

No. 881,709.

PATENTED MAR. 10, 1908.

D. J. O'LEARY.
DRILL CHUCK.

APPLICATION FILED NOV. 11, 1907.

Fig. 1.

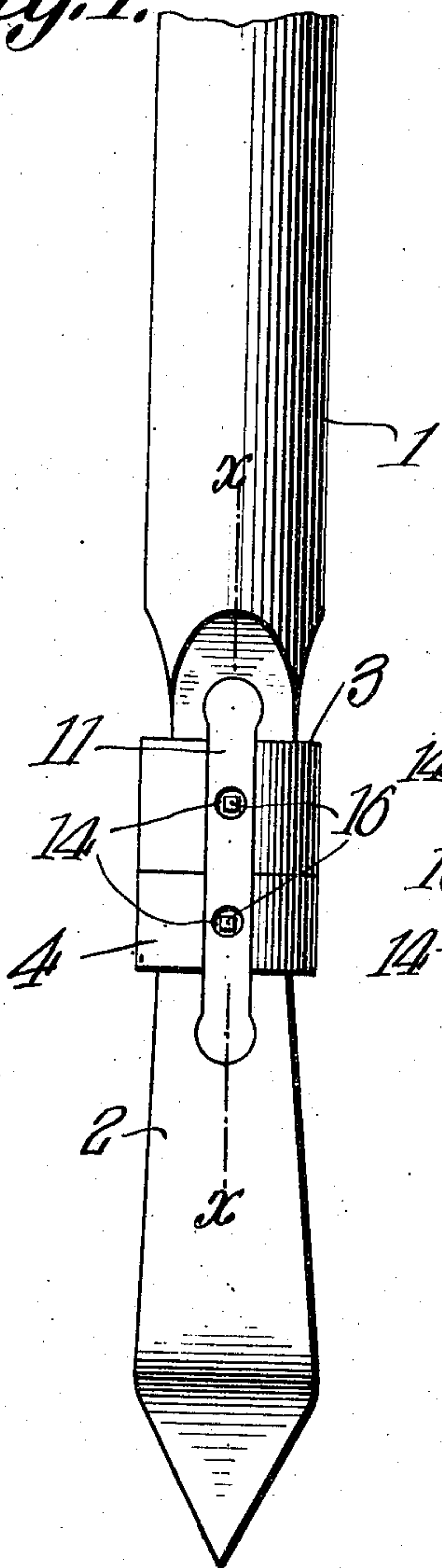


Fig. 2.

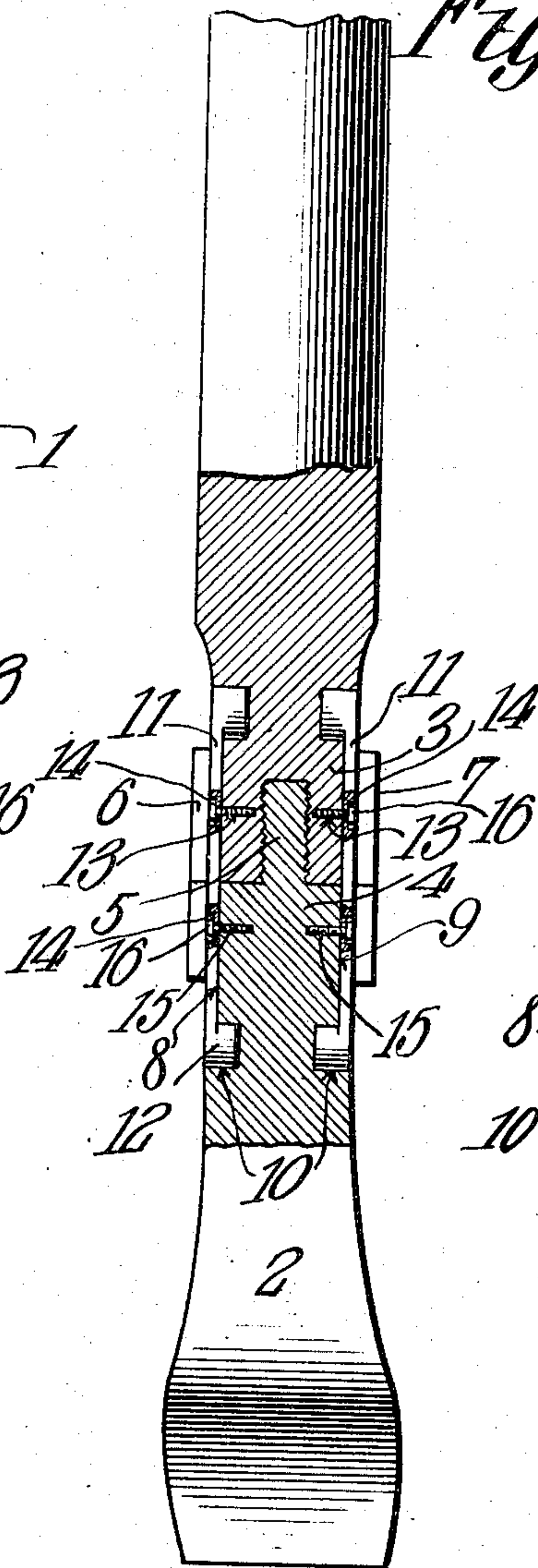


Fig. 4.

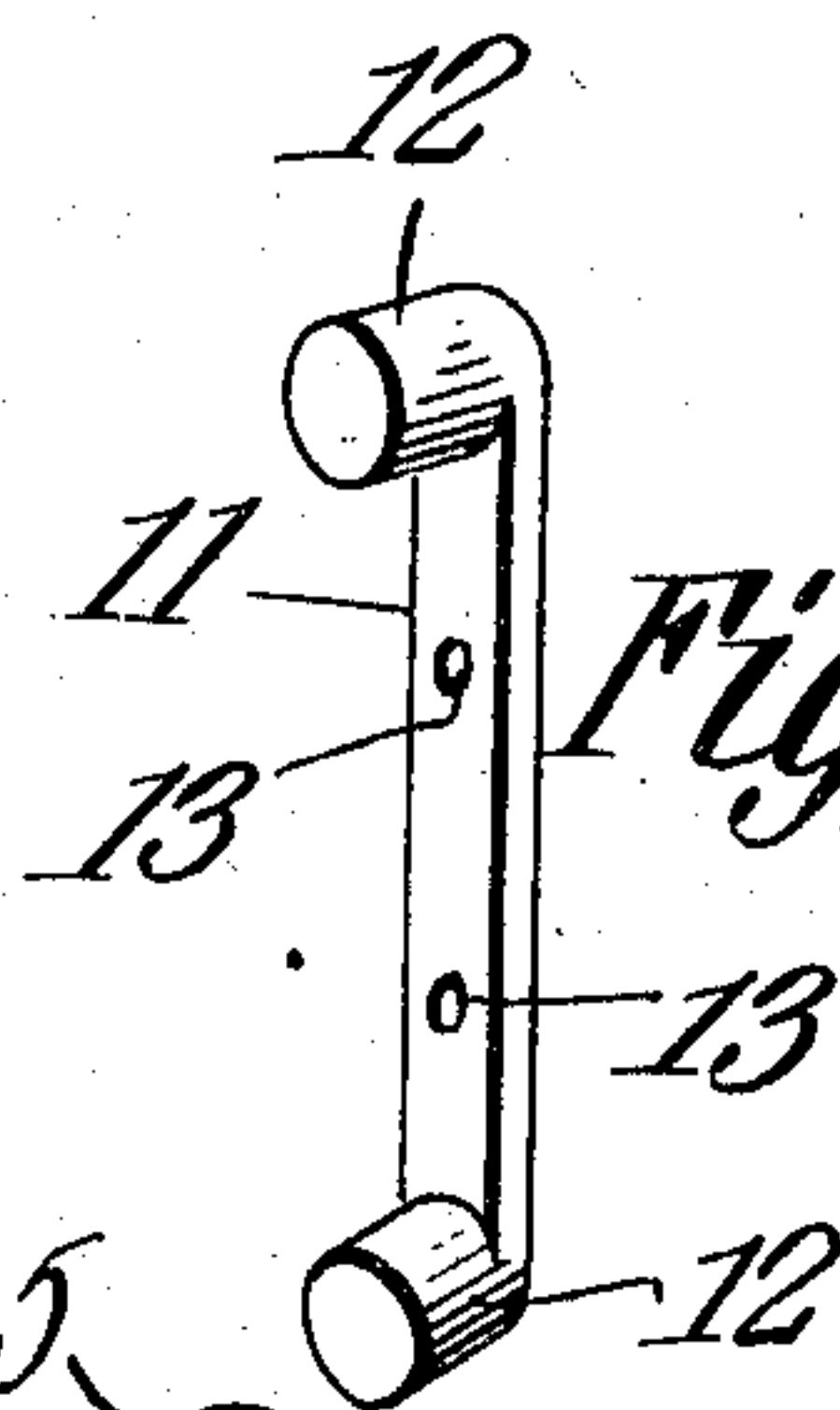
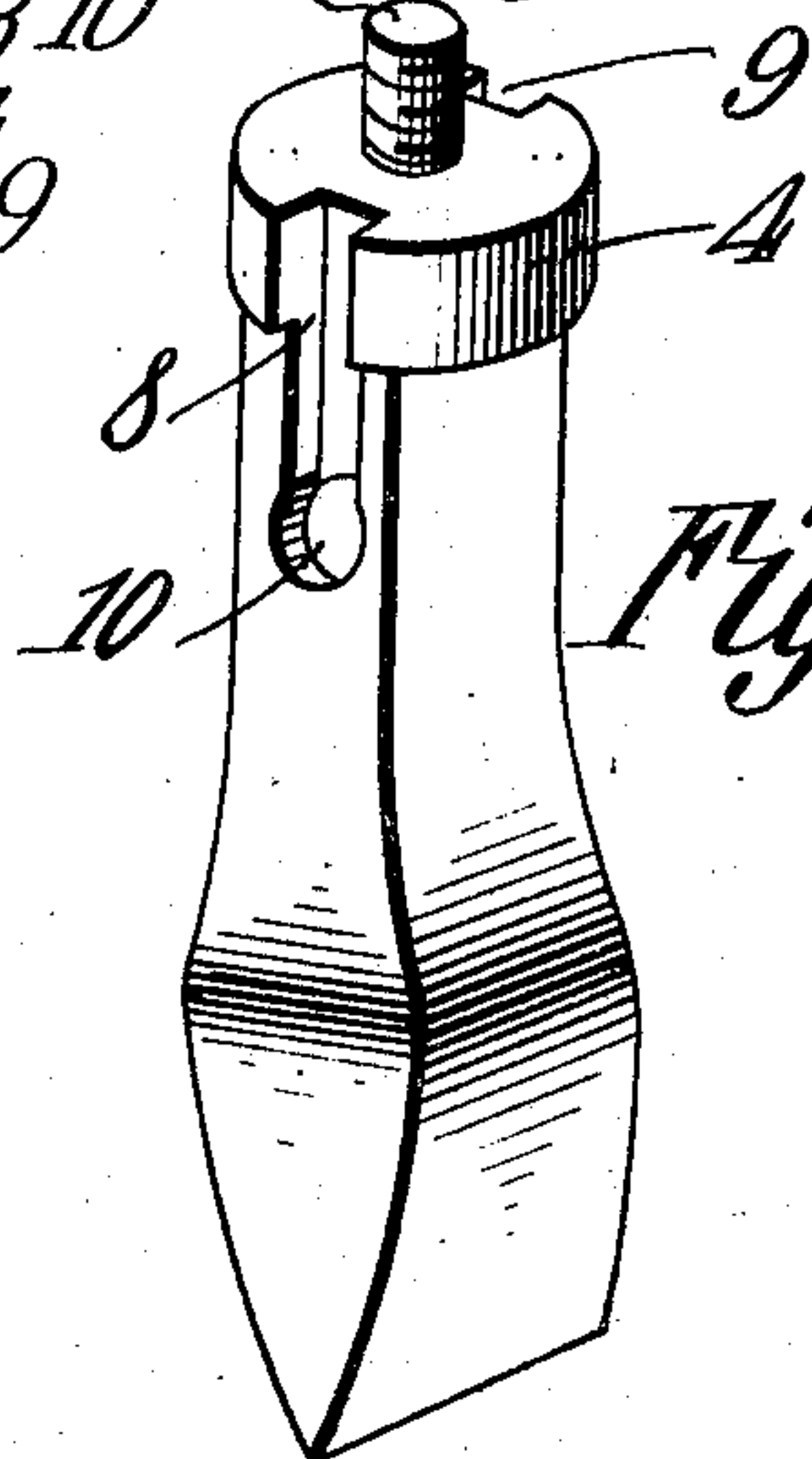


Fig. 3.



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DRILL-CHUCK.

No. 881,709.

Specification of Letters Patent.

Patented March 10, 1908.

Application filed November 11, 1907. Serial No. 401,695.

To all whom it may concern:

Be it known that I, DANIEL J. O'LEARY, a citizen of the United States, residing at Green Bay, in the county of Brown and State of Wisconsin, have invented a new and useful Drill-Chuck, of which the following is a specification.

This invention has reference to improvements in drill chucks, being designed more particularly for use in connection with rock drills for deep well boring.

In well drilling, the loss of a drill point in the well is, of course, a serious occurrence, since it means that further drilling of the well must be stopped until the lost point can be recovered. The present invention provides a means for locking such drill point in place on the end of the drilling rod, and at the same time so coupling the drill point to the drill rod that even though the usual connections should, for any cause, be broken or disengaged, still the drill point would be held to the drill rod and might be withdrawn from the well without danger of its becoming disengaged and so lost.

By the present invention, the drill point is connected to the lower end of the drill rod by a screw connection, and this connection is prevented from disengagement by removable locking links seated in longitudinal grooves in which they are held by suitable screws. The links extend on each side of the joint between the drill point and the drill rod, and are seated flush with the outer surfaces of these two structures, while the screw heads are suitably countersunk into the links until flush with the outer surface thereof. The links are furthermore provided at their ends with heads or enlargements projecting laterally therefrom and seated in recesses formed at the ends of the seats in which the links are placed, so that the co-action of these heads and recesses serves to relieve the screws, both for fastening the links in place and for connecting the drill point to the drill rod, from strain.

The invention will be best understood from a consideration of the following detail description, taken in connection with the accompanying drawings forming part of this specification, in which drawings,

Figure 1 is a side elevation of a drill point and drill rod with the improved connecting means applied thereto. Fig. 2 is an elevation at right angles to that of Fig. 1 with

parts shown in section on the line $x-x$ of Fig. 1. Fig. 3 is a perspective view of the drill point, and Fig. 4 is a perspective view of one of the connecting links.

Referring to the drawings, there is shown a drill rod 1 and a drill point 2, each terminating in a head 3 and 4, respectively, with a screw socket formed in the head 3 and a screw stem 5 formed on the head 4, so that the drill point may be screwed into the end of the drill rod.

At diametrically opposite sides of the head end of the drill rod are formed longitudinal grooves 6, 7 and on diametrically opposite sides of the head end of the drill point 2 are similar longitudinal grooves 8, 9. The relation of these grooves and the screw stem 5 is such that when the drill point 5 is screwed tightly into the drill rod 1, the grooves on the rod and point will exactly match, and, for convenience, it will be assumed that the grooves 6 and 8 and the grooves 7 and 9 match.

The ends of the grooves remote from the meeting faces of the drill rod and drill point are formed with inward extensions entering deeper into the body of the drill point and of the drill rod than do the grooves 6, 7, 8 and 9. These recesses 10 may be made of a slightly greater width than the body of the groove, and at this point the groove may be made also a little wider than the remainder of it, and this portion of the groove, as well as the recess, may be made cylindrical, as indicated.

In Fig. 4, there is shown detached a link 11 consisting of an elongated strip terminating in cylindrical heads 12, one at each end, projecting laterally from the link body, and at the points where the heads 12 are formed the body may be made somewhat wider and also conforming to the cylindrical shape of the heads, as best indicated in Fig. 1. The links 11 are a sufficient length, so that when the drill point 2 is screwed into the drill rod 1 the links will fit snugly into the combined recesses 6 and 8 on one side of the structure, and in the combined recesses 7 and 9 on the other side of the structure, with the heads 12 projecting into the recesses 10. In this position, the links do not project beyond the outer surface of either the drill rod or drill point.

The links have properly spaced holes 13 through them, and these holes are counter-

sunk on the outer face of the links, as shown at 14. At correspondingly spaced points on the drill rod and drill point are tapped holes to receive screws 15 having bolt heads 16 adapted to seat in the countersinks 14. These screws may be applied by means of a suitable socket wrench.

A drill point connected to the drill rod by means of the screw stud 5 is securely enough attached so long as the heads 3 and 4 are in contact and take the impact of the blows. Should, however, the drill point begin to unscrew, as it is very liable to do, the threads quickly strip under the force of the blows delivered by the drill and the drill loosens and falls away from the drill rod to be regained only by tedious effort, and possibly not at all.

By the use of the links 11, the drill point is prevented from unscrewing, and so while the screw connection is intact, the drill point cannot escape from the drill rod. However, the drill points, in addition to the shocks and jars of impact, are often subjected to a lengthwise pull on the return stroke of the drill by catching in the sides of the drill hole, or because of the mass of material in the drill hole, or from other causes, and this lengthwise pull is usually only resisted by the threads on the stem 5, and these threads may become worn and ultimately permit the drill point to become so loosened, even though it be held against rotation, tending to unscrew the drill point from the drill rod, as to afford sufficient play between the drill point and the drill rod to cause the ultimate stripping of the threads and the possible loss of the drill point. Now, these objectionable conditions are avoided by the use of the links 11 on diametrically opposite sides of the joint between the drill rod and drill point with the cylindrical extensions 12 entering the lateral recesses 10. The screws 15 prevent displacement of the links 11 from their seats, but these screws may be quite light, since they are not subjected to longitudinal strains imparted to the drill rod and point, since such strains are resisted by the links and the heads 12 thereof. The structure therefore approaches in strength a drill rod with an integral point, while at the same time the point may be removed for sharpening or replacing, but cannot be displaced by the shocks and jars incident to the operation of drilling, even though the screw connection be practically destroyed.

I claim:—

1. A drill point connection for deep well drills comprising a drill rod having at its end an axial screw socket and diametrically opposed longitudinal grooves on each side thereof terminating in end recesses entering the body of the drill rod, a drill point having a screw stem adapted to the screw socket and the drill rod, and also having diametrically opposed longitudinal grooves terminating at one end in recesses, the grooves in the drill rod and drill point being located to match when the drill point is screwed into the drill rod, links having heads at each end projecting at right angles to the length of the links, and adapted to be seated in the grooves and recesses on opposite sides of the joint between the drill rod and point, and means for holding the links in their seats.

2. A drill point connection for deep well drills comprising a drill rod having at its end an axial screw socket and diametrically opposed longitudinal grooves on each side thereof terminating in end recesses entering the body of the drill rod, a drill point having a screw stem adapted to the screw socket and the drill rod, and also having diametrically opposed longitudinal grooves terminating at one end in recesses, the grooves in the drill rod and drill point being located to match when the drill point is screwed into the drill rod, links having heads at each end and adapted to be seated in the grooves and recesses on opposite sides of the joint between the drill rod and point, and screws having their heads countersunk in the links and entering both the drill rod and drill head.

3. A drill point connection for deep well drills comprising a drill rod and drill point having matching grooves each terminating at the end remote from the meeting ends of the rod and point in a laterally inwardly extending recess, and a link adapted to be seated in such groove, said link having at each end a head extending at right angles to the length of the link, said links being adapted to the lateral recesses at the ends of the matched grooves.

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

DANIEL J. O'LEARY.

Witnesses:

TIMOTHY BURKE,
JOE DIEL.