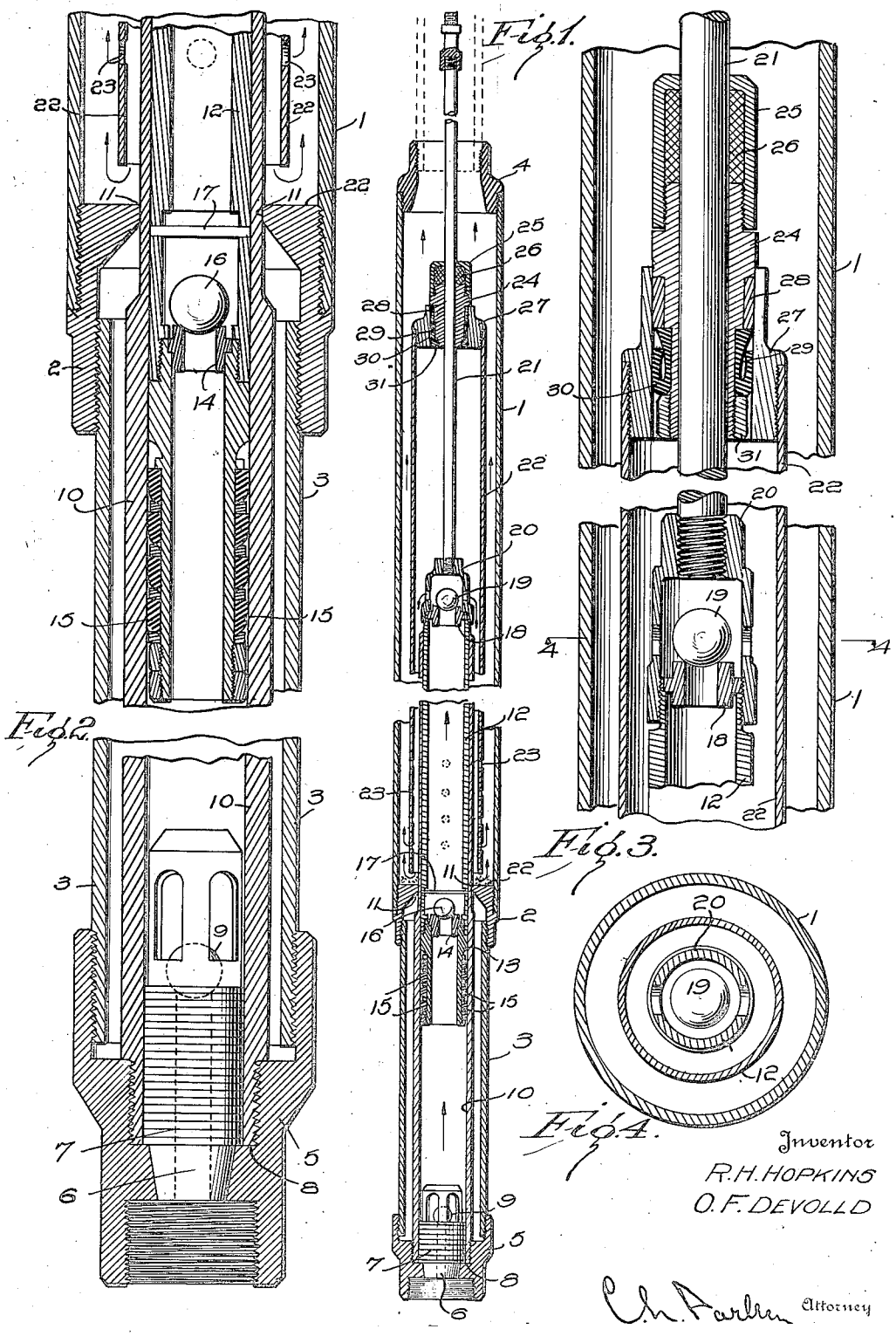
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PUMP.

APPLICATION FILED OCT. 24, 1921.

1,423,935. Patented July 25, 1922.



UNITED STATES PATENT OFFICE.

RICHARD F. HOPKINS AND ORIAN F. DEVOLLD, OF BARTLESVILLE, OKLAHOMA.

PUMP.

1,423,935. Specification of Letters Patent. Patented July 25, 1922.

Application filed October 24, 1921. Serial No. 509,931.

To all whom it may concern:

Be it known that we, RICHARD F. HOPKINS and ORIAN F. DEVOLLD, citizens of the United States, residing at Bartlesville, in the county of Washington and State of Oklahoma, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

This invention relates to pumps for oil wells and it comprises a pump casing or shell, a working barrel arranged in the lower portion thereof, a traveling tube, a valve arranged in said barrel, and a floating tube surrounding the upper portion of said traveling tube, whereby the oil delivered from said traveling tube is caused to pass around the lower end of the floating tube and deposit sand contained therein.

In the present invention, we provide an oil pump in which the sand delivered to the pump barrel with the oil is prevented from lodging on the cups and destroying them. The floating tube is arranged within the casing and this tube protects the barrel and keeps the floating sand from lodging in the valve tube or cups.

A further advantage of the present invention is the provision of a construction wherein a cast barrel may be employed which will not be readily broken.

A further object of the invention is the provision of a construction employing a floating tube having perforations in its lower end through which the oil passes. When the level of sand extends above the perforations, the pressure in the valve tube will lift the floating tube and release it from the sand.

In the accompanying drawings, we have shown one embodiment of the invention. In this showing:

Figure 1 is a vertical sectional view,

Figure 2 is a similar view of the lower end of the pump on an enlarged scale,

Figure 3 is a similar view of the upper end on an enlarged scale, and,

Figure 4 is a transverse horizontal sectional view on line 4—4 of Figure 3.

Referring to the drawings, the pump comprises a main outer shell 1. The lower end of the shell is threaded for the reception of a casting 2, to which a lower outer shell 3 is secured. A casting 4 is arranged at the upper end of the outer shell. A bottom casting 5 is secured to the lower end of the lower outer shell. This casting is provided with a central opening 6. A valve cage 7 is supported on a shoulder 8 formed in the casting and this cage is adapted to receive a ball valve 9. A working barrel 10 is supported in the casting 5. The working barrel is preferably formed of cast metal. As shown, the working barrel extends upwardly beyond the casting 2 and the casting is provided with a circumferential rib 11 adapted to engage the barrel to hold it in place. A traveling tube 12 is arranged within the working barrel. This tube is provided with a traveling valve 13 on its lower end. As shown, the tube is adapted to receive a coupling member 14 to which the valve 13 is connected. The traveling valve is provided with valve cups 15. The coupling 14 is provided with a valve seat on its upper face for the reception of a ball valve 16. The upward movement of the valve is limited by a pin 17. The upper end of the tube is provided with a member 18 forming a valve seat for the reception of a ball valve 19, a cage 20 surrounding the valve. A plunger rod 21 is connected to this cage and extends upwardly through the outer casing.

The floating tube 22 is arranged in the pump between the working barrel and the outer casing. The floating tube is adapted to rest upon the upper face 22 of casting 2. As shown, it is provided with a plurality of perforations 23 near its lower end. Suitable packing is provided at the point where the plunger rod passes through the floating tube. As shown, the plunger rod is surrounded by a packer body 24 which supports a packing gland 25 having suitable packing 26 arranged therein. A casting 27 is secured in the end of the floating tube, and the packer body is secured to this casting by means of a packer spring 28. A coupling 29 is arranged beneath the spring, the coupling being so shaped to permit a packer cup 30 to be arranged as shown. The parts are retained in position by means of a nut 31.

In operation, the upward movement of the traveling tube and valve in the working barrel creates suction in the lower end and raises the valve 9 from its seat, permitting oil to flow into the lower end of the working barrel. On the downward stroke, the valves 16 and 19 are opened, permitting the oil to pass from the interior of the working barrel to the interior of the floating tube. Thence, the oil flows downwardly as indicated by the arrows on Figure 1 of the draw-

ings, and passes through the perforations in the lower end of the floating tube into the main outer shell or casing. The provision of a tube independent of the movable parts permits the tube to adjust itself according to the sand lodging at the bottom thereof. When sufficient sand is trapped to cover the perforations, the oil flowing into the interior of the floating tube creates a pressure therein, raising the tube and permitting the oil to flow into the main casing.

It is to be understood that the form of our invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size, and arrangement of parts may be resorted to without departing from the spirit of our invention or the scope of the subjoined claims.

Having thus described our invention, we claim:

1. In a pump for oil wells, an outer casing, a working barrel arranged in the lower portion thereof, a traveling tube mounted therein, valves arranged in said barrel and tube, and a floating tube arranged in said casing and surrounding the upper portion of said working barrel.

2. In a pump for oil wells, an outer casing, a working barrel arranged in the lower portion thereof, a member mounted in said casing, and forming a guide for said barrel, a traveling tube mounted in said barrel, valves arranged in said barrel and said tube, and a floating tube normally resting on said guide member and surrounding the upper portion of said barrel.

3. In a pump for oil wells, an outer casing, a working barrel arranged in the lower portion thereof, a member mounted in said casing, and forming a guide for said barrel, a traveling tube mounted in said barrel, valves arranged in said barrel and said tube, and a floating tube normally resting on said guide member and surrounding the upper portion of said barrel.

4. In a pump for oil wells, an outer casing, a working barrel arranged in the lower portion thereof, a traveling tube mounted therein, valves arranged in said barrel and tube, a floating tube arranged in said casing and surrounding the upper portion of said working barrel, and means for supporting said floating tube when a normal pressure exists therein.

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

RICHARD F. HOPKINS.
ORIAN F. DEVOLLD.

Witnesses:
W. B. MAXWELL,
O. C. LUEKER.