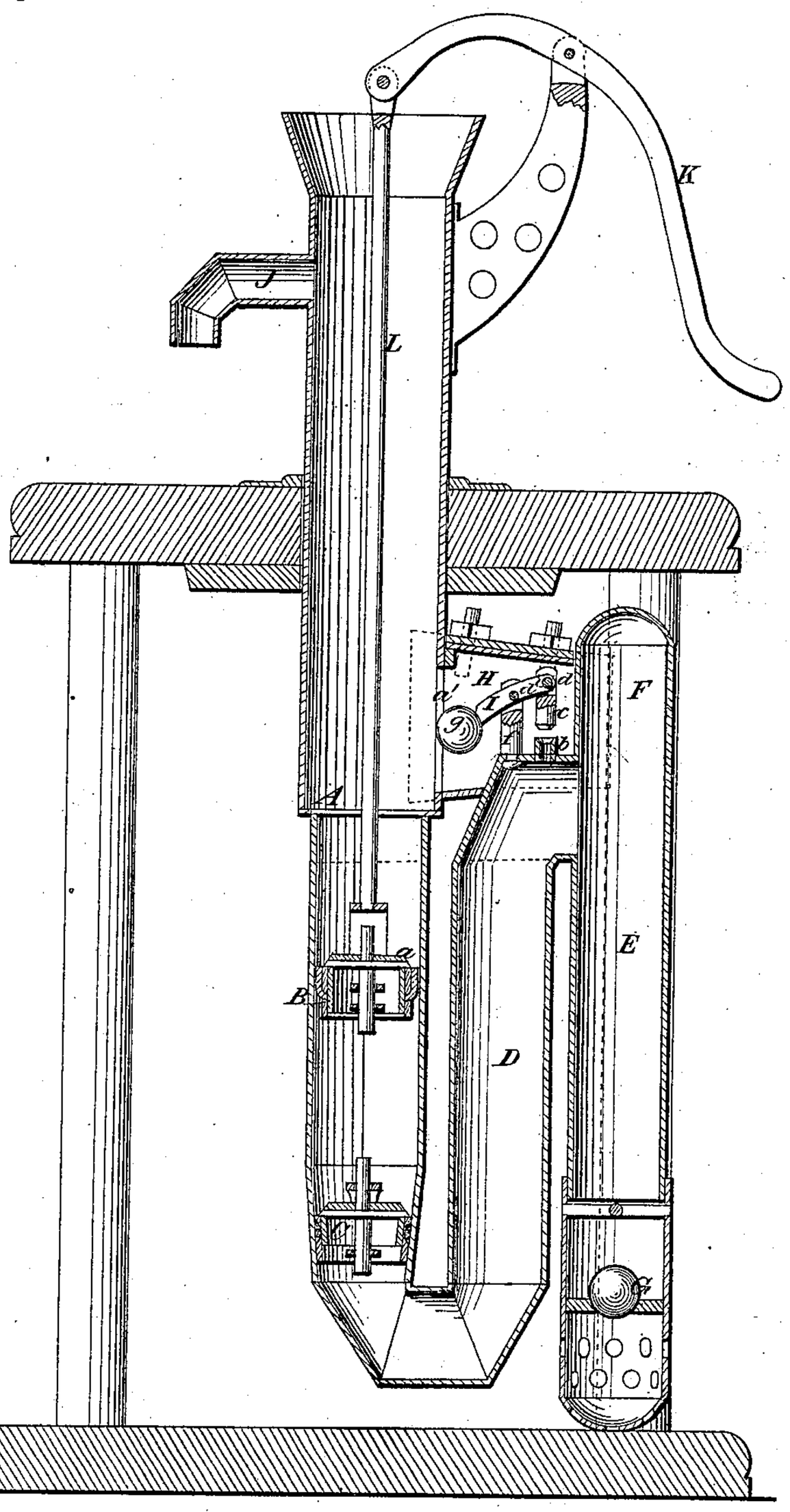
W. H. Thomas

Pump Lift,

No. 42,128. Patented Mar. 29, 1864.



Witnesses;
J. W. Coombs
Geo. B. Reed

Inventor;
W. H. Thomas
per Munn & Co
attys

UNITED STATES PATENT OFFICE.

WILLIAM H. THOMAS, OF SACRAMENTO, CALIFORNIA.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **42,128**, dated March 29, 1864.

To all whom it may concern:

Be it known that I, WILLIAM H. THOMAS, of Sacramento, in the county of Sacramento and State of California, have invented a new and useful Improvement in Pumps; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, making a part of this specification, said drawing being a vertical central section of my invention.

This invention has for its object the keeping of a pump always charged with water after having once been put in operation, thereby obviating the trouble attending the starting of a pump which has become empty on account of leaky or defective valves.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents an upright cylinder, in which the piston B of the pump works, said piston being provided with a valve, *a*, as usual, opening upward. C is a valve placed in the lower part of the cylinder A, said valve also opening upward.

To the lower end of the cylinder A there is attached a pipe, D, curved at its lower end, and extending upward a certain distance, and then curved horizontally and connected to a vertical pipe, E, a short distance below its upper end, the space in the pipe E above the junction of pipe D serving as an air-chamber, and designated by F. The pipe E extends down into the well or cistern, and is provided with a check-valve, G, opening upward. The two pipes D E form a siphon or arc of that shape, as shown clearly in the drawing.

H is a chamber in the upper end of the pipe D, and said chamber communicates with the cylinder A, as shown at *a'*. In the upper end of the pipe D there is a small tube, *b*, which, when its upper end is open, forms a communication between the chamber H and the pipe D. This tube *b*, when closed, has a plug or stopper, *c*, fitted in its upper end, said plug or stopper being attached by a pivot, *d*, to one end of an arm, I, which is secured by a pivot, *d'*, to an upright, *f*, in the chamber H, and to the opposite end of the arm I a float, *g*, is attached.

J is a nozzle or discharge-spout attached to the upper part of the cylinder A, and K is a brake or lever, which is connected to the rod L of the piston D.

The operation is as follows: At the commencement of the operation, as the piston B rises a suction is of course produced in the lower part of the cylinder A and in the pipes D E, and the plug or stopper *c* will be closed or fitted in the upper end of the tube *b*, under atmospheric pressure, and the water will rise from the well or cistern up the pipe E and flow down through D and up through valve C, and follow the piston B. As the piston B is forced down, the valve C closes, and holds the water in A, the piston passing down through the water, which is elevated and discharged from the nozzle J at the succeeding upward movement of the piston. The valve G also, it will be seen, holds the water in E and D, so that it cannot return into the well. This operation is precisely the same as that of any ordinary lifting-pump. In case, however, that the pipes D and E had no communication with the external air, it will be seen that in the event of the leaking of the valves that the water would all escape into the well or cistern, and leave the cylinder A and pipes D and E empty, so that each time the pump requires to be operated considerable time would elapse before water could be elevated and discharged from the nozzle J. This difficulty is obviated as follows: When the water ascends in the cylinder A or is carried upward by the ascent of the piston B, the chamber H fills with water, and the float *g* is raised by the water and causes the plug or stopper *c* to fit into tube *b*, and said tube will be kept closed so long as the chamber H is kept filled with water. When, however, the pump is stopped and the water, owing to leaky valves, escapes down into the well or cistern, the water of course will escape from the chamber H, and the float *g* falls and the plug or stopper *c* rises, so as to leave the top of the tube *b* open. This, it will be seen, prevents the water escaping from the pipe D, as there will be an atmospheric pressure both in the upper part of D as well as in cylinder A, and the water consequently retained in both D and A at a level coinciding with the lower part of the junction of D with E, as indicated by the dotted line. Thus it will be seen that in the event of leaky valves there

will always be retained a sufficiency of water in the pump cylinder to start it at any time. By having the air-chamber F in the position described—to wit, between the valves C and G—the pump operates with greater uniformity, there being an elasticity both above and below the piston.

In working the brake or handle K there will be no jolting or jarring.

I would remark that this invention is applicable to both force and lifting pumps.

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

1. The vent or tube *b*, fitted in the pipe D or at the bend of a siphon-shaped suction-pipe of a pump, in connection with a plug or stopper, *c*, attached to an arm, I, provided with a float, *g*, and fitted within a chamber, H, communicating with the pump-cylinder A, or the cylinder or pipe through which the water is discharged, all arranged to operate substantially as and for the purpose specified.

2. The relative arrangement of the air-chamber F, valves C and G, and pump-cylinder A, substantially as herein shown and described.

WM. H. THOMAS.

Witnesses:

FRANK. F. TAYLOR,

WM. G. ENGLISH.