Jan. 12, 1932. R. E. KRAFT 1,840,959

FIRE OR HEAT CLOSING VALVE

Filed May 26, 1930

Fig. 1.

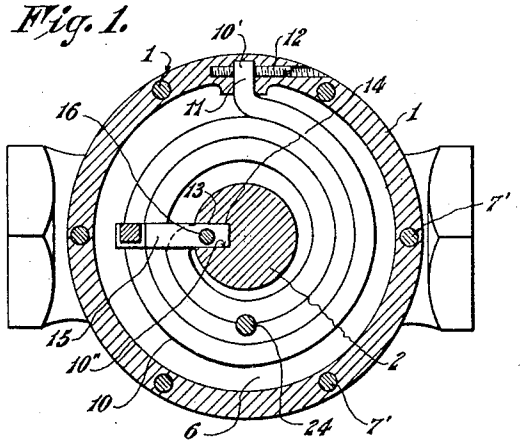


Fig. 2.

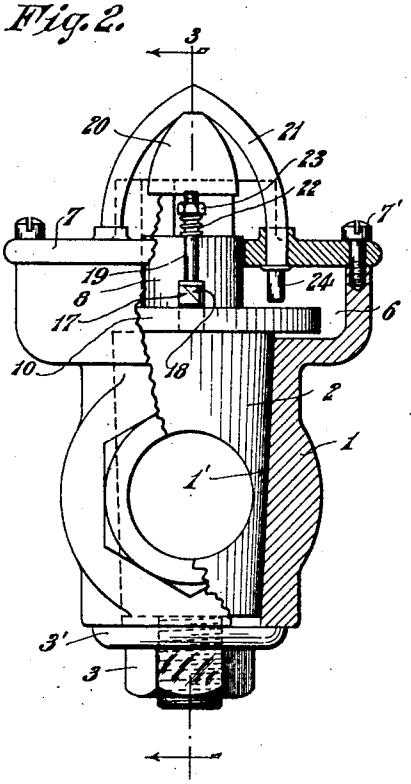
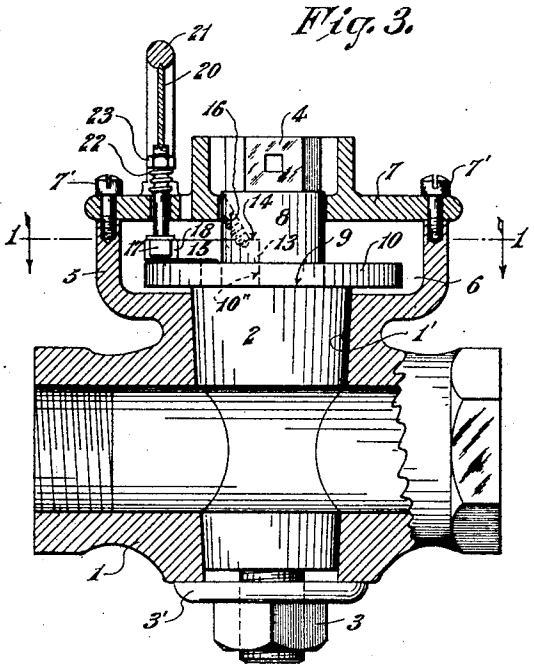


Fig. 3.



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UNITED STATES PATENT OFFICE

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FIRE OR HEAT-CLOSING VALVE

Application filed May 26, 1930. Serial No. 455,507.

This invention relates to improvements in valves of the type that are automatically operated at a predetermined temperture, in case of fire, or excessive heat, and the object of my improvements is to provide a simply controlled, dependable, shut-off, or valve, for the purpose of shutting off the flow of water, gas, oil, or other supplies leading into a building, where fire or an excessive heat occurs. Oftentimes, explosions of gas occur, because the flow is not shut off, and also damage from water. I attain these objects by means of the construction illustrated in the accompanying drawings, in which

Fig. 1 is a plan view in section, taken on line 1—1 of Fig. 3, showing plug and coiled spring in wound-up condition.

Fig. 2 is a vertical sectional view, partly in elevation, and

Fig. 3 is a vertical sectional view on the line 3—3 of Fig. 2 showing the spring retaining means and the valve open.

Similar numerals refer to similar parts throughout the several views.

The valve body 1 is formed with an opening 1′ to receive and support the tapered shut-off plug 2, which is adjustable vertically, by means of the nut 3 and washer 3′ and the head 4 on which a wrench may be applied. The valve body is formed with an integral extended portion 5 to provide an opening 6 at its top; this opening being closed after the assembly of the parts by the cover plate 7 and cap screws 7′. The plug 2 is formed with an integral and extended portion 8 at the top and of smaller diameter than the upper portion of the main plug 2 for forming the shoulder 9, upon which rests the coil spring 10 in the opening 6. The coil spring 10 is mounted with a bent end 10′ firmly secured to the valve body 1, in a recess at 11, by means of the lock screw 12, and the other end 10″ is inserted in a recess 13 in the part 8 of the plug 2. In the upper part of the recess 13 is inserted one end 14 of the spring retaining or lock bar 15, both lock bar and end 10″ of the coil spring 10 being held in place with the lock or set screw 16, as shown. The opposite end of the lock bar 15 is formed with an inclined cammed surface 17. Engaging this surface 17 of the bar 15 is the similarly inclined or cammed surface 18 on the end of the lock pin 19, which is normally held in the engaged locking position by means of the fusible metal plate 20, the lower or one edge of which rests upon the upper end of pin 19, and the other, or upper edge, engages the fixed yoke-shaped frame 21, mounted on and secured to the cover plate 7. The upper part of the pin 19 is threaded, and the coil spring 22 is mounted thereon, its tension being adjusted by the nut 23. A stop 24 is secured to the cover 7 to retain and position the plug 2 in a closed position at 90° from its normally open position against the tension of the coil spring 10.

In operation, it is apparent that, when excesive heat, or fire, melts the fusible plate 20, the spring retaining or lock bar 15 will be released by the double or combined action of the coil spring 10, the expansion spring 22 and co-operating inclined surfaces 17 and 18; the coil spring 10 will immediately and quickly turn the plug 2 and close the valve. The stop 24 will now be engaged by the spring retaining bar 15. The valve is re-set in its normally open position by applying a wrench on the part 4 to rotate the plug into its normally open position. The lock pin 19 is depressed into engagement with the bar 15 against the tension of the spring 22. The fusible member 20 is now inserted or put in place.

What I claim is:

1. An automatically operated shut-off valve comprising a body, a shut-off plug therein, a spring attached to the plug and to the body, a lock bar attached to the plug, a pin engaging the lock bar to retain the valve open and the spring under tension, and a fusible member engaging the pin and exposed to the surrounding temperature for releasing the pin and bar at a high temperature, as described.

2. A valve, for the purpose described, comprising a body having a plug receiving opening, a shut-off plug in the opening, a coil spring attached to the plug and to the body respectively, a lock bar attached to the plug, a spring actuated pin engaging the lock bar

to hold the plug in open position, inclined co-operating surfaces between the lock bar and pin, a valve cover, a frame on the valve cover, a fusible member or plate inserted between the pin and the frame, the spring actuated pin operating against the fusible member to release the pin from its engagement with the lock bar, when the fusible member melts, and a stop to retain the shut-off plug in its closed position against the tension of the spring, as described.

3. An emergency valve, for the purpose described, comprising a body member having a valve receiving opening, a valve therein, means for retaining the valve in its normally open position and for permitting it to automatically close at a predetermined temperature comprising a spring secured to the valve and body member for closing the valve, a bar with an inclined surface connected to the valve, a pin having an inclined surface engaging the said surface of the bar, a fusible member for retaining the said surfaces in contact, which, when it melts, releases the pin and bar and permits the spring to turn the valve into its closed position.

In testimony hereof, I have subscribed my name this 14th day of May, 1930.

RUSSELL E. KRAFT.