

(No Model.)

L. SCHUTTE.
CHECK VALVE.

No. 516,407

Patented Mar. 13, 1894.

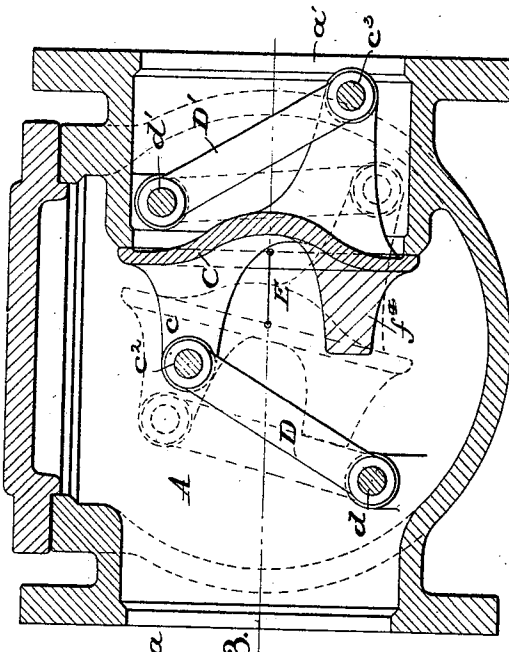


Fig. 3.

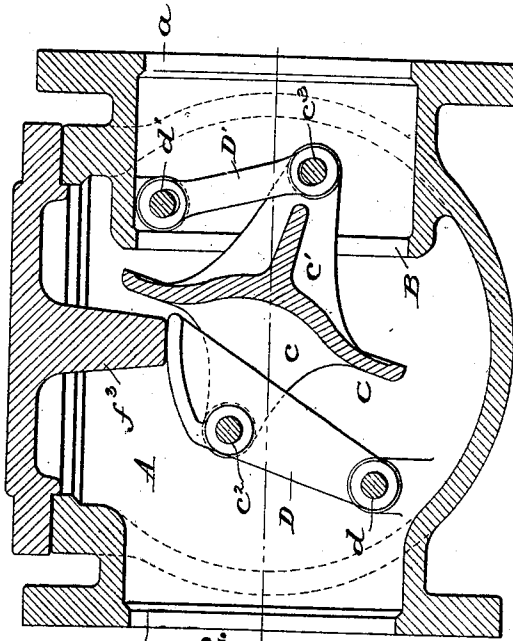


Fig. 2.

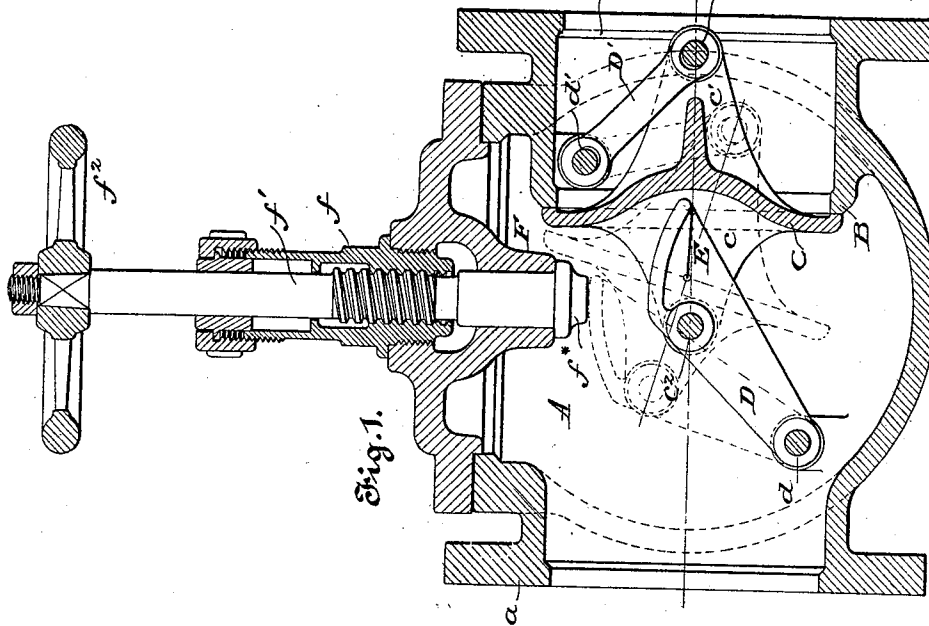


Fig. 1.

Witnesses:

Raymond H. Barnes.
Fabius D. Elmore.

Inventor:

Louis Schutte
By P. T. Lodge
Atty.

UNITED STATES PATENT OFFICE.

LOUIS SCHUTTE, OF PHILADELPHIA, PENNSYLVANIA.

CHECK-VALVE.

SPECIFICATION forming part of Letters Patent No. 516,407, dated March 13, 1894.

Application filed June 6, 1893. Serial No. 476,725. (No model.)

To all whom it may concern:

Be it known that I, LOUIS SCHUTTE, of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Check-Valves, of which the following is a specification.

My invention relates to horizontally moving check valves, the object being to provide a valve of this character which will be balanced so that the resistance offered to its opening and closing movements will be reduced to a minimum.

The invention is particularly applicable where currents of low pressure are employed, such as the exhaust from engines, pumps or vacuum pans, though it is not necessarily confined in its application to such uses, and may be employed wherever the circumstances are such as to require a balanced horizontally moving check valve.

The invention consists primarily in combining with a valve seat, a horizontally moving valve adapted to close the same and sustained so as to be moved back and forth by links or equivalent supports pivotally connected to the valve on opposite sides of the same.

The invention also consists in a stop constructed to limit the movement of the valve or to regulate the length of its "throw."

The invention also consists in the details of construction and combination of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1, is a vertical sectional elevation of a valve and casing having my invention embodied therein, the valve being closed and an adjustable stop being shown to regulate its movement. Fig. 2, is a similar view with the valve opened, a fixed stop being shown to limit its opening movement. Fig. 3, is a similar view of a modified form of the valve and its connections and of the limiting stop.

Referring to Figs. 1 and 2, A represents a suitable casing containing a horizontal passage therethrough and provided with necks a, a' , by means of which the casing may be connected between the adjacent ends of pipe sections, or may be applied in other connections according to the use to which the valve is put may require. This casing is provided at one side with a vertical valve seat B, adapt-

ed to receive and be closed by a valve proper C, thus closing the passage through the casing. The valve proper is provided at its center with oppositely extending flanges c, c' to which are connected by horizontal transverse pivots c^2, c^3 , the upper and lower ends respectively of sustaining links D, D', the opposite ends of said links being pivoted on horizontal transverse axes to the valve casing at opposite sides of the valve as shown at d, d' .

From this description it will be seen that the valve is suspended, as it were, by the two oppositely extending links this arrangement admitting of the movement of the valve horizontally. It will also be seen that the tendency of the valve to open and close will depend upon the relations of the center of gravity of the valve to the pivoted axes c^2, c^3 of the support, and by suitably proportioning the parts of the valve and adjusting the relations of the axes, and the center of gravity of the valve, the amount of pressure necessary to close or open the valve and the corresponding amount of resistance to its movements may be reduced to a minimum, so that the valve will be truly balanced and will respond quickly to the least variation of pressure on its opposite sides. It will also be noted that the movement of the center of gravity is practically in a straight line as indicated at E. Its center of gravity moving thus, it will require, of course, less force to move the valve than it would, if the center of gravity moved obliquely, or in a path other than truly horizontal.

In order that the opening movement of the valve may be limited, I provide a stop for the same

In Fig. 1, I have represented the stop as adjustable, so that the movements of the valve may be regulated or varied. In this figure the upper side of the casing is provided with a depending boss F, having a vertical opening therein, on the upper side of which is fixed a neck f , into which is threaded a spindle f' , the lower end f^* of which extends through the boss in the casing to the interior of the same. The upper end of the spindle is provided with a hand wheel f^2 . The lower end of the spindle is in position to be encountered by the upper edge of the link D, when the valve is opened, and by screwing the

spindle down through the casing, it is obvious that the end of the spindle may be adjusted in different positions to be encountered by the link, and thus vary the movement of the valve. In Fig. 2 the stop is in the form of a fixed depending boss f^3 projecting downward into the casing from its upper side in position to be encountered by the upper edge of the link D as in the first instance.

10 In Fig. 3, I have represented a modification of my valve and of the stop. In this figure it will be seen that the flanges to which the supporting links are pivoted do not extend in line with the center of gravity, but project at upper and lower sides of the same. This difference in the location of the pivotal connections of the valve with its supports, affects in no manner the movement or operation of the valve. The stop in this figure is represented as being in the form of a lug f^4 projecting from the lower side of the valve proper, in such position that when the valve is opened, its end will encounter the sustaining link D, and thus limit the movement of the valve.

25 Having thus described my invention, I claim—

1. The combination of the casing provided with a vertical valve seat, a horizontally movable valve to close the same, and movable supports sustained by the casing and pivoted to the valve on opposite sides of the same.

2. In a check valve the combination of the casing provided with a vertical valve seat, a horizontally movable valve, and links pivoted at their upper and lower ends respectively to

the opposite sides of the valve on horizontal transverse axes, and pivoted at their opposite ends to the casing.

3. In a check valve the combination of the casing provided with a vertical valve seat, a horizontally movable valve provided at its center on opposite sides with flanges, and links pivoted at their upper and lower ends respectively to the flanges and pivoted at their opposite ends to the casing.

4. In a check valve the combination with the casing provided with a valve seat, of a horizontally movable valve, a link pivoted at its upper end to the casing and at its lower end to the valve, a second link pivoted at its lower end to the casing and at its upper end to the valve, and a stop fixed to the casing in position to be engaged by the last named link and limit the motion of the valve.

5. In a check valve the combination of the casing provided with a valve seat, a horizontally movable valve, a link pivoted at its upper end to the casing and at its lower end to the valve, a second link pivoted at its lower end to the casing, and at its upper end to the valve, and a vertically adjustable stop mounted in the casing with its lower end in position to be engaged by the last named link.

In testimony whereof I hereunto set my hand, this 23d day of May, 1893, in the presence of two attesting witnesses.

LOUIS SCHUTTE.

Witnesses:

DANIEL WATSON HILDRETH,
MAURICE FRANCIS SPILLIN.