

F. McCARTHY.

VALVE.

APPLICATION FILED DEC. 20, 1910.

1,001,970.

Patented Aug. 29, 1911.

2 SHEETS-SHEET 2.

Fig. 2.

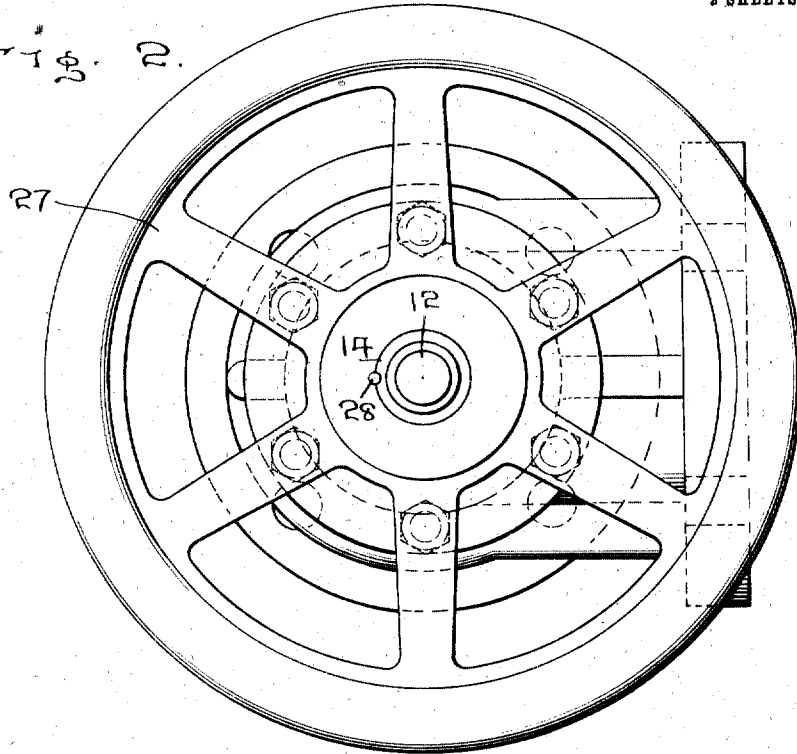
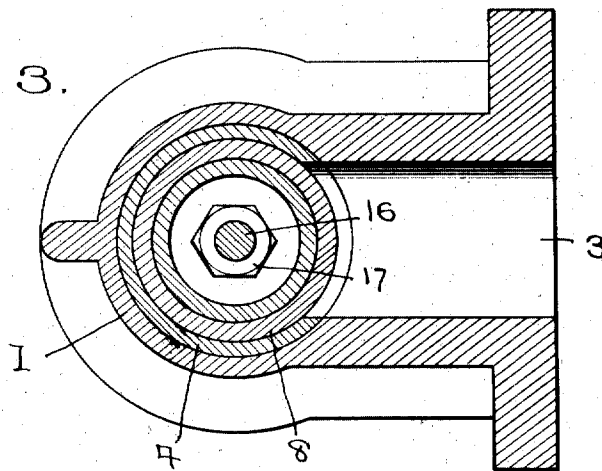


Fig. 3.



Inventor

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Witnesses

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VALVE.

1,001,970.

Specification of Letters Patent for an Improved Valve, Filed Aug. 29, 1911.

Application filed December 20, 1910. Serial No. 598,308.

To all whom it may concern:

Be it known that I, FELIX MCCARTHY, a citizen of the United States, residing at Pottstown, in the county of Montgomery and State of Pennsylvania, have invented certain new and useful Improvements in Valves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to new and useful improvements in valves and more particularly to that class known as blow off valves and is primarily an improvement on my former Patent 771,486, dated October 4, 1904, and my object is to provide a sliding piston within the valve body, one portion of which is provided with an opening adapted to register with the outlet port in the valve body.

A further object is to provide packing rings for the piston and so arrange said rings that when the valve is closed a ring will be on each side of the outlet port.

A further object is to provide a stem and means for moving the same lengthwise to open or close the piston.

A further object is to provide means for movably attaching the stem to the piston, and, a further object is to provide means to direct pressure on the packing rings to expand the same when the valve is closed.

Other objects and advantages will be hereinafter set forth and pointed out in the specification.

In the accompanying drawings, which are made a part of this application, Figure 1 is a longitudinal central sectional view through the valve. Fig. 2 is an end elevation thereof, and, Fig. 3 is a sectional view as seen on line 3-3, Fig. 1.

Referring to the drawings, in which similar reference numerals designate corresponding parts throughout the several views, 1 indicates the valve casing, which is preferably cylindrical-shaped and is provided at one end with an inlet port 2 and in its length with a laterally projecting outlet port 3. Fitting within the casing 1 is a lining 4 preferably of brass, which prevents the interior of the valve from corroding, one end of the lining resting against a shoulder 5 at that end of the casing in which the inlet port is formed, while the opposite end is engaged by a cap 6, which fits over the opposite end of the casing. Slidably mounted

within the casing is a piston 7, which is also preferably cylindrical, the inner end portion thereof being of such diameter as to snugly fit within the lining and said end is so arranged as to abut against the shoulder 5 when the valve is closed. A portion of the piston is reduced to receive a sleeve 8 between one end of which and a ledge 9, formed by reducing the size of the piston, is a packing ring 10, while a similar packing ring 11 is placed at the opposite end of the sleeve. The piston is operated by means of a stem 12, which is provided with exterior threads 13 and engages threads in a thimble 14 extending through the cap 6 so that when the thimble is rotated the stem will be moved lengthwise. The inner end of the stem is provided with a head 15, which enters the opening in the piston and is movably connected to the piston by extending a stud bolt 16 into the head and through a partition 17 in the piston, that end of the stud projecting through the partition having locking nuts 18 thereon. The stud bolt is of such length that the head can move a distance into the piston after the piston has been seated on the shoulder 5 and in order to employ such movement to compress the edges of the packing rings 10 and 11 to expand the same laterally, the outer end of the head 15 is provided with an extension 19, in which is formed a circumferential channel 20, to receive the outer end of the piston, the depth of the channel being such as to compensate for the movement of the head in the piston.

By providing the channel in the extension 19 a flange 21 is formed which engages the packing ring 11 and is of sufficient extent to normally hold the end of the piston a distance from the inner end of the channel. By constructing the head in this manner and connecting the same to the piston, as shown, if the valve should leak when the end of the piston is moved against the shoulder 5, a slight additional turn of the thimble 14 will force the flange 21 inwardly and thereby direct pressure against the two packing rings and the sleeve, causing said packing rings to expand laterally sufficiently to completely stop the leakage. The packing rings will only remain in their expanded position so long as the pressure of the flange is directed thereon and as soon as the thimble is operated to open the valve, the first action will be to remove the pressure of the flange

from the packing rings, the piston remaining stationary until the locking nuts have been moved against the partition of the piston. That portion of the piston adjacent to the inlet port is provided with an opening 22, which is adapted to register with the outlet port 3 when the piston is opened to its full extent and to prevent the steam, etc. from passing through the opening in the piston, a plug 23 is threaded into the interior of the reduced portion of the piston at a point between the opening 22 and the partition 17. It will further be seen that by threading the plug into the piston it can be readily removed to gain access to the locking nuts and stud bolt. The stem 12 is held against rotation by cutting away the teeth at one point to form a passage 24, into which projects a tongue 25 carried by a collar 26, said collar being seated in the opening in the cap 6 and is stationary therein. A hand wheel 27 is threaded onto the upper end of the thimble 14 and is fixed thereto by means of a set screw 28, which causes the thimble to rotate with the hand wheel. The inner end of the thimble is provided with a flange 29, which engages a shoulder 30 in the cap 6 and prevents the thimble from moving lengthwise. The head 15 is held in proper alignment with the piston 7 by attaching guide pins 31 to the head of the piston and extending the same through openings in the extension on the head.

It will be seen that the valve when closed will normally prevent leakage in view of the fact that the end of the piston is seated against the shoulder. It will likewise be seen that by giving the hand wheel a slight additional turn after the valve has been closed, the packing rings may be expanded and firmly engaged with the wall of the cas-

ing, and, it will likewise be seen that when the hand wheel is rotated in the opposite direction to open the valve, the pressure will be removed from the packing rings, thus permitting the same to assume their normal condition, so that the valve can be readily opened.

What I claim is:

1. A valve of the class described, comprising a hollow casing having an inlet port at one end and an outlet port in the side of the casing and at right angles thereto, a piston slidably mounted in the casing, a pair of packing rings surrounding the piston, a sleeve between said packing rings, a stem having a head adapted to enter the piston, means to movably attach the head to the piston and means on the head to direct pressure on the packing rings and expand the same laterally when the piston is closed.

2. A valve of the class described, comprising a hollow casing having an inlet port at one end and an outlet port in the side of the casing and at right angles thereto, a piston slidably mounted in the casing, a pair of packing rings surrounding the piston, a sleeve between said packing rings, a stem having a head adapted to enter the piston, means to movably attach the head to the piston, and means comprising an extension on the outer end of the head provided with a circumferential channel to receive the outer end of the piston to direct pressure on the packing rings when the piston is closed.

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

FELIX McCARTHY.

Witnesses:

J. HOWARD KENNEY,
FELIX McCARTHY, Jr.