No. 737,101. PATENTED AUG. 25, 1903.

R. I. HENDERSON.

WELL CASING SPEAR.

APPLICATION FILED MAR. 14, 1903.

NO MODEL.

Fig. 1.

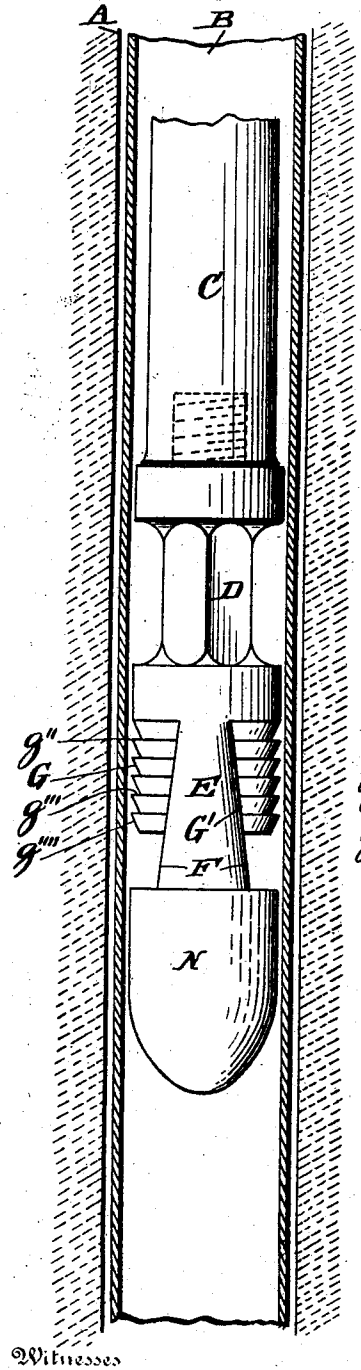


Fig. 2.

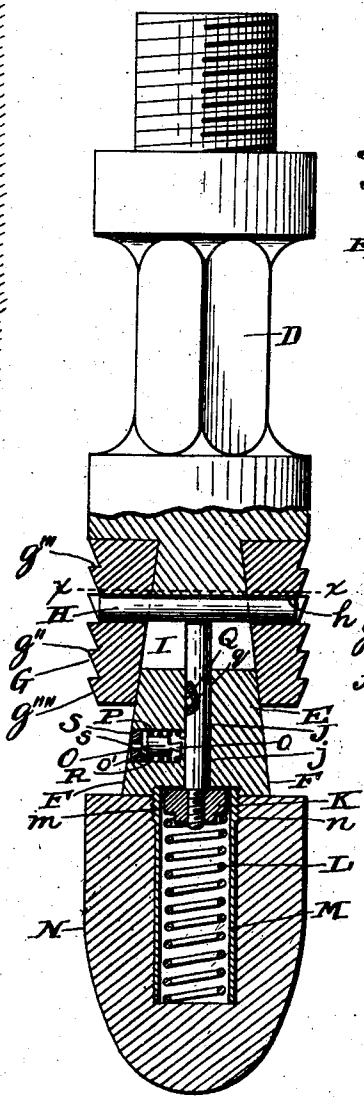


Fig. 4.

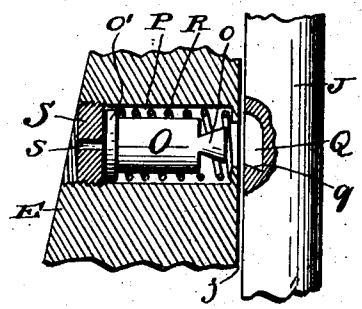


Fig. 3.

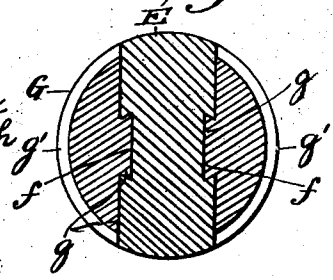
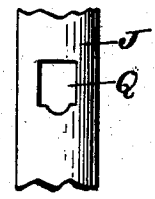


Fig. 5.



Witnesses

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No. 737,101. Patented August 25, 1903.

UNITED STATES PATENT OFFICE.

RALPH IRWIN HENDERSON, OF CAIRO, WEST VIRGINIA.

WELL-CASING SPEAR.

SPECIFICATION forming part of Letters Patent No. 737,101, dated August 25, 1903.

Application filed March 14, 1903. Serial No. 147,790. (No model.)

To all whom it may concern:

Be it known that I, RALPH IRWIN HENDERSON, a citizen of the United States, residing at Cairo, in the county of Ritchie and State of West Virginia, have invented certain new and useful Improvements in Well-Casing Spears, of which the following is a specification.

My invention relates to devices for removing casings from oil and other wells, and has for its object to provide a device having serrated jaws that may be held in a non-clamping position while being lowered into the well and that may be expanded when it is desired to grab the casing and that is also adapted to be removed from the well should it be found that the casing is too firmly seated.

The advantages of my invention will more fully appear hereinafter, and by reference to the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view of a well and casing, showing my spear therein in elevation; Fig. 2, a longitudinal sectional view of the spear; Fig. 3, a cross-section on the line x x of Fig. 2; Fig. 4, a detail view of the trigger and its seat; Fig. 5, a view of a fragment of the operating-plunger, showing the trigger-seat.

Referring to the drawings, in which similar reference characters indicate corresponding parts throughout the several views, A represents the well, and B the casing contained therein, while C represents the lower end of a drill-jar, in which is secured the shank D of my casing-spear. Below shank D the spear is reduced, as shown at E, and is formed with outwardly-inclined faces, on which are mounted jaws G. Said jaws G are formed with a slanting bearing-face G′ of the same degree as the slant on sides F and have dovetails g to fit into dovetail-slots f in the face of inclines F. The fronts of jaws G are provided with a curved face g', having serrations g'', said serrations consisting of a horizontal face g''' and an inwardly-slanting face g''''.

H represents the cross-head inserted in bores h in jaws G and slidably mounted in slot I in the reduced portion E, while J represents a plunger slidably mounted in a vertical bore j in the lower end of said reduced portion E and in slot I and bearing against cross-head H, K being a nut screwed on the lower end of plunger J, against which bears coil-spring L, inserted in tubular extension M of reduced portion E and having a screw-threaded exterior m.

N represents the cap-nut having a screw-threaded bore n to fit the screw-threads m on tubular extension M.

The purpose of cross-head H, plunger J, and spring L is to hold the jaws G at the upper part of the inclined faces F and out of engagement with the casing, and it will readily appear that the tension of spring L may be regulated as desired by tightening or loosening the cap-nut N.

In order to hold the plunger J depressed when lowering the spear into the well, I provide a bolt or trigger O, mounted in a bore P in the side of reduced portion E. The outer end of said trigger O is provided with a frustum-shaped latch o, which is adapted to fit into notch Q in the plunger J, said notch Q having its lower surface q curved and slanting inwardly, so as to fit the latch o. The inner end of the trigger O is provided with an enlarged head o', against which bears a coil-spring R, the other end of said coil-spring bearing against the outer end of bore P. The purpose of coil-spring R is to normally hold latch o within bore P.

S represents a screw-plug inserted in the outer end of bore P and having a central aperture s, through which an instrument may be inserted to push latch o out of bore P.

The operation of my invention is as follows: To set the device, first unscrew cap-nut N, withdraw spring L from tubular extension M, and thus allow plunger J to drop until notch Q is opposite bore P. Then insert a nail, awl, or other suitable instrument through aperture s and push trigger O against the resilience of spring R until latch o is seated in said notch Q. Cap-nut N is then screwed onto tubular extension M. The tension of spring L will hold the bottom q of notch Q in engagement with latch o and prevent spring R from withdrawing trigger O. This will permit the jaws G to drop a short distance, sufficiently to allow serrations g'' to bite the inner surface of the tube; but in lowering into the well the friction against the sides of the casing will keep the jaws raised, so that the spear has free movement; but when the spear is brought to a standstill the jaws drop, so

that the serrations bite the casing, and when the spear is raised the jaws are forced farther apart and into the inner surface of the casing by traveling down faces F, thus pushing plunger J downward and permitting spring R to withdraw trigger O. The casing will thus be raised. Should, however, it be found that the casing cannot be raised, the spear can be released by reversing the motion of the jar C, which will withdraw the jaws G from engagement with the casing B. The spring L will then push the plunger J up until the jaws G are at the top of inclined faces F, when the spear can be removed from the well.

Having thus described my invention, what I claim is—

1. In a well-casing spear having vertically-movable jaws, and a plunger for operating said jaws, a trigger for holding said plunger depressed having its end formed with a frustum-shaped latch, and the plunger having a notch therein with its base formed with a concave surface shaped to fit said plunger, substantially as shown and described.

2. In a well-casing spear, a shank, a reduced portion below said shank having outwardly-inclined faces and a vertical slot, said inclined faces having dovetailed grooves therein, clamping-jaws having beveled surfaces and dovetails to fit into said grooves and serrated surfaces consisting of horizontal faces and inwardly-inclined faces, a crosshead mounted in said jaws and the slot in said reduced portion, a tubular portion below said reduced portion having a screw-threaded exterior, a plunger mounted in said tubular portion and said slot, a coil-spring bearing against the base of said plunger, a nut-cap having a screw-threaded recess to fit the screw-threads on said tubular portion, said reduced portion having a bore therein, a bolt mounted in said bore having a frustum-shaped latch at one end and an enlarged head at the other, a spring bearing between said enlarged head and the end of said bore, and the plunger provided with a notch having a curved base beveled to fit the frustum-shaped latch on said bolt, substantially as shown and described.

3. In a well-casing spear, a shank, a reduced portion below said shank having outwardly-inclined faces and a vertical slot, said inclined faces having dovetailed grooves therein, clamping-jaws having beveled surfaces and dovetails to fit into said grooved and serrated surfaces consisting of horizontal faces and inwardly-inclined faces, a crosshead mounted in said jaws and the slot in said reduced portion, a tubular portion below said reduced portion having a screw-threaded exterior, a plunger mounted in said tubular portion and said slot, a coil-spring bearing against the base of said plunger, a nut-cap having a screw-threaded recess to fit the screw-threads on said tubular portion, a spring-actuated trigger mounted on said reduced portion having a frustum-shaped head, and the plunger aforesaid provided with a notch having a curved base beveled to fit the frustum-shaped head on the trigger, substantially as shown and described.

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

RALPH IRWIN HENDERSON.

Witnesses:

J. NEWMAN,

F. A. BEST.