L. STEWART

Anchor for Oil-Well Packer.

No. 210,575. Patented Dec. 3, 1878.

Fig. 1.

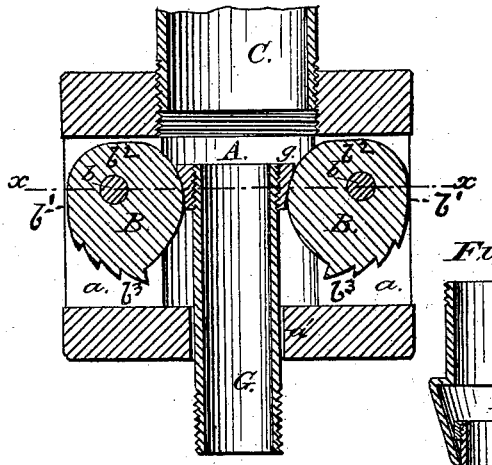


Fig. 2.

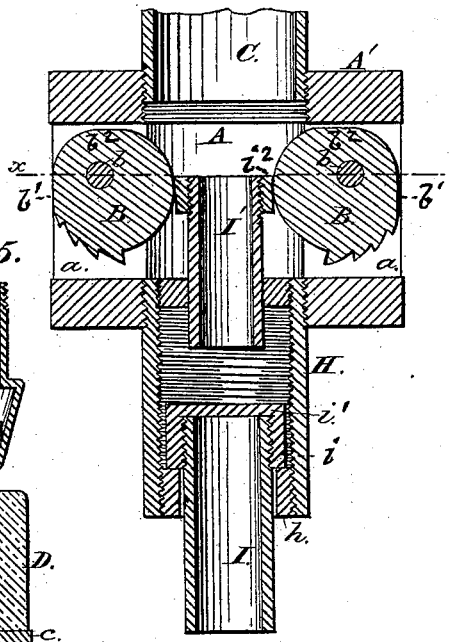


Fig. 5.

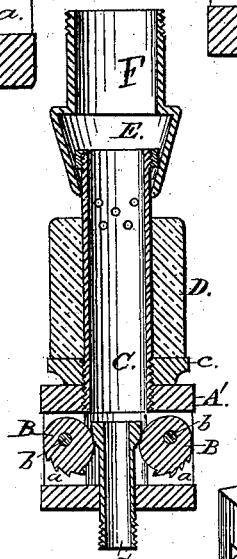


Fig. 3.

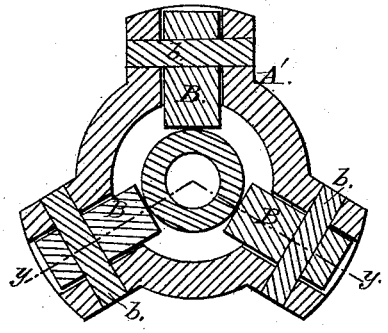
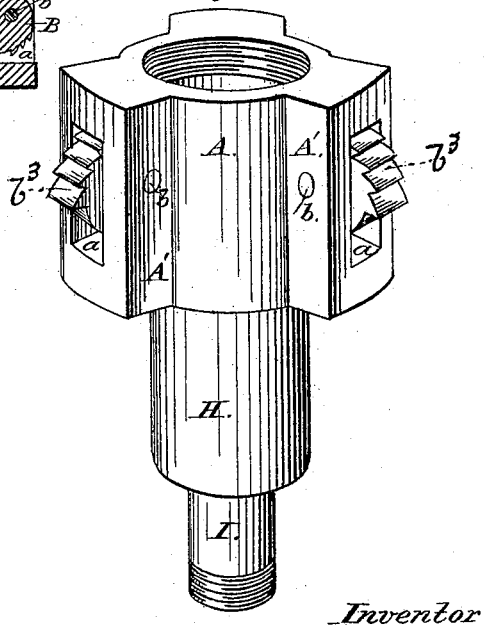


Fig. 4.



Witnesses:

T. C. Brecht

Chas. C. Abbe

Inventor:

Lyman Stewart,

By H. A. Doubleday

Attorney.

UNITED STATES PATENT OFFICE.

LYMAN STEWART, OF TITUSVILLE, PENNSYLVANIA.

IMPROVEMENT IN ANCHORS FOR OIL-WELL PACKERS.

Specification forming part of Letters Patent No. **210,575**, dated December 3, 1878; application filed November 18, 1878.

To all whom it may concern:

Be it known that I, LYMAN STEWART, of Titusville, in the county of Crawford and State of Pennsylvania, have invented certain new and useful Improvements in Anchors for Oil-Well Packers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 is a vertical section of an oil-well packer having my invention applied thereto in its simplest form of construction. Fig. 2 is a vertical section, showing another form of the invention. Fig. 3 is a transverse section taken on line *x x* of Figs. 1 and 2; and Fig. 4 is a perspective view of the construction represented in Fig. 2, showing the dogs engaged with the wall of the well.

Similar letters of reference indicate like parts in all the figures.

It is sometimes desirable to shift a packer from one position to another in a well, from the fact that a crevice or other irregularity in the wall of the well prevents packing tightly at the point where the packer is first located; and the object of my invention is to so construct the "anchor," as it is usually termed, that the location of the packer can be thus changed by merely raising the tubing such distance as it is desired to move the packer.

In the drawings, A represents a short cylinder, provided upon three sides with projections or wings A′, which extend nearly to the walls of the well. Each of these wings is provided centrally with a slot or throat, *a*, in which is pivoted eccentrically, at *b*, a locking-dog, B. Each dog is provided with a flat side, as at b^1, and also, by preference, with another flat side, b^2, arranged at substantially a right angle to the side b^1, for a purpose which will be hereinafter explained. Each dog is also provided with one or more sharp teeth or spurs, b^3, to take hold of the wall of the well.

In the drawings I have represented this packer as consisting of a flange, *c*, upon the tube C, a rubber cylinder, D, supported on the flange *c*, and a conical wedge, E, constructed to slide upon the upper end of the tubing C, in such manner that when it (the cone-wedge) is forced downward by the upper section, F, of the tubing, it will press the rubber block D against the wall of the well, the upper end of the tubing C being provided with a rim or flange, which engages with a corresponding shoulder, *e*, of the cone-wedge, so that when the tubing F is withdrawn from the wall it will carry with it the packer.

G (see Fig. 1) is a section of pipe, sliding freely within the cylinder A, which is provided at its lower end with an internal flange or rim, *a′*, which encircles and serves as a guide for the tube G. The upper end of this tube G carries a flange or rim, *g*, which may be beveled or concave upon its under side to fit the upper faces of the dogs, upon which it is supported when in the positions shown in Figs. 1, 2, and 5 of the drawings. The object of this pipe G and its rim *g* is to serve as a detent or stop to retain the dogs in the position shown, except when the dogs are removed from contact with the rim *g*, as I will now explain.

The parts being in the position shown, the device is lowered into the well, and when the lower end of the tube G strikes the bottom of the well the further descent of the cylinder A will at once break the contact between the rim *g* and the dogs, when the weight of these dogs will cause them to swing upon their pivots *b*, and thus project them against the wall of the well, such contact with the wall rolling the dogs outward through the slots *a*, and checking the further downward movement of the cylinder A, the tube C, and the rubber block D, in such manner that the well will be packed by the action of the cone-wedge, as will be readily understood.

If it be found that the well is not packed tightly, the packer may be raised a short distance, the dogs being rolled inward by this upward movement of the cylinder A; and when the packer has been raised the desired distance the tube may be let down again, when the dogs, by their contact with the wall of the well, will be again rolled outward, and the further downward movement of the anchor and packer prevented.

In the construction represented in Fig. 2, a short section of tubing, H, is secured in the

lower end of the cylinder A, and a section of pipe, I, is arranged to slide freely within this tubing-section, but is prevented from falling out by means of the rim *i*, attached to the pipe, and engaged with a corresponding rim, *h*, inside the tubing. The upper end of the tubing I is closed by a cap, *i''*.

I' i^2 is a detent arranged to slide vertically in a ring or flange attached to the inside of the cylinder A or the tubing H, said ring or flange serving as a seat for the lower part of the detent. The function and operation of this detent is substantially the same as that of the parts G *g* in Fig. 2—that is to say, when the device is being lowered into the well the flange *g* or i^2 engages with the dogs, as is indicated in the drawings, and retains them (the dogs) in the position shown until the lower end of the tubing touches the bottom of the well, when the dogs, being released from contact with the flange *g* or i^2, will rotate upon their axes, and when the tubing is lifted the flange *g* or i^2 will pass down between the dogs, and leave them free to oscillate upon their axes.

From an examination of Fig. 4 it will be seen that the further outward or upward rotation of the dogs is prevented by the contact of the shoulders *b* with the upper walls of the slots *a*, in which they are mounted, thus insuring that when they (the dogs) cut into the rock they cannot rock outward beyond the point indicated in Fig. 4. The dogs being thus held in the position indicated in Fig. 4, it is apparent that the packer will be firmly supported against downward movement.

What I claim is—

1. A support for an oil-well packer, provided with locking devices which engage with the wall of the well, to support the packer against the downward thrust of the superincumbent tubing.

2. A support for an oil-well packer, provided with locking devices, which are held from contact with the wall of the well as the packer is being lowered into position, in combination with a tripping mechanism which is actuated by contact with the rock of the well, to release the locking devices, and permit them to engage with the wall of the well.

3. As a support for an oil-well packer, the cylinder A, in combination with the dogs B, substantially as set forth.

4. The combination of the cylinder A, dogs B, and the locking device G *g* or I' i^2, substantially as set forth.

5. The combination, with the cylinder A, dogs B, and detent I' i^2, of the pipe I, substantially as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

LYMAN STEWART.

Witnesses:
A. L. HOLT,
F. BATES.