

C. E. ANDERSSON.
THREE-WAY VALVE.
APPLICATION FILED NOV. 17, 1908.

929,367.

Patented July 27, 1909.

Fig. 1

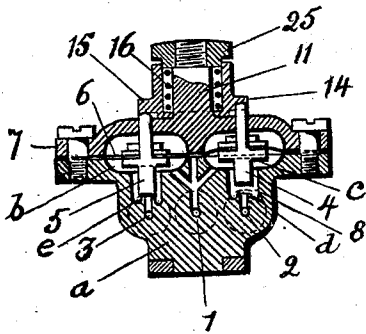


Fig. 2

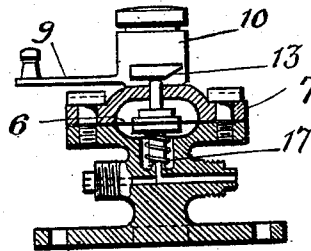


Fig. 3

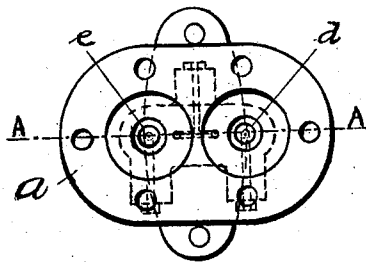


Fig. 4

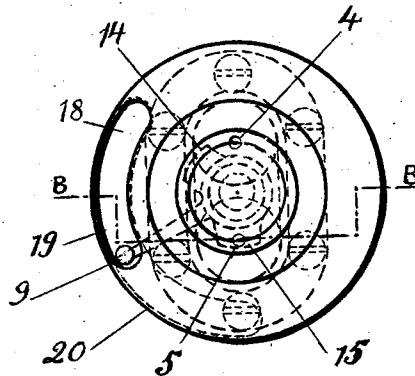
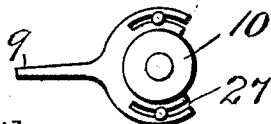
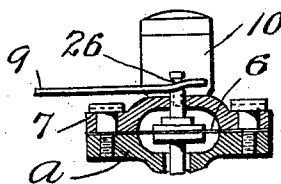


Fig. 6



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Fig. 5



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UNITED STATES PATENT OFFICE.

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THREE-WAY VALVE.

No. 929,367.

Specification of Letters Patent.

Patented July 27, 1909.

Application filed November 17, 1908. Serial No. 463,011.

To all whom it may concern:

Be it known that I, CARL EMIL ANDERSSON, a subject of the King of Sweden, and a resident of Eskilstuna, in Sweden, mechanic, have invented a new and useful Three-Way Valve, of which the following is a specification.

The object of my invention is to construct a three-way-cock or valve in such a manner that it can be operated with great ease and at the same time is quite safe against leakage. I attain these objects by using two chambers, a valve in each chamber, a diaphragm connected to the valves and a member adapted to shut (or open) the valves alternately (and simultaneously).

In the accompanying drawing Figure 1 is a vertical section on line A—A, Fig. 3. Fig. 2 is a vertical section on line B—B, Fig. 4, the casing being omitted. Fig. 3 is a plan view with valves and diaphragm and the parts above the latter omitted. Fig. 4 is a plan view of the whole device.

The valve-box *a* has two chambers *b*, *c* and three ways 1, 2, 3, to be connected to the conduits (not shown). The way 1 communicates with both chambers. The ways 2 and 3 communicate with the valve seats *d*, *e* and are thus controlled by the valves 4, 5. Connected to the valves is a diaphragm 6, which is inserted between the valve-box *a* and the lid 7.

The valve seats are formed on the bottom of sockets 8, in which the valves are guided so as to permit the passage of fluid, when the valve is open.

The upper part of the valve spindles extend above the diaphragm and through holes in the lid 7 so as to be operated by cams or the like on a member outside of the valve-box. In the drawing this member is represented by a lever 9, the hub 10 of which is passed on a vertical stud or pivot 11 formed on top of the lid 7. Cams or inclined planes 13 adapted to coöperate with the upper end of the valves are formed on the hub or on lugs 14, 15 or the like projecting from the hub.

A nut 25 screwed on top of stud 11 prevents upward movement of the hub. In order to soften the pressure which the cams exert upon the valves when closing them, a spring 16 is arranged between hub and nut.

In Figs. 1 and 4 valve 5 is closed and valve 4 open, so that fluid from way 1 can by passing through chamber *c* escape through

way 2 (or flow in opposite direction from way 2 to way 1 as the case may be). When turning the lever 9, Fig. 4, so as to bring cam 15 to leave valve 5 and cam 14 to ride on valve 4, the fluid from way 1 is shut off from way 2 but can escape through way 3 (or fluid from way 3 can escape through way 1 as the case may be).

Any suitable means may be used for ascertaining the position of the valves. In Fig. 4 I have shown the lever 9 provided with a segment 18 moving under an aperture 19 in the casing 20. The segment may be provided with suitable marks for instance the words "Closed" and "Open" so disposed that but one of these words is visible in the aperture 19 when the valve 4 is shut and only the other word when said valve is open.

In Fig. 4 the cams are so disposed, that one valve is always open, when the other is closed. It is obvious, that the cams may also be disposed so as to keep both valves shut simultaneously when the lever has an intermediate position. A movement of the lever 9 in one direction from this position will then release the one valve, and a movement in opposite direction will release the other valve.

The valves released may be opened by the fluid itself when this has a pressure suitable for that purpose, or the diaphragm may be mounted so that its tension opens the valve, or a spring 17 may be used as shown in Fig. 2. If the fluid is under a pressure exceeding that of the atmosphere it is evident that the valves will be easily opened by said fluid pressure acting upon the underside of the diaphragm 6.

It should be understood that various parts may be modified according to circumstances without departing from the principle of this invention. So for instance the pivoted member 9 and the valve spindles may be formed so that the cams or inclined planes are adapted to open the valves instead of shutting them. Such a modification would be suitable, when the inner pressure is lower than that of the atmosphere.

Figs. 5 and 6 show a form, where the cams are adapted to act in both directions so as to both open and shut the valves. The top of the latter has a neck 26 working in curved slots 27 formed in lugs or a flange on hub 10. These lugs may be curved about as shown in Fig. 5, so that the valve is opened when the

neck is near one end of the slot and shut when near the other end of said slot.

What I claim is:

1. A three way valve having a valve box and a lid portion therefor, two chambers in said valve box, a valve in each chamber, a diaphragm between said valve box and said lid portion, a stud projecting from said lid portion, a lever pivoted on said stud and having lugs with inclined planes adapted to close the valves alternately, substantially as set forth.

2. A three way valve having a valve box and a lid portion therefor, two chambers in said valve box, a valve and valve seat in each chamber, a conduit communicating with both chambers, a conduit communicating with each valve seat, a diaphragm between said valve box and said lid portion and connected with the valves, a lever pivoted on said lid portion and having lugs with inclined planes adapted to close the valves alternately, substantially as set forth.

3. A three way valve having a valve box and a lid portion therefor, two chambers in said valve box, a valve and valve seat in each chamber each of said valves having a spindle projecting through said lid portion, a lever pivoted on said lid portion and having lugs

with inclined planes adapted to close the valves alternately by engagement with the ends of said spindles, and means associated with each valve for lifting the valve off its seat when pressure is removed, substantially as described.

4. A three way valve having a valve box and a lid portion therefor, two chambers in said valve box, a valve and valve seat in each chamber each of said valves having a spindle projecting through said lid portion, a conduit communicating with both chambers, a conduit communicating with each valve seat, a diaphragm connected with the valves, a stud projecting from said lid portion, a lever pivoted on said stud and having lugs with inclined planes adapted by engagement with said spindles to close the valves, a spring associated with each valve for lifting the valve off its seat on the removal of pressure, and adjustable means for regulating the pressure of the lever, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CARL EMIL ANDERSSON.

Witnesses:

HJALMAR ZETEERSTROM,
EDITH OLSSON.