

(No Model.)

W. H. DE VALIN.  
SINGLE ACTING PUMP.

No. 326,409.

Patented Sept. 15, 1885.

FIG. 1.

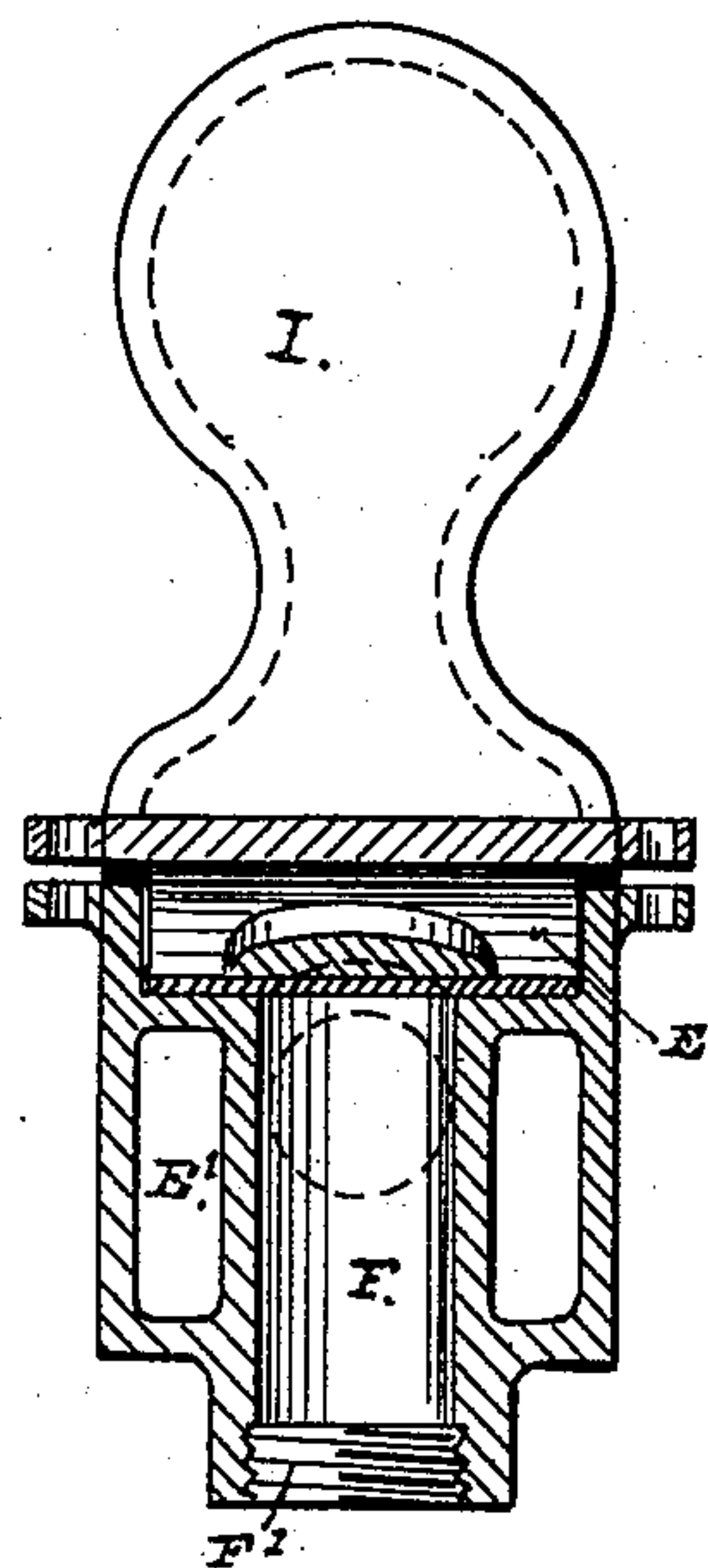
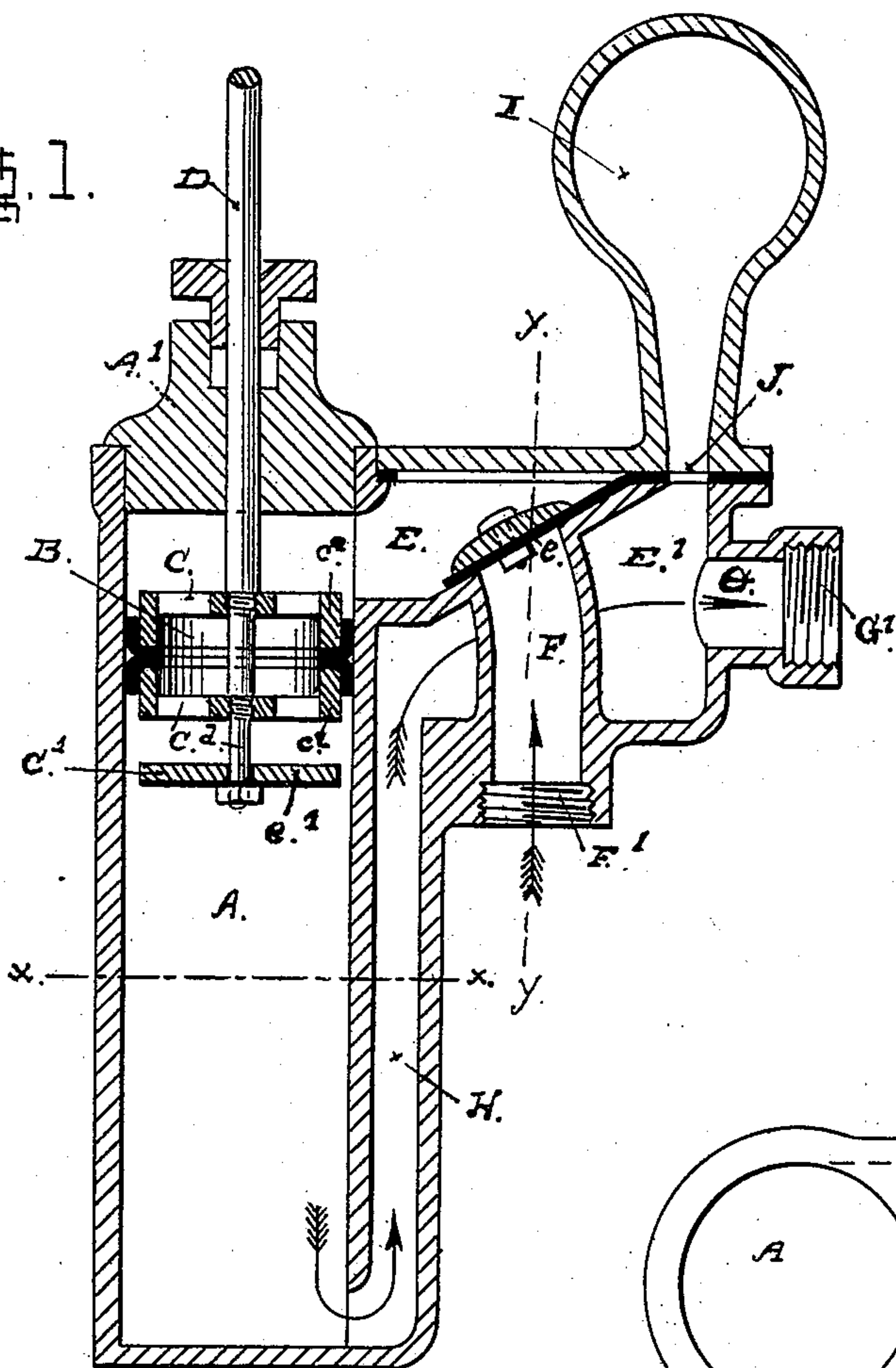


FIG. 3.

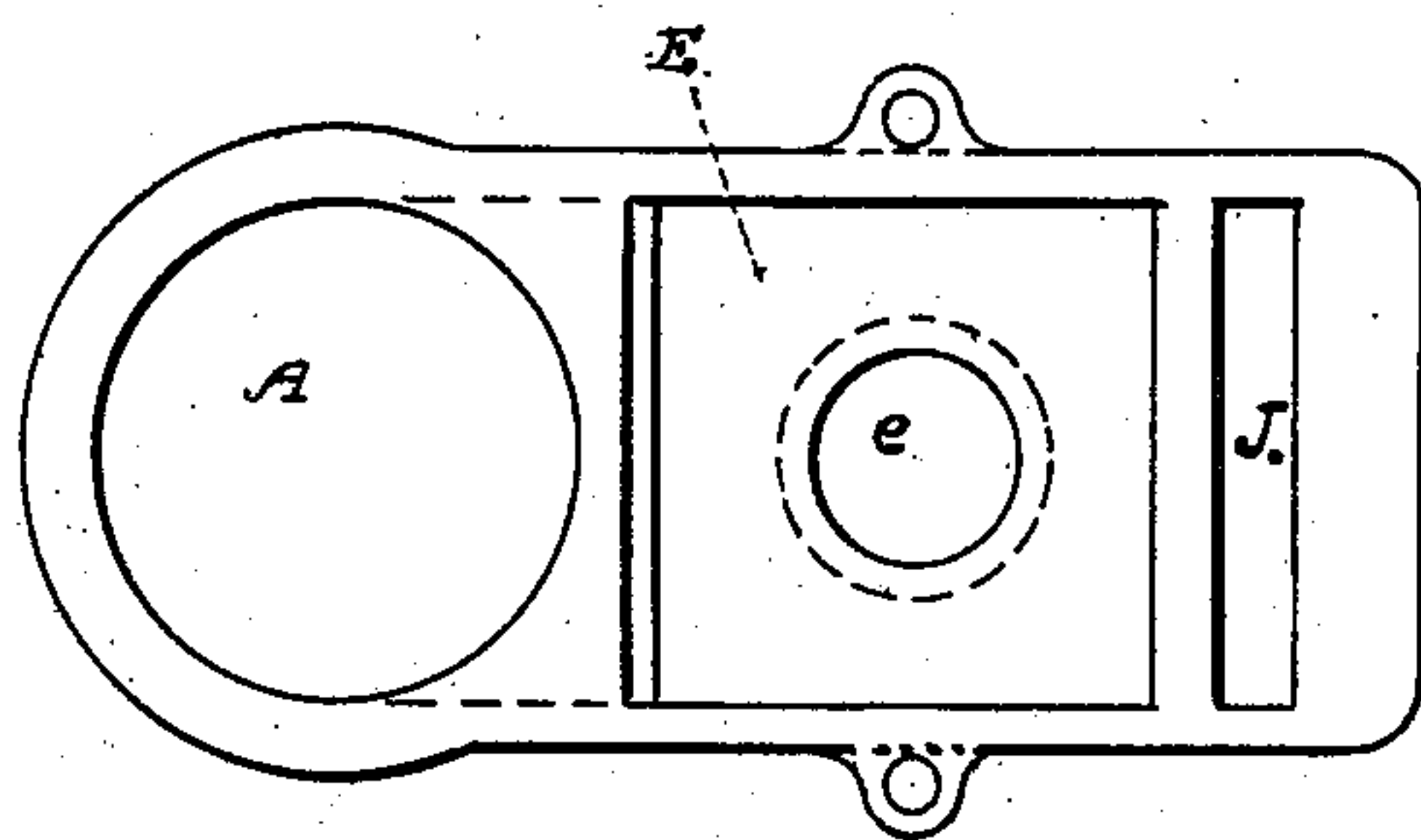
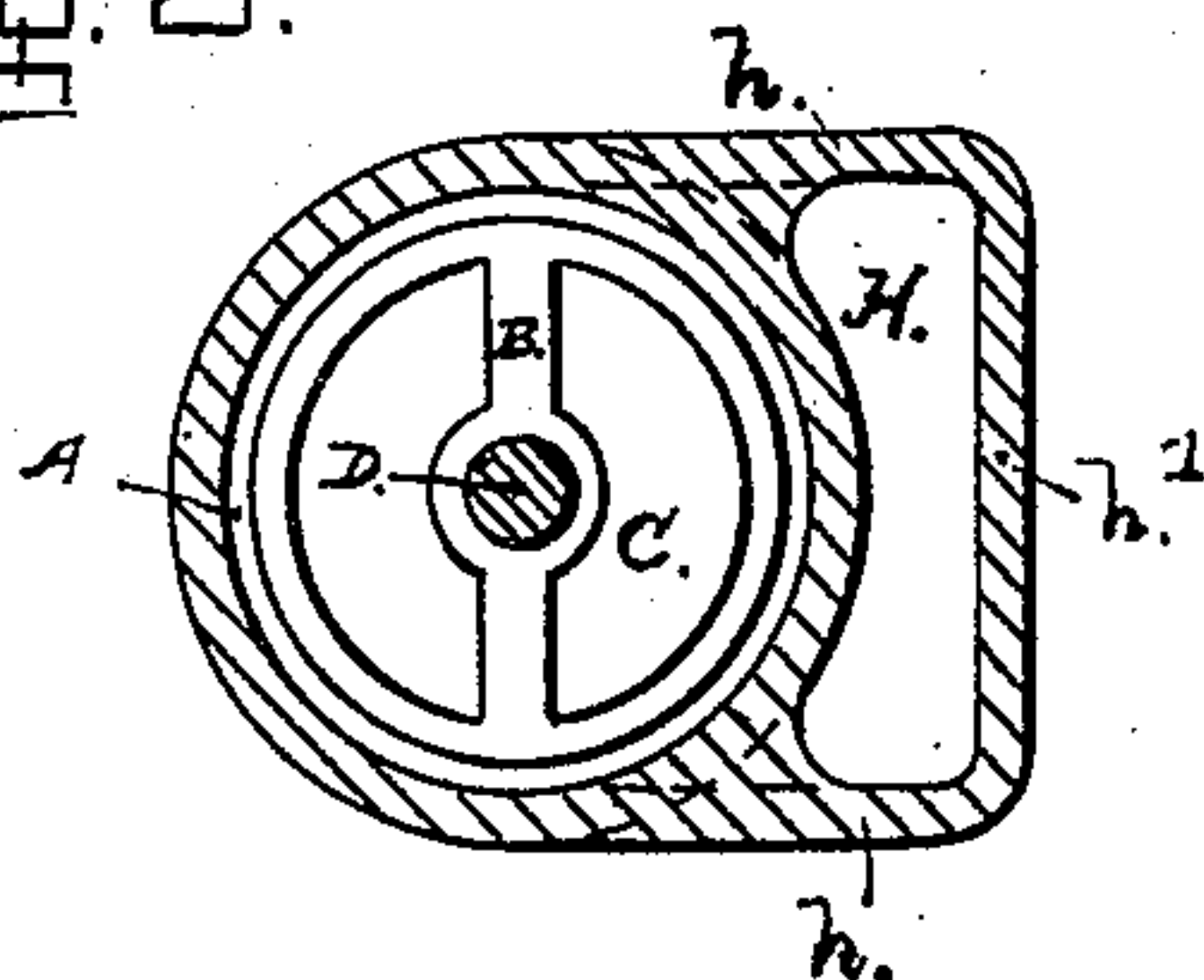


FIG. 4.

FIG. 2.



WITNESSES

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By his Atty



# UNITED STATES PATENT OFFICE.

WILLIAM H. DEVALIN, OF SAN RAFAEL, CALIFORNIA.

## SINGLE-ACTING PUMP.

SPECIFICATION forming part of Letters Patent No. 326,409, dated September 15, 1885.

Application filed February 1, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. DEVALIN, a citizen of the United States, residing at San Rafael, Marin county, State of California, have made certain new and useful Improvements in Single-Acting Pumps; and I do hereby declare that the following is a full, clear, and exact description of my said invention, and of the manner in which I proceed to construct, apply, and use the same, the accompanying drawings being referred to therein by figures and letters.

My invention relates to an improved form of single-acting pump for use more particularly in situations where a long pump-rod is required, as in the case of a windmill-pump, and in connection with other motors that are placed at a considerable height above the pump.

The object sought to be attained by my improved construction is to utilize the weight of the pump-rod in lifting the water, and cause the same to act with the motive power during the working-stroke of the piston, by means whereof a considerable saving in power and a more regular action are obtained; and the invention consists in the construction and combination of parts hereinafter described, and pointed out in the claim.

In the drawings referred to, Figure 1 is a vertical section through the center of a pump constructed to operate in accordance with my invention, the section being taken longitudinally or through the eduction-passage and the air-chamber connected to it. Fig. 2 is a cross-section taken through the line  $x x$ , Fig. 1. Fig. 3 is a section through the induction and eduction passages on the line  $y y$ , Fig. 1. Fig. 4 is a plan or top view of the body of the pump, the head of the piston-chamber and the cover or top plate of the eduction-chamber and passage being taken off.

A is the piston-chamber; A', the head and gland that form a cover to the chamber and a guide for the piston-rod.

B is the piston; C, the opening through the piston; C', the disk-valve controlling this opening, and D the piston-rod.

E is the induction-passage. It is divided from the eduction-chamber E' by an inclined partition, in which is an induction-port,  $e$ , controlled by an upwardly-moving clapper-valve.

F is a tubular passage leading through the

eduction-chamber and out through the shell at the bottom, where it terminates in a threaded socket, F'.

G is an outlet leading from the end of the eduction-chamber, and terminating, also, in a threaded socket, G'.

H is a water-way leading from below the piston up alongside of its chamber A to the eduction-chamber.

I is an air-chamber communicating with the eduction-chamber through an aperture, J, in the top plate.

The water-way is of the full width of the piston-chamber, and is produced by extending opposite sides of the shell straight outward from the cylindrical portion and joining these sides by a straight back portion, as seen in Fig. 2, where  $h h$  are the prolonged sides,  $h'$  the back, and  $h^2$  the shell or wall of the cylindrical chamber dividing the space A from the water-way. At the upper end this passage terminates in the eduction-chamber, to which connection of a conducting-pipe is made at the outlet G, and from the top of the partition that divides the water-way from the piston-chamber the inclined partition extends to the top plate or cover, and divides the eduction-chamber into the two independent compartments constituting the induction and eduction passages. The former opens directly into the top of the piston-chamber and the latter is an extension and enlargement of the water-way leading from below the piston.

The piston is formed of two rings having guides or bridge-pieces with threaded openings to take upon screw-threaded portions on the end of the piston-rod, and provided, also, with projecting rims  $c^2$ . The packing is introduced between the two disks as they are placed upon the rod, and being screwed tightly toward each other, they serve to clamp the packing and hold it firmly in place. The extreme end of the piston-rod is carried below the bottom of the piston to form a guide,  $d$ , for the disk-valve, which is placed loosely upon it, and is held by a nut on the outer end. This stem is of sufficient length to give free play and a full opening to the valve.

If it be required, a check-valve can be placed in the chamber to control the outlet after the usual manner of employing such device, to relieve the back-pressure.

Now, in the operation of a pump as thus constructed, the weight of the rod may equal half the weight of the water to be lifted, and the power required will be then only that  
5 amount required to act upon the other half, as the rod acts with the power on the downstroke while no work is being done on the upstroke.

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

A single-acting pump consisting of the piston chamber or cylinder A, having the water-passage H, connected with the base thereof and formed integral therewith and extending  
15 up and connected with the eduction-port E, the induction-port E, connected with the top

of the cylinder A, and the passage F, connecting the induction-port E with the exterior or a suitable pipe, said passage F lying in the eduction-port, an inclined partition, as de- 20 scribed, dividing the induction and eduction ports provided with the opening e over the mouth of passage F, and the valve described fitting over said opening, and the open piston and upwardly-acting valve under it, all con- 25 structed and combined to operate, as set forth.

Witness my hand and seal.

WILLIAM H. DEVALIN. [L. S.]

Witnesses:

S. M. AUGUSTINE,  
GEO. MASON.