Sept. 23, 1952 W. R. HANLINE ET AL 2,611,438

VALVE FOR PRESSURE BAILERS

Original Filed Aug. 7, 1948

FIG. 1.

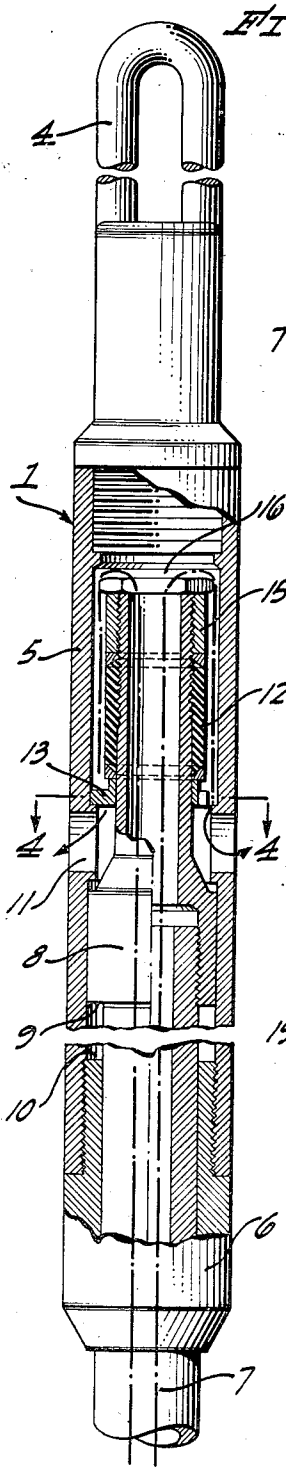
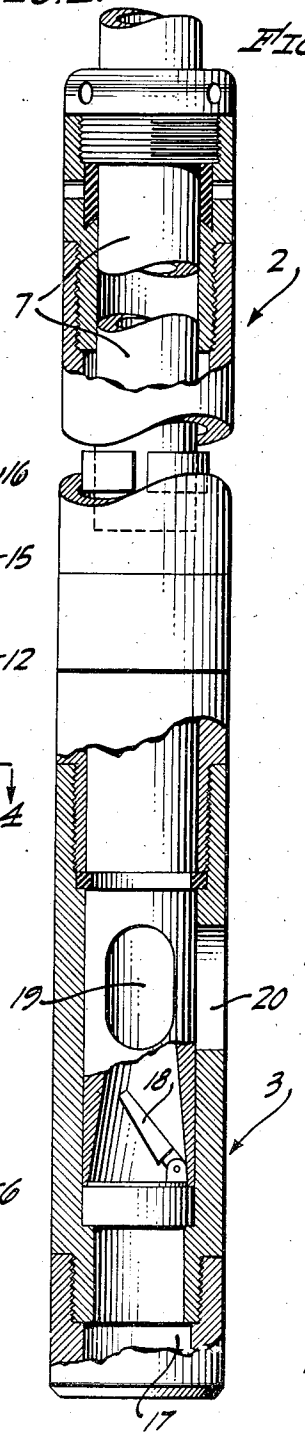


FIG. 2.



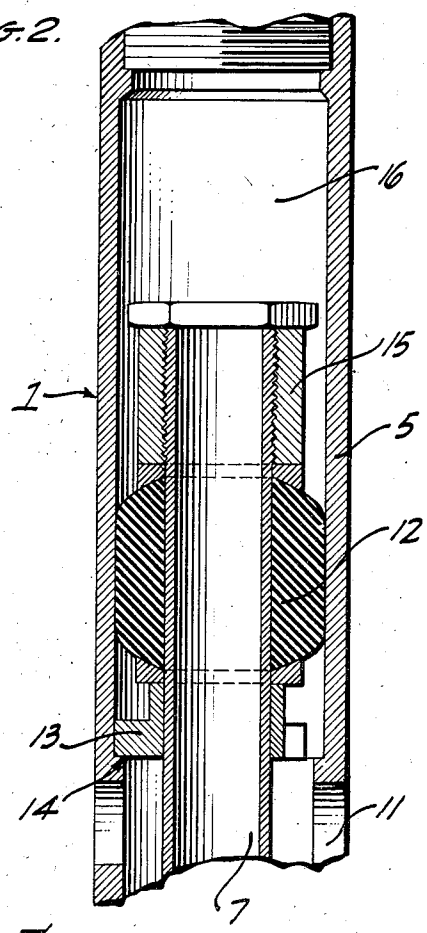


FIG. 3.

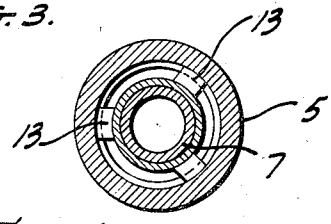


FIG. 4.

INVENTORS.
JAMES W. E. HANES,
WALTER R. HANLINE,

BY

ATTORNEY

Patented Sept. 23, 1952 2,611,438

UNITED STATES PATENT OFFICE

2,611,438

VALVE FOR PRESSURE BAILERS

Walter R. Hanline and James W. E. Hanes,
Ventura, Calif.

Original application August 7, 1948, Serial No. 43,135. Divided and this application August 19, 1950, Serial No. 180,484

2 Claims. (Cl. 166—19)

1

This application is a division of our previously filed patent on Control Valve for Pressure Bailers, No. 2,588,521, issued March 11, 1952.

This invention relates to an improved valve for pressure bailers, of the type used in oil wells where it is desired to remove material from the well, such as sand, mud, sludge, or other materials.

An object of our invention is to provide a novel control valve in a pressure bailer, which will effectively seal the pressure top of the bailer as the tool is being run into the well or removed from the well.

Another object of our invention is to provide a novel control valve for pressure bailers in which this valve automatically seals the pressure top of the bailer while the bailer is suspended in the well, and opens the pressure top of the bailer when the bailer is supported on the bottom of the well or on a bridge in the well.

Still another object of our invention is to provide a novel control valve for pressure bailers, which will seal the pressure top of the bailer by relative longitudinal movement of the valve structure and the body of the bailer, thus controlling the venting of the pressure top of the bailer to the outside.

Other objects, advantages and features of invention may appear from the accompanying drawing, the subjoined detailed description and the appended claims.

In the drawing:

Figure 1 is a partial longitudinal sectional view of the upper portion of our pressure bailer.

Figure 2 is a partial longitudinal sectional view of the lower part of our pressure bailer.

Figure 3 is a fragmentary sectional view showing the valve in compressed and closed position.

Figure 4 is a sectional view taken on line 4—4 of Figure 1.

Referring more particularly to the drawing, our pressure bailer includes a pressure seal top 1, a plunger section 2, and a dump bottom 3. A bail 4 is attached to the upper end of the pressure top 1 by threading the bail into the pressure top, substantially as shown. A cable (not shown) is attached to this bail so that the tool can be moved into or out of the well, as desired. The pressure top 1 includes an outer tube 5, cylindrical in cross-section and of sufficient length to accommodate the other parts, which will be subsequently described.

A fitting 6 screws into the lower end of the tube 5 and acts as a guide for the pipe 7, which extends into the tube. A ring 8 is formed on or

2

attached to the pipe 7 and provides a shoulder 9 on the bottom thereof, this shoulder engaging a second shoulder 10 on the top of the fitting 6 to limit the downward movement of the pipe 7 in the tube 5.

A plurality of vent holes 11 are formed in the tube 5 for the purpose of permitting fluid to circulate outwardly from the tube 5, as shown by the arrows in Figure 1, and as will be more specifically described.

The upper end of the pipe 7 has an expandable rubber packer 12, positioned thereon, and this packer rests on a spider 13, which encircles the pipe 7. The spider 13 is slidable on the pipe 7 and normally rests on a shoulder 14 on the inside of the tube 5. A nut 15 on the upper end of the pipe 7 is fixedly attached to this pipe, preferably by means of threads and the packer 12 bears against this nut and against the spider 13 at the bottom, as previously described, thus enabling the packing to be expanded, as shown in Figure 3, when weight is applied to the pipe 7. The packing 12, when expanded, seals off the upper pressure chamber 16 as long as the bailer is hanging in the well under its own weight. The weight of the pipe 7 and the parts attached thereto, is sufficient to expand the packing 12, as shown in Figure 3. As long as the packing is thus expanded, the pressure chamber 16 is not vented and, therefore, pressure will be retained therein. The pipe 7 is fixedly secured to the upper end of the dump bottom 3, as shown in Figure 2. The construction of the plunger section 2 an dthe dump bottom 3 is usual and well known in the art and the details of this part of the bailer form no part of this invention.

The dump bottom 3 is open at the bottom, as shown at 17, and a flap valve 18 is hingedly mounted above the bottom of the tool. The valve 18 is free to open or close, depending on whether there is pressure on the bottom or the top of the valve. The bailer is dumped by aligning the port 19 with the port 20, this being accomplished by rotating the outer part of the dump bottom until these ports match.

In operation, the tool is suspended on a cable (not shown) and the weight of the pipe 7, the plunger section 2, and the dump bottom 3, will cause the pipe to slide downwardly within the pressure top 1, moving the spider 13 against the shoulder 14, and then compressing the packing 12 against the wall of the tube 5. This prevents circulation of fluid out of the ports 11 while the tool is being moved downwardly in the well.

As the tool is dropped, the valve 18 will be

opened and material can flow upwardly into the tool. When the bottom is reached, or when the tool strikes a sand bridge, weight is relieved on the pipe 7 and also permitting this pipe to slide upwardly, whereupon the packing 12 will collapse, whereupon the fluid can pass upwardly through pipe 7 and out through the ports 11, as shown by the arrows in Figure 1.

The flow of fluid through the ports 11 and thence downwardly within the bore of the well permits sand to be taken in through the bottom hole 17 of the tool and moved upwardly past the valve 18 until the bailer is filled. The velocity and pressure of the flowing fluid will wash the sand into the dump bottom 3, as described. Upward movement of the suspending cable will close the ports 11 by expanding the packing 12, as previously described, and the valve 18 also closes due to the weight of sand upon it. The material within the bailer is now held under whatever pressure exists at the bottom of the well. When the surface is reached, the ports 19 and 20 are aligned and the pressure within the bailer will automatically expel the sand or other material within the bailer.

Having described our invention, we claim:

1. A control valve for pressure bailers, said bailer including a tubular pressure top, a plunger barrel threaded onto the pressure top and a dump bottom threaded onto the plunger barrel, said tubular pressure top having ports therein, a pipe slidably mounted in said pressure top and extending through said plunger barrel, and attached to said dump bottom said pipe being of smaller diameter than the inside of the pressure top, means in the pressure top engageable by said pipe to limit the longitudinal movement of said pipe in the pressure top, expandable packing mounted on said pipe above the ports, means on the pipe engaging the bottom of the packing,

a shoulder in the pressure top engaged by said means, and means on the pipe engaging the top of the packing to expand the same on longitudinal movement of the pipe, said packing engaging the pressure top when expanded to seal off said pressure top, adjacent said ports.

2. A control valve for pressure bailers, said bailer including a tubular pressure top, a plunger barrel threaded onto the pressure top and a dump bottom threaded onto the plunger barrel, said tubular pressure top having ports therein, a pipe slidably mounted in said pressure top and extending through said plunger barrel and attached to said dump bottom said pipe being of smaller diameter than the inside of the pressure top, expandable ring packing mounted on the upper end of said pipe above the ports, a spider on said pipe engaging the bottom of said packing, a shoulder in the pressure top engageable by the spider to permit expansion of the packing on downward movement of said pipe, means on the pipe engaging the top of the packing said packing engaging the pressure top when expanded to seal off said pressure top adjacent said ports.

WALTER R. HANLINE.
JAMES W. E. HANES.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,957,100	Diepenbrock	May 1, 1934
2,144,420	Thaheld	Jan. 17, 1939
2,166,488	Gates	July 18, 1939
2,166,489	Gates	July 18, 1939
2,191,223	Van Stone	Feb. 20, 1940