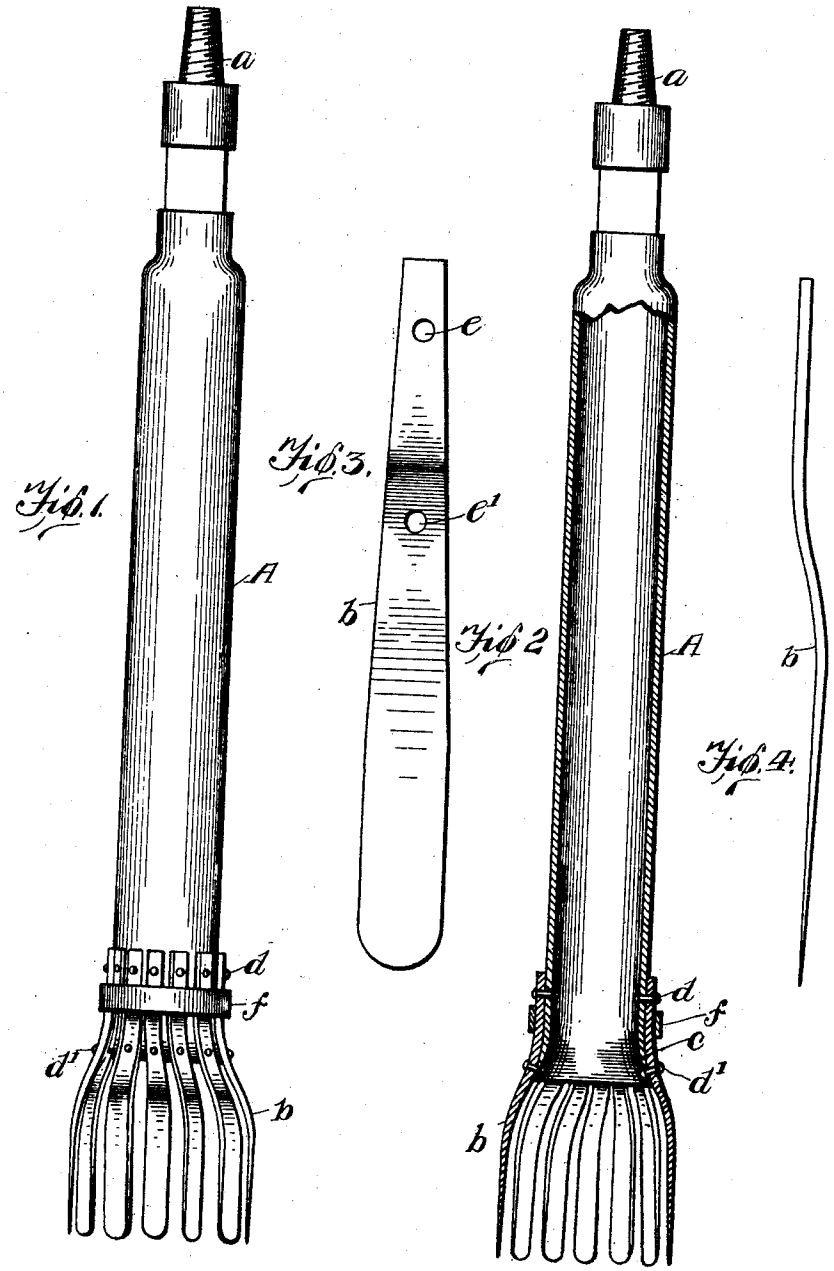
No. 826,550.

PATENTED JULY 24, 1906.

E. S. W. DROUGHT.

DEVICE FOR GRAPPLING LOST TOOLS IN DRILL WELLS.

APPLICATION FILED OCT. 2, 1905.



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DEVICE FOR GRAPPLING LOST TOOLS IN DRILL-WELLS.

No. 826,550. Specification of Letters Patent. Patented July 24, 1906.

Application filed October 2, 1905. Serial No. 281,023.

To all whom it may concern:

Be it known that I, EDWARD S. W. DROUGHT, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented new and useful Improvements in Devices for Grappling Lost Tools in Drill-Wells, of which the following is a specification.

My invention relates to improvements in devices for grappling lost tools in drill-wells, and for this purpose consists of the combination and arrangement of parts hereinafter set forth and claimed.

In the accompanying drawings, which form a part of the specification, Figure 1 represents a side view of a device embodying my invention. Fig. 2 represents a vertical section of the same, and Figs. 3 and 4 are respectively face and edge views of one of the plate-springs.

Similar letters indicate like parts in the several figures of the drawings.

A designates a horn socket or tube having at its upper end a thread-stem *a*, to which a suitable rod can be attached for operating it.

The lower end of the socket-piece is expanded and tapered, as shown at *c*, so that when the plate-springs *b* are secured thereto there are no shoulders on the inner face or wall to contact with the tool to prevent its ready entrance therein. The plate-springs, which compose a mouthpiece, are formed of spring metal and are of the form shown in Figs. 2 and 3—broader at their lower ends than at their upper and tapering in thickness from the top down to their lower ends. They are also curved intermediate of their ends, being somewhat bell-shaped. The said springs encircle the lower end of the socket-piece and are secured thereto at intervals by two rows of rivets *d* and *d'*, which pass, respectively, through the openings *e* and *e'* in said springs, the upper opening, *e*, being in the upper straight part of the spring, while the latter opening, or *e'*, is in the curved or bell portion of the spring. It will be noticed that owing to the bell or curved formation of the spring the lower edges of the same, which normally are separated, form a circle of greater diameter than the lower edge of the socket-piece and are adapted when in use to be in contact with the wall of the well in which it is operated, so as to guide it to the outer face of the lost tool, so as to inclose it. Encircling the springs and bearing on the bell portion thereof and between the two rows of rivets is a metallic band *f*, which assists in holding the upper ends of the springs in place.

The manner of operating the device is easily understood. When lowered in the well, the lower ends of the springs being guided on the side walls of the well readily pass behind or outside of the lost tool, which as the device is lowered enters the mouthpiece and the lower end of the socket and is gripped by the lower ends of the springs, so that it can be readily drawn from the well.

Having described my invention, what I desire to claim and secure by Letters Patent is—

1. A device of the character described consisting of a socket-piece having secured thereto at its lower end, and encircling the same a series of plate-springs, each tapering in width being broader at the bottom than at the top, and of greater thickness at the top than at the bottom, and each being of curved or bell shape intermediate its ends, substantially as described.

2. A device of the character described, consisting of a socket-piece with an expanded and beveled lower end, and a mouthpiece formed of separated plate-springs fastened at their upper ends to the outer side of said socket-piece, and free at their lower ends, said mouthpiece at its lower end being of greater diameter than the lower end of said socket-piece, said parts being combined substantially as described.

3. A device for the purpose set forth comprising a socket-piece and a mouthpiece, the latter consisting of separate plate-springs secured at their upper ends by rivets to the outer lower end of said socket-piece, and having free lower ends, the said parts being combined substantially as described.

4. A device for the purpose set forth, comprising a socket-piece with a threaded upper end, a mouthpiece, consisting of separate plate-springs secured at their upper ends to said socket-piece and having free lower ends, and a metal band encircling the upper ends of said springs; the lower end of said mouthpiece being of greater diameter than the lower end of said socket-piece.

5. A device for the purpose set forth, consisting of a socket-piece with a threaded up-

per end, and an expanded and beveled lower end; a mouthpiece consisting of plate-springs secured at their upper ends to said socket-piece, and having free lower ends and curved intermediate portions; and a band encircling said springs; said parts being combined substantially as described.

In testimony whereof I affix my signature in presence of two subscribing witnesses.

EDWARD S. W. DROUGHT.

Witnesses:
SIMON B. WALLACE,
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