R. H. Fletcher,

Steam Pump.

No. 15,227. Patented July 1, 1856.

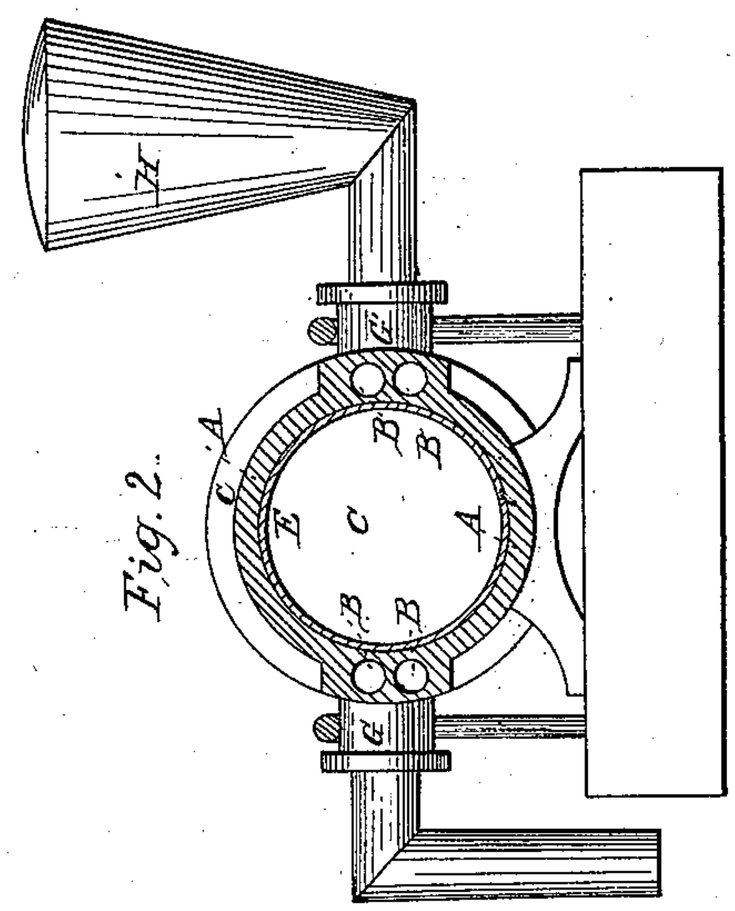

Fig. 2.

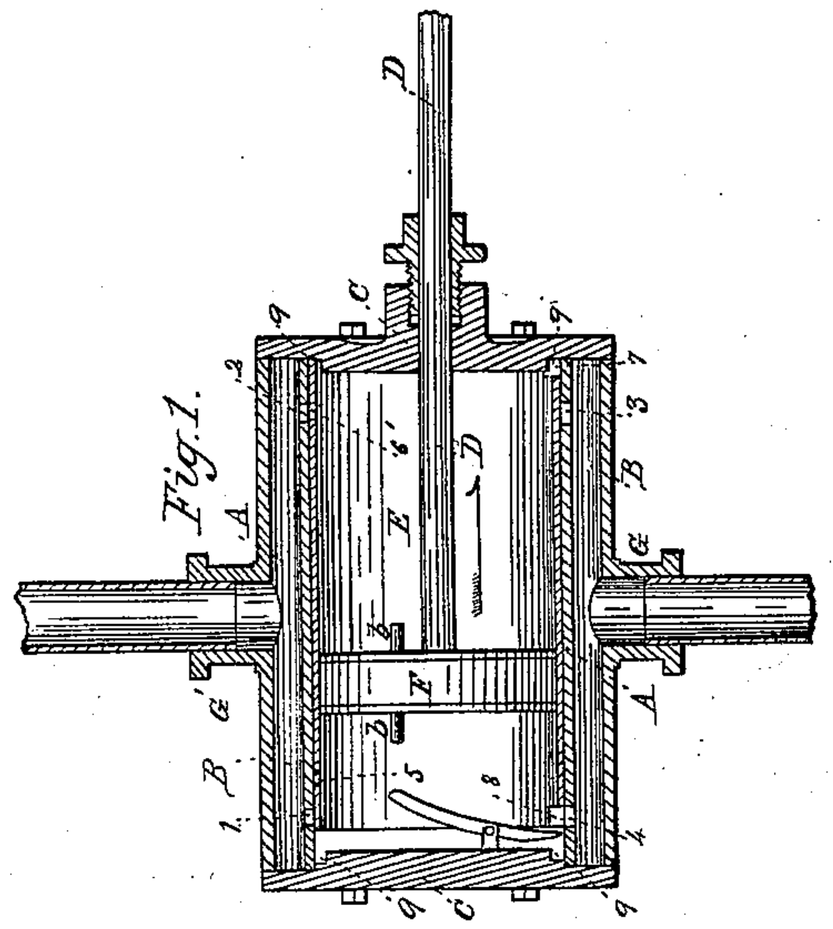

Fig. 1.

UNITED STATES PATENT OFFICE.

ROBERT H. FLETCHER, OF BROOKLYN, NEW YORK.

METHOD OF OPERATING VALVES OF STEAM-PUMPS.

Specification of Letters Patent No. 15,227, dated July 1, 1856.

To all whom it may concern:

Be it known that I, ROBERT H. FLETCHER, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Steam-Pumps; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part thereof, in which,—

Figure 1 represents a horizontal section through the pumping cylinder, with the pump piston therein uncut. Fig. 2 represents a vertical transverse section through the same, with the piston removed.

Similar letters where they occur in the separate figures, denote like parts in both.

The nature of my invention relates to an internal cylinder, within the outer cylinder, in which interior cylinder the piston moves in such manner that, every stroke of the piston shall actuate such internal cylinder, causing it to open and close, alternately, the inlet and exit water ways, and thus produce a double acting pump without the use of the ordinary valves which are so liable to leak, and to be cut or worn away. Thus making a steam pump which is exceedingly cheap and simple, and very efficient in its operation.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A, represents the outside cylinder of the pump, having water ways B, B, along its side, extending from end to end of the cylinder.

C, C, are the cylinder heads, through one of which the piston rod D, passes, in a packed box, of any ordinary kind.

The water ways B, B, may be formed in the casting of the cylinder, or may be bored out afterward as may be found most convenient; and from these water ways, at or near each end of the cylinder, are made ducts or passages 1, 2, 3, 4, leading into the interior of the cylinder A. Within the outer cylinder A, is fitted neatly, an interior cylinder E, which is provided also with ducts or passages 5, 6, 7, 8, which alternately communicate with, and cut off, or close the ducts or passages 1, 2, 3, 4, in the water ways B, B. The interior cylinder E, is somewhat shorter than the interior bore of the outer cylinder A, so that it may travel far enough to open and close the passages 1, 2, 3, 4; or a circular groove or recess 9, may be cut in the interior of the cylinder heads, to allow for a portion, or the whole of the movement of said interior cylinder. The piston head F, on the rod D, moves within the interior cylinder E, and may be so packed in regard to said cylinder, as that it, (the piston) more especially in small pumps, may carry said inner cylinder with it, to the extent of its movement, and thus cause it to work by the mere friction between the piston head, and the inner cylinder. But in large pumps where more power would be required, a lever *a*, may be pivoted to the interior of each of the cylinder heads C, the point of which lever, should be so arranged as to catch against the end of said inner cylinder as the latter is moved up toward it—then by a stud or pin *b*, in the piston head, which strikes against the heel end of the lever *a*, the said inner cylinder may be forced alternately from one position to another to open and close the ducts or passages as above described.

G, G′, are trunnions, cast on the outer cylinder A, which are hollow, and through one of which (G) the inlet passage for the water is made; and through the other (G) the outlet or exit passage is made, and this latter may have connected with it an air vessel or chamber H, to give a more steady flow of water from the pump.

Suppose the piston head to be traveling in the direction of the arrow in Fig. 1,—the ports or passages 6, 2, form a continuous passage from the interior cylinder to the exit pipe G′, and the water is being driven through said pipe—the passages 4, 8, are also opposite each other, and the cylinder is being filled with water through them. When the piston has finished its stroke, and starts back, it shifts the inner cylinder E, (or this may be done by the stud *b*, and a lever *a*, as shown at the left side of Fig. 1,) and the passages 6, 2, and 4, 8, are closed, and those 1, 5, and 3, 7, are opened, causing the water to enter and leave at opposite points, but keeping up a continuous flow, and so on at each backward and forward movement of the piston.

Having thus fully described the nature of my invention what I claim therein as new and desire to secure by Letters Patent is—

Inclosing the piston-head within an in-

ner cylinder, which fits within the outside cylinder of the pump—said inner cylinder being somewhat shorter than the space between the outside cylinder heads, and so constructed as to alternately open and close the ports through which the water passes in and out of said pump, and operated by the piston, substantially in the manner herein described.

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Witnesses:
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