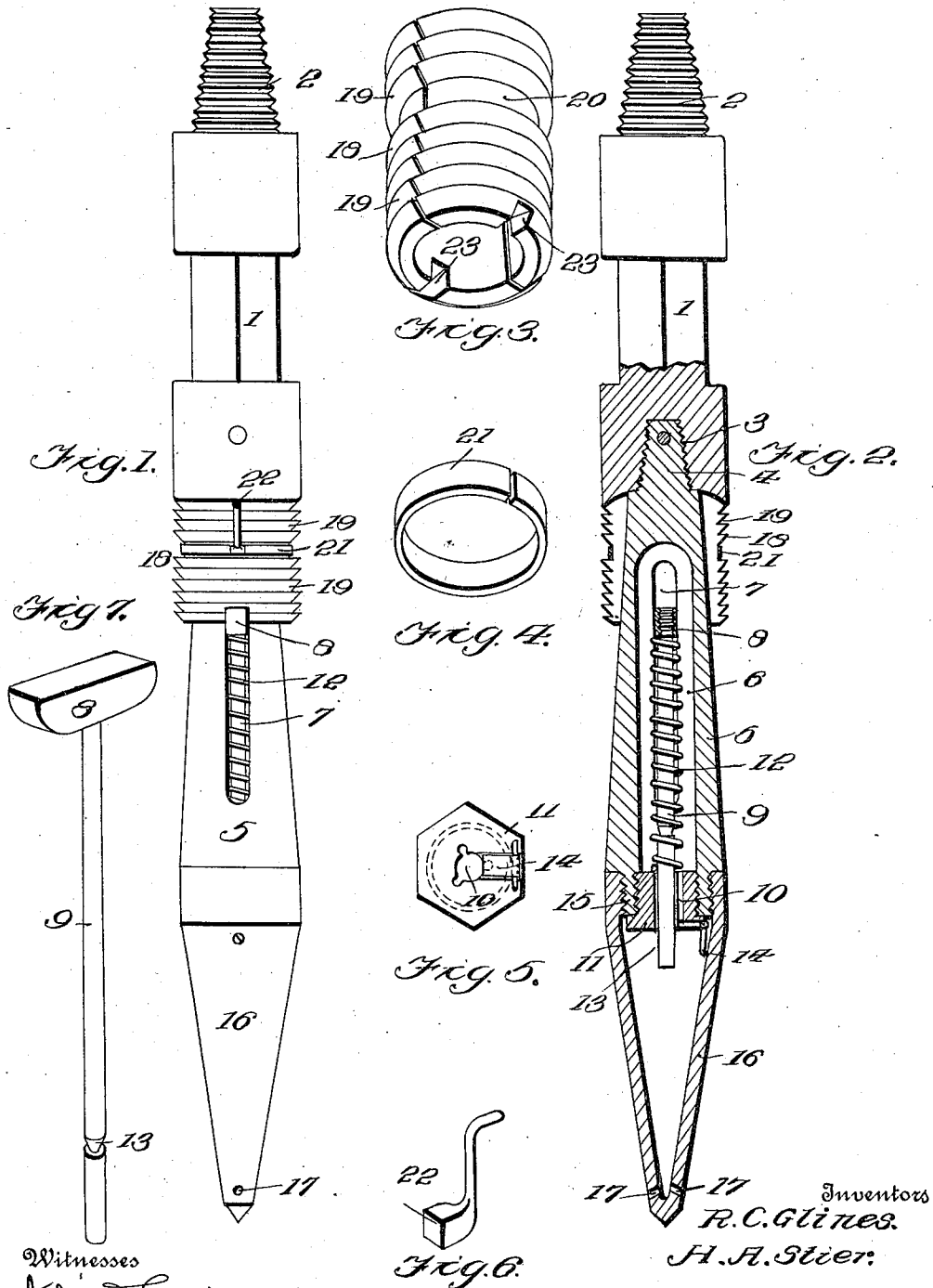


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TUBING OR CASING SPEAR.
APPLICATION FILED OCT. 9, 1911.

1,041,268.

Patented Oct. 15, 1912.



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Fig. 6.
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UNITED STATES PATENT OFFICE.

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Specification of Letters Patent.

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Application filed October 9, 1911. Serial No. 653,750.

To all whom it may concern:

Be it known that we, ROBERT C. GLINES and HENRY A. STIER, citizens of the United States, residing at Orcutt, in the county of Santa Barbara and State of California, have invented certain new and useful Improvements in Tubing or Casing Spear, of which the following is a specification.

This invention comprehends certain new and useful improvements in devices for pulling out tubes or casings from deep wells and the like, and the invention has for its primary object a simple, durable and efficient construction of tubing and casing spear, the parts of which can be cheaply manufactured and readily assembled and disassembled. The invention also has for its object a device of this character which will be practically automatic in its action to tightly grip the tube or casing into which it is inserted and which can be easily released whenever desired.

The invention also aims to generally improve this class of devices and to render them more useful and commercially desirable.

With this and other objects in view as will more fully appear as the description proceeds, the invention consists in certain constructions, arrangements and combinations of parts that we shall hereinafter fully describe and claim.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a side elevation of a casing spear embodying the invention. Fig. 2 is a sectional side elevation thereof. Fig. 3 is a detail perspective view of a sectional collar or slips employed. Fig. 4 is a similar view of a clamping spring for the slips. Fig. 5 is a detail view of a bushing used. Fig. 6 is a similar view of a spreader, and Fig. 7 is a detail view of a cross bar and rod.

Corresponding and like parts are referred to in the following description and indicated in all views of the drawings by the same reference characters.

Our improved tubing and casing spear includes a stock or sub, 1, which is formed at one end with a threaded nipple or pin 2 for attachment to tubing or a string of drilling tools, and is provided at its opposite end with a threaded socket 3 designed for engagement by the threaded stem 4 that is formed on one end of a tapered body por-

tion 5. It is to be understood that the parts 1 and 5 may be formed integral with each other, this being the preferred arrangement in the smaller sizes of the device, but in the larger sizes, it is preferred that these two parts be made separate and detachably connected together. The body portion 5 is formed with a longitudinally extending pocket 6 and with two diametrically opposite longitudinal slots 7 opening into the pocket. A cross bar 8 is mounted in the pocket 6 with its ends extending out of and working in the slots 7, said cross bar being connected in any desired way to one end of a rod 9. The opposite end of said rod is designed to work through an opening 10 formed centrally in a threaded bushing 11 which closes the lower end of the pocket 6 and is engaged by one end of a coiled spring 12 which encircles the rod 9 and exerts its expansive action against the cross bar 8 so as to tend to move the cross bar upwardly in the body portion 5. The rod 9 is formed near its lower end with a notch 13 designed for engagement by a latch 14 which is secured to the outer side of the bushing 11. The body portion 5 is formed at its lower end with a threaded nipple 15 on which a hollow tapering foot 16 screws, the foot practically forming a pointed continuation of the body portion. Preferably, the foot 16 is formed near its point with one or more fluid inlet orifices 17, as clearly illustrated in the drawings.

A gripping collar 18 composed of two parts or sections, constituting slips as shown, is mounted upon the body portion 5, said collar being formed with a series of upwardly beveled annular teeth 19, and, intermediate of its ends, with a smooth portion 20, around which latter a contractile band spring 21 extends to clamp the sections of the collar upon the body portion. 22 designates a spreader designed to fit in between the ends of the spring 21 so as to open the spring to set the collar to the diameter of the tube or casing it is desired to pull. In the preferred construction of the parts, the lower end of the head 1 is reamed out and the upper end of the collar 18 is correspondingly rounded to fit therein. Also, the opening 10 in the bushing 11 has its walls recessed at any desired number of points so as to provide openings for the liquid to pass therethrough from the hollow foot 16 into the body portion 5 and out through slots 7.

From the foregoing description in connection with the drawings, the operation of our improved automatic tubing and casing spear will be apparent. In the practical use of the device, the spreader 22 is positioned in between the ends of the spring 21 so as to set the sections of the collar 18 so that they will come down on the tapering body portion 5 according to the size of the pipe or tube to be pulled. When the collar 18 has thus been set, the adjusting stem or rod 9 is pulled down and held in lowered relatively inoperative position by the engagement of the latch 14 with the notch 13, and the casing or foot 16 is then screwed on the body portion 5. When the spear is lowered into the pipe, the slips will take hold and will be forced by the body portion 5, as the spear is then pulled upwardly, relatively downward, the spring 21 being further opened or spread apart so that its ends will be freed from the spreader 22, whereupon such spreader will drop back against the rear wall of the recess in which it is located. Manifestly, in this relative downward movement of the slips as regards the body portion 5, the latch 14 will be released from the rod 9, owing to the fact that the ends of the cross bar 8 engage the notches 23 in the lower edge of the slips and consequently relative downward movement of the cross bar and the rod 9 must follow the downward movement of the slips. The tube or pipe is thus withdrawn, and whenever it is desired to release the hold of the spear, the operator will jar down on the spear and the ends of the spring 21 will come toward each other and ride over the spreader and clamp the sections or slips tightly around the smaller part of the body portion 5 as the stem 9, being then free, moves said slips toward the top or smallest part of said body portion. The entire device will then be free to be pulled out. The collar on the lower end of the sub 1 acts as a swage above the slips and the large part of the body acts as a swage below the slips.

While the accompanying drawings show what we believe to be the preferred embodiment of our invention, it is to be understood that the invention is not limited thereto, but that various changes may be made in the construction, arrangement and proportion of the parts without departing from the scope of the invention as defined in the appended claims.

Having thus described the invention, what is claimed as new is:

1. A tubing or casing spear including a

tapered body portion formed with a longitudinally extending pocket and longitudinal slots opening into the pocket, slips mounted on said body portion and spring held thereon, a rod mounted in the pocket of the body portion and provided with a cross bar working in said slots and engaging said slips, a spring mounted in the pocket and tending to move the cross bar in a direction to carry the slips toward the smaller end of the tapered body portion, means for holding the rod with the spring contracted, and a foot connected to the lower end of the body portion.

2. A tubing or casing spear including a tapered body portion formed with a longitudinally extending pocket and slots opening into the pocket, slips mounted for longitudinal movement on the body portion and spring clamped thereon, a rod mounted in the pocket and provided with a cross bar extending through said slots and engaging the slips, a bushing secured to the lower end of the body portion and formed with an opening through which the rod passes, a spring encircling said rod and bearing against the cross bar and the bushing, a latch carried by the bushing and adapted to engage the rod to hold the same with the spring contracted, and a hollow foot secured to the lower end of the body portion.

3. A tubing or casing spear including a tapered body portion, slips mounted for movement thereon, a spring encircling said slips and clamping them to the body portion, a spreader adapted for insertion between the ends of said spring to hold the same apart to admit of the adjustment of the slips upon the body portion, means tending to move the slips toward the smaller end of the body portion, and a latch adapted to hold said means in inoperative position.

4. A tubing or casing spear including a tapered body portion, slips mounted for movement thereon, a spring encircling said slips and clamping them to the body portion, a spreader adapted for insertion between the ends of said spring to hold the same spread apart to admit of the adjustment of the slips upon the body portion, and means tending to move the slips toward the small end of the body portion.

In testimony whereof we affix our signatures in presence of two witnesses.

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