R. CONRADER.

PUMP.

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1,067,315.

Patented July 15, 1913.

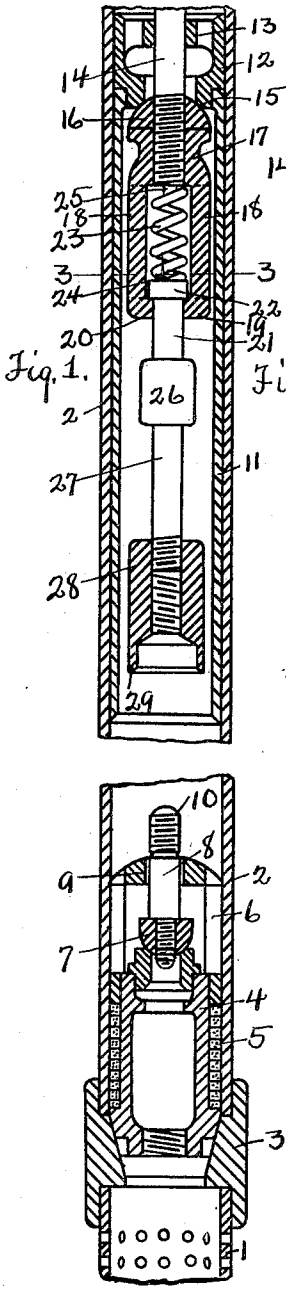


Fig. 1.

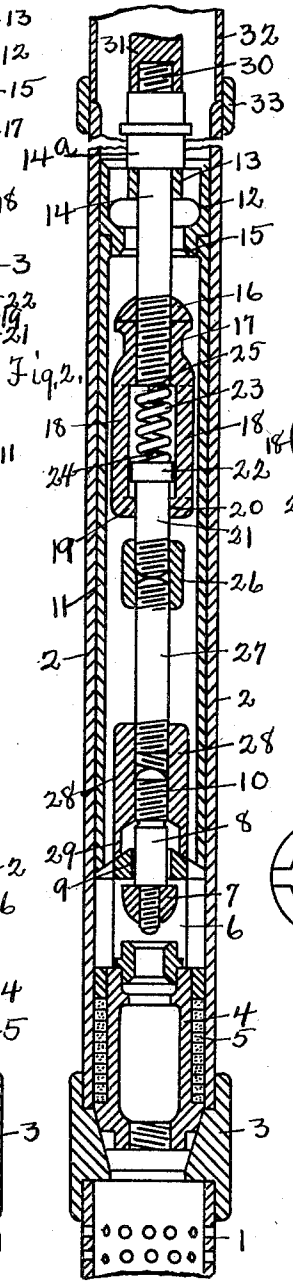


Fig. 2.

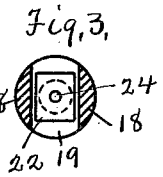


Fig. 3.

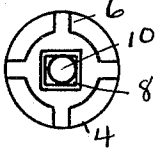


Fig. 4.

Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

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PUMP.

1,067,315. Specification of Letters Patent. Patented July 15, 1913.

Application filed January 23, 1911. Serial No. 604,010.

To all whom it may concern:

Be it known that I, RUDOLPH CONRADER, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented new and useful Improvements in Pumps, of which the following is a specification.

This invention relates to pumps, and consists in certain improvements in the construction thereof as will be hereinafter fully described and pointed out in the claims.

It is often desirable to open the pump valves so that the liquid in the tubing may be discharged through the pump either for the purpose of cleaning the pump, or for acting upon the well.

One of the objects of this invention is to provide a simple means for accomplishing this purpose and at the same time one that can be conveniently operated without injuring the parts.

Other objects of the invention will appear from the specification and claims.

The invention is illustrated in the accompanying drawings as follows:

Figure 1 shows a central section of the working barrel and plunger, the parts in their working position. Fig. 2 a similar view with the plunger lowered and connected with the check of the standing valve. Fig. 3 a section of the fitting for the yielding connection on the line 3—3 in Fig. 1. Fig. 4 a plan view of the standing valve detached. Fig. 5 a view of the parts at the top of the well.

1 marks the usual strainer, and 2 the working barrel. The barrel is connected with the strainer by the coupling 3.

A standing valve 4 is arranged at the bottom of the working barrel. It is provided with the usual packing rings 5. A cage or crown 6 extends upwardly from the body of the valve and the check 7 operates in the crown. A squared stem 8 is secured to the check 7 and extends through the squared opening 9 in the top of the crown. The stem terminates in the screw 10.

The plunger 11 as shown is a hollow plunger. It has a crown 12 in which there is a spider 13 at the top through which the sucker rod connection 14 operates. The crown has the valve seat 15 at the bottom on which the plunger valve 16 seats. The plunger valve 16 is screwed on to the sucker rod connection 14. A yielding connection fitting 17 is also screwed on to the sucker rod connection forming a jam nut for the valve 16. The fitting has the two guides 18, one at each side, and the transverse portion 19 at the bottom. The transverse portion has the perforation 20 through which the bolt 21 extends. The bolt is provided with a squared head 22 which engages the guides 18 and prevents the rotation of the bolt. A spring 23 is arranged in the fitting and yieldingly holds the bolt against the bottom transverse portion. A small projection 24 on the end of the bolt extends into the spring at one end and the projection 25 on the sucker rod connection extends into the opposite end of the spring, thus securing the spring in place. The bolt 21 is connected by a coupling 26 with a rod 27. This is secured to the cup nut 28, said nut being screw threaded and the rod 27 extending into it through a portion of its length. The nut 28 is adapted when dropped down to a position into engagement with the screw 10 to be screwed on to the screw 10. The nut has the cup or flange bottom 29 which engages the top of the crown 6 so that as the nut is screwed on to the screw 10, the axial movement incident to the action of the screw lifts the check 7 from its seat, the cup formed by the cup or flange 29 receiving the squared portion 8 as clearly shown in Fig. 2.

It will be observed that the sucker rod connection, the yielding connection, and the parts can be rotated without rotating the plunger. It will also be observed that the plunger when the nut 28 is in place on the screw 10 rests on the crown 6 and that the length of the parts forming the connection between the sucker rod connection and the nut 28 is so proportioned to the plunger that when the nut 28 is in engagement with the screw 10, the valve 16 is below the seat 15 so that there is a free passageway through the plunger and through the standing valve.

In order to avoid jamming or injuring the threads of the screw 10 and nut 28 as the nut 28 is lowered into engagement with the screw, I prefer to use the yielding connection, the yielding element of which is the spring 23. This spring is of sufficient length so that with the plunger on the crown and the collar 14^a of the sucker rod connection on the top of the crown 12, thus limiting the downward movement of the sucker

rod connection, the nut 28 will still be permitted to yield so that only the pressure of the spring can be delivered against the screw 10. In consequence these screws are kept in engagement so that they may be readily entered, but such pressure as will injure the parts is avoided. This yielding connection also relieves the valve of its shock and consequently of any injury there might be to it from the dropping of the sucker rods.

I prefer to provide a means for dropping the plunger below normal to bring it into engagement with the screw. The sucker rod connection has the screw projection 30 to which the sucker rod 31 is attached. The tube 32 is connected to the working barrel by the usual coupling 33. The casing 34 has the usual casing head 35. The polished rod 36 extends through the polished rod adjuster 37. This polished rod adjuster comprises the body 38, eye bolt 39, screw 40 and nut 41. It will be readily observed that as the nut is screwed up, the eye bolt is drawn sidewise, thus clamping the polished rod in any adjustment desired.

A socket 42 is arranged on the body 38 and the pipe 43 secured in this socket. This pipe is screw threaded, and extends through the head 44 of the trunnions 45. The trunnions operate on the walking beam 46 in the usual manner.

By dropping the walking beam to its lowest position, and then screwing the sucker rod actuating pipe 43 down, the plunger may be dropped so as to bring the nut 28 into engagement with the screw 10. I prefer to provide the gage 47 for indicating when the parts are brought into engagement and the nut 48 at the bottom for indicating the position of the parts when they are at normal and for clamping the screw 43 in the head 44.

I do not claim in this application broadly a yielding connection between the standing valve and plunger as this forms the subject matter of application #604,007 filed on even date herewith.

What I claim as new is:

1. In a pump, the combination of a barrel; a plunger operating in the barrel; a removable standing valve comprising a check; means on the check for connecting it with the plunger for lifting the check and with it the standing valve; a plunger valve in the plunger; and devices for holding the plunger valve open when the plunger is connected with the check.

2. In a pump, the combination of a barrel; a plunger in the barrel; a plunger valve in the plunger; a standing valve in the barrel comprising a check; a screw on the check; a screw on the plunger adapted to be brought into engagement to lift the check; and means for holding the plunger valve open when the plunger and check are connected.

3. In a pump, the combination of a barrel; a standing valve in the barrel comprising a check; and devices for lifting the check comprising a yielding connection for cushioning the shock when the devices are brought into engagement with the check.

4. In a pump, the combination of a barrel; a standing valve in the barrel comprising a check; a plunger in the barrel; and devices for connecting the plunger and check comprising a yielding connection for cushioning the shock when the devices are brought into engagement with the check.

5. In a pump, the combination of a barrel; a standing valve in the barrel comprising a check; a screw on the check; and devices comprising a screw for engaging the screw on the check, one of said screws being yieldingly mounted in an axial direction to relieve the screws of shock when brought into engagement.

6. In a pump, the combination of a barrel; a standing valve in the barrel comprising a check; a plunger in the barrel; a screw on the check; and a screw carried with the plunger and adapted to engage the screw on the check, one of said screws being yieldingly mounted.

7. In a pump, the combination of a barrel; a standing valve in the barrel comprising a check; a plunger in the barrel; a screw on the check; and a screw yieldingly mounted on the plunger and adapted to engage the screw on the check.

8. In a pump, the combination of a barrel; a standing valve in the barrel comprising a check; a plunger in the barrel; devices for connecting the plunger and check comprising a yielding connection for cushioning the shock when the devices are brought into engagement; a plunger valve in the plunger; and means for holding said valve open when said devices are in engagement.

9. In a pump, the combination of a barrel; a standing valve in the barrel comprising a check; a plunger in the barrel; a screw on the check; a screw carried with the plunger and adapted to engage the screw on the check, one of said screws being yieldingly mounted; a plunger valve in the plunger; and means for holding the plunger valve open when the screws are in engagement.

10. In a pump, the combination of a barrel; a plunger in the barrel; a standing valve comprising a check; means rotating independently of the plunger for actuating the plunger; and devices for connecting said means with the check by the rotation of said means.

11. In a pump, the combination of a barrel; a plunger in the barrel; a standing valve comprising a check; means rotating independently of the plunger for actuating the plunger; devices for connecting said means with the check by the rotation of said

means; a plunger valve in plunger; and mechanism for holding the plunger valve open when said means is connected with the check.

12. In a pump, the combination of a barrel; a standing valve in the barrel; a screw on the standing valve; a plunger; a sucker rod connection for actuating the plunger, said sucker rod connection being rotative relative to the plunger; and a screw carried by the sucker rod connection for engaging the screw on the check.

13. In a pump, the combination of a barrel; a standing valve in the barrel; a screw on the standing valve; a plunger; a sucker rod connection for actuating the plunger, said sucker rod connection being rotative relative to the plunger; a screw carried by the sucker rod connection for engaging the screw on the check; a plunger valve in the plunger; and means for holding the plunger valve open when the screws are in engagement.

14. In a pump, the combination of a barrel; a standing valve in the barrel comprising a check; a plunger in the barrel; a sucker rod connection for actuating the plunger rod relatively to the plunger; and devices yieldingly mounted for connecting the sucker rod connection with the check.

15. In a pump, the combination of a barrel; a standing valve in the barrel comprising a check; a screw on the check; a plunger in the barrel; a sucker rod connection for actuating the plunger, said sucker rod connection being rotative relative to the plunger; and a screw carried by the sucker rod connection for engaging the screw on the check, one of said screws being yieldingly mounted.

16. In a pump, the combination of a barrel; a standing valve in the barrel comprising a check; a plunger in the working barrel; a sucker rod connection for actuating the plunger, said sucker rod connection being movable axially with relation to the plunger; a plunger valve actuated by the sucker rod connection; and devices connecting the sucker rod connection with the check, said devices being proportioned to hold the plunger valve open when said sucker rod connection is connected with the check.

17. In a pump, the combination of a barrel; a standing valve in the barrel comprising a check; a screw on the check; a plunger; a sucker rod connection rotatively and axially movable in the plunger; a plunger valve actuated by the sucker rod connection; and a screw carried by the sucker rod connection and adapted to engage the screw on the check.

18. In a pump, the combination of a barrel; a standing valve in the barrel comprising a check; a screw on the check; a plunger; a sucker rod connection rotatively and axially movable in the plunger; a plunger valve actuated by the sucker rod connection; and a screw carried by the sucker rod connection and adapted to engage the screw on the check, one of said screws being yieldingly mounted.

19. In a pump, the combination of a working barrel; a standing valve comprising a check in the working barrel; a plunger in the working barrel; a screw on the check; a screw carried by the plunger adapted to engage the screw on the check, one of said screws being yieldingly mounted; a reciprocating means for actuating the pump; a sucker rod; a trunnion carried by said means; and a screw connecting the sucker rod with the trunnion.

20. In a pump, the combination of a barrel; a standing valve in the barrel comprising a check; a plunger in the barrel; and means for moving the check from its seat and for lifting the standing valve from the barrel comprising a screw connection, one part of which is carried by the standing valve and the other by the plunger, said screw connection being adapted to be brought into and out of engagement.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

RUDOLPH CONRADER.

Witnesses:
H. C. LORD,
BLANCHE HARTMAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."