No. 862,838. PATENTED AUG. 6, 1907.

E. T. MURRAY.

BIT HOLDER AND EXTENDER.

APPLICATION FILED FEB. 17, 1905.

Fig. 1

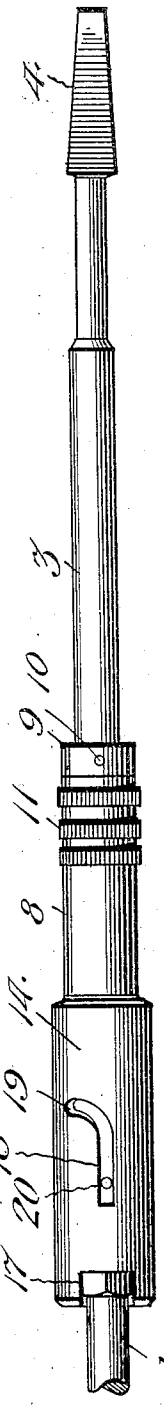


Fig. 2.

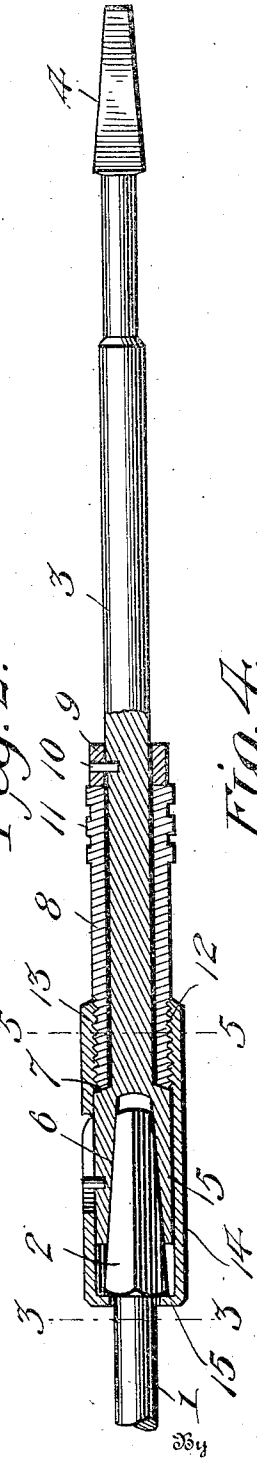


Fig. 5.

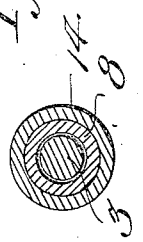


Fig. 4.

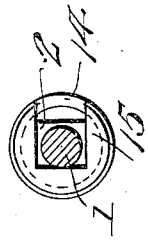
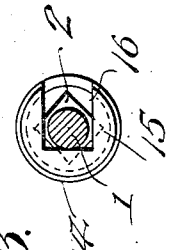


Fig. 3.



Witnesses

Geo. Ackmann Jr.

C. C. Hines.

Inventor

E. T. Murray

By

Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

EDWARD T. MURRAY, OF COLORADO SPRINGS, COLORADO.

BIT HOLDER AND EXTENDER.

No. 862,838. Specification of Letters Patent. Patented Aug. 6, 1907.

Application filed February 17, 1905. Serial No. 246,172.

To all whom it may concern:

Be it known that I, EDWARD T. MURRAY, a citizen of the United States, residing at Colorado Springs, in the county of El Paso and State of Colorado, have invented new and useful Improvements in Bit Holders and Extenders, of which the following is a specification.

This invention relates to a bit holder and extender, namely, a device whereby bits may be attached to and projected forward from a brace to permit a short bit to be used for operations ordinarily requiring long bits, the object of the invention being to provide a device of this character which may be readily packed with other tools in a tool bag or chest, which is simple of construction and admits of the convenient application and removal of the bit, and which is of such restricted cross-sectional size or diameter as to easily follow the bit into the bore, thereby enabling deep holes to be bored with an ordinary short bit.

With this and other objects in view, the invention consists of the features of construction, combination and arrangement of parts hereinafter fully described and claimed, reference being had to the accompanying drawings, in which:—

Figure 1 is a view in elevation of a bit holder and extender embodying my invention; Fig. 2 is a vertical longitudinal section of the same; Fig. 3 is a section on line 3—3 of Fig. 2 looking towards the chuck and showing the bit tang locked in the chuck; Fig. 4 is a view similar to Fig. 3 showing the bit in position to be released; and Fig. 5 is a cross section on the line 5—5 of Fig. 2.

Referring now more particularly to the drawings, the numeral 1 represents the shank of an ordinary bit and 2 its angular tapered tang.

The bit holder and extender comprises a shank 3 provided at one end with an angular tapered tang 4 adapted to engage the chuck of an ordinary brace, and having its opposite end enlarged to form a head 5 which is provided with a socket 6 to receive the tang 2 of the bit 1. The enlargement of the outer end of the shank 3 to form the head 5 causes the production of a shoulder 7, in rear of which is arranged an adjusting sleeve 8 which is free to revolve in a fixed plane about the shank 3 between said shoulder 7 and a collar 9, the latter being secured to the shank by means of a pin or equivalent fastening 10. The inner or upper end of the sleeve 8 is provided with milled portions 11 to enable it to be readily grasped and turned while the outer or lower end thereof is formed with external screw threads 12 to engage internal screw threads 13 on the inner end of a clamp 14 which is employed to hold the tang 2 seated in the socket 6.

The clamp 14 is in the form of a sleeve open at its inner end so that it may be applied to and removed from the extender over the head 5, and provided at its outer end with a clamping head 15 adapted to engage the base or large end of the tang 2. As shown, the head 15 is provided with a slot 16 extending transversely across the same from a point a little on one side of the center of the clamp to and through one side of the clamp, the said slot communicating at its outer end with a notch or recess 17 in the side wall of the clamping sleeve. In the side wall of the clamping sleeve above the notch 17 is formed a slot 18 which is provided at its inner end with an offset portion 19, thus forming in effect a keyhole slot which receives a pin or projection 20 extending from the head 5. By this construction clamping sleeve 14 is permitted to move longitudinally on the head 5 and to turn or rotate to a limited extent to vary the position of the slot 16 relative to the axis of the tool to effect a release of the tang 2 and the clamping of the same by head 15. As the adjusting sleeve 8, while free to rotate, is held from longitudinal movement between the shoulder 7 and collar 9, it will be seen that when this sleeve is turned in one direction or the other it will adjust the clamping sleeve 14 of the chuck longitudinally in and out on the head 5, which motion will be converted at the limit of the movement of said clamping sleeve into a partial rotary movement by the action of the pin 20 on the walls of the slot 18 and its offset 19.

Fig. 2 shows the tang 2 of the bit 1 seated in the socket 6 and held clamped therein by the head 15 of the chuck sleeve 14, in which operation the slot 16 occupies the position shown in Fig. 3, in which it will be seen that the walls of said slot extend at an angle to the sides of the tang and project below and across the points of the tang, thus holding the latter from outward movement. When the sleeve 8 is turned to force the clutch sleeve 14 outward on the head 5, however, the head 15 first moves out of contact with the base of the tang 2, and as the movement of the sleeve 14 continues the head 15 will be removed sufficiently from the end of the head 5 to permit the tang 2 to be withdrawn from the socket 6, at which time the pin 20 will have caused a rotary movement of the sleeve 14, thus bringing the slot 16 to the position shown in Fig. 4 in which the walls of said slot 16 lie in planes parallel with the sides of the tang 2 and outwardly beyond the same, thus permitting the bit 1 to be withdrawn through said slot. The purpose of the side slot or notch 17 is to facilitate removal of the tang 2 and avoid the necessity of adjusting the sleeve 14 outward to its fullest extent, said slot admitting of the tang 2 being disengaged before it is entirely withdrawn from the slot 6 by a movement of said tang laterally or at an angle to said slot, such movement being permitted by the reduced end of the tang being of less size than the outer end of the socket, whereby the tang may be easily withdrawn to detach the bit. To apply the bit it is simply necessary to adjust the clamping sleeve outwardly to the required extent, then to insert the bit through the slot 16 and into the socket 6, then to

turn the adjusting sleeve 8 to the right to slide the clamping sleeve 14 inward on the head 5, whereupon the latter will be adjusted longitudinally on said head and at the same time turned to clamp the tang in position, as shown in Fig. 3.

The construction of the parts employed by me is such as to permit of the chuck end of the holder and extender being made of such relatively small size that the extender may follow the bit into the bore cut thereby, thus enabling deep holes to be bored with an ordinary short bit.

It will be understood that in operation the bit to be used is clamped to the holder and extender, and the latter then applied by means of its tang 4 to the brace, thus projecting the bit forward of the brace a sufficient distance to perform the operation and form the length of bore desired. Preferably, the slot 16 is disposed eccentrically to the axis of the sleeve 14 in a direction transversely of its length, in order that one of the walls of the slot may project inwardly a greater distance than the other, so as to insure the engagement of the head 15 with the tang of a bit smaller than the standard size if such a bit happens to be used.

From the foregoing description, taken in connection with the accompanying drawings, the construction and mode of operation of the invention will be understood without a further extended description.

Changes in the form, proportions and minor details of construction may be made within the scope of the invention without departing from the spirit or sacrificing any of the advantages thereof.

Having thus described the invention, what is claimed as new, is:—

1. In a bit extender, the combination of a shank provided at one end with a head having a socket and forming at its point of junction with the shank a holder, a pin projecting from the head, a clamping sleeve surrounding the head and provided with a longitudinal slot receiving said pin and having a lateral offset, said sleeve being provided at its inner end with internal screw threads and at its outer end with a head formed with a slot extending transversely across the same from a point on one side of its center to and through its opposite side, said slot communicating with a notch in the side wall of the sleeve below said longitudinal slot, a collar on the shank, and an adjusting sleeve mounted on the shank between said collar and the stop shoulder formed by the head and provided at its outer end with internal threads engaging the threads of the sleeve, substantially as described.

2. An extension bit holder comprising a stem having an end socket and a guide pin, a sleeve slidable longitudinally on said socket having a partially closed free end with an opening communicating at one side of the sleeve with a longitudinal slot therein, connections between the sleeve and the stem being respectively a threaded engagement and one permitting rotary without longitudinal motion, the sleeve having a slot with a deflected portion engaging said pin whereby by the threaded engagement the sleeve may be forced longitudinally of the stem to move a tool head into the socket and by the pin and slot connection be turned to a tool holding position.

3. An extension bit holder comprising a stem having a socket to receive a bit tang, a bit clamping cap fitted on said socket and provided with an end and a side opening, an operating sleeve rotatable on the stem in a fixed plane and in adjustable connection with the cap to impart a longitudinal movement thereto, said connection being adapted to permit the cap to have rotary movement, and connecting means between the cap and socket, whereby the longitudinal movement of the cap produces a rotary movement thereof to move the cap in and out of clamping position.

4. An extension bit holder comprising a stem having a socket for the reception of a bit tang, a clamping cap fitted on the socket and having a partially closed outer end formed with an end and a side opening, an operating sleeve rotated in a fixed plane on the stem and having a threaded engagement with the cap to move said cap longitudinally on the socket and permit a rotary action thereof, and connecting means between the cap and socket, whereby the longitudinal movement of the cap produces a rotary movement thereof to adjust the cap in and out of clamping position.

5. In a tool holder, the combination of a stem having a socket for the reception of a tool tang, a clamping cap carried by the stem, said cap being provided at its outer end with a transverse slot and a side slot communicating therewith, connecting means between the stem and cap, whereby the cap is adapted to have a longitudinal and limited rotary movement on the stem to move it into and out of clamping position, and a rotary operating member on the stem having adjustable connection with the cap, whereby the latter may be longitudinally adjusted and permitted to rotate through the action of the described connection.

6. An extension bit holder comprising a stem having a bit receiving socket, a clamping cap having a longitudinal and rotary motion on the socket and provided with means operative upon reverse movements thereof to clamp and release a bit held in the socket, an operating device revolubly mounted on the stem and connected with the cap to effect a longitudinal movement thereof and permit rotation of the cap on each of its longitudinal movements, and a connection between the cap and socket, whereby the longitudinal movement of the cap produces a rotary movement thereof to adjust said cap into and out of clamping position.

In testimony whereof, I affix my signature in presence of two witnesses.

EDWARD T. MURRAY.

Witnesses:
GEO. MORRISON,
WALTER MURRAY.