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L. D. MOWREY ET AL

PUMP

Filed March 21, 1925

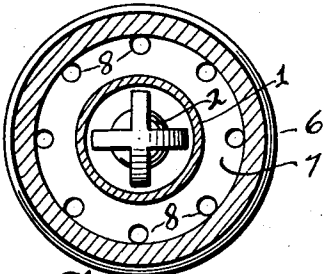
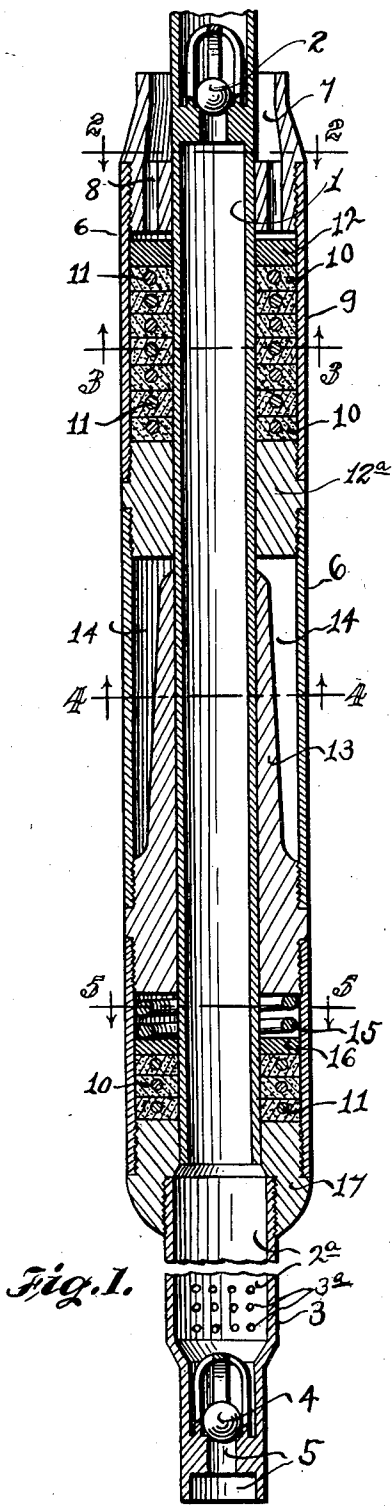


Fig. 2.

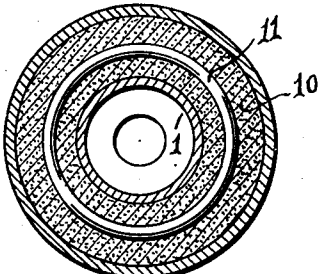


Fig. 3.

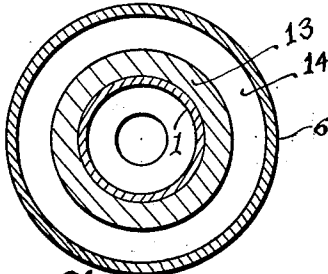


Fig. 4.

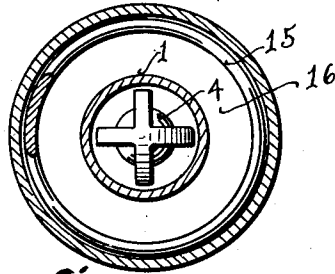


Fig. 5.

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UNITED STATES PATENT OFFICE.

LESTER D. MOWREY AND GEORGE T. KIMBELL, OF BURKBURNETT, TEXAS.

PUMP.

Application filed March 21, 1925. Serial No. 17,170.

To all whom it may concern:

Be it known that we, LESTER D. MOWREY and GEORGE T. KIMBELL, citizens of the United States, residing at Burkburnett, in the county of Wichita and State of Texas, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

This invention relates to pumps, particularly for oil wells, and has for its objects the provision of a pump so designed as to prevent sand from accumulating on the plunger rod of the pump, to aid in the fluid lifting operation and to eliminate the probable sticking of the pump plunger.

Another and important object of the invention is to provide a packing box for the plunger rod to prevent leakage, and to provide a compact and strongly built pump.

With the above and other objects in view the invention will be more clearly understood by reference to the following description, taken in connection with the accompanying drawings, forming part hereof, and in which:

Figure 1 is a vertical sectional view of a pump embodying the invention.

Figures 2, 3, 4 and 5 are cross-sectional views thereof, taken on the same lines indicated by the respective figures.

Continuing the description of the invention and referring to its various parts more in detail, 1 denotes the plunger barrel of the pump which is provided with an upper valve 2. The lower part of the pump 3, seated in the bottom of the well, has a caged, stationary valve 4, the liquid entering the barrel through the inlets 5, and passing through the perforations 3^a in the lower end 2^a of the plunger barrel. The object of these perforations will be referred to hereinafter.

Secured to the lower part of the pump 3 is a packing chamber 6 with a central opening through which the plunger barrel 1 works.

The upper part or connecting head of the chamber 6 is recessed at 7 and provided with spaced apertures 8—8 for the entrance of liquid which during the operation of the pump compresses the packing in a stuffing box 9. This stuffing box is filled with a number of round, solid rings 10—10 in the center of each of which is embedded a heavy wire 11 to prevent the ring from collapsing. Seated upon the top-most ring is

a follower ring 12 disposed directly underneath the apertures 8—8. Below the rings is a connector 12^a for uniting the two upper parts of the packing chamber together, and which forms a support for the rings 10—10.

In the middle section of the chamber 6 is a tapered, cylindrical member or pump barrel portion 13, the bottom of which unites the middle section with the lower section of this chamber. The space 14 between the inner walls of the chamber and the tapered, cylindrical member 13 provides a sand trap or pocket on the outside, the member 13 wiping any sand from the plunger barrel or tube and catching it in the pocket during the reciprocation of the plunger.

Below the member 13 is a spring 15, a follower head 16 and several rings 10—10 as in the upper part of the chamber. The lower-most ring is seated upon a lower head 17 which connects the pump part 3.

Referring again to the perforations 3^a in the lower end of the plunger barrel 1; the object of these perforations is to equalize the fluid pressure on the top, bottom and wearing surfaces of the packing to prevent the packing from collapsing when it is necessary to remove the plunger.

In the operation of the pump, on the upward stroke, the oil or liquid pressure will enter the apertures 8—8 through the recess 7 and compress the packing rings 10, making a snug and tight fit around the plunger. The spring 15, bearing against the rings 10 also causes the barrel or plunger to be tightly embraced at this point, thus preventing any leakage. The arrangement also provides for the wiping of the plunger free from sand at each stroke and traps it in the pocket 14.

What is claimed is:

1. In a pump, the combination of a tubular plunger rod, a valve therein, a packing chamber surrounding said plunger rod and secured to the lower part of the pump; a plurality of re-inforced packing rings in the upper and lower part of said chamber, a sand trap in the center of said chamber, means for compressing the upper and lower rings to provide a tight embrace of the packing chamber around the rod to prevent leakage.

2. In a pump construction, the combination of a plunger rod, with a valve, a packing chamber, an upper connecting head on the chamber with a recess and apertures

for entrance of liquid under pressure, a plurality of re-inforced rings next the lower head, a support for the rings, an upwardly directed tapered, cylindrical member below the support providing an annular recess between the chamber walls and said tapered, cylindrical member for a sand trap, re-inforced packing rings below the tapered, cylindrical member under spring tension, and a lower connecting head below the latter rings.

3. In a pump construction, the combination of a tubular plunger rod with a lower perforated end, a valve in the plunger rod, a packing chamber through which the rod reciprocates; said chamber having a recessed and apertured head, packing rings for causing a close embrace of the rod on liquid pressure in the pump operation; similar rings on the lower end of the chamber, and a sand trap in the center of said chamber, said trap comprising a recess formed

between the inner sides of the chamber and an upwardly tapered member secured to the chamber sides at its base.

4. In a pump construction, the combination of a tubular plunger rod, with a valve, a packing chamber, an upper connecting head on the chamber with a recess and aperture for entrance of liquid under pressure, a plurality of re-inforced rings next the lower head, a support for the ring, an upwardly directed cylindrical pump barrel member outside of said plunger with a taper providing an annular recess between the chamber and member for a sand trap, re-inforced packing rings below the cylindrical member, under spring tension and a lower connecting head below the latter rings.

In testimony whereof we have signed our names to this specification.

LESTER D. MOWREY.
GEORGE T. KIMBELL.