April 19, 1927. 1,625,230

C. B. THURSTON

OIL WELL PUMP

Filed March 10, 1926

Fig. 1.

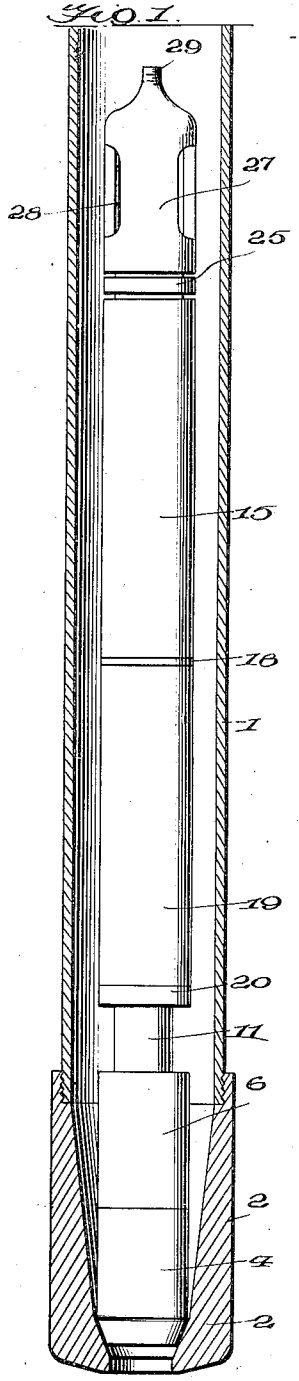


Fig. 2a

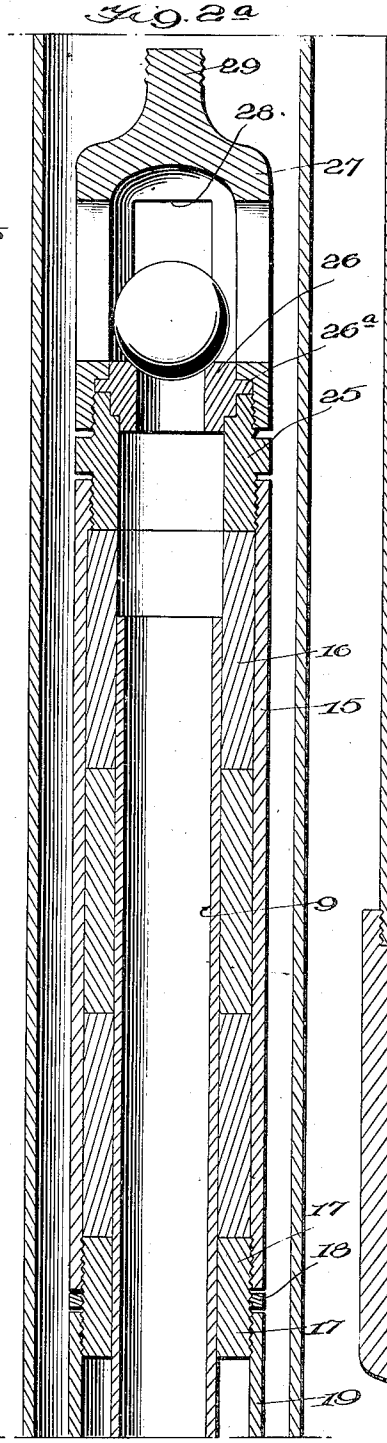
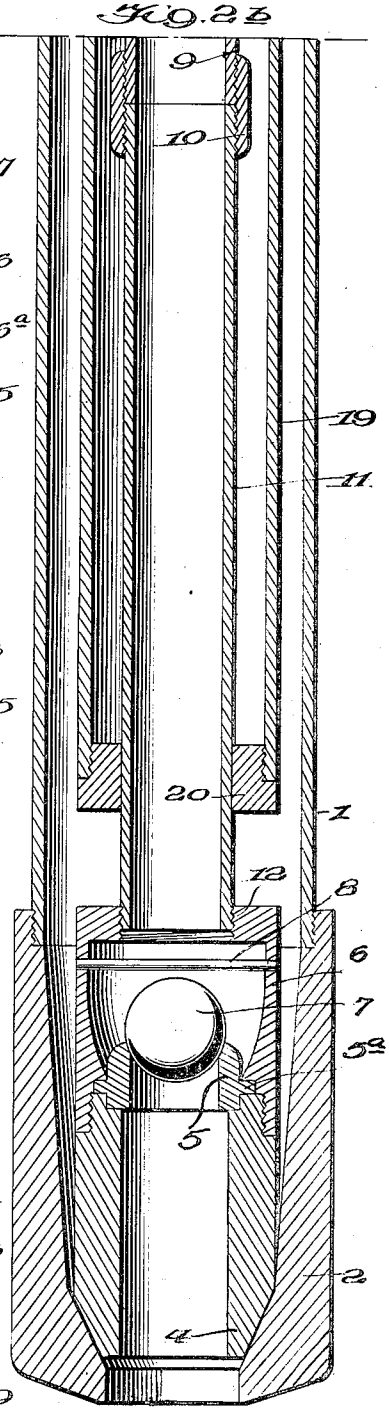


Fig. 2b



WITNESSES

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UNITED STATES PATENT OFFICE.

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OIL-WELL PUMP.

Application filed March 10, 1926. Serial No. 93,653.

This invention relates to an improvement in oil well pumps of the type forming the subject matter of a co-pending application filed March 18, 1925, Serial #16,444, allowed June 22, 1925, renewed February 10, 1926, and allowed February 17, 1926.

The object of the present invention is to provide an oil well pump which has all of the advantages and capacities of the pump forming the subject matter of my co-pending application, and of pumps of this type, and which also eliminates the possibility of sand settling upon and scoring the outer periphery of the stationary plunger, and which also affords from the plunger an unobstructed discharge of maximum internal area.

A further object resides in the provision of an oil well pump having these advantages and capacities and which is of simple and durable construction, reliable and efficient in operation, and easy and comparatively inexpensive to manufacture.

A further object is to provide a pump of this character wherein any desired number of liners may be provided in the working barrel for co-action with the plunger.

Another object resides in the provision of an oil well pump having novel and effective means for pulling the plunger out of the tubing or casing when desired.

Other objects and advantages reside in certain novel features of the construction, arrangement and combination of parts which will be hereinafter more fully described and particularly pointed out in the appended claims, reference being had to the accompanying drawings forming a part of this specification, and in which:

Figure 1 is a fragmentary view partly in section and partly in elevation showing an oil well pump constructed in accordance with the present invention,

Figure 2^a is a fragmentary view in vertical section showing the upper portion of the pump, and

Figure 2^b is a view similar to Figure 2^a, but showing the lower portion of the pump.

Referring to the drawings, the numeral 1 designates the tubing or casing on the lower end of which a standing valve barrel, or shoe 2 is threaded. A standing valve body 4 is fitted in the shoe 2 and has a valve seat 5 secured on its upper end by means of a valve cage 6 threadedly connected with the valve body 4, and clamping a flange 5^a on the valve seat 5 against the upper end of the valve body 4. In the valve cage 6 a ball valve 7 is provided and co-acts with the seat 5. The upward movement of the ball valve 7 away from its seat 5 is limited by means of a cross pin 8. A stationary plunger 9 having the form of an open ended tube of uniform cross section from end to end, is provided, and has its lower end fastened by means of a coupling 10 on the upper end of a plunger extension 11, the plunger extension 11 also being in the form of an open ended tube of uniform cross section from end to end, the lower end of the plunger extension 11 being threadedly connected as at 12 to the valve cage 6. The coupling 10 projects exteriorly beyond the peripheries of the plunger and its extension and constitutes an abutment as will hereinafter more fully appear.

A reciprocable working barrel is provided, and is made up of a jacket 15 and any desirable number of liners 16 fitted within the jacket and engageable with the outer periphery of the stationary plunger 9. The liners 16 are arranged in end to end and abutting relation and the lower end of the lowest liner rests on a combined adapter and coupling 17 which is threadedly connected with the jacket 15 of the working barrel, and snugly and slidably fits the outer periphery of the stationary plunger.

A lock nut 18 is provided for securing the adapter and coupling 17 in properly adjusted position. A jacket extension 19 has its upper end threadedly connected with the combined adapter coupling 17 and at its lower end this jacket extension 19 has threadedly connected thereto a combined pull nut and guide 20 which slidably embraces the extension 11 of the plunger, and which is engageable with the abutment or coupling 10 when it is desirable to pull the plunger out of the casing or tubing 1.

A bushing 25 is threaded into the upper end of the jacket 15 and engages the upper liner 16, the bushing coacting with the adapter 17 to hold the liner 16 properly positioned in the jacket 15. A travelling valve seat 26 rests on the bushing 25 and has a flange 26^a clamped to the bushing 25 by a portion of the travelling valve cage 27, the travelling valve cage 27 being threadedly connected with the upper end of the bushing 25. As shown to advantage in

Figures 1 and 2ª, the travelling valve cage 27 has discharge openings 28 and also has a threaded connection or coupling member 29 adapted to be connected with the string of rods or the other means employed to impart reciprocatory movement to the working barrel.

With this organization and construction it will be apparent from a consideration of Figure 2ª that in all operative positions of the working barrel the liners will snugly engage the plunger and will prevent sand from settling outside on the periphery of the plunger. Pockets permitting the accumulation of sand are eliminated from the construction.

Another important feature resides in the fact that the discharge end, that is, the upper end of the plunger is unobstructed, and affords the maximum internal discharge area thereby increasing the efficiency of the pump. Along with all of these advantages, the plunger may be readily pulled from the tubing when the pull nut 20 has been moved into engagement with the coupling 10.

I claim:—

1. An oil well pump including a casing having a standing valve shoe, a standing valve body fitted in the shoe, a stationary tubular plunger located in the casing, an extension between the lower end of the plunger and the standing valve body, an external coupling between the plunger and its extension, a reciprocable working barrel having a jacket and liners within the jacket and extending from end to end thereof, an adapter connected with the lower end of the jacket and supporting the liners at their lower end, a bushing connected to the upper end of the jacket and holding the liners against the adapter, a travelling valve mounted on said bushing, a jacket extension carried by the adapter, and a pull nut carried by the lower end of the jacket extension and engageable with the coupling.

2. An oil well pump including a casing having a standing valve shoe, a standing valve body fitted in the shoe, a stationary tubular plunger located in the casing, an extension between the lower end of the plunger and the standing valve body, a reciprocable working barrel having a jacket and liners within the jacket and extending from end to end thereof, an adapter connected with the lower end of the jacket and supporting the liners at their lower end, a bushing connected to the upper end of the jacket and holding the liners against the adapter, and a travelling valve mounted on said bushing.

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