

(No Model.)

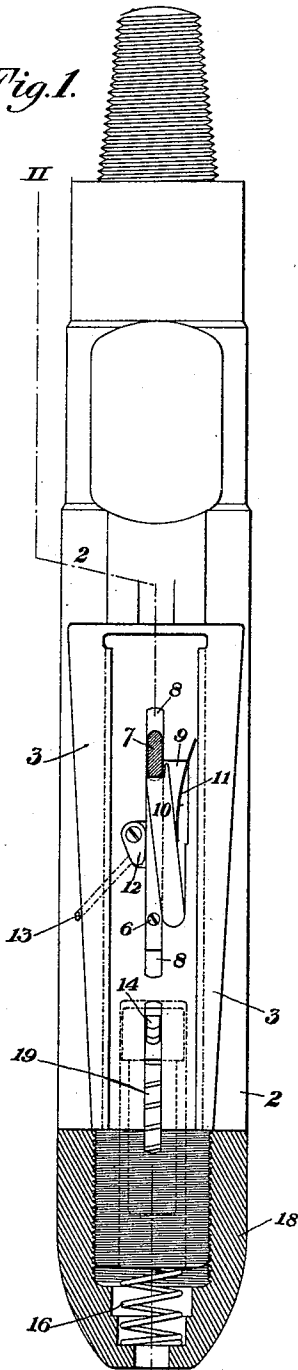
2 Sheets—Sheet 1.

J. CARRUTHERS.
CASING SPEAR.

No. 479,933.

Patented Aug. 2, 1892.

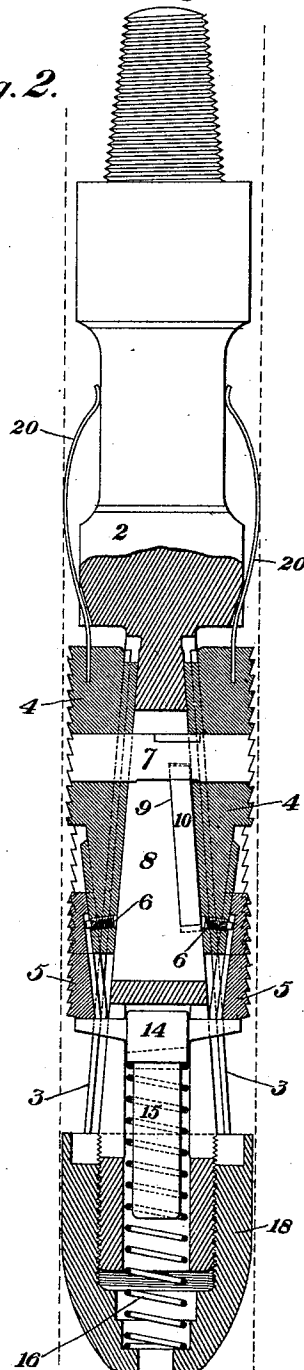
Fig. 1.



WITNESSES

H. L. Gill
C. Byrnes.

Fig. 2.



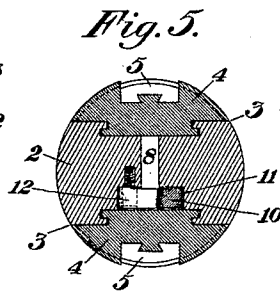
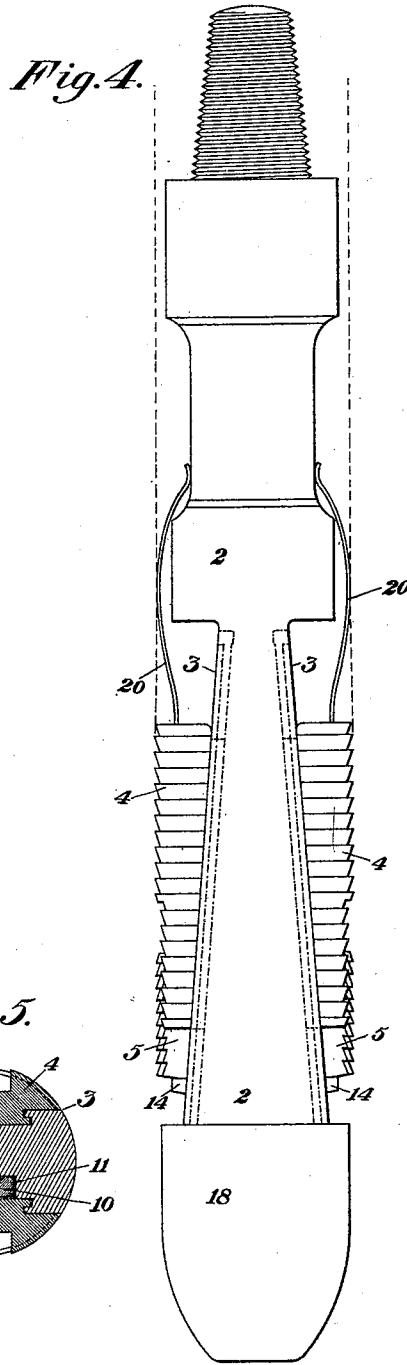
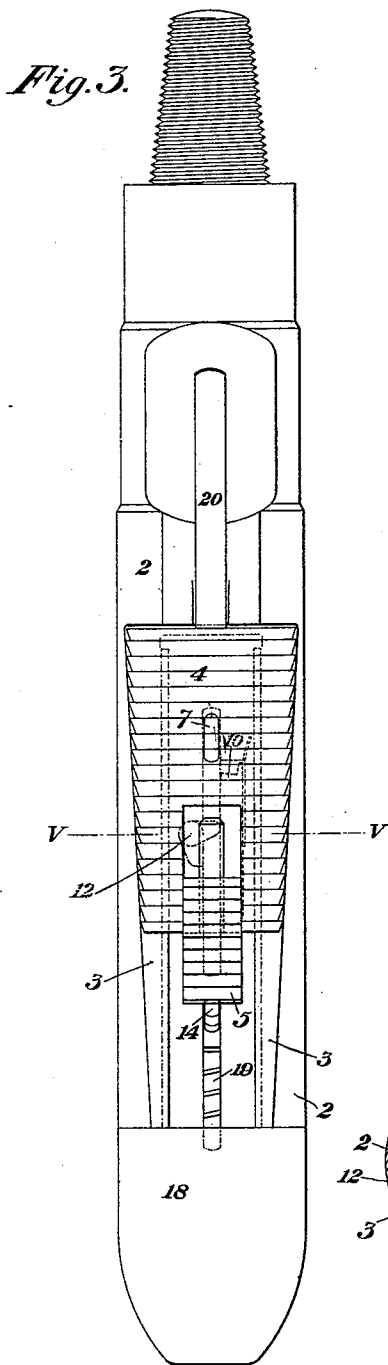
INVENTOR

John Carruthers
by W. B. Russell & Sons
his attorneys

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UNITED STATES PATENT OFFICE.

JOHN CARRUTHERS, OF HARMONY, PENNSYLVANIA, ASSIGNOR OF ONE-HALF
TO MYRON J. PETERS, OF SAME PLACE.

CASING-SPEAR.

SPECIFICATION forming part of Letters Patent No. 479,933, dated August 2, 1892.

Application filed April 18, 1892. Serial No. 429,562. (No model.)

To all whom it may concern:

Be it known that I, JOHN CARRUTHERS, of Harmony, in the county of Butler and State of Pennsylvania, have invented a new and useful Improvement in Casing-Spears, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

10 Figure 1 is a side elevation, partly in section, of my improved casing-spear, showing the same locked for withdrawal from the casing. Fig. 2 is a vertical sectional view on the line II II of Fig. 1. Fig. 3 is a side elevation
15 of the spear, showing in dotted lines the pawl withdrawn and the parts ready for lowering in the well. Fig. 4 is a side elevation at right angles to Fig. 3, showing the parts in position for jarring upwardly on the casing. Fig. 5 is
20 a cross-section on the line V V of Fig. 3.

My invention relates to the casing-spears employed for the purpose of removing a casing from a well or for loosening it and permitting it to be shifted; and it consists in the peculiar construction and arrangement of the
25 parts, as hereinafter more fully described, and set forth in the claims.

In the drawings, in which like numerals indicate corresponding parts, 2 represents the
30 body of the casing-spear, upon the inclined slideways 3 3 of which are mounted the ribbed or barbed wedge-slips 4 4, moving in dovetailed grooves in said slideways. The barbs upon the slips 4 4 are upwardly directed, so
35 that they are adapted to bite on the casing when the spear is moved upwardly therein.

5 5 are barbed wedge-slips dovetailed in inclined slideways on the wedges 4 4 and limited in their downward movement by studs or
40 screws 6, which fit in inner grooves of said wedges. The barbs on the second set of slips are downwardly directed, so that they shall be adapted to engage the casing when the spear is moved down. The first set of slips 4
45 4 are connected by the cross-bar 7, which moves in the slot 8, extending between the slips, and pivoted in a recess 9 of the body is a pawl or latch 10, which is pressed outwardly by the spring 11. A trigger 12, mounted in
50 the body on the opposite side of the slot, is arranged to engage said pawl and push the

same back against the action of the spring by means of a rod passed through the hole 13, extending to the outside of the body. Bearing upon the lower ends of the slips 5 5 is a cross-
55 head 14, supported upon a vertically-movable post 15, carried upon and supported by a spiral spring 16, which incloses the same and bears upon an annular shoulder on its upper portion. This spring at its lower end bears
60 upon the bottom of the central recess of a cap 18, which is screwed upon the lower tubular end of the spear-body. The ends of the cross-head project through a second slot 19 beneath and in line with the slot 8 and bear upon the
65 wedges 5, as above stated. To prevent the rubbing and wearing away of the teeth on the slips, I provide two springs 20, which are arranged to bear against the inside of the casing, which is indicated in dotted lines, and
70 hold the slips out of contact therewith.

To operate the device, a rod is inserted through the hole 13 and the trigger pushed into the position shown by dotted lines in Fig. 3, thus disengaging the pawl 10. The slips 5
75 5 hang at the lower portion of their reciprocatory path, and in this position their periphery lie in a smaller circle than that of the upper wedges 4 4. The device being lowered within the casing at the end of a string of
80 tools, the slips 4 4 move up in their inclined seats and permit its easy descent. When the portion of the casing which it is desired to seize has been reached, the operator jars upwardly on the tools, and in such upward jar-
85 ring the slips 4 4 bite on the casing, and further lifting or upward jarring of the spear will move the casing. When the casing has been properly loosened or sufficiently raised in the well and it is desired to withdraw the
90 spear therefrom, the operator jars down on the tool-stock. The effect of this is to loosen the slips 4 4 by the downward movement of the stock, to push aside the trigger by the cross-bar, and to thrust out the slips 5 5, which
95 support the weight of the tools and are prevented from moving downward by the barbs thereon. The spiral spring serves to maintain a yielding pressure upon these slips. The slips 4 4, now resting upon the upper
100 part of the slideways, are retracted and the spear may be withdrawn without difficulty,

the teeth or barbs upon the slips slipping over the casing, so that if the spear should drop they would bite on the casing and uphold the same.

5 The advantages of the device are obvious. The device is much simpler than other spears formerly used and is positive and certain in all its motions, while the blocks of wood heretofore inserted to hold up the wedges until
10 the spear reached the proper position and then broken down by jarring are dispensed with.

I claim as my invention—

1. In a casing-spear, the combination, with
15 the tool-stock, of two contrarily-acting sets of wedge-slips, one set being mounted upon inclined guideways on the stock and the second set being mounted upon similar oppositely-inclined guideways upon the first set,
20 and a pawl for locking the first set in retracted position, substantially as and for the purposes described.

2. In a casing-spear, the combination, with the tool-stock, of a set of wedge-slips mounted
25 in inclined guideways thereon, a cross-bar connecting the slips and moving in a slot passing through the stock, a spring-pawl arranged to engage said cross-bar, and a second set of contrarily-acting wedge-slips mounted in re-
30 versely-inclined guideways upon the first set, substantially as and for the purposes described.

3. In a casing-spear, the combination, with the tool-stock, of a set of wedge-slips mounted in inclined guideways thereon, a cross-bar
35 connecting the slips and moving in a slot passing through the stock, a spring-pawl arranged to engage said cross-bar, a second set of contrarily-acting wedge-slips mounted in reversely-inclined guideways upon the first set, a
40 cross-head moving in a second slot passing through the stock, and a spiral spring surrounding the stem supporting said cross-head, substantially as and for the purposes described.

4. In a casing-spear, the combination, with the tool-stock, of a set of wedge-slips mounted in inclined guideways thereon, a cross-bar
45 connecting the slips and moving in a slot passing through the stock, a spring-pawl arranged to engage said cross-bar, a trigger arranged to engage the spring-pawl, a hole extending from said trigger to the exterior of the casing, and
50 a second set of contrarily-acting wedge-slips mounted in reversely-inclined guideways upon the first set, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 30th day of March, A. D. 1892.

JOHN CARRUTHERS.

Witnesses:

W. B. CORWIN,
H. M. CORWIN.