Oct. 19, 1926. 1,603,848

J. P. HENSLER

FISHING TOOL

Filed Jan. 4, 1926

Fig. 1.

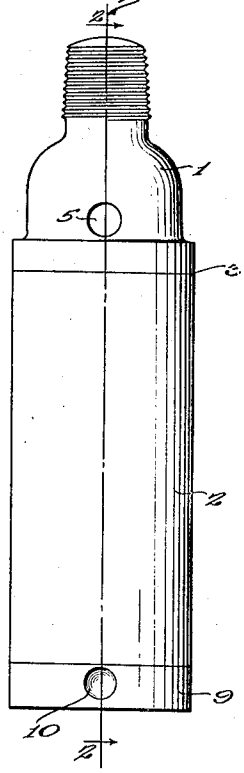


Fig. 2.

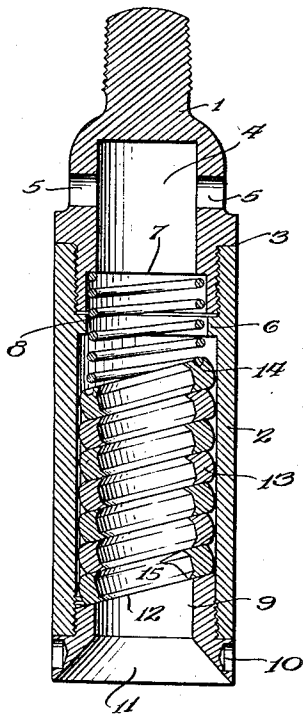


Fig. 3.

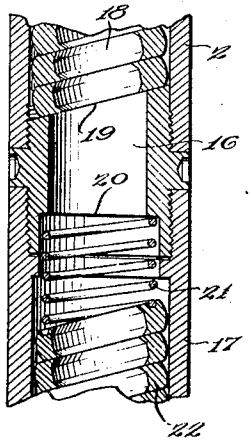
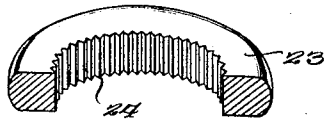


Fig. 4.



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UNITED STATES PATENT OFFICE.

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FISHING TOOL.

Application filed January 4, 1926. Serial No. 79,198.

This invention is a fishing tool for use in deep wells to recover pipes, rods or like articles which may have been lost therein. The object of the invention is to provide a device which may be easily lowered in the well and which will upon contact with the object ride easily over the end thereof and guide it into engagement with gripping elements whereby when the tool is withdrawn the pipe or rod will be also lifted from the well. The invention is illustrated in the accompanying drawing and will be hereinafter fully set forth.

In the drawing:

Figure 1 is an elevation of my improved fishing tool;

Fig. 2 is a longitudinal section of the same on the line 2—2 of Fig. 1;

Fig. 3 is a detail section showing a second form of the invention, and

Fig. 4 is a detail showing another form of gripper.

In carrying out the invention, I employ a cap or head 1 which is suitably constructed to be attached to a casing or other lowering element whereby the tool may be permitted to descend within the well, and the lower end of this cap or head is threaded into a cylindrical casing 2 of such diameter that it will lie flush with the external surface of the cap, as shown at 3. The cap or head is provided with a socket or chamber 4 in its lower end and with radial openings 5 leading through its sides and communicating with said chamber so that liquid which may be in the well will be permitted to escape and thereby flow around the tool to avoid clogging of its descent. The casing 2 is preferably provided with an internal annular rib or shoulder 6 which limits the extent to which the threaded extremity of the cap or head may be forced into the casing, and above the lower extremity of the cap or head an annular shoulder 7 is formed therein to serve as a stop or abutment for the upper end of an expansion spring 8, as shown in Fig. 2. The lower end of the casing 2 receives a lower cap or ferrule 9 which fits within the casing and is provided with sockets 10 in its external surface whereby it may be engaged with a turning tool so as to be turned home within the casing. The lower end of the bore of this ferrule is flared, as shown at 11, so that when it encounters the end of a pipe or rod it may ride easily over the same and guide it into the upper cylindrical portion of the bore in an obvious manner. The upper end of the ferrule is cut or shaped upon an oblique line, as indicated at 12, and between the said upper end of the ferrule and the spring 8 a plurality of gripping rings 13 are housed within the casing so that they will be held to the ferrule by the spring and may be canted within the housing, as clearly shown in Fig. 2. The upper and lower surfaces of these rings or gripping elements are smooth and parallel and the uppermost ring is provided with an annular groove 14 in its upper side in which the lower end of the spring 8 may seat so that the proper engagement between the spring and the ring will be effected. The inner peripheries of the rings are dished or concaved in cross section so that the upper and lower edges of each ring are somewhat sharpened and constitute teeth projecting inwardly toward the centers or axes of the respective rings, as will be understood upon reference to Fig. 2.

In operation, the tool is lowered in the well, and is preferably of such diameter that it will fit close to the walls of the well in order to avoid dropping at the side of the lost object instead of riding over the end of the same. When the ferrule 9 engages the upper end of the lost pipe or rod, the said end will be guided into the central bore of the ferrule and will readily pass therethrough, coming into contact with the lower portion of the ring 13 resting thereon so that the ring will be shifted to a position following the diameter of the casing 2. In this position, the pipe or rod may easily ride upwardly through the several rings so that the tool may be lowered over the pipe or rod to any desired degree limited only by impact of the end of the object with the upper end of the chamber 4 in the head or cap 1. The tool is then lifted and the upward movement imparted thereto will relieve the engagement between the gripper rings 13 and the engaged pipe or rod to such an extent that the spring 8 may expand and return the gripping rings to the canted position illustrated in the drawing, whereupon the teeth or end edges of the several rings will bind against the pipe and grasp it with sufficient strength to hold it while the tool is withdrawn from the well. The device is exceedingly simple and may

be constructed at a slight expense. It will automatically engage the object and, when the object is engaged, will securely hold it so that it will be retained until the mouth of the well is reached, whereupon it may be easily withdrawn from the tool by the application of slight manual force.

In Fig. 3, I have illustrated a further development of the invention in which a coupling tube 16 is engaged in the lower end of the casing 2 so as to connect the same with a second casing 17 which may have a larger internal diameter. Gripping rings 18, corresponding in all respects to the gripping rings 13, are fitted within the casing 2 above the coupling 16, and the upper end of this coupling has an obliquely disposed surface, as shown at 19. The lower end of the coupling 16 provides an annular shoulder or abutment 20 for a spring 21 which acts upon a second series of gripping rings 22 housed within the lower casing 17 and supported by a ferrule as in the first described form. The internal diameter of the rings 22 is somewhat larger than the diameter of the rings 18, this arrangement being intended for use where the diameter of the lost object is not known. With this embodiment of the invention, if the diameter of the object in the well is such that it will be gripped by the lower rings, it will not enter the upper gripping rings but if the diameter of the object should be so small that it will not act upon the lower gripping rings it will ride upwardly within the tool until it encounters the upper rings, whereupon it will be gripped by the latter in the same manner as the rings 13 will grip an object.

In Fig. 4, I have illustrated a gripping ring 23 which has vertical teeth 24 formed upon its inner periphery. This form of ring will operate in the same manner as the form of grippers shown in Figs. 2 and 3 but the vertically disposed teeth are better adapted to grip an object of hard metal than the structure shown in the first described forms.

Having thus described the invention, I claim:

1. A fishing tool for wells comprising a casing to be lowered in a well, and a plurality of gripping elements supported within the casing for rocking movement whereby upon downward movement of the tool they may ride over an object to be withdrawn and upon upward movement of the tool will grip such object so as to retain the same.

2. A fishing tool for wells comprising a casing to be lowered in the well, a guide at the lower end of the casing to engage an object to be withdrawn and direct the same into the casing, a gripping element supported within the casing by the inner end of said guide for rocking movement whereby to ride downwardly over a tool and grip the same upon upward movement, and yieldable means within the housing for holding said gripping element to the guide.

3. A fishing tool for wells comprising a casing to be lowered in the well, a ferrule secured in the lower end of the casing and having a flared lower end and having a canted surface upon its upper end, a gripping ring within the casing resting upon the canted upper end of the ferrule, and a spring housed within the casing and bearing upon the gripping ring to hold it to the ferrule and permitting rocking movement thereof.

4. A fishing tool for wells comprising a casing to be lowered in the well, a ferrule secured in the lower end of the casing and having a flared lower end and having a canted upper end, a plurality of gripping rings supported within the casing by the canted upper end of the ferrule, said rings having object-engaging teeth on their inner peripheries and the uppermost ring having an annular groove in its upper side, and an expansion spring housed within the casing and having its lower end seating in the annular groove of the uppermost ring.

In testimony whereof I affix my signature.

JULIUS P. HENSLER. [L. S.]