

W. A. MCGREGOR.
WELL PUMP.

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940,545.

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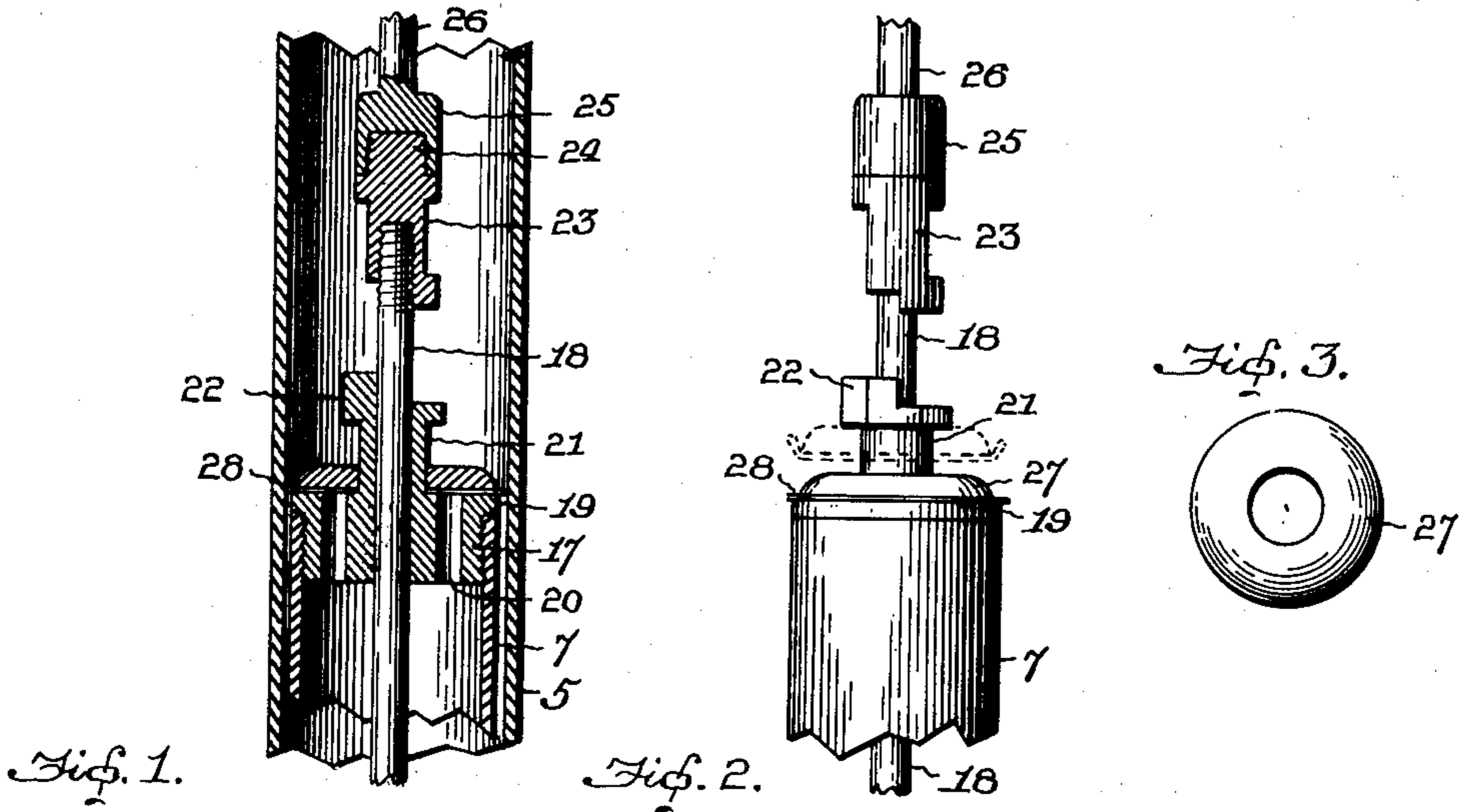


Fig. 3.

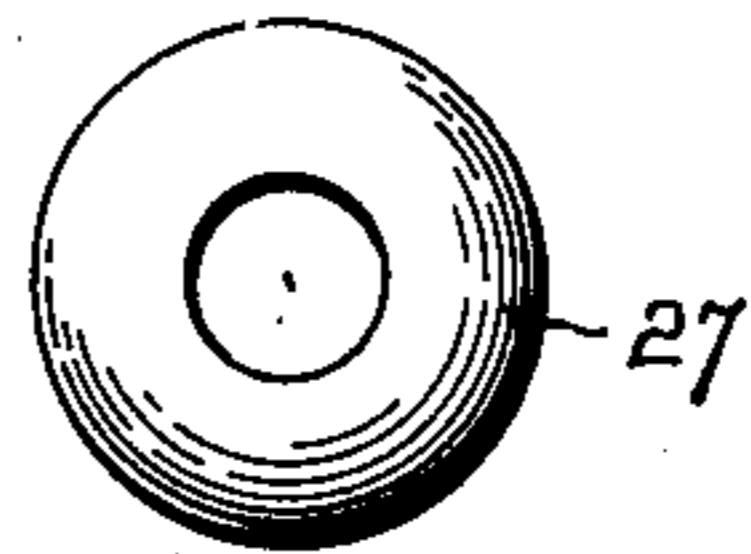


Fig. 1.

Fig. 2.

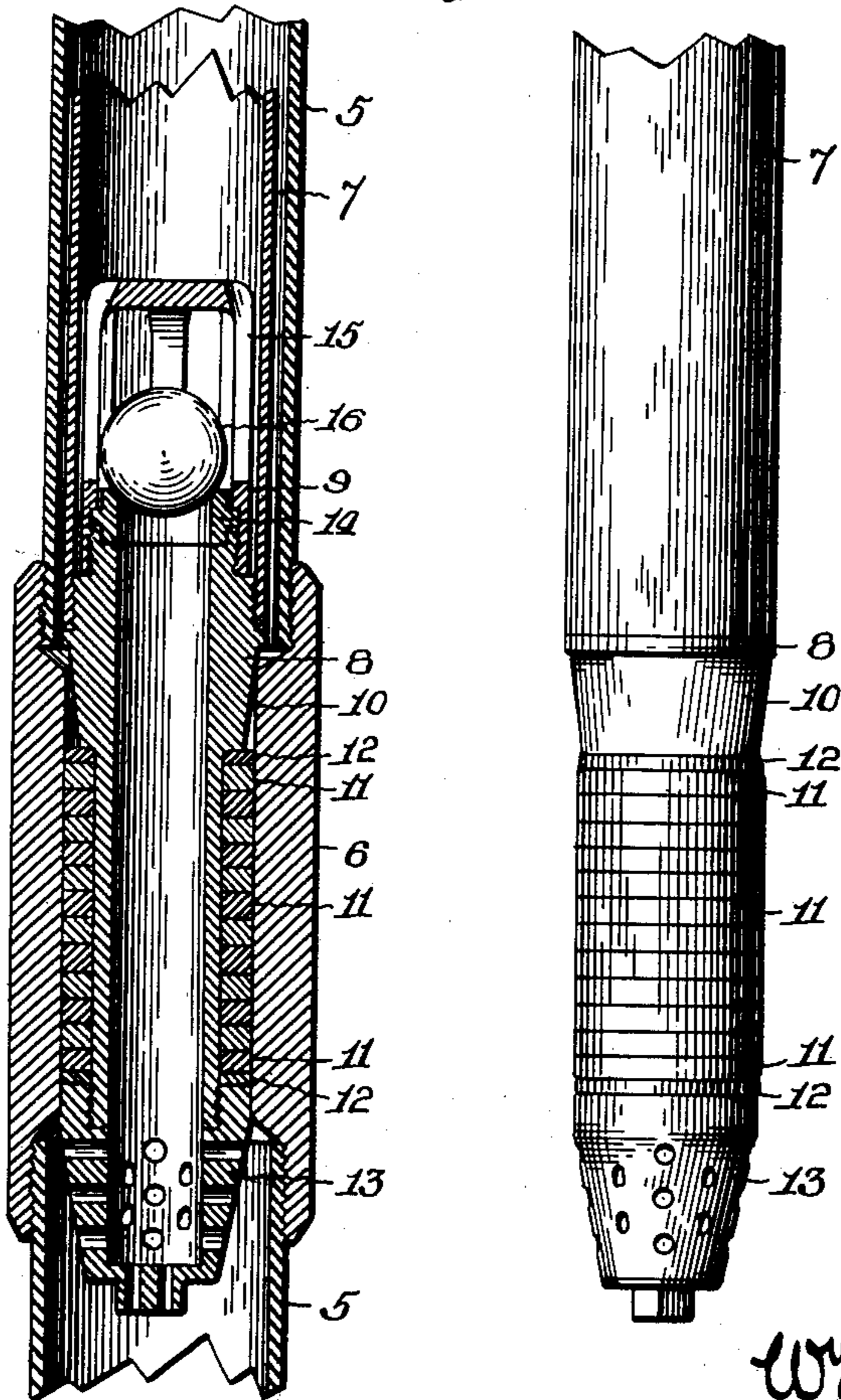
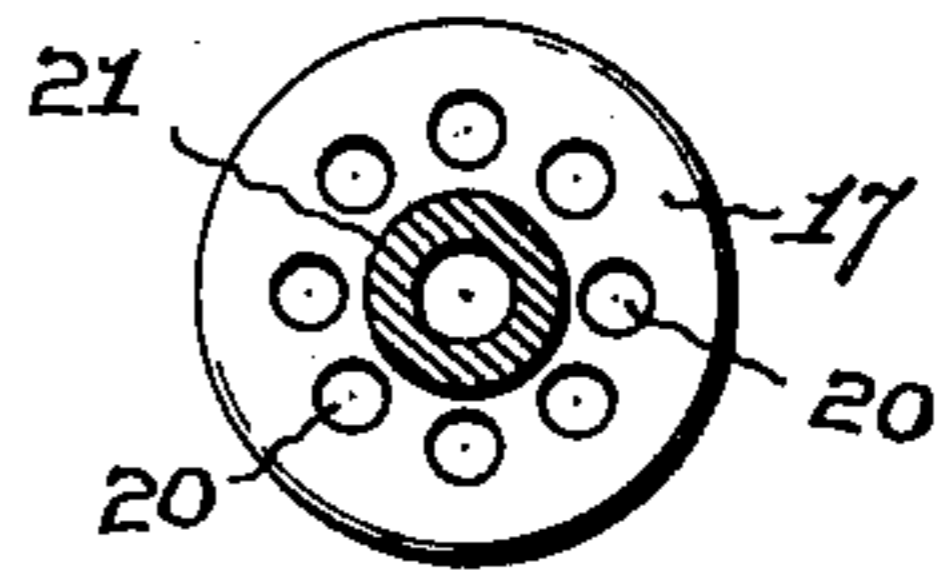


Fig. 4.



Witnesses

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WELL-PUMP.

940,545.

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To all whom it may concern:

Be it known that I, WILLIAM A. MCGREGOR, a citizen of the United States, residing at Bradford, in the county of McKean and State of Pennsylvania, have invented a Well-Pump, of which the following is a specification.

This invention is an improvement in pumps, and relates more especially to that class which are employed in connection with oil wells.

The primary object of my present invention is to provide a pump cylinder with a standing valve in connection therewith and forming a lower extension thereof, said parts being of such construction that they may be dropped into the well tubing and will be securely held therein during the operation of pumping.

A further object of my invention is to provide the perforated bushing at the upper end of the pump cylinder or barrel with a check-valve which is not only of assistance in the pumping operation, but also normally covers the openings in the bushing so as to prevent rivets, sand, and other particles from entering the pump cylinder and injuring the working valve and packings of the piston.

A further object of my invention is to provide the bushing with a locking-nut or engaging-member at its upper end adapted to cooperate with a similar locking-nut or engaging-member at the upper end of the piston-rod, so as to hold said piston-rod against turning while screwing connecting-rods in place.

Other objects and advantages of my invention will hereinafter appear, and what I claim as novel will be more specially set forth in the appended claims.

In the accompanying drawings, which form a part of this specification: Figure 1 is a vertical longitudinal sectional view showing the application of my invention to a well-tubing. Fig. 2 is a side elevation of the pump-cylinder and parts carried thereby. Figs. 3 and 4 are details hereinafter referred to.

Like numerals of reference indicate like parts in all the figures of the drawings.

My invention is adapted to be applied to the ordinary form of well tubing, as illustrated in Fig. 1, in which 5 designates the tubing, and 6 a collar or coupling usually employed in connection therewith, the in-

ternal diameter of said collar or coupling being slightly less than the internal diameter of the tubing, for the purpose hereinafter apparent.

In carrying out my invention I employ in the first place a tubular casing or cylinder 7, forming the pump-barrel, and to the lower end of the same connect the standing valve 9, the body portion 8 of which in the present instance is extended some distance beyond the pump-barrel, to receive the means hereinafter described which hold the parts of the device in place by frictional engagement with the inner side of the coupling or collar 6. The body portion 8 is provided immediately below the standing valve with a tapered seat 10, at the lower end of which said body portion is reduced in diameter for the remainder of its length to receive a series of leather rings 11, confined between metal washers 12, said leather rings and washers being firmly clamped in place by means of a perforated cap 13 threaded on the lower end of the aforesaid body portion or extension of the standing-valve. As will be seen, the leather rings 11 are slightly wider in diameter than the metal washers, and correspond in width, approximately, with the internal diameter of the collar or coupling 6, so as to bind securely therein when the pump-barrel with its standing-valve are dropped in the well-tubing. When the parts are in place the tapered ground seat 10 fits closely in the contracted upper end of the collar or coupling to form a tight joint. The engagement of the extension of the standing-valve with the collar or coupling therefor serves to securely hold the parts of the pump in place in the well-tubing, so that the barrel will not be disturbed during the operation of the piston, and, also, so that the pump mechanism may be removed by extraordinary pulling force.

The standing-valve is of the ball-valve type, with a reversible seat 14, the latter being held in place by the cage 15 which is screwed on the upper end of the body portion 8 and contains the ball 16.

In the upper end of the cylinder or pump-barrel 7 is threaded a bushing 17, through the center of which passes the piston-rod 18 of the pump, said bushing being formed with a flange 19 which overlies the upper edge of the barrel. The bushing is provided with holes 20, through which the oil or fluid passes out of the pump-barrel into the well tubing, and centrally is provided with a

round upward extension 21, terminating at its upper end in an enlargement 22, in the form of an octagonal nut with which a wrench may engage for screwing and unscrewing the bushing, said enlargement being cut away at one side, as shown, so as to form one member of a locking device with which co-acts a coupling 23 threaded on the upper end of the piston-rod and similarly cut away at its lower end. The coupling 23 is flattened at its opposite sides, as shown, to receive a wrench or tool, and is threaded at its upper end, as at 24, to engage in a threaded socket 25 at the lower end of the coupling-rod 26.

The piston-rod is coupled at its lower end to an ordinary form of hollow piston having a working-valve, but as I lay no claim to any part of the piston I have not shown same herein.

Working on the round extension 21 of the bushing between the enlargement or nut 22 and body portion of said bushing, is a check-valve 27, which is adapted to cover the holes 20 in the bushing when the pump is at rest, so as to prevent rivets, pieces of wood, dirt, sand, or other particles from getting into the pump-barrel and injuring the working-valve or other parts of the piston. This check-valve is in the form of an annular plate, the outer upper edge of which is preferably rounded, as shown. In connection with this check-valve or annular plate I may use a leather piece 28, attached to the underside thereof and projecting beyond the outer edges of the valve so as to more effectually prevent the finer particles, as sand, from falling below the bushing, said leather piece forming practically a yielding flap or apron, which may fold upward to permit the oil or fluid to pass by the valve. It will be observed, also, that the check-valve assists in the operation of the pump, in that it closes the upper end of the pump-barrel on the descent of the piston so that the oil or fluid

will be forced to pass upward through the piston, said check-valve opening on the ascent of the piston so as not to interfere with the upward flow of the oil. The essential office of this check-valve is, however, to protect the mechanism of the pump by normally closing the holes in the bushing and in fact all that part of the well-tubing below the bushing.

Having thus described my invention, what I claim as new and desire to secure by Letters-Patent, is:—

1. In a pump for oil-wells, the combination with a cylinder or pump-barrel and piston-rod, of a bushing secured in the upper end of the cylinder or pump-barrel and having an upward extension terminating in a head cut away at one side, and a coupling on the piston-rod cut away at one side so as to interlock with the aforesaid head on the bushing, substantially as shown and for the purpose set forth.

2. In a pump for oil-wells, the combination with a cylinder or pump-barrel, and piston-rod, of a bushing secured in the upper end of the cylinder or pump-barrel and having holes therethrough and an extension rising centrally therefrom, said extension terminating at its upper end in an enlarged octagonal head cut away at one side, a check-valve working on the extension below the head, and a leather apron secured to the underside of the check-valve and projecting beyond the outer edge thereof; together with a coupling on the upper end of the piston-rod cut away at its lower end to interlock with the head on the extension of the bushing, as herein shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM A. MCGREGOR.

Witnesses:

S. F. MULLIN,
J. H. HOWE.