Sept. 7, 1926. 1,598,701

G. F. BELL

SWIVEL ROPE SOCKET

Filed March 22, 1926

Fig.1.

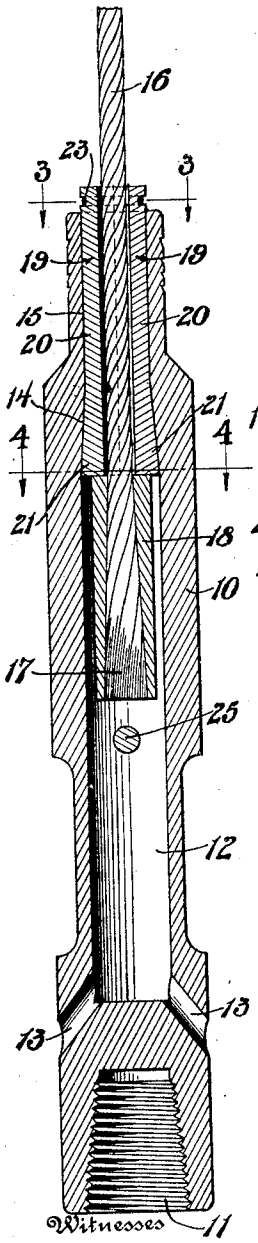


Fig.2.

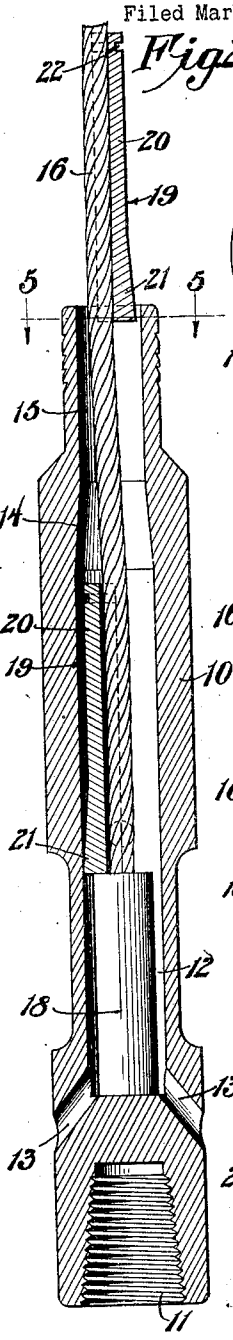


Fig.3.

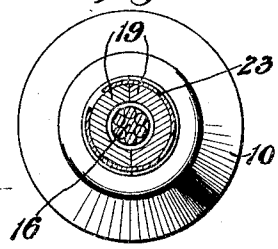


Fig.4.

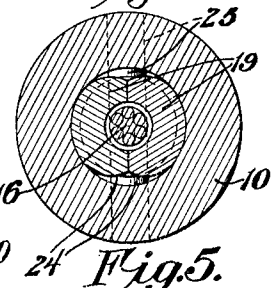


Fig.5.

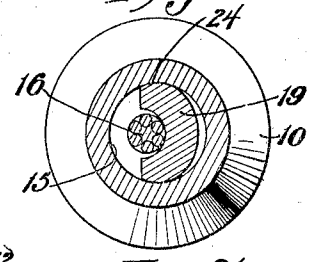


Fig.6.

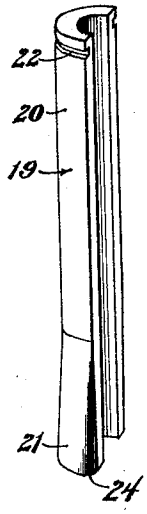


Fig.7.

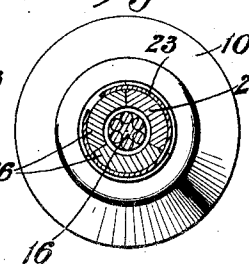
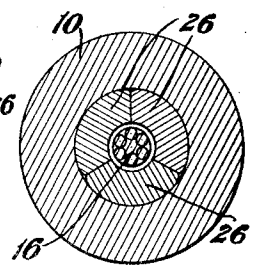


Fig.8.



Witnesses

Chas. L. McDonald

E. N. Lovewell

Inventor

George F. Bell

By

E. G. Siggers

Attorney

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UNITED STATES PATENT OFFICE.

GEORGE FRANCIS BELL, OF TULSA, OKLAHOMA.

SWIVEL ROPE SOCKET.

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This invention relates to a swivel rope socket, especially adapted to be used in well drilling operations for connecting the rope or cable to the drilling tools.

In carrying on operations of this kind, the rope rapidly becomes worn where it enters the swivel, so that it is necessary about every other day to withdraw the tools from the well, cut off the babbitted end of the rope, and make a new end. In order to do this, with the sockets now generally used, it is necessary to disconnect the tools and pull the end of the rope through the lower end of the socket. This involves a great deal of time, labor and expense, mud, water and drillings will get into the threads, and unless great care is exercised the threads will become mutilated, so that the tools will often become detached while drilling.

The object of the present invention, broadly stated, is to avoid the above mentioned difficulties by providing a practical construction so that the rope may be provided with a new end without disconnecting the tools from the socket, and more specifically to provide a socket in which the end of the rope with the swivel attached may be readily removed or inserted through the upper end of the socket.

The specific construction of the invention and the advantages resulting therefrom will be more fully explained in connection with the accompanying drawing illustrating the same.

In the drawing:—

Figure 1 is a central longitudinal section through the socket showing the same connected with the rope.

Figure 2 is a similar view illustrating the process of attaching the socket to the rope.

Figure 3 is a transverse section taken on the line 3—3 of Figure 1.

Figure 4 is a transverse section taken on the line 4—4 of Figure 1.

Figure 5 is a transverse section taken on the line 5—5 of Figure 2.

Figure 6 is a perspective view of one of the bushing sections.

Figure 7 is a view similar to Figure 3, but showing a modified bushing.

Figure 8 is a view similar to Figure 5, but showing the same form of bushing as that illustrated in Figure 7.

As illustrated in the drawing, the invention comprises a barrel or socket member 10, formed at its lower end with a tapered threaded recess 11 to which the tools are adapted to be connected. A cylindrical cavity 12 is formed within the socket member 10, and is closed at its lower end, except for wash out openings 13. The upper end of the cavity 12 merges into a tapered portion 14, and the upper portion 15, which extends to the upper end of the socket member, is also cylindrical, but of less diameter than the cylindrical portion 12.

The rope or cable 16 is spread at its lower end and babbitted in the usual manner, as shown at 17, within the swivel member 18. The outer surface of the swivel member 18 is cylindrical, and of approximately the same diameter as the cylindrical bore 15, so that it may be readily passed therethrough. The rope 16 above the swivel member 18 is adapted to be surrounded by a bushing which, in the form illustrated in Figures 1 to 6 inclusive, is made up of two equal sections 19. Each of these sections is made up of a cylindrical portion 20 with a flared lower end 21, and when the sections of the bushing are assembled, the flared lower portions 21 wedge into the tapered portion 14 of the socket cavity, while the cylindrical portions 20 fit within the bore 15, and extend upwardly somewhat beyond the end of the socket member, as shown in Figure 1. The bore through the bushing is of sufficient diameter to permit the rope 16 to slide freely therein. The upper ends of the bushing sections 19 are formed with a circumferential channel 22 adapted to receive a spring clip 23, which holds the sections of the bushing in assembled relation.

In connecting the rope with the socket member, the end of the rope is first inserted in the swivel member 18 and babbitted. The swivel member 18 is then inserted through the bore 15 into the cavity 12. The rope, where it passes through the bore 15, may then be deflected, first toward one side, and then toward the other to permit the insertion of the bushing sections 19 one by one as illustrated in Figure 2. The lower flared portions 21 of the bushing sections have their opposite edges rounded, as shown at 24, so that they will not be too wide to

pass through the bore 15. This also permits circulation of water through the cavity 12, so that the latter will be kept clean.

After the bushing sections have been inserted into the cavity 12, and rest upon the upper end of the swivel member 18, the latter is drawn upwardly, and the bushing is drawn into the position shown in Figure 1, and the clip 23 is applied. A pin 25 may then be inserted transversely of the socket, so as to prevent any possibility of the bushing sections from being jarred out of their seats.

Instead of making the bushing in two sections, it may be made in three sections, as indicated at 26 in Figures 7 and 8. In such case, the three sections are assembled by the same method as that used in case of a two-section bushing.

In order to disconnect the rope from the socket when it is necessary to make a new end, the socket is drawn up and suitably secured above the surface of the ground. The pin 25 may then be knocked out, and the rope lowered until the swivel member 18 rests upon the bottom of the socket 12. One of the sections of the bushing may then be easily driven down into the cavity 12, whereupon the rope may be deflected, so that the other bushing section may be easily withdrawn through the bore 15. The swivel 18 and the remaining bushing section are then raised until the latter may be grasped. The swivel member 18 is then lowered sufficiently so that the rope may be deflected, to permit the other section of the bushing to be withdrawn, leaving the bore clear for the withdrawal of the swivel member 18.

From the foregoing description, it will be seen that I have provided a swivel rope socket in which the swivel member may be easily taken out through the top of the socket for the purpose of making a new end on the rope, and yet, when the swivel is inserted in the socket and the bushing properly assembled, there is no chance for the socket to become detached. By using this socket, therefore, it is never necessary to disconnect the same from the tools for the purpose of making a new end on the rope.

While I have herein shown and described what is at present deemed the preferred form of the invention, it is to be understood that the construction and arrangement may be considerably modified within the scope of what is claimed without any material departure from the salient features of the invention.

What is claimed is:—

1. In a swivel rope socket, the combination of a socket member having a cylindrical cavity merging into a bore of smaller diameter extending to the upper end of said member, a swivel member adapted to be secured to the end of a rope and small enough in diameter to permit it to be inserted through the bore into the cavity, and means for positively preventing the withdrawal of the swivel member while drilling, but permitting rotational movement of the socket member with respect to the rope and swivel member, said means being removable through the upper end of the bore when desired, to permit the swivel member to be taken out.

2. In a swivel rope socket, the combination of a socket member having a cylindrical cavity merging into a bore of smaller diameter extending to the upper end of said member, a swivel member insertable from the upper end of the socket member through the bore into said cavity, and means also insertable and removable through the upper end of the socket and normally preventing the withdrawal of the swivel member, said means when inserted leaving sufficient space for a rope to be connected to the swivel member.

3. In a swivel rope socket, the combination of a socket member having a cylindrical cavity therein and provided at its lower end with means for attaching drilling tools, a swivel member insertable in the upper end of the socket member, and means also insertable and removable through the upper end of the socket and normally preventing the withdrawal of the swivel member, said means when inserted leaving sufficient space for a rope to be connected to the swivel member.

4. In a swivel rope socket, the combination of a socket member having a cylindrical cavity with a taper at its upper end merging into a bore of smaller diameter, a swivel member adapted to be attached to the end of a rope and small enough to be inserted through the bore into the cavity, and a bushing for the rope made up of sections separately insertable through said bore, said sections being flared at their lower ends so that when the bushing is assembled its lower end will fit said taper and become wedged therein when engaged by the swivel member.

5. In a swivel rope socket, the combination of a socket member having a cylindrical cavity with a taper at its upper end merging into a bore of smaller diameter, a swivel member adapted to be attached to the end of a rope and small enough to be inserted through the bore into the cavity, and a bushing for the rope fitting within the bore and having its lower end flared to fit said taper, said bushing being long enough so that its upper end normally projects above the socket member, said projecting upper end being formed with a circumferential channel for receiving a spring clip to hold the sections together.

6. In a swivel rope socket, the combination of a socket member having a cylindri-

cal cavity with a taper at its upper end merging into a bore of smaller diameter, a swivel member adapted to be attached to the end of a rope and small enough to be inserted through the bore into the cavity, and a bushing for the rope fitting with the bore and having its lower end flared to fit said taper, the edges of the flared portions being rounded to reduce the greatest transverse dimensions of the sections sufficiently to permit the sections to be individually withdrawn or inserted through said bore.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature.

GEORGE FRANCIS BELL.