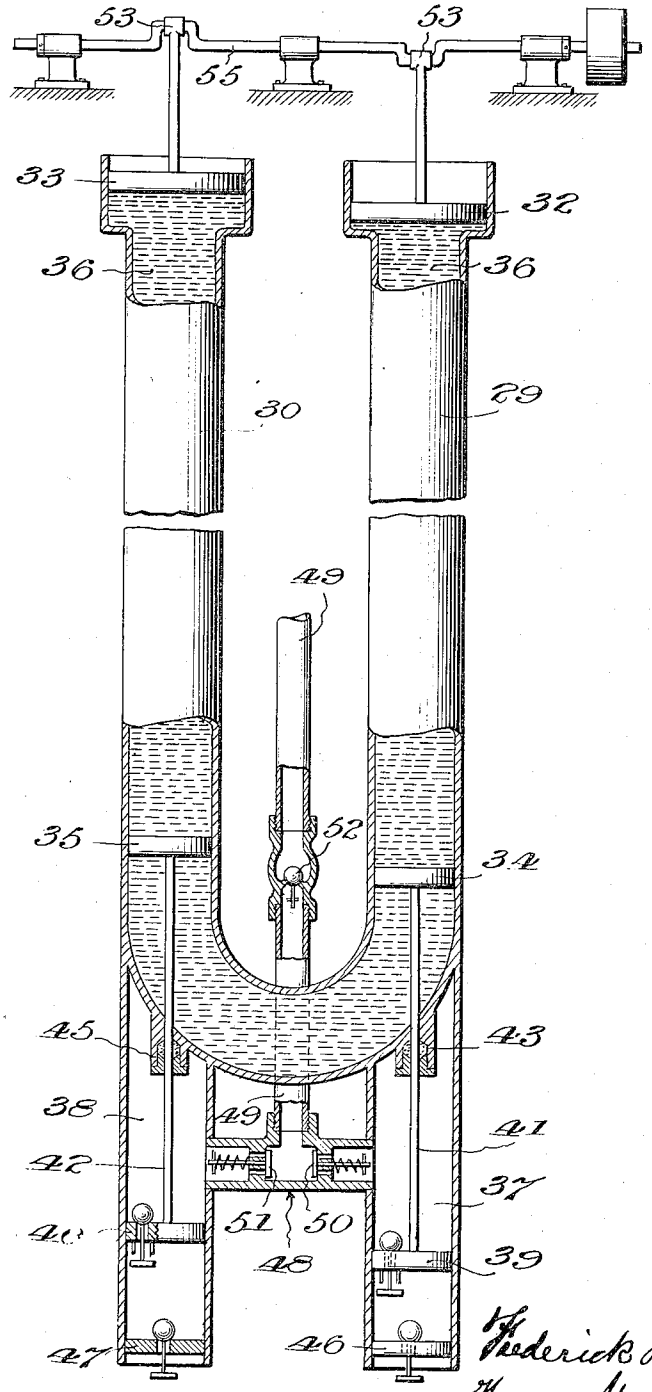
F. H. SIBLEY AND H. M. LASHER.

DEEP WELL PUMP.

APPLICATION FILED JAN. 22, 1918.

1,330,352. Patented Feb. 10, 1920.



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DEEP-WELL PUMP.

1,330,352. Specification of Letters Patent. Patented Feb. 10, 1920.

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To all whom it may concern:

Be it known that we, FREDERICK H. SIBLEY and HENRY M. LASHER, citizens of the United States, residing at Lawrence, Kansas, and Kansas City, Kansas, respectively, have invented certain new and useful Improvements in Deep-Well Pumps, of which the following is a specification, reference being had therein to the accompanying drawing.

Our invention relates to deep well pumps and has for its object the provision of a deep well pump adapted for use in oil wells where the liquid must be raised against a high hydrostatic head and where the greatest possible degree of sturdiness, and simplicity of structure and operation is required.

Other objects of the invention will be apparent from a perusal of the following specification and the drawings forming a part thereof.

Our invention is illustrated in the accompanying drawings in which:

The figure shows a vertical section of a pump embodying our invention.

Referring to the drawing the pipes 29 and 30 are connected through a bend 31 at their lower ends and provided with power driven pistons 32 and 33 at their upper ends, and secondary pistons 34 and 35 near the lower ends of the tubes just above the bend 30. The power driven pistons 32 and 33 may be operated in any suitable manner to be oppositely reciprocated as by a pair of cranks 53 set at an angle of 180° on a power driven crank shaft 55.

The entire space between the primary pistons 32 and 33 including the bend 31 is filled with a suitable non-compressible fluid 36, preferably oil. A pair of pump cylinders 37 and 38 are carried at the bottom of the bend 31 and project downwardly therefrom in axial alinement with the main pipes 29 and 30 and are provided with pump pistons 39 and 40 connected by suitable piston rods 41 and 42 with the secondary pistons 34 and 35, respectively. Suitable stuffing boxes 43 and 45 are provided between the bend 31 and the pump chambers. The cylinders 37 and 38 are provided at the bottom with suitable diaphragms or closures 46 and 47 having inlet openings with suitable ball check valves arranged to permit upward flow only, the pistons 39 and 40 being also provided with upwardly operating check valves, so as to form an upwardly operating pumping arrangement in the cylinders 37—38. The pump cylinders 37 and 38 are connected at points above the limit of the up stroke of the pistons through a discharge connection 48 to the discharge pipe 49 which leads upwardly through the well to suitable receiving means, not shown. The passages from the pump cylinders through the discharge connection are controlled by suitable check valves 50 and 51 arranged to permit an inward flow only. An upwardly operating check valve 52 is also provided in the discharge pipe 49.

The arrangement operates as follows: The crank shaft 55 being rotated, the primary pistons 32 and 33 are caused to reciprocate in opposite directions which motion is transmitted through the column of liquid 36 to the secondary pistons 34 and 35 and from the latter to the pump pistons 39 and 40, the columns of liquid in the pipes 29 and 30 balancing each other and acting to move the secondary pistons positively in both directions, by means of the connection through the bend 31. Due to the arrangement of the various check valves as described, the reciprocating movement of the pistons 39 and 40 in their respective cylinders 37 and 38, causes oil to be pumped up through the cylinders and discharge pipe 49 to the receiving means, as will be readily understood.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. A deep well pump comprising a U-shaped tube, primary pistons fitted in the arms of the U-shaped tube near the top, secondary pistons fitted in the arms of the U-shaped tube near the bottom above the bend of the U, a pair of pumps carried by said U-shaped tube below the bend, each having a piston mechanically connected with one of said secondary pistons, a common discharge pipe leading from said pumps to

the top of said U-shaped tube and means for oppositely reciprocating said primary pistons.

2. A deep well pump comprising a pair of tubes in communication with each other at their lower ends, means for reciprocating columns of water in said tubes, pistons fitted in the tubes near the bottom above the point of connection, a pair of pumps carried by said tubes below the connection, each having a piston mechanically connected with one of said first mentioned pistons, and a common discharge pipe leading upwardly from said pumps.

In testimony whereof we affix our signatures.

FREDERICK H. SIBLEY.
HENRY M. LASHER.