

March 15, 1927.

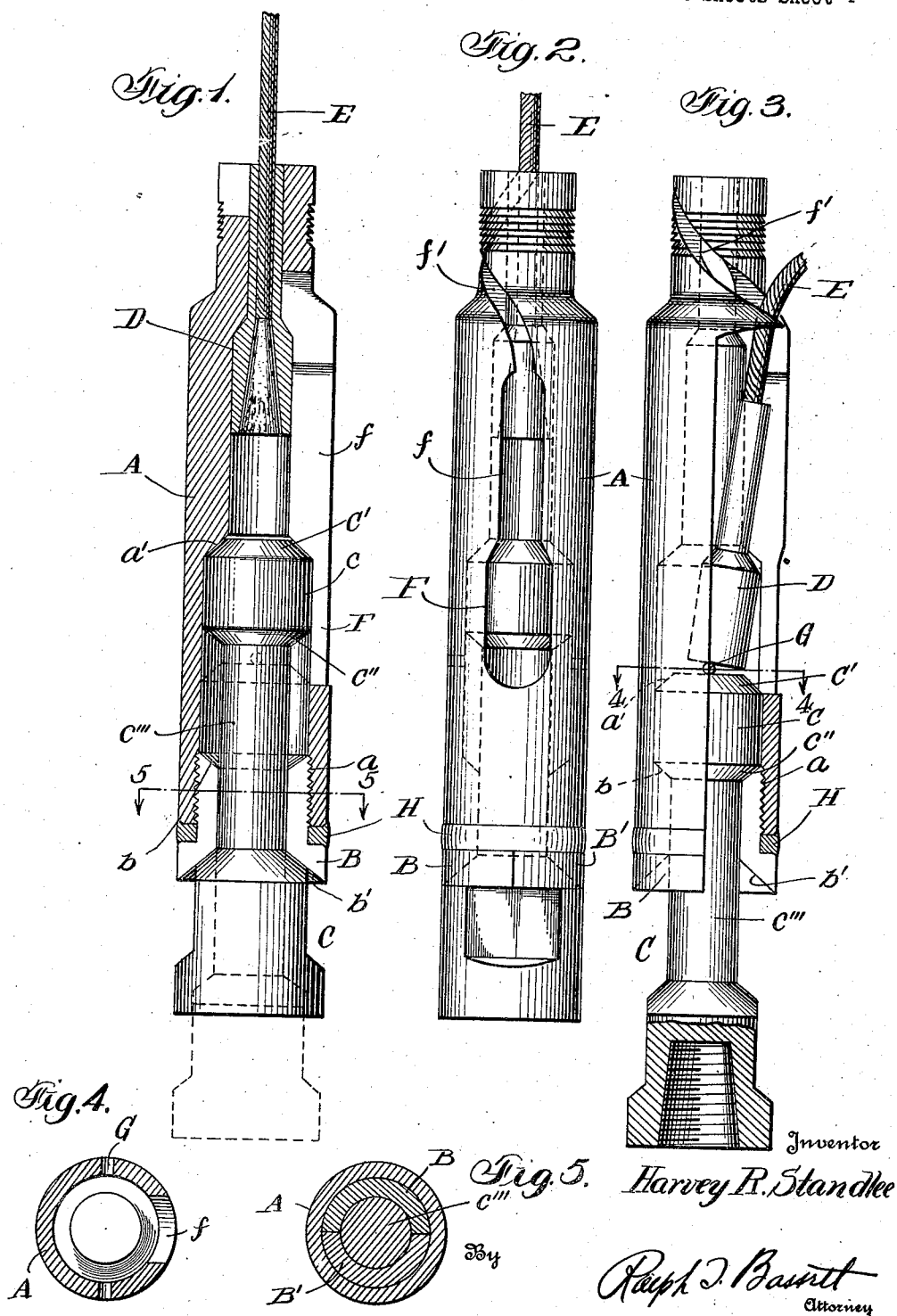
H. R. STANDLEE

1,620,985

COMBINED SOCKET AND JAR

Filed Oct. 21, 1924

2 Sheets-Sheet 1



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Fig. 6.

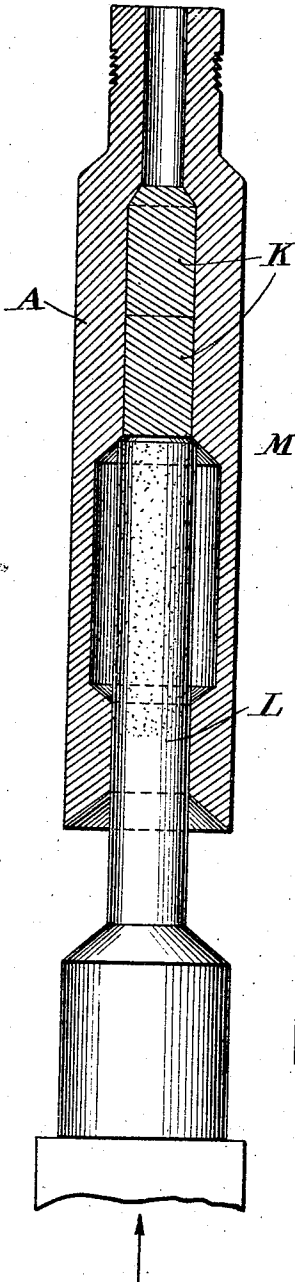


Fig. 7.

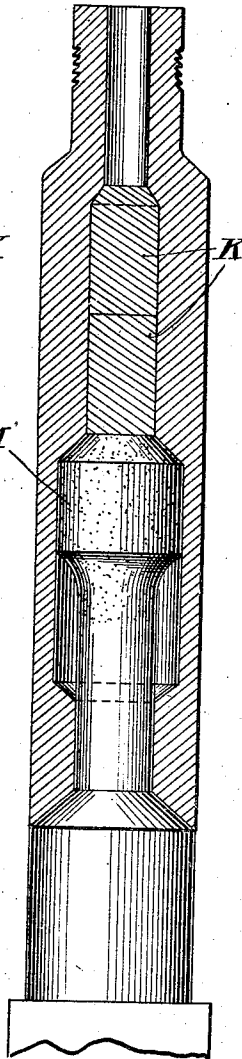
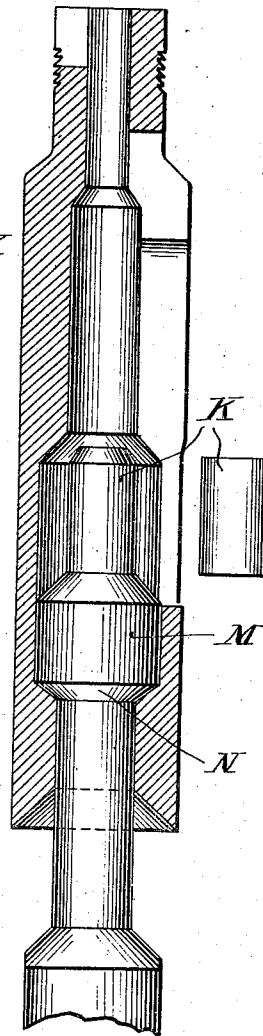


Fig. 8.



Inventor
Harvey R. Standlee.

By

Ralph J. Bassett

Attorney

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UNITED STATES PATENT OFFICE.

HARVEY R. STANDLEE, OF TULSA, OKLAHOMA, ASSIGNOR TO PAUL ARBON & COMPANY, OF TULSA, OKLAHOMA, A CORPORATION.

COMBINED SOCKET AND JAR.

Application filed October 21, 1924. Serial No. 744,910.

This invention contemplates improvements in sockets particularly of the jar type, common in deep well drilling, and the primary object consists in providing means to facilitate the application and removal of the cable and also to provide for securing the cable swivel against lateral displacement through the opening provided therefor.

More specifically the present invention provides a spiral lateral passage for the cable whereby the lateral movement of the latter from the central bore is prevented except upon a flexing and swinging movement, and then only when the head of the tool carrying jar is locked at its lower position.

Another important feature resides in the means for preventing the upward movement of the jar member during the removal of the swivel and the securing of the jar in the bore of the socket body.

Still another object of the present invention consists in the formation of an integral head on the upper extremity of the jar member within a closed jar chamber by the application of heat and subsequent shaping of the metal.

Other features will hereinafter more clearly appear by reference to the accompanying specification and claims, taken in conjunction with the annexed drawings wherein,

Fig. 1 is a vertical sectional view through the socket body and swivel, the jar member being in elevation.

Fig. 2 is a front elevation showing the part in position with the jar elevated as in Fig. 1 to close the swivel opening.

Fig. 3 is a side elevation with parts broken away in section, and the swivel and cable in partially removed position.

Fig. 4 is a section on line 4—4 of Fig. 3.

Fig. 5 is a section on line 5—5 of Fig. 1.

Fig. 6 is a vertical section showing the jar member in position to be shaped.

Fig. 7 is a similar view after the shaping of the jar member, and

Fig. 8 is another view showing the removal of the shaping blocks.

Referring now to Fig. 1, the socket body A is formed with a longitudinal bore, and from this bore the lateral opening extends. The inner wall of the socket body, as defined by the bore, is threaded at its lower end at *a* to receive the block sections B, B', which retain the combined jar and tool

socket or box in position. The longitudinal central bore is reduced at substantially its intermediate point to form the inclined annular shoulder *a'*, and a chamber for the swivel D which carries the cable E.

The lateral opening heretofore mentioned which communicates with the central bore includes an enlarged lower portion F arranged to communicate with the larger lower portion of the central bore and is of such dimension as to permit the passage of the enlarged lower end of the swivel D. The reduced portion *f* of the lateral passage extends vertically and is adapted to accommodate the stem of the swivel and terminates at the upper end of the reduced lateral spiral passage or slot *f'*. This spiral passage *f'* extends from the upper end of the passage *f* spirally to a point substantially diametrically opposite at the upper extremity of the socket body, and is designed to permit by proper manipulation the removal of the cable E which is fixed to the swivel D.

The tool box C which likewise includes the jar member consists of the enlarged head portion *c* formed with upper beveled annular face *c'* and lower beveled annular face *c''*, rounded, elongated shank *c'''*, and conventional tool box or socket at the lower extremity.

For retaining the jar and tool carrier in position, the present invention embodies two methods. The first method shown in Figs. 1, 2, 3, 4 and 5, includes the use of the slip externally threaded nipple B, B' constructed for engagement with the internal threads at the lower extremity of the central bore of the socket body. The nipple B, B' is formed with upper inwardly beveled annular face *b* and lower inclined annular face *b'* to accommodate the corresponding faces of the cooperating elements. The upper face *b* being adapted to seat the tapered face *c''* of the head *c* and the lower face *b'* permitting the snug engagement of the corresponding face of the tool socket, whereby a positive jarring action is obtained.

Attention is directed to the pin G, shown in Fig. 3 extending through suitable perforations at a point in the wall of the socket body immediately above the jar head when in its lower position. This arrangement is essential to prevent the closing of the enlarged portion F of the lateral passage by the upward movement of the head, during

the removal of the swivel. In this figure, the pin is shown in position and the swivel D and its vertical shank together with the cable E is shown in partially removed position.

A welded connection is shown at H between the nipples B, B' and the socket body to retain these parts in their relative position.

In Figs. 6, 7 and 8, my second method of forming and inserting the jar member is illustrated. In these figures the reduced portion of the central bore in the shell A is filled with suitable hard metal blocks K and the upper extremity L of the jar which is in shank form is inserted at a proper heat for working. The head M shown in Figs. 7 and 8, is then formed by pressure or hammer. The shaping of the lower face of the head is performed by machine through the lateral opening and this opening also permits the removal of the blocks K after the formation of the head.

What I claim as new and desire to secure by Letters Patent is:—

1. In a socket, a body member formed with a longitudinal bore and a lateral opening being of spiral formation at its upper end and shaped to accommodate passage of a swivel therethrough at its lower end, and a jar member arranged for longitudinal movement in the bore of said body.

2. In combination with a socket having a longitudinal bore reduced at its upper portion, a cable swivel arranged in the reduced portion of said bore, a lateral opening formed with a swivel shaped lower portion and a spiral upper portion communicating with the bore to permit the removal of said cable and a jar member arranged for movement within said bore.

3. In combination with a socket having a longitudinal bore having a reduced portion at its upper extremity, a cable swivel arranged in the reduced portion of said bore formed with an enlarged lower portion, a lateral opening communicating with the central bore shaped to accommodate the passage of the swivel and terminating in a reduced spiral slot, and a jar member arranged in said central bore for vertical reciprocating movement and adapted in one position to close the enlarged lower portion of the lateral passage.

4. In combination with a socket formed with a longitudinal bore having a reduced upper portion, a cable swivel arranged in the reduced portion of said bore and formed with an enlarged lower portion, a lateral

opening communicating with the central bore shaped to accommodate the passage of the swivel and terminating at its upper end in a spiral slot, a jar member, and means for retaining said jar member within the lower portion of the central bore.

5. In combination with a socket formed with a longitudinal bore having a reduced upper portion, a cable swivel arranged in the reduced portion of said bore and formed with an enlarged lower portion, a lateral opening communicating with the central bore shaped to accommodate the passage of the swivel and terminating at its upper end in a spiral slot, a jar member arranged for vertical movement in the longitudinal bore of said socket to close the enlarged portion of the lateral opening, and means for retaining said jar below said enlarged slot portion.

6. In combination with a socket formed with a longitudinal bore having a reduced upper portion, a cable swivel arranged in the reduced portion of said bore and formed with an enlarged lower portion, a lateral opening communicating with the central bore shaped to accommodate the passage of the swivel and terminating at its upper end in a spiral slot, a jar member arranged for vertical movement in the longitudinal bore of said socket to close the enlarged portion of the lateral opening, means for retaining said jar below the enlarged lateral opening, and means for retaining the jar within said bore.

7. In a socket, the combination of a body member formed with a longitudinal central bore reduced at two spaced points to form annular shoulders and chambers of varying diameter, a swivel member arranged in the upper chamber, a jar member arranged in the lower chamber and extending below the latter, a tool carrier formed with said jar member, a lateral passage shaped to conform to the shape of the swivel member communicating with said bore and extending from a point adjacent the upper portion of the jar when in its lower position to the upper extremity of said socket, the upper portion of said lateral passage being reduced in diameter to correspond to the diameter of the cable and being of spiral formation, a sectional nipple in threaded engagement with the interior of the socket and enclosing the shank portion of said jar, and means for fixing the nipple with relation to the socket.

In testimony whereof I affix my signature.

HARVEY R. STANDLEE.