No. 681,611.

Patented Aug. 27, 1901.

T. B. BELFIELD.

CHECK VALVE.

(Application filed May 31, 1901.)

(No Model.)

Fig. 1.

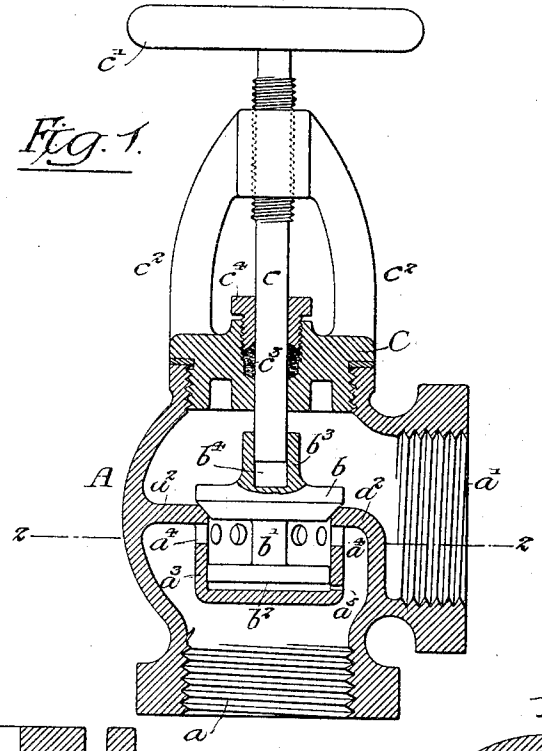


Fig. 3.

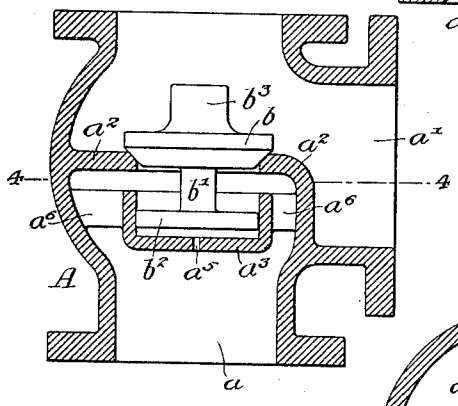


Fig. 2.

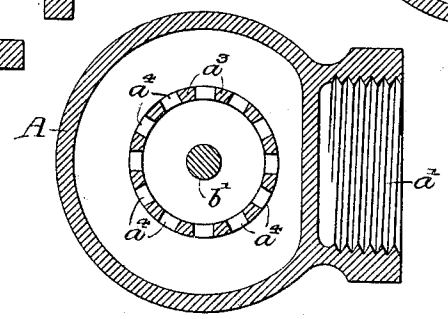
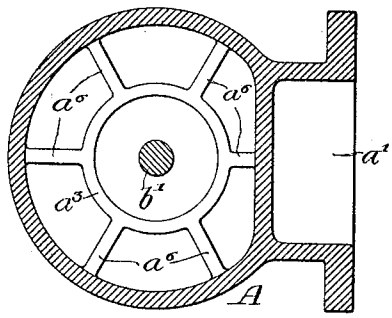


Fig. 4.



Witnesses:

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

THOMAS BROOM BELFIELD, OF PHILADELPHIA, PENNSYLVANIA.

CHECK-VALVE.

SPECIFICATION forming part of Letters Patent No. 681,611, dated August 27, 1901.

Application filed May 31, 1901. Serial No. 62,598. (No model.)

To all whom it may concern:

Be it known that I, THOMAS BROOM BELFIELD, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Check-Valves, of which the following is a specification.

My invention relates to improvements in check-valves, and more particularly to improvements in the type of valve which is provided with means for preventing hammering or chattering when the fluid flowing through it undergoes rapid variations of pressure or changes its direction of flow.

In the accompanying drawings, Figure 1 is a side view, partly in section, showing my invention applied to an angle-valve. Fig. 2 is a sectional plan view of the same, taken on the line 2 2, Fig. 1. Fig. 3 is a vertical sectional view of a portion of a check-valve, showing a modification of my invention; and Fig. 4 is a sectional plan view of Fig. 3, taken on the line 4 4 of said figure.

In constructing check-valves having a device for preventing chattering of the valve proper it has hitherto been customary to attach a piston to the valve and to provide a cylinder or dash-pot for said piston in the top or bottom part of the valve-casing. This design has been satisfactory, except when it was desired to place an antichattering check-valve at an angle in a system of piping or use it as an L-valve, in which case there has hitherto been no satisfactory device for such use. By my invention I provide a structure of the above-mentioned type especially adapted for use in an angle-valve, although it will be understood that it may be used in straight-way valves, if desired.

In Figs. 1 and 2 of the drawings, A is the casing of an angle-valve, having an inlet a and an outlet a', there being a partition a^2, which divides its interior into two chambers. Suspended or supported from this partition is a cylinder a^3, one of the chambers of the valve-casing proper communicating with the same through a series of openings a^4 a^4 in the sides of the cylinder. The other chamber of said casing opens into one end of the cylinder, and the edges of this opening are constructed to form a seat for a valve b. Screwed into or formed integral with this valve is a stem or rod b', on the end of which is a piston b^2, made, preferably, to loosely fit the cylinder a^3. If desired, there may be a restricted opening a^5 in the bottom of said cylinder, putting the space under the piston in communication with one of the chambers of the valve-casing. There is a projecting boss b^3 on the valve b, having in it a recess b^4, in which fits a valve-rod c, constructed to act as a guide for the valve. This rod has a handle c' on its upper end and is supported by arms or projections c^2 c^2 from a cover or top piece C, screwed into or bolted to the casing A. The said rod is preferably threaded at the point where it passes through the arms c^2 c^2, and a stuffing-box c^3, with a gland c^4, is provided when the said rod passes through the cover C. The boss b^3 is made of such a length that after the valve has been raised from its seat the desired distance it will strike upon the under side of the valve-cover C.

In Figs. 3 and 4 is shown a modification of the above construction, the cylinder a^3 being supported by arms a^6 a^6, projecting from the sides of the valve-casing, its construction otherwise being similar to that shown in Figs. 1 and 2.

In operation fluid entering the casing at a passes into the cylinder a^3 through the openings a^4, or in the modified forms shown in Figs. 3 and 4 between the arms a^6 a^6, and raises the valve b, thereby passing into the other chamber of the casing and out at a'. While fluid has been flowing through the casing some of it has passed the piston b^2 or come through the hole a^5 into the lower part of the cylinder as the valve b was raised. If now a sudden cessation of flow of the fluid or a material variation of its pressure occurs, the valve b will have a tendency to return rapidly to its seat, this violent action being prevented by the body of fluid under the piston, which must be allowed to escape, either past said piston or through the opening a^5, before the valve can be reseated. When it is desired to prevent the flow of fluid through the valve-casing, the rod c may be screwed down on the valve b, thereby keeping it from rising and holding it firmly to its seat.

By suspending the cylinder from the partition a^2 or from the sides of the casing a compact strong construction of parts is se-

cured and one which is most advantageously applicable for use in angle-valves.

I claim as my invention—

1. In a check-valve, the combination of a casing divided by a partition into two chambers, a cylinder supported from said partition, a valve-seated opening into said cylinder from one of said chambers, and a series of openings through the sides of the cylinder from the other chamber, with a valve fitting the seated opening and a piston fixed to the valve and operating in the cylinder, and a relatively-restricted passage into the cylinder connecting the space under the piston with one of the chambers of the casing, substantially as described.

2. The combination of a casing having an inlet and an outlet and a removable cover, a partition dividing the interior of the casing into two chambers, a cylinder supported from the partition having a valve-seated opening into it at one end, other openings into the cylinder through the sides thereof, a piston in the cylinder and a valve connected thereto, a rod supported on the casing and constructed to engage the valve whereby said valve may be kept seated when desired, substantially as described.

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

THOMAS BROOM BELFIELD.

Witnesses:
WILLIAM E. BRADLEY,
JOS. H. KLEIN.