

No. 876,147.

PATENTED JAN. 7, 1908.

A. W. CADMAN.
VALVE DISK.

APPLICATION FILED JAN. 13, 1905.

Fig. 1.

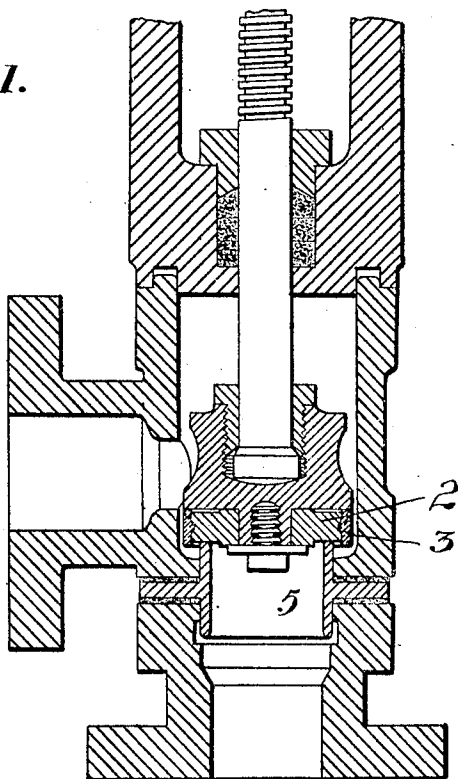


Fig. 2.

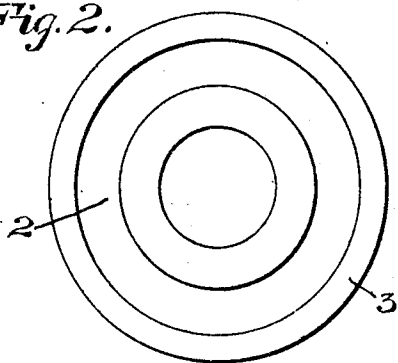
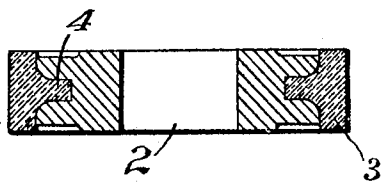


Fig. 3.



WITNESSES:

Warren W. Swartz
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INVENTOR.

A. W. Cadman
by Baker & Hayes
his attys

UNITED STATES PATENT OFFICE.

ALEXANDER W. CADMAN, OF PITTSBURG, PENNSYLVANIA.

VALVE-DISK.

No. 876,147.

Specification of Letters Patent.

Patented Jan. 7, 1908.

Application filed January 13, 1905. Serial No. 240,917.

To all whom it may concern:

Be it known that I, ALEXANDER W. CADMAN, of Pittsburg, Allegheny county, Pennsylvania, have invented a new and useful Valve-Disk, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical cross-section of a valve provided with my improved disk; Fig. 2 is a top plan view, and Fig. 3 is a view similar to Fig. 1 showing a modified form.

My invention relates to that class of valve disks wherein the portion contacting with the seat is formed of a special alloy or metal such as copper, which will provide close contacting and sealing of the valve. Heretofore in forming such valve disks I have secured a ring or rings of the copper or other suitable metal or alloy within an annular groove or grooves in the disk; but this method is difficult and expensive.

My present method provides a simple and efficient article which may be made at low cost, by providing a securing band or ring of harder and stronger metal or alloy surrounding a ring or disk of the copper or softer metal or alloy. The outer retaining ring is preferably formed by casting it about the softer ring or disk, through it may be secured in other ways.

In the drawing, referring to the form of Figs. 1 and 2, I show the disk body as formed of a copper disk or ring 2, having an annular peripheral groove or recess. The retaining ring or band 3, which may be of brass or other suitable metal or alloy is preferably cast about the copper ring in a mold, the brass filling the grooves and firmly contacting or uniting with the copper. During the shrinkage of the brass in cooling it compresses the copper, which is forced slightly in a lateral direction, thus preventing the brass ring from breaking or cracking during the cooling and shrinkage. After casting the disk may be faced on both sides by a lathe or suitable machine, when the same is ready for use.

In Fig. 3 I show a form similar to that of Figs. 1 and 2, except that a deep channel 4 is

formed at the bottom of the groove in the inner ring or disk to weaken its walls and allow the copper more freedom in shrinking by forcing the copper sidewise, to effectually prevent cracking or pulling apart of the outer ring during cooling. The hole through the disk may be screw-threaded for ease in turning and facing, but this is purely for ease in machining, the disk being held to the valve by a bolt or suitable securing means extending through the hole.

In the form shown the disk is reversible so that it may be turned over for using both of the copper faces which bear upon the valve seat 5. I prefer this form of the disk, though it may be non-reversible if desired.

The advantages of my invention result from the simplicity and cheapness of the device, which may be easily and rapidly formed.

Many variations may be made in the form and size of the disk without departing from my invention.

I claim:

1. A reversible disk valve, comprising an inner relatively soft metallic ring, and an outer surrounding retaining ring of harder metal, the inner ring having its peripheral portion constructed to compensate for the shrinkage of the outer ring; substantially as described.

2. A metallic valve disk having a central portion of relatively soft material, formed with a peripheral groove, and a retaining ring of stronger material cast upon the central portion and having a spreading portion engaging the peripheral groove; substantially as described.

3. A valve disk comprising a body portion of copper, and a surrounding ring of brass, the copper having a peripheral groove, and the brass ring being cast upon the copper and having a portion entering the said groove; substantially as described.

In testimony whereof, I have hereunto set my hand.

ALEX. W. CADMAN.

Witnesses:

H. M. CORWIN,
JOHN MILLER.