

C. M. HEETER.
FISHING TOOL.
APPLICATION FILED FEB. 14, 1907.

1,051,225.

Patented Jan. 21, 1913.

2 SHEETS-SHEET 1.

Fig. 1.

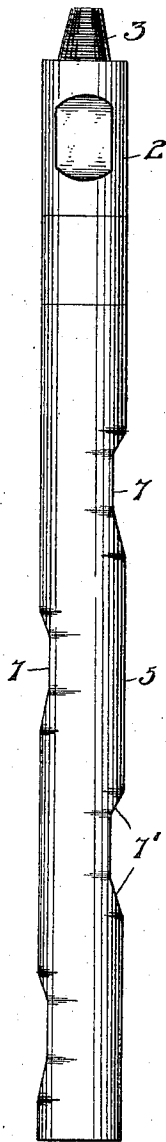


Fig. 2.

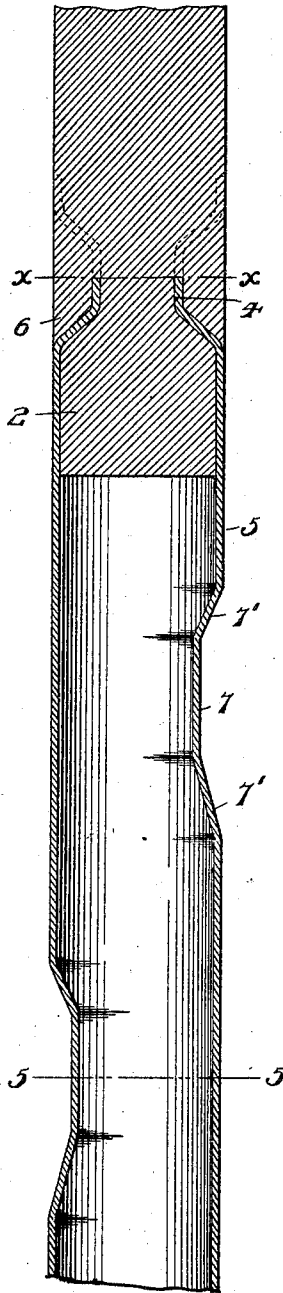


Fig. 3.

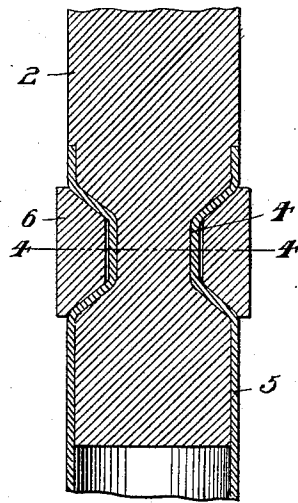


Fig. 4.

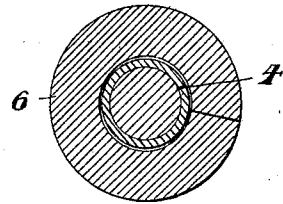
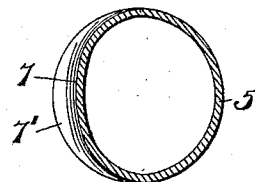


Fig. 5.



Witnesses:

J. O. Appleman,
Albert R. R. R.

Inventor

C. M. Heeter,

By J. W. Vossler, Atty.

C. M. HEETER.
FISHING TOOL.

APPLICATION FILED FEB. 14, 1907.

1,051,225.

Patented Jan. 21, 1913.

2 SHEETS-SHEET 2.

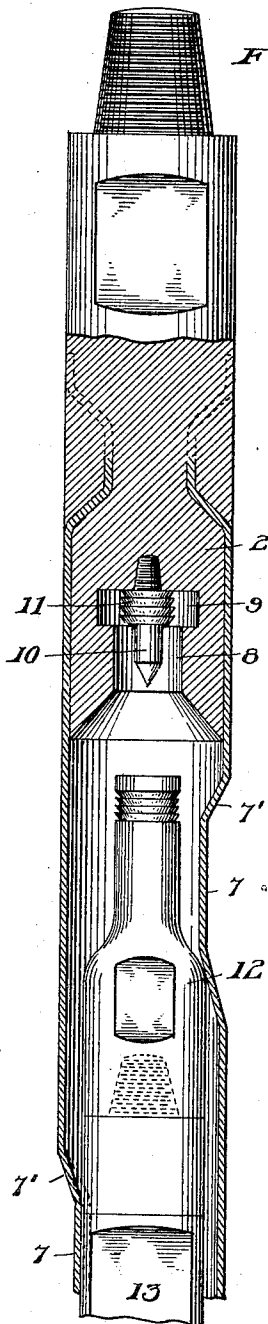


Fig. 6.

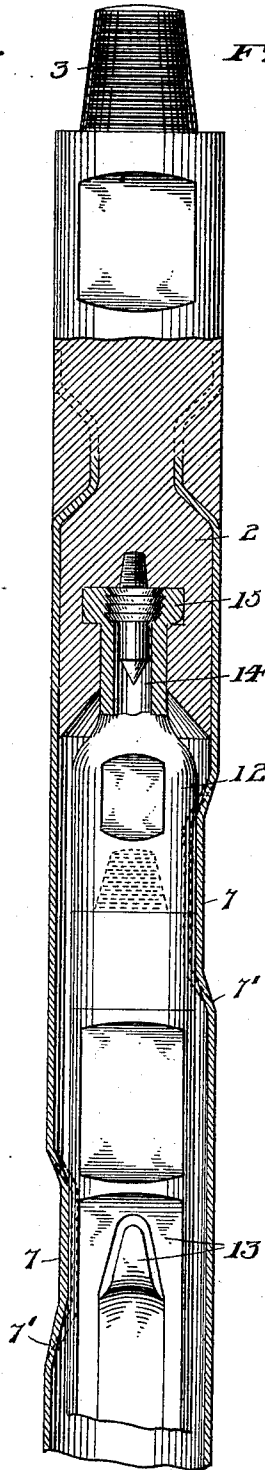
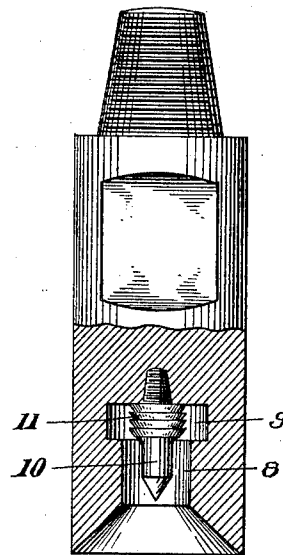


Fig. 7.

Fig. 8.



Witnesses:

J. B. Appleman,
Walter A. Richard

Inventor
C. M. Heeter,
By J. M. Vailbit
Att'y

UNITED STATES PATENT OFFICE.

CHARLES M. HEETER, OF BUTLER, PENNSYLVANIA.

FISHING-TOOL.

1,051,225.

Specification of Letters Patent.

Patented Jan. 21, 1913.

Application filed February 14, 1907. Serial No. 357,317.

To all whom it may concern:

Be it known that I, CHARLES M. HEETER, residing at Butler, in the county of Butler and State of Pennsylvania, have invented certain new and useful Improvements in Fishing-Tools, of which the following is a specification.

This invention relates to a device for recovering rope sockets, jars, and other drilling tools from deep wells, and consists primarily of a socket adapted to be driven down over the tool and obtain such a firm hold thereon as to permit of its withdrawal from the well.

One object of the invention is to so form the socket as to obtain an effective friction-hold on the tool to be recovered.

A further object is to so connect the socket and its operating stem as to preclude the separation of said parts under the great strains to which the tool is subjected.

Still a further object is to provide a tool which is designed especially for the recovery of rope sockets, being adapted for use either with or without the friction-hold socket.

In the accompanying drawings, Figure 1 is a side elevation of the improved tool which I term a friction socket, and Fig. 2 is a vertical sectional view of a portion of the same on a larger scale. Fig. 3 is a sectional view of the joint between the socket and stem members of the tool before the welding operation. Fig. 4 is a cross sectional view taken on lines 4—4 of Fig. 3, and Fig. 5 is a similar view on lines 5—5 of Fig. 2. Fig. 6 is a vertical sectional view of the friction socket device constructed for removing a rope socket and any tools that may be connected thereto, and Fig. 7 is a similar view showing the hold obtained on a rope socket by the tool. Fig. 8 is a view of the rope socket remover without the friction socket.

Referring to the drawings, 2 designates the stem of the tool which is of conventional well-tool form, having the usual threaded extension 3 for connecting with an operating member. Stem 2 is formed between its ends with an encircling rounded or curved depression 4, and when assembling the parts of the tool, the friction socket member 5 is fitted over and around the lower portion of the stem and bent inward in such manner as to fit depression 4, the upper extremity of the socket preferably extending slightly above the depression, as shown. A collar 6 is then fitted around the depression

in the socket, holding the latter firmly in depression 4 of the stem, maintaining the depression and preventing that portion of the socket from straightening out and separating from the stem under torsional strain. The upper portion of the stem, the upper extremity of the socket, and the upper portion of sleeve 6, down to about line 4—4 of Fig. 3 is then subjected to a welding heat, after which the parts thus heated are welded together so as to make the united parts substantially integral above line X—X of Fig. 2. In Fig. 3 I have shown the parts as assembled and before being welded, while in Fig. 2 the same are shown as welded together, the portions welded to the stem being indicated by dotted lines. By uniting the parts in this way I secure a substantially integral joint which, in strength, much more than overcomes the thinning of the metal incident to the welding operation. Beneath the weld the thickness of the socket is not affected, and its embracing union with the recessed and curved portion of the stem is not impaired. Thus the mechanical union due to a joint of this character is taken advantage of, while by welding the upper portion of the connection the parts are securely held against any stripping or separating tendency.

Socket 5 is open at its lower end so as to pass down over a rope socket, jars, or other tool to be recovered, and is formed with indentations or insets 7 which are inclined or tapered at the ends as indicated at 7' where they merge into the normal diameter of the socket, thus readily slipping over the tool. These indentations are preferably formed in diametrically opposite portions of the socket, and are located in alternate relations rather than opposite each other. When the socket is lowered, indentations 7 retard its downward passage over the tool, and make it necessary to drive or force the socket thereover, this being accomplished either by the weight of the tubing or other mechanism used for operating the socket, or by utilizing a suitable appliance for driving the socket downward. When it is forced over the tool, indentations 7 spring outward as shown in Fig. 7 (their normal position being indicated in dotted lines in said figure), thereby securing a very tight friction-hold on the tool which in ordinary cases is sufficient to loosen and withdraw the latter. As thus constructed, the socket is adapted for

embracing tools of various kinds, particularly the socket and jars located at the upper end of the string.

For augmenting the hold of the friction socket on a rope socket, the lower extremity of stem 2 may be formed with the beveled upward recess 8, laterally enlarged at its upper end at 9. Depending from the upper face of enlargement 9 and into recess 8 is mandrel 10, tapered or pointed at its lower end, and coincident with recess enlargement 9 formed with serrations 11. The friction socket is driven over the rope socket 12 and jars 13 secured thereto, Figs. 6 and 7, causing mandrel 10 to enter the downwardly extending rope cavity 14 in socket 12, and then by jarring stem 2, the upper extremity of socket 12 is upset and flared laterally in recess enlargement 9, as indicated at 15. By this means a securing interlocking connection is formed between the rope socket and the rope, and the latter may be subjected to a very strong pull or jar without danger of disconnecting it from the tool being recovered.

While the means here shown for interlocking with the upper extremity of a rope socket may be advantageously used in connection with the friction socket 5, the latter may be omitted, as shown in Fig. 8, and when so omitted the tool becomes simply a special device for recovering rope sockets.

The method herein disclosed of uniting the stem and socket portions of a well tool or like device is claimed in an application filed September 24, 1909, Serial No. 579,331.

I claim:

1. A well tool comprising a stem having a depression, a tool-embracing socket open at its ends and fitting around the stem and depending therefrom, the socket being indented into the stem depression, and means for holding the socket thus indented.

2. A well tool comprising a stem having an annular depression, a tool-embracing socket open at its end and depending from the stem and fitting therearound and indented annularly to fit the stem depression, and a collar encircling the indented portion of the socket.

3. A well tool comprising a stem formed with an annular depression, a socket depending from the stem and fitting therearound and indented into said depression, and a collar encircling the indented portion of the socket, a portion of the collar and parts of the socket and stem being welded together.

4. A well tool comprising a stem formed with an encircling depression, the depression being rounded or curved at its lower portion where it merges into the normal diameter of the stem, a socket depending from

the stem and embracing the same and indented into the stem depression so as to closely fit the rounded portion thereof, and a collar encircling the indented portion of the socket, the upper portion of the collar and the corresponding portions of the socket and stem being welded together.

5. A well tool comprising a stem having a depression, a socket fitting around the stem and indented into the stem depression, the parts being secured by welding.

6. A well tool comprising a stem having a depression, a socket fitting around the stem and indented into the stem depression, the parts being secured by a weld extending part way the length of the stem and socket depressions.

7. A well tool comprising a stem having a depression, a socket fitting around the stem and indented into the stem depression, a collar extending around and entered in the socket depression, the collar socket and stem being united by welding.

8. A well tool comprising a stem having a depression, a socket fitting around the stem and indented into the stem depression, a collar extending around and entered in the socket depression, the collar socket and stem being united by a weld extending a portion of the length of the stem and socket depressions and a portion of the collar.

9. A well tool comprising a stem having an upward depression in its lower end, the upper or inner portion of the depression being enlarged, a downwardly extending mandrel in said depression, and a tool-embracing socket depending from the stem.

10. A well tool comprising a stem having an upwardly extending depression in its lower end with the inner or upper portion of the depression enlarged, and a mandrel depending into the depression from the top wall thereof, the mandrel formed with serrations in the plane of the depression-enlargement.

11. A well tool comprising a stem having an upwardly extending depression in its lower end with the inner or upper portion of the depression enlarged, and a mandrel depending into the depression from the top wall thereof, and the lower portion of the mandrel extending into the unenlarged portion of the depression with the portion of the mandrel in the plane of the depression-enlargement serrated for the purpose described.

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

CHARLES M. HEETER.

Witnesses:

ALEX. S. MARON,
J. M. NESBIT.