E. W. BELL.

WELL DRILL SOCKET.

APPLICATION FILED JUNE 12, 1920.

1,390,750.

Patented Sept. 13, 1921.

2 SHEETS—SHEET 1.

Fig. 1.

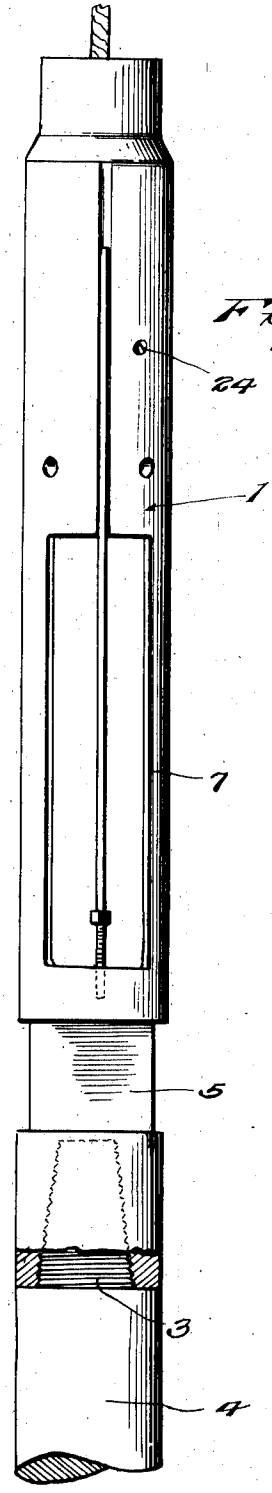


Fig. 2.

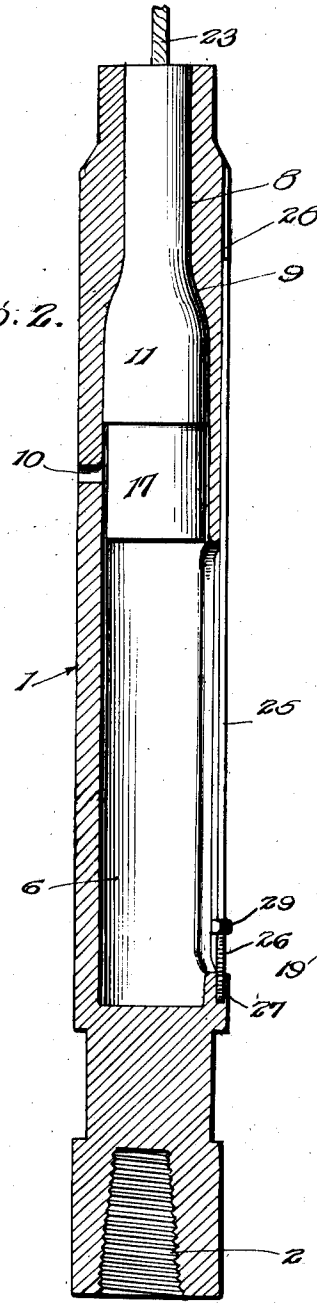
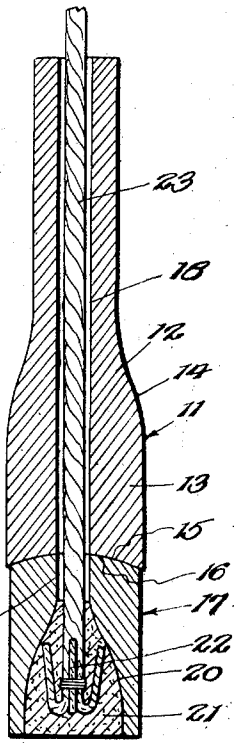


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

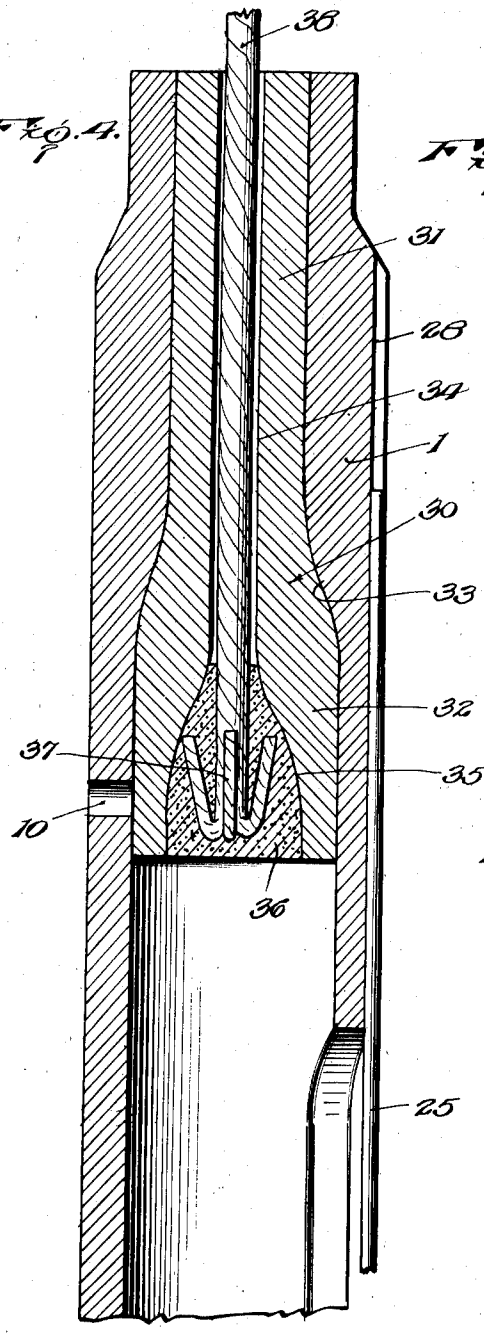
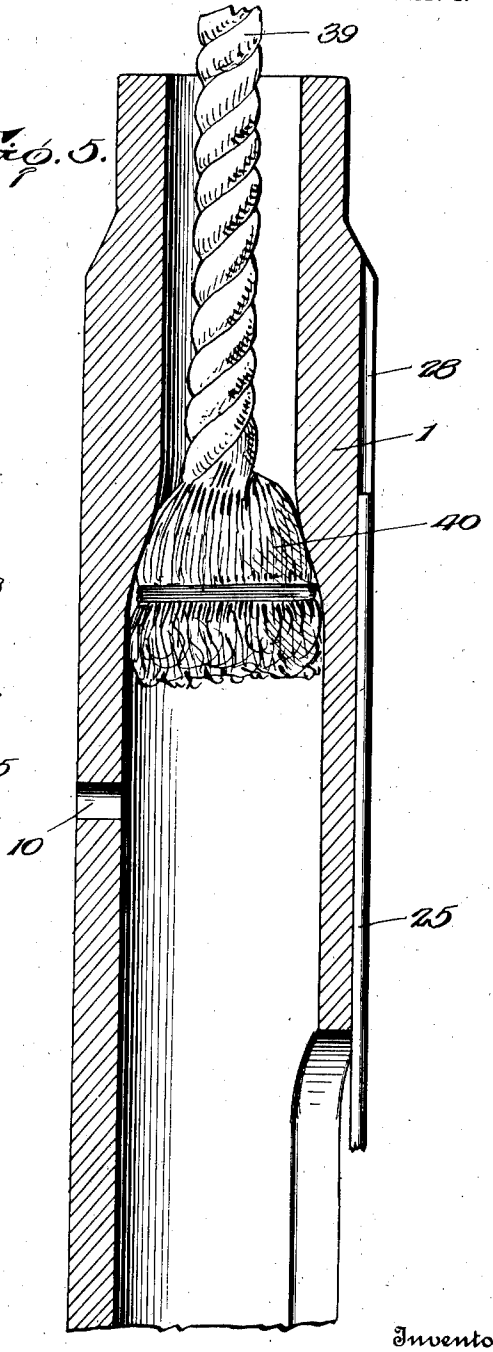


Fig. 5.



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UNITED STATES PATENT OFFICE.

EDGAR W. BELL, OF NEW WILSON, OKLAHOMA.

WELL-DRILL SOCKET.

1,390,750. Specification of Letters Patent. Patented Sept. 13, 1921.

Application filed June 12, 1920. Serial No. 388,437.

To all whom it may concern:

Be it known that I, EDGAR W. BELL, a citizen of the United States, residing at New Wilson, in the county of Carter and State of Oklahoma, have invented certain new and useful Improvements in Well-Drill Sockets, of which the following is a specification.

This invention relates to well drilling apparatus and more particularly to an improved drill socket and it is the primary object of the invention to provide a socket in connection with which either a Manila rope or a cable or what is known as a "stiff wire" may be selectively employed in different stages of the operation of drilling a well. It is customary to begin the drilling by the use of a Manila rope and after the drilling has progressed to a certain point a wire cable is substituted for the rope. Also it is desirable to provide, at times, a swivel connection between the cable and the socket. Therefore the present invention has as its object to provide a socket so constructed and equipped with attachments of such a nature that the single socket may be employed under all three of the conditions mentioned, and so that the change from one kind of connection to the other may be quickly and readily effected.

In the accompanying drawings:

Figure 1 is a side elevation of the socket embodying the present invention equipped with the swivel connection;

Fig. 2 is a vertical sectional view therethrough, the swivel connection being shown in elevation;

Fig. 3 is a detail vertical longitudinal sectional view through the swivel connection removed from the bore of the socket;

Fig. 4 is a detail vertical sectional view illustrating the socket arranged for use with a wire cable;

Fig. 5 is a similar view illustrating the socket employed in connection with a Manila rope.

The device embodying the present invention comprises a barrel which is indicated in general by the numeral 1 and which is formed in its lower end with a threaded socket 2 to receive the threaded upper end 3 of the drilling tool 4, the barrel immediately above its socketed lower end being exteriorly squared as at 5 to permit of the application of a wrench or any other tool whereby it may be rotated when required.

The barrel is formed in its upper portion with a bore which is indicated by the numeral 6, and with an opening 7 in one side which communicates with the bore and which extends longitudinally of the socket from a point adjacent the lower end of the bore to a point a suitable distance below the upper end of the socket. Above the upper end of the opening 7, the bore 6 is reduced in diameter as indicated by the numeral 8 so as to provide a shoulder 9 the purpose of which will presently be made clear. Also the wall of the barrel is formed with one or more openings 10 near the upper end of the bore and above the upper end of the opening 7 so that water may drain from the barrel in the event the bore and opening 7 become clogged.

Figs. 1, 2 and 3 of the drawings illustrate the device employed as a swivel socket and in order that the device may be so employed, I provide in connection with the barrel 1 the swivel connection shown in Figs. 2 and 3 of the drawings. This connection is indicated in general by the numeral 11 and comprises an upper member or stem 12 which has its lower portion increased in diameter as indicated by the numeral 13 so as to provide a shoulder 14. The lower end of the stem 12 is formed with a concave seat 15 to receive the convex or rounded upper end 16 of the other member of the connection which is indicated by the numeral 17 and which is of slightly less diameter than the enlarged lower end of the section 11. The section 11 is formed with a longitudinally axially extending bore 18, and the section 17 is formed with a similar bore 19 registering at its upper end with the lower end of the bore 18. The bore 19 is enlarged in the direction of its lower end to provide a flared recess 20 filled-in with molten lead or the like as indicated by the numeral 21 and anchoring the lower end 22 of a wire cable 23 which is connected with the walking beam of the drilling apparatus in the usual manner. In assembling the swivel connection with the barrel of the device, the said connection is inserted into the bore of the barrel through the opening 7 and moved to position seating within the upper portion of the said bore, the shoulder 14 of the connection seating against or within the shoulder 9 with the upper portion of the section 12 fitting into the reduced upper end 8 of the bore 6. Inasmuch as the cable 23 is securely anchored at its lower end in the section 17, it will be evi-

dent that the device may be rotated with relation to the cable and without imposing any torsional strain upon the cable due to the mutual engagement of the faces 15 and 16 of the said sections 12 and 17. In order to secure the section 12 against rotation, a set screw 24 is threaded through the wall of the bore below the seat 9 and may be adjusted to bind against the enlarged lower end portion 13 of the said section 12.

In order that the swivel connection may be prevented from loss through the opening 7 under conditions where such loss might otherwise occur, a guard member is provided comprising a rod 25 which is threaded at its lower end as at 26 and removably fitted into a threaded socket 27 formed in a boss upon the outer side of the barrel 1 at the lower end of the opening 7, the rod 25 extending vertically in front of this opening and seating at its upper end portion in a groove 28 formed in the said outer side of the barrel 1 above the opening 7. The rod 25 is provided with a polygonal enlargement 29 for the application of a wrench whereby it may be threaded into and out of the socket 27.

When it is desired to employ a wire cable and yet it is not desired to make use of the swivel connection shown in Figs. 2 and 3 of the drawings, a connection such as illustrated in Fig. 4 of the drawings may be employed. In this figure the numeral 30 indicates in general a sleeve-like member having a stem portion 31 designed to fit within the reduced upper end 8 of the bore 6 of the barrel 1, and a body portion 32 which is of greater diameter than the stem portion 31 and which defines a shoulder 33 to engage against the shoulder 9 as in the case of the section 12 of the swivel connection 11. The connection 30 is formed with a longitudinally extending bore 34 which is considerably increased in diameter at its lower end portion to form a recess 35 to receive a molten filling 36 of lead or the like in which filling is embedded the lower end 37 of a wire cable 38.

When the device embodying the invention is to be employed in connection with a Manila rope which is indicated by the numeral 39 in Fig. 5 of the drawings, the rope is opened and knotted at its lower end as at 40 in the usual manner, the knot 40 being of such dimensions as to crowd within the seat 9 of the barrel 1 when the rope is led upwardly through the reduced portion 8 of the bore of the barrel.

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

In a device of the class described, a barrel having means at one end for the attachment of a drill and formed with a bore opening through its other end and provided interiorly with a shoulder, the barrel being formed in its side with an opening communicating with its bore and located below the said shoulder, a cable coupling member insertible into the bore of the barrel through the said opening and having a shoulder to engage the shoulder of the bore, and means removably disposed within the opening and extending vertically longitudinally thereof to prevent loss of the said connecting member from the barrel through the opening, the said means comprising a rod having a threaded portion, and the said barrel at one end of the opening being provided with a threaded socket to receive the threaded portion of the rod.

In testimony whereof I affix my signature.

EDGAR W. BELL. [L. S.]