

A. J. HENDERSON.
STANDING VALVE.
APPLICATION FILED NOV. 27, 1911.

Patented May 14, 1912.

1,025,977.
Fig. I.

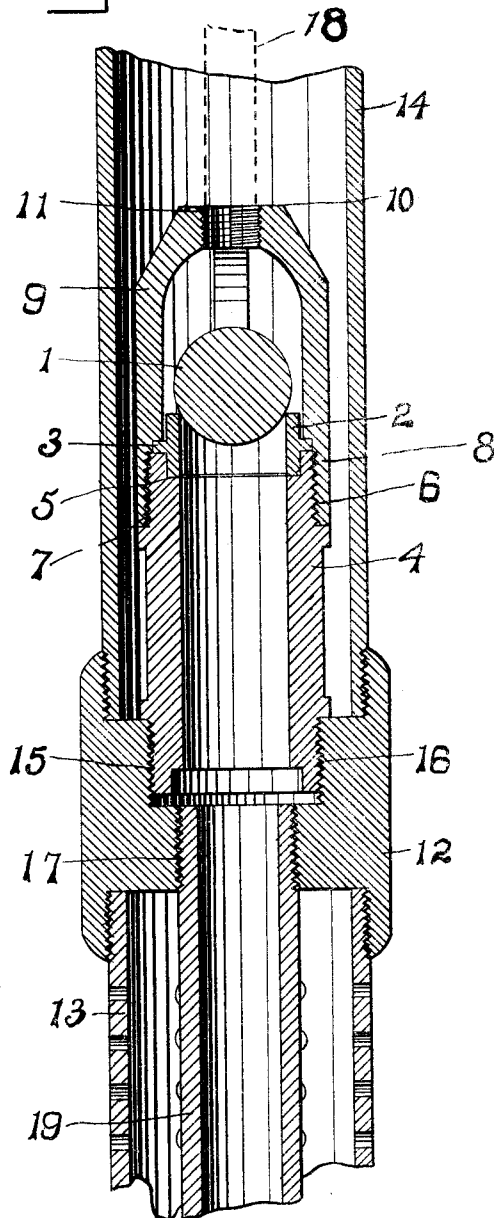
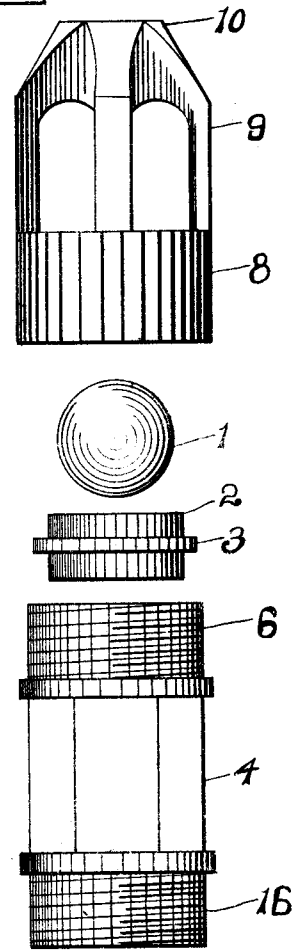


Fig. 2



WITNESSES

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ANDREW J. HENDERSON, OF SARATOGA, TEXAS.

STANDING-VALVE.

1,025,977.

Specification of Letters Patent.

Patented May 14, 1912.

Application filed November 27, 1911. Serial No. 662,635.

To all whom it may concern:

Be it known that I, ANDREW J. HENDERSON, a citizen of the United States, residing at Saratoga, in the county of Hardin and State of Texas, have invented certain new and useful Improvements in Standing-Valves, of which the following is a specification.

The chief objects of this invention are to increase the efficiency and durability of standing valves for deep oil wells having strong pressure and to facilitate the placing and removal of such valves.

To these ends the said invention consists in the construction and combination of parts hereinafter more particularly set forth and claimed.

In the accompanying drawings: Figure 1 represents a vertical section through a standing valve embodying my invention and contiguous or neighboring parts; and Fig. 2, a side elevation of the valve and valve casing, the several parts thereof being slightly separated but arranged in normal order.

The ball valve 1 rests normally on a reversible, detachable annular seat 2, which is provided at its middle with an external integral annular collar 3 that rests on the upper end of a valve body 4, the lower end of said seat (whichever end be directed downward) resting on an internal annular shoulder or fixed collar 5 of said valve body, so that said seat is doubly supported by the latter. It is normally held in place thereon by the action of external screw-threads 6 of the upper end of the valve body, engaging internal screw-threads 7 of the solid annular lower part of the body 8 of the valve casing whereby the lower end of said body is drawn tightly down toward collar 3 and an external annular shoulder of said body, bearing against the same. The valve cage 9 of said body is integral with the latter and ends at the top in a collar 10, which is internally screw-threaded at 11 to engage a screw-threaded picker-rod 18 (dotted lines) for lifting it at need in that way. Ordinarily these threads 11 are not used.

12 designates a coupling collar or coupling sleeve, which is internally screw-threaded in its ends to engage respectively the perforated tubular screen-section 13 and pipe section 14 concentric with the valve body 4. The said coupling is provided above its middle with screw-threads 15 in

the wall of a bore of reduced diameter for engaging exterior screw-threads 16 on the lower end of the valve body; also below its middle with screw-threads 17 in the wall of a bore of still less diameter for engaging a depending tube 19 known as the suction tube or gas-anchor, which forms a pocket to hold ascending gas and may vary in length according to the quantity of the latter. Said valve body is provided at each end with a corresponding recess for the valve seat and external screw-threads and a shoulder, in order that either end of said body may fit the said coupling which will bear against one of said shoulders, the other end of said body then screwing into the valve casing and receiving the valve seat, so that said body is perfectly reversible.

Heretofore it has been common in wells of this nature to rely on supporting the valve-casing in the valve body by the friction of washers, a collar or internal shoulder being provided below them to prevent the dropping of the said casing when the washers wear out; but this will not prevent the casing from becoming loose in such circumstances and holding the valve seat irregularly with resulting unevenness and leakage. The absolute security given against this by my engaging screw-threads is a valuable improvement. Since the suction tube or gas-anchor screws into the coupling, and not into the valve casing, as heretofore in such wells, the valve and valve body can be removed without injuring or dislodging the gas anchor; and no dislocation of the latter will affect any other part.

This construction makes it also very easy to remove the standing valve from the valve body by merely unscrewing the valve casing; whereas such separation is often very difficult in the ordinary construction, if the washers fit tightly, and especially if sand has collected upon and about them. Sometimes, after removing the pumping mechanism and tubing it is impracticable to dislodge the valve from the working-barrel without battering the various parts and rendering them worthless. The need for this separation arises, for example, when a well has been abandoned and it becomes desirable to withdraw the mechanism, including the standing valve in good condition for use elsewhere.

The coupling collar or sleeve with its four series of screw-threads is a novel and useful

feature in standing valve equipment and is thus adapted to perform several different functions.

The working-barrel above described, like the valve-seat, is also reversible and to this end has both its ends of the same diameter and provided externally with screw-threads of the same size. Internally both its ends are provided with annular recesses of the same size to receive said valve seat.

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

1. In combination with the screen pipe and upper tubing of a well and a coupling detachably connecting the same, a tubular part also screwing into said coupling at its lower end and having two external annular shoulders, the lower of which bears on the top of said coupling, a valve cage screwing on the upper end of said tubular part and bearing at its lower end against the upper annular shoulder of said part, a valve within said cage and a valve seat held in place between said cage and said tubular part substantially as set forth.

2. A reversible valve body having screw-threads at each end and integral annular shoulders between said screw-threads and unthreaded middle portion, in combination with a supporting device and a valve cage, each of which is adapted to engage the

threads of either end of said valve body and to bear against either one of said annular shoulders.

3. A valve seat, valve and cage, in combination with a supporting coupling and a reversible valve body having at each end a recess for said valve, external screw-threads and an external annular shoulder, the said cage and coupling being adapted to screw on either end of said body and bear against either annular shoulder substantially as set forth.

4. In combination, a coupling, a valve casing and a reversible valve body connecting the two by means of screw-thread engagement.

5. In combination, a ball-valve, a valve-seat, a valve casing, a coupling and a reversible valve body, said valve body having its ends externally screw-threaded and of the same diameter and provided with internal recesses to receive said valve-seat and connecting said coupling and valve-casing by means of screw-threaded engagement therewith.

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

ANDREW J. HENDERSON.

Witnesses:

E. H. MEYER,
R. H. ROWE.