary pressure at times when it is not necessary; furthermore, to render the apparatus capable of feeding automatically or being fed by hand.

With the above and other objects in view, as will appear as the nature of the invention is better understood, the same consists in the novel construction and combination of parts of a drilling apparatus, as will be hereinafter fully described and claimed.

In the accompanying drawings, forming a part of this specification, and in which like characters of reference indicate corresponding parts, there is illustrated one form of embodiment of the invention capable of carrying the same into practical operation, it being understood that the elements therein exhibited may be varied or changed as to shape, proportion, and exact manner of assemblage without departing from the spirit thereof, and in these drawings—

Figure 1 is a view in elevation, partly in section, of a drilling apparatus constructed in accordance with the present invention. Fig. 2 is a perspective detail view of the head or disk.

The apparatus comprises a threaded shank 1, provided at one end with a drill-socket 2 and at the opposite end with a polygonal head 3 to be engaged by the socket of a bit-brace, by a wrench, or by any other implement employed in turning the shank. The drill-socket may be integral with the shank or secured thereto in any suitable manner.

The friction-exerting means comprises a

split head 4, having lateral arms 5 and 6, the arm 5 being provided with a transverse slot 7 to receive the links of the chain employed in holding the apparatus properly positioned with relation to the object being drilled. The arm 6 is cleft through to an opening 8, which forms a bearing for the shank-actuating collar presently to be described, and extending through the two members thus formed is a bolt 9, carrying a winged nut 10, between the inner face of which and the arm is disposed a washer 11. The two members of the arm 6 are spaced apart a sufficient distance to receive a link of the chain, which is held in operative relation thereto by having the bolt 9 passed through it.

The shank-actuating collar 12 is of a length to pass through the head 4 and the hub of a feed-wheel 13, to which it is connected against rotation by a screw 14. The lower end of the collar is provided with a ball-bearing race 15, in which are mounted balls 16, which are borne upon by a slip-bearing 17, disposed against the lower end of the head. The slip-bearing may or may not be provided with a groove to receive the balls, and this, as well as the ball-bearing race, are preferably hardened in order to reduce wear to a minimum.

The hand-wheel 13 is provided with wings 18, by which it is turned, and is employed for the purpose of regulating the feed by hand, if desired.

In the operation of the device where a slow feed is required the collar is allowed to rotate freely within the head, the pressure exerted by the balls upon the slip-bearing and thence to the head presenting sufficient frictional resistance to the threads of the shank to cause the latter to feed downward. Should a faster feed be desired, the head will be tightened upon the collar, but not locked, and under these conditions if the cut of the drill is heavy the slip-bearing will yield, and thus obviate any danger of breaking the drill. Should a very rapid feed be desired, the head is clamped tightly around the collar, so that the latter cannot rotate, and the feed of the drill will then be determined by the pitch of the threads of the shank.

Where it is desired to feed the shank by hand, the head is allowed to rotate freely upon the collar and the operator turns the hand-wheel as rapidly as necessary.

The chief advantage accruing from the head herein defined is that a clamping action is exerted entirely around the collar, so that

lateral yield in any direction, which would cause an uneven wear of the threads of the shank, is positively obviated. Furthermore, the clamping action is positive and will, when desired, lock the collar against rotation independent of the head, irrespective of the resistance presented to the rotation of the drill.

As will be apparent, this device may be used for drilling without employing the chain and the head, in which case the head 3 will engage the socket of the bit-brace or turning implement in the manner usual to ordinary bit-sockets.

It will be seen from the foregoing description that although the device of this invention is exceedingly simple of construction it will, owing to the manner in which the parts are constructed and arranged, be thoroughly efficient in use, be practically free from danger of breakage under ordinary use, and in case of damage may readily be repaired.

The nut, slip-bearing, head, and hand-wheel will be made in standard sizes, so that where damage or breakage to either of these parts occurs, which will render it useless, such part may readily be supplied and applied to position by the user.

Having thus described the invention, what is claimed is—

An implement of the class described comprising a threaded shank, a collar arranged thereon and provided at its lower end with a bearing, a clamping-head entirely encircling and mounted for rotation upon the collar and resting at one end upon the bearing, lateral arms carried by the head, one of which is provided with one of a pair of holding-chain-receiving recesses, and the other of which is cleft through to the collar-opening, the members formed by the cleft having their opposing faces rabbeted to form the second holding-chain-receiving recess, and a bolt and nut combined with the cleft arm to clamp the head upon the collar, the bolt serving as a means for connecting a holding-chain with the implement.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM D. RANKINS.

Witnesses:

C. O. ANDERSON,
J. A. DUNN.