

H. L. & M. N. BIGGS.
ATTACHMENT FOR PUMPING APPARATUS.
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1,056,000.

Patented Mar. 18, 1913.

Fig. 1.

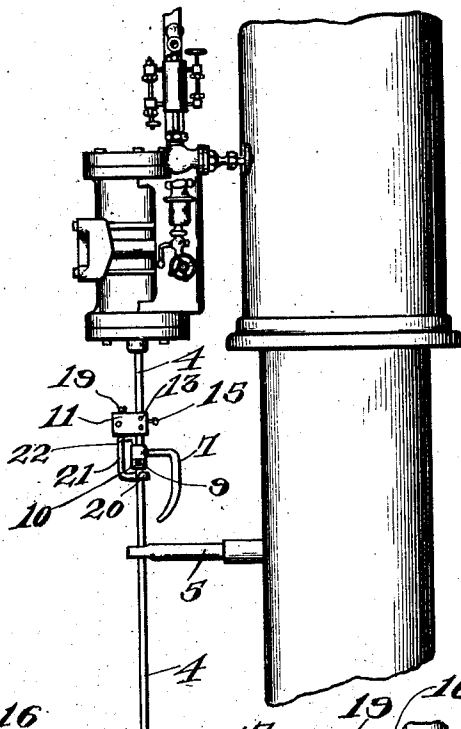


Fig. 2.

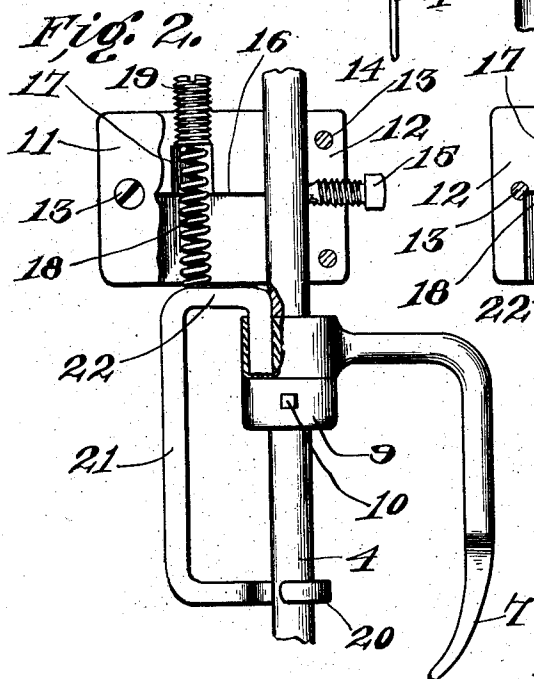
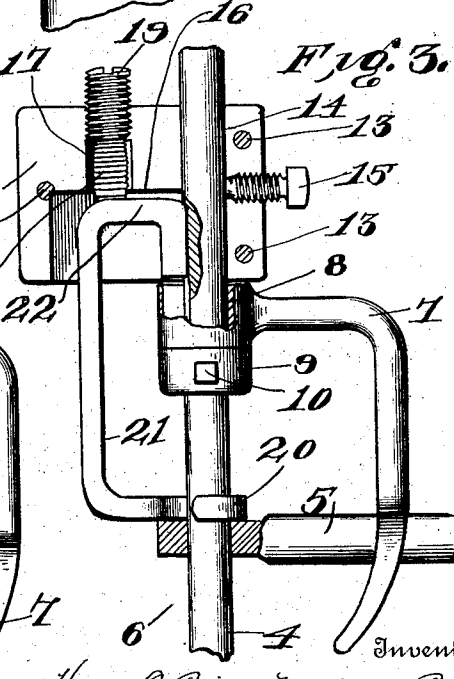


Fig. 3.



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UNITED STATES PATENT OFFICE.

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ATTACHMENT FOR PUMPING APPARATUS.

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Specification of Letters Patent.

Patented Mar. 18, 1913.

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To all whom it may concern:

Be it known that we, HARRY L. BIGGS and MARSHALL N. BIGGS, citizens of the United States of America, and residents of Lebanon, in the county of Laclede and State of Missouri, have invented certain new and useful Improvements in Attachments for Pumping Apparatus, of which the following is a specification.

This invention relates to pumping apparatus and particularly to means for yieldingly engaging and actuating a trip for supplying power, that is to say, steam or other pump operating fluid, in the event of there being a break or interruption in the operation of the pumping mechanism, the invention being designed primarily for use on what are known as deep wells.

An object of this invention is to produce novel means adapted to be secured to and having means of attachment with a reciprocating rod which may be in the nature of a pump rod or piston rod which is adapted to reciprocate.

A further object of this invention is to provide trip levers in operative relation to the reciprocating rod and means on the reciprocating rod adapted to yieldingly contact with the controlling levers whereby descent of the reciprocating rod beyond a predetermined distance results in the operation of the tripping mechanism for the purpose of shutting off the supply of pump operating fluid whether said fluid be in the nature of air or other compressed element.

With the foregoing and other objects in view, the invention consists in the details of construction, and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention in detail, reference will be had to the accompanying drawings forming part of this specification wherein like characters denote corresponding parts in the several views, and in which—

Figure 1 illustrates a view in elevation of a pumping apparatus with the invention applied thereto. Fig. 2 illustrates an enlarged detail view of the attachment for operating the tripping levers partly in section with the tripping mechanism in one position of adjustment; and Fig. 3 illustrates a similar view with the parts in a different position of adjustment.

In these drawings 4 denotes the partially

rotatable rod, 5 denotes the controlling or tripping lever which extends to and has an aperture 6 for the reception of the said rod 4.

The partially rotatable rod 4 is further provided with an arm 7 which is secured on the said rod in any appropriate way, as by having an aperture 8 for the reception of the rod. The arm is limited in its downward movement on the rod by a collar 9, preferably secured to the said rod by a set screw 10. The controlling lever 5 is preferably located under the collar 9 and the rod is movable independently of the controlling lever.

As a means for operating the controlling lever when a break occurs within the pump and the pump rod descends in the well, a yieldable tripping device is provided, the same comprising, as here illustrated, a body or block consisting of two sections 11 and 12 secured together by transversely disposed screws 13. The inner faces of the sections 11 and 12 are recessed to form an aperture 14 which is designed for the reception of the rod 4. The two sections 11 and 12 are further provided with threaded recesses extending longitudinally of the said sections and intersecting or merging with the said opening 14. A set screw 15 is screwed into the threaded recesses and is adapted to bind against the rod 4 for the purpose of retaining the body at different positions of adjustment on the said rod 4.

In practice it is preferable to clamp the body to the rod through the medium of the set screw just above the arm 7. The body is further provided with a longitudinally disposed recess extending from the under side thereof to a point about midway the height of the said body and there terminates in a shoulder 16. That portion of the body which is uninterrupted by the formation of the recess is provided with a threaded socket 17 in which a spring 18 is seated, the said spring extending downwardly to a point near the lower edge of the body. The threaded socket 17 has a plug 19 which is threaded therein and is adapted to adjust the tension of the spring 18.

The means that is actuated by the body for communicating motion of the rod to the controlling lever comprises a hook member, the hook 20 of which encircles the rod at a point between the collar 9 and the controlling lever 5, the said member having a shank

21 which terminates in a horizontally disposed bar or extension 22 which is adapted to fit in the slot of the body and bear against the spring 18.

5 In carrying out the invention and in employing it in practice, it is to be understood that the valve rod 4 is alternately partially rotated through the engagement of the controlling lever 5 which reciprocates with the
10 pump rod, it being understood that the said rod 4 is provided with a set of members similar to the members 7, 9, 10, 11, 13, 15, 19, 20 and 22 at a point below the controlling lever 5 so that the rod 4 is partially rotated in one direction upon the downward
15 movement of the controlling lever and in an opposite direction at the upward movement of said controlling lever.

The arm 7 in each instance is connected
20 to the rod 4 by the coupling 22 fitting in the keyway of the arm 8 where it embraces the rod 4 so that as the arm 7 is moved, it communicates movement to the rod 4. While the pump is operating normally, the parts
25 are in the position shown in Fig. 2 of the drawing but should the pump become impaired, the connection between the arm 7 and rod 4 is lifted to the position shown in Fig. 3 so that the arm 7 is free to rotate on
30 the rod 4 and when actuated in the position shown in Fig. 3, the arm will not communicate motion to the rod 4. As the rod 4 controls the admission of the fluid pressure to the cylinder, it follows that the break of the
35 connection between the arm 7 and rod 4, whereby the rod is partially rotated, the fluid pressure ducts will be closed so that the pump cylinder is without pressure to cause it to operate, and the parts will remain in the position shown in Fig. 3 until
40 reset in the operative position shown in Fig. 2.

We claim—

1. In a controlling means for pump operating motors, a valve rod, a body having an aperture therein for the reception of the rod, means for clamping the body on the

rod, said body having a longitudinally disposed recess extending from its under surface and a threaded aperture extending vertically in said body from the point of termination of the recess, a spring seated therein, a plug threaded in the aperture and adapted to bear against the spring, a member on the rod, means for coupling the member to the rod, said member being slidable in the recess and having a shank terminating in a hook encircling the rod, and means for engaging the member on the rod for communicating motion thereto.

2. In a controlling means for pump operating motors, an oppositely rotatable valve rod, a member secured on the valve rod and free to rotate thereon, means for yieldingly coupling the said member to the valve rod whereby movement imparted to said member is imparted to the valve rod, and an extension on said coupling device adapted to be engaged by a moving portion of a pumping mechanism to uncouple the member from the said rod.

3. In a controlling means for pump operating motors, an oppositely rotatable valve rod, a body secured on the valve rod, a member on the valve rod, means for holding the said member in operative relation to the body, a coupling for connecting the said member to the valve rod, a yielding device in the body for normally holding the coupling in position to couple the member and body, and a member carried by the pump mechanism for actuating the coupling against the action of the yielding device engaging said coupling, whereby the member is uncoupled from the valve rod upon abnormal movement of a portion of the pumping mechanism.

In testimony whereof, we affix our signatures in the presence of two witnesses.

HARRY L. BIGGS.

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Witnesses:

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