A. S. Cameron,

Pump Valve.

No. 113,397. Patented Apr. 4. 1871.

Fig: 1.

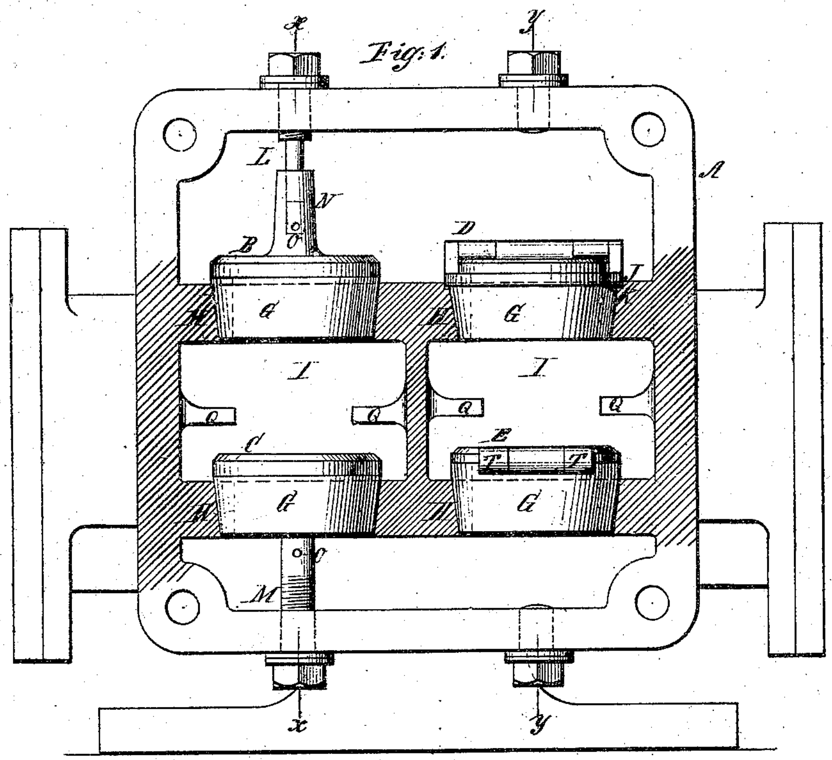


Fig: 2.

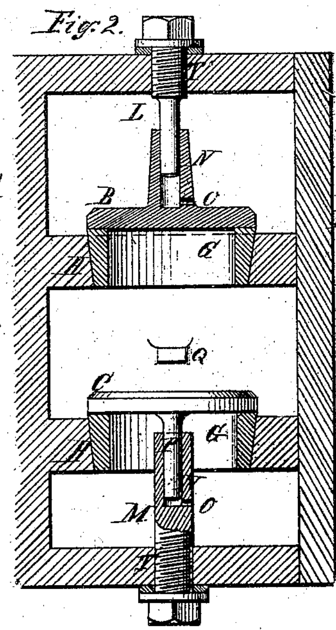
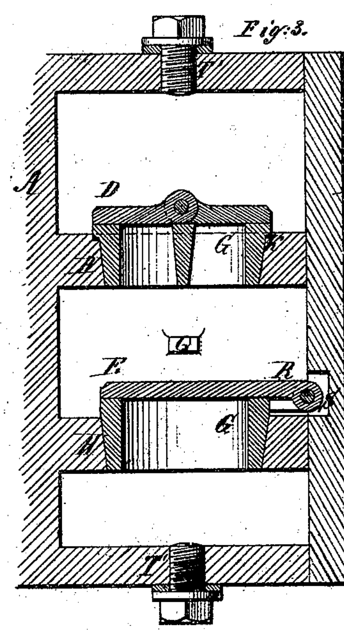


Fig: 3.



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UNITED STATES PATENT OFFICE.

ADAM S. CAMERON, OF NEW YORK, N. Y.

IMPROVEMENT IN PUMP-VALVES.

Specification forming part of Letters Patent No. **113,397**, dated April 4, 1871.

To all whom it may concern:

Be it known that I, ADAM S. CAMERON, of the city, county, and State of New York, have invented a new and useful Improvement in Pump-Valves; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which drawing—

Figure 1 represents a sectional front view of the valve-chest of my pump, the bonnet having been removed to expose the interior of the chest. Fig. 2 is a transverse section of the same, the line *x x*, Fig. 1, indicating the plane of section. Fig. 3 is a similar section, taken in the plane indicated by the line *y y*, Fig. 1.

Similar letters indicate corresponding parts.

This invention relates to the construction of the valve-chest of a pump with valve-seats turned tapering, and fitted into tapering holes provided in the valve-chest to receive them, in such a manner that by removing the bonnet or bonnets which give access to the valves, access is thereby also given to either or all of the valve-seats on their upper and lower sides.

The invention also relates to the arrangement outside of the diameter of the valve-seat, in combination with the tapering exterior of the seat, of a hinge, by which the valve is hinged to the seat in such a manner as to give a free and unobstructed opening through the valve-seat.

The letter A designates a valve-chest, containing valves B, C, D, and E.

The bonnet F of the valve-chest is shown in its place in Figs. 2 and 3; but it is removed in Fig. 1 in order to show the interior of the valve-chest.

The letter G in all the figures designates the valve-seats, which are made separate from the valve-chest, and are made tapering on their peripheries and inserted in tapering holes H, bored out to receive them in the upper and lower walls of the valve-chambers I.

One advantage of this method of making the valve-seats is, that they can be secured in their places or removed with great facility.

Another advantage is, that the greater the pressure that is brought to bear upon them the tighter they become, provided the pressure is not sufficient to force them through the openings made to receive them. To provide against such an occurrence, I construct the seats, when required to withstand a severe pressure, with an exterior shoulder, as at J, in valve D, which rests upon the top of the wall H, or in a rabbet, K, made to receive the shoulder.

Another advantage is, that any person using pumps made in this manner can order from the manufacturer valve-seats of the required size and drop them into their places with the aid only of ordinary labor, without requiring the skill of a machinist.

The valves may be mounted, each pair one over the over, on a single spindle, and provided with spiral springs for rapid working, as is shown in my Letters Patent of the United States, granted to me December 17, 1867, numbered 73,363; or they may be mounted in the manner shown in Fig. 2 and in the left-hand side of Fig. 1, where the two valves B C work on their separate spindles L M.

The valve B moves freely up and down on its spindle L, which is inserted in a socket, N, made in the top of the valve, and is prevented from lifting too high by striking the bottom end of its spindle; and in order that the valve shall not be retarded in its movements by the presence of fluid in the lower end of the socket, I make a hole, O, through the neck of the valve, intersecting the bottom of the socket, to permit the rapid ingress and egress of the fluid, and also to permit the escape of any sediment which might otherwise accumulate.

The valve C is similarly constructed to the valve B, its spindle M, which is inverted, being made to extend upward from the bottom of the valve-chest through the valve-seat; and its upper end is provided with a socket, N, which receives the stem P of the valve, the bottom of the socket being also provided with a hole, O, for the escape of fluid and sediment. The valve C is arranged so as to play up and down on its stem P, and is prevented from lifting too high by coming in contact with stops Q Q, that extend from the sides of the valve-chambers I.

It is obvious that by this arrangement of

the valves B and C, I obtain valve-seats with clear openings, unobstructed by cross-bars. It is, however, necessary that the spindles which guide the valves shall be strong, so as to be able to resist any tendency to become strained out of their proper relations to the valve-seats.

On the right-hand side of Fig. 1, and in Fig. 3, I have shown an ordinary double-hinged or clack valve, D, but arranged on a tapering seat, and also an improved hinged valve, E, which I will next describe.

It will be obvious that by the common valve D the passage of fluid will be much obstructed. This defect is avoided in my improved valve E. Its seat is inserted as above described, and is provided with a tail, R, and two lugs, T, to which the valve is hinged so as to move freely up and down.

The valve is prevented from lifting too high by stops Q Q, cast in the valve-chamber I; or a projection may be made on the bonnet to arrest it.

This form of valve provides a free and unobstructed opening through the seat; and as it is desirable to construct a valve of this kind with the hinge placed at a considerable distance from the valve-seat, so as to secure an easy movement and a nearly uniform opening for discharge all around the seat, this may be done without materially increasing the capacity of the pockets in which the valves or valve-seats are situated, (a thing which would be unfavorable to the good working of a pump placed at a considerable elevation above the fluid to be moved,) by keeping the face on which the valve-bonnet rests as near to the body of the valve-seats as is consistent with proper strength of metal, while the projecting hinged ends of the valves and valve-seats enter into the recesses S, cast in the bonnet, just large enough to receive them.

I do not claim, broadly, the inserting of a tapering valve-seat into a casting bored tapering to receive it, this having been done in cast-iron check and globe valves provided with brass valve-seats, without, however, giving access to both sides of said seats; nor do I desire to claim the mounting of a valve on a valve-spindle placed at right angles to the seat; but

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

1. The arrangement, in the valve-chest, of partitions provided with conical sockets to receive the valve-seats, and giving access to said seats from above and below when the bonnet is removed, substantially as described.

2. The tail or extension of the removable valve-seat, receiving the pivot on which the valve swings, and throwing the joint outside of the diameter of the seat, and giving an unobstructed passage through the valve, as described.

This specification signed this 6th day of December, 1870.

A. S. CAMERON.

Witnesses:

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