Jan. 13, 1925. 1,522,704

E. W. SALMON, JR

AUTOMATIC SPRINKLER SYSTEM

Filed Aug. 3, 1922 2 Sheets-Sheet 1

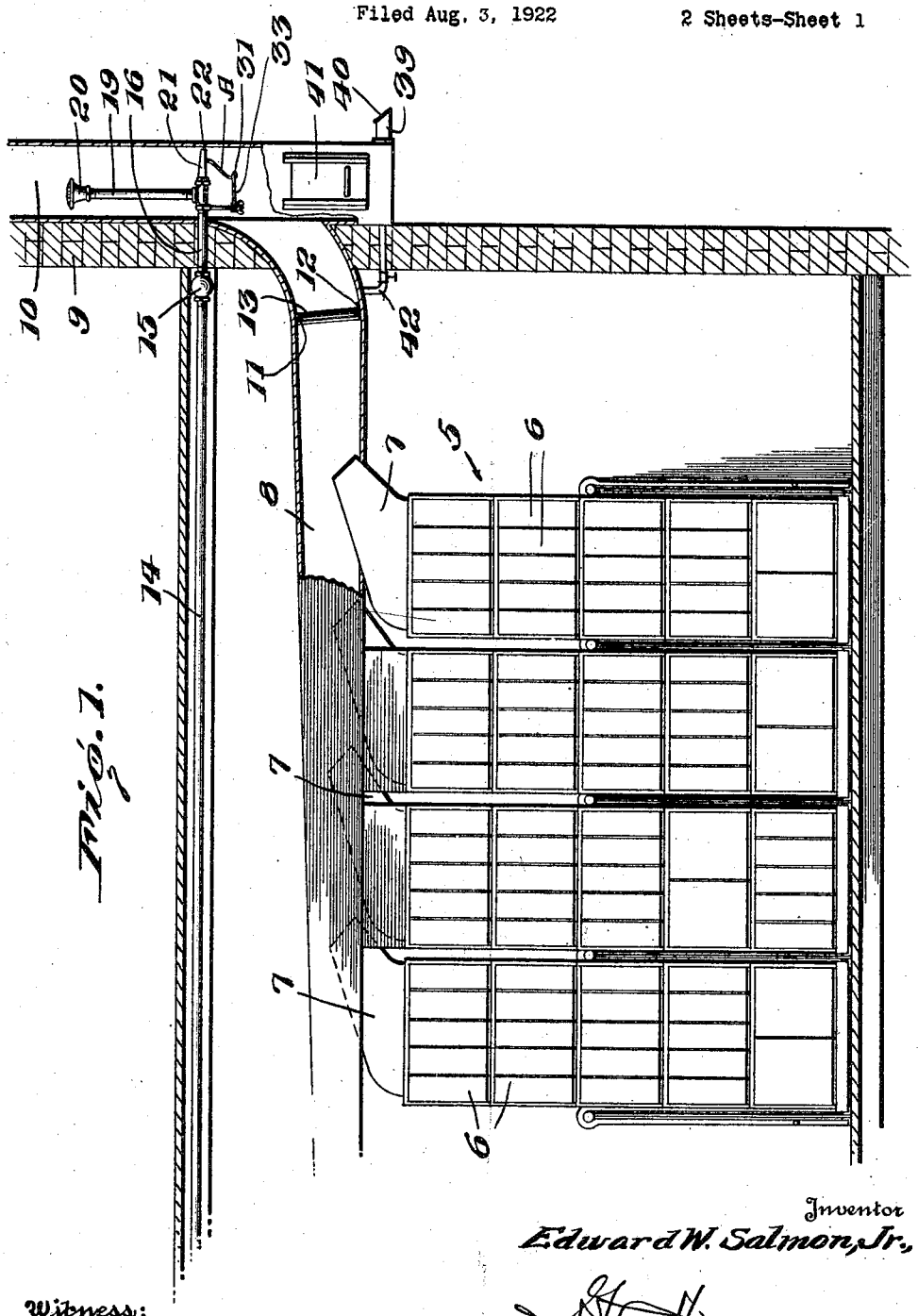


Fig. 1.

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By

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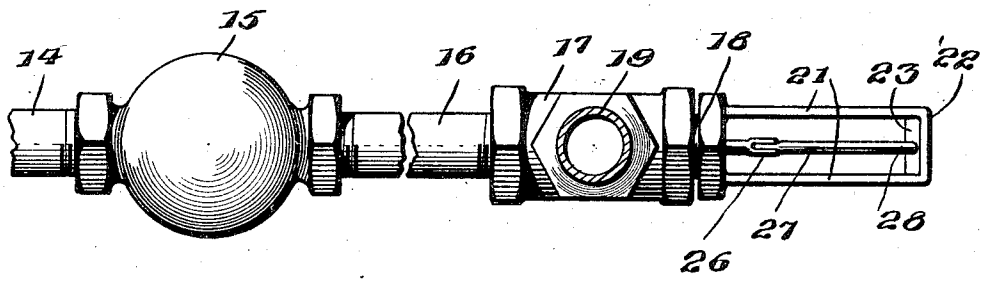


Fig. 3.

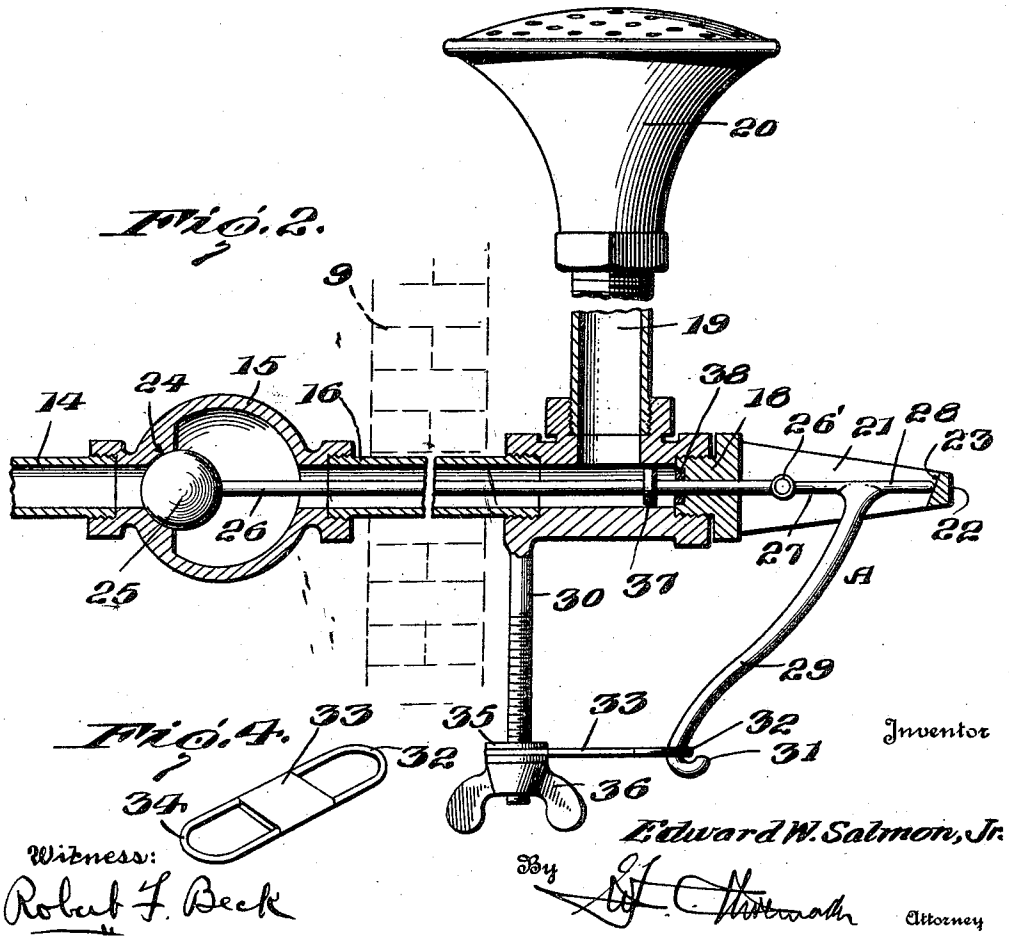


Fig. 2.

Fig. 4.

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Patented Jan. 13, 1925.

1,522,704

UNITED STATES PATENT OFFICE.

EDWARD W. SALMON, JR., OF BALTIMORE, MARYLAND, ASSIGNOR TO LEO FESENMEIER, OF BALTIMORE, MARYLAND.

AUTOMATIC SPRINKLER SYSTEM.

Application filed August 3, 1922. Serial No. 579,454.

To all whom it may concern:

Be it known that I, EDWARD W. SALMON, JR., a citizen of the United States, residing in the city of Baltimore and State of Maryland, have invented new and useful Improvements in Automatic Sprinkler Systems, of which the following is a specification.

This invention relates to automatic sprinkler systems.

Moving picture films are of a highly combustible nature, and in the interests of the public and property, underwriters and to guard the films against complete destruction in the event of a fire, I have devised a sprinkler system operable automatically for the purpose of extinguishing fire through spontaneous combustion or otherwise among moving picture films, associating the sprinkler system with a system of filing and storing the films, so that in the event of one of the films catching fire, the sprinkler system is automatically operated to extinguish the fire with the object in view of confining the fire to the one film. The improved sprinkler system is preferably arranged outside of the building in a flue having communication with a duct leading from the film cabinet and includes a fusible means which is affected by the gases and fumes, in the event of a fire, to set the sprinkler system into operation for the purpose of extinguishing the fire and for the further purpose of absorbing unpleasant or dangerous odors and thereby providing for escape of fumes from the flue of a harmless nature to surrounding property or nearby inhabitants employed or living close by the plant in which the dual system referred to is installed. While the sprinkler system is disposed outside of the building, as stated, the water supply pipe and the valve mechanism interposed between the supply pipe and the sprinkler system, are maintained within the building, in which the films are filed or stored, so that in freezing weather, there is no danger of the water in the sprinkler system freezing because the water in the supply pipe is confined to the interior of the building and the water flows into the sprinkler system only in the event of a rupture of the fusible means designed to normally maintain the sprinkler system inactive. By virtue of this particular location of the sprinkler system with the water supply pipe and the valve mechanism interposed between the latter and the sprinkler system, my invention is applicable for other uses as for instance, the location of the supply pipe and the valve mechanism in a heated room and the sprinkler system connected thereto located in an adjoining or other room which may or may not be heated.

It will therefore be understood that the the primary object of the present invention is to provide an automatic fire extinguishing system designed to operate only in the event of a fire in which a suitable valve mechanism is interposed between the water supply pipe and the sprinkler mechanism and in which the valve is held tightly on its seat to prevent leakage and leaves the seat only in the event of a rupture of the fusible connection associated with the sprinkler system and that the parts are so associated as to obviate the possibility of the sprinkler system becoming inoperative by virtue of freezing in cold weather.

With the above and other objects in view the invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:

Figure 1 illustrates my invention partly in elevation and partly in section.

Figure 2 is an enlarged fragmentary, detail vertical sectional view.

Figure 3 is a top plan view.

Figure 4 is a detail perspective view of the fusible link.

Referring now more particularly to the accompanying drawings, there is shown for purposes of illustration, the sectional film storage and filing cabinet 5 such as is more fully illustrated and described in my copending application filed on even date herewith, Serial No. 579,451, and in which, in the event of a fire in one of the compartments 6 of the cabinet, the smoke, fumes, gases and odors are conveyed to an exhaust chamber 7 at the top of the cabinet and discharged into a duct 8, all as described in

detail in my aforesaid pending application and which need not be described more in detail herein.

The duct 8 preferably discharges through a wall 9 into a flue 10 on the opposite side of the wall 9. A window frame 11 is hinged at 12 to the bottom of the duct 8 and is provided with a thin pane of glass 13. The window frame is disposed preferably between the cabinet 5 and the wall 9 and inclined slightly in the direction of the cabinet and is designed for the purpose of preventing moisture from the flue from finding its way into the cabinet. The window is adapted to swing on its hinge in the event of fire in one of the compartments by virtue of the internal pressure incident to the fire, but in the event that the frame should not swing the glass 13 is so thin that incident to heat, it will break and permit the ready passage of fumes, odors and gases on through the duct into the flue 10.

In the event of the passage of gases, fumes and odors into the flue 10, there is danger of the products of combustion damaging surrounding property and of offensive and injurious odors affecting inhabitants residing or working in close proximity to the plant in which the films are filed or stored. I therefore provide an automatically operating sprinkling system designed to spray water on the escaping gases, fumes and odors in the flue 10 so as to relieve the escaping products of combustion from dangerous and offensive characteristics. To this end, I provide a supply pipe 14 which has connection with the water main (not shown) and which may be located in any suitable part of the building in which the film cabinet is installed. A valve casing 15 is detachably connected to the inner end of the water supply pipe 14 in any suitable manner, and arranged preferably adjacent the inner side of the wall 9. An outlet pipe 16 is detachably connected in any suitable manner to the valve casing 15 and extends through the wall 9 into the flue 10. A T-coupling 17 is detachably connected to the outer end of the outlet pipe 16 and has one of its openings closed by a plug 18 with a stand pipe 19 connected to its intermediate opening and at its upper end provided with a nozzle 20. The plug 18 has formed therewith a substantially U-shaped bracket including sides 21, and an outer end 22, with the inner face of the end 22 formed upon an incline, or angularly disposed, as indicated at 23, for a purpose presently explained.

The valve casing 15 has a valve seat 24 upon which is adapted to be normally seated a valve member 25 provided with a relatively long stem 26 which extends slidably through the valve casing, the outlet pipe 16, the T-coupling 17, and also through the plug 18, with its outer end pivotally connected, at 26', to an arm 27 of a three-armed operating lever A, while a second arm 28, has its outer end arranged to lie against the inclined or angularly disposed face 23 of the end 22 of the aforesaid bracket and maintained in such position with the arms 26 and 27 thereby arranged in alignment with the stem 26. The third arm 29 of this three-armed operating lever is relatively long and curved in a direction toward an arm 30 depending from the T-coupling 17. The arm 29 is provided at its lower end with a hook 31 adapted to receive the eye 32 of a fusible link 33 having another eye 34 adapted to receive the depending arm 30, which latter is screw threaded and provided with a nut 35 against which latter the fusible link is held firmly by means of a winged nut 36 having working fit on the screw threaded arm 30, thereby holding the arm 27 in tight engagement with the inclined or angularly disposed face of the part 23 of the aforesaid bracket. This operating lever thus held by the fusible link 33 maintains the valve member 25 tightly on its seat against the pressure of water in the supply pipe until the fusible link 33 breaks, in which event, the valve is then unseated, incident to the pressure of water moving the valve member 25 away from its seat and breaking the joint 26' between the valve stem 26 and the arm 27 and permitting the water to flow through the nozzle 20 and spray the outgoing gases passing into the flue 10, the gases and fumes in the flue being the agency by which the fusible link is broken to affect unseating of the valve and permitting the sprinkling system to operate. To limit the movement of the valve member 25 from its seat in the valve casing 15, I provide the stem 26 with a collar 37 which is adapted to engage the inner end of the aforesaid plug 18 at the point where there may be disposed a suitable packing 38, to prevent leakage when the sprinkler system is operated, although this packing is entirely unnecessary and may be dispensed with if desired.

To relieve the flue of the water from the sprinkling mechanism, I provide the lower end of the flue 10 with an outlet pipe 39 having a flapper or other valve 40 at its outer end. To permit ready access to the sprinkler mechanism and to the window 12—13, the lower end of the flue may be provided with an opening closed normally by a slidable or other closure 41, whereby the sprinkler mechanism and the window may be readily inspected or repaired at will.

In the event there should be a back flow of water from the sprinkler system into the duct 8, it will flow into the flue 10 by way of the branch pipe 42, the discharge end of the exhaust chamber extending into the duct

8 above the bottom wall of the latter to prevent possibility of water entering the exhaust chamber and finding its way into a compartment of the cabinet, as described in detail in my aforesaid copending application.

It will be understood that on one side of the valve casing there is the water supply pipe and that from another side of the valve casing there is a water discharging means, which may consist of the outlet pipe, the T-coupling and the nozzle and stand pipe between the nozzle and T-coupling, and that the discharge of the water is under the control of the lever maintained normally inactive by a fusible means.

What I claim is:

1. In a sprinkler system, a valve casing having a valve seat, a valve member cooperating with the valve seat to control the supply of water, the casing having an outlet, a lever pivotally connected with the valve member and movable to and from an engaging position, an arm depending from the discharge outlet and fusible means connected with the lever and said arm for retaining the lever in its engaging position to hold the valve member on the said seat.

2. A sprinkler system including a valve casing having a valve seat, a valve member cooperating with the seat to control the supply of water and having a slidable stem, a lever pivoted to the valve stem and movable to and from an engaging position, fusible means connected with the lever for holding the valve member in its closed position, and an abutment engaged by the lever and having an inclined or angularly disposed face adapted to guide the lever in its swinging movement when the said lever is released and the valve member subjected to the pressure of the water.

3. A sprinkler system including a valve casing having a valve seat, a supply pipe connected with the valve casing, an outlet pipe also connected with the valve casing and having a discharge portion provided with a sprinkler nozzle, a bracket mounted on the discharge pipe and having an inclined or angularly disposed face, a valve member cooperating with the seat and slidable in the bracket, a lever pivoted to the valve member and movable into and out of engagement with the said inclined or annularly disposed face, and fusible means connected with the lever for holding the same in engagement with the said face to retain the valve member in its closed position.

4. In a sprinkler system, a valve casing having a valve seat, a valve member cooperating with the valve seat to control the supply of water, the casing having an outlet, a bracket mounted on the outlet and having an inclined face, a three-armed lever having one of its arms pivotally connected to the valve member and another of its arms normally engaging the inclined face of the bracket, and having its other arm relatively long and curved, a separate arm depending from the discharge outlet and a fusible connection between the longer one of the three-armed lever and the said separate arm for retaining the three-armed lever normally in a position to present one of its arms to the inclined face of the bracket and to hold the valve member normally on said valve seat.

5. In a sprinkler system, a cabinet, a duct having communication with the cabinet, a flue arranged outside of the building in which the cabinet is stored and having communication with the duct, a water supply pipe extending through the wall of the building, a valve having connection with the supply pipe and confined within the building for protection against freezing and adapted to normally check the flow of water through the water supply pipe, the valve having an outlet extending through the building wall into the said flue, a spray nozzle having connection with the outlet pipe, means in the flue to control the seating and unseating of the valve, the flue having a closed lower end and provided with a valved outlet adjacent its lower end and also provided with a door opening, a closure for said opening, and a drain pipe connection between said duct and the lower portion of said flue.

In testimony whereof I have hereunto set my hand.

EDWARD W. SALMON, Jr.