P. C. SPEER.

SLIP SOCKET.

APPLICATION FILED NOV. 15, 1909.

991,176. Patented May 2, 1911.

FIG. 1.

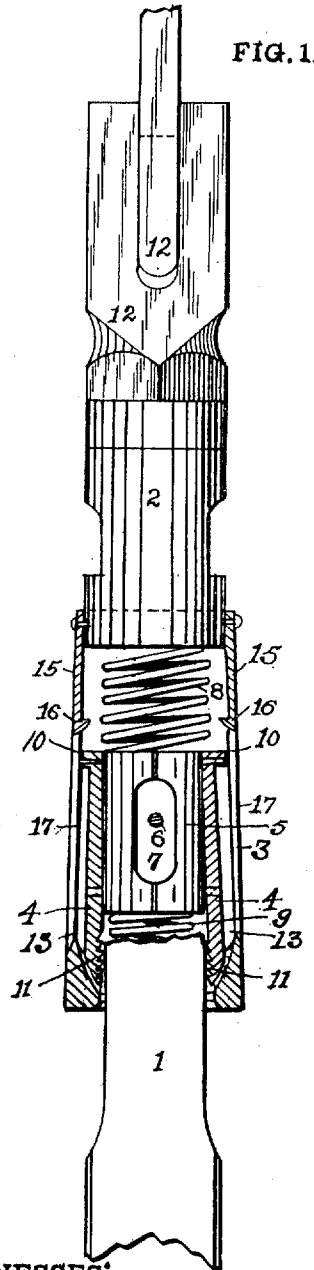


FIG. 3

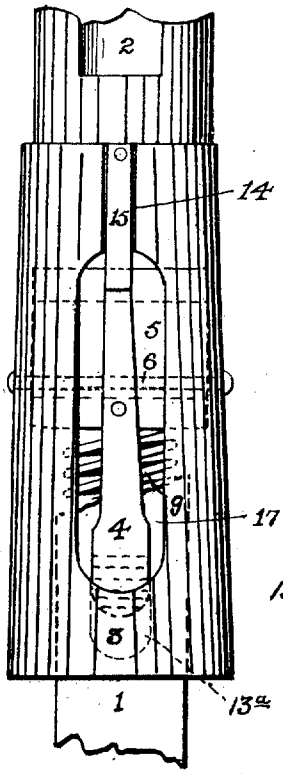
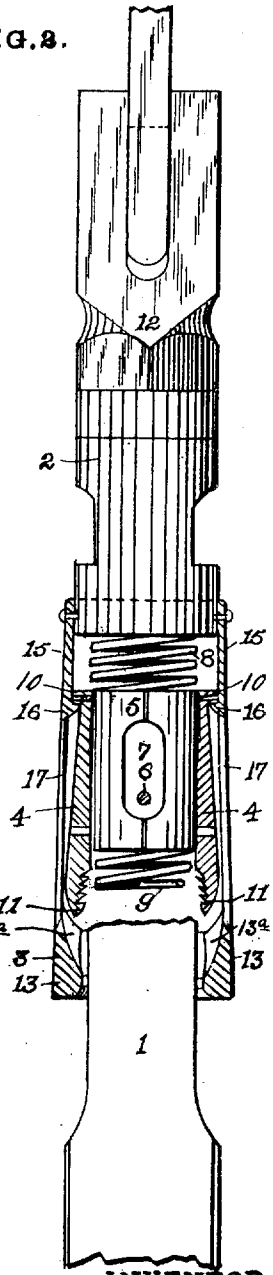


FIG. 2.



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SLIP-SOCKET.

991,176. Specification of Letters Patent. Patented May 2, 1911.

Application filed November 15, 1909. Serial No. 528,054.

To all whom it may concern:

Be it known that I, PRESTON C. SPEER, a citizen of the United States, and residing in the township of Hovey, in the county of Armstrong and State of Pennsylvania, have invented or discovered new and useful Improvements in Slip-Sockets, of which the following is a specification.

My invention consists in certain new and useful improvements in slip sockets used in fishing for tools stuck in oil, gas or Artesian wells. When the drill or other tool becomes broken from the string, it must be removed or the well abandoned as a "plugged hole." To obtain a grip on the stuck tool a slip socket is lowered into the hole over the end of the tool which is seized thereby by means of the "slip" carried by the socket. The "jars" are then operated to exert an upwardly jarring motion on the socket and the result is usually the dislodgment of the tool and its removal from the well. Sometimes, however, this operation is not successful, and it is then desirable to disengage the socket from the tool so that the former may be withdrawn. Frequently the socket cannot be readily disengaged from the tool and a jarring motion is resorted to which frequently results in fracturing the socket and leaving a portion of the same or its slips in the well. The socket is then worthless unless the damage can be repaired. As slip sockets are expensive, this results in great cost.

My invention consists in providing the socket with means which, by the exertion of a downward jar on the socket, release the slips from their engagement with the tool and hold them in their inoperative position while the socket is being withdrawn. The socket may thus be released from the tool and withdrawn from the well without injury and can therefore be used over and over again without the need of repairs.

In the accompanying drawings, Figure 1 is a side elevation showing the slip socket engaging a stuck tool, the means for holding the slips in their inoperative position being shown inoperative and the socket bowl being shown broken away for the sake of clearness; Fig. 2 is a similar view showing the slips held in their inoperative position, while Fig. 3 is a side elevation on a large scale, taken at right angles to the other figures, showing the bowl and also showing the slips in their inoperative position.

The following is a detailed description of the drawings.

1 is a tool supposed to be stuck in a well, and 2 is the head of the socket by which the socket is suspended from the string.

3 is the cylindrical bowl, secured to, or integral with, and depending from the head 2.

4—4 are the slips mounted in bowl 3 on block 5 which is slidably mounted in said bowl by means of a pin 6 passing through a longitudinal slot 7 in said block and having its ends secured in the wall of said bowl. The block 5 is preferably made in two parts for ease of assembling in the bowl, said parts being secured together by any convenient means, not shown.

8 is a coiled spring interposed between block 5 and the head 2 to normally hold the slips 4—4 in their lowest position, and 9 is a second spring secured to block 5 so as to be interposed between said block and the end of tool 1 when the socket is in use, thus tending to throw the slips upward when they are released. These springs also aid in softening the blows.

10—10 are shoulders on the upper ends of slips 4—4 adapted to be engaged by the releasing means to be described. The lower ends of slips 4—4 are provided with downwardly and outwardly tapered inner faces which are provided with gripping teeth 11—11 adapted to securely grip the end of tool 1.

12—12 are the "jars" interposed in the string, preferably just above the socket so that an upward or downward jar may be exerted on the tool as desired.

The lower portion of bowl 3 is preferably of less inner diameter than the remainder thereof, as at 13, the lower edge thereof being preferably beveled as at 3^a so as to pass easily over the end of tool 1 and in said portion 13 are a pair of beveled slip seats 13^a—13^a in which the slips 4—4 seat when in their operative position, as shown in Fig. 1, the upper portion of their toothed faces extending out from said seats to firmly grip the tool 1.

In the socket I provide two vertical slots 14—14 extending downwardly from the top of the bowl in which are seated the spring fingers 15—15 provided with inwardly ex-

tending hooked ends 16—16, having their lower faces beveled, which engage the shoulders 10—10 of slips 4—4 and hold said slips in their inoperative position.

The sides of the bowl 3 are cut away as at 17—17 to provide for access to the mechanism contained in the bowl and to assist in assembling the parts.

The operation of the device is as follows: The socket is lowered down the well until the socket telescopes down over the end of tool 1, and, owing to the action of spring 8, the slips seated in seats 13^a—13^a engage the end of said tool. An upward jarring motion is now applied to the socket, thus drawing the bowl 3 upwardly as relates to the slips 4—4 thus, by the beveled shape of seats 13^a—13^a, forcing the slips 4—4 into snug contact with the tool. This jarring action is continued until the tool 1 is loosened or it is discovered that the tool cannot be loosened in this way. Sometimes a single downward jar will loosen the socket from tool but frequently, unless my releasing means are provided, it is necessary to jar the socket until it gives away by breaking or the slips are worn out or torn off before the socket can be released, usually leaving a portion of the socket in the well and sometimes producing a "plugged hole" or, in other words, a well that must be abandoned. This is obviated by the use of my improved releasing means. When it is desired to release the socket from the tool, in the use of my improved socket, I exert a downward jar on the socket thus forcing the head 2 and bowl 3 downwardly against the spring 8, the block 5 and the slips 4—4 mounted thereon remaining in their first position. This movement of the bowl 3 moves the seats 13^a—13^a below the ends of slips 4—4 removing the wedging action which forces the slips against the tool 1. The spring fingers 15—15, descending with the bowl and head, snap over the shoulders 10—10 of slips 4—4 with their hooked ends 16—16, holding the slips 4—4 in their elevated, inoperative position within bowl 3 and permitting the socket to be drawn up out of the well. To set the socket again for use, the spring fingers are disengaged from the slips thus permitting the spring 8 to throw the block 5 and the slips 4—4 down into their normal position.

It is evident that my improved socket may be readily removed from the well without injury so that it can be used repeatedly without repairs. The additional cost of my improved socket, over the old form is trivial while the saving is very substantial.

Although, for the sake of clearness, I have minutely described the embodiment of my invention shown in the drawings, I do not wish to limit myself thereby but claim broadly:—

1. In a slip socket, the combination of a bowl, a longitudinally slotted block slidably mounted in said bowl, a pin passing through the slot in said block and secured to the walls of said bowl, a pair of slips mounted on said block and adapted to be forced into engagement with the end of the tool by means of an upward jar and to be disengaged therefrom by a downward jar, and depending fingers mounted on said socket and adapted to be forced down into engagement with said slips by a downward jar to hold them in their inoperative position, substantially as described.

2. In a slip socket, the combination of a bowl, a longitudinally slotted block slidably mounted in said bowl, a pin passing through the slot in said block and secured to the walls of said bowl, a pair of slips mounted on said block and adapted to be clamped into engagement with the tool by an upward jar and to be released therefrom by a downward jar, and depending fingers mounted on the socket and adapted to be forced down into engagement with said slips by a downward jar to hold the same in their inoperative position, substantially as described.

3. In a slip socket, the combination of a bowl, a two-part block provided with a longitudinal slot slidably mounted in said bowl, a pin passing through the slot in said block and secured to the walls of said bowl, a pair of slips mounted on said block and adapted to be clamped into engagement with the tool by an upward jar and to be released therefrom by a downward jar, and depending fingers mounted on said socket and adapted to be forced down over the exterior of said slips into engagement therewith by a downward jar to hold them in their inoperative position, substantially as described.

Signed at Pittsburg, Pa., this 12th day of November, 1909.

PRESTON C. SPEER.

Witnesses:
ADAH M. MANN,
EDWARD A. LAWRENCE.