

(No Model.)

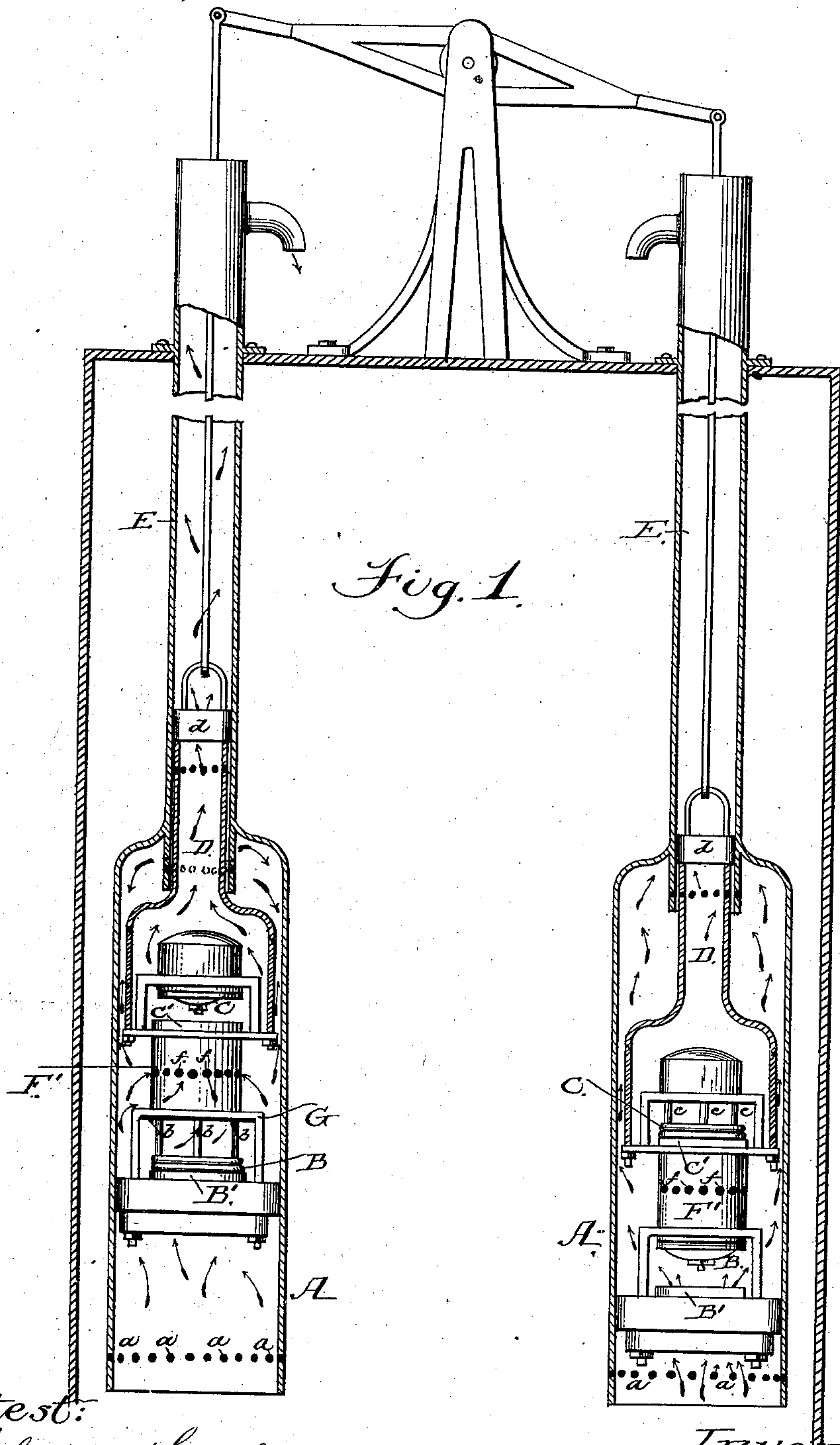
A. W. WHITE.

2 Sheets—Sheet 1.

PUMP.

No. 291,250.

Patented Jan. 1, 1884.



Attest:  
Charles Fowler,  
H. B. Applewhite,

Inventor;  
Archibald W. White  
per Atty  
A. N. Evans & Co

(No Model.)

2 Sheets—Sheet 2.

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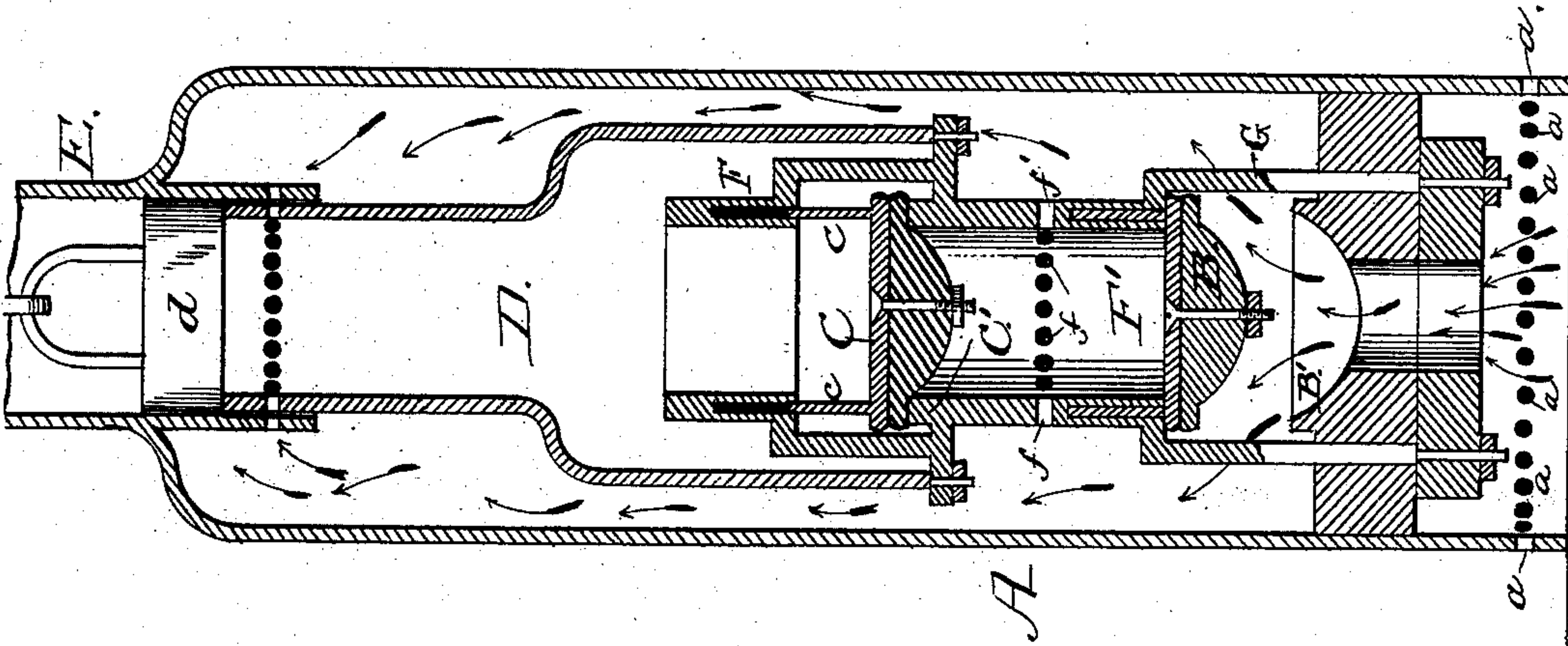


Fig. 3

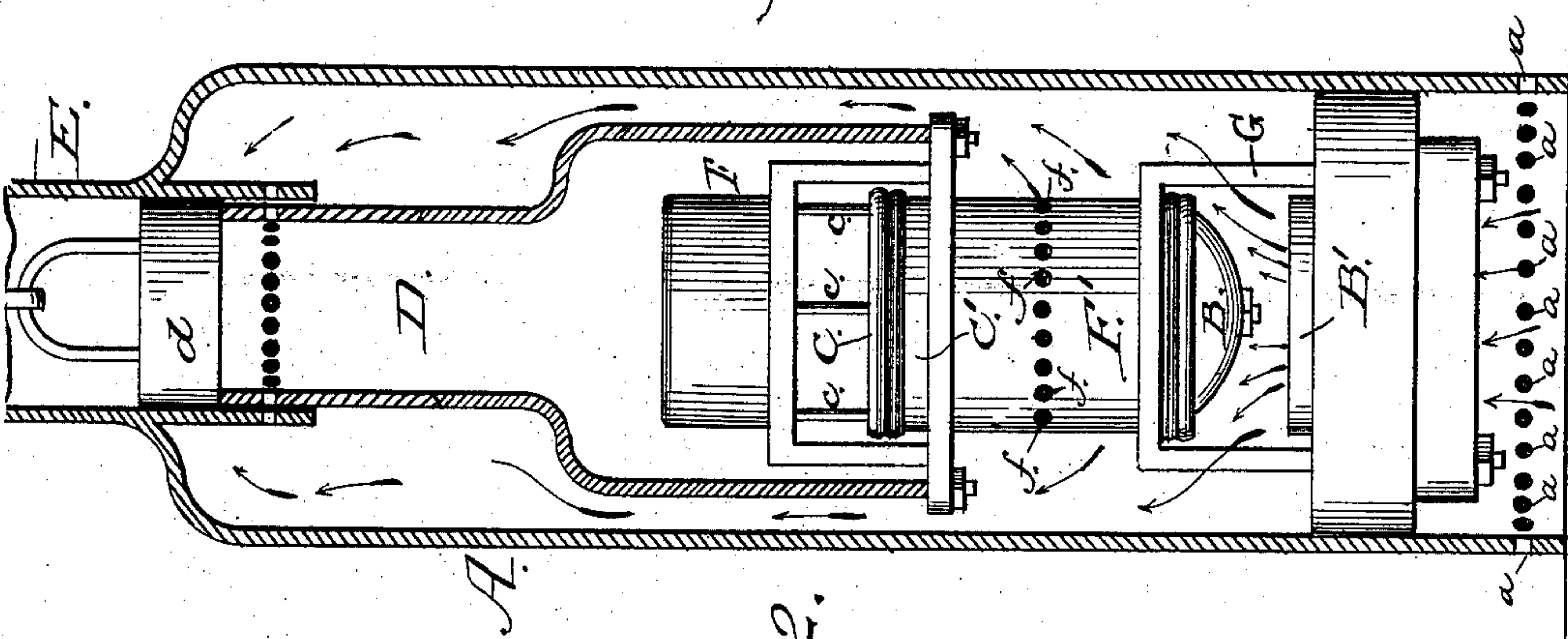


Fig. 2.

Attest;

Sheldon Fowler,  
H. B. Applewhite,

Inventor;

Archibald W. White

Per Atty

A. H. Evans & Co.



# UNITED STATES PATENT OFFICE.

ARCHIBALD WATSON WHITE, OF SAN JOSÉ, CALIFORNIA.

## PUMP.

SPECIFICATION forming part of Letters Patent No. 291,250, dated January 1, 1884.

Application filed May 11, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, ARCHIBALD W. WHITE, of San José, in the county of Santa Clara and State of California, have invented a new and useful Improvement in Pumps, of which the following is a clear, full, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 shows an elevation of pumps. Fig. 2 shows the supply-cylinder with the valves enlarged. Fig. 3 is a vertical section of Fig. 2.

My invention relates to that class of double-acting pumps in which the water which is at rest in the descending pump partially counterbalances the resistance encountered in raising the ascending pump; and it consists in the combination of devices hereinafter explained and claimed.

To enable others skilled in the art to make and use my invention, I will proceed to describe the exact manner in which I have carried it out.

In the drawings, A A represent the supply-cylinders; B B, the plunger-valves; C C, the column check-valves; D D, the hollow pistons, and E E the delivery-pipes. The hollow piston D is provided with the packing *d*, to render the joint between it and the delivery-pipe water-tight. The supply-cylinders are provided with the perforations *a a*, to permit the inward flow of water, and also to admit the escape of the water when the cylinder is raised for repairs. Within the hollow piston D is secured the check-valve C, provided with guide-rods *c c*, sliding vertically in the head-block F, as shown in Fig. 3. This allows the valve to readily rise from or rest upon its seat C' as the hollow piston moves up or down in the supply-cylinder. Below the check-valve C, and rigidly attached beneath the hollow pis-

ton, is a short cylinder, F', provided with the frame G, which supports the seat B' of the plunger-valve B. This valve is provided with guide-pins *b b*, which steady its movements during the rising and falling of the piston in the supply-cylinder. The short cylinder F' is provided with the openings *f f* for the passage of water from the supply-cylinder to the hollow piston during the upward movement of the pump.

The operation of my improved pump is as follows: When the piston descends, the plunger-valve B is forced up by the flow of water into the upper part of the supply-cylinder above the valve. The check-valve C is in the meantime held in position on its seat by the column of water at rest in the hollow piston. Now, when the piston begins to ascend, the plunger-valve B is instantly closed by the downward pressure of water. As the piston continues to ascend, the water confined above it in the supply-cylinder has to escape by forcing up the check-valve C and passing into the hollow piston and upward through the delivery-pipe E. The valve-seat B' has proper packing to prevent the escape of the water downward as the piston moves upward.

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

In a double-acting pump, the supply-cylinders A and hollow pistons D, in combination with the plunger-valves B, provided with the guide-pins *b*, and located within the frames G, and the check-valves C, provided with the guide-pins *c*, and operating within the hollow pistons D, all constructed substantially as and for the purpose set forth.

ARCHIBALD WATSON WHITE.

Witnesses:

J. E. BROWN,  
M. C. CLOSE.