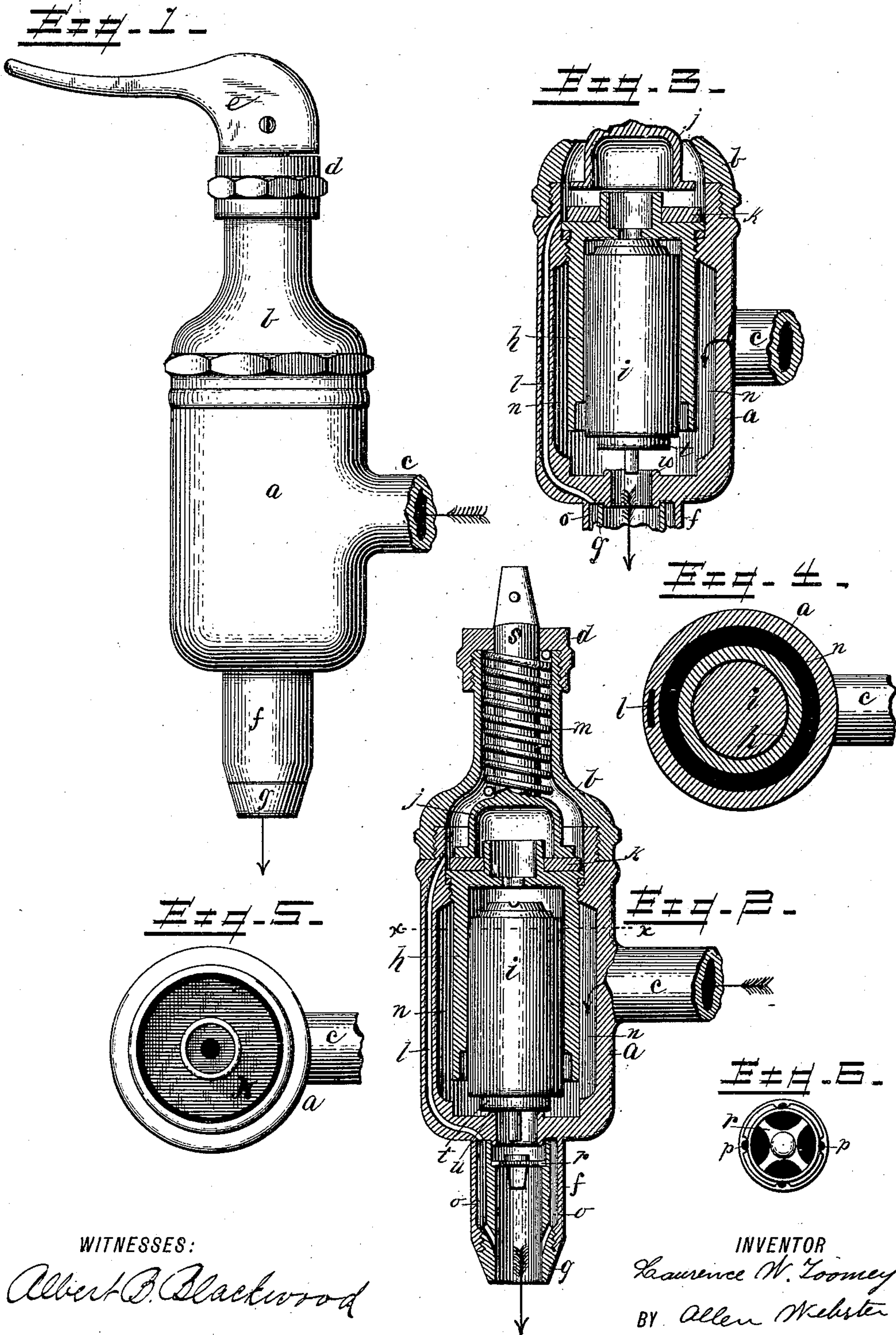


(No Model.)

L. W. TOOMEY.
VALVE.

No. 459,797.

Patented Sept. 22, 1891.



UNITED STATES PATENT OFFICE.

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VALVE.

SPECIFICATION forming part of Letters Patent No. 459,797, dated September 22, 1891.

Application filed February 25, 1891. Serial No. 382,806. (No model.)

To all whom it may concern:

Be it known that I, LAURENCE W. TOOMEY, a citizen of the United States of America, residing in Chicopee, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Valves, of which the following is a specification, reference being had to the accompanying drawings and letters of reference marked thereon.

10 In the drawings like letters of reference indicate like parts.

Figure 1 is a side elevation of my device. Fig. 2 is a side elevation of the same in section, showing the valve closed. Fig. 3 is a side elevation of a part of the same in section, showing the valve open. Fig. 4 is a plan view in section taken on line *xx* of Fig. 2. Fig. 5 is a plan view of the lower portion of the valve as seen with the upper detachable portion removed, and Fig. 6 is a plan view of the outlet-tube *g*.

In detail, *a* indicates the body portion of the shell; *b*, the upper part of the same; *c*, the inlet branch; *d*, a packing-ring; *e*, an operating-lever; *f*, outlet-tube connected with the shell; *g*, detachable outlet-tube; *h*, an inner shell; *i*, a plunger arranged therein; *j*, a cap arranged over shell *h*; *k*, a packing-ring; *l*, a water-way or conduit; *m*, a spring; *n*, a water passage or chamber between the main outer shell and inner shell *h*; *o*, conduit for waste-water passage; *p*, outlet-openings for conduit *o*; *r*, a spider; *s*, valve-stem; *t*, packing-ring on plunger *i*, and *u*, valve-seat.

35 The object of my invention is to construct a device wherein the pressure of water may be employed to assist in opening the valve and wherein the water will so operate as to prevent pounding when the valve is closed.

40 My object is, further, to provide a valve which may be readily and easily operated to open the valve to its fullest extent with but slight motion of the operating-lever; and, generally, my object is to provide a device which shall have the advantages hereinafter pointed out.

My invention consists in the construction and arrangement herein pointed out, whereby the objects of my invention are attained.

50 The construction will be readily understood on reference to the drawings, wherein is shown a shell *a*, having an inlet branch *c* ar-

ranged at one side thereof and having a centrally-arranged outlet-opening in the lower portion of the shell. An inner shell *h* is arranged to be removably mounted within the outer shell *a*, thus forming a water chamber or passage between the outer surface of the shell *h* and the inner surface of the shell *a*, around which the water has free passage.

60 Within the shell *h* is arranged a plunger *i* so as to have free motion within the shell *h*, the lower end of the plunger *i* being provided with a packing-ring *t*, which, when the valve is closed, rests upon the valve-seat *u*. The upper portion of the shell *h* is provided with a packing-ring *k*, and an opening is formed through the upper portion of the shell. Above the opening last referred to is mounted a cup-shaped part *j*, the lower face of which, when the valve is closed, rests upon the packing-ring *k*.

75 Attached to the cup-shaped cell *j* is a stem *s*, which passes through a packing-ring *d* and at its outer end is provided with any convenient means to move the stem *s* outward.

In the drawings I have shown a simple construction of lever adapted to be rocked either forward or backward, and thus the stem, and with it the cup-shaped shell *j*, is raised. A spiral spring *m*, mounted upon said stem, serves to normally maintain the cup-shaped shell *j* in position with its lower face against the packing-ring *k*. A conduit *l* is provided, which extends from the opening in the main shell, above the shell *h*, downwardly, and to the conduit *o*, the object of this water-passage being to allow the water which shall have flowed into the shell *j* to escape, and thus allow the plunger to move upward and open the valve. The water from the conduit *o* finds escape into the common water-exit passage through openings *p*. The main central outlet-passage is provided with a spider *r*, the office of which is to cause the water which may flow from the valve to form in a compact stream, instead of a broken stream, as frequently results where an unbroken outlet-passage is provided.

100 In the drawings, Fig. 2 represents the valve closed, while Fig. 3 represents the same open. When the cup-shaped shell *j* is raised, the water flowing from inlet branch *c* into the chamber *n* operates by its pressure to cause the plunger *i* to rise, and thus the packing-

ring *t* is carried away from the valve-seat *u* and the water flows through the central outlet-opening. When, however, the lever is released, the spring *m* operates to force the cup-shaped shell *j* against the packing-ring *k*, and the air or water which may be within the cup-shaped shell or below it at that time operates to force the plunger *i* downward and force the packing-ring *t* against the valve-seat *u*, and thus close the valve, and the pressure of the water forces a small portion of the fluid upwardly between the inner surface of the shell *h* and the outer surface of the plunger *i* until the open space above the plunger and below the inner surface of the cup-shaped shell *j* is substantially filled, thus operating to maintain the valve closed until the stem and cup be again raised. When the cup is raised, as before stated, the surplus water therein finds escape through the overflow or waste conduit *l* and outwardly through the conduit *o* and openings *p* into the main outlet-channel. The outlet-tube *g* is preferably threaded, as shown in Fig. 2, and fits within the outlet portion *f*, and the space between the inner surface of outlet portion *f* and the outer surface of the upper portion of the tube *g* forms the conduit *o*. Different-sized streams may be had by employing tubes *g* of different-sized main openings.

Having therefore described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of an outer shell provided with an inlet and an outlet port, the latter being provided with a valve-seat, an inner shell *h*, entirely open at the bottom and provided with an opening at the top, a plunger *i*, provided with a valve-disk and arranged to move within the shell *h* and project therefrom to close the outlet-port, a cover to set over the opening in the upper portion of the inner shell and form a chamber, means to raise said cover, and an outlet to receive the overflow, substantially as shown.

2. The combination of an outer shell provided with a horizontally-arranged inlet-port and at its lower portion a vertically-arranged outlet-port, an inner shell arranged therein to form a chamber between the walls of the two shells, a plunger movably mounted in the inner shell and arranged to project therefrom and close the outlet-port, a chambered shell or part having an opening into the inner shell at its inner end, a valve arranged to close the latter chamber, means to operate

said valve, and a conduit to carry off the overflow from said chamber, substantially as shown.

3. The combination of an outer shell having inlet and outlet ports, an inner shell *h*, a plunger *i*, arranged to move therein and project therefrom, a cup-shaped part *j*, arranged to set over the opening above the plunger and form a chamber, means to operate said cup-shaped part, and means to carry off the overflow, substantially as shown.

4. The combination of an outer shell having inlet and outlet openings, an inner shell *h*, centrally arranged therein and entirely open at one end and partially open at the opposite end, a plunger *i*, arranged to move within the latter and project therefrom to close the outlet-port when forced outwardly, a cup-shaped shell *j*, arranged to set over the opening in shell *h* above the plunger, a stem *s* to raise said cup-shaped part, a spring arranged to force it downward, and a lever arranged to raise said stem, substantially as shown.

5. An outer shell *a*, provided with an inlet-port at its side and an outlet-port depending from its lower portion, an inner shell *h*, arranged therein, open at the bottom and partially closed at the top, a conduit *l*, formed in the wall of the outer shell, extending from a point above the inner shell to a point below the valve-seat, a plunger *i*, arranged to slide within the inner shell and project therefrom to close the outlet-port, a part *j*, arranged to close the opening to the chamber formed above the plunger, and means to raise and lower the part *j*, substantially as shown.

6. The combination, with a valve having a main outlet and a supplemental overflow-outlet, of an auxiliary outlet-tube *g* of less diameter than the inner wall of the main outlet-tube and provided with openings *p* through its walls to connect the overflow to the main central opening, substantially as and for the purposes shown.

7. The combination of shell *a*, having conduit *l*, inner shell *h*, having an opening in its top portion and detachably mounted therein, a top portion *b*, threaded to part *a*, a cup-shaped part *j*, arranged as shown, a lifting-lever, stem *s*, spring *m*, and plunger *i*, substantially as shown.

LAURENCE W. TOOMEY.

Witnesses:

ALLEN WEBSTER,

FREDERICK A. TOOMEY.