Nov. 10, 1953 P. M. RIDER 2,658,581

OIL TRAP FOR VACUUM LINES OF WELLS

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Fig. 1

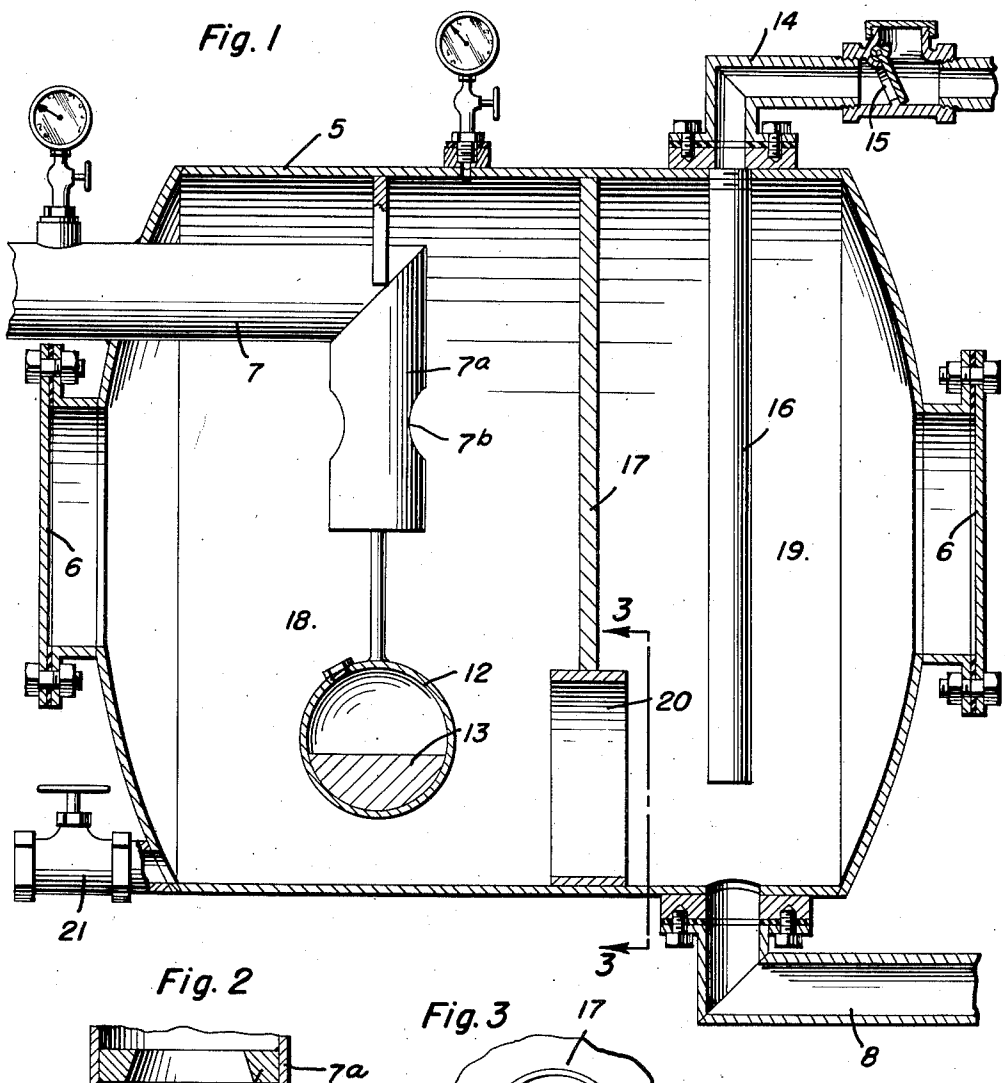


Fig. 2

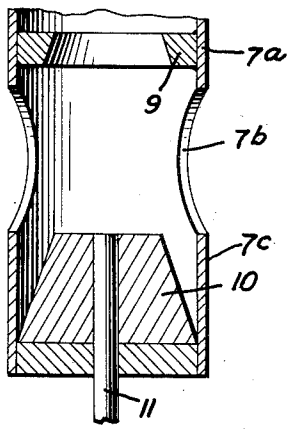
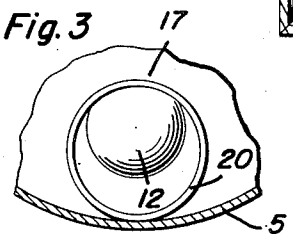


Fig. 3



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OIL TRAP FOR VACUUM LINES OF WELLS

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1 Claim. (Cl. 183—2.7)

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The present invention relates to new and useful improvements in oil well equipment and more particularly to a safety trap for the vacuum line used in pulling gas from the well to prevent oil from entering the line and interrupting operation of the vacuum system.

An important object of the invention is to provide a trap of this character which will not only automatically cut off the vacuum line should oil enter the line, but which will also return the oil to the well to save the oil and automatically restore the trap to re-open the line.

Another object is to provide a safety trap comprising a tank having a suction line connected to one end and provided with a float controlled valve, and a line leading from the other end of the tank to the well, and further providing a baffle in the tank forming a chamber at each end thereof whereby spray from oil surging into the tank from the well will not be drawn into the suction line prior to the closing of the valve.

A further object is to provide a safety trap of this character which is simple and practical in construction, efficient and reliable in operation, relatively inexpensive to manufacture and otherwise well adapted for the purpose for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a vertical sectional view of the trap;

Figure 2 is an enlarged vertical sectional view of the float controlled valve; and,

Figure 3 is a fragmentary sectional view on reduced scale taken on a line 3—3 of Figure 1.

Referring now to the drawing in detail, wherein for the purpose of illustration I have disclosed a preferred embodiment of my invention, the numeral 5 designates a trap tank having clean out covers 6 at each end. A suction pipe 7 enters one end of the tank at its upper portion leading from a suction system used for creating a vacuum in a well during its pumping operation and a vacuum line 8 leads from the bottom of the tank at its opposite end to the well.

The inner end of pipe 7 extends downwardly in the tank and in which is suitably secured a valve seat 9 engaged by a valve 10 at the upper end of a rod or stem 11 which has a float 12 at its lower end. The downwardly extending portion 7a of pipe 7 is formed with an opening 7b below the valve seat and the lower end of pipe 7

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is closed to form a cup-like chamber 7c in which valve 10 is confined in a position out of the path of suction entering the pipe, when the valve is in open position, as shown in Figure 2. Float 12 preferably comprises a metal ball having a quantity of mercury 13 therein sufficient to open the valve against the suction force in the system and permitting the float to rise when oil enters the tank.

An oil line 14, having a check valve 15 therein, leads from the top of the tank at its end to which line 8 is also attached, the oil line leading to the oil storage tanks (not shown) for the well. A tube 16 is connected to the inner end of oil line 14 and extends downwardly in the tank to a point adjacent its bottom to syphon oil from the tank by pressure of air built up in the top of the tank.

A baffle plate 17 is suitably secured in the tank to provide a chamber 18 at one end for the inner end of suction pipe 7 and a chamber at the other end of the tank for the inner end of vacuum line 8 and tube 16 for oil line 14.

A ring 20 is secured in the lowermost portion of baffle plate 16 to provide an opening between the chambers.

A drain valve 21 is connected to one end of the tank.

In the operation of the device, the weighted float 12 holds valve 10 open and vacuum line 8 leading to the well remains open. Should oil from the well enter vacuum line 8 and tank 5, float 12 will rise to close the suction pipe 7 and prevent the oil from entering the suction system. Pressure built up in the tank 5 by the oil will open check valve 15 in oil line 14 and the oil will flow from the tank to the usual storage tanks (not shown).

Baffle plate 17 prevents spray caused by the surging and splashing of oil as it enters the tank 5 from reaching chamber 18 and entering the suction pipe 7 before the oil rises sufficiently to close the valve 10.

In view of the foregoing description taken in conjunction with the accompanying drawings it is believed that a clear understanding of the device will be quite apparent to those skilled in this art. A more detailed description is accordingly deemed unnecessary.

It is to be understood, however, that even though there is herein shown and described a preferred embodiment of the invention the same is susceptible to certain changes fully comprehended by the spirit of the invention as herein described and the scope of the appended claim.

Having described the invention, what is claimed as new is:

An oil trap for the suction line of an oil well and comprising a tank, a baffle plate extending from top to bottom of the tank separating the same into a first chamber and a second chamber at the opposite ends of the tank, said baffle plate having an opening in its lower portion to provide a restricted passage between the chambers, said first chamber having a suction line attached thereto at a point above the opening in the baffle and said second chamber having a vacuum line connected to its bottom and leading to the well, a valve housing at the inner end of the suction line and extending downwardly therefrom into the first chamber, said valve housing having an opening in one side and a cup-like chamber in its bottom below said last named opening, a valve seat in the housing above said last named opening, a valve in the housing adapted to move upwardly into closed position against the valve seat, said valve being confined in the chamber at the bottom of the valve housing and out of the path of fluid entering the housing by way of the opening therein when the valve is in open position, a float in the first chamber and connected to the valve, a pipe leading from the top of the second chamber to remove oil therefrom, said pipe having a syphon tube extending downwardly therefrom into the second chamber to a point substantially in the horizontal plane of said opening in the baffle to syphon oil from both chambers by pressure of air built up therein, and a check valve in said pipe.

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