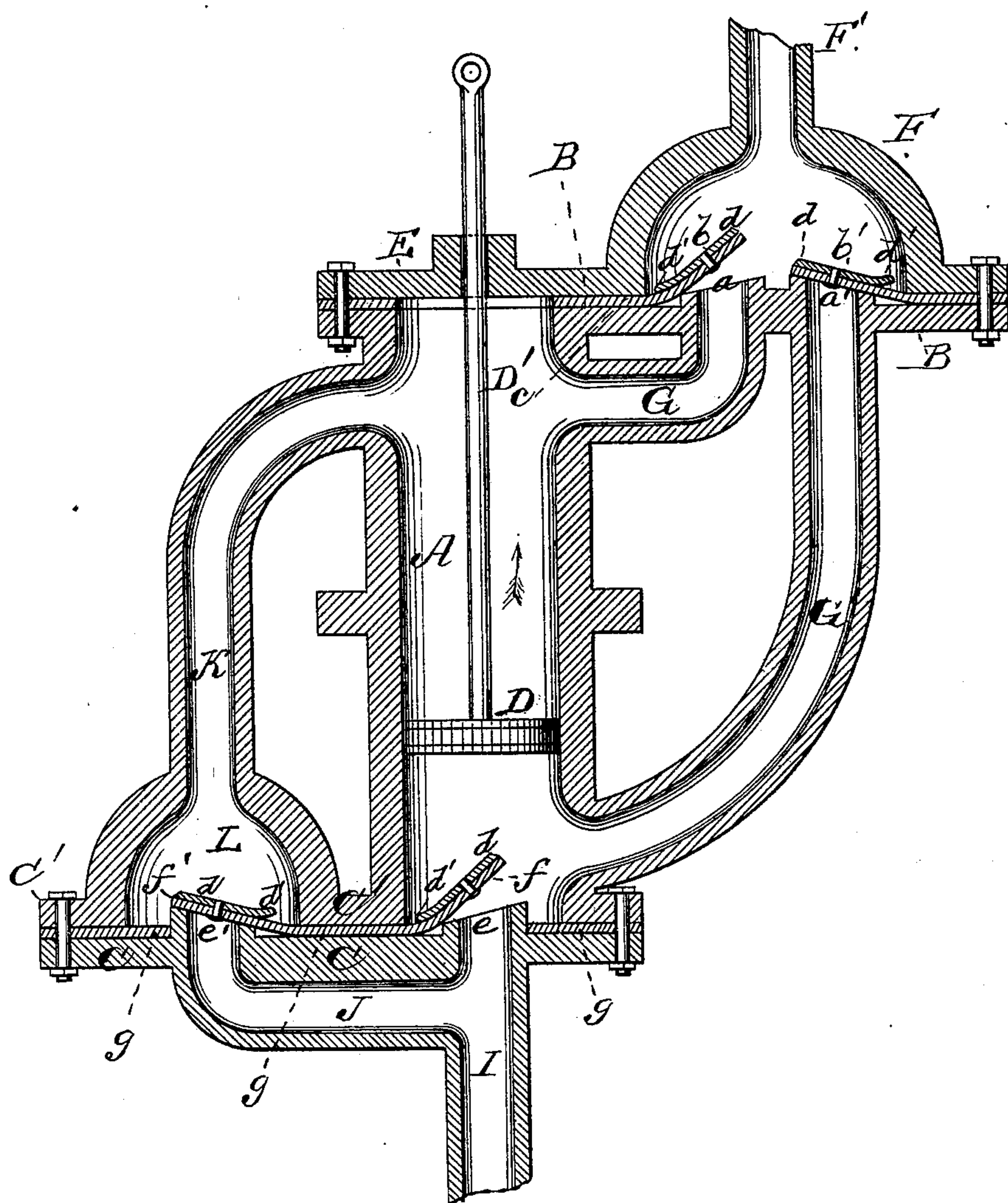


C. H. DUWELIUS.  
Pump.

No. 218,245.

Patented Aug. 5, 1879.



WITNESSES

Mary S. Utley.  
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# UNITED STATES PATENT OFFICE

CHARLES H. DUWELIUS, OF RICHMOND, INDIANA.

## IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **218,245**, dated August 5, 1879; application filed May 3, 1879.

*To all whom it may concern:*

Be it known that I, CHARLES H. DUWELIUS, of Richmond, in the county of Wayne and State of Indiana, have invented a new and valuable Improvement in Pumps; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing, making a part of this specification, and to the letters and figures of reference marked thereon.

The drawing is a representation of a vertical longitudinal section of my invention.

This invention has relation to improvements in double-acting pumps; and the nature of the invention consists in a certain novel construction and arrangement of the parts of the pump, as will be hereinafter more fully set forth.

In the annexed drawing, the letter A designates the barrel of the pump, made, if desired, of two or more sections, and having formed or secured thereon the oppositely-projecting platforms B and C', respectively, at top and bottom. The cylinder A may be of any desired length and diameter.

Inside of the cylinder is the usual piston D, and connected thereto is the rod D', extending through a stuffing-box in the upper head, E, of the pump-barrel. This head is of the same conformation as the upper platform, B, and has formed thereon, outside of the body of the pump-cylinder, a chamber, F, the object of which will be hereinafter set forth.

At one side of the cylinder are two pipes, G G', each extending through platform B, side by side, but slightly separated, and opening the one into the upper portion of said cylinder and the other into the lower portion thereof.

In the apex of the dome or chamber F is a pipe, F', through which the water raised is discharged into a suitable receptacle.

At the upper ends of the pipes G G' are formed the raised and oppositely-inclined valve-seats *a a'*, respectively, working in connection with which are the valves *b b'*, opening upward. These valves are usually formed out of the body of a leather or other suitable packing material, *c*, interposed between the head E and platform B, and, in order to their more efficient working, are weighted and counterbalanced, as shown at *d d'*, respectively.

C indicates a similar head, conforming to the shape of platform C', and secured thereto in any suitable manner. Extending through this head is the main supply-pipe I, having at its upper end an inclined valve-seat, *e*, raised above the surface of the head; and branching off therefrom is a pipe, J, that opens into the said supply-pipe below head C, and also extends through the platform C'. The end of the branch pipe extending through this platform is also provided with an inclined and raised valve-seat, *e*.

Interposed between the head and platform is a leather packing, *g*, out of the body of which are cut the valves *f f'*, working, respectively, in connection with the seats *e e'*. These also open upward, and are preferably weighted and counterbalanced.

K indicates a pipe, opening at one end into the upper portion of the pump-barrel, and provided at its lower end with a chamber, L, spanning the major portion of the exterior part of the platform C', and inclosing the valve *f'*, the object of which will be explained hereinafter.

The upper and lower heads are secured to their respective platforms by means of bolts and suitable nuts.

The operation of my improved pump is as follows: The piston moving in the direction indicated by the arrow, valve *f*, at the top of the main supply pipe, is opened upward, and valve *e'* of the branch pipe J remains closed. At the same time valve *b* of pipe G is opened, and valve *b'* of pipe G' closed. A partial vacuum is created below the piston, and water rushes up the main supply-pipe I into the lower part of the cylinder A, any water above the piston passing out of the cylinder through pipe G into the condensing-chamber F. When the movement of the piston is reversed, valve *f* is closed, as is also valve *b*, and the valves *f'* and *b'* opened. Water rushes into the chamber L through branch pipe J, and, passing through pipe K, fills the upper part of the pump-barrel. At the same time the water below the piston is forced up pipe G' into the chamber F.

It will be seen from the foregoing description that I have devised a double-acting force-pump of exceptional excellence, wherein the chambers L F act as condensers, and cause

the water to be delivered from pipe F' in a steady, continuous, and forcible stream.

The valve-seats being both raised and inclined, sedimentary matter is prevented from settling thereon and clogging the valves.

What I claim as new, and desire to secure by Letters Patent, is—

In a double-acting force-pump having the pipes G G' and I J extending above the platform B and head C', forming raised and inclined valve-seats *a a'* and *e e'*, and the con-

tinuous packing *c g*, interposed between the heads and platforms above and below, forming valves *b b'* and *f f'*, having weights *d d'* secured thereto, as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

CHARLES H. DUWELIUS.

Witnesses:

FRED F. ROST,  
H. H. ROST.