

**1,551,872**

# AUTOMATIC VALVE OPERATING DEVICE

Filed Nov. 28, 1923

FIG. 1.

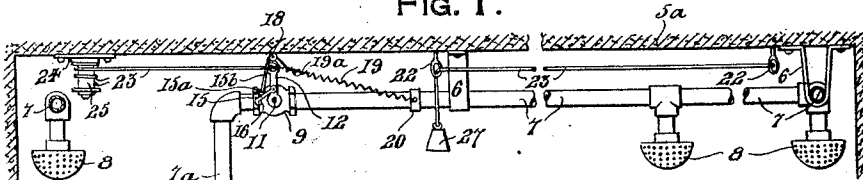


FIG. 2.

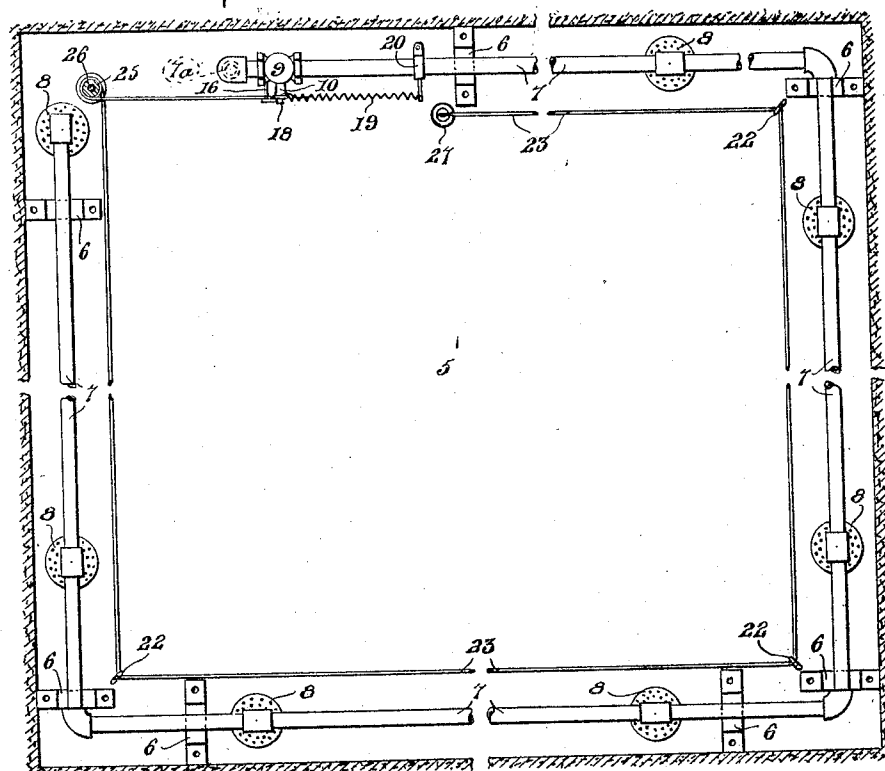


FIG. 3.

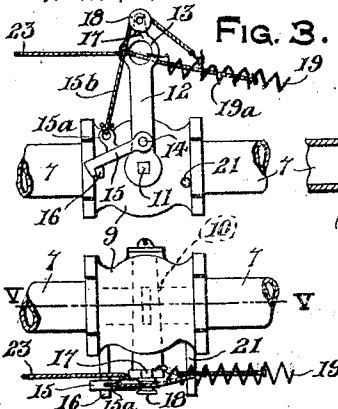


FIG. 5.

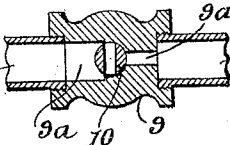


**FIG. 6.**

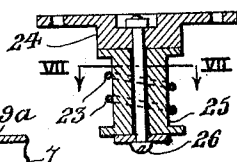
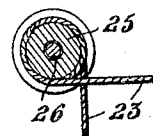


FIG. 7.



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## UNITED STATES PATENT OFFICE.

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AUTOMATIC-VALVE-OPERATING DEVICE.

Application filed November 28, 1923. Serial No. 677,468.

*To all whom it may concern:*

Be it known that I, STANISLAW FUDALSKI, a citizen of Poland, residing at Glenwhite, in the county of Blair and State of Pennsylvania, have invented certain new and useful Improvements in Automatic-Valve-Operating Devices, of which the following is a specification.

This invention relates to new and useful improvements in automatic valve operating devices especially adapted for fire sprinkler systems.

An important object of the invention is to provide a device that will automatically operate the control for a sprinkler system when fire occurs in the vicinity thereof.

A further object of the invention is to provide a device of the above mentioned type which is of exceedingly simple construction and one that may be manufactured at a very nominal cost.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawing forming a part of this specification and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a partly sectional and partly side elevational view of a fragmentary portion of a room with a sprinkler system arranged therein and with a portion of the automatic operating device which controls the valve that is operatively connected with the said sprinkler system,

Figure 2 is a top plan view of the sprinkler system and valve operating device associated therewith and in readiness for operation should a fire break out within the room in which this system is arranged,

Figure 3 is a fragmentary side elevational view of the valve which controls the flow of water through the sprinkler system and the operating device associated with the said valve,

Figure 4 is a top plan view of Fig. 3,

Figure 5 is a longitudinal sectional view taken upon line V—V of Fig. 4,

Figure 6 is a longitudinal sectional view of a friction element which forms a part of this invention, and

Figure 7 is a transverse sectional view taken upon line VII—VII of Figure 6.

In the drawing, wherein for the purpose of illustration is shown a preferred embodiment of this invention, the numeral 5 designates the room within which this sprinkler system and automatic valve operating device are arranged. It is to be understood that this room may be employed for any purpose desired, such as a garage, warehouse, store, living quarters, etc. Suitably secured to the ceiling 5<sup>a</sup>, as by the pipe straps 6, is the sprinkler system which embodies the piping 7 and the suitably spaced sprinkler heads 8. This piping 7 is provided with a supply pipe 7<sup>a</sup> which is suitably connected to the piping designated by the numeral 7 by means of a valve housing 9 which is provided with a rotary plug valve 10 positioned therein. It is to be understood that this valve housing 9 and rotary plug 10 may be of any well known form.

In Figs. 1 to 4 inclusive, it will be seen that this rotary valve plug 10 is provided with a projecting stem 11 to which is suitably secured the vertically extending valve operating arm 12 which is provided with an enlarged apertured portion 13 adjacent its outer end. It is to be understood that when the valve plug operating arm 12 is in the position illustrated in Figs. 1 to 4 inclusive, that the passageway 9<sup>a</sup>, through the valve casing 9 is closed by the said rotary plug valve 10, as best illustrated in Fig. 5. The valve operating arm 12 is intended to be illustrated as extending vertically in these various views. Pivotaly connected to the valve operating arm, as at 14, is a latch member 15 which is provided with a hooked outer end that is intended to engage the pin 16 carried by the outer surface of the valve housing 9 and is employed for retaining the said valve operating arm 12 in its vertically extending position. The extreme upper or outer end of the valve operating rod 12 is provided with a suitable extension 17 to which is journaled a grooved wheel 18. Suitably connected to the aperture in the enlarged portion 13 of the valve operating arm 12 is a coil spring 19 which extends to a bracket 20 which is clamped to the portion of the piping 7 spaced slightly laterally from the valve housing 9. It is intended that when the valve operating arm 12 is in its vertically extending position, the spring 19 will be under tension and will be endeavoring to move the arm 12 into a horizontally extending position against the stop 21 which is carried by the valve housing 9. It will be seen by this arrangement that the spring 19 is endeavoring to move the valve

to its open position and the latch member 16 is retaining the said valve in its closed position.

Extending around the room, in any desired manner, and supported by the eye screws 22 is a continuous cord 23 which is connected at one end to one of the convolutions of the coil spring 19 as illustrated in Fig. 3. It will be seen that the point of connection between the cord 23 and the spring 19 is spaced from the point of connection of the spring 19 with the apertured enlarged portion 13 of the valve operating arm 12. Spaced a suitable distance from the valve operating arm 12 is a bracket 24 which is suitably secured to the ceiling 5<sup>a</sup> and carries the rotatable spool or grooved pulley 25. It is intended that the bolt 26, which connects the spool or grooved pulley 25 to the bracket 24 may be so adjusted that the said element 25 will be permitted to rotate, but will not rotate freely. The cord 23 is intended to be passed around this spool or grooved pulley wheel 25 any desired number of times and that this connection provides a frictional holding means for the said cord to relieve a portion of the pull of the spring 19. The opposite end of this cord 23 is provided with a depending weight 27 which operates to hold the said cord in a taut or stretched condition. It is intended that the weight 27 be sufficient to exert a pull upon the spring 19 which will cause the portion of the same, designated by the numeral 19<sup>a</sup> and which is positioned between the point of connection of the cord 23 to the spring 19, in a slack or sagging condition. It will be seen with this arrangement, that the cord 23 will prevent the spring 19 from exerting a pulling force on the valve operating arm 12. The latch member 15 is provided with an apertured ear 15<sup>a</sup> to which is connected the cord 15<sup>b</sup> which passes upwardly and around the grooved wheel 18 and is suitably connected to the section 19<sup>a</sup> of the coil spring 19.

The operation of the device embodying this invention is as follows:—

With all of the elements arranged in their various positions, as illustrated in the different views, the system is in readiness for operation. Should a fire break out in the room 5, the flames therefrom will burn the cord 23 and sever the same. When this cord is severed in this manner, the pull of the weight 27 is removed and the portion of the cord connected to the spring 19 will be allowed to become slack and the section 19<sup>a</sup> of the spring 19 will straighten out or be placed under tension. This straightening or tensioning of the section 19<sup>a</sup> will exert a pull upon the cord 15<sup>b</sup> and will move the latch member 15 out of engagement with the pin 16 whereupon the spring 19 will move the valve operating arm 12 into a

horizontally extending position for causing the passageway through the rotary plug valve 10 to aline with the passage 9<sup>a</sup> of the valve housing 9 and will allow water to enter the piping 7 from which it will be discharged upon the fire through the sprinkler heads 8. It will be obvious to anyone skilled in the art that the various elements may be returned to their inoperative positions after the fire has been extinguished and a new cord may be arranged in place of the old one.

It is to be understood that the form of this invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size, and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described the invention, I claim:—

1. In an automatic fire sprinkler, a sprinkler pipe, a valve for said pipe having a valve lever, a tension spring having one end connected to said valve lever and its other end connected to a fixed point and constantly urging said lever to valve opening position, a latch holding said lever against movement by said spring, a tension element having one end connected to the spring between its ends and acting on the spring away from the fixed point of spring attachment to relieve the tension on the portion of the spring adjacent the lever, said tension element being severable by fire in its vicinity, and means connecting the latch to the spring and connected to the spring between the lever and the point of connection of the tension element whereby primary movement of the spring will free the latch and release the lever.

2. In an automatic fire sprinkler, a sprinkler pipe, a valve for said pipe having a valve lever, a tension spring having one end connected to said valve lever and its other end connected to a fixed point and constantly urging said lever to valve opening position, a latch holding said lever against movement by said spring, a tension element having one end connected to the spring between its ends and acting on the spring away from the fixed point of spring attachment to relieve the tension on the portion of the spring adjacent the lever, said tension element being severable by fire in its vicinity, means connecting the latch to the spring and connected to the spring between the lever and the point of connection of the tension element whereby primary movement of the spring will free the latch and release the lever, and a guide pulley carried by the end of the lever and over which said means runs.

In testimony whereof I affix my signature.  
STANISLAW FUDALSKI.