Feb. 26, 1929. 1,703,248

G. E. R. ROTHENBUCHER

CHECK VALVE

Filed Feb. 17, 1926

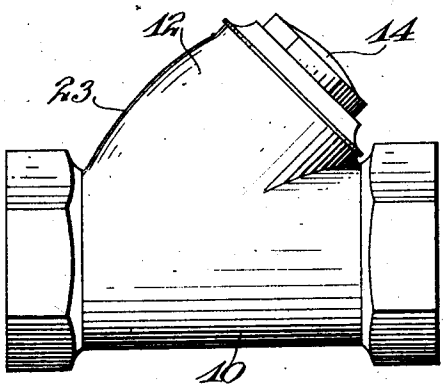


Fig. 1.

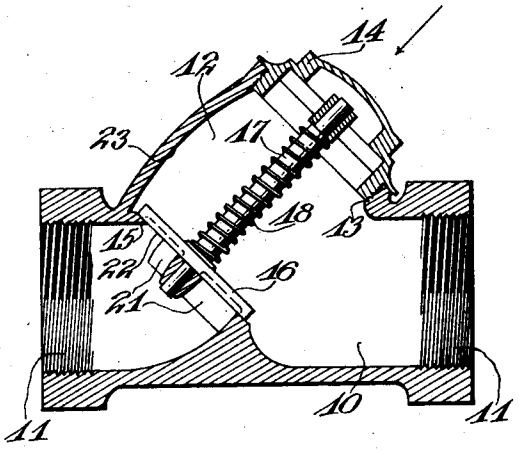


Fig. 2.

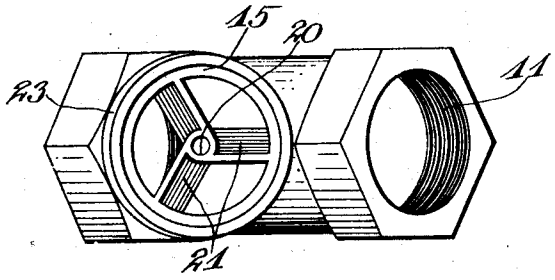


Fig. 3.

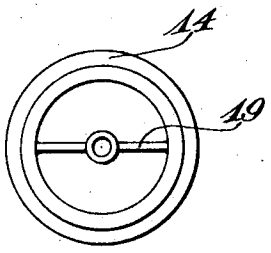


Fig. 4.

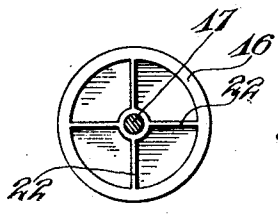


Fig. 5.

G.E.R. Rothenbucher

INVENTOR

BY Wilson & Stevens & Co.

ATTORNEYS.

Patented Feb. 26, 1929. 1,703,248

UNITED STATES PATENT OFFICE.

GEORGE E. R. ROTHENBUCHER, OF ELGIN, ILLINOIS.

CHECK VALVE.

Application filed February 17, 1926. Serial No. 88,870.

This invention relates to appliances commonly known as check valves and employed to permit the passage of a medium in one direction and to check the passage thereof in the opposite direction.

One object of the present invention is to provide a new and improved valve of the type mentioned which assures the checking of the return flow.

A further object of the invention is to so design the valve that it seats unfailingly.

A still further object of the invention is to so construct the valve that it may, through the influence of the passing medium, turn periodically to find a new seat, whereby to wear evenly and clear the seat of obstructions.

Another object of the invention is to design the housing of the valve on lines to facilitate the passage of the medium in its full capacity.

A final but nevertheless important object of the invention is to construct the same of few and simple parts, whereby it may be produced at low cost.

With the above objects in view and any others which may suggest themselves in the specification and claim to follow, a better understanding of the invention may be obtained by reference to the accompanying drawing, in which

Figure 1 is an elevation of the novel valve;

Fig. 2 is a longitudinal section thereof;

Fig. 3 is a view taken in the direction of the arrow in Figure 2, of the valve with its cap and moving parts removed;

Fig. 4 is a bottom view of the valve cap; and

Fig. 5 is a section of the valve stem, showing a bottom view of the valve disk.

Referring specifically to the drawing, 10 denotes the horizontal portion of the valve housing, which is essentially on the lines of the typical gate valve housing, having its ends tapped as shown at 11 to receive the pipe sections between which the valve is interposed.

The housing is extended from the portion 10 in an inclined direction to form an upper portion 12 whose outlet is tapped as shown at 13 to receive a cap 14. The crown of the cap is polygonal in outline to receive a wrench when the cap is to be screwed down or removed.

The housing is divided by an annular seat 15 for a valve disk 16, the latter being carried by an axial stem 17. That part of the stem which extends above the disk receives a coil spring 18 and passes into a bearing sleeve medially carried by a cross bar 19 located in and forming a part of the cap 14. That part of the stem which extends below the valve disk 16 enters a bearing 20 formed by the union of radial wings 21 cast in the housing just below the valve seat 15.

As far as the valve has been described, it will be apparent to those skilled in the art, that the medium—such as water, air, steam or other fluid—obtains passage through the valve by entering the chamber below the disk 16, forcing the latter to open by receding against the tension of the spring 18, and passing on in a lateral direction out of the valve.

The wings 21 are set obliquely to the path in which the medium travels, so that the latter is deflected in a lateral direction as it meets the disk 16. The bottom face of the latter is formed with radial ribs 22, and these being struck by the laterally moving medium cause the disk 16 to turn to some extent as it yields to the pressure of the moving medium. In seating, the disk therefore finds a new seat, so that the latter will wear uniformly; also the lateral or rotary movement of the disk before it seats will tend to dislodge any foreign matter that may cling to the disk or the seat, keeping the contacting surfaces from becoming coated, pitted or scored, and from sticking and therefore hampering the free action of the valve.

Upon issuing from the sides of the disk 16 the medium finds a full-capacity conduit, in that the interior walls of the housing are curved or bulged out, as shown at 23, to offer the medium an unrestricted flow. The path of the medium is, it will be noted, practically straight from one side of the valve to the other, and no tortuous, sharply curved or otherwise restricted passages are contended with, so that the novel valve offers a minimum resistance to the medium.

In providing the spring 18 to insure the seating of the valve, an added function is performed, in that the spring also serves to regulate or control the turning tendency of the valve disk 16, so that it will not spin or slap. This feature, in limiting the disk to partial rotation, insures a new contact each time the disk seats, and of course makes the operation of the valve noiseless.

In providing a two-part stem for the valve disk, and a bearing for each part, the disposal of the working element of the valve is

rendered stable, devoid of strains and unaffected by varying the position of the valve housing. Operation of the valve for long periods without attention may thus be expected.

I claim:—

A check valve comprising a valve casing, a valve seat formed in said casing disposed at a slight angle to the transverse axis of said casing, said seat being provided with vanes extending inwardly and terminating in a bearing disposed coaxially of said seat, said vanes having faces inclined to the axis of the valve seat and serving to impart a whirling action to liquid passing through the valve casing, a removable plug for said casing disposed in axial alinement with said valve seat, a bearing formed in the plug in axial alinement with the bearing in the valve seat, a valve stem supported in said alined bearings, an axially movable valve disk on the valve stem adjacent the lower end of the same for closing the passage through the valve casing and having radial ribs on its underface adapted to be actuated by the whirling fluid passing through said casing for imparting a partial rotary motion to said valve disk, and a spring around said valve stem confined between the valve disk and the bearing in the cap tending to maintain the valve disk on its seat.

In testimony whereof I affix my signature.

GEORGE E. R. ROTHENBUCHER.