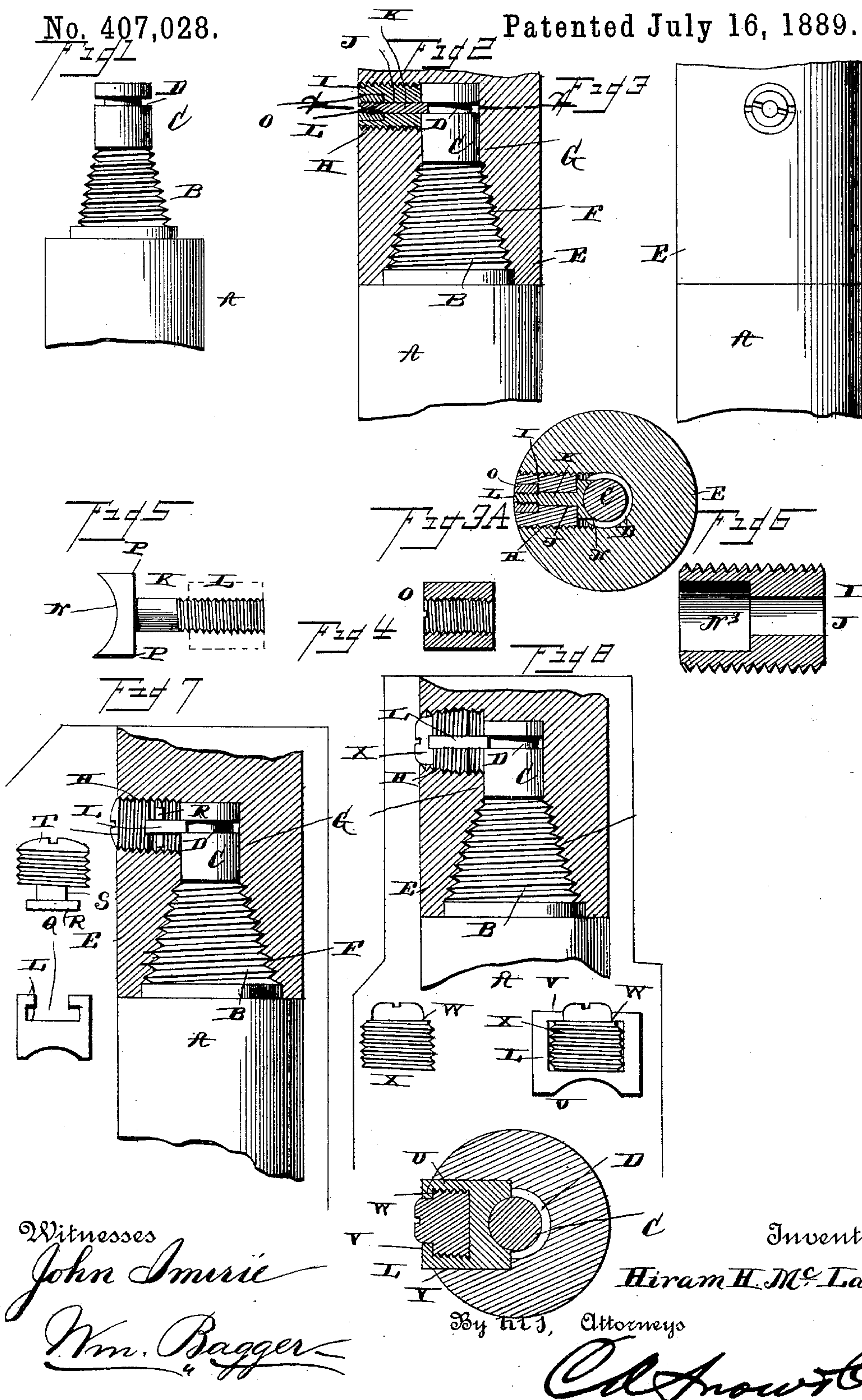


(No Model.)

H. H. McLANE.
TOOL FOR DRILLING WELLS.

No. 407,028.

Patented July 16, 1889.



Witnesses

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TOOL FOR DRILLING WELLS.

SPECIFICATION forming part of Letters Patent No. 407,028, dated July 16, 1889.

Application filed February 28, 1889. Serial No. 301,429. (No model.)

To all whom it may concern:

Be it known that I, HIRAM H. McLANE, a citizen of the United States, residing at San Antonio, in the county of Bexar and State of Texas, have invented a new and useful Improvement in Tools for Drilling or Boring Wells, of which the following is a specification.

This invention relates to tools for drilling or boring Artesian, oil, and other deep wells; and it has for its object to prevent the loss of the drill or auger or of any portion of the drill-rods.

With this end in view the invention consists in an improved means for connecting the tool to the lower end of the drill-rod, as will be hereinafter more fully described, and particularly pointed out in the claims.

In the drawings, Figure 1 is a side view showing the upper end of the drill or auger. Fig. 2 is a vertical sectional view showing the same connected to the adjoining section of the drill-rod. Fig. 3 is a side view of the same. Fig. 3^A is a sectional view taken on the line *xx* of Fig. 2. Figs. 4, 5, and 6 are detail views of the parts by which the coupling or connection is effected. Figs. 7 and 8 are detail views illustrating various modifications of my invention.

The same letters refer to the same parts in all the figures.

A designates the upper end of the drill, which is provided with a tapering screw-threaded portion B, from which extends a cylindrical portion C, in which is formed an annular groove D.

E represents the lower end of the drill-rod, which is provided with the tapering screw-threaded recess F and with the cylindrical socket G to admit the cylindrical portion C of the tool. I would state at the outset that it is not necessary, either in this or in the modified constructions to be hereinafter described, that the screw-threaded portion and the recess for the reception of the same should be tapered, as my invention will be equally applicable to tools in which the screw-threaded portion is cylindrical; but I prefer the tapering configuration on account of the well-known advantages possessed thereby. The drill-rod E is provided with a transverse opening H, communicating with the recess

or socket G and adapted to receive the screw-threaded plug or follower I, having a longitudinal opening J to receive the stem K of the follower I, which latter is provided with a curved recess N at its front end, adapted to enter and fit in the annular groove D of the cylindrical portion C of the tool when the latter enters the socket G. The outer end of the longitudinal opening J in the plug I is somewhat enlarged, as will be seen at N³ in Fig. 6 of the drawings, so as to receive a cylindrical nut O, which engages a screw-threaded key formed upon the shank K of the follower I. This screw-thread, it should be noted, is to be cut in a reverse direction to that of the thread formed exteriorly upon the plug I. When the upper end of the drill A is screwed to its seat in the lower end of the rod E, the follower L is adjusted in the opening H in such a manner as to enter the annular groove D. The plug I is then adjusted upon the shank of the follower and screwed home in the opening H, thus forcing the follower into the groove by bearing upon the shoulders P of the said follower. The nut O is then adjusted upon the screw-threaded outer end of the stem K of the follower and within the recess N³ prepared for its reception in the plug I. The outer ends of the plug I and nut O should be flush with the outside of the drill-rod, and they are to be provided with nicks or notches, so as to be readily manipulated by means of an ordinary screw-driver. It will be seen that when the parts are in this position it is impossible for the screw-threaded portion B of the drill to become loosened in its seat, thus making it impossible for the drill to become accidentally detached from the drill-rod. When, on the other hand, it shall be desired to detach the drill from the drill-rod, it may be easily done by partly unscrewing the plug I, which will then carry with it the nut O and the follower, which latter may thus be withdrawn from the annular groove D without detaching it or its holding devices from the drill-rod. The advantages resulting from this construction will be readily understood, it being exceedingly simple and easily operated, and the parts, being so arranged as to be capable of being operated without being detached, are not liable to be lost or misplaced.

By the modification shown in Fig. 7 of the drawings the follower L is provided at its outer end with a transverse T-shaped notch Q, adapted to be engaged by the circular disk or button R, formed upon a shank S at the inner end of a plug T, which works in the screw-threaded opening H in the drill-rod. The construction of the latter and of the other end of the drill is precisely as hereinbefore described.

It will be seen that by this modification one of the parts—namely, the nut O—is dispensed with and the construction correspondingly simplified, the follower being forced in an outward as well as in an inward direction by the direct action of the screw-threaded plug T.

By the modification shown in Fig. 8 the follower L is provided with a yoke U, the ends of the arms of which are provided with lugs V, adapted to take over a shoulder W, formed at the outer end of the screw-threaded plug X. The opening H, formed in the drill-rod for the reception of said plug, is provided on diametrically-opposite sides with recesses Y Y to accommodate the yoke of the follower.

The operation of this device is substantially the same as that of the foregoing modification, the follower being actuated directly by the plug X.

The operation and advantages of my invention will be readily understood from the foregoing description, taken in connection with the accompanying drawings.

I would state that I do not wish to confine myself to the precise details of construction herein described, inasmuch as various other modifications embodying the same principle might be resorted to without departing from the spirit of my invention.

I would also state that by making various slight structural changes which will readily suggest themselves to those skilled in the art my invention may be applied to many old tools of ordinary construction, thus avoiding much of the expense which would be occasioned by the purchase of new outfits. By my invention it is made utterly impossible for the drill to become detached from its coupling, thereby avoiding the possibility of losing the drill, the loss of time occasioned by endeavoring to extract lost drills, and the expense which is often occasioned by the necessity of abandoning partially-finished wells on account of the loss therein of the drill and the impossibility of recovering the same.

It will be understood, of course, that this invention may be applied to shaft or rod couplings wherever such may be required, and that I do not limit myself to its application to well-boring tools, as herein described.

I am aware that drilling-tools have been constructed with a cylindrical annularly-grooved extension above the screw-threaded portion at their upper ends to engage the points of screws inserted through the walls of the socket in the drill-rod for the purpose

of connecting the parts together. By my improvement the annular groove in the cylindrical extension is engaged by a follower operated by a screw, and inasmuch as said follower may have a much wider bearing than the point of a screw the device is rendered much more effective.

Having thus described my invention, I claim—

1. The combination, with a drill or well-boring tool or the like having a cylindrical annularly-grooved extension above its screw-threaded portion, of a socket formed for its reception in the lower end of the drill-rod, a transverse opening communicating with said socket, and a non-rotating follower arranged to slide in the said opening and to engage the annular groove in the upper cylindrical portion of the drill, substantially as and for the purpose set forth.

2. The combination, with a drill or well-boring tool or the like having a cylindrical annularly-grooved extension above the screw-threaded portion at its upper end, of a socket formed for its reception in the lower end of the drill-rod, a transverse opening connecting said socket with the outside of the drill-rod, a screw-threaded plug moving in said opening, and a non-rotating follower engaging the annular groove in the cylindrical portion of the drill, substantially as set forth.

3. The combination of a drill or shaft having a screw-threaded portion and an annular groove with a socket formed in the lower end of the drill-rod, a transverse opening communicating with said socket, a non-rotating follower sliding in said opening, so as to engage the annular groove in the drill, and having an outwardly-extending stem screw-threaded at its outer end, a screw-threaded plug moving in the transverse opening and bearing at its inner end against the shoulders of the follower, and a cylindrical nut adjusted upon the outer screw-threaded end of the stem and seated in a suitable recess formed for its reception in the outer end of the plug, substantially as and for the purpose set forth.

4. The combination, with a drill or shaft having a screw-threaded portion and an annular groove, of a socket formed in the lower end of the drill-rod, a transverse opening communicating with said socket, a follower arranged to slide in said opening and adapted to engage the annular groove in the drill, and means for moving the said follower positively in either an inward or outward direction, substantially as and for the purpose set forth.

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

HIRAM H. McLANE.

Witnesses:

L. D. DIBBLE,
FRANCIS SMITH.