

July 3, 1928.

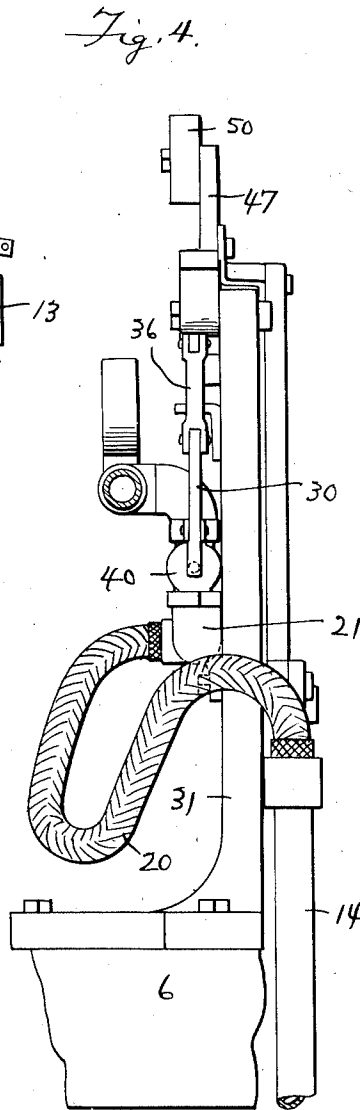
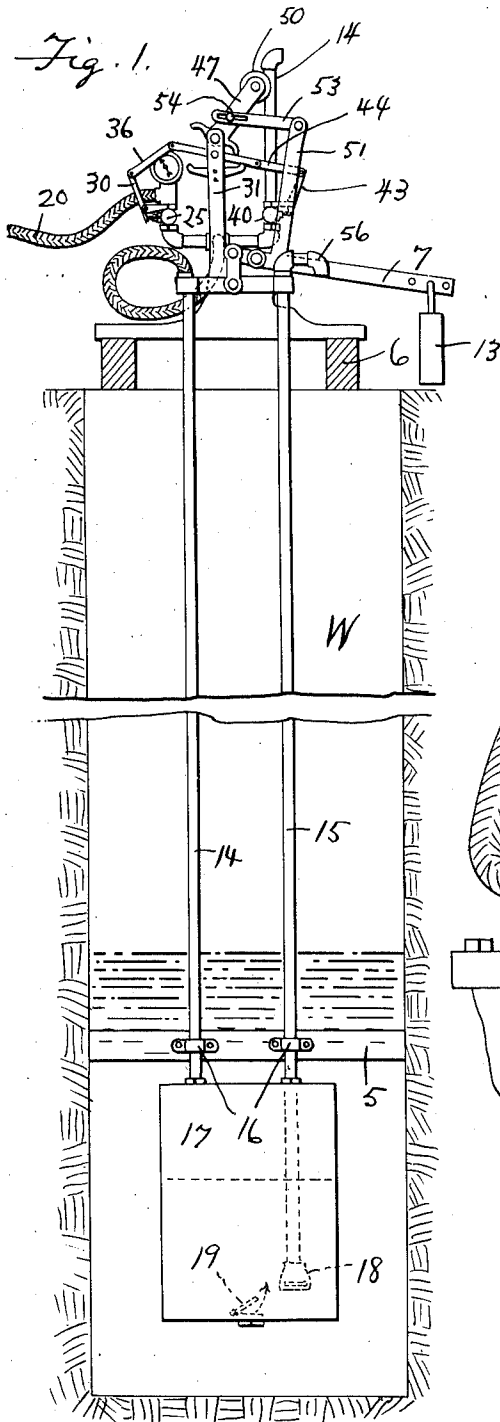
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F. TEEPLE

COMPRESSED AIR WELL PUMP

Filed June 14, 1927

3 Sheets-Sheet 1



Inventor

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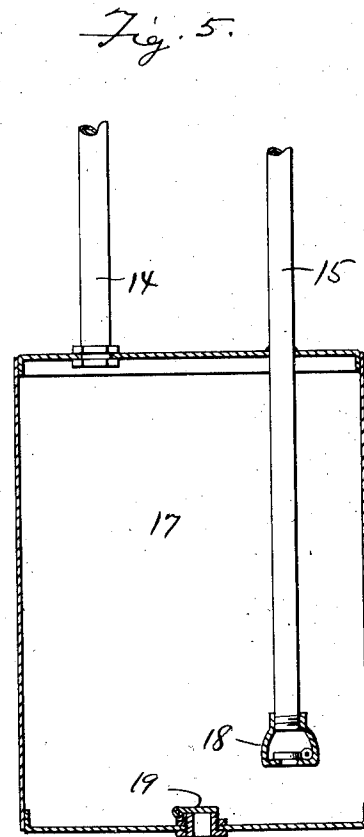
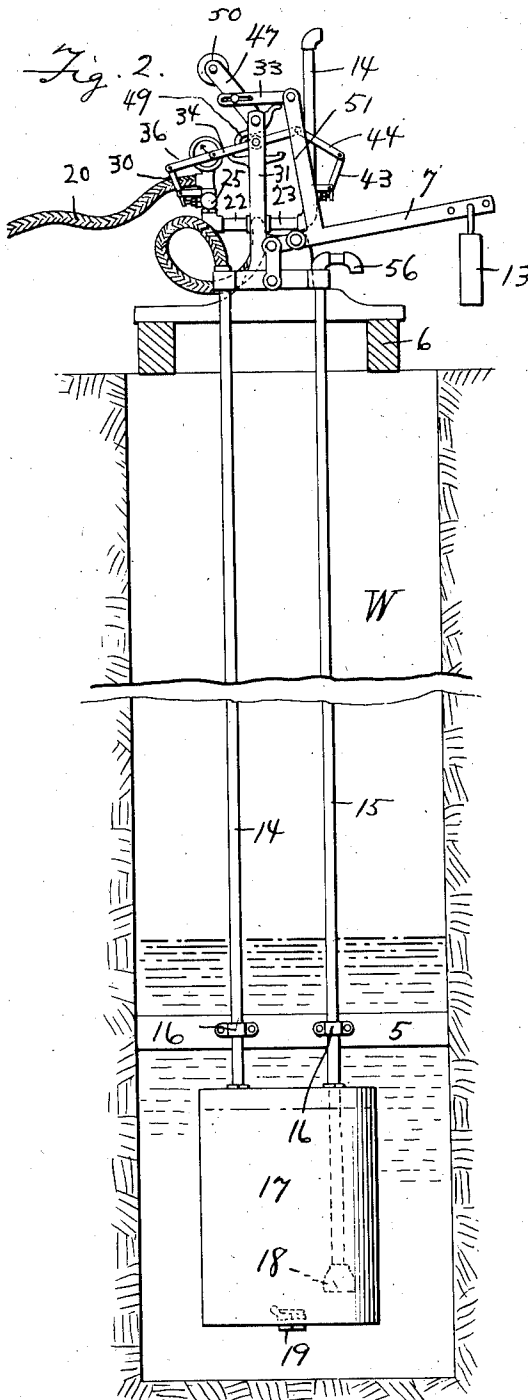
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3 Sheets-Sheet 2



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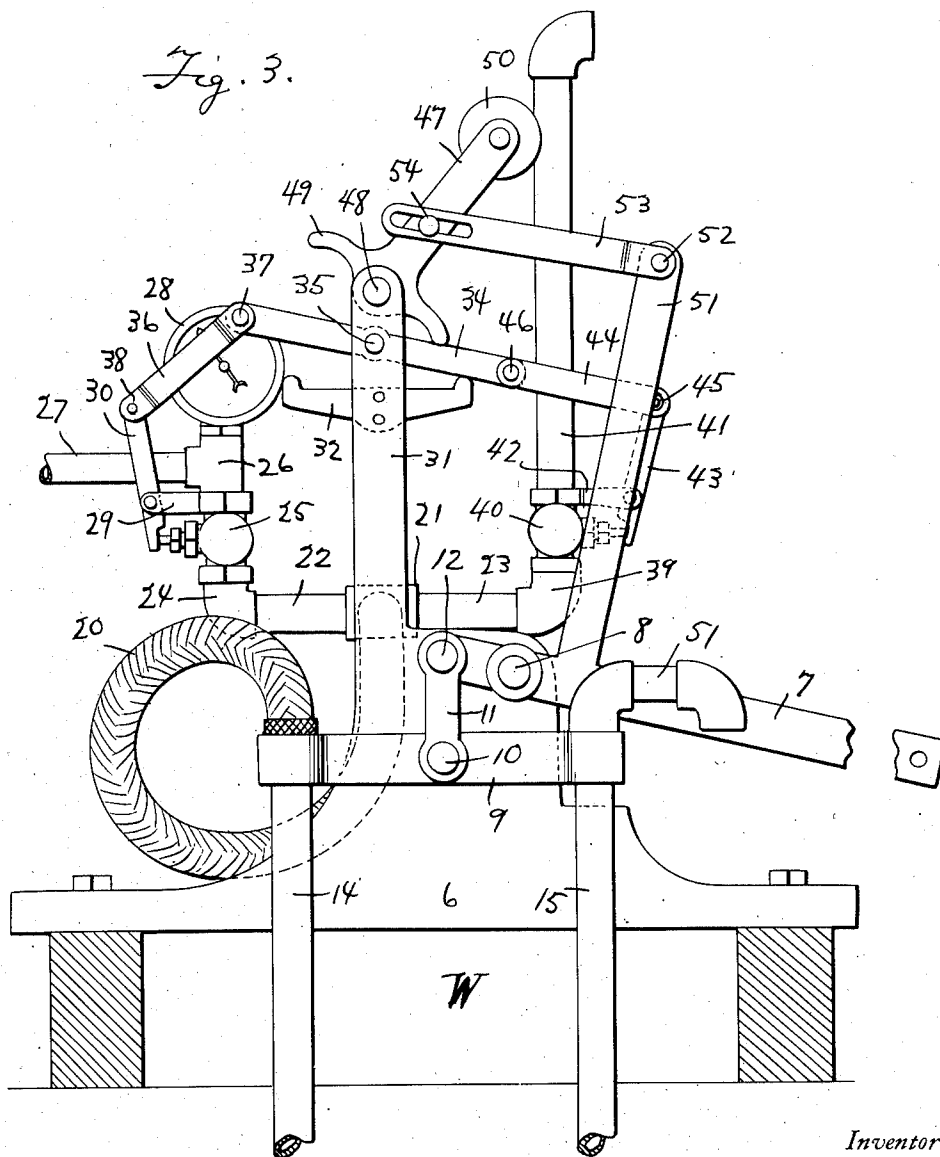
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F. TEEPLE

COMPRESSED AIR WELL PUMP

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

FLOYD TEEPLE, OF MUSCATINE, IOWA.

COMPRESSED-AIR WELL PUMP.

Application filed June 14, 1927. Serial No. 198,764.

The present invention relates to a compressed air well pump and has for its prime object to provide a structure, wherein a tank or cylinder is mounted in the fluid in the bottom of the well to be filled with the fluid and to have the fluid forced therefrom, the compressed air displacing the fluid and causing the tank to rise for operating a novel valve structure which controls the compressed air and the outlet of the fluid.

A still further important object of the invention resides in the provision of a pump of this nature which is exceedingly simple in its construction, automatic, efficient and reliable in its operation, strong and durable, comparatively inexpensive to manufacture, not likely to easily become out of order and otherwise well adapted to the purpose for which it is designed.

With the above and numerous other objects in view as will appear as the description proceeds, the invention resides in certain novel features of construction, and in the combination and arrangement of parts as will be hereinafter more fully described and claimed.

In the drawing:

Figure 1 is a sectional elevation showing the improved pump structure with the tank in a raised position.

Figure 2 is a similar view, showing the tank in a lowered position.

Figure 3 is an enlarged detail elevation of the valve and valve operating mechanism.

Figure 4 is an edge elevation thereof, and

Figure 5 is an enlarged section through the tank.

Referring to the drawing in detail, it will be seen that a well is designated generally by the letter W and has a cross piece 5 located therein below the level of the fluid. A suitable supporting structure 6 is mounted at the top of the well, and has rockable thereon a lever 7, as at 8. A rod 9 is pivoted intermediate its ends, as at 10, to a link 11, which is pivoted to one end of the lever 7 as at 12. A weight 13 is adjustably mounted on the other end of the lever 7. A pair of pipes 14 and 15 are mounted in the ends of the member 9 and extend down into the well through bearings 16 on the cross piece 5. The pipe 14 is attached to the top of a tank 17, while the pipe 15 projects through the top of the tank and terminates adjacent the bottom thereof in a check valve 18. An inwardly opening check valve 19 is mounted in the

bottom of the tank 17. A flexible hose 20 is connected to the top of the pipe 14 and to a T-coupling 21 having branches 22 and 23 projecting therefrom. An elbow coupling 24 is connected with the branch 22 and has connected therewith a valve 25, which in turn is connected with the T-coupling 26, to which leads a pipe 27, from a suitable source of compressed air. A compressed air gauge 28 is connected with the T-coupling 26. A bracket 29 is mounted on the valve 25 and has rockable thereon a lever 30, for actuating the valve 25, which is of that type which normally is closed. The lever 30 is operated to open this valve 25. A bracket 31 rises from the supporting structure 6 and has a cross piece 32 mounted adjacent the upper end thereof. A rocker 34 is pivotally mounted intermediate its ends as at 35, above the cross piece 33 and a link 36 is pivotally engaged with one end as at 37, and with the lever 30, as at 38. An elbow coupling 39 is connected with the branch 23 and has attached thereto a valve 40 from which rises a pipe 41. A bracket 42 is mounted on the valve and rockably supports a lever 43, which is actuatable to open the valve 40, said valve 40 being normally closed. A link 44 is pivotally engaged, as at 45, with the lever 43, and is also pivotally engaged as at 46, with the rocker 34. Obviously, when the rocker is in one position, the valve 40 is opened and the valve 25 is closed and when in the other position the valve 20 is closed and the valve 25 opened. The cross piece 32 functions as a stop for the rocker 34 as will be quite apparent. A lever 47 is pivoted as at 48 to the upper end of the bracket 31 and has fingers 49 projecting laterally therefrom for engaging the rocker 34, to rock the same as the lever is swung from one position to the other. On the upper end of the lever is a weight 50. A lateral extension 51 is provided on the lever 7 and has pivotally engaged with its extremity as at 52, a link 53, which has a pin and slot connection 54, with an intermediate portion of the lever 47.

As is shown to advantage in Figure 1, when the tank 17 is in the raised position, the compressed air valve 25 is opened and the valve 40 is closed and therefore the compressed air will flow through the flexible pipe or hose 20 down the pipe 14 to force fluid from the tank 17 up the pipe 15 and out through the outlet 56. As soon as the

compressed air fills the tank, said tank will rise from the position shown in Figure 2 to the position shown in Figure 1, because the air accumulating in the tank 17 will make the tank buoyant, and therefore the rising of this tank will close the valve 25 and open the valve 40, so that the air from the tank may escape up through the pipe 14, through the flexible hose 20, through the branch 23, coupling 39, valve 40 and pipe 41, and fluid will enter through the check valve 19 to fill the tank until it is sufficiently heavy to sink again to the position shown in Figure 2, upon which the compressed air will be turned on again and this operation will be continued without attention on the part of an operator.

It is thought that the construction, operation, utility and advantages of this invention will now be quite apparent to those skilled in this art, without a more detailed description thereof.

The present embodiment of the invention has been disclosed in detail merely by way of example, since in actual practice it attains the features of advantage enumerated as desirable in the statement of the invention and the above description. It will be apparent that changes in the details of construction and in the combination and arrangement of parts may be resorted to, without departing from the spirit or scope of the invention as hereinafter claimed or sacrificing any of its advantages.

Having thus described my invention, what I claim as new is:

1. In a pump mechanism of the class described, a cross piece adapted to be inserted in a well below the level of the fluid, a supporting structure adapted to be supported above the well, a tank, a pipe, a second pipe, bearings on the cross piece through which the pipes are slidable, the first pipe connected to the top of the tank, the second pipe extending through the top of the tank terminating adjacent the bottom thereof, a check valve at the bottom end of the second pipe, a second valve in the bottom of the tank opening inwardly thereof, a lever supported on the supporting structure being pivoted intermediate its ends, counter-balancing means on the lever, a member connected to the top end of the pipe, a link supporting the member from one end of the lever, a flexible pipe connected to the first pipe, branches leading therefrom, valves in the branches, means for connecting one of the valves with a source of compressed air, air escape means connected with the other valve, and a means operable by the lever for alternately opening and closing the valves.

2. In a pump mechanism of the class described, a cross piece adapted to be inserted in a well below the level of the fluid, a

supporting structure, adapted to be supported above the well, a tank, a pipe, a second pipe, bearings on the cross piece through which the pipes are slidable, the first pipe connected to the top of the tank, the second pipe extending through the top of the tank terminating adjacent the bottom thereof, a check valve at the bottom end of the second pipe, a second valve in the bottom of the tank opening inwardly thereof, a lever supported on the supporting structure being pivoted intermediate its ends, counter-balancing means on the lever, a member connected to the top end of the pipe, a link supporting the member from one end of the lever, a flexible pipe connected to the first pipe, branches leading therefrom, valves in the branches, means for connecting one of the valves with a source of compressed air, air escape means connected with the other valve, and a means operable by the lever for alternately opening and closing the valves, said means comprising a rocker, means for supporting the rocker on the supporting structure, means for operating the valves from the rocker, a lever pivoted on the means supporting the rocker, and having fingers engageable with the rocker, a weight on the last mentioned lever, an extension from the first lever, a link pivotally connected with the extension, a pin and slot connection between the link and the second lever.

3. In a pump mechanism of the class described, a cross piece adapted to be inserted in a well below the level of the fluid, a supporting structure, adapted to be supported above the well, a tank, a pipe, a second pipe, bearings on the cross piece through which the pipes are slidable, the first pipe connected to the top of the tank, the second pipe extending through the top of the tank terminating adjacent the bottom thereof, a check valve at the bottom end of the second pipe, a second valve in the bottom of the tank opening inwardly thereof, a lever supported on the supporting structure being pivoted intermediate its ends, counter-balancing means on the lever, a member connected to the top end of the pipe, a link supporting the member from one end of the lever, a flexible pipe connected to the first pipe, branches leading therefrom, valves in the branches, means for connecting one of the valves with a source of compressed air, air escape means connected with the other valve, and a means operable by the lever for alternately opening and closing the valves, said means comprising a rocker, means for supporting the rocker on the supporting structure, means for operating the valve from the rocker, a lever pivoted on the means supporting the rocker, and having fingers engageable with the rocker, a weight on the last mentioned lever, an extension from the first lever, a link pivotally con-

connected with the extension, a pin and slot connection between the link and the second lever, means for limiting the rocking movement of the rocker.

5 4. In a pump mechanism of the class described, a cross piece adapted to be inserted in a well below the level of the fluid, a supporting structure, adapted to be supported above the well, a tank, a pipe, a second pipe,
10 bearings on the cross piece through which the pipes are slidable, the first pipe connected to the top of the tank, the second pipe extending through the top of the tank terminating adjacent the bottom thereof, a
15 check valve at the bottom end of the second pipe, a second valve in the bottom of the tank opening inwardly thereof, a lever supported in the supporting structure being pivoted intermediate its ends, counter-balancing
20 means on the lever, a member connected to the top end of the pipe, a link supporting the member from one end of the lever, a

flexible pipe connected to the first pipe, branches leading therefrom, valves in the branches, means for connecting one of the
25 valves with a source of compressed air, air escape means connected with the other valve, and a means operable by the lever for alternately opening and closing the valves,
said means comprising a rocker, means for
30 supporting the rocker on the supporting structure, means for operating the valve from the rocker, a lever pivoted on the means supporting the rocker, and having fingers engageable with the rocker, a weight on the
35 last mentioned lever, an extension from the first lever, a link pivotally connected with the extension, a pin and slot connection between the link and the second lever, means
40 for limiting the rocking movement of the rocker, outlet means at the top end of the second pipe.

In testimony whereof I affix my signature.

FLOYD TEEPLE.