

E. BISHOP.
VALVE.

APPLICATION FILED OCT. 13, 1911.

1,063,767.

Patented June 3, 1913.

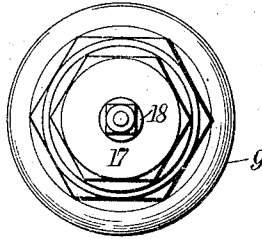


Fig. 2

Fig. 1

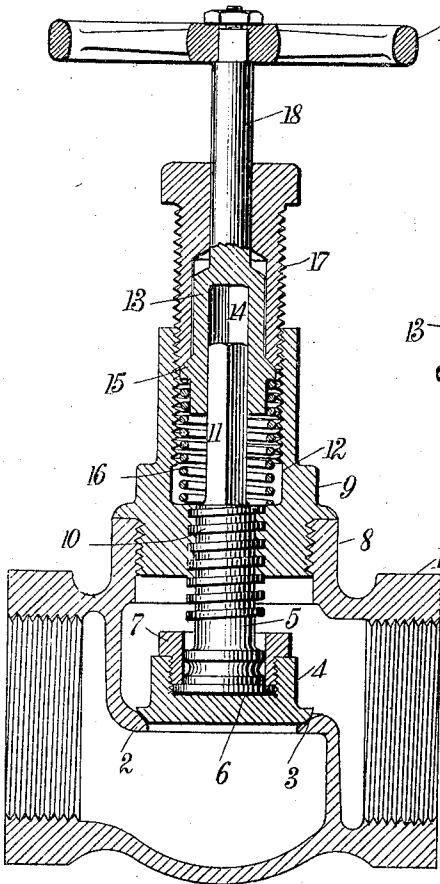
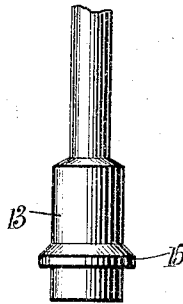


Fig. 3



WITNESSES
Benedict Goffe
Wm. F. Nickel

INVENTOR
Edward Bishop
BY *Mumford Co.*
ATTORNEYS

UNITED STATES PATENT OFFICE.

EDWARD BISHOP, OF EXCELSIOR, ARKANSAS.

VALVE.

1,063,767.

Specification of Letters Patent.

Patented June 3, 1913.

Application filed October 13, 1911. Serial No. 654,470.

To all whom it may concern:

Be it known that I, EDWARD BISHOP, a citizen of the United States, and a resident of Excelsior, in the county of Sebastian and State of Arkansas, have invented a new and Improved Valve, of which the following is a full, clear, and exact description.

My invention relates to valves for conduits, and particularly to valves intended to be located in steam pipes to shut off and regulate the supply of steam flowing there-through to a point where the same is made to do its work; and it comprises a novel construction of this sort wherein the valve head while being moved by the stem, at the same time has a movement independently thereof, and wherein the stem is protected against the action of the steam to guard against wear and corrosion.

Reference is to be had to the accompanying drawings forming a part of this specification, in which the same characters of reference indicate the same parts in all the views.

Figure 1 is a longitudinal section of one form of my improved valve; Fig. 2 is a top plan thereof with the operating hand-wheel removed; and Fig. 3 is a side elevation of the end of the operating stem which engages the valve stem.

On the drawings the numeral 1 indicates a valve casing having a partition 2 shaped to provide an opening surrounded by a beveled seat 3, on which rests the valve head 4 when the valve is in closed position. This head 4 is rotatably connected to the valve stem 5 by being bored out on top, as shown in Fig. 1, to receive a flange 6 on the lower end of the valve stem 5, the bore being threaded to engage with threads on a binding nut 7, which is screwed into the head 4 around the valve stem 5, and secures the head 4 thereon. The head 4, however, is not secured on so as to prevent rotation, but is merely carried upon the end of the valve stem so as to move up and down therewith.

The numeral 8 represents a boss projecting laterally from the valve casing, this boss being threaded internally to receive a nut or bonnet 9, with which the valve stem 5 has threaded engagement, as shown at 10. The upper end of the valve stem 5 is reduced to a squared section 11, which extends into a bore or recess 12, which is formed in the bonnet 11, this recess or bore 12 opening through the top thereof to give passage to the oper-

ating stem and means for holding the operating stem in proper relation to the valve stem. The squared portion 11 at the upper end of the valve stem 5 fits into a bore 14 of corresponding shape, in the thickened lower end 13 of the operating stem, which is indicated at 18. This thickened portion 13 of the operating stem is provided with a circumferential collar 15 adjacent its lower extremity, the upper side of this collar being beveled, as shown, and the lower side being perpendicular to the operating stem to provide a seat for a spring 16. This spring 16 is housed inside of the bonnet 9, and rests at its lower end in the bottom of the bore or recess 12 around the valve stem 5.

17 is a nut or gland which surrounds the operating stem 18, and has screw-threaded engagement with the wall of the recess 12 in the bonnet, and has its lower end shaped to fit snugly against the beveled upper surface of the collar 15. This nut can be screwed in or out to adjust the tension of the spring 16, in any manner required. The operating stem 18 extends through the nut or gland 17 and is provided on its outer end with a polygonal-shaped section to which is fitted a hand-wheel 19, by means of which the valve is operated. This hand-wheel 19 is secured by a suitable nut, and when the same is turned, it of course turns the operating stem with it.

The manner of operating the valve head 4 by the construction above described will be apparent. The spring 16 will keep the valve operating stem 18 pressed up against the lower end of the gland or nut 17, and the tension of this spring can be regulated at will by screwing the gland 17 in or out of the bonnet 9. When the hand-wheel 19 is turned to turn the valve operating stem 18, the valve stem 5 will be turned with it. The stem 18, however, will not move longitudinally, but when the valve stem 5 is turned it will move upward or downward, owing to its screw-threaded engagement with the nut or bonnet 9, and this will cause the valve head 4 to come into open or closed position. It will be understood of course that the reduced portion 11 of the valve stem 5 need not be square, but may be of any polygonal shape. The valve head 4, as above stated, is loose upon the end of the valve stem to the extent that it is free to rotate thereon, and thus form a snug fit at all times with its seat. It will also be apparent from the con-

struction of the valve as shown in Fig. 1, that the valve operating stem is protected from the action of the steam, because the valve operating stem is so connected with the valve stem that the former is located entirely outside of the valve casing, and the liability of corrosion is practically nullified. At the same time, every advantage in the way of ready and easy operation and proper adjustment is obtained.

The construction shown in Figs. 1, 2 and 3 is intended to illustrate how my improvements may be applied to valves of the common type that are now in use.

It will be noted that the operating stem can be taken off for repairs at any time, merely by unscrewing the nut or gland 17, after first screwing down the valve stem 5 to hold the valve head 4 to its seat; and this can be done without the flowing out or leaking of the steam from the casing 1, and without going to the trouble of cutting off the supply of steam flowing through the supply pipe, by means of the valve at the entrance thereof, (not shown) or in some other way.

The advantage of the construction above described is the fact that no packing is necessary to make the valve fit tight when mounted in position. The bonnet 9 is screwed home snugly enough to make packing between it and the boss 8 unnecessary, and the beveled surface of the collar 15 provide a sufficiently tight fit between the operating stem and the other parts which support the valve stem.

I wish to have it understood that I reserve to myself the right to make such small changes in the shape, size and arrangement of the parts as fairly fall within the scope and spirit of my invention.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. The combination of a valve bonnet, a valve stem in said bonnet and being of polygonal cross-section at its inner end, a gland engaging said bonnet and having a bore therethrough, an operating stem received by said bore and extending into said bonnet, said operating stem having a bore corresponding with the cross-section of the inner end of the valve stem and receiving the same, and having a circumferential collar having one side abutting against the inner end of the gland, said bonnet having an internal shoulder, and a spring engaging said shoulder and said collar to hold said collar and the inner end of said gland in engagement with each other.

2. The combination of a valve bonnet, a valve stem entering the same, a gland engaging said bonnet and having a bore, an operating stem received in said bore and extending into said bonnet, the inner ends of the valve stem and the operating stem being shaped to have slidable engagement with each other and to move in unison when the operating stem is turned, the said gland having a conical surface, and the operating stem having a circumferential collar having a beveled surface fitting against the conical surface on the gland, said bonnet having an internal shoulder, and a spring engaging said shoulder and the said collar to hold the beveled surface of the collar and the end of the gland in engagement with each other.

3. The combination of a valve bonnet having a bore therein, a valve stem entering said bore, a gland engaging said bonnet and having a bore therethrough, an operating stem received in said bore, the inner end of said valve stem and said operating stem being shaped to have sliding engagement with each other and to move in unison when the operating stem is turned, the operating stem having a collar to engage the inner end of the gland, said bonnet having an internal shoulder, and a spring engaging said shoulder and said collar to hold the collar and the end of the gland in engagement with each other.

4. The combination of a valve bonnet having a bore therein, a valve stem entering the bonnet and having a portion which is polygonal in cross-section adjacent its inner end, a gland engaging the bonnet having a bore therein, an operating stem passing through said bore and having a bore in its inner end shaped to correspond with the cross-section of the inner end of the valve stem to enable the valve stem and the operating stem to have sliding engagement with each other and to rotate together when the operating stem is turned, the operating stem having a circumferential collar having one side beveled, the said gland having a correspondingly-formed surface to receive said side, said bonnet having an internal shoulder, and a spring engaging said shoulder and said collar to hold the collar and the gland in engagement with each other.

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

EDWARD BISHOP.

Witnesses:

G. W. SATTERFIELD,
CHESTER HOLLAND.