

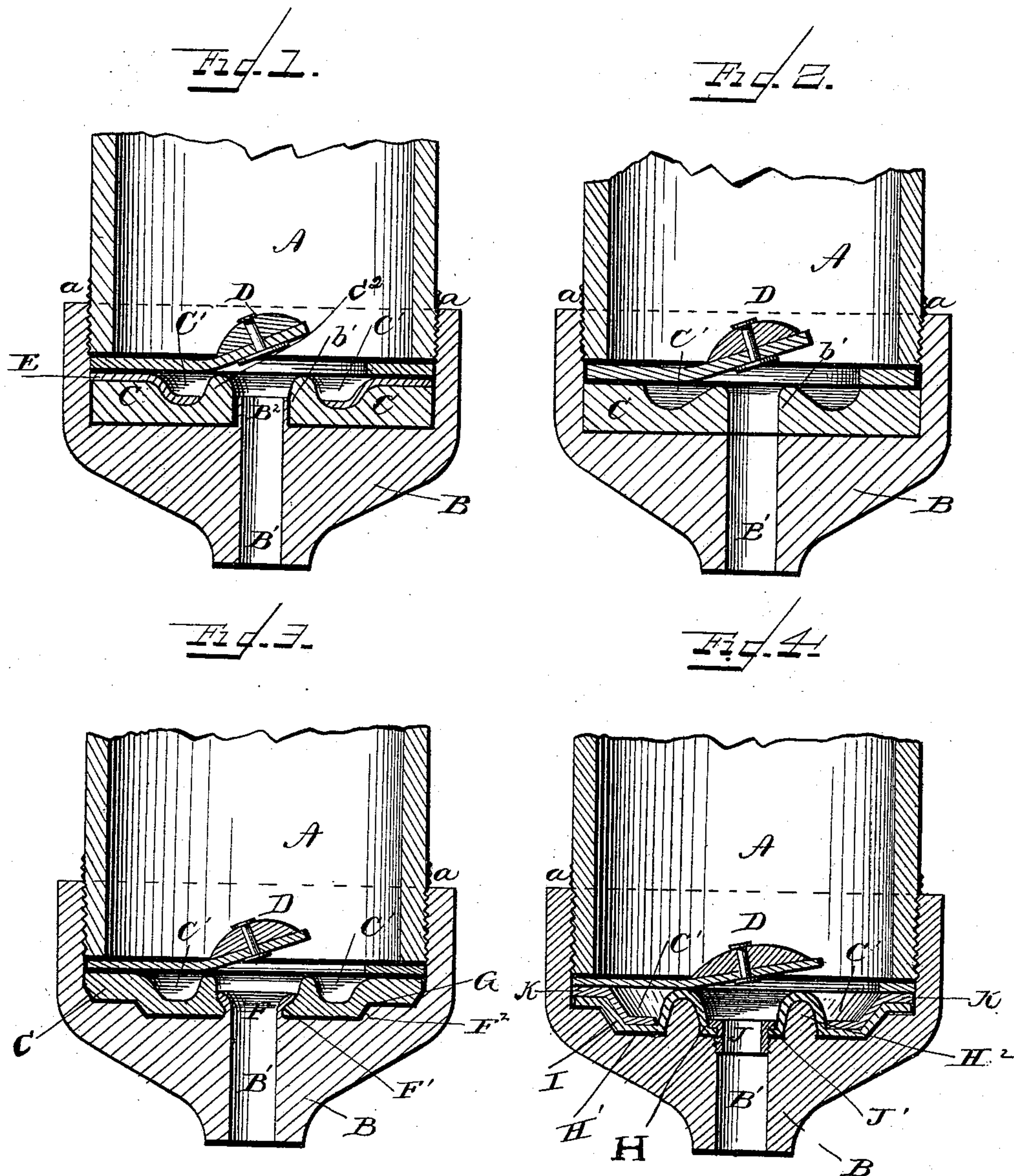
(No Model.)

D. J. NYSEWANDER.

VALVE SEAT.

No. 338,609.

Patented Mar. 23, 1886.



WITNESSES  
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# UNITED STATES PATENT OFFICE.

DAVID J. NYSEWANDER, OF NEW CARLISLE, OHIO.

## VALVE-SEAT.

SPECIFICATION forming part of Letters Patent No. 338,609, dated March 23, 1886.

Application filed July 22, 1885. Serial No. 172,313. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID J. NYSEWANDER, a citizen of the United States, and a resident of New Carlisle, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Valve-Seats; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention has for its object the production of an elastic valve-seat especially designed to be used in lift-pumps, which shall possess advantages in the points of simplicity, durability, and general efficiency; and to these ends my invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, and pointed out in the claims.

Referring to the annexed drawings, Figure 1 is a vertical sectional view of the lower end of a lift-pump cylinder with its cap in which my invention is embodied, and Figs. 2, 3, and 4 are similar views showing modifications of my invention which it may be desirable to employ under certain circumstances in place of the peculiar construction shown in Fig. 1.

The same letters of reference indicate corresponding parts in all the figures.

Referring to the several parts by letter, A represents the cylinder of the pump, the lower portion of which only is shown, the lower extremity of the said cylinder being provided with the usual external screw-thread, *a*, to adapt the cap B to be secured thereon in its operative position; or the cap and cylinder may have suitable flanges to adapt them to be bolted together.

B represents the cap, which is provided with the usual central vertical opening or inlet-port, B', and is further cast with the upwardly-extending annular flange B<sup>2</sup>, encircling the upper end of the said central vertical opening, as shown, for the purpose which will be hereinafter set forth.

C indicates an annular rubber cushion, of a sufficient degree of softness, which forms the valve-seat, the said rubber cushion resting upon the flat upper surface of the cap B, with

the central upwardly-extending flange, B<sup>2</sup>, extending up within the central aperture of the said cushion for a sufficient height, thereby serving to hold the said cushion in its operative position, and more particularly to prevent its inner circular edge, *b'*, from being forced over or beyond the edges of the central aperture or inlet-port, B', when the cap B is screwed up tightly upon the lower end of the cylinder A, for the purpose of securing the valve D and the valve-seat securely in position. The annular rubber cushion C is provided at a point sufficiently near its central aperture with the annular groove C', which forms the usual sand-chamber.

D represents the valve, which is of ordinary construction. This valve may, if desired, be placed immediately upon the rubber cushion C, and secured in its operative position by screwing the cap B up upon the screw-threaded lower end of the cylinder A until the lower circular edge of the said cylinder bears firmly upon the flange of the leather valve, thereby securing the same tightly upon the rubber cushion, and also holding the cushion itself firmly in position. It will be seen that by this arrangement, if the valve or cushion becomes loosened from any cause, they may be readily tightened in their operative positions by screwing the cap B a little farther up upon the end of the cylinder, so as to cause the lower end of the cylinder A to bear more firmly down upon the valve and cushion, as will be readily understood.

An annular metallic plate, E, of brass, copper, or other suitable metal, may be placed upon the upper side of the rubber cushion, if desired, between the said cushion and the valve, the central opening of the said plate being considerably larger than the central aperture of the rubber cushion, so that the inner circular edge of the said plate rests within the annular groove C' of the cushion, as shown, so as to leave the seat C<sup>2</sup>, formed by the inner portion of the cushion, free for the reception of the valve proper.

The circular annular rubber cushion C is made of such a diameter that when placed in operative position in the cap B its outer circular edge will extend beneath the lower edge of the cylinder A, as shown in the drawings, so that when the cap B has been screwed up



5 tightly upon the lower screw-threaded end of  
 the said cylinder the pressure of the lower  
 edge of the said cylinder will render it impos-  
 sible for the valve D, under the pressure of  
 10 the water on each downstroke of the pump-  
 piston, to force the seat C<sup>2</sup> of the said rubber  
 cushion down or outward away from the cen-  
 tral flange, B<sup>2</sup>, until the valve would come in  
 contact with the upper end of the metal flange  
 15 B<sup>2</sup>, which would be liable to occur if a rubber  
 ring merely surrounding the flange B<sup>2</sup> without  
 extending beneath the lower end or edge of  
 the cylinder A were employed in place of my  
 improved rubber cushion herein shown and  
 20 described. The metallic annular plate E also  
 serves, when the cap B has been screwed up  
 tightly upon the end of the cylinder A, to  
 exert an even pressure upon the main portion  
 of the upper side of the rubber cushion C, and  
 25 thereby force the inner circular edge of the  
 said cushion into firmer contact with the flange  
 B<sup>2</sup>, thereby facilitating the before-mentioned  
 object and holding the cushion firmly in its  
 operative position.  
 30 The upwardly-extending central flange, B<sup>2</sup>,  
 which is cast integral with the cap B, may be  
 entirely dispensed with, if desired, as shown  
 in Fig. 2 of the drawings, by making the cush-  
 ion of vulcanized rubber of a sufficient degree  
 35 of hardness to prevent its inner edge from be-  
 ing forced over so as to partly obstruct the  
 upper end of the inlet-port B', the cushion in  
 this case being also made of such a diameter  
 that its outer circular edge will extend beneath  
 40 the lower edge of the cylinder A, as shown;  
 or the cap may be cast with an inwardly-  
 curved flange, F, and an annular recess, F',  
 in its upper face, as shown in Fig. 3 of the  
 drawings, so as to leave the annular shoulder  
 45 F<sup>2</sup>, between which and the curved flange F  
 the lower portion of the rubber cushion is  
 tightly wedged, the cushion being in this case  
 cut away at its rear lower portion annularly  
 at G, this arrangement effecting a considerable  
 50 saving in material, as will be readily seen.  
 The cap may also be constructed with the two  
 concentric annular grooves H and H', leaving  
 the annular bead or projection H<sup>2</sup>, over which  
 the inner portion of the cushion I, which in  
 55 this case may be of leather, extends, a metallic  
 thimble, J, having the flange J' at its upper  
 end, being screwed down within the upper  
 end of the inlet-port of the cap, so as to firmly  
 secure the inner annular edge of the leather  
 60 cushion I, while an annular metallic plate, K,  
 is placed between the valve and the said cush-  
 ion in the position shown, so as to leave that  
 portion of the leather which passes over the  
 annular bead H<sup>2</sup> clear for the reception of the  
 valve proper.

The above-described construction is clearly  
 illustrated in Fig. 4 of the drawings.

65 From the foregoing description, taken in  
 connection with the accompanying drawings,  
 the construction of my invention will be read-  
 ily understood without requiring further ex-  
 planation. It will be seen that the valve

comes in direct contact with the annular rub-  
 ber valve-seat, and that therefore the corro-  
 sion which infallibly ensues when a leather 70  
 valve is brought in contact with metal of any  
 kind is entirely avoided, while by construct-  
 ing the rubber cushion on which the valve-  
 seat is formed of such a diameter that its  
 outer circular edge will extend beneath the 75  
 lower edge of the cylinder A the rubber  
 valve-seat is held firmly in its operative posi-  
 tion when the cap B is screwed up tightly  
 upon the lower end of the said cylinder, as  
 before described. 80

The upwardly-projecting annular flange  
 prevents the sand from working under the  
 rubber cushion, which it would otherwise be  
 liable to do.

The cap may be tightened upon the lower 85  
 end of the cylinder to take up wear at any  
 time.

Having thus described my invention, what I  
 claim, and desire to secure by Letters Patent  
 of the United States, is— 90

1. The combination, with the cap formed  
 with the central upwardly-extending annular  
 flange, of the annular rubber cushion forming  
 an elastic valve-seat, and constructed of such a  
 diameter that when placed in operative posi- 95  
 tion within the said cap its outer circular  
 edge will extend beneath the lower edge of  
 the pump-cylinder, upon the lower end of  
 which the said cap is adjustably secured, as  
 and for the purpose set forth. 100

2. The combination of the cap formed with  
 the central upwardly-extending annular  
 flange, the annular rubber cushion forming  
 an elastic valve-seat, and constructed of such  
 a diameter that when placed in operative po- 105  
 sition within the said cap its outer circular  
 edge will extend beneath the lower edge of  
 the pump-cylinder, upon the lower end of  
 which the said cap is adjustably secured and  
 the valve arranged above the said cushion, as 110  
 described.

3. The combination, with the cap having  
 its upper end provided with the interior  
 screw-thread to adapt it to be secured adjust- 115  
 ably upon the lower end of the pump-cylin-  
 der, and formed with the central upwardly-  
 extending annular flange, of the annular rub-  
 ber cushion forming an elastic valve-seat,  
 and constructed of such a diameter that when  
 placed in operative position within the said 120  
 cap its outer circular edge will extend be-  
 neath the lower edge of the pump-cylinder,  
 upon the lower end of which the said cap is  
 adjustably secured, substantially as and for  
 the purpose shown and described. 125

4. The combination of the cap formed with  
 the central upwardly-extending annular  
 flange, the annular rubber cushion forming  
 an elastic valve-seat, and constructed of such  
 a diameter that when placed in operative po- 130  
 sition within the said cap its outer circular  
 edge will extend beneath the lower edge of  
 the pump-cylinder, upon the lower end of  
 which the said cap is adjustably secured, and



the annular metallic plate arranged, as described, above the said cushion.

5 5. The combination, with the cap having its upper end provided with an interior screw-thread to adapt it to be secured adjustably upon the lower end of the pump-cylinder, and formed with the central upwardly-extending annular flange, of the annular rubber cushion forming an elastic valve-seat, and constructed  
10 of such a diameter that when placed in operative position within the said cap its outer circular edge will extend beneath the lower edge of the pump-cylinder, upon the lower

end of which the said cap is adjustably secured, the annular metallic plate arranged, as described, above the said cushion, and the valve, all constructed and arranged in the manner and for the purpose shown and described.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

DAVID J. NYSEWANDER.

Witnesses:

H. P. MORLEY,  
G. W. JACKSON.