

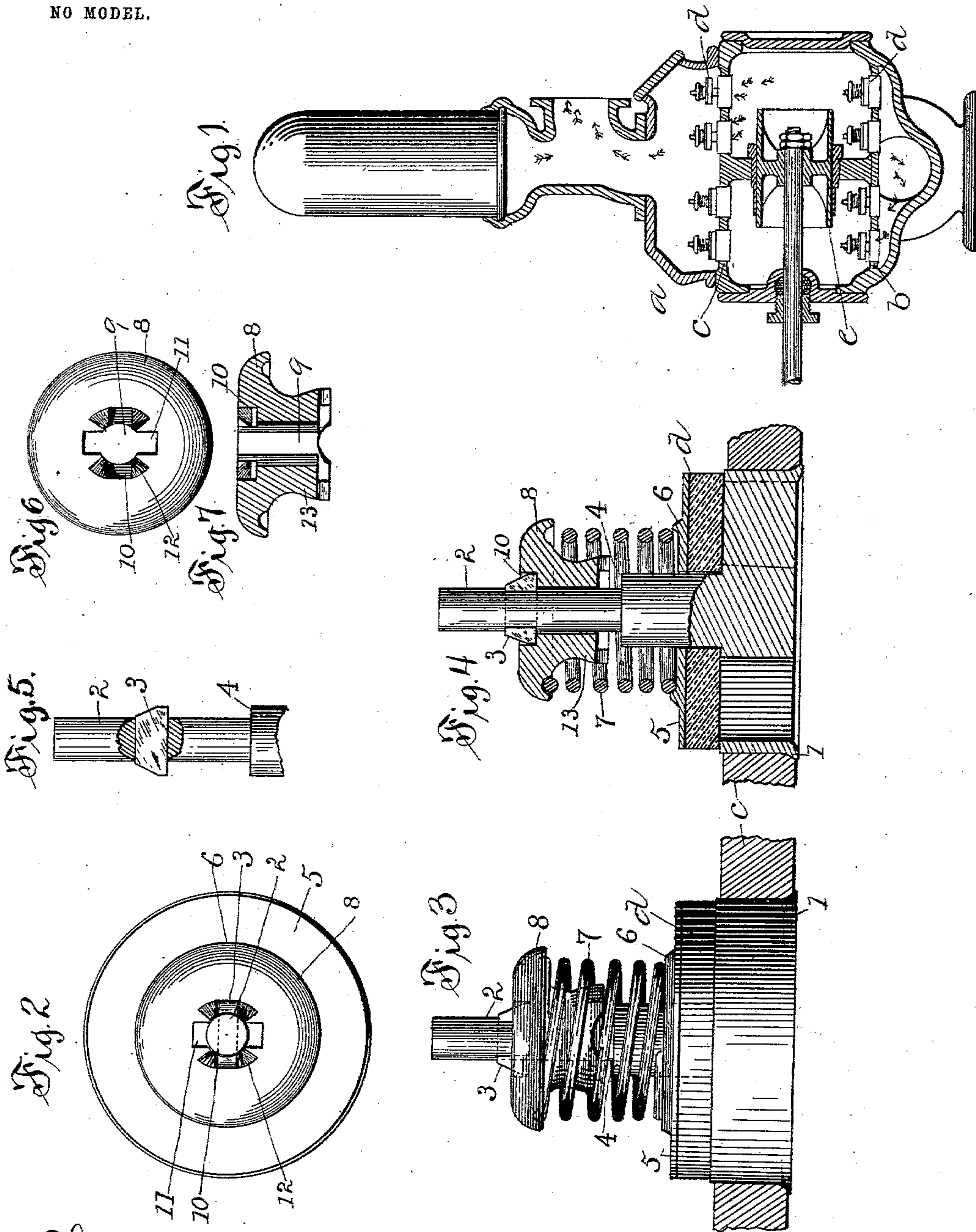
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W. H. STRATTON, DEC'D.
C. M. STRATTON, ADMINISTRATRIX.
VALVE.

APPLICATION FILED FEB. 3, 1902.

NO MODEL.



Witnesses:
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ADMINISTRATRIX OF SAID WILLIAM H. STRATTON, DECEASED.

VALVE.

SPECIFICATION forming part of Letters Patent No. 753,215, dated February 23, 1904.

Application filed February 3, 1902. Serial No. 92,289. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. STRATTON, a citizen of the United States, and a resident of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Valves, of which the following is a specification.

My invention relates more especially to valves used in pumps adapted for fire-extinguishing purposes; and the object of my invention is to provide for use in apparatus of this kind a valve so constructed as to be little liable to get out of repair or be broken and also one in which the valve may be easily and readily removed and replaced in an inverted position or renewed when necessity demands. A form of device by means of which these objects may be attained is illustrated in the accompanying drawings, in which—

Figure 1 is a view in section of a pump, illustrating the manner of use of valves of this class. Fig. 2 is a top or plan view of the device. Fig. 3 is a view in side elevation of my improved device and of a portion of a valve-deck on which it is supported. Fig. 4 is a detail view in section through the device shown in Fig. 3. Fig. 5 is a detail view showing the upper part of the valve stem or spindle. Fig. 6 is a detail top or plan view of the lock. Fig. 7 is a detail view in section through the same.

In devices of this class it is essential that a spring shall be used to act upon and quickly return the valve to its seat, and much annoyance, loss of time, and damage has been caused by reason of the working loose of the means employed to hold the spring. In such apparatus interengaging screw-threaded parts have commonly been used—as, for instance, a nut fitting the screw-threaded end of the stem or spindle on which the valve is mounted—and the repeated blows delivered by the valve in its operation causes the nut to work loose, thus releasing the spring and other parts of the device, which are liable to be forced into other locations in the pump or connections and cause irreparable damage.

In the apparatus shown and described herein I have provided means whereby the faults

above described are practically entirely obviated, there being little liability of any of the parts becoming loose.

In the drawings the letter *a* denotes a pump having a suction-deck *b* and a force-deck *c*, in connection with which the valves *d* operate, a plunger *e*, operated by any suitable means, being employed to draw the water into and force it through and out of the pump. The arrangement of these parts may be of any well-known construction, my invention residing in the construction of the valve appurtenant to either the suction or force deck. For the purpose of the description herein the valve will be considered as used in connection with the force-deck, it being obvious that the advantages of its use will be the same when used in connection with the suction-deck. A valve seat or ring 1 is secured in the deck *c*, openings for the passage of water being formed through this seat. A stem or spindle 2 is secured to the valve-seat, preferably being formed integral therewith. Locking-lugs 3 are formed on this stem, and a shoulder 4, facing the lugs, is also provided.

The valve *d* is composed of rubber or like material, preferably backed up by a plate 5, of metal. A rib 6 on this plate forms a recess in which the lower end of the spring 7 rests, the upper end of the spring thrusting against the under surface of a lock or abutment 8. The lock or abutment 8 has a central opening 9 for the reception of the stem 2, and preferably on diametrically opposite sides of this opening are recesses 10 of a size and shape to admit the locking-lugs 3, the bottom of the recesses being forced into contact with the under surface of the lugs by the spring 7. The lock or abutment is also provided with slots 11, located, preferably, on diametrically opposite sides of the opening 9, these slots extending through the lock and being also of a size and shape to admit the lugs 3. The surface of the lock is beveled, as illustrated at 12, these beveled surfaces extending into the recesses at opposite sides thereof. It will be noted that the interengaging parts between the lock or abutment and the stem constitute a means for normally holding the lock or abutment against

longitudinal or rotary movement and at the same time permit such longitudinal and rotary movements as are necessary for disengaging the parts. A skirt 13 projects from the under surface of the lock to a distance to permit the valve to rise sufficiently to admit the proper amount of water through the opening in the valve-seat. This skirt affords a stop for the valve and prevents the spring from being compressed to a degree to destroy its elasticity. This limiting of the movement of the valve also prevents undue noise caused by the valve as it is thrust to its seat.

In structures of this class after a certain period of use the valve becomes worn on that surface that makes contact with the valve-seat, and a common practice in such cases is to reverse the valve, and thus cure the defect. In the majority of instances the valve will be located in such position in the pump that it can be reached only with difficulty, the hand-hole through which access to the valves is had being of a size to admit one arm only of a person and the valve being located at arm's length therefrom. In such cases and where the springs are held by interengaging screw-threads a wrench which is required may be used by the sense of feeling only, the nut, spring, plate, and valve being thus removed, the latter reversed, and the parts then replaced in the same way. It will be seen that this operation will be attended with great difficulty, which is entirely obviated by my improved device. No tools are required for the removal of the valve. The lock is readily accessible to the hand, by which it is grasped, pressed downward, releasing the lugs from the locking sockets, given a quarter-turn, and upon release of the downward pressure the lock rises, the locking-lugs passing through the slots 11, and the parts may then be removed and replaced with little difficulty. If the spring should become broken and allow the lock to drop a certain distance, as the lock is forced upward in the successive rises of the valve should it have been turned in its falling movement the beveled surfaces 12 coming in contact with the lugs 3 will force the lock back to its former position, and it will thus be seen that there will be little liability of the lock working loose and freeing the other parts of the device even though the spring becomes broken.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In combination with a valve-seat, a valve mounted upon said valve-seat, a spring for holding the valve to its seat, a stem operatively arranged with relation to the valve, a removable abutment adapted for locking and releasing actions with relation to said spring, and interlocking parts appurtenant to the abutment and stem arranged to permit removal of the abutment upon a partial movement of one of the interengaging parts.

2. In combination with a valve-deck having openings therethrough, a valve mounted on the surface of said deck, a spring for holding the valve to its seat, a stem extending through the valve, an abutment separable from the valve-stem for locking the spring in place, and interengaging parts appurtenant to the removable abutment and stem whereby the abutment may be removed upon a partial movement.

3. In a valve device, a valve-seat with openings therethrough, a valve located on the seat, a spring for forcing the valve against its seat, a stem projecting through the valve and spring and having lugs, and a lock located on the stem and having openings adapted to permit the passage of lugs, and recesses arranged to receive the lugs.

4. In a valve device, in combination, a valve-seat having openings therethrough, a valve located on the seat, a spring for forcing the valve against its seat, a lock to hold the spring, and a stem extending through the valve, spring and lock, said lock and stem being provided with interengaging lugs and recesses, adapted to be locked and released upon a partial rotation.

5. In a valve device, in combination with a valve and a spring adapted to force the valve to its seat, a lock adapted to hold the spring, means for holding the lock, said lock and holding means being provided with interengaging lugs and recesses and with beveled surfaces extending into said recesses.

6. In a valve device, in combination with a valve, valve-stem and a spring adapted to force the valve to its seat, a lock for holding the spring separable from the valve-stem and having a stop located in the path of movement of the valve, means for normally holding the lock against longitudinal or rotary movement, including means for releasing the lock upon its partial rotation.

7. In a valve device in combination with a valve and a spring adapted to force the valve to its seat, a lock, separable from the valve-stem, a stem extending through the valve, spring and lock, means located on the stem and lock for normally preventing relative rotary and longitudinal movement of said parts, said means arranged for releasing the parts upon a partial rotation, and a stop located on the lock in the path of movement of the valve.

8. In a valve device, in combination with a valve and a spring adapted to force the valve to its seat, a lock separable from the valve-stem for holding the spring, a stem extending through the valve, spring and lock, said lock and stem having means for normally preventing relative rotary and longitudinal movement of the lock and stem, yet permitting said movements for disengaging the parts.

9. In combination with a valve and valve-seat, a stem operatively mounted with relation to said parts, a spring for holding the

valve to its seat, an abutment cooperating with the stem and separable therefrom for locking the parts in position and provided with parts cooperating with interengaging parts upon the stem, said abutment provided with a separate stop adapted to determine the maximum movement of the valve.

10. In combination with a valve and its seat, a spring for holding the valve to its seat, a stationary stem operatively arranged with relation to the valve and provided with a shoulder, an abutment or lock separable from the stem for holding the spring in position and provided with a stop extending toward the shoulder on the stem, interengaging parts between the stem and abutment arranged to permit rotation of the latter upon its depression against the shoulder of the stem.

11. In combination with a valve-deck and openings therethrough, a valve mounted on the surface of said deck, a spring for holding the valve to its seat, a stem extending through the valve and spring, a lock or abutment on the stem and separable therefrom, said lock and stem having interengaging fixed lugs and recesses cooperating therewith for the purpose specified.

12. In a valve device of the character described, in combination, the apertured valve-seat provided with a post, the valve centrally

apertured and arranged to move endwise relatively to the post to open and close the valve-seat opening, a spiral spring encircling the post for exerting a closing pressure to the valve, a spring-retainer comprising an annular axially-apertured central portion, and a spring-bearing flange, and said post and retainer being constructed, the one with a groove parallel with its axis, and the other with a lug adapted to play through the groove, and both arranged whereby, upon matching the lug with the groove the retainer may have an endwise spring-compressing movement relatively to the post, and whereby upon rotating the retainer the lug may serve as a stop for preventing the displacement of the retainer under the reaction of the spring.

13. In a fluid-controlling device including a valve-seat, a valve for said seat, a stem projecting through the valve, means for normally holding the valve to its seat, an abutment appurtenant to the stem for said holding means, and means appurtenant to the stem and abutment for preventing relative, axial or rotative movement of said abutment and stem.

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