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Patented Dec. 10, 1901.

R. L. SHAINWALD, JR.  
DEVICE FOR ACTUATING VALVES.

(Application filed Apr. 29, 1901.)

(No Model.)

Fig. 3.

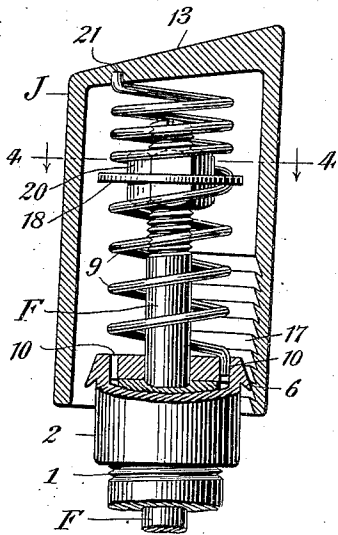


Fig. 1.

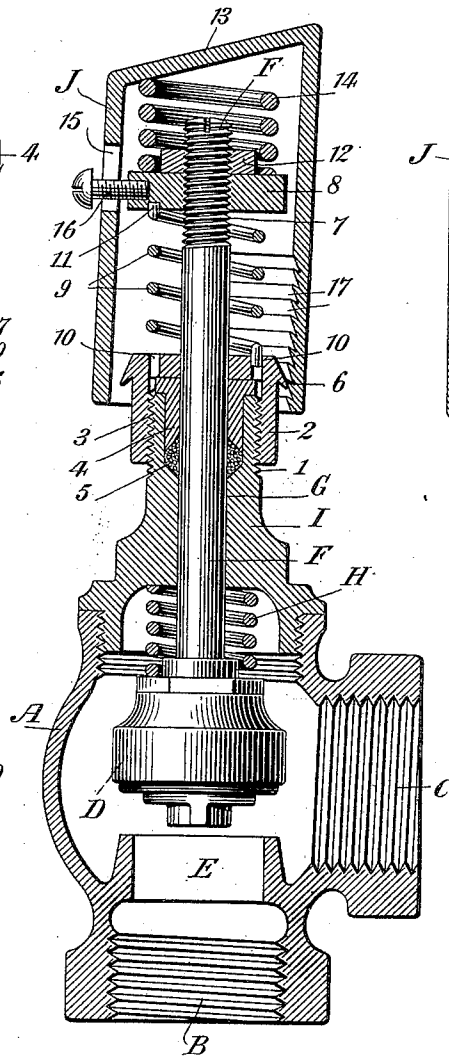


Fig. 2.

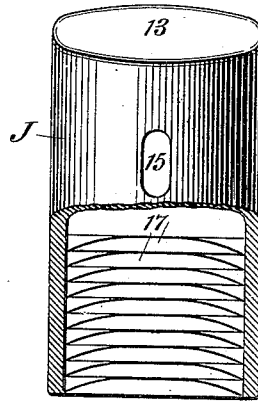
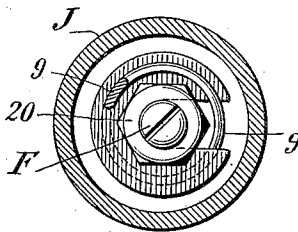


Fig. 4.



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# UNITED STATES PATENT OFFICE.

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## DEVICE FOR ACTUATING VALVES.

SPECIFICATION forming part of Letters Patent No. 688,705, dated December 10, 1901.

Application filed April 29, 1901. Serial No. 57,897. (No model.)

*To all whom it may concern:*

Be it known that I, RALPH L. SHAINWALD, Jr., a citizen of the United States, and a resident of the borough of Manhattan, New York city, New York, have invented a new and useful Improvement in Devices for Actuating Valves, of which the following is a specification.

My invention relates to an improvement in devices for actuating valves, and especially steam-valves with vertical spindles, which are used to open and close steam-radiators. It relates particularly to that class of device which is operated by the foot instead of by hand and in which a spring operates to lift the spindle of the valve when the actuating device is moved by the foot and to close and lock it when pressure, either by hand or by foot, is exerted upon the proper part of the device.

The invention will be best understood by reference to the accompanying sheet of drawings, in which—

Figure 1 is a vertical section of an ordinary steam-radiator valve, showing the device attached. Fig. 2 is a side view of the cap of the device with the lower portion partly broken away. Fig. 3 is a vertical section of an alternative form of the device without the valve itself. Fig. 4 is a cross-section of the upper part of the device on the lines 4 4 of Fig. 3 looking down in the direction of the arrow.

Similar letters and numerals refer to similar parts throughout the several views.

In the drawings, A represents the exterior shell of the valve, B the inlet, and C the outlet. D is the valve-disk. E is the valve-seat. F is the vertical spindle, to which the valve-disk D is attached, and G is the vertical bearing in the valve head or bonnet I, in which the spindle moves. The head I is provided on its upper exterior periphery with a screw-thread 1. A gland-nut 2 has threads cut upon its inner surface, so as to engage with and screw down over the upper end of the head I. A suitable gland-ring 4 is provided for the purposes of compressing the packing 5 when pressure is applied by the screwing down of the gland-nut 2. All of these parts are common to any valve used

with steam-radiators and need not be further described.

The upper end of the gland-nut 2 is provided with a beveled flange 6, the purpose of which will hereinafter be described. The upper end of the spindle F is provided with a screw-thread 7, over which a collar 8 is screwed. Between the collar 8 and the top of the gland-nut 2 is placed a spring 9, confined between these parts, the upper and lower ends of which engage with seats or openings 10 and 11, cut in the head of the gland-nut 2 and in the lower face of the collar 8, respectively. The collar 8 is threaded internally and made fast on the spindle by means of a lock-nut 12, which screws down over the end of the spindle F, as shown, and permitting of adjustment of collar 8. The upper end of the spindle F is surmounted by a cylindrical cap J, of suitable metal, the upper face of which, 13, is inclined at any convenient angle with reference to the front, so as to afford a convenient surface on which to place the foot. The cap J is placed over the top of the spindle F, and between it and the upper face of the collar 8 is placed a second spring 14 of considerably greater tension than the spring 9. For the purposes of preventing the cap J from rotating a slot 15 is formed in the cap on the side of the lowest point of the inclined surface 13, and a screw 16 is inserted, which screws into the periphery of the collar 8. For the purpose of enabling the cap to be turned so as to present the inclined surface at the proper position for working without reference to the situation of the valve a number of seats 10 are provided upon the top of the gland-nut 2, as shown in Figs. 1 and 3, in which the end of the spring is fitted according to the particular position to be assumed by the cap. In this manner the cap may be so adjusted as readily to operate the valve in practically any position. The inner rear surface of the cap J is provided with a series of receding ratchet-teeth 17, cut upon a portion of the inner surface of the cap, as shown in Figs. 1, 2, and 3. Any convenient number of them may be employed. These serve to engage with the sharp beveled flange or face 6 of the gland-nut 3 in the manner shown in Figs. 1 and 3 and to hold

the cap at any desired point, substantially in the manner shown.

The valve D is normally held in an open position, as shown in Fig. 1, by means of the expansive force of the spring 9. When, however, pressure is exerted upon the surface 13 of the cap J through the medium of the spring 14, the valve descends and closes, and therefore any device which will operate to hold the spring 14 down and compress it will operate to close the valve. The yielding of the spring 14 after the valve has been seated allows the cap J to descend a further distance, equal to one or more of the ratchet-teeth and when the teeth engage the flange 6 the spring is further compressed and a constant force is exerted on the valve equal to the difference in pressure exerted by the two springs 14 and 9. A third spring H is provided, which, though not indispensable, serves as a cushioning-spring and relieves the pressure upon the valve-head when the valve is opened.

The method of operation is as follows: When it is desired to close the valve, the cap J is pressed down by the foot until the valve is closed. The spring 14 will then begin to be compressed, and the cap J will lock onto the beveled flange 6, and the closed valve will then become locked. It is evident that the harder the spring 14 is compressed the tighter will the cap be locked. This is due to the action of the upper part of the spring 14, which by meeting the top of cap J to the front and eccentrically serves to press inward the ratchet side of the cap, thus economically performing an operation which otherwise would be achieved only by placing another spring between the front of cap J and the gland-nut 2. It will be obvious that when the cap J is moved in the direction shown by the arrow in Fig. 1 and connection is broken between the beveled flange 6 and the particular ratchet-tooth with which the same is engaged the cap J will be released, the spring 9 will expand, and the valve will resume the position shown in Fig. 1. It will also be obvious that this may be effected in any desired manner, either by the hand or by foot, as only very slight pressure will be necessary to effect this disengagement.

In the form shown in Fig. 3 two springs made of a single piece of wire are used instead of the two separate springs 9 and 14, (shown in Fig. 1,) and the desired difference in force required to compress them is effected by varying the pitch of the coils of the two portions. The division of the spring is effected by a plate 18, provided with an opening 19, through which the wire passes, and which plate is adjustably locked upon the screw-thread 7 of the spindle by two lock-nuts 20 and 21, as there shown. The upper end of the spring is turned in such a manner as to engage with a seat 22 in the upper end of the cap J, which prevents the cap from

turning in the same manner as the screw 16 does in the construction shown in Fig. 1. There is no difference in principle between the two constructions, the only effect being that the two springs are united together instead of being separate.

I claim as my invention—

1. The combination with a valve having a vertical spindle, of a spring acting upwardly on the spindle, a device for locking the spindle after it is depressed, and a spring acting downwardly on the spindle for keeping the valve seated, after locking.

2. The combination with a valve having a vertical spindle, of a spring acting upwardly on the spindle, a device for locking the spindle after it is depressed, a spring acting downwardly on the spindle for keeping the valve seated after locking, and a spring for causing the spindle when released to rise gradually.

3. The combination with a valve having a vertical spindle, of a spring acting upwardly upon the spindle, and surrounding the same, a cylindrical metal cap surrounding the spindle and spring provided interiorly, on one side with receding ratchets, a circular projecting flange on the gland-cap of the valve, with which the ratchets engage and lock the spindle when it has descended and a spring acting downwardly upon the spindle which keeps the valve seated after locking.

4. The combination with a valve having a vertical spindle, of a spring acting upwardly upon the spindle, a cylindrical metal cap provided interiorly on one side with receding ratchet-teeth surrounding the spindle and spring, a circular projecting flange on the gland-cap of the valve into which said ratchet-teeth lock, a spring acting downwardly upon the spindle, which keeps the valve seated after locking and a device for keeping the cap from turning around the spindle after it has been set to the desired position.

5. The combination with a valve having a vertical spindle, of a spring surrounding the spindle and divided into two parts of different pitch, one acting upwardly thereon, to keep the valve seated after locking, a cylindrical metal cap surrounding the spindle and spring, provided interiorly on one side with receding ratchet, a circular projecting flange on the gland-cap of the valve, into which said ratchet-teeth lock, a device for keeping the cap from turning around the spindle after it has been set to the desired position, and a spring for causing the spindle when released to rise gradually.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 26th day of April, 1901.

RALPH L. SHAINWALD, JR.

Witnesses:

MAURICE WERTHEIM,  
JAMES ROSCOE NASH.