

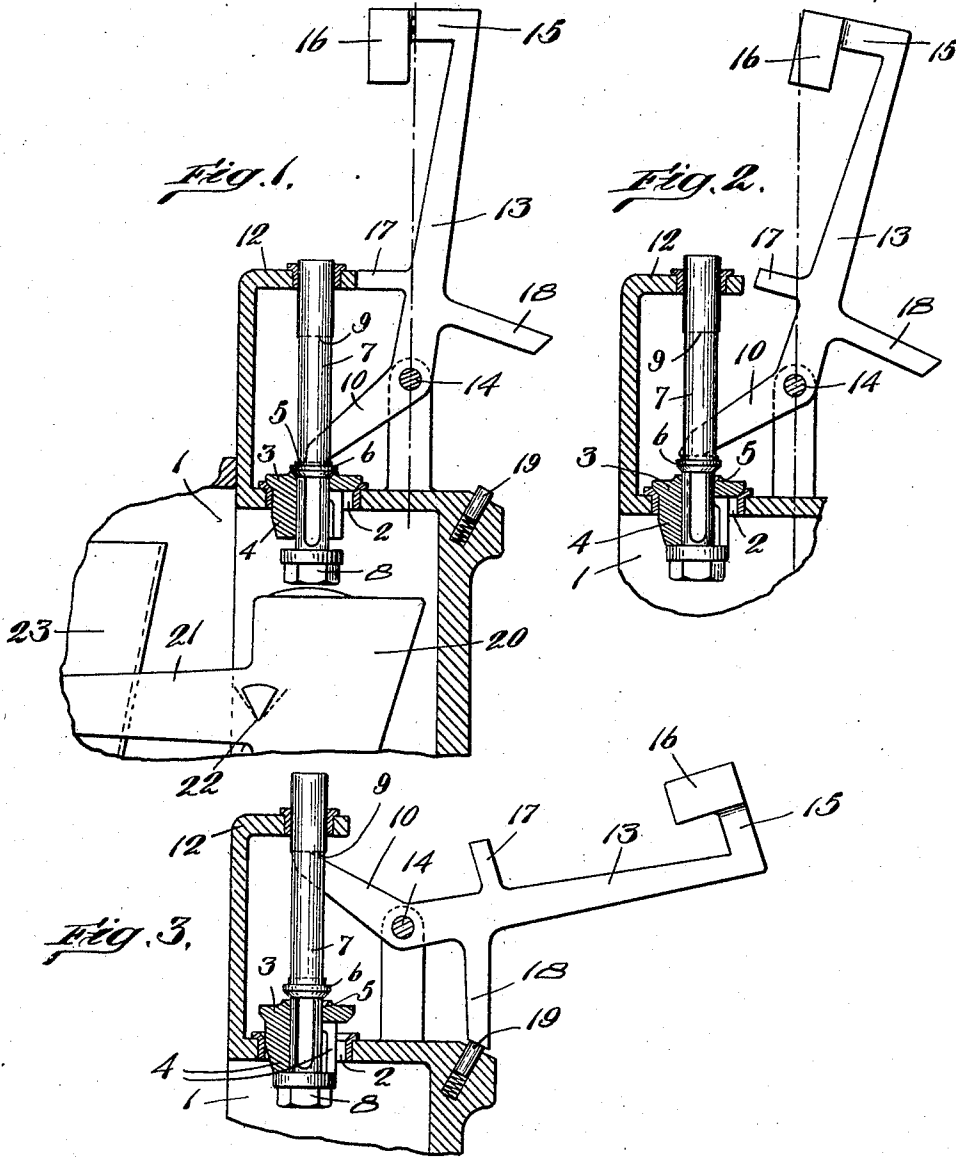
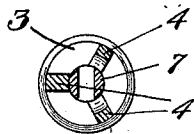
H. E. MORTON.

VALVE.

APPLICATION FILED MAY 3, 1915. RENEWED MAY 26, 1916.

1,307,450.

Patented June 24, 1919.



Witnesses:

H. B. Davis.
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Fig. 4.

Inventor:

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UNITED STATES PATENT OFFICE.

HARRY E. MORTON, OF BOSTON, MASSACHUSETTS.

VALVE.

1,307,450.

Specification of Letters Patent. Patented June 24, 1919.

Application filed May 3, 1915, Serial No. 25,425. Renewed May 26, 1916. Serial No. 100,155.

To all whom it may concern:

Be it known that I, HARRY E. MORTON, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Valves, of which the following is a specification.

This invention relates to valves especially designed for use in connection with vacuum-breakers, such for instance, as represented in my application for Letters Patent No. 752,288, filed March 6, 1913. The valve is adapted to serve as a closure for a compartment or chamber in which, at times, there is contained a vacuum, and at other times there is contained atmospheric pressure. The invention has for its object certain improvements, whereby the valve will be held tightly closed on its seat under both the conditions above recited, and also may be easily operated when there is vacuum contained in the chamber, thereby to open said chamber to the atmosphere; also, to produce a valve which may be associated with a vacuum-chamber which is adapted to be operated by means arranged within said chamber to open said chamber to the atmosphere, and to be reset by manual means which is arranged outside of the chamber; also, to construct a valve having associated therewith actuating-means arranged inside of said chamber, and resetting-means arranged outside of said chamber, said resetting-means also being arranged to serve as actuating-means for the valve, to supplement the action of the main actuating-means; also, to construct a valve and its resetting-means in such manner that the resetting-means may be given an initial progressive accelerated movement independent of the valve, and subsequently the accumulated momentum suddenly imparted to the valve with a tendency to lift it in a direction away from its seat; also, to associate with the main-valve an auxiliary-valve, said valves being concentrically disposed and arranged for sliding movement one with relation to the other, to permit initial movement of the auxiliary-valve in advance of the main-valve, said auxiliary-valve having means for engaging and lifting the main-valve during its final movement, the valve-seat of the auxiliary-valve being formed on the main-valve, and the valve-seat of the main-valve being formed on the wall of the chamber, and associating with said auxiliary-valve resetting-means which

is also arranged to supplement the action of the actuating-means in lifting both valves.

Figure 1, is a side elevation and partial vertical section of a main-valve and auxiliary-valve associated with it, and the actuating-means and resetting-means embodying this invention.

Fig. 2, is a similar view with the auxiliary-valve open.

Fig. 3, is a similar view with both the main and auxiliary-valves open, the resetting-means being in its abnormal position.

Fig. 4, is a transverse sectional view of the valves.

1 represents a fragmentary portion of a chamber, which, at times contains a vacuum, and at other times atmospheric pressure. Said chamber has an opening at 2, formed with a valve-seat for the main-valve 3. The main-valve consists of a body having a valve-formed end-portion to engage said seat, and downwardly extended wings 4, which project into the chamber, and a circular central hole through it having a valve-seat 5, at its upper end for the auxiliary-valve. The auxiliary-valve consists of a valve-plate 6, for engaging said seat 5, arranged on and intermediate the length of a stem 7, and said stem extends both upward and downward. The downwardly extended portion of the stem extends through the main-valve-body, and terminates below the extremities of the wings 4, and has secured to its extremity an enlarged portion, here shown as a nut 8, which is threaded on the stem. Said downwardly extended portion of the stem is made tubular, at least for a portion of its length, and the tubular portion has lateral openings, so that when the valve is lifted from its seat, passages are opened from the chamber to the atmosphere. The upwardly extended portion of the stem has an elongated slot 9, through it transversely to receive a finger 10, on the resetting-means, to be described, and the end-portion of the stem passes through a hole in a frame 12, which serves to guide its vertical movement. The upper end of the elongated slot terminates below the guide-frame.

The resetting-means here shown, consists of an arm 13, mounted loosely on a shaft 14, secured to a bracket on the frame, said arm having at its extremity an offset portion 15, provided at its extremity with a weight 16. Said arm also has at its opposite sides lateral projections 17, 18, the projection 17 be-

ing arranged to strike the guide-frame or other fixed point to serve as a limiting-stop for the arm when moved in one direction, and the projection 18 being arranged to strike a yielding buffer 19, on the wall of the chamber or other form of stop to serve as a limiting-stop for the arm when moved in the other direction.

A finger 10 is formed on said arm, and is arranged for engagement with the stem of the auxiliary-valve, as for instance, it is here shown as entering the long vertical slot 9 in said stem. When the resetting-means is arranged in its normal position, as shown in Fig. 1, its arm occupies a substantially vertical position, and the weight 16 occupies a position at the left-hand side of the line of direction, so that said weight acts to hold said arm in such position. The arm is moved by the engagement of the lower end of the slot 9 in the valve-stem with the finger 10, upon upward movement of the stem, and when the latter is moved a short distance, the arm and weight are correspondingly moved, and the weight passes to the other side of the line of direction, whereupon it acts by the force of gravity to move the arm into its other extreme position, as shown in Fig. 3. Such movement is necessarily quick and is progressively accelerated, and, as a result, the finger advances independently of the valve-stem, and suddenly strikes the upper end of the slot 9 therein, and thereby tends to impart to the stem a sudden blow tending to lift the auxiliary-valve, and by reason of the enlarged end-portion on the downwardly extended portion of the valve-stem, which is arranged for engagement with the wings of the main-valve, said main-valve is also lifted. The weighted arm may be engaged by hand and returned to its normal position, whereupon the valves are caused to resume their normal positions by gravity, and when closed will be held closed by the weighted arm through the finger bearing against the lower end of the slot 9 in the valve-stem. Such force to hold the valves closed is not great, yet is sufficient for the purposes desired, particularly as the valves are held closed at important moments by the vacuum in the chamber. The main actuating-means for the valves is arranged inside of the chamber, and, as here shown, consists of a more or less ponderous weight 20, arranged on a lever 21, pivoted at 22, the other end of said lever bearing a receptacle 23, adapted to receive water, and by the weight thereof to move said lever on its pivot and lift the weight 20. Said weight 20 is arranged directly below the lower end of the valve-stem, and when lifted will act to lift said stem, and thereby open first the auxiliary-valve, and then the main-valve, and will also act to lift the finger, so as to release the resetting-means in order that it may, for

the time being, serve as an auxiliary actuating-means.

I claim:—

1. The valve herein described consisting of a valve-seat, a valve-plate arranged for engagement with said seat, a stem bearing said plate and extended above and below it, its upper end-portion having an elongated slot, and its lower end-portion being made tubular and having lateral openings, actuating-means arranged beneath said lower end-portion of the stem and resetting-means having a finger which enters the slot in the upper end-portion of the stem, and adapted, when in one position, to engage the lower end of the slot, and when in another position, to engage the upper end of the slot, said resetting-means serving as a supplementary actuating-means while being moved into its abnormal position.

2. A vertically movable valve, actuating-means therefor arranged to lift it from its seat, said valve having a stem with an elongated slot, a finger arranged in said slot, a pivoted weighted arm bearing said finger, said arm being held in upright position with the finger engaging the bottom of the slot, by the weight arranged at one side of the line of direction, and movable to carry the weight to the other side of said line by said actuating means, whereupon it will be moved by the weight quickly, to move the finger along the slot and suddenly engage the upper end of the slot to assist in lifting the valve, said arm being accessible to admit of its being operated by hand in either direction, to reset the valve when moved in one direction, and to operate the valve independently of the actuating means when moved in the other direction.

3. The valve herein described consisting of a main-valve-seat and valve-body engaging it, having a center-hole through it having at its upper end an auxiliary valve-seat, an auxiliary valve-stem slidably arranged in said hole having a valve-plate for engagement with the seat therein, and having a slot arranged above, and an enlarged portion arranged below the main valve-body, pivoted actuating and resetting means having a finger arranged to work in the slot, and main actuating-means arranged beneath the enlarged portion of the auxiliary valve-stem, movement of which engages said portion and lifts it against the main-valve-body to lift said body, and also moves the resetting-means.

4. The valve herein described consisting of a main-valve-seat and valve-body engaging it, having a center-hole through it having at its upper end an auxiliary valve-seat, an auxiliary valve-stem slidably arranged in said hole having a valve-plate for engagement with the seat therein, and having a slot arranged above, and an enlarged portion

arranged below the main valve-body, piv-
oted actuating and resetting means having
a finger arranged to work in the slot, and
bearing a weight movable with it from one
5 to the other side of a line of direction, a
main actuating means arranged below the
enlarged portion of the auxiliary valve-stem,
movement of which engages said portion
and lifts the stem to move the valve-plate
10 away from its seat, and also move said en-

larged portion against the main valve-body
to lift said body away from its seat and also
move the resetting means.

In testimony whereof, I have signed my
name to this specification, in the presence of 15
two subscribing witnesses.

HARRY E. MORTON.

Witnesses:

B. J. NOYES,

H. B. DAVIS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."