(No Model.)

J. F. BREUX.

ROTARY PUMP.

No. 332,586. Patented Dec. 15, 1885.

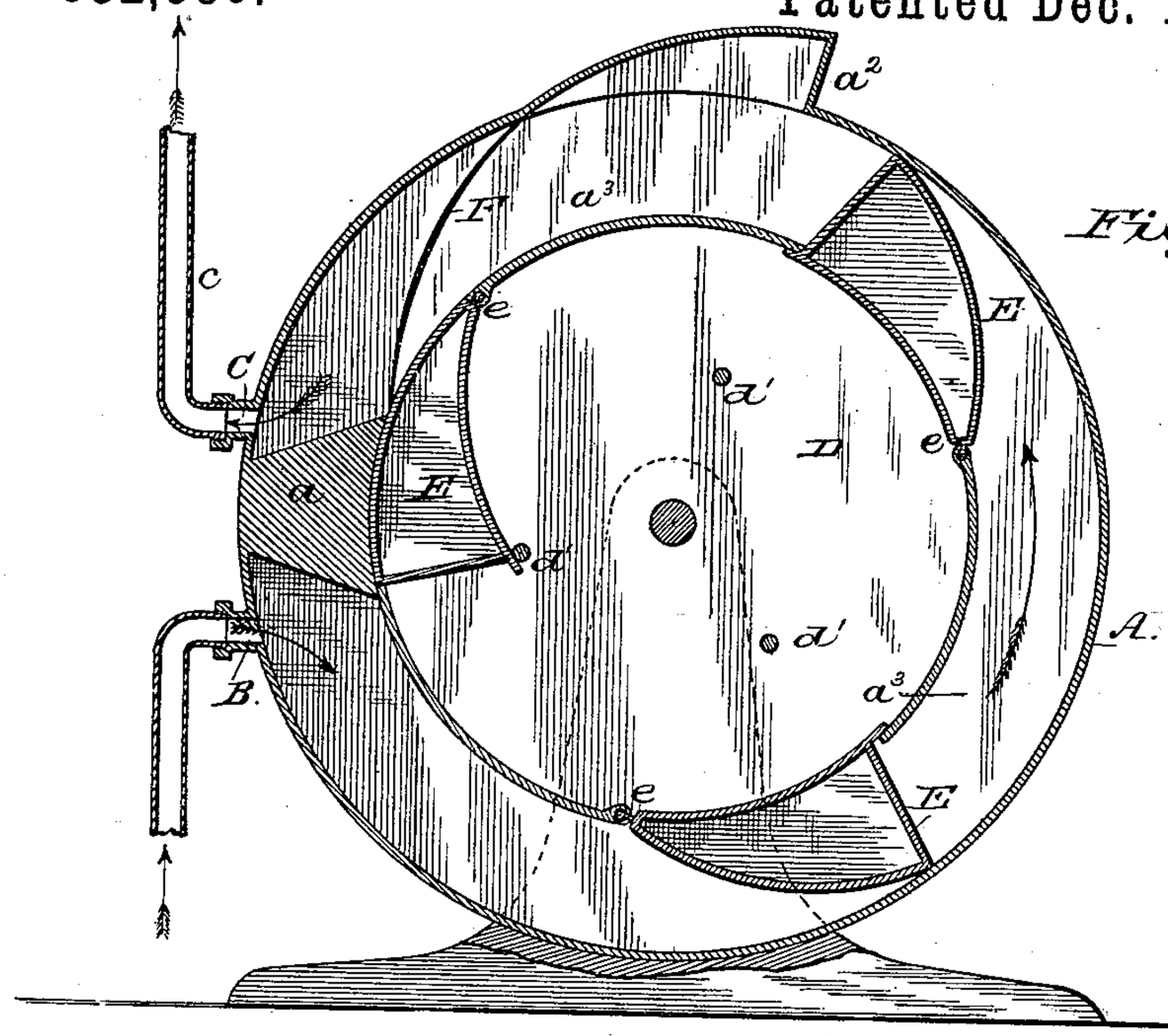

Fig. 1.

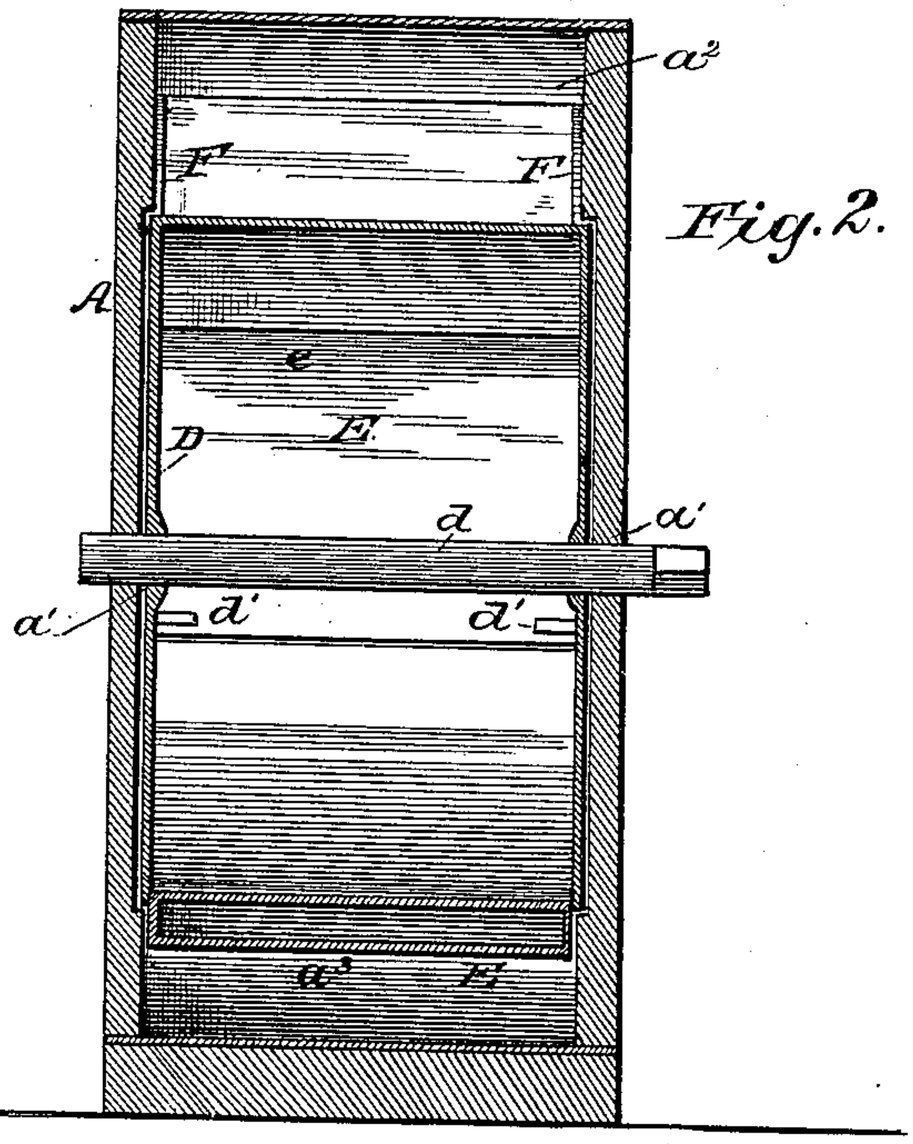

Fig. 2.

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ROTARY PUMP.

SPECIFICATION forming part of Letters Patent No. 332,586, dated December 15, 1885.

Application filed May 9, 1885. Serial No. 164,980. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH F. BREUX, a citizen of the United States, residing in Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Rotary Pumps; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, in which—

Figure 1 is a side view of the pump, showing the casing in which it works and the shaft on which it is mounted in section. Fig. 2 is a transverse view of the pump, also showing the casing in section.

This invention relates to rotary pumps; and it consists in the detailed construction of the parts hereinafter fully described, by which the pump is rendered very simple and not likely to get out of repair, by which all undue friction is avoided, and by which the action of the moving pistons is rendered certain and effective.

In the accompanying drawings similar letters of reference indicate corresponding parts in all the figures.

A is the casing of the pump, provided with an opening, B, through which the water enters, and with a second opening, C, through which the water is discharged up the pipe *c* after being acted on by the pistons of the pump. A partition, *a*, is situated between the openings, so that the suction-water is kept from mixing with the discharge. The casing A has flat ends provided with bearings *a'* for the center shaft of the pump. The casing is cylindrical in form between the said ends, except at the top part, where it is enlarged, forming a shoulder, a^2, and then gradually slants into the cylindrical portion at the discharge-opening.

D is a cylindrical-shaped casting mounted on the center shaft, *d*, which is provided with a crank-handle, or with other suitable means for rotating it. E are the pistons, three in number, provided with pivots *e*, by which they are hinged to the cylinder or casting D, which revolve in recesses a^3 in the sides of the outer casing, A. When the pistons are at the top of the pump, they fall inward through the openings in casting D provided for them, and rest upon pins *d'*. The outer surface of the pistons when in, conforms to the shape of the cylindrical casting; when out the said pistons fill the cross-section of the space formed between the two cylinders A and D. The discharge-pipe *e* is carried upward from the discharge-opening C, so that the pump is always kept full of water when at work. The water finds its way into and fills the interior of the hollow casting D through the small chinks between the pistons and the said casting.

To work the pump, it must be revolved in the direction of the arrow in Fig. 1. The piston at the bottom, which is out, drives the water before it until the shoulder a^2 is reached, where the cylindrical portion of casing A is enlarged. This establishes a communication between the water behind the piston and the water in front of it, and the pressure of the water against the flat face of the piston being thus relieved the said piston is free to fall inward by its own weight. In case this should not be sufficient to bring the piston level with the casting D, I provide projecting guide-flanges F upon the sides of the casing A, which press upon the piston and prevent it from striking against the partition *a* and perhaps breaking the pump. After each piston has passed the partition *a* it is free to fall outward by its own weight, and is forced to do so on the arrival of the piston next behind it at the recess, because whenever a piston is forced inward at the top of the pump it displaces a certain quantity of water in the interior of the casting D, which forces outward the piston which is nearing the bottom of the cylinder, and also assists in holding out the third piston which is rising in the cylinder and approaching the said recess.

The column of water in the delivery-pipe assists in forcing the pistons inward when they come to the recess at the top of the outer casing, as when a piston passes the shoulders a^2 the pressure of water in the delivery-pipe acts upon the curved surface of it, which presents a much larger area than the end upon which the water pressed prior to its arrival at the shoulder a^2, and this increase of pressure forces the said piston inward, and thereby assists in forcing out the piston at the bottom part of the pump.

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

1. The combination of the casing having induction and eduction ports and provided with a division or abutment, the cylinder having closed ends and journaled in said casing and provided with peripheral openings, pistons made of a length equal to the peripheral openings of the cylinder, hinged at one end of said opening and having their opposite ends movable into and out of the cylinder, and stops whereby to limit the inward movement of the pistons, substantially as set forth.

2. A cylinder for rotary pumps, closed at both ends and having peripheral openings, and provided with pistons hinged at one end to the end wall of said openings, and fitted to approximately close the same in either their open or closed positions, said pistons being closed on all sides, whereby the in-forcing of one piston will operate to drive another piston out by the action of the water within the cylinder, substantially as set forth.

3. In a rotary pump, the combination of the casing having an abutment, induction and eduction ports, and an enlargement in advance of the eduction-port, the cylinder having closed ends and journaled in said casing, and provided with peripheral openings and internal stops located between said openings and the axis of the cylinder, and pistons made of a length equal to the peripheral openings, hinged at one end to one end wall of said openings and having their opposite ends provided at their inner edges with forwardly-projected flanges or stops, all arranged substantially as set forth.

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