C. J. BENZENHAFER.

VALVE.

APPLICATION FILED AUG. 10, 1905.

903,436. Patented Nov. 10, 1908.

Fig. 1.

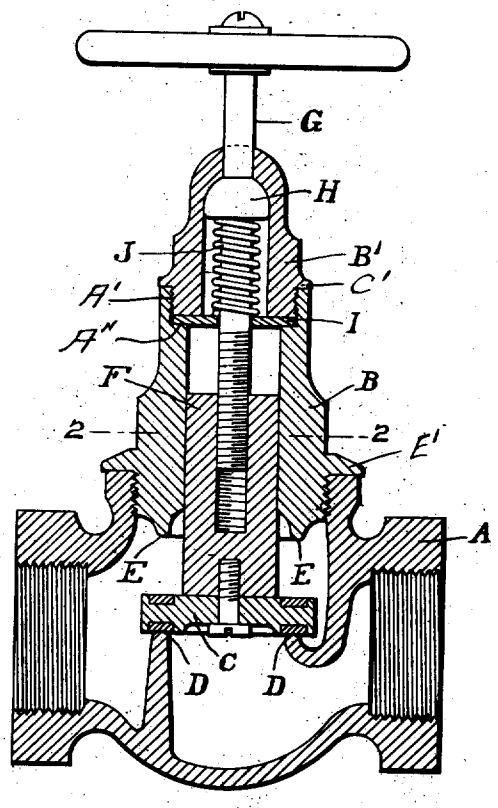
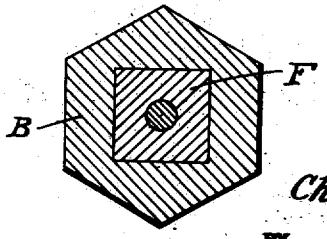


Fig. 2.



WITNESSES

D. Webster, Jr.

J. Williamson

INVENTOR

Charles J Benzenhafer

BY

ATTY.

UNITED STATES PATENT OFFICE.

CHARLES J. BENZENHAFER, OF PHILADELPHIA, PENNSYLVANIA.

VALVE.

No. 903,436. Specification of Letters Patent. Patented Nov. 10, 1908.

Application filed August 10, 1905. Serial No. 273,598

To all whom it may concern:

Be it known that I, CHARLES J. BENZENHAFER, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a certain new and useful Improvement in Valves, of which the following is a specification.

My invention relates to a new and useful improvement in valves, and has for its object to provide a construction in valves, particularly globe valves, in which the packing of the valve-stem is entirely done away with and provides against the escape of steam around the valve-stem, whether the valve is open or closed.

With these ends in view, this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claim.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, the construction and operation will now be described in detail, reference being had to the accompanying drawing forming a part of this specification, in which—

Figure 1 is a longitudinal sectional view through my improved valve showing the same closed; Fig. 2, a cross-section taken on the line 2—2 of Fig. 1.

A represents the body of the usual form of globe-valve, B is a bonnet through which the valve-stem extends, C is the valve-disk which is adapted to contact with its lower side the seat D to shut off the steam between the two ports, and the upper side of the valve-disk C is adapted to come in contact with the seat E formed upon the lower end of the bonnet so as to prevent the escape of steam upward around the valve-stem when the valve is fully opened. F is a slide adapted to slide in the bonnet B, and has secured to its lower end the valve-disk C. G is the valve-stem, the lower end of which is threaded into the slide F. H is a hemispherical shoulder which is ground to fit tightly against the underside of the cap B′ which is threaded into the bonnet. I is a plate secured between the bonnet and cap through which the valve-stem G passes, and J is a spring interposed between this plate or disk I, and the spring J always tends to hold the shoulder against its seat. Thus it will be seen that when the valve-stem is rotated in one direction the valve-disk C will be raised, and on a continued turning of the valve-stem the valve-disk will be forced against the seat E with a spring pressure and thus effectually prevent any steam upward around the valve-stem or gate, and while the valve is being closed the spring J will force the shoulder H tightly against its seat and prevent any escape of the steam at this time.

It will thus be seen that I have provided a valve in which no packing is used upon the valve-stem, but at the same time will effectually prevent the escape of steam around the valve-stem, and this valve will be exceedingly durable and economical, as it does away with the entire expense of packing, and does not need to be looked after like a packed valve, the slide F, of course, must be provided with means to prevent the same turning within the bonnet B.

The bonnet B at its lower edge is formed with an annular depending flange of contracted width as compared with said bonnet disposed mid-way of its inner and outer circumference which constitutes the seat E. Exteriorly the bonnet is threaded and at the upper ends of its threads is formed with an outstanding flange E′, the said threads and flange E′, engaging body A. At its upper end bonnet B is counterbored and interiorly threaded as at A′, the counterboring forming shoulder A″ on which plate I seats. Cap B′, at its lower portion is reduced in diameter and exteriorly threaded to engage in said interior threads A′, of the bonnet, the end of cap B′, seating directly on the upper face of plate I. Cap B′, has outstanding flange C′, which seats on the top edge of bonnet B. I have shown in the drawing the slide F made square in cross-section, as shown in Fig. 2, but it is obvious that any means could be employed for preventing the rotation of the slide, as for instance the same could be made cylindrical in shape with a feather or key-way to prevent the same rotating. It is also to be noticed that the cap B′, is of such form as to allow a sufficient movement of the same therein as to force the slide F, upon the seat D, should it be necessary to effect a sudden or quick closure of the valve. Of course it is not the intention of the invention that this should be the preferred manner of operating the valve, but it has been found advantageous when a quick or momentary closure is desired.

Of course I do not wish to be limited to the exact construction here shown, as slight modifications could be made without departing from the spirit of the invention.

Having thus fully described my invention, what I claim as new and useful, is—

A valve consisting of a body having a threaded portion, a bonnet having a threaded lower end engaging said body threaded portion and an outstanding flange at the top of said threads engaging said body, said bonnet at its lower end being formed with a depending annular flange of contracted width as compared with said bonnet which flange constitutes a valve seat and is disposed midway of the inner and outer circumference of said bonnet, the outer end of said bonnet being counterbored and threaded and forming a shoulder at the base of said counterbored portion, a plate seating on said shoulder, a cap having its lower end reduced and threaded into said outer end of the bonnet to bear at its lower edge on said plate, an outstanding flange on said cap seating on the outer end of said body, a valve stem in said cap and body having a shoulder thereon, a coil spring abutting said shoulder and seating on said plate, a slide in the bonnet connected to said valve stem, and a valve disk on said slide.

In testimony whereof, I have hereunto affixed my signature in the presence of two subscribing witnesses.

CHARLES J. BENZENHAFER.

Witnesses:
MARY E. HAMER,
S. S. WILLIAMSON.