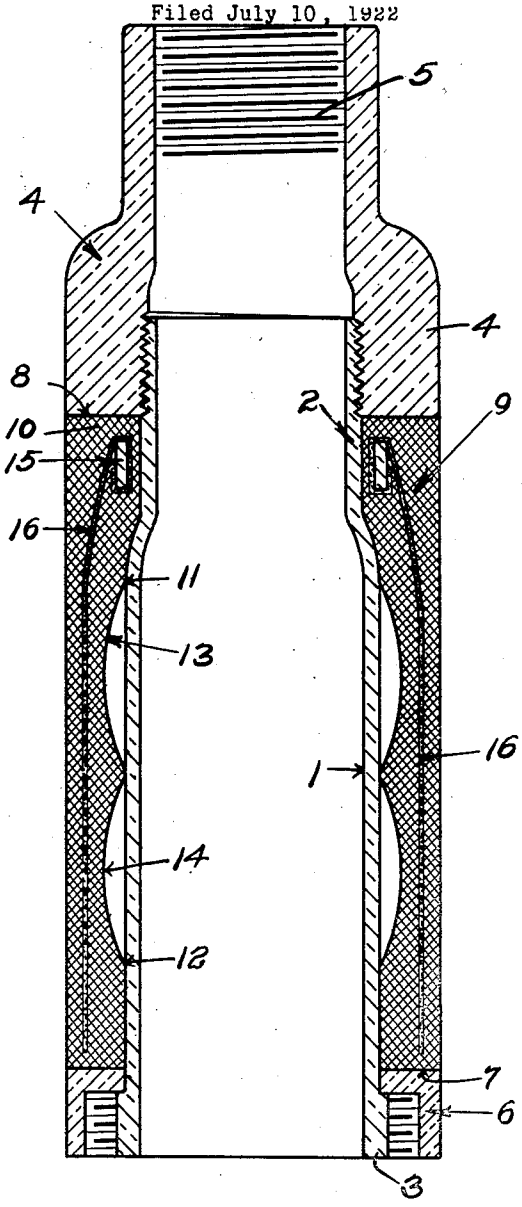
July 22 , 1924. 1,502,372

J. T. CALLANAN, JR

PACKER

Filed July 10, 1922



WITNESSES:

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UNITED STATES PATENT OFFICE.

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PACKER.

Application filed July 10, 1922. Serial No. 574,063.

To all whom it may concern:

Be it known that I, JAMES T. CALLANAN, Jr., a citizen of the United States, and a resident of Parkersburg, in the county of Wood and the State of West Virginia, have made a new and useful Invention in Packers, of which the following is a specification.

This invention relates to well packers.

In packers employing a rubber and in which the weight of the tubing, casing or pipe extending from the packer to the top of the well is utilized to set or expand the rubber to the well wall, great difficulty is experienced in setting or expanding the packer rubber in shallow wells, because of the fact that the weight of the tubing, casing or pipe above the packer is not sufficient to cause the rubber as now made to set or expand, and an object of this invention is to provide a packer, the rubber of which may be set or expanded with a minimum weight of tubing, casing or pipe above the same whereby the packer may be effectively utilized in packing shallow wells.

Experience has shown that packer rubbers do not as a rule expand in the center of their length, but have a tendency to roll over on themselves in a number of places throughout their length and this often makes it difficult to remove them with the tubing or casing.

A further object of this invention is to provide a rubber packer which may be easily removed when desired with the casing, tubing or pipe.

These, as well as other objects which will readily appear to those skilled in this particular art, I attain by means of the device described in the specification and illustrated in the single sheet of drawings accompanying and forming part of this application.

The single figure of the drawings represents, in longitudinal section, a packer embodying this invention.

In carrying out this invention, in one of its forms, a length of tubing 1 reduced at its upper end as shown at 2 and having an annular flange 3 at its lower end is carried by a head member 4 which is attached to the lower end of the well casing, tubing or pipe (not shown) by means of threads 5. A coupling ring 6 confined on tubing 1 by annular flange 3 is adapted to slide relatively to the tubing 1, and, between the upper surface 7 of this ring and the lower end 8 of head member 4, a rubber packer 9 is located.

Exteriorly, rubber packer 9 is cylindrical, but its inner surface from its upper end 10 to a point 11 is made to conform to and hug the outer surface of tubing 1, the lower end of the rubber packer from point 12 conforms to and hugs the outer surface of tube 1. Between points 11 and 12 the inner surface of the packer rubber is formed with annular depressions 13 and 14 which tend to weaken the packer rubber at these points. A metal anchor ring 15 having its inner diameter less than the outer diameter of the major part of tube 1 is embedded in the rubber packer and anchored to this is a tubular cord fabric reinforcing member 16.

The upper end of the tubular fabric reinforcing member 16 is preferably folded around anchor ring 15 and the fabric extends to the bottom of the packer rubber. The fabric is impregnated with rubber and after being positioned is vulcanized into the rubber. The fabric is so woven that it will stretch circumferentially but will elongate but slightly.

By having a fabric of this character vulcanized in the rubber at or near its center and extending from end to end, the packer at the weakened points is allowed to expand circumferentially to pack, but is prevented from blowing out by gas which passes between the coupling ring 6 and the outer surface of tubing 1.

The fabric which prevents elongation of the packer rubber facilitates removal of the packer, since the fabric is secured to the anchor ring. With this construction which prevents rolling of the packer rubber, the rubber will always be lifted from the well by the anchor ring. This method prevents jamming which frequently occurs with packer rubbers of the ordinary type.

Having thus described my invention, what I claim is:—

1. In a well packer, relatively movable members and a sleeve of expansible material confined between said members having a fabric reinforcement capable of circumferential expansion and but slight elongation.

2. In a well packer and in combination with telescoping members, a rubber sleeve confined between said members having its inner wall provided with one or more circumferentially extending depressions and

provided with a fabric reinforcement capable of circumferential expansion and but slight elongation.

3. A packer rubber, comprising a metal ring, a fabric tube depending from said ring and so formed as to be capable of circumferential expansion and but slight elongation, rubber surrounding said ring and said tube and within which said tube and ring are embedded and vulcanized.

4. A packer rubber, comprising a metal ring, a fabric tube depending from said ring and so formed as to be capable of circumferential expansion and but slight elongation, rubber surrounding said ring and said tube and within which said tube and ring are embedded and vulcanized; the inner surface of said sleeve being provided with one or more circumferentially extending depressions of such character and size as to cause said sleeve to expand at said depressions during longitudinal collapsing of the sleeve.

In testimony whereof, I have hereunto subscribed my name this 28th day of June, 1922.

JAMES T. CALLANAN, JR.