W. Serrell,

Pump Valve.

No. 36,863. Patented Nov. 4, 1862.

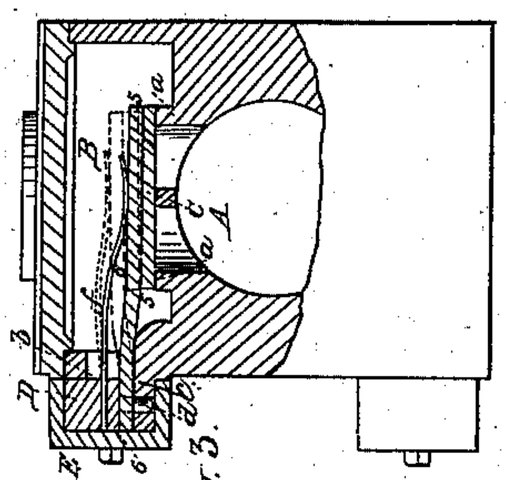

Fig. 3.

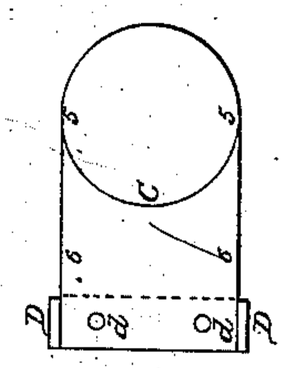

Fig. 4.

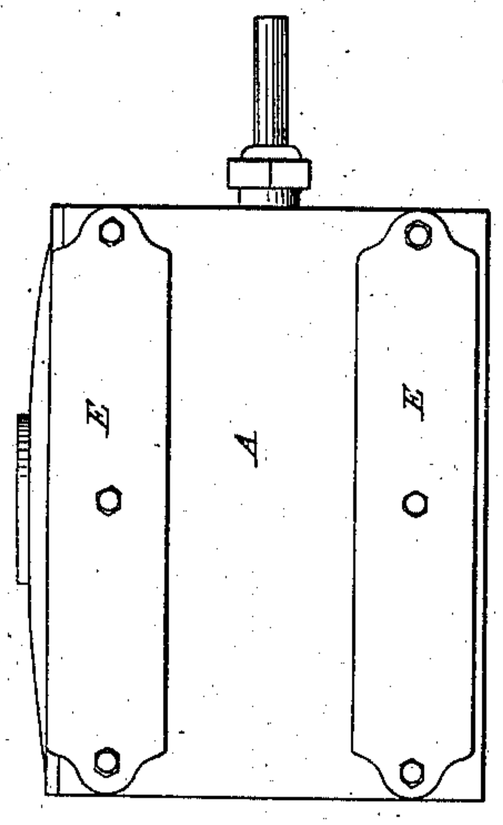

Fig. 1.

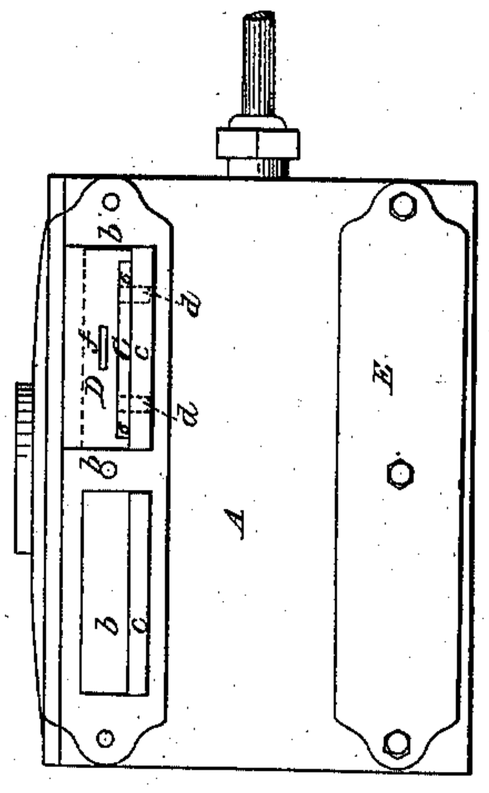

Fig. 2.

Witnesses.
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WILLIAM SEWELL, OF NEW YORK, N. Y.

IMPROVEMENT IN VALVES FOR STEAM-PUMPS.

Specification forming part of Letters Patent No. **36,863,** dated November 4, 1862.

To all whom it may concern:

Be it known that I, WILLIAM SEWELL, of the city, county, and State of New York, have invented a new and Improved Mode of Applying Valves to Pumps; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side view of a pump-cylinder having my invention applied. Fig. 2 is a similar view of the cylinder with one of the caps which secure the valves removed. Fig. 3 is a transverse section corresponding with Fig. 1. Fig. 4 is a face view of one of the valves.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to flap-valves, whether composed wholly or in part of india-rubber or other flexible material or of metal; and it consists in a novel construction and mode of applying and securing such valves, which affords great facility for taking them out and replacing them, and which permits them to open to a nearly equal width all around their seats.

To enable those skilled in the art to make and apply my invention, I will proceed to describe its construction and operation.

A is the cylinder. B is the discharge-chamber, and *a a* the seat of one of the discharge-valves.

C is the valve, represented as made of vulcanized india-rubber, strengthened with cloth or other fibrous material, having the portion 5 5, which covers the seat, and which is of circular or other form, to correspond with the seat, made thicker than the remaining portion, 6 6, in order to give the one portion the necessary stiffness and the other portion the necessary flexibility. The flexible portion 6 6 is made considerably longer than in most valves of similar character, to enable the valve to open wider on that side of the seat next the said flexible portion, and this greater length is permitted without increasing the width of the chamber in which the valve is placed by making the attachment of the valve entirely outside of the chamber, as shown in Figs. 2 and 3.

To provide for the above-mentioned mode of attaching the valves, there is provided in the side of the chamber B an oblong opening, *b*, just large enough to allow the insertion and withdrawal of the valve, and a flange, *c*, is provided all along the exterior of the lower edge of this opening.

The pump represented in the drawings is double-acting, and therefore has two inlet and two discharge valves, and a separate opening is provided for each valve, as illustrated with respect to the discharge-valves in Fig. 2. The margin of the end of the flexible portion 6 6 of the valve is fitted into a recess in the bottom of a block, D, of metal, the length and width of which corresponds with that of the flange *c*, and the height or depth of which is greater than that of the opening *b*. The said block is furnished at the bottom with tenons or dowels *d d*, which pass through and project below the portion 6 6 of the valve, for the purpose of entering mortises or holes provided in the flange *c* for their reception.

To put the valve in its place, its portion 6 6 is first placed in the block D with the tenons of the latter through it, and it is then passed through the opening *b* as far as permitted by the block D, which is then left upon the flange *c*, upon which and against the portion of the chamber B above the opening *b* it is secured firmly by bolting a cap-piece, E, to the outside of the chamber, the said cap-piece having within it a cavity large enough to receive within it the flange *b* and the block D. Where there are two valves in the same chamber, the same cap-piece E may be made long enough to fit over the blocks of both valves and the flanges *c* of both openings. A spring, *f*, is secured in each block D, to press upon and assist in closing its respective valve.

To remove the valve, it is only necessary to take off the cap E, lift up the block D high enough to permit its dowels to clear the flange *c*, and then draw the block from the opening, and the valve and spring, both being attached to the block, are withdrawn through the opening *b*. To replace the valve, it is only necessary to attach it to the block, insert it through the opening *b*, drop the block onto the flange *c*, and put on the cap D.

The facility thus afforded for the removal and replacement of the valve is one of the advantages of this construction and mode of applying it; but another consists in the great length of which the flexible part 6 6 is per-

mitted to be made by making the attachment outside of the chamber, thus permitting the valve to open wide at the edge of the seat nearest to the said flexible portion, substantially as represented in red outline in Fig. 3.

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

1. So constructing and applying the valve that its flexible portion or hinges is held at a point or in a line outside of the chamber which contains the valve, substantially as and for the purpose herein specified.

2. The combination of the block D, provided with dowels *d d*, or their equivalents, the flange *c*, and the cap E, the whole applied, in combination with the valve C and the opening *b* in the valve-chamber, substantially as and for the purpose herein set forth.

WILLIAM SEWELL.

Witnesses:
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TIMOTHY SHINE.