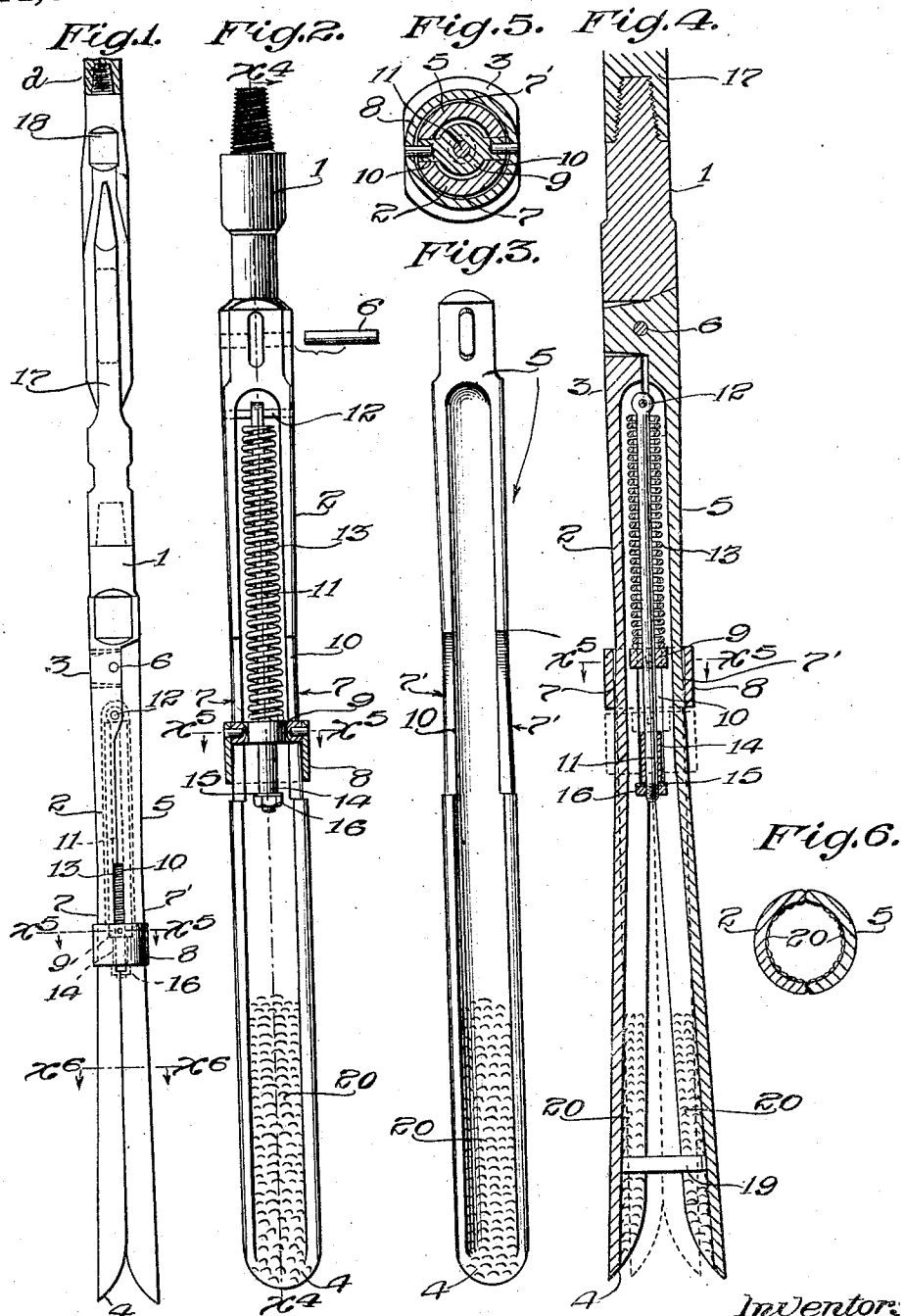


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WELL DRILLER'S FISHING TOOL.
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Patented Dec. 28, 1909.

944,582.



Witnesses:-

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UNITED STATES PATENT OFFICE.

MATTHEW L. THORN, OF HOLLYWOOD, AND WILLIAM M. McGEE, OF SANTA MONICA CALIFORNIA.

WELL-DRILLER'S FISHING-TOOL.

944,582.

Specification of Letters Patent.

Patented Dec. 28, 1909.

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To all whom it may concern:

Be it known we, MATTHEW L. THORN, a citizen of the United States, residing at Hollywood, in the county of Los Angeles and State of California, and WILLIAM M. McGEE, a citizen of the United States, residing at Santa Monica, in said county and State, have invented a new and useful Well-Driller's Fishing-Tool, of which the following is a specification.

The object of this invention is to provide means whereby underreamer cutters and other loose objects and material in a drilled well can be removed with ease and facility.

The invention is capable of various embodiments, and comprises a tool provided with blades or fingers pivotally secured together at a distance from one end, means to temporarily hold the fingers spread apart, and means to force the fingers together when the temporary spreading means is displaced.

We do not limit the invention to a specific form of embodiment.

The accompanying drawings illustrate the invention.

Figure 1 is a side elevation of an appliance embodying this invention in the form at present deemed most desirable. Fig. 2 is an enlarged side elevation of the inner face of the rigid blade and the stem, the jars being omitted and the cross-head and ring being shown in section, the view being a portion of Fig. 1 viewed from the right. The sleeve and cross-head are sectioned, and the shorter blade is detached and omitted to expose the interior parts. The pin which pivots the shorter blade to the main blade is shown displaced. Fig. 3 is an elevation of the inside face of the shorter blade removed from Fig. 2. Fig. 4 is an axial section of the grappling tool on line indicated by x^4 , Fig. 2. The tool is shown set. Fig. 5 is a plan section of the grappling tool on line indicated by x^5 , Figs. 1, 2 and 4. The grappling tool being shown open, is indicated in Fig. 4. Fig. 6 is an enlarged section on line x^6 , Fig. 1.

1 designates a stem, and 2 a transversely-curved blade fixed thereto and forming a solid extension thereof, the same being slightly bent or deflected outwardly from the axis of the stem, as indicated at 3, and being beveled and rounded at the point 4 so that when the tool is open the point will approximately fit the inside of the well-casing

and will be devoid of any sharp corners that might scrape or injure such casing when the tool is lowered into the well, and also to allow the point of the blade to insert past any loose object to be withdrawn from the well.

5 designates a blade pivoted to the upper end of the fixed blade 2 by a pivot 6. This blade is transversely curved and corresponds in construction to the fixed blade throughout its length and is adapted to swing on the pivot 6 to increase or decrease the space between the lower portions of the blades. The blades are provided externally with oppositely-arranged outwardly and downwardly-diverging faces 7, 7', thus giving to the tool an upwardly-tapering formation a distance below the pivot.

8 designates a sleeve movable along the blade and adapted to slide on the tapering portions 7, 7' of the tool. The interior diameter of the sleeve corresponds to the exterior diameter of the tool at the lower end of the taper faces 7, 7' when the blades are closed. When the sleeve is brought to the upper end of the taper portion, the blades may be spread apart at the lower end. When the sleeve is forced downward on the taper portion it presses the blades together into the position shown in solid lines in Fig. 1 and in dotted lines in Fig. 4.

9 is a cross-head to which the sleeve 8 is fastened, the blades being longitudinally notched or slotted as at 10 to allow the cross-head to move along the tool for adjustment of the sleeve.

11 is a rod on which the cross-head 9 is slidably mounted. Said rod is pivoted at 12 to the fixed blade.

13 is a spring around the rod 11 to force the cross-head 9 and the sleeve which it carries, toward the larger end of the taper portions 7, 7' of the tool.

14 is a sleeve, 15 a washer, and 16 a nut on the rod 11 to retain the cross-head 9 thereon.

17 and 18 designate the members of a set of jars, and a is a part of a string of tools for operating the grappling device above described. It is to be understood that the jars may be operated by the usual drilling-line or by tubing fastened to the jars in the well-known manner of operating drilling-tools.

19 designates a prop to hold the jaws spread apart while being lowered to the bottom of the well. The inner trough-like faces are barbed as shown at 20, to increase friction on the object gripped by the tool.

In practical operation, assuming that an underreamer-bit has been lost in the bottom of a hole and covered with cavings, the driller will attach the jars to the bottom of the stem *a* of a string of tools, and will then attach the stem 1 of the grapple to the lower member 17 of the jars, and will then swing the string of tools, with the blades attached, free from the ground, and will provide suitable means not shown, for supporting the cross-head against the thrust of the spring to hold the sleeve stationary while the tool is allowed to descend. The supporting means may be of any suitable character, as for instance, props or bars, not shown, underneath the sleeve; or a post, as a two-inch pipe, not shown, underneath the cross-head. When thus supported, the string of tools may be lowered, thus bringing the narrower part of the taper portion 7, 7', inside the sleeve; whereupon the points of the blades may be spread apart and the prop 19 placed in position. Then the operator will raise the string of tools, thus allowing the spring 13 to force the sleeve downward against the taper portions 7, 7', thereby forcing the points of the blades inward to hold the prop in place, which in turn holds the blades from closing and prevents the further descent of the sleeve along the taper portion. The tool may then be lowered into the hole, and when an obstruction at the bottom of the well intercepts the prop, it will dislodge the same and release the blades, whereupon the spring will force the sleeve down along the taper portion, thereby closing the blades to grip whatever is between them. The jars may then be lightly used to force the blades down to take firm hold, and then the string of tools may be drawn up and swung aside from the hole and the sleeve again supported by the prop at the top of the hole while the tool is let down to bring inside the sleeve the smaller end of the taper portion of the tool, thus allowing the blades to be again swung apart to release whatever may be held between them; as for instance, the prop 19 and a portion of the cavings. The same, or another prop, may then be inserted in the same way as before, and the described operation repeated, and so on until the cavings have all been drawn from above the cutter. When the tool is again lowered, the ends of the blades will embrace the cutter, and the driller may operate the jars gently to force the blades well down over the cutter. When he is satisfied a solid grip has been secured on the cutter, the tool will be withdrawn as before, thus withdrawing the cutter.

The operation for recovering a string of tools or any other object will be practically the same as that above described; the driller at each operation using his judgment with regard to the amount of jarring to which he subjects the tool before withdrawing the same.

The tool may be used without the jars, but there is greater danger of applying too great force and thereby bending the blades, and much better work can be done with a tool provided with jars, as shown, than can be done with the same grappling tool without jars.

We claim:—

1. A fishing tool comprising a blade provided with a stem, a blade pivoted thereto, said blades having oppositely-arranged upwardly-tapering portions below the pivot, a sleeve around the blades at the tapering portion thereof, a spring between the blades, and means connecting the spring with the sleeve to force the sleeve toward the larger end of the taper portion.
2. In a fishing tool, a set of jars, a stem connected to the lower member of the jars, a blade extending downwardly from the stem, a second blade pivoted to the upper end of the first blade, a rod mounted between the two blades, a cross-head upon the rod and movable along the blades, a spring pressing the cross-head downwardly, a sleeve attached to the cross-head and encircling the blades, and means for temporarily holding the lower ends of the blades spread apart to support the sleeve against the tension of the springs and for insertion into the well, said means being frictionally held between the blades so that such means may be displaced by an obstruction passing between the blades.
3. In a fishing tool, a stem adapted for connection to operating means, a blade rigid with the stem, a second blade pivotally mounted relative to the blade, a sleeve mounted upon the blades and movable lengthwise thereof for forcing the blades together as the sleeve descends, and means for temporarily holding the blades apart and the sleeve elevated, so that when the tool descends into the well and meets an obstruction the blades will be released and the sleeve will be allowed to descend to force the blades together to grip the obstruction.
4. In a fishing tool, a stem adapted for connection with means for operating the tool, a blade rigid with the stem, a second blade pivotally mounted relative to the stem, a prop for holding the blades apart, a rod pivoted between the blades, a cross-head upon the rod and movable along the blades, a spring upon the rod against the cross-head, and a sleeve carried by the cross-head and encircling the blades, so that when the tool descends into a well and meets an obstruction the obstruction will displace the prop

allowing the spring to force the sleeve downwardly and force the jaws to engage the obstruction.

5. In a fishing tool, two blades of curved cross-section and rounded points pivoted together, a stem rigid with one of said blades and adapted for connection to means for operating the tool, a rod pivoted between said blades, a spring on said rod, a cross-head operable by said spring, and means carried by the cross-head to force the ends of the blades together.

15 6. In a fishing tool, two blades of curved cross-section and rounded points pivoted together, a stem rigid with one of said blades and adapted for connection to means for operating the tool, a rod pivoted between said blades, a spring on said rod, a cross-head operable by said spring, means to temporarily
20 hold the blades apart, and means carried by the cross-head to force the ends of the blade together.

7. In a fishing tool, two blades pivoted together, a stem rigid with one of the blades

and adapted for connection to means for 25
operating the tool, a rod extending between the blades, a cross-head carried by the rod, means carried by the cross-head to force the blades toward each other, and a spring carried by the rod to operate said means. 30

8. In a fishing tool, two concave internally-barbed blades pivoted together, a stem rigid with one of the blades and adapted for connection to means for operating the tool, a rod extending between the blades, a 35
cross-head carried by the rod, means carried by the cross-head to force the blades toward each other, and a spring carried by the rod to operate said means.

In testimony whereof, we have hereunto 40
set our hands at Los Angeles, California,
this 19th day of June, 1908.

MATTHEW L. THORN.
W. M. MCGEE.

In presence of—

JAMES R. TOWNSEND,
M. BEULAH TOWNSEND.