W. PAINTER.

VALVE.

No. 175,145. Patented March 21, 1876.

Fig. 1.

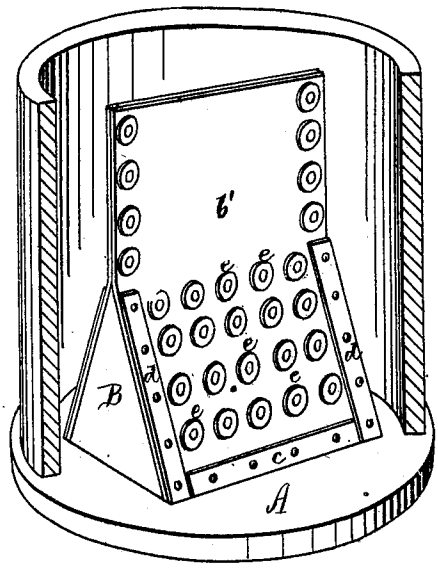


Fig. 2.

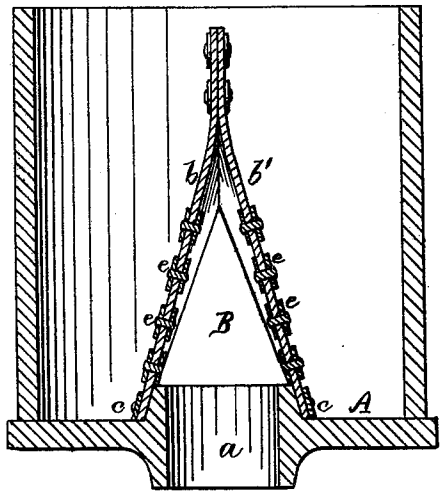


Fig. 3.

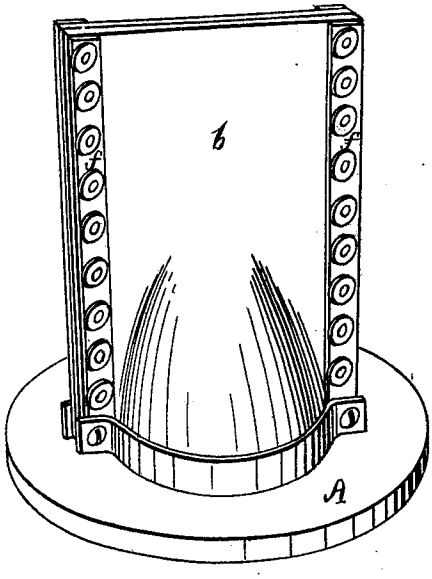
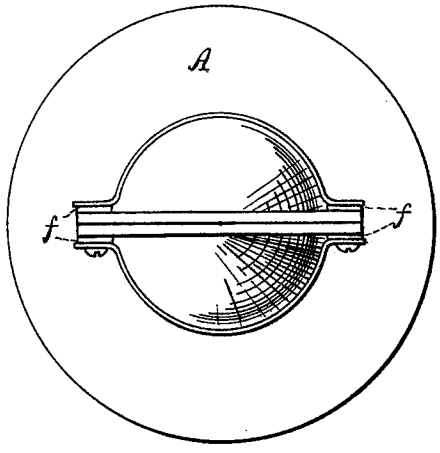


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM PAINTER, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN VALVES.

Specification forming part of Letters Patent No. **175,145**, dated March 21, 1876; application filed October 6, 1875.

To all whom it may concern:

Be it known that I, WILLIAM PAINTER, of the city and county of Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Valves; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a true, clear, and complete description thereof.

My improved valves are intended for use in connection with pumping apparatus for removing the contents of cess-pools and other similar receptacles for offensive matter. In the several patents heretofore issued to me, covering improvements in valves adapted to this purpose, I have shown a variety of valves embodying flexible flaps and stiffeners.

My present invention consists in a valve, the opening or port of which is guarded by two covers composed of flexible material, and provided on each edge with rigid stiffeners; also in providing the flexible material with numerous protecting plates, which, while they afford sufficient protection of said material against the action of abrasive matter, do not affect its lateral or longitudinal flexibility. In flap-valves, embodying stiffeners as heretofore employed, there exists either a total or partial absence of flexibility of the material, which closes the valve-opening in one or more directions. With the side stiffeners, a flexibility in all directions, is to some extent available, except closely adjacent to the two side stiffeners. To more particularly describe my invention I will refer to the drawings, in which—

Figure 1 represents one of my valves in perspective, as if located in a pump-cylinder. Fig. 2 represents the same in vertical section. Figs. 3 and 4 represent in perspective and top views, respectively, another form of valve embodying my invention.

In all the figures A represents the valve-plate, which may be varied in form according to the position and connection in which it is to be used. The valve-opening is shown at *a*, and can be round, square, oval, or any other shape desired. In Figs. 1 and 2 the valve port or opening is guarded by two pieces of flexible material, as at *b b'*. This material may or may not be elastic, as well as flexible. At each side of the valve-port are the two side stiffeners B, to which the edges of the flexible material are firmly attached. The side stiffeners, in this instance, are triangular in form, and may be cast as a part of the valve-plate, or separately constructed and secured thereto. The lower ends of the flexible pieces are secured to shoulders on the valve-plate, as at *c*. In this valve the two flexible pieces extend upward beyond the tops of the side stiffeners, and are riveted together at their edges.

The flexible pieces may be readily secured to the side stiffeners by means of the clamping-plates *d* and the screws, as shown. The flexible material thus held by the side stiffeners is secured against being drawn backward through the valve-opening, and yet it can adapt itself by reason of its general flexibility to obstructions, which may be temporarily lodged near or on the line of the tops of the stiffeners, and the upwardly-extending flaps being in close contact contribute to a perfect closure of the valve, even though the lower portion, opposite the stiffeners, should fail to close. These flaps contribute largely to the value of the valve; but desirable results may be attained without them.

Valves employed in connection with pumps, for removing contents of privy-vaults and cess-pools are subjected to considerable wear by reason of the attrition of solid matters in their passage through the valve; and, therefore, I employ the numerous protecting-plates, as shown at *e*. These protecting-plates are preferably circular in form, and are used in pairs opposite each other, on the two surfaces of the flexible material, and they are secured to each other by means of short lengths of metallic rod, headed after the manner of riveting.

It will be seen that these protecting-plates may be applied closely to each other on both the inner and outer surfaces of the flexible material without impairing their desired flexibility.

In the valve shown in Figs. 3 and 4 the side stiffeners, at *f*, are not triangular, but are two straight thin rigid metallic strips, with the two pieces of flexible material interposed between them. At the upper end the flexible pieces are in close contact with each other, while, at their lower ends, they are separated

so as to embrace a flange on the valve-seat, to which they are secured, so that the said flexible pieces constitute a tubular structure, the lower end of which is normally open, and its upper end normally closed.

The flexible material may be cut of a width somewhat greater than the distance between the side stiffeners, in order that by the excess or fullness thus attained a larger opening will be obtained than would be the case if the material were cut only wide enough to admit of its being secured at its edges to said stiffeners.

When side stiffeners are employed like those shown in Figs. 3 and 4, said stiffeners, although rigid from end to end, may be hinged to the valve-plate, and thereby permit them to have a slight vibratory movement toward and away from each other, in which case fullness of the flexible material, as before mentioned, will not be desirable.

Having thus described my invention, I claim as new—

1. A valve, provided with covers composed of flexible material secured at their edges to side stiffeners, substantially as described.

2. A valve-cover composed of flexible material, and provided with the protecting-plates *e* secured to the material and located at intervals thereon, substantially as described, whereby said material is protected from abrasion without impairing its flexibility in either direction, as and for the purposes specified.

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