

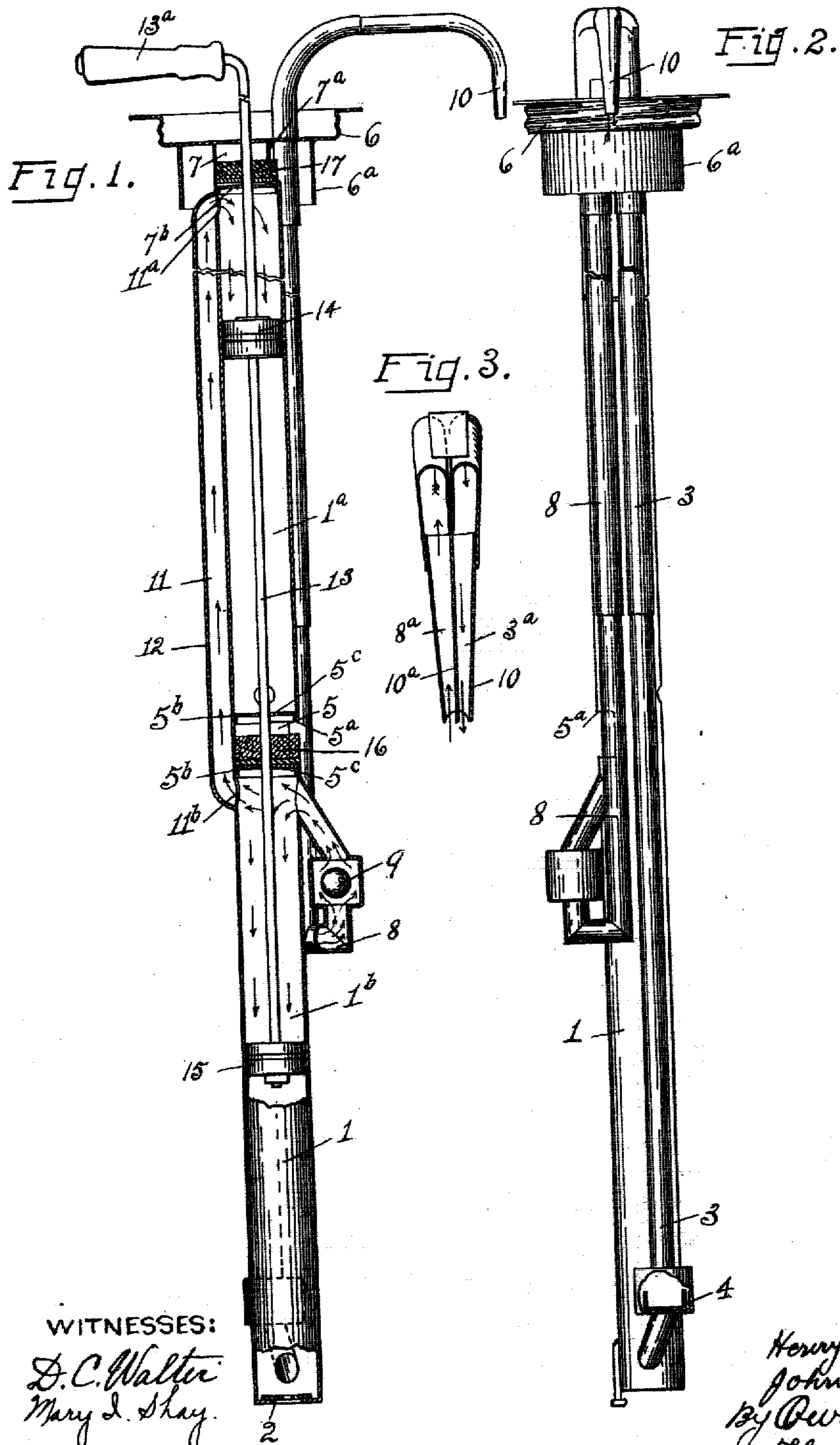
No. 825,547.

PATENTED JULY 10, 1906.

H. L. LEILICH & J. P. BURGER.

OIL PUMP.

APPLICATION FILED NOV. 15, 1905.



WITNESSES:

D. C. Walter
Mary L. Shay

INVENTORS

Henry L. Leilich &
John P. Burger,
by Owen & Owen,
their attorneys.

UNITED STATES PATENT OFFICE.

HENRY L. LEILICH AND JOHN P. BURGER, OF DELPHOS, OHIO, ASSIGNORS
TO THE DELPHOS CAN COMPANY, OF DELPHOS, OHIO, A CORPORATION OF OHIO.

OIL-PUMP.

No. 825,547.

Specification of Letters Patent.

Patented July 10, 1906.

Application filed November 15, 1905. Serial No. 287,430.

To all whom it may concern:

Be it known that we, HENRY L. LEILICH and JOHN P. BURGER, citizens of the United States, and residents of Delphos, in the county of Allen and State of Ohio, have invented certain new and useful Improvements in Oil-Pumps; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

Our invention relates to improvements in the class of pumps employed for transferring liquids from one vessel to another and embodying means by which the surplus liquid discharged to the receiving vessel is returned to the storage tank or vessel through the continued operation of the pump, whereby to effectually prevent an overflow of the liquid in the receiving vessel. While pumps of this class which employ a single piston-head for effecting the discharge and siphoning back of a liquid are perfectly satisfactory in their operation and effectually prevent an overflow of the receiving vessel when oils or liquids of a light nature are operated on, it has been found in practice that they are ineffectual to prevent an overflow of the liquid from a receiving vessel when used in conjunction with oils or other liquids of a heavy nature.

The primary object of our invention is the provision of a pump for use in conjunction with the handling of oils or other liquids of a heavy nature that is so constructed as to cause a greater suction or siphoning force through the return-pipe than the expelling force through the discharge-pipe, whereby the heavy liquid when it reaches a predetermined height in the receiving vessel will be returned to the discharging vessel as fast or faster than it is expelled therefrom.

To this end the invention consists of certain novel features of construction, combination and arrangement of the parts, as will be hereinafter more fully described and finally claimed.

In the accompanying drawings, forming part of the specification, Figure 1 is a side elevation of a pump embodying one construction of our invention with a portion thereof shown in central longitudinal section. Fig.

2 is a side elevation of the pump in another position to that shown in Fig. 1, and Fig. 3 is an enlarged view of the combined discharge and return spout with a portion shown in vertical section.

Referring to the drawings, 1 represents the pump cylinder or barrel, which is provided at its lower end with the usual foot-valve 2 and communicates adjacent such end with the discharge-tube 3. This discharge-pipe extends upward at the side of the cylinder and terminates at its upper end in a spout 3^a and is provided adjacent its lower end with an outwardly-opening check-valve 4.

Substantially midway of the ends of the cylinder 1 is provided a chamber 5, which has one side cut away, as shown at 5^a, and is formed by securely placing the spaced partitions 5^b 5^b within the cylinder. This chamber divides the pump-cylinder into an upper compartment 1^a and a lower compartment 1^b and has communication with each through an opening 5^c in both its upper and lower ends. The top of the cylinder is closed by a top piece 6, which is preferably made in the form of a screw-cap for engaging an opening in the top of the vessel with which it is associated and provided with a downwardly-projecting cylindrical extension 6^a, which is of greater diameter than and surrounds the upper portion of the cylinder, as shown. A chamber 7, having one side cut away, as at 7^a, is formed at the upper end of the cylinder 1 by the securing of a partition 7^b therein and has communication with the compartment 1^a of the cylinder through a central opening in said partition. Communicating with the compartment 1^b of the cylinder adjacent its upper end is the return or siphon tube 8 of the pump, which tube for a portion of its length extends upward in parallelism with the discharge-tube 3 and terminates at its upper end in the spout 8^a and is provided near its inner end with an inwardly-opening check-valve 9, preferably of the ball type. The spouts 3^a and 8^a preferably merge at their ends in a common nozzle 10, but are separated throughout the length of the nozzle by a partition 10^a, as shown in Fig. 3. A conduit or channel 11 is provided at one side of the pump-cylinder and has its upper end communicating with the compartment 1^a through an opening 11^a, adjacent its top, and its lower end communicating with the com-

partment 1^b through an opening 11^b, adjacent its top. This channel is shown in the drawings as being formed by securing a longitudinally-bent sheet-metal strip 12 to the cylinder-casing.

A piston-rod 13 is mounted within the cylinder 1 and is of sufficient length to extend from without the top to substantially the bottom of the cylinder and has its upper or outer end terminating with a handle portion 13^a. This piston-rod passes freely through the openings in the partitions forming the chambers 5 and 7, said openings being of greater diameter than the rod, and carries a piston-head 14 for operation in the compartment 1^a and a piston-head 15 for operation in the compartment 1^b. The piston-rod is also provided with valves 16 and 17, which are fitted friction-tight to said rod and arranged to play therewith between the ends of the chambers 5 and 7, respectively. These valves are formed of a stiff disk of leather, rubber, or other suitable material and are adapted on the downstroke of the piston-rod to close the lower port or opening in their respective chambers and on the upstroke of said rod to open said ports or openings and close the opening in the upper end of the chamber 5 and pack the opening in the cap-piece 6, through which the rod passes, against leakage. Each chamber 5 and 7 and inclosed valve combines the functions of both a stuffing-box for preventing leakage around the piston-rod at such point and a valve for controlling communication between the related compartments and the exterior of the cylinder through the opening in the side of the chamber as the rod is reciprocated. An opening 18 is provided in the lower end of the upper compartment of the cylinder to prevent the forming of a vacuum below the piston 14 on its upstroke.

The operation of the pump is as follows: On a reciprocation of the piston-rod the lower piston-head 15 thereon operates on its upstroke to draw a quantity of oil or other liquid into the lower compartment 1^b of the pump-cylinder, and on its downstroke to force the liquid from the cylinder through the discharge-pipe 3 and its spout into the receiving vessel, into which the end of the spout projects. The piston 15 on its downstroke also operates to create a suction in the return-tube 8 and is augmented in this operation by the action of the piston 14 in the compartment 1^a, due to the communication between the upper ends of the compartments 1^a and 1^b through the channel 11. As the liquid rises in the receiving vessel to a height sufficient to immerse the open end of the spout of the return-tube the suction created in the return-tube 8 draws the surplus liquid in the vessel through the return-tube and back into the pump-cylinder above the pistons, the valve 9 in the return-tube opening

for that purpose and the liquid taking the course indicated by the arrows, which show a portion of the returned liquid as following the piston 15 and remaining in the lower compartment and a portion thereof as passing upward through the channel 11 and into the upper compartment of the cylinder above the piston. The liquid thus returned to the pump-cylinder is expelled on the upstroke of the pistons to the can or tank in which the pump is positioned, it being free to pass into the chambers 5 and 7 through the openings or ports in the lower ends thereof and thence into the can or tank through the cut-away portions 5^a and 7^a in the walls of said chambers, due to the upward movement of the valve 16 and 17 with the piston-rod.

It will thus be apparent that we have provided a pump of the non-overflow type, which has a more powerful siphoning than expelling force, whereby oils or other liquids of a heavy nature may be operated on and returned from a receiving vessel to the vessel from which discharged as fast or faster than they are expelled therefrom and simultaneous with the expelling operation, and that as many of the siphoning-pistons may be provided in a single pump as the congealed or thickened condition of the liquid may require to effectually prevent an overflow thereof when expelled to a receiving vessel.

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

1. A pump, comprising a cylinder divided into a plurality of compartments, a discharge-tube, a return-tube, a piston-rod, and a piston carried within each compartment by the piston-rod, said compartments having the portions thereof disposed above their pistons in communication, substantially as described.

2. A pump, comprising a cylinder having a plurality of compartments, a piston-rod, a piston carried within each compartment by the rod, a discharge-tube and a return-tube communicating with one compartment on opposite sides of its piston, the portion of the compartment with which the return-tube connects being in communication with each of the like portions of the other compartments whereby to augment the suction created in the return-tube by the piston operating in the compartment with which it is directly connected.

3. A pump, comprising a cylinder having a plurality of superimposed compartments, a discharge-tube leading from the lower of said compartments, a return-tube having communication with the like portion of each compartment, a piston-rod mounted within the cylinder, and a piston carried by said rod within each compartment, all of said pistons being operative to create a suction through the return-tube and the lower one being op-

erative to create a discharge through the other tube.

4. In a pump, a cylinder having a plurality of communicating superimposed compartments, each compartment having a valved exit, a discharge-tube and a return-tube in communication with the lower compartment, a piston-rod, and a piston carried by said rod within each compartment, the one in the lower compartment being operative to create a discharge through one tube and a suction through the other, and the other pistons being operative to augment the suction created in the return-tube by the first piston.

5. In a pump, a cylinder having a main compartment and an auxiliary compartment, each provided with a valved exit, a discharge-tube leading from the main compartment and having an outwardly-opening valve, a return-tube leading to said compartment and having an inwardly-opening valve, means opening communication between the two compartments, a piston-rod in the cylinder, a piston carried by the rod within the main compartment and operative to create an expelling force through the discharge-tube and a suction through the return-tube, and a piston carried by the rod in the auxiliary compartment for augmenting the suction created in the return-tube by the other piston.

6. In a pump, a cylinder having two communicating compartments and an exit from each compartment, a discharge-tube and a return-tube communicating with one compartment, a piston-rod in the cylinder, a piston carried by the rod within each cylinder,

one piston being operative to create an expelling force through the discharging-tube and a suction in the return-tube and the other to augment the suction in the return-tube, and a valve mounted in each exit-opening and operatively related to the piston-rod.

7. In a pump, the combination of a cylinder having two communicating compartments, an exit-chamber communicating with each compartment, and a valved intake-opening in one compartment, an eduction-tube leading from the compartment having the intake-opening, a return-tube communicating with both compartments, a piston-rod in the cylinder, a piston carried by the rod in each compartment, and a valve mounted in each exit-chamber and operatively related to the piston-rod.

8. In a pump, the combination of a cylinder having an intake at its lower end and two superimposed compartments communicating at their upper ends and each provided at its upper end with a valved exit, a piston-rod, a piston carried by the rod within each compartment, a valved discharge-tube leading from the lower compartment below the piston therein, and a valved return-tube leading to the lower compartment above the piston therein.

In testimony whereof we have hereunto signed our names to this specification in the presence of two subscribing witnesses.

HENRY L. LEILICH.
JOHN P. BURGER.

Witnesses:

A. S. PERKINS,
D. D. CHAMBERS.