A. C. RICKSECKER.

VALVE.

APPLICATION FILED MAR. 25, 1908.

927,753. Patented July 13, 1909.

Fig. 1.

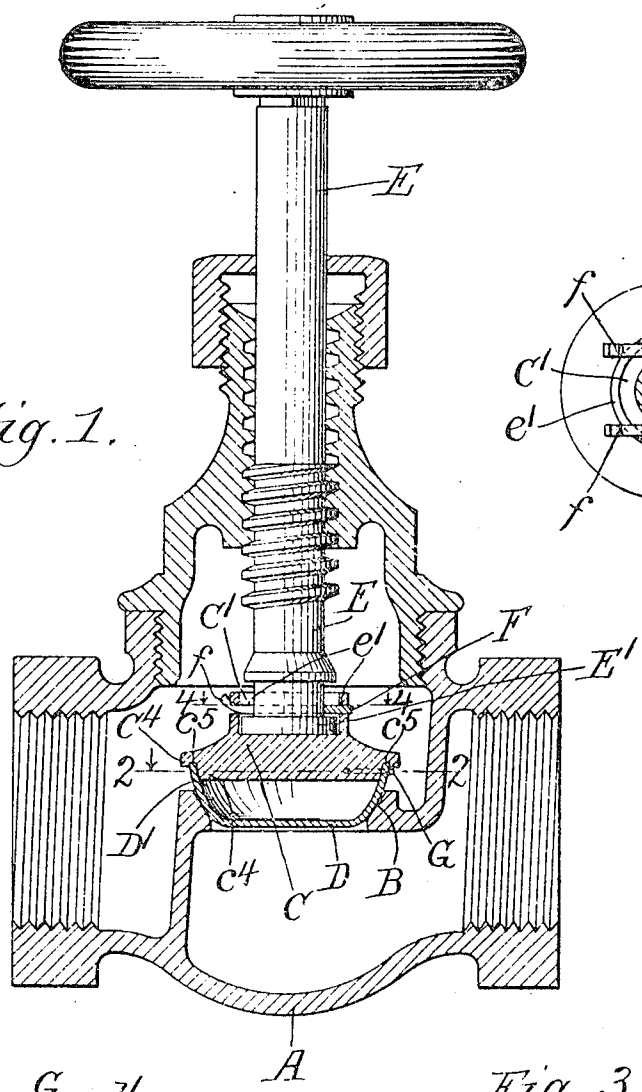


Fig. 4.

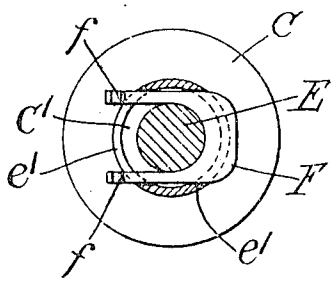


Fig. 2.

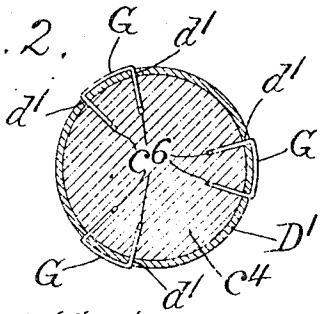
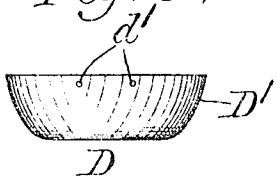


Fig. 3.



Witnesses.
Edward T. Wray.
J. S. Abbott

Inventor.
Alva C. Ricksecker.
by Burton & Burton
his Attys.

UNITED STATES PATENT OFFICE.

ALVA CURTIS RICKSECKER, OF CHICAGO, ILLINOIS.

VALVE.

No. 927,753. Specification of Letters Patent. Patented July 13, 1909.

Application filed March 25, 1908. Serial No. 423,095.

To all whom it may concern:

Be it known that I, ALVA CURTIS RICKSECKER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Valves, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

The purpose of this invention is to provide an improved construction of valves of the type or class comprising a rigid head or disk-holder to which a stem is connected and a spring disk which constitutes the seating element and is removably secured to such head or holder.

The invention consists in the features of construction shown and described as indicated in the claims.

In the drawings:—Figure 1 is a section axial with respect to the valve stem of a valve structure embodying this invention. Fig. 2 is a detail section at the line 2—2 on Fig. 1. Fig. 3 is a side elevation of the spring disk. Fig. 4 is a detail section at the line 4—4 on Fig. 1.

In the drawings I have represented my invention as applied to an ordinary screw-down valve in which the body, A, has a tapered valve seat at B, and the valve head comprises a holder, C, on which is mounted a removable disk, D, having an annular portion, D^1, which is concavo-convex, the convex side being exterior and forming the seating face for contact with the tapering seat, B. In practice, the entire disk may be concavo-convex in radial or diametric section, as shown in the drawings, but the concavo-convex form of the portion of the disk lying within the seating area is not particularly significant, so far as this invention is concerned. The valve head or disk holder, C, is connected with the stem, E, for permitting the rotation of the stem without rotating the valve head and allowing the valve, within a limited range, to accommodate itself to its seat. For this purpose the upper side of the valve head or disk holder, C, has a cylindrical pocket, C^1, which receives the cylindrical flange, E^1, which terminates the stem, E. At a distance above the bottom of the pocket, C^1, slightly more than the thickness of the terminal flange, E^1, of the stem, the wall of said pocket has at each side an aperture, e^1, for receiving a U-shaped or forked key, F, which is inserted through such apertures, striding or receiving between its side bars the valve stem and passing above the terminal flange, E^1, the fork ends extending out at one side and being slightly bent up or down for retaining the key in place, the edge being straightened whenever it is desirable to withdraw the key to permit the stem to be separated from the head or holder, C.

In the use of removable valve disks heretofore, they have generally been secured to the valve head at the center where the threaded stem and nut, or equivalent devices, have been employed for securing them. Such construction involves the necessity of making a fluid-tight joint between the disk and head or disk-holder around a central stem or bolt, and involves a further objection that any device used for securing the disk in such position is liable to become loosened and escape and be carried back through the fluid passage into the mechanism with which the valve is connected, involving danger and serious damage to the latter. The present invention constitutes one means of providing a disk without a central aperture and requiring no such central securing device, but having in all respects the full advantage which pertains to a removable spring disk. In order that the disk may be positively forced on to its seat when the valve is closed, and also that it may be definitely centered on the holder, the latter is peripherally rabbeted, the disk having its marginal portion cylindrical for fitting around the cylindrical shoulder, c^4, formed by rabbeting, and being stopped against the annular shoulder, c^5, thus formed. This construction, it will be observed, leaves the annular concavo convex seating portion of the valve disk free to yield elastically to the pressure which forces it on the seat, and thereby free to accommodate itself to the seat, which is the primary purpose of the spring disk. In the form of the device shown, the disk has no backing or support within the seating area, the advantage of this construction being that thereby the disk is afforded the maximum elasticity, the entire portion which closes the aperture in the valve contributing its elasticity, as well as the annular seating portion. In order that this disk may be secured to the holder removably and without risk of accidental detachment of the securing device, the cylindrical marginal portion of the disk is provided with a number of apertures d^1—preferably six or more—, and the holder is

provided with a corresponding number of correspondingly distributed apertures, c^5, which extend radially into the cylindrical shoulder, c^4, said apertures being arranged in pairs to receive the prongs of three wire staples, G, whose said prongs are deflected from their original and normal parallel position into converging position as they pass into the radial and therefore converging apertures, c^6. The convergence of the prongs when the staples are thus driven into place prevents the staples from escaping, but they may be readily withdrawn for detaching the disk when necessary for substituting a new one. Preferably the holder is provided with a slight marginal bead or flange, C^4, projecting from its face encompassing the disk and operating to check its expansion when pressed upon its seat, and thereby prevent any danger of bursting the disk. The cross-bar or bridge of the staples, G, does not project beyond the thickness or width of the flange, C^4, and therefore the presence of the staples does not increase the size of aperture in the body or cap necessary for admitting the valve to its seat.

I claim:—

1. In a valve of the class indicated, a valve head comprising a disk holder and a thin metal disk detachably secured to the holder and forming the seating element of the valve, said disk being lodged against the holder in contact therewith at a line or area outside the seating area, said disk being out of contact with the holder at and within the seating area, the sole securement of the disk to the holder being outside the seating area.

2. In a valve, in combination, a valve head having a round pocket at the back or upper side; a stem terminating in a transverse disk adapted to be inserted in such pocket by axial movement, the wall of the pocket being apertured transversely to the axis of the pocket at a distance from the bottom approximately the thickness of the terminal disk of the stem, and a forked or U-shaped key inserted through such apertures striding the stem above the disk.

3. In a valve of the class indicated, a valve head comprising a disk holder and a thin metal disk detachably secured thereto and forming the seating element of the valve, the disk being unapertured within the outer circumference of the seating area, but having marginal apertures in pairs outside said seating area, the holder being provided with a shoulder for centering the disk thereon, said shoulder having pairs of non-parallel apertures corresponding in position at their outer ends to the marginal apertures of the disk, and staples having their prongs entered through the respective pairs of apertures in the holder for connecting the disk to the holder.

4. In a valve of the class indicated, a valve head comprising a disk holder and a thin metal disk detachably secured thereto and forming the seating element of the valve, the disk being unapertured within the area bounded by the outer circumference of the seating area, but having marginal apertures in pairs outside the seating area, the holder being provided with a shoulder for centering the disk thereon, said shoulder having radial apertures in pairs leading in from its surface coinciding at their outer ends with the pairs of apertures of the disk, and staples having their prongs entered through the respective pairs of apertures of the disk and extending into the corresponding pairs of apertures of the holder for connecting the disk to the holder.

5. In a valve of the class indicated, a valve head comprising a disk holder and a thin metal disk detachably secured thereto and forming the seating element of the valve, the disk being unapertured within the area bounded by the outer circumference of the seating area, but having marginal apertures outside the seating area, the holder being formed with a shoulder for centering the disk thereon and an annular shoulder for seating the edge of the disk, said shoulder having apertures corresponding in position to the marginal apertures of the disk, and means taking through the apertures of the disk into the corresponding apertures of the holder for connecting the disk to the holder.

6. In a valve, in combination, a valve head having a round pocket at the back or upper side; a stem having a transverse terminal disk loosely fitting the pocket, adapted for axial insertion therein, the wall of the pocket being transversely apertured at opposite sides of a plane above the bottom of the pocket a distance sufficient to accommodate the disk, and a forked key inserted through the aperture above the disk embracing the stem and adapted to have its ends flexed for engagement outside the pocket wall.

In testimony whereof, I have hereunto set my hand, in the presence of two witnesses, at Chicago, Illinois, this 23d day of March, 1908.

ALVA CURTIS RICKSECKER.

In the presence of—
JULIA S. ABBOTT,
M. GERTRUDE ADY.