Oct. 16, 1934. J. D. GARVEY 1,977,381

SPRINKLING SYSTEM

Original Filed April 4, 1932

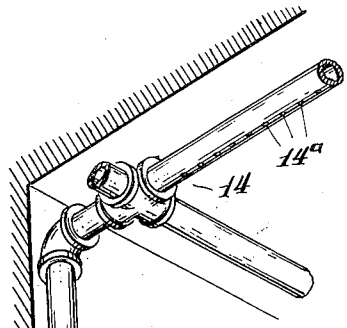


Fig. 2.

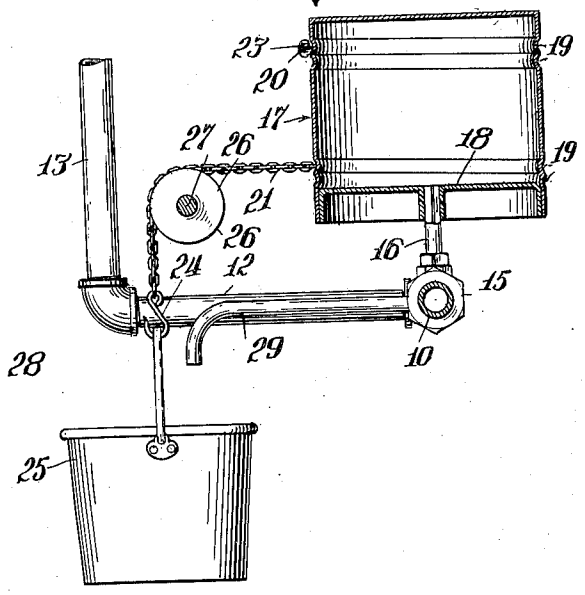


Fig. 1.

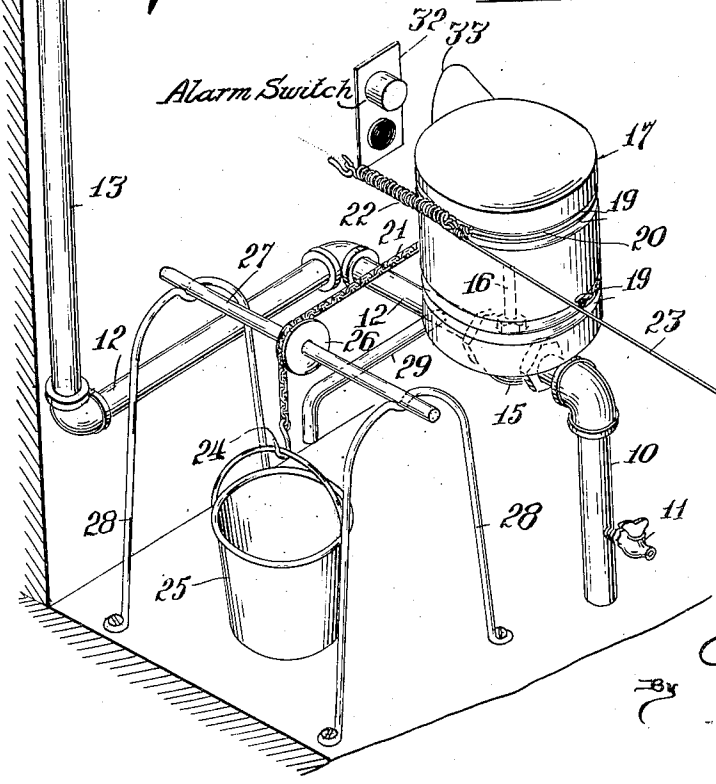
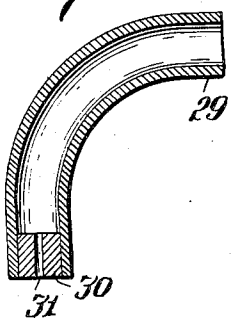


Fig. 3.



Inventor
James D. Garvey,
By Geo. Heidenreich
Attorney.

Patented Oct. 16, 1934

1,977,381

UNITED STATES PATENT OFFICE

1,977,381

SPRINKLING SYSTEM

James D. Garvey, Chicago, Ill.

Application April 4, 1932, Serial No. 603,080
Renewed March 14, 1934

3 Claims. (Cl. 169—19)

My invention relates to a sprinkling system intended for extinguishing fires, whether in a building or elsewhere; the invention having for its object the provision of a system which will automatically be set in operation during the initial stage of a fire and which will continue to spray water until the system is manually reset or the flow of water automatically shut off.

Another object of the invention is to provide a system of inexpensive construction and which may be arranged, at the will of the user, to be put into operation by a small flame which may be somewhat removed from the water conveying conduits.

The objects and advantages of my invention will be readily comprehended from the following detailed description of the drawing, wherein:

Figure 1 is a perspective view of my improved system, with portions broken away.

Figure 2 is a sectional elevation of the water control portion of the system.

Figure 3 is a detail sectional view of a portion of a water flow control outlet.

For purposes of exemplification, I have illustrated my improved system arranged in a compartment of a building, but it will be understood that the system is equally adapted for installations wherever the need for fire protection is necessary; that is to say, the system is adapted to be installed in forests and other out-of-door places where need for immediate release or operation of a sprinkling system during the incipiency of a fire is essential.

The specific exemplification of the invention involves a water supply conduit as at 10, intended to be connected with a suitable water supply, which may be a city water main or elevated supply tank. The supply conduit is preferably provided with a small pet cock as at 11, for the purpose of determining whether there is a suitable water pressure in the conduit 10. This conduit 10 is intended to lead to the place of installation of the system, as for example to lead into the room or compartment to be protected and is preferably located adjacent to or a short distance above the ground or floor, where the conduit 10 is preferably provided with a horizontally disposed conduit portion 12.

Conduit portion 12 is connected to the upwardly disposed conduit 13 and the latter connected to one or more horizontally disposed perforated conduits 14 disposed horizontally adjacent to the ceiling or at any desired elevation above the ground or area to be protected against fire.

The horizontally disposed conduit 12 is provided with a suitable valve, such as the well known globe valve, indicated at 15, which is provided with an upstanding non-circular stem 16.

The upper non-circular portion of the valve-stem 16 has a controlling member 17 secured thereto. The member 17 is shown in the nature of a drum, of predetermined diameter, with the end wall 18 provided with a non-circular opening for reception of the upper non-circular end of the valve-stem 16 and to which it is preferably secured against removal.

The side or cylindrical wall of the drum 17 is shown preferably provided with the circumferentially disposed grooves 19, 19, which are adapted to receive suitable wire cables or chains 20 and 21.

These cables or chains are of prearranged length so as to be wound about the drum to an extent sufficient to rotate the drum and completely open the valve 15 when occasion arises; one end of each cable or chain being permanently secured to the drum.

The free end of cable, chain or wire 20 is secured to the end of a coil spring 22, whose other end is intended to be secured to a side wall or other immovable object.

The spring 22 is intended to be expanded sufficiently when the cable 20 is wound on the drum 17 so as to exert a strong pull on the cable 20 when the spring is released and cause the drum to rotate sufficiently to open the valve 15. The spring 22 is held in expanded condition by a cord or string 23. The cord or string 23 is intended to be disposed above the floor, desk or other object or material to be protected and the opposite end of the cord or string fastened to the opposite wall or immovable object opposite to the wall or object to which the spring 22 is secured. It is apparent, that the string 23 may be of any length so as to cover or overlie a considerable area.

The other cable or chain 21 has its free end provided with a hook 24, on which a suitable sized pail or receptacle 25 is hung.

The cable 21 is intended to be wound a sufficient distance about the drum 17 and is wound in a direction opposite to that of cable 20 so as to rotate the drum in a direction opposite to that of cable 20. The cable 21 extends over a pulley 26 rotatably supported by the spindle or rod 27 mounted on suitable upright brackets as shown at 28, which rests on the floor or other immovable base. When spring 22 is distended and cable 20 is wound on the drum 17, cable 21 will be in unwound condition and the pail 25 will be in its lowered position; the brackets 28 being of suf-

ficient height to permit required travel of the pail between the floor or ground and the pulley 26.

The horizontal pipe 12 on the normally shut-off side of valve 15 is provided with an outlet 29, shown in section in Figure 3. This outlet is intended to extend into the vertical plane of pail 25 and has its outer end disposed downwardly and provided with a suitable plug 30 having a small bore or opening 31 of prearranged diameter so as to permit a minute trickle or slow drip to be discharged into the pail 25.

When spring 22 is distended by the taut cord or string 23, cable 20 will be wound about the drum and valve 15 will be closed. During this normal condition, cable 21 is unwound and the empty pail is in its lowered position. In the event of fire occurring in proximity to the cord or string 23, the latter will immediately burn and thereby release spring 22 which in turn will exert a pull on cable 20 and rotate drum 17 which in turn will open valve 15 and allow the water to enter pipes 12, 13 and 14. The horizontally disposed pipe or pipes 14 are provided throughout the length with a suitable number of perforations as at 14^a so that when the water enters pipe 14 the water will be sprayed onto the floor and other objects therebeneath. As the drum 17 is rotated in valve opening direction, cable 21 will wind up on the drum and elevate the empty pail 25. Water entering conduit 12 will also enter the outlet tube 29 from whence it is permitted to discharge very slowly by reason of the minute port 31.

The strength of spring 22, size of the port 31 and of the pail 25, as well as the distance of travel of the pail are so correlated that a sufficient period of time will be required before the pail and quantity of water therein will be of sufficient weight to overcome the strength of the contracted spring 22 and induce reverse rotation of drum 17 in valve closing direction.

The object of the water receiving pail 25 is to shut valve 15 and close off flow of water into the sprinkling pipe or pipes 14 after enough time has elapsed to sufficiently saturate the room or objects therebeneath to extinguish the fire, because the system, as is apparent, will operate during incipiency of the fire and hence require less water to extinguish. In this manner, an unnecessary discharge of water is obviated and hence unnecessary damage by water prevented.

It is apparent that after the system has been in operation as above described, pail 25 is then emptied and replaced on hook 24 and a new string or cord 23 is fastened to spring 22 and the latter again distended, while the other end of the string is secured as previously stated, thus placing the system again in condition for further operation.

My system also involves the idea of providing a suitable signal or alarm when the drum 17 is moved in valve opening direction, namely an electrically operated alarm or signal.

This may be accomplished in various ways, as for example by arranging an electric switch, indicated at 32 in Figure 1, in close proximity to drum 17 which in turn may be provided with a suitable cam surface as at 33 adapted to operate switch 32 into circuit closing position.

It is apparent that certain refinements of the system may be made without, however, departing from the spirit of my invention which has been described in terms employed for purposes of description and not as terms of limitation.

What I claim is:

1. A sprinkling system of the character described comprising, in combination with a water supply pipe having a horizontal portion and an overhead discharging portion, a shut-off valve in said horizontal portion provided with an extended rotatable valve-stem, a cylindrical member operatively connected to the valve-stem so as to rotate the latter, an indestructible flexible element secured at one end to and wound about said cylindrical member, a coil spring secured to the free end of said flexible element and to an immovable object spaced from the cylindrical member so as to permit the spring to be normally distended and exert pulling action on the element, a combustible cord adapted to be strung taut across the area to be protected with one end of the cord fastened to a distant immovable object while the other end is secured to said spring and holds the latter in its distended condition, an outlet on the valve controlled side of the pipe arranged to discharge water at a predetermined speed, an indestructible flexible element wound about said cylindrical member in a direction opposite to that of the first mentioned element, a receptacle supported by the free end of the second mentioned element, and guide means for the second mentioned element whereby the receptacle is vertically suspended to receive the water discharged by said outlet, the receptacle being of predetermined size so that when the receptacle is filled its weight overcomes the tension of said spring and the cylindrical member is rotated in valve closing direction.

2. A sprinkling system of the character described comprising the combination of a water supply pipe having a shut-off valve, a cylindrical member operatively secured to the valve-stem, an indestructible flexible element wound about the member, a coiled spring secured to one end of the element and to an immovable object spaced from the member so as to normally exert a pull on the element in valve opening direction, a second indestructible element wound about the member in a direction opposite to that of the first mentioned element a receptacle suspended from the other end of said second mentioned element and of capacity sufficient to close the valve when the receptacle becomes filled with water, a drip outlet in the water pipe on the valve controlled side arranged to discharge water into the receptacle at a predetermined rate of speed, and a combustible cord adapted to be strung taut across the area to be protected, one end being fastened to said spring while the other end is secured to a distant immovable object and the spring held in distended condition.

3. A sprinkling system of the character described comprising, in combination with a water supply pipe having a horizontal portion and an overhead discharging portion, a shut-off valve in said horizontal portion provided with an extended rotatable valve-stem, a control member operatively connected to the valve-stem so as to rotate the latter, an indestructible element secured to and wound about said control member, a coil spring having one end secured to the free end of said element while the other end of said spring is secured to an immovable object spaced from the control member so as to permit said spring to be normally distended and exert pulling action on the element, a combustible cord adapted to be strung taut laterally across the area to be protected, with one end secured to an immovable object and the other end secured to said spring

and arranged to hold the spring in its distended condition, an outlet from the valve controlled side of the water pipe, adapted to discharge water at a predetermined speed; a receptacle positioned to receive the discharge from the outlet and of prearranged capacity that the weight of the water filling it is capable of closing the valve, and flexible means for supporting said receptacle and wound about said control member in a direction opposite to that of said indestructible element whereby the control member will be rotated in valve closing direction against the action of said spring.

JAMES D. GARVEY.