C. M. & J. W. HEETER.

COMBINATION ANCHOR AND WALL PACKER.

APPLICATION FILED FEB. 19, 1907.

925,906. Patented June 22, 1909.

Fig. 1.

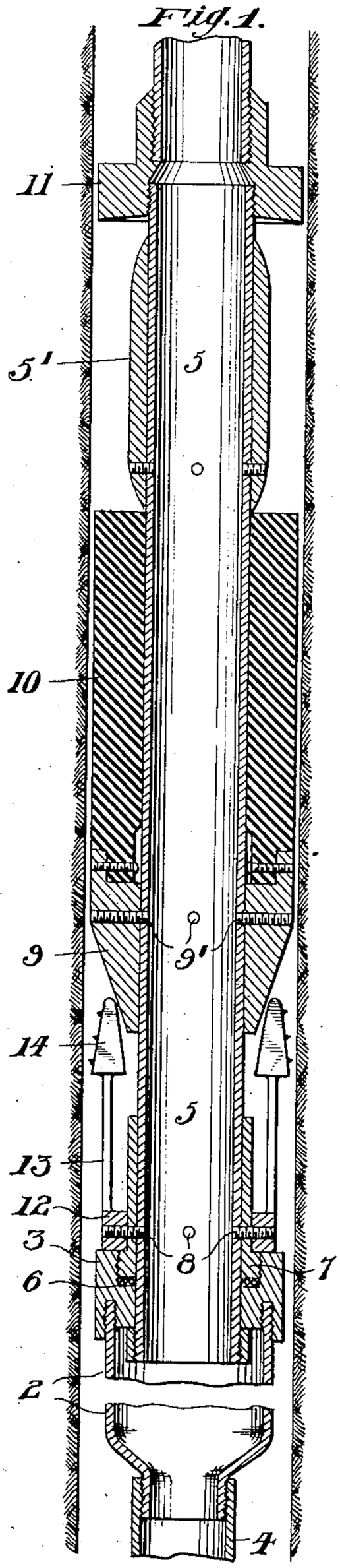


Fig. 2.

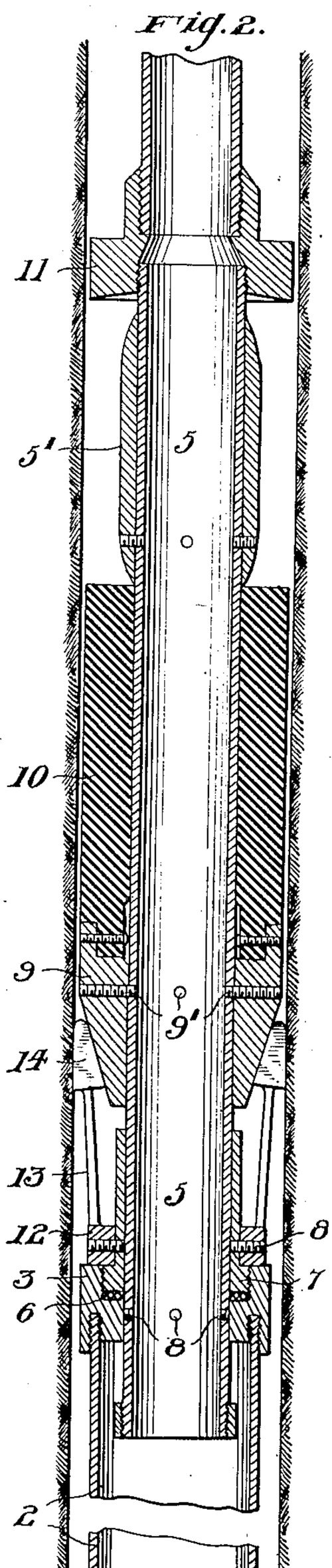
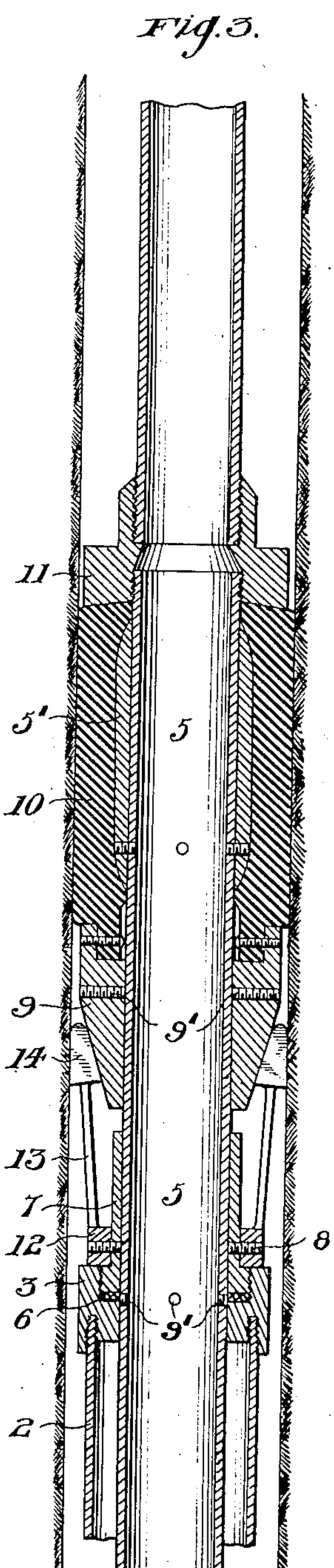


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

CHARLES M. HEETER AND JOSEPH W. HEETER, OF BUTLER, PENNSYLVANIA; SAID JOSEPH W. HEETER ASSIGNOR TO ANNIE M. HEETER, OF BUTLER, PENNSYLVANIA.

COMBINATION ANCHOR AND WALL-PACKER.

No. 925,906. Specification of Letters Patent. Patented June 22, 1909.

Application filed February 19, 1907. Serial No. 358,185.

To all whom it may concern:

Be it known that we, CHARLES M. HEETER and JOSEPH W. HEETER, residing at Butler, in the county of Butler and State of Pennsylvania, have invented certain new and useful Improvements in a Combination Anchor and Wall-Packer, of which the following is a specification.

This invention relates to a combination anchor and wall packer for deep wells, and the object is to provide a packer which is sustained by the anchor reaching to the bottom of the well, as well as by wall-gripping mechanism, thus insuring the holding of the packer in place.

Heretofore, a so-called anchor packer has depended for its support upon the anchor resting on the bottom of the hole or on any cavings that may have become lodged in the well. It has frequently happened that through settling or otherwise, the support for the anchor has weakened or become depressed, thereby permitting the anchor and the packer to settle, tearing the latter away from the wall and destroying its efficiency. We overcome these difficulties by providing the packer with a double hold or support, one of which is the anchor, and the other the wall-gripping means, which latter remains effective even though the anchor does not.

In the accompanying drawings, Figure 1 is a vertical sectional view of the packer before being set. Fig. 2 is a similar view showing the same partially set, and Fig. 3 is a like view showing the same wholly set.

Referring to the drawings, 2 designates the packer sleeve, carrying at its upper end the collar 3, and depending from the lower end of the sleeve is anchor 4 which is adapted to rest on the bottom of the well or on any cavings therein. 5 is the tubular body of the packer extending through sleeve 3. The upper end of collar 3 forms a box for packing 6, which is confined therein around body 5 by the gland-like upward extension 7 of collar 3. This packing prevents gas on the exterior of body 5 from passing downward through collar 3 and entering sleeve 2 and the packer body.

Body 5 is secured to collar-extension 7 by frangible rivets 8, and also secured to the body by frangible rivets 9′, a distance upward from collar 3, is the cone shaped collar 9 which forms the bottom abutment for rubber annulus 10 which surrounds body 5 in the usual manner. Secured to the upper end of body 5 is the top abutment or collar 11. Beneath this collar, body 5 is preferably provided with enlargement 5′, which assists in expanding the rubber when the packer is being set.

Collar-extension 7 is surrounded by ring 12, secured thereto by rivets 8, and projecting upward from this ring are spring arms 13 carrying at their upper ends the wedged-shaped slips 14, which normally stand inward within the longitudinal lines of the packer structure.

The packer is set by lowering it in the well until anchor 4 reaches the bottom and provides a resistance, whereupon the weight of the operating tubing connected to collar 11 forces downward body 5, shearing rivets 8, and driving cone 9 into engagement with slips 14, when the latter are sprung outward and caused to impinge the well wall as in Fig. 2, thus forming a secure anchorage or hold for the cone. When the latter becomes fixed in this manner, and is thus incapable of further downward movement the weight of the parts above shear rivets 9′, permitting the packer body to lower as far as it will and thus fully compress and set the rubber against the wall as in Fig. 3.

If the hole should be enlarged by caving, or if from any other cause slips 14 should fail to obtain a sustaining hold, cone 9 would lower from the position shown in Fig. 3 into engagement with collar-extension 7 and thus be positively sustained by the anchor.

From the foregoing it will be seen that the packer is sustained by the anchor as well as by the wall-gripping slips, either of which is sufficient to hold the packer securely in place, and hence if either supporting means weakens from any cause, the packer is nevertheless securely held.

We claim:

1. In a packer, the combination of an anchor sleeve, a packer body extended thereinto, a frangible connection between the body and sleeve, wall gripping slips, a downwardly tapered collar carried by the packer body for expanding the slips, and a rubber annulus confined on the packer body above said collar.

2. In a packer, the combination of a

packer body, an anchor sleeve, frangible means connecting the body and sleeve, and packer-anchor mechanism supported by the sleeve.

3. In a packer, the combination of a packer body, an anchor sleeve, frangible means connecting the body and sleeve, upwardly projecting slips supported by the sleeve, and means for expanding the slips into engagement with the well wall.

4. In a packer, the combination of an anchor sleeve, a packer body, frangible means connecting the sleeve and body, upwardly projecting slips supported by the sleeve, a cone-shaped collar, frangible means securing the collar to the packer body, the collar when depressed adapted to wedge the slips into engagement with the well wall.

5. The combination of an anchor sleeve, upwardly extending laterally expansible slips supported by the sleeve, a packer body, frangible means securing the body to the sleeve, a cone-shaped collar on the body, frangible means securing the collar to the body, a rubber annulus on the body above said collar, and a top abutment for the rubber secured to the body.

6. In a packer, the combination of a packer body, an anchor sleeve, a collar on the sleeve having an upward extension, upwardly projecting spring arms supported by the collar and having wedging slips at their upper ends, and a downwardly tapered sleeve on the body adapted to expand the slips.

7. In a packer, the combination of an anchor sleeve, a collar on the sleeve having an upward extension, a packer body working through the collar, a rubber annulus on the body, a collar forming a bottom abutment for the latter adapted to rest on the sleeve extension, and an abutment on the body for the upper end of the annulus.

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

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Witnesses:
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S. B. LITTLE.