

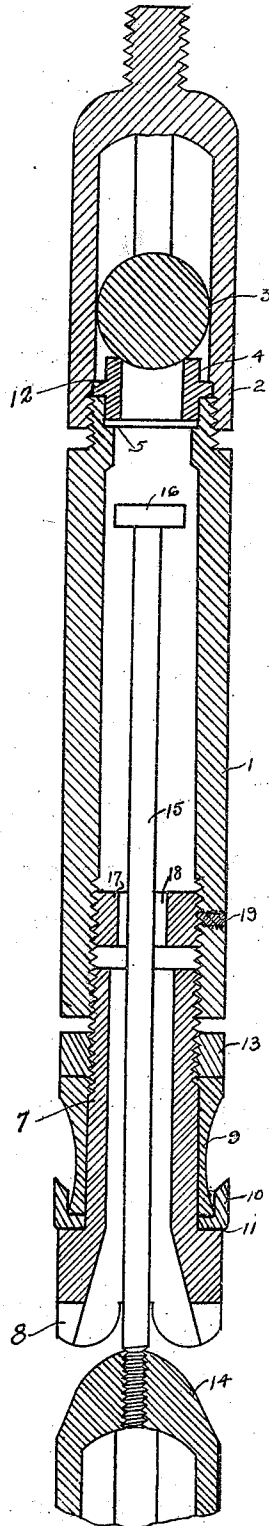
H. E. KARNES.

PLUNGER.

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934,184.

Patented Sept. 14, 1909.



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UNITED STATES PATENT OFFICE.

HARRY E. KARNES, OF BATSON, TEXAS.

PLUNGER.

934,184.

Specification of Letters Patent. Patented Sept. 14, 1909.

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To all whom it may concern:

Be it known that I, HARRY E. KARNES, a citizen of the United States, residing at Batson, in the county of Hardin and State of Texas, have invented certain new and useful Improvements in Plungers, of which the following is a specification.

My invention relates to new and useful improvements in plungers and more particularly to that class of plungers used in working barrels in water and oil wells.

The object of the invention is to produce a device of this character which will allow battering without loosening the cups and rings or spreading the base of the plunger barrel in such a manner that it will be of no further use.

Another feature of the device resides in the fact that all the threads are at the upper end of the plunger barrel, thus lessening the danger of the cups being dropped from the plunger barrel and causing the threading to be damaged.

Another object of the invention is to provide means whereby the standing valve may be so connected with the plunger as to permit the standing valve to be withdrawn at the same time the rods with the plunger attached are taken out.

Finally the object of the invention is to produce a device of the character described that will be strong, durable, compact, efficient and one in which the parts will not be likely to get out of working order.

With the above and other objects in view the invention has relation to certain novel features of construction and operation which will be more fully understood as the nature of the invention is more minutely described, an example of which is given in this specification and illustrated in the accompanying drawings; wherein the figure is a sectional view of my complete plunger with an enlarged bushing showing means for withdrawing the standing valve with the plunger.

Referring more particularly to the drawings, the numeral 1 designates the bushing. 2 designates the crown and 3 the ball which seats in valve seat 4 which is reversible and is driven in bushing 1. This bushing is provided with an inward shoulder 5 to stop valve seat at a proper depth and is connected to a barrel 7 by means of inward threads in bushing and outward threads on the upper end of the said barrel.

The lower end of the barrel is provided

with projections 8 which flare from the inside outwardly and are designed to fit snugly over the top of the crown of the lower or standing valve, when the plunger is lowered and is so designed that it will not bind and will reduce the jar to a minimum.

Numeral 9 designates the cup rings over which the valve cups 10 fit when assembled on barrel 7. 11 designates a shouldered base which supports 9 and 10 in proper position on barrel 7.

The construction of my device is as follows:—The barrel 7 is provided at its base with a shoulder 11 and flanges 8 at the lower end and is threaded at its upper end. Valve cups are placed on the cup rings, and these are then placed on the barrel with the flared edges of both the cup rings and the valve cups toward the threaded end of the barrel until a desired number of cup rings and valve cups have been placed on the barrel, when a locknut 13 is screwed down on the barrel until it comes in contact with the valve cups and holds the valve cups and cup rings in proper position. Then bushing 1 is screwed onto the threaded end of the barrel. A double valve seat 4 is driven into this bushing until its rib strikes the end of the barrel. This valve seat is provided with a centrally located annular rib 12 between its ends so that when it is desired to exchange ends with said valve seat the rib 12 of the valve seat will come in contact with the upper edge of the bushing. This rib and the edge of the bushing as well as the shoulder in the bushing should be ground joints so that there will be no leakage between seat and bushing when the ball seats in the valve seat. The ball 3 is placed on valve seat and the crown 2 is then screwed down on the bushing which completes the plunger.

Particular attention is called to the manner in which both the barrel threading and inward bushing threading is done, that is, the outward threading tapers toward the end of the barrel while the inward threading tapers toward the center of the bushing. This is for the purpose of allowing the parts to be screwed together tighter as the threads become worn which is not true of the plungers now in common use. Attention is also called to the fact that space is provided between the nut and the bushing for the purpose of allowing the bushing to be tightened when threads become worn.

Particular attention is also called to the

fact that the base of the barrel is provided with a shoulder for holding the cup rings and valve cups against losing off in operation, as there is no nut to become loose as is true of the plungers now in common use and attention is called to the beveled projections for the purpose of engaging the crown of the lower or standing valve, so that should the couplings of the plunger become loose the said plunger may be jammed down onto the crown of the standing valve and said couplings be tightened by turning the plunger by means of a rod which screws onto the crown of the plunger, these flanges serving to hold the lower portion of the plunger stationary while the couplings are being tightened. It is to be further noted that the rib on the valve seat contacts on one side with the bushing forming ground joints and on the other side it contacts with the cage or crown which is screwed down on the bushing forming another close fitting joint which when all the other points are properly connected forms my complete and improved plunger.

In the figure the numeral 14 designates the top portion of the standing valve into which an iron rod 15 is screwed. This rod carries an enlarged head 16 upon its upper end. In this form of plunger the bushing is elongated and the rod 15 extends up inside thereof as shown in the drawing. This bushing is provided with a nut 17 which is screwed up inside of the bushing. This nut is provided with an opening 18 through which the rod 15 passes. This opening is much larger in diameter than the diameter of the rod but is smaller in diameter than the diameter of the head of the rod and thus in raising the plunger the head of the rod 15 is engaged by the nut 17 and the plunger and standing valve are held together in withdrawing them irrespective of the condition of the intermediate parts, the means for engaging the head of rod 15 being independent of the barrel of the plunger. The nut is held against turning in the bushing by a set screw 19.

While I have shown this particular design and described this special method of operation I desire it to be understood that the invention is not limited either to this particular form or specific construction but may be varied so long as the principle is not departed from.

What I claim is:—

1. In a plunger, the combination with a barrel having a shouldered base integral therewith, said plunger being provided, at its lower extremity, with downwardly projecting outwardly tapering flanges of a

bushing secured upon the extremity thereof, a threaded nut secured within the inner walls of said bushing upon the threaded walls thereof, means for holding said nut in its proper place, a rod operating loosely within said barrel and through an aperture in said nut, said rod being secured to a standing valve beneath and being provided with a head at its upper extremity for securing engagement with said nut; said rod being so disposed as to secure said standing valve to the bushing of the plunger.

2. In a plunger, the combination with a barrel having a shouldered base integral therewith, said barrel being provided on its lower end, with downwardly extending and outwardly tapering flanges; of a bushing secured upon the other end of said barrel; an outwardly threaded nut secured within the inner wall of said bushing upon the threaded wall thereof; a set-screw passing through the wall of said bushing and into the said nut for holding the same securely in place; a rod operating loosely within said plunger and through an aperture in said nut, said rod being secured to a standing valve beneath and being provided with a head at its upper extremity for securing engagement with said nut; and being so disposed as to secure said standing valve to said plunger; a crown carried on one extremity of the said bushing; a reversible valve seat carried within the said crown and a ball to close said valve seat, substantially as described.

3. In a plunger the combination with a barrel having a shouldered base integral therewith, said barrel carrying at its lower end downwardly projecting flanges; of a bushing secured to the other end of said barrel; a nut secured upon the inner wall of said bushing; a means passing through the wall of said bushing and engaging with said nut for holding the same in place; a rod operating loosely within said plunger and through an aperture in said nut, said rod being secured to a standing valve beneath and being provided with a means at its upper extremity for securing engagement with said nut, and being so disposed as to secure said standing valve to said plunger; a crown carried on one extremity of said bushing; a reversible valve seat carried within said crown and means to close said valve.

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

HARRY E. KARNES.

Witnesses:

P. S. RUSSELL,
PAINE PANNILL.