May 26, 1931. R. L. WRIGHT ET AL 1,807,114

SUCKER ROD BOX CLEANER

Filed Feb. 24, 1930

Fig. 1.

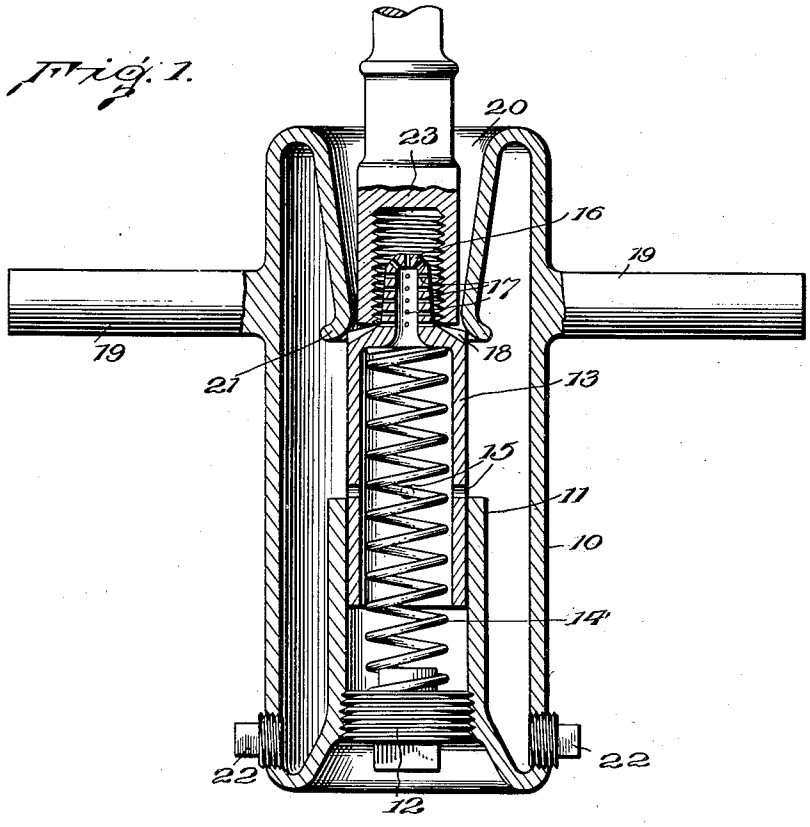


Fig. 2.

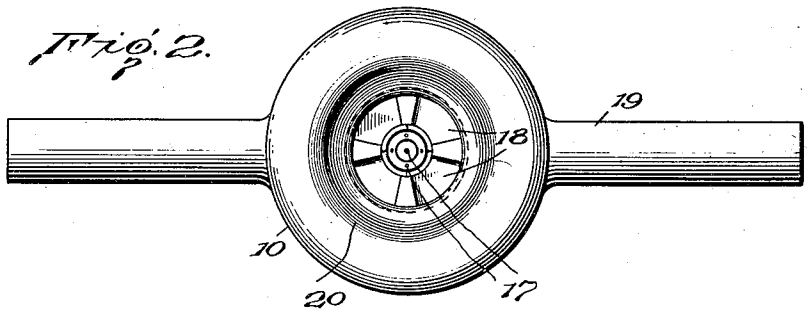
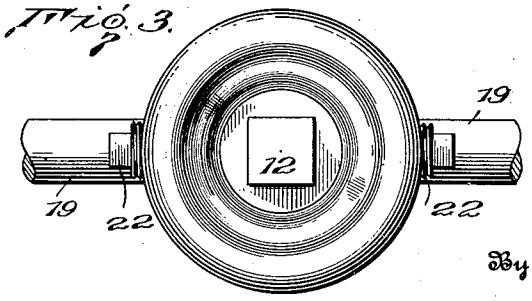


Fig. 3.



Inventor

Robert L. Wright,

Hubert D. Collins

By Church & Church

His Attorneys

Patented May 26, 1931

1,807,114

UNITED STATES PATENT OFFICE

ROBERT L. WRIGHT AND HUBERT D. COLLINS, OF TULSA, OKLAHOMA, ASSIGNORS TO GYPSY OIL COMPANY, OF TULSA, OKLAHOMA, A CORPORATION OF OKLAHOMA

SUCKER ROD BOX CLEANER

Application filed February 24, 1930. Serial No. 430,895.

This invention relates to well drilling accessories, and particularly to an appliance for cleaning the box on the female ends of sucker rods.

The primary objects of the invention is to provide a device of this nature whereby oil, dirt or other foreign substances may be expeditiously removed from the boxes of sucker rods, whether the latter be of the box and pin type, the double pin type, or of the double box type.

A further object is to provide a device of this nature of simple construction and which may be conveniently manipulated or handled on the rig floor of the well.

A further object is to provide a cleaning device for sucker rod boxes wherein a cleaning fluid is forced from a container into the box, so as to flush out of the box any foreign materials therein, the arrangement being such that the fluid forced out of the container into the box will be free to drain back into the container. In view of this, the container is provided with clean-out openings for the removal of sediment and foreign material which is brought back into the container by the cleaning fluid.

With these and other objects in view, the invention consists in certain details of construction and combinations and arrangements of parts, all as will hereinafter be more fully described and the novel features thereof particularly pointed out in the appended claims.

In the accompanying drawings,

Figure 1 is a longitudinal sectional view of the present cleaning device;

Fig. 2 is a plan view of the upper end of the structure shown in Figure 1; and

Fig. 3 is a bottom plan view thereof.

The device consists essentially of a container 10, preferably of cylindrical cross section, and arranged centrally within said container there is a cylinder 11, the upper end of said cylinder terminating approximately a little below the vertical center of the container. The lower end of the cylinder may be closed by a threaded plug 12, so as to facilitate the insertion and removal of a plunger 13 and spring 14 within the cylinder. The plunger 13 is tubular and slides with a neat fit in cylinder 11, and in the sides of said plunger there are one or more ports 15 which are adapted to be located at a point above the upper end of cylinder 11 when the plunger is in its advanced position, as shown in Figure 1, the plunger being normally held in this position by spring 14.

At the forward end of plunger 13 there is a nozzle 16 having a multiplicity of small orifices 17 therein. Nozzle 16 is of considerably less cross section than the plunger, and on the end surface of the plunger, between said nozzle and the perpihery of the plunger, there are a plurality of grooves 18. These grooves extend to the very edge of the plunger and preferably are radially disposed so that cleaning fluid sprayed through the orifices 17 into a sucker rod box will not be trapped in the box by the engagement of the end of the sucker rod with the grooved surface of the plunger.

Near its upper end, container 10 is provided with handles 19, whereby it may be conveniently handled on the rig floor by the operator, the weight of the finished article hardly exceeding eight or nine pounds. The upper end of container 10 is open, and extending inwardly from this upper open end there is a tubular sleeve 20, preferably tapered inwardly so as to serve as a guide for guiding the end of a sucker rod inserted therein onto or around nozzle 16. The extreme inner end of sleeve 20 may be flared as at 21.

In operation, the container is filled with kerosene or other suitable washing fluid, to an extent not exceeding three-quarters of its capacity. Assuming that the sucker rod is hung above the casing head, the present appliance is brought against the lower end of the box 23 and raised quickly. This results in plunger 13 being pressed down against the spring 14 and kerosene, which has previously flowed into cylinder 11 through ports 15, will be forced through the orifices 17 in nozzle 16, into the sucker rod box. It will be appreciated that this will inevitably result, because the moment plunger 13 is depressed, ports 15 move within cylinder 11 so that there is no escape for the cleaning fluid trapped in the cylinder other than through the nozzle

orifices. This spraying of the box naturally cleanses it of all foreign materials, and, due to the provision of grooves 18 in the upper end surface of plunger 13, the fluid ejected into the sucker box, together with the foreign material carried thereby, will drain back into container 10. For this reason, the container is provided near its bottom with one or more clean-out openings adapted to be closed by clean-out plugs 22, so that foreign material and sediment settling or collecting in the bottom of the container may be readily removed.

With the present construction, there is little, if any, likelihood of the device being accidentally rendered inoperative. Especial attention is directed to the fact that the apparatus is substantially a valveless one, in that the ports 15 control the flow of cleaning fluid from the container to cylinder 11, and there is no possibility of their becoming clogged with foreign material. The provision of the tubular sleeve 20 at the upper end of the container facilitates the appliaction of the appliance to the end of a sucker rod that is to be cleaned, and by permitting the cleaning fluid sprayed from nozzle 16 to drain back into the container, there is no loss of cleaning fluid, as the same fluid is used over and over again.

What is claimed is:

1. In a sucker rod box cleaner, a container for the cleaning fluid, a sleeve projecting into one end of said container, a cylinder of larger diameter than the inner end of said sleeve projecting into the other end of the container, said cylinder being closed at its outer end and communicating with said container, a hollow plunger having one end slidably engaging the interior of said cylinder and its other end normally yieldingly positioned in said sleeve, the end of said plunger in said sleeve being of reduced diameter and having orifices therein.

2. In a sucker rod box cleaner, a container for the cleaning fluid, a sleeve integral with said container and projecting inwardly from one end thereof, a cylinder projecting inwardly from the other end of said container, said cylinder being formed integral with the container and communicating with the interior of the container, a removable closure for the outer end of said cylinder, a hollow plunger slidable in said cylinder and projecting from the opposite end thereof, a nozzle on the projecting end of said plunger and means for yieldingly positioning said nozzle in said sleeve.

3. In a sucker rod box cleaner, a container, an inwardly projecting sleeve fixed at one end thereof, a fixed cylinder projecting inwardly from the other end of the container, said cylinder communicating with the interior of the container, a hollow plunger slidable in said cylinder whereby it may be moved relatively to said sleeve, a nozzle on said plunger, and means normally yieldingly holding said plunger advanced in the cylinder with said nozzle in said sleeve.

4. In a sucker rod box cleaner, a tubular container having its end portions reversely turned inwardly to form an open ended sleeve extending into one end of the container and a cylinder extending into the other end thereof, the inner ends of the sleeve and cylinder being spaced apart and said cylinder communicating with the interior of the container, a closure for the outer end of the cylinder, a hollow plunger slidable in the cylinder, a nozzle on said plunger and means for yieldingly positioning said nozzle in said sleeve.

5. In a sucker rod box cleaner, a container for a cleaning fluid, a sleeve extending inwardly at one end of the container, a cylinder within the container at the other end thereof, said cylinder communicating with the interior of the container, a hollow plunger slidable in said cylinder, one end of said plunger being of reduced cross-section to form a nozzle at said end and a shoulder at the base of said nozzle, means for yieldingly positioning said nozzle in said sleeve whereby a sucker rod box may be positioned over said nozzle and against said shoulder, and radially disposed grooves in said shoulder.

ROBERT L. WRIGHT.
HUBERT D. COLLINS.