June 1, 1926. 1,586,920

P. A. SCHMUCK

SWIVEL ROPE SOCKET

Filed May 14, 1925

Fig.1.

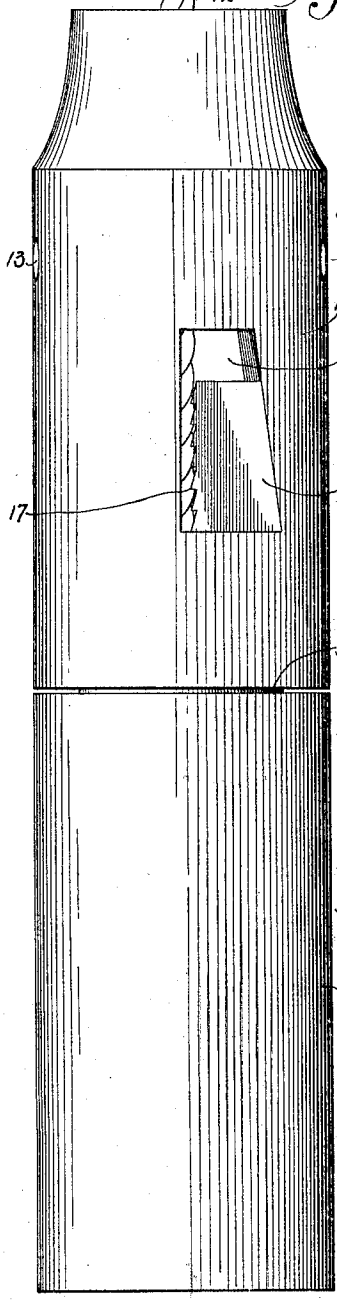


Fig.2.

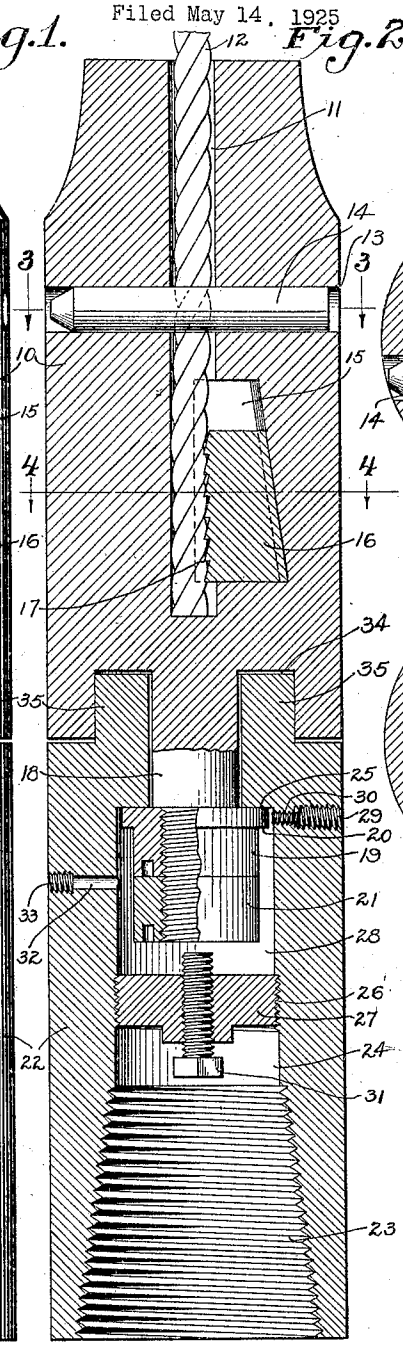


Fig.3.

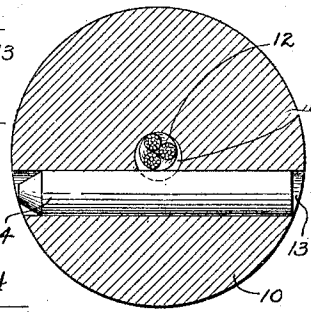


Fig.4.

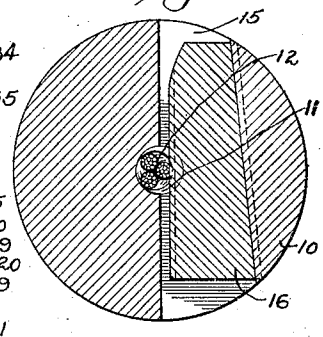
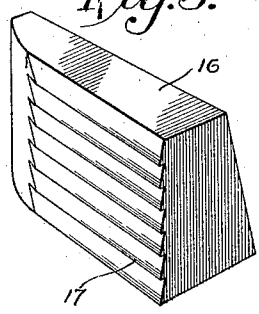


Fig.5.



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UNITED STATES PATENT OFFICE.

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SWIVEL ROPE SOCKET.

Application filed May 14, 1925. Serial No. 30,391.

This invention relates to a swivel rope socket adapted particularly for use in connection with the drilling and operation of oil wells and the like.

One of the important objects of the invention is to provide a rope socket to which a drill or other tool may be attached, and which will permit a free swiveling movement of the tool, but may be easily changed to a non-swivel socket when desired. It contains a swivel box which is normally filled with grease, so that no foreign matter can get into it, and means for receiving and securing the end of the rope or cable, which is entirely above and independent of the swiveled member, the latter forming an integral part of the pin box to which the tool is secured.

The objects and advantages of the invention will be more fully explained in connection with the following detailed description, which is to be read in connection with the accompanying drawing illustrating the preferred embodiment thereof.

In the drawing:

Figure 1 is a side elevation of the invention.

Figure 2 is a central vertical section thereof.

Figure 3 is a horizontal section taken on the line 3—3 of Figure 2.

Figure 4 is a horizontal section taken on the line 4—4 of Figure 2.

Figure 5 is a detail perspective view of the wedge used for clamping the rope or cable.

The device, which constitutes the subject matter of the invention, comprises an upper socket member 10 having a central bore 11, extending from its upper end through the greater portion of its length, and adapted to receive the lower end of the rope or cable 12. A transverse bore 13 extends through the upper part of the member 10 a little to one side of its center, and receives a plug 14 which is adapted to frictionally engage the cable 12 after the latter has been inserted in the bore 11. Below the bore 13, a channel 15 extends from side to side of the member 10 in a plane substantially at right angles to the plane of the bore 14, and at one side of the longitudinal axis of the socket member. The upper and lower faces of this channel are substantially at right angles to the bore 11, while the depth of the channel diminishes from the lower to the upper wall thereof, and from one side of the member 10 to the other side. A wedge 16 is shaped to correspond to the channel 15, that is, it is substantially in the shape of a prism tapering from the bottom face toward its top face, and from one end to the other, as best shown in Figure 5. The inner face of the wedge is formed with downwardly inclined serrations 17 adapted to engage and clamp the lower portion of the cable 12. The wedge 16 may be driven into the lower part of the channel 15 to clamp the cable, and an upward pull of the latter will tend to draw the wedge upwardly in the channel and tighten its clamping action on the cable.

The lower end of the member 10 is formed centrally with a downwardly projecting neck 18, which is threaded to receive an internally threaded head 19, which may be screwed thereon by means of a socket or spanner wrench, and subsequently welded or secured by means of a lock nut 21.

The lower member 22 of the swivel socket is formed with the usual tapered threaded pin box 23, from the upper end of which extends a longitudinal bore 24. The upper end of the bore through the member 22 is reduced, so as to swivel on the neck 18, and to rest upon the shoulder 25 formed by the flanged upper end 20 of the head 19. The lower portion of the bore 24 is formed with internal threads 26 adapted to receive a removable plug 27, which thus forms a closure for a cylindrical swivel box 28 adapted to contain grease.

During the drilling operation, the drill is supported from the pin box 23 formed in the lower end of the member 22, and the latter is swiveled on the neck 18 so as to turn freely. Inasmuch as the socket often pounds against the side of the well hole and subjects the neck to a very considerable strain, it is desirable to increase the bearing surface by forming an annular recess 34 in the lower end of the member 10 surrounding the neck 18 and to form the upper end of the member 22 with an annular projection 35 to fit into this recess. This not only provides a stronger bearing and reduces the strain resulting from the vibration, but also is more effective in preventing dirt or other foreign matter from getting into the bearing.

Under certain conditions, it is desirable that the member 22 should be locked to the member 10, and for this purpose it is pre-

ferred to use two set screws 29 and 30, which are mounted in a hole tapped through the side of the member 22 opposite the flange 20 of the head 19. One of these screws has a right hand thread and the other a left hand thread, and they may be set so as to clamp the lower member 22 to the head 19, and thereby secure a non-swivel connection. A set screw 31 is threaded into the plug 27, and may be engaged with the lower end of the neck 18 to assist in locking the swivel when the drill stem is removed.

The swivel box 28 may be packed with grease, which may be supplied through a hole 32 by means of a grease gun. A suitable plug 33 may be provided for normally closing the hole. By this means the swivel is always kept well lubricated, and will turn freely except when it is converted into a non-swiveling socket by means of the set screws 30 and 31.

It will be noted that the cable 12 is rigidly connected to the socket member 10, and is completely separated from the swivel neck 18 to which the swivel member 22 is connected. The swivel box 28 is completely closed and packed with grease, so that no foreign matter can get in, and the upper end of the swivel box, which is supported on the shoulder 25, is integrally connected to the pin box 23, thus forming a substantial and durable socket.

While I have shown and described in detail the form of the invention, which is at present preferred, it is, of course, obvious that various modifications may be made therein without sacrificing any of the salient features of the invention. It is my intention, therefore, to include all such modifications within the scope of what is claimed.

What is claimed is:

1. A swivel socket comprising an upper member provided with means for clamping a cable to its upper end, a neck extending from the lower end of said upper member, a head removably secured to said neck, a lower member swiveled on said neck and supported by and completely surrounding said head, a pin box at the lower end of said lower member and forming an integral part thereof, and a removable plug between the pin box and the cavity receiving said head to permit the latter to be removed.

2. A swivel socket comprising an upper member having a cylindrical portion with a central bore extending into its upper end but terminating short of its lower end, means for clamping a cable in said bore, a neck extending from the lower end of said upper member and formed integral therewith, a head removably secured to said neck, a lower member swiveled on said neck and supported by said head and having the same outside diameter as the upper member, said lower member having a bore with an enlarged lower portion through which the head may be inserted, and a removable plug forming a closure for the lower end of the bore in the lower member, thereby forming an enclosed space for said head.

3. A swivel socket comprising an upper member having an annular channel in its lower end, a downwardly projecting neck inside of said channel having a head secured to its lower end, a lower member having a bore receiving said head, an annular projection on the upper end of the lower member fitting in said annular channel, an internal shoulder formed in said bore and resting on said head to support the lower member, and a closure for the lower part of the bore and forming an enclosed space for said head.

4. A swivel socket comprising an upper member with a cylindrical portion having an annular channel in its lower end, a downwardly projecting neck inside of said channel and having a head secured to its lower end, a lower substantially cylindrical member of the same outside diameter as the upper member and having a bore receiving said head, an annular projection on the upper end of the lower member fitting in said annular channel, an internal shoulder formed in said bore and resting on said head to support the lower member, a closure for the lower part of the bore and forming an enclosed space for said head, means for clamping the lower member to said head to prevent relative rotation of the two members, and a pin box formed integral with said lower member.

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

P. AUGUST SCHMUCK.