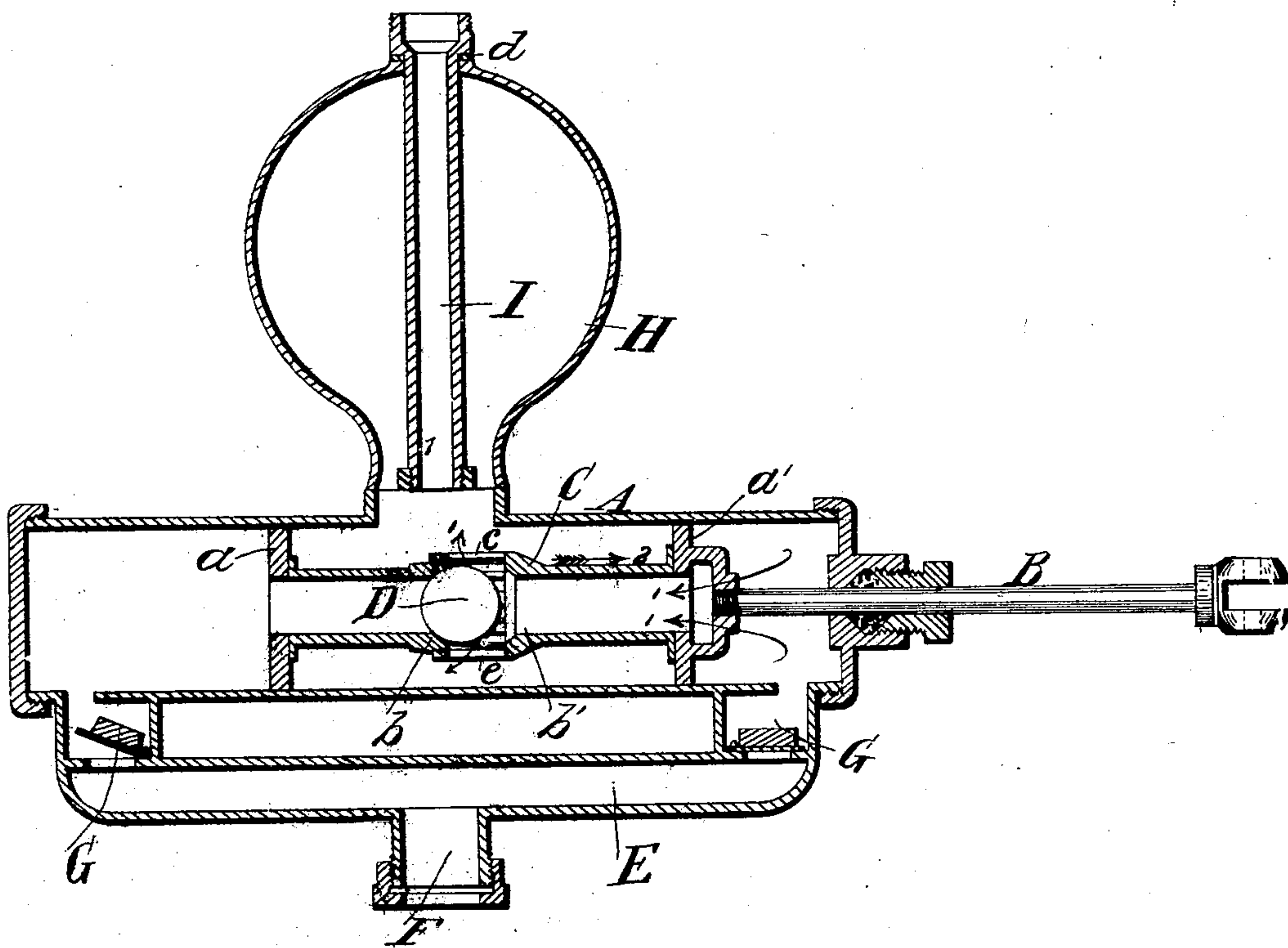


**E. A. JEFFERY.**  
**Double Acting Pump.**

**No. 13,007.**

**Patented June 5, 1855.**



# UNITED STATES PATENT OFFICE.

EDWIN A. JEFFERY, OF CORNING, NEW YORK.

## DOUBLE-ACTING PUMP.

Specification of Letters Patent No. 13,007, dated June 5, 1855.

*To all whom it may concern:*

Be it known that I, EDWIN A. JEFFERY, of Corning, in the county of Steuben and State of New York, have invented a new and Improved Double-Acting Pump; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawing, making a part of this specification, said drawing being a vertical longitudinal section of my improved pump.

The nature of my invention consists in the employment or use of a tubular piston provided with a ball valve arranged and operating as will be hereinafter shown and described. And also in the peculiar mode of connecting or attaching the air chamber to the cylinder of the pump as will be hereafter fully explained.

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

A, represents the cylinder of the pump, B, is the piston rod, and C, is the piston attached thereto. The piston is formed of a tube having a flanch or head (*a*), (*a'*), at each end which is fitted snugly within the cylinder by means of suitable packing or otherwise. Within the tube there is fitted a ball D, which works between two shoulders or seats (*b*) (*b'*), apertures (*c*) (*c*) being made through the tube, one below and one above the ball. Both ends of the tube of the piston C, are open and communicate with the interior of the cylinder. The ball D, being at the center of the tube as shown in the drawings.

E, is a longitudinal tube or pipe which communicates with both ends of the cylinder A, at each side or end of the piston C, to the center of this tube or pipe A, suction pipe F, communicates. At the points of junction of the ends of the tube or pipe E, with the cylinder, valves G, are placed, one at each end of the pipe or tube E.

H, is an air chamber secured to the upper side or part of the cylinder A, and I, is the force pipe within the air chamber and its lower end is screwed into the upper part or side of the cylinder A. The upper end of the force pipe is provided with a shoulder (*d*) which rests or bears upon the upper end of the air chamber.

It will be seen that the air chamber is

firmly secured to the cylinder A, by the force pipe, and the force pipe is also rendered firm as it has two bearings one at the top of the air chamber and the other at its junction with the cylinder.

The operation of the pump will readily be seen, suppose the piston to be moving in the direction of arrow 2, and the water in front of the head or flanch moving into the interior of the tube of the piston and through the apertures (*c*) (*c*) into the force pipe I, as indicated by arrows 1. The ball D, bearing, in consequence of the pressure of the water against the shoulder or seat (*b*) and as the piston moves and forces the water out of one end of the cylinder a suction is of course formed in the opposite end and the water rushes up through the pipe F, and opens the proper valve G, the other valve G, being closed by the pressure of the water, as they open upward. When the piston returns, the ball is forced against the opposite shoulder or seat (*b'*) and the water that was previously drawn up in the cylinder, as the piston moved in the direction of arrow 2, is forced out of the cylinder. Thus a continuous stream of water is thrown and the construction of the pump rendered extremely simple and durable.

I do not claim merely substituting ball-valves, for other kinds of valves, in a tubular piston with valve seats at its ends but

What I do claim is—

1. Connecting the piston heads by a long tube, having a short valve-chamber near its middle, with a single ball valve, the water passing alternately through each end of the tube, and out at the sides of said valve-chamber—the valve chamber being so short that the ball will exclude the water from one end, by rolling only far enough to admit the water fairly at the other, while the piston heads are so far apart that the eduction port shall always be embraced between them, substantially as set forth.

2. I claim securing the air chamber H, to the cylinder A, by means of the force pipe I, as herein described, whereby the air chamber is firmly secured to the cylinder and the force pipe firmly supported.

EDWIN A. JEFFERY.

Witnesses:

HENRY M. HYDE,  
JOHN MAYNARD.