

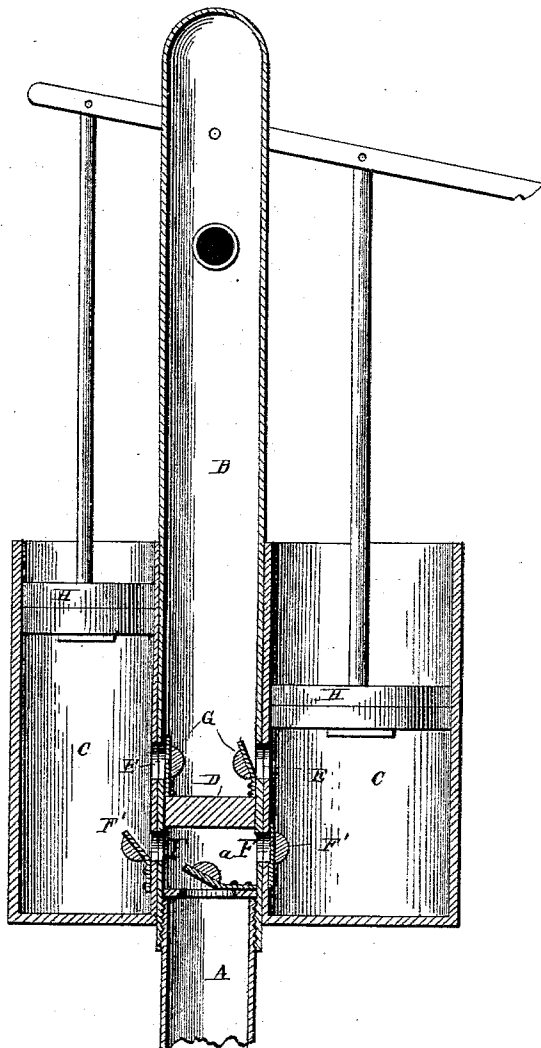
(No Model.)

G. F. CASE.

PUMP.

No. 339,617.

Patented Apr. 13, 1886.



WITNESSES

*Edwin L. Jewett,*  
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INVENTOR

*G. F. Case,*  
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# UNITED STATES PATENT OFFICE.

GEORGE F. CASE, OF STANTON, MICHIGAN.

## PUMP.

SPECIFICATION forming part of Letters Patent No. 339,617, dated April 13, 1886.

Application filed January 26, 1886. Serial No. 159,820. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE F. CASE, a citizen of the United States, residing at Stanton, in the county of Montcalm and State of Michigan, 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 will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to the letters and figures of reference marked thereon, which forms a part of this specification.

This invention has relation to improvements in force-pumps; and it consists in the construction, novel arrangement, and adaptation of devices, as will be hereinafter more fully set forth, and particularly pointed out in the appended claims.

The invention is fully illustrated in the accompanying drawing, in which the same is represented by a side elevation, partly in section.

Referring to the said drawing by letter, A indicates the well-tube which is provided at its upper end with an upwardly-opening valve, *a*. B indicates the pump-stock, which receives at its lower end the upper end of the said well-tube. Arranged at opposite sides of the said stock are two similar vertical cylinders, C, which communicate with the stock B.

The stock is provided at a suitable distance above the upper end of the well-tube with a diaphragm, D, and above and below this diaphragm are respectively provided two lateral ports, E and F, which communicate with the cylinders C C. The ports or cylinders below the diaphragm of the stock are provided with outwardly-opening valves F', and the cylinders or stock at the ports above the diaphragm are provided with inwardly-opening valves G. Within the cylinders are plungers H, which may be of any ordinary or approved construction and connected by means of piston-rods with the hand-lever or power mechanism.

The stock is provided at a suitable point with a discharge spout or nozzle.

In the construction illustrated it will be seen that the cylinder nearer the operator is of slightly greater diameter than the one at the opposite side of the stock. Thus it will

be seen that the power required to operate is equalized and the force to operate the pump lessened.

I attach importance to the fact that the cylinders are open at their upper ends and the objectionable packing which has heretofore been employed is dispensed with.

While I have shown a hand-lever for operating the plungers, yet I do not wish to be confined to such means for operating them, as it is obvious that others may be employed, such, for instance, as cog-gearing and a hand-wheel or rope and pulleys.

In operation, it will be seen that when power has been applied to the hand-lever the plungers will be carried up and down alternately, and the water or other liquid, as it is drawn from the well-tube, will enter the stock, and thence, through the first set of valves, enter the respective cylinders. Upon the upstroke of the plungers the said valves will be opened and close at the downstroke. Consequently one of the said valves will be open and water received continuously to the cylinders during the work of the pump. As the plunger descends within the cylinders, they close the lower valves, and the force of the water therein simultaneously opens the upper valves and is forced up in the stock to the discharge-spout.

I am aware that it is not new in forcing-pumps to employ cylinders of different diameters. Neither is it new to employ, in combination with two cylinders, an intermediate well-tube and pump-stock provided with inlet and trap valves, and therefore I disclaim said constructions when broadly considered.

Having described this invention, what I claim is—

1. In a double-acting force-pump, the combination of two vertical piston-cylinders of different diameters, for the purpose described, with an intermediate pump-stock impinging against said cylinders their entire length, the four horizontal ports directly through the walls of said cylinders, and pump-stock provided with valves, the diaphragm D, and the detachable well-tube provided at its upper end with a valve opening upwardly below said diaphragm, all substantially as specified.

2. In a forcing-pump, the combination, with two vertical cylinders of different diameters,

ported as described, of a pump-stock ported  
to register with the ports through the walls  
of said cylinders, the four valves for said ports,  
the diaphragm D, the discharge-aperture be-  
5 low the upper closed end of said pump-stock,  
and a well-tube, A, provided with a valve, a,  
and detachably secured to the pump-stock, all  
substantially as described.

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

GEORGE F. CASE.

Witnesses:

GEO. S. STERN,  
N. J. BROWN.