

C. O. LUCAS.

PUMP.

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944,243.

Patented Dec. 21, 1909.

2 SHEETS—SHEET 1.

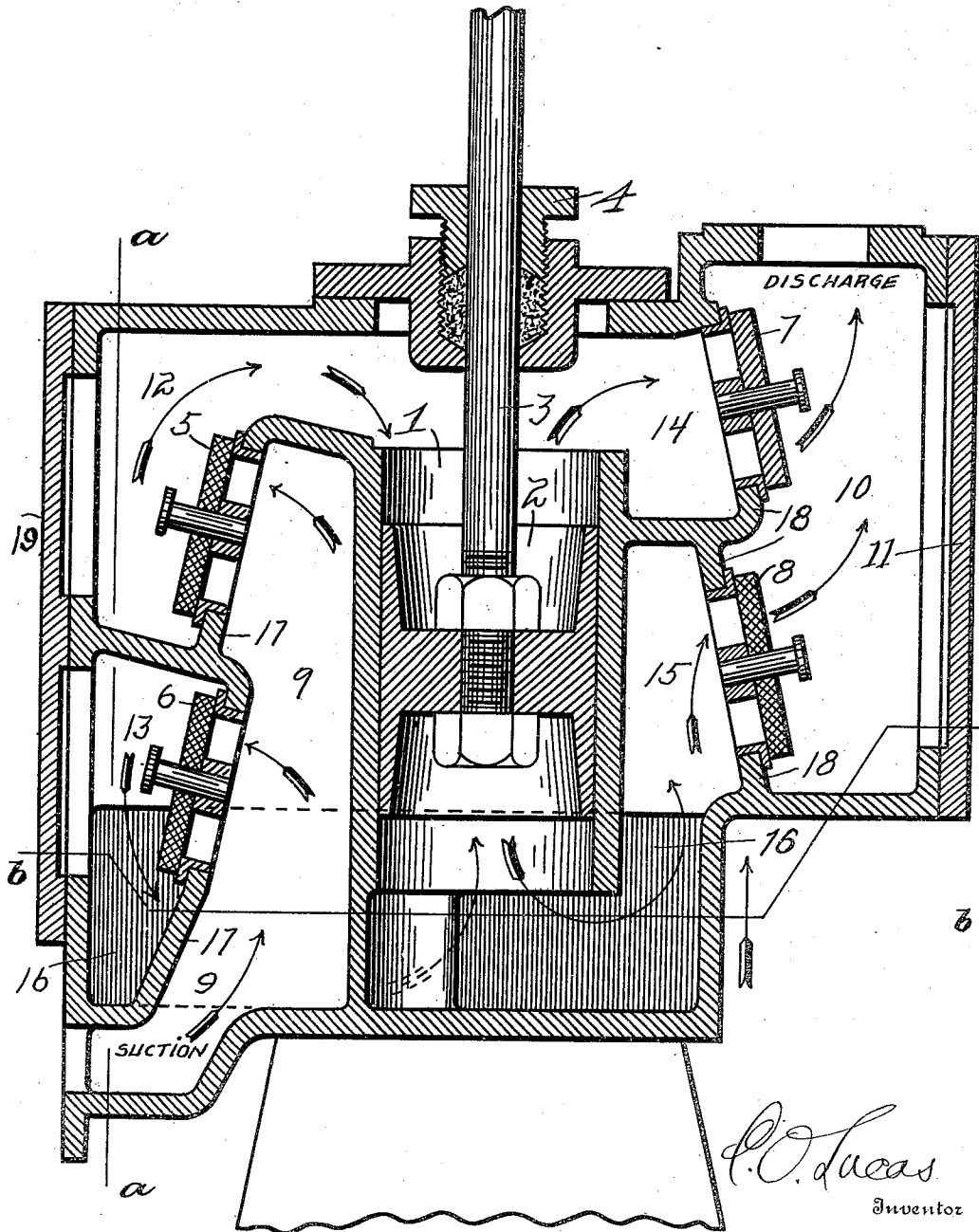


Fig. 1.

Witnesses

M. Liebler.

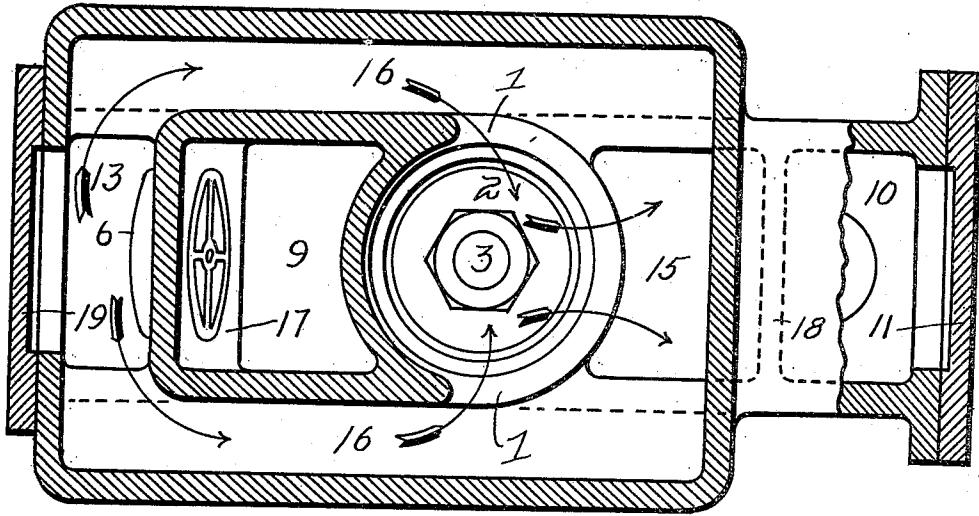
C. M. Theobald.

By

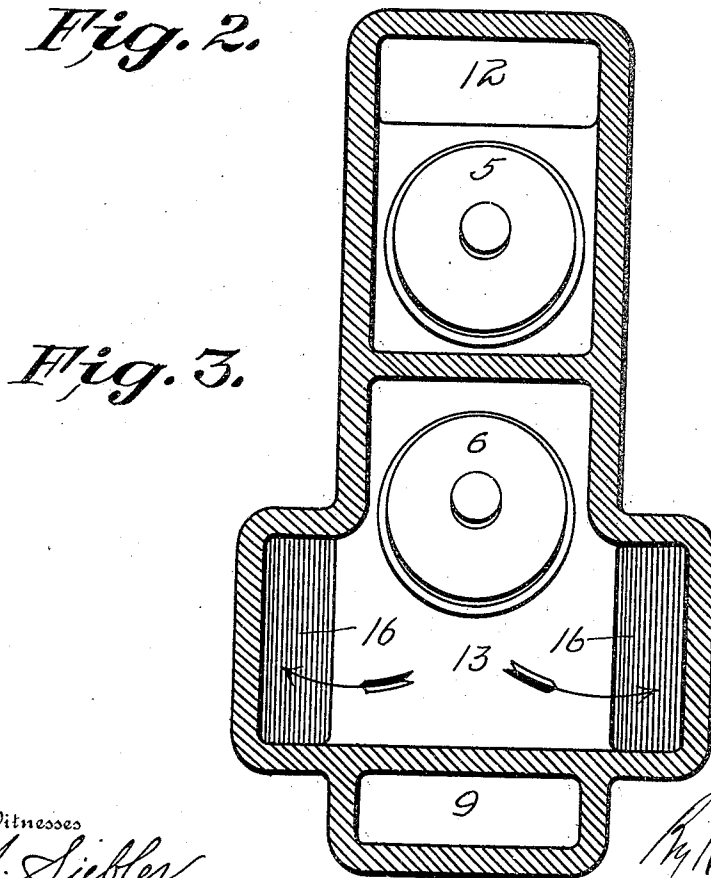
R. M. Tandy.  
his Attorney

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Patented Dec. 21, 1909.  
2 SHEETS—SHEET 2.



*Fig. 2.*



*Fig. 3.*

Witnesses  
M. Liebler.  
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# UNITED STATES PATENT OFFICE.

CHARLES O. LUCAS, OF DAYTON, OHIO, ASSIGNOR TO THE LUCAS PUMP COMPANY, OF DAYTON, OHIO.

PUMP.

944,243.

Specification of Letters Patent.

Patented Dec. 21, 1909.

Application filed December 7, 1908. Serial No. 466,279.

*To all whom it may concern:*

Be it known that I, CHARLES O. LUCAS, citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Pumps; and I do declare the following to be a full, clear, and exact description of the invention, such as it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in pumps, and has specific reference to the construction of the pump housing or casing.

The object of the invention is to provide a pump housing so constructed as to permit of access to the several valves without necessitating the dismantling of the pump. Those familiar with the usual labor and annoyance in getting at the valves of pumps will readily appreciate the advantages of the present invention by the means of which the valves may be gotten at for the purposes of cleansing or repairing with little or no labor or delay.

Preceding a detailed description of the invention, reference is made to the accompanying drawings, of which—

Figure 1, is a vertical sectional elevation of a pump constructed in accordance with my invention. Fig. 2, is a sectional elevation on the line *b b* of Fig. 1, looking up. Fig. 3, is a vertical section on the line *a a* of Fig. 1.

In a detail description of the invention, similar reference characters indicate corresponding parts.

An important feature of the invention, is the arrangement of the suction chamber 9 between the pump cylinder 1 and the inlet or suction valves 5 and 6. This enables said valves to open outwardly and to thus establish a communication between said chamber 9 and the upper and lower suction valve chambers 12 and 13. Valve chamber 12 it will be seen, communicates with the upper end of the cylinder 1, and valve chamber 13 communicates with two side passage ways 16, and the lower end of the cylinder and the lower discharge valve chamber 15. See Fig. 2.

It will be observed that the pump casing

and the cylinder are in one casting, the suction valve decks 17 and the discharge valve decks 18 being joined to the cylinder and to the casing. This arrangement of the valves enables both the suction chamber 9 and the upper and lower discharge valve chambers 14 and 15 to be placed between the pump cylinder and the valves. The upper discharge valve 7 controls the communication between the upper chamber 14 and the discharge chamber 10, and the lower discharge valve 8 controls the communication between the lower discharge valve chamber 15 and the main discharge chamber 10.

It will be noted that the upper discharge valve chamber 14 communicates with the upper suction valve chamber 12 and the upper end of the cylinder, and the lower discharge valve chamber 15 communicates with the passage way 16 between the lower suction valve chamber 13 and the lower end of the cylinder. Both sets of valves it will be observed, open outwardly into the respective chambers 10 and 12 and 13, and that access may be had to either of these valves by removing the caps 11 and 19. These caps are secured in position by screws or otherwise, and it will be understood that by simply removing them, access may be had to the valves without disturbing any other element of the pump.

The piston 2 within the cylinder is connected with the piston rod 3 which passes out through the stuffing box 4 and connects with any suitable driving medium (not shown.) When the piston ascends, the water or other element to be pumped, is drawn through the lower suction valve 6 from the chamber 9 by the suction created in the passage ways 16, which as we have before seen, communicates with the lower suction valve chamber 13. The water continues to be drawn into the passage ways 16 and the pump cylinder during the entire upward stroke of the piston, and the water previously drawn into the upper suction valve chamber 12 and upper discharge valve chamber 14, by the downward movement of the piston, is forced through the upper discharge valve 7 into the discharge chamber 10 and out through the discharge orifice of the pump. When the lower suction valve 13 and the upper discharge valve 7 are thus being controlled by the ascending piston, the lower discharge valve 8 and the upper

suction valve 5 are held to their seats by the suction and pressure created in the respective chambers 15 and 12. In the descent of the piston, the water previously drawn into passage ways 16 and the discharge chamber 15, is discharged through the lower discharge valve 8 and the chamber 10, and the suction created in the upper suction valve chamber 12 opens the valve 5 and draws the water into chambers 10 and 14 above the piston. The operation is thus repeated during the movement of the piston.

I claim:

A pump comprising a casing, a cylinder joined thereto by decks which extend from opposite sides of one end of the cylinder and one of which provides seats for two outwardly-opening inlet valves, the said deck providing a main suction chamber on one side of the cylinder which communicates with the exterior of the casing at the lower extremity thereof, and lower and upper auxiliary suction chambers which communicate with said main suction chamber through the

inlet valves, the upper auxiliary suction chamber communicating directly with the upper end of the cylinder, and the lower auxiliary suction chamber communicating with the lower end of the cylinder through passage-ways on opposite sides of the lower end of the cylinder, the other of said decks providing seats for two outwardly-opening outlet valves, and an outlet chamber on the exterior of said valves, and upper and lower discharge chambers which communicate with said outlet chamber through said valves, the lower discharge chamber communicating directly with the lower end of the cylinder, and the upper discharge chamber communicating directly with the upper end of the cylinder, substantially as shown and described.

In testimony whereof I affix my signature, in presence of two witnesses.

CHARLES O. LUCAS.

Witnesses:

R. J. McCARTY,  
MATTHEW SIEBLER.