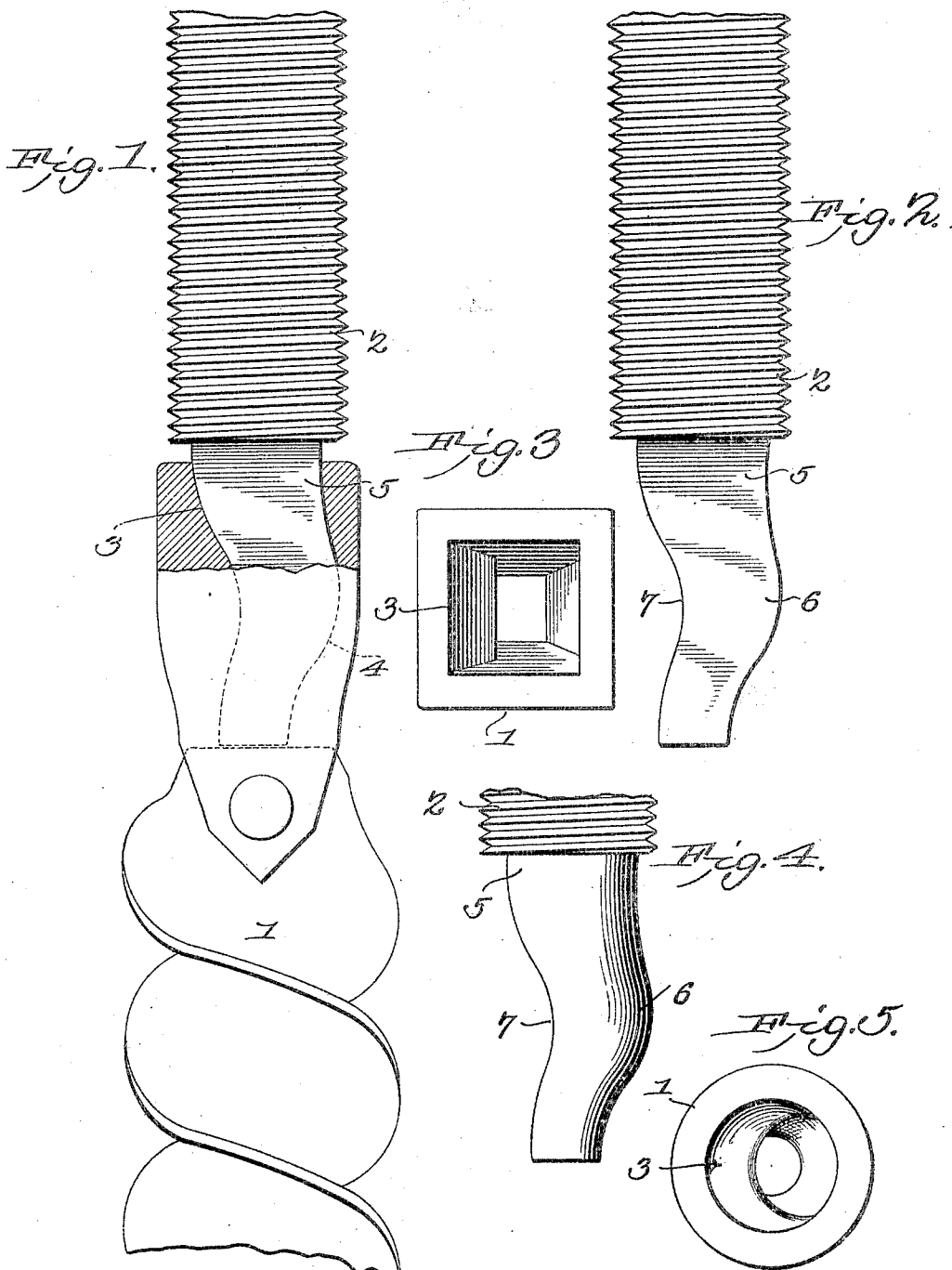


J. S. LIME.
DRILLING BIT SOCKET.
APPLICATION FILED MAY 5, 1905.



Witnesses
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UNITED STATES PATENT OFFICE.

JAMES S. LIME, OF PITTSBURG, KANSAS.

DRILLING-BIT SOCKET.

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To all whom it may concern:

Be it known that I, JAMES S. LIME, a citizen of the United States, residing at Pittsburg, in the county of Crawford and State of Kansas, have invented a new and useful Drilling-Bit Socket, of which the following is a specification.

The usual detachable connections employed between drill-bits and their stocks or drill-bars includes a socket in one of the members and a pin carried by the other member detachably received within the socket. In some instances the pin and socket are threaded, in which event it is impossible to withdraw the bit by a reverse rotation of the drill-bar or stock, as the latter will merely unscrew out of the bit. In other instances the socket and pin are non-circular, which precludes the withdrawing of the bit by reverse endwise movement of the stock or drill bar. Having appreciated these disadvantages, I propose to provide an improved detachable connection which will facilitate the assemblage and disconnection of the bit and its stock or drill-bar and at the same time will permit of the bit being withdrawn either by reverse rotation of the drill-bar or a reverse endwise movement thereof without employing any extraneous fastenings.

With this object in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a side elevation of a bit and its stock or drill-bar assembled in accordance with the present invention, parts of the socket in the bit or drill being broken away. Fig. 2 is a detail view of the bit-engaging end of the stock or drill-bar. Fig. 3 is a rear end view of the bit or drill looking into the socket thereof. Figs. 4 and 5 are views similar to Figs. 2 and 3, showing a modification.

Like characters of reference designate corresponding parts in each and every figure of the drawings.

To illustrate the application of the present invention, there have been shown in the ac-

companying drawings a portion of a conventional form of drill or bit 1 and the forward portion of a drill-bar or stock 2, which may be threaded, as commonly used in connection with mine-drilling machines, or unthreaded, according to the character of the machine or power employed for driving the drill. In carrying out the invention one or the other of these members, preferably the drill or bit, is provided in its rear end with a socket 3, which is tapered inwardly and sinuous in form—that is to say, the middle portion of the socket is bowed laterally, as shown at 4, so as to be offset from the longitudinal axis of the socket. The stock or drill-bar 2 is provided at its forward end with a longitudinally-disposed pin 5, which has the same sinuous shape as the socket 3, which produces a bulge 6 intermediate of the ends of the pin and at one side thereof and a corresponding recess 7 in its opposite side.

In connection with the assemblage of the drill and the stock or drill-bar it will be noted that the entrance to the socket 3 is inclined slightly across the longitudinal axis of the drill and when fitting the two members together they are disposed at an angle to one another, so as to pass the forward end of the pin 5 into the socket, and then the members are gradually brought into longitudinal alignment, which works the forward end of the pin through the laterally-offset portion of the socket and finally brings the entire pin snugly into the socket. When thus assembled, the drill may be rotated by rotation of the stock or drill, bar 2, as the lateral bulge or offset portion 6 of the pin fitting in the correspondingly-offset portion of the socket interlocks the members for simultaneous rotation, and therefore the drill may be driven forward by rotation of the stock and also drawn out of the hole by a reverse rotation of the stock. Furthermore, as the lateral offset 6 prevents endwise separation of the bit and the stock so long as these two members remain in alignment the drill or bit may be drawn directly out of the hole by a rearward endwise movement of the stock or drill-bar. At the same time the drill and stock may be conveniently disconnected by tilting the same and pulling endwise thereon, so as to work the pin out of the socket.

The embodiment of the present invention shown in Figs. 1, 2, and 3 discloses a square or polygonal socket and a correspondingly-

shaped pin 5, while Figs. 4 and 5 disclose a substantially cylindrical socket and a substantially cylindrical pin. Otherwise the two forms are precisely alike.

5 From the foregoing description it will be noted that the present connection dispenses with extraneous fastenings, and therefore facilitates the assembling and disconnecting of the bit and its stock, while at the same time
10 the connection is effective to transfer rotary movements and also endwise movements from the stock or drill-bar to the drill or bit, thus permitting of the effective driving and withdrawing of the drill by manipulation of the
15 drill-bar or stock.

Having thus described the invention, what is claimed is—

1. A drill and stock having detachable interlocking members, one of which consists of
20 a socket and the other of a pin fitting snugly therein, corresponding opposite wall portions of said socket and pin being deflected from the longitudinal axes of the members with the pin fitting snugly the socket to prevent end-
25 wise looseness and separation when the members are assembled and in longitudinal alignment.

2. A drill and stock having detachable interlocking members, one of which consists of
30 a sinuous pin and the other of a sinuous socket of a size and shape to snugly receive the pin and prevent endwise looseness and separation

thereof when the members are assembled and in longitudinal alignment.

3. The combination of a drill and a stock 35 therefor, one of said members having a tapered socket with its entrance inclined across the longitudinal axis of the socket and its intermediate portion offset laterally, the other member having a pin corresponding in shape 40 to the socket and capable of being entered therein, the drill and the stock being interlocked against endwise separation when the socket and pin are assembled and the drill and stock in longitudinal alignment. 45

4. The combination of a drill having a tapered socket in its rear end, the entrance to said socket being inclined across its longitudinal axis and its intermediate portion being bowed laterally, and a stock having a tapered 50 pin shaped to fit within the socket, the lateral bowed portion of the pin fitting in the lateral bowed portion of the socket to interlock the drill and stock for simultaneous rotation and to prevent endwise separation of the members 55 when in longitudinal alignment.

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

JAMES S. LIME.

Witnesses:

ANDREW BROWN,
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