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PUMP FOR OIL AND GAS WELLS AND THE LIKE.

APPLICATION FILED DEC. 15, 1913.

1,132,329. Patented Mar. 16, 1915.

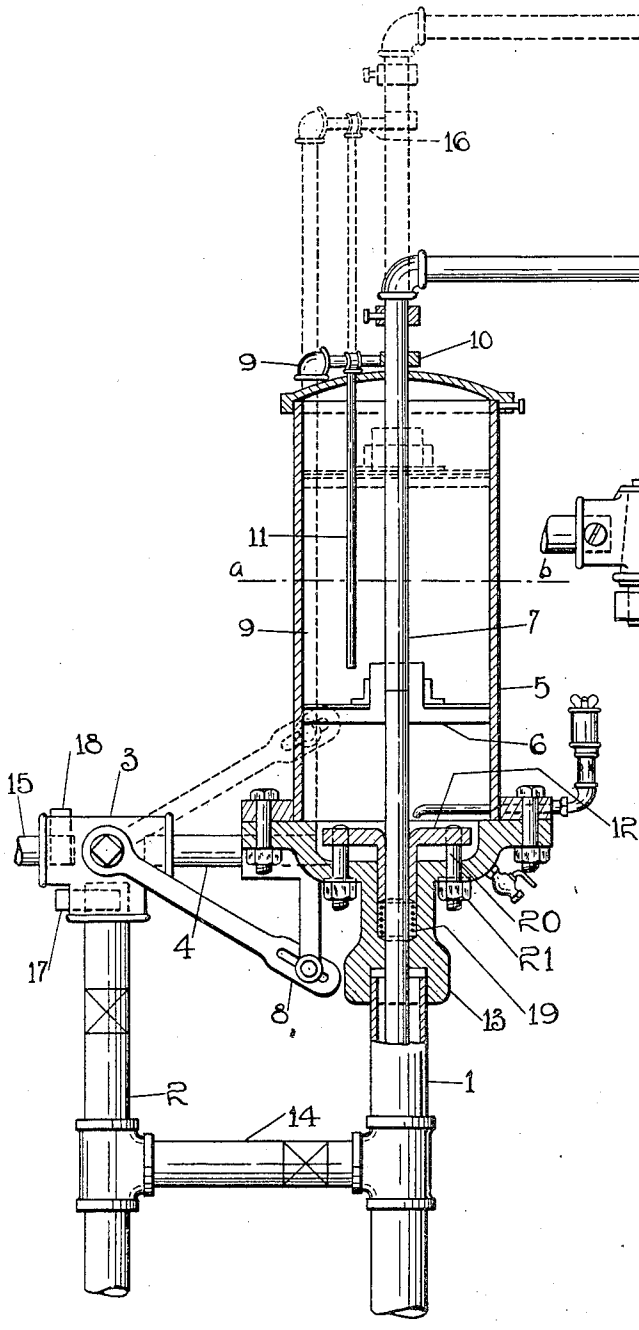


Fig. 1.

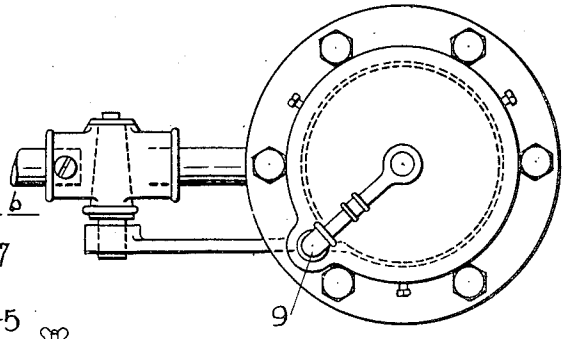


Fig. 3.

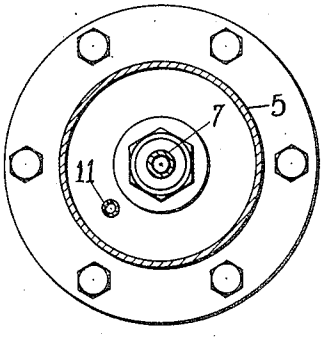


Fig. 2.

WITNESSES.

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PUMP FOR OIL AND GAS WELLS AND THE LIKE.

1,132,329. Specification of Letters Patent. Patented Mar. 16, 1915.

Application filed December 15, 1913. Serial No. 806,843.

To all whom it may concern:

Be it known that we, GEORGE R. GAMBLE, a subject of the King of Great Britain, and a resident of the village of Port Dover, Province of Ontario, Canada, and HARRISON A. STRINGER, a citizen of the United States, and a resident of the town of Simcoe, Province of Ontario, Canada, have invented certain new and useful Improvements in Pumps for Oil and Gas Wells and the like, of which the following is a specification.

This invention relates to pumps especially adapted for use in cased wells from which a liquid is to be pumped and particularly for use in gas wells in which water accumulates, which requires to be removed as it collects.

Our object is to devise a simple and effective pump for this purpose and particularly to devise simple means for connecting the pump with the well casing and for packing the pump plunger rod.

We attain our object by means of the constructions hereinafter described and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of our improved pump and its connections; Fig. 2 is a section on the line *a*—*b* in Fig. 1; and Fig. 3 is a plan view.

In the drawings like numerals of reference indicate corresponding parts in the different figures.

1 represents the casing of a well from which water or other liquid is to be pumped. This casing is secured to the lower head 13 of the cylinder 5. Preferably the casing is threaded and screwed into the cylinder head. The pump rod 7 passes up through the casing and through the cylinder head, being secured to the piston 6. The pump rod is also extended upwardly through the upper head of the cylinder. It is usual to have the pump rod formed of a tube, through which the liquid pumped passes. We, therefore, show the pump rod as extended laterally to a suitable discharge point. This arrangement is, however, old in the art.

The pump as shown is arranged to operate with gas pressure obtained from the well itself. The casing is, therefore, connected by means of the branch 14 with the pipe line 2, through which the gas from the well is conveyed to the places where it is to be used. This pipe line is connected with the three-way valve 3, which is connected by the pipe 4 with the cylinder 5 below the piston 6. This three-way valve 3 is of ordinary type and will be adapted to place the pipe 4 in communication either with the exhaust 15 or the pipe line 2. The three-way valve is operated by means of the rock arm 8, which by means of a pin and slot connection is connected with the lower end of the rod 9, slidably supported in the lower cylinder head. This rod 9 is also steadied by means of the arm 16 secured thereto and arranged to slide freely on the rod 7, being provided for that purpose with the collar 10. A rod 11 secured to the arm 16 extends through the upper head of the cylinder and has its lower end in the path of the piston 6.

When the parts are in the position shown in Fig. 1 in full lines, gas pressure is admitted below the piston, raising the same, with its connected parts, to the position shown in dotted lines. The piston striking the rod 11 shifts the three-way valve 3 to the exhaust position whereupon the parts under the influence of gravity return to their initial position ready for a second stroke. The pressure of gas, and consequently the rate of operation of the pump, is controlled by means of a needle valve 17 and the rate of exhaust is controlled by the needle valve 18. By adjusting the needle valve 18 any violent jar due to the sudden drop of the pump rod is avoided.

An important feature of our invention is the arrangement for packing the pump rod 7, several stuffing boxes being required in well pumps of ordinary construction. As the well casing is directly connected with the cylinder head 13 no stuffing box is required where the pump rod emerges from the casing, but some packing must be provided where the pump rod passes through the cylinder head. For this purpose we provide the stuffing box 19, which opens into the interior of the cylinder and is provided with the gland 12, provided with means for adjustment extending to the exterior of the cylinder. For this purpose we provide the bolts 20, passing through lugs on the gland and extending through the cylinder head to the outside, where they are adjusted by means of the nuts 21. Any suitable packing washers may be placed beneath these nuts. These

nuts may be tightened up, as necessary, to suitably compress the packing in the stuffing box.

Leakage from under the nuts is easily prevented by the washers and an effective adjustment is thus provided. It will be noted that with this arrangement any slight leakage through the stuffing box is not material as the leakage is into the cylinder 5 below the piston, where the leakage pressure would assist in the operation of the pump.

From the above description it will be seen that we have devised a construction which effectively attains the objects of our invention set out in the preamble to the specification. It will be noted, however, that we do not desire to confine ourselves to the exact construction of the means for rocking the arm 8, as other arrangements might be devised which would fall within the scope of our invention.

What we claim as our invention is:

1. The combination of a well casing; a motor cylinder provided with a cylinder head to which the well casing is secured; a pump rod passing up through the casing and cylinder head; a stuffing box for said pump rod opening at the cylinder side of said head; adjusting bolts for the gland of said stuffing box extending through said head; and nuts on the outer ends of said bolts.

2. The combination of a well casing; a motor cylinder provided with a cylinder head to which the well casing is secured; a pump rod passing up through the casing and cylinder head; a stuffing box for said pump rod opening at the cylinder side of said head; and means for adjusting the packing of the stuffing box from outside the cylinder head.

Simcoe, Ont., this twenty-eighth day of November, A. D. 1913.

GEORGE R. GAMBLE.
HARRISON A. STRINGER.

Signed in the presence of—
J. CRAIG NICKERSON,
FRANK REID.