E. L. MILLER.

SOCKET FASTENER.

APPLICATION FILED JULY 27, 1908.

922,936. Patented May 25, 1909.

Fig. 1.

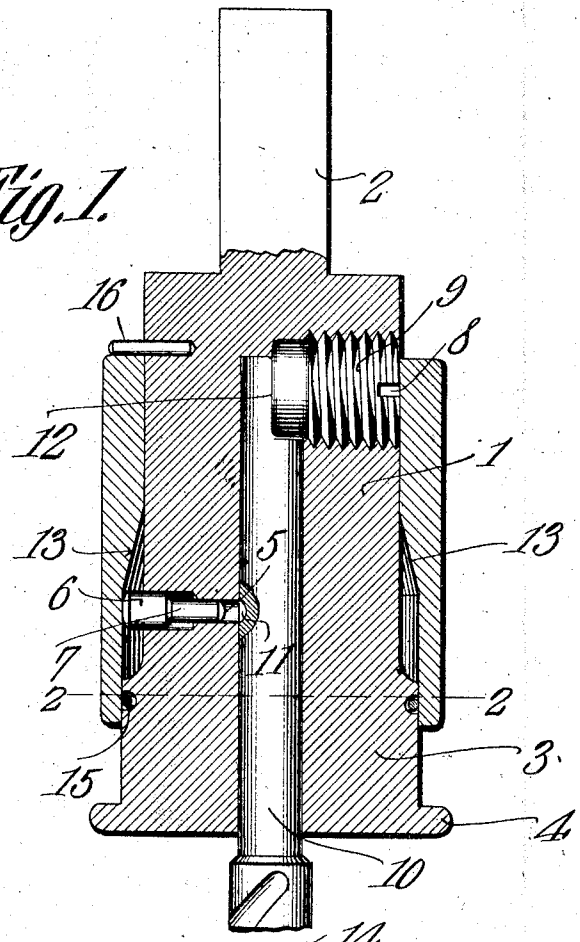
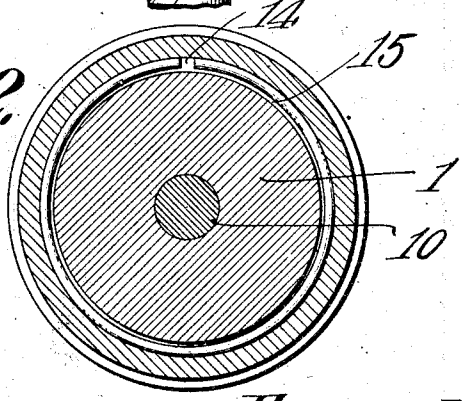


Fig. 2.



Witnesses

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EDWIN L. MILLER, OF TERRE HAUTE, INDIANA.

SOCKET-FASTENER.

No. 922,936. Specification of Letters Patent. Patented May 25, 1909.

Application filed July 27, 1908. Serial No. 445,506.

To all whom it may concern:

Be it known that I, EDWIN L. MILLER, a citizen of the United States, residing at Terre Haute, in the county of Vigo and State of Indiana, have invented a new and useful Socket-Fastener, of which the following is a specification.

This invention relates to improvements in tool chucks, such as are used in connection with a brace or lathe to secure the shank of a bit or drill.

It has for its object to provide a device of that kind which can be readily operated to so engage the shank of a tool that lateral and longitudinal movement of the same will be impossible.

A further object is to provide a device which will be simple in construction, embodying but few working parts, and comparatively inexpensive to manufacture, and which may be readily operated to disengage the shank of a tool.

With these and other objects in view, as will more fully hereinafter appear, the present invention consists in certain novel details of construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims; it being understood that various changes in the form, proportion, size and minor details of the device may be made, without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings forming a part of this specification:—Figure 1 is a longitudinal sectional view of the device showing the parts in position to disengage the shank. Fig. 2 is a sectional plan view taken on line 2—2 of Fig. 1.

Similar numerals of reference are employed to designate corresponding parts throughout.

In the construction illustrated body 1, of the chuck is cylindrical and centrally provided at one end with the usual extending stem 2. The socket 1 is reduced in diameter from the stem end to a point approximately intermediate its horizontal center and opposite end thereby forming an enlarged head 3, the outer edge of which is provided with a circumferential flange 4, the function of which will appear later.

The socket is centrally provided with a longitudinal bore extending from the head end 3 to a point adjacent the opposite end and further provided adjacent its horizontal center with an opening 5, extending from the surface of the chuck and terminating in the longitudinal bore; this opening 5 is reduced in diameter at its inner end so as to provide a shoulder, which forms a stop for the head 6, of a bolt 7, the latter is greater in length than the opening 5, so that when the head 6 engages the shoulder, the inner terminal of the bolt will project into the bore, while the outer end will be flush with the outer face of the chuck. A threaded opening 8 is formed in the socket adjacent the stem end; this opening extends inwardly, similar to the opening 5, and terminates in the bore and at the inner end thereof; a suitable screw 9 is threaded into said opening, the inner terminal of which is flat and projects into the bore, while the outer terminal is flush with the outer face of the chuck.

The shanks 10 of the bit or drill to be used, is of a size to enter the bore of the socket, and is provided with a transverse recess 11, in which fits the inner terminal of the bolt 7 when the end of the shank abuts the end of the bore, or as when the parts are in position, as illustrated in Fig. 1; thus it will be seen that longitudinal movement of the bit will be prevented, and in order to prevent the bit from turning while so held, the end of the shank thereof is stepped as shown at 12, and this stepped portion is adapted to receive the terminal of the screw 9 when the parts are in position as shown in Fig. 1. Thus it can be seen that I have provided a device which will positively hold a bolt against longitudinal movement without the aid of the usual tightening jaws with which considerable difficulty is experienced in disengaging the bits. In order that the parts may be held in the position as described a suitable sleeve is employed and adapted to operate on the outer face of the chuck. In the present instance, the length of this member is shown to be substantially the same as the length of the reduced portion of the socket, and its inner face is so constructed, that at the end adjacent the head 3, the interior diameter is sufficient to permit the sleeve to slide longitudinally on the head. This enlarged interior diameter extends toward the end of the sleeve for a distance, approximately equal to the length of the head, where it terminates in an inwardly inclined shoulder 13, which extends approximately to the hori-

zontal center of the sleeve; the remainder being of a diameter sufficient to slidingly fit on the reduced portion 1 of the chuck.

With this construction, it is obvious that when the enlarged interior of the sleeve is moved toward the reduced portion 1 until the shoulder 13 clears the opening 5, the head 6 of the bolt will move into the opening formed by the inner face of the sleeve and outer face of the chuck; and the shank 10 may be inserted into or withdrawn from the bore by now moving the sleeve in the opposite direction the shoulder 13 will engage the head of the bolt and force the end of latter into the bore. In order to secure the sleeve in position to hold the bolt in engagement with the shank, a circumferential groove 14 is formed in the head 3 adjacent the reduced portion 1. This groove is designed to form a seat for a spring 15, which is preferably formed of a single piece of spring wire bent to the shape of the head 3. Thus it will be seen that when the parts are in position as illustrated in Figs. 1 and 2, the tendency of the spring will be to straighten and this will cause the latter to bind against the face of the sleeve, thereby holding the latter in adjusted position.

The longitudinal movement of the sleeve is limited by the flange 4, at one end of the socket, and by a pin 16, adjacent the opposite end, as illustrated in Fig. 1.

I claim:—

1. In a chuck, the combination of a socket terminating at one end in an enlarged head, a transversely disposed lock bolt slidingly fitted in said socket, a slide sleeve encircling said socket interiorly provided with a beveled face to engage said bolt, and an expansible ring interposed between the surfaces of said socket and sleeve and adapted to frictionally bear on the inner face of said sleeve to hold the beveled face of the latter in and out of engagement with said bolt.

2. In a chuck a socket member having an enlargement at one end constituting a head, a radially extending lock bolt slidably mounted within the socket member, an expansible ring seated in the head of the socket member, a sleeve slidably mounted on said socket member and provided with an interior beveled face, said face being movable into frictional engagement with the lock bolt and said ring frictionally engaging the inner face of the sleeve to hold said sleeve either in or out of engagement with the bolt, and means adjacent the ends of the socket member for limiting the sliding movement of the sleeve.

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

EDWIN L. MILLER.

Witnesses:
R. B. STIMSON,
F. M. BUCKINGHAM.