(No Model.)

T. A. SWANN.

PUMP VALVE.

No. 441,339. Patented Nov. 25, 1890.

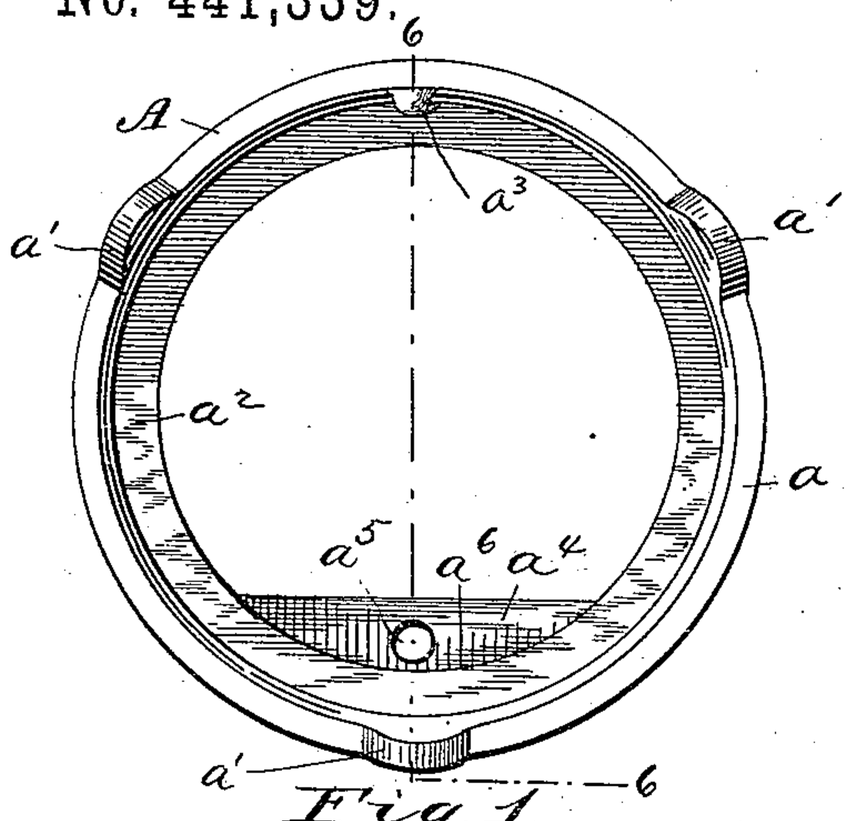

Fig. 1.

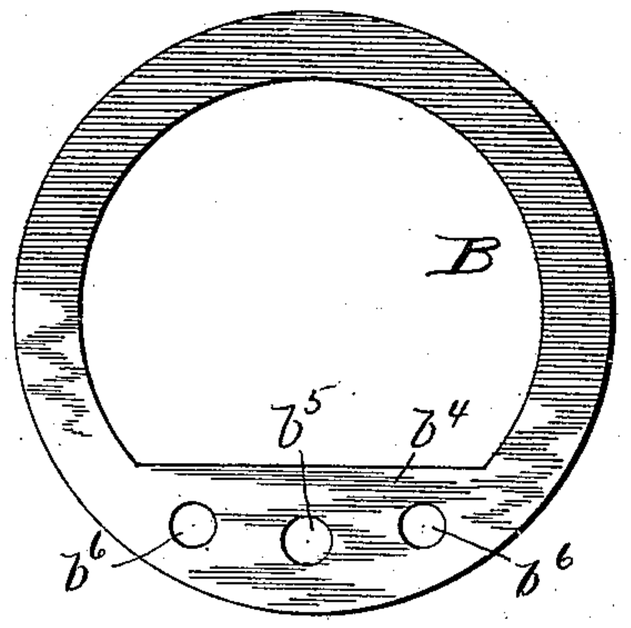

Fig. 2.

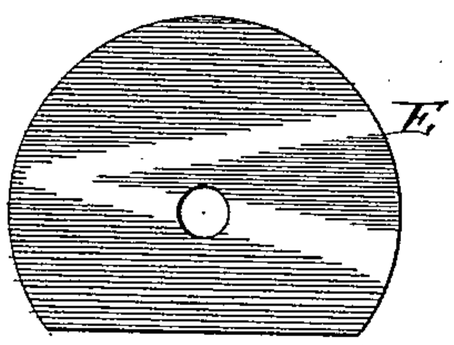

Fig. 3.

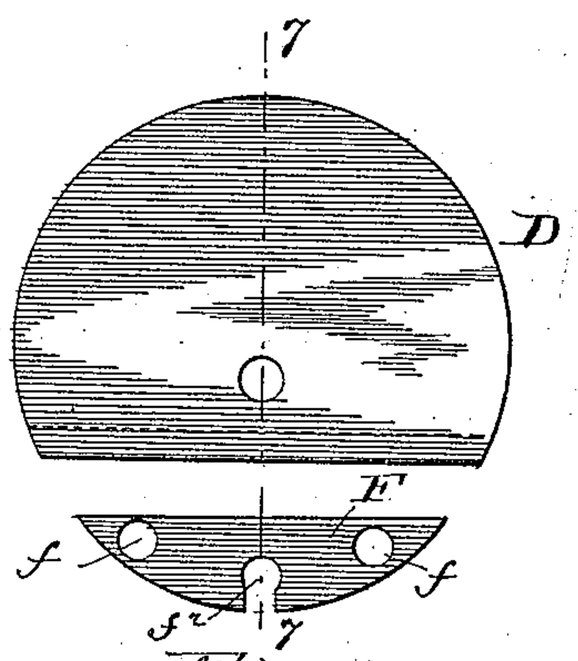

Fig. 4.

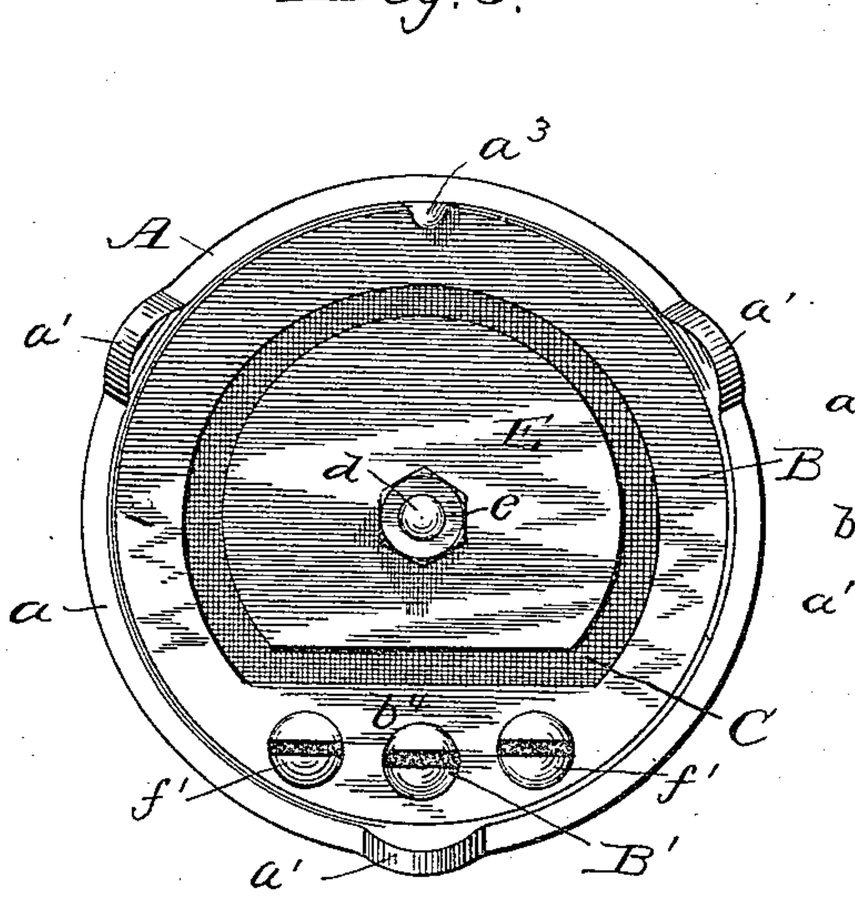

Fig. 5.

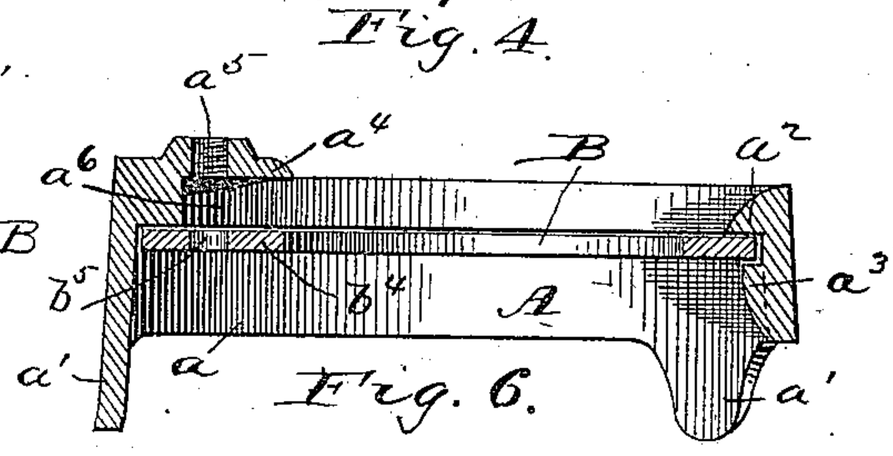

Fig. 6.

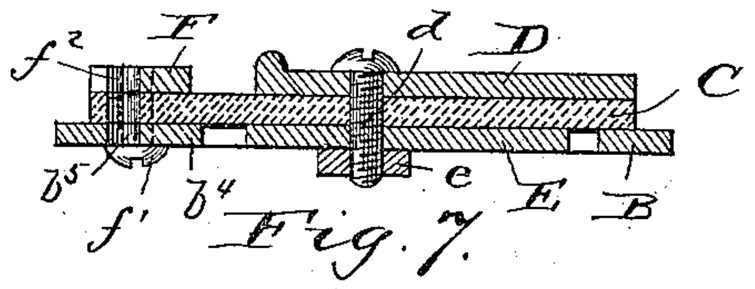

Fig. 7.

Witnesses:
D. H. Burry.
E. K. Stuntevant.

Inventor:
Thomas A. Swann
by Smith & Low
attys.

UNITED STATES PATENT OFFICE.

THOMAS A. SWANN, OF BALTIMORE, MARYLAND.

PUMP-VALVE.

SPECIFICATION forming part of Letters Patent No. 441,339, dated November 25, 1890.

Application filed July 3, 1890. Serial No. 357,670. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. SWANN, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Pump-Valves; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention is directed to the improvement of a well-known form of valve which is especially adapted for use at the lower end of the tubes of ships' pumps.

It is the object of my invention to hold or support the rubber or other flexible material employed for the flap of the valve proper in such manner that it shall be durable and shall be always held in a flat shape adapted to conform to all parts of its seat accurately.

It is a further object of my invention to so connect the valve with a removable ring or annular plate that the flap will be firmly held in place and cannot get out of position so as to fail to close the opening which it is designed to fit, and, on the other hand, so that it may be readily removed when it is desired to replace a worn-out disk of rubber or leather with a new one.

It is a further object of my invention to provide for the ready removal of such ring, carrying with it the valve proper fixed thereto, by securing the ring in place by a single removable fastening device.

These objects are attained by a construction consisting of certain parts and combinations thereof, hereinafter more particularly set forth and claimed.

In order to make my invention more clearly understood, I have shown in the accompanying drawings means for carrying the same into practical effect.

In said drawings, Figure 1 is a bottom plan view of the outer or main frame of the valve detached. Fig. 2 is a similar view of the removable valve-supporting ring. Fig. 3 is a similar view of the plate which fits the under side of the valve proper. Fig. 4 is a view of the plates which fit the upper side of said valve, and one of which secures the flap firmly to the removable ring. Fig. 5 is a bottom plan view of the above-mentioned parts assembled together. Fig. 6 is a sectional view on line 6 6, Fig. 1. Fig. 7 is a sectional view on line 7 7, Fig. 4.

Referring to the drawings, A indicates the outer or main frame of the valve, adapted to be secured to the bottom of the pipe through which the flow or return of fluid is to be controlled. In certain respects this frame is of ordinary or well-known form, while with regard to other features it is modified to form a co-operative part of my present improvement. The said frame is provided with the usual depending flange a, with which are preferably formed supporting-legs a', by which the valve with its pipe may be held above a surface upon which said legs stand to admit fluid to the valve in a well-known manner.

At and around the upper edge of the frame A is formed an inwardly-extending flange a^2, against which is adapted to fit the removable ring B. At one side of said frame, upon the inner face of the flange a and a distance below the flange a^2 equal to the thickness of the ring B, is situated a lug or projection a^3, which is adapted to support one side of said ring. At the opposite side of the frame is formed a horizontal flange a^4 in the form of a segment of a circle, and provided with a screw-threaded aperture a^5. This flange a^4 is situated at a distance above the flange or shoulder a^2 equal to the thickness of the rubber or leather valve proper together with the thickness of one of its securing-plates hereinafter more particularly described, thus forming a "recess," as it may be termed, a^6, situated between the under face of the flange a^4 and the upper face of the removable ring B. The ring B is formed with a segmental portion b^4 of substantially the same size as the flange a^4, and is perforated with an aperture b^5 for a securing-screw B', the threaded end of which fits the aperture a^5. This screw supports that side of the removable ring opposite to the projection a^3, and it is therefore simply necessary to the removal of the ring and the valve to unscrew the screw B'.

The rubber disk or valve proper is indicated at C. It is substantially circular, and of a diameter slightly less than the inner diameter of the flange a^2. Its main portion is covered on the upper side by a plate D, against which the rubber or leather is tightly com-

pressed by an opposite plate E, so as to keep the flexible disk flat and its operating-edges in the same plane. The plate E, which is substantially of the same shape but a little smaller than the opening through the plate B, is secured to the plate D by a bolt d and nut e. The flap thus composed of the parts C, D, and E is firmly secured to one side of the ring B by an overlying plate F, having screw-threaded holes f, and by screws f', which pass up through holes b^6 in the ring B and engage said holes f. The flexible material may thus be adjusted and firmly secured in proper relation to the ring B, which in operation it is to fit independently of the frame A and before the ring is put in place. The flexible disk, therefore, cannot be displaced during the operation of securing the ring. When the latter is in place, the plate F fits within the recess a^6, already described, and shown in Figs. 1 and 6. An opening f^2 in the plate F permits the passage of the single securing-screw B′.

In applying the removable ring thus provided with a flap-valve to the frame A the operation is simply to insert the edge of the ring next to the free edge of the flap between the flange a^2 and projection a^3, bring the plate F up into the recess a^6 and against the flange a^4 and insert the screw B′ through the openings b^5 and f^2 and into the threaded hole a^5. I have thus materially increased the facility of repair and the accuracy of fit in the valve after the repair is completed.

Having thus described my invention, what I claim is—

1. In a pump-valve, the combination of the frame A, having the flange a^2, provided with the recess a^6, and the projection a^3 below the flange, the removable ring B, having a securing device opposite to said projection, and the plate F, adapted to secure the disk to said removable ring independently of said frame A, substantially as set forth.

2. In a pump-valve, the combination of the frame A, having the flange a^2, provided with the recess a^6, and the projection a^3 below the flange, the removable ring B, having a securing device opposite to said projection, the clamping-plates D and E, for holding a disk of flexible material, and the plate F, adapted to secure the disk to said removable ring independently of said frame A, substantially as set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

THOMAS A. SWANN.

Witnesses:

J. F. CRAPSEY,

FELIX R. SULLIVAN.