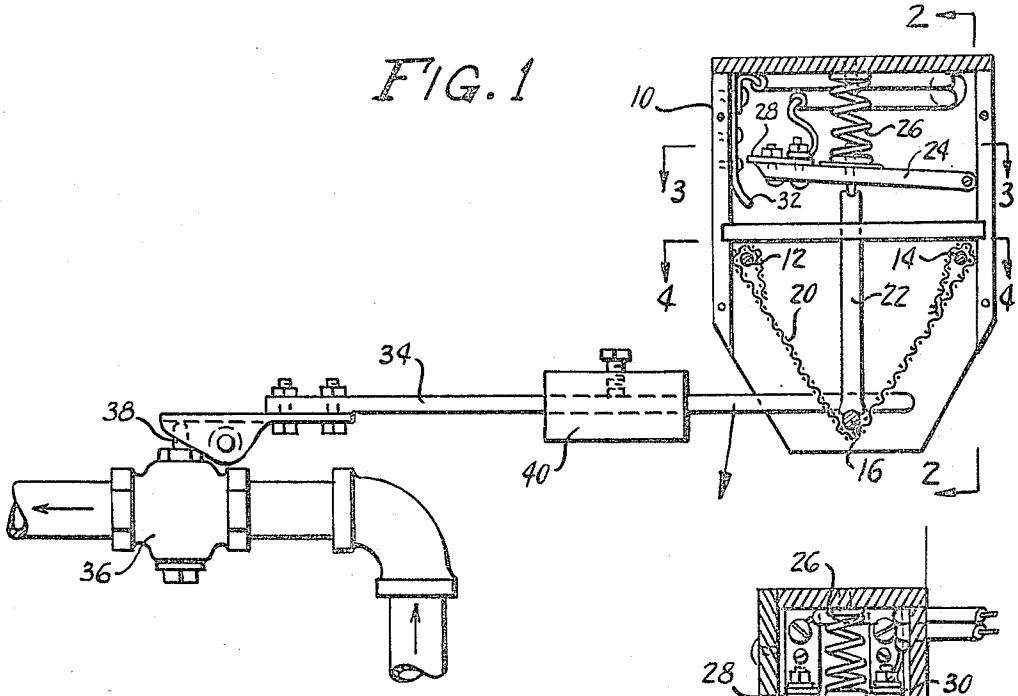
Nov. 29, 1966 A. A. TRUDEAU 3,288,224

FIRE ALARM AND SPRAY SYSTEM ACTUATED BY MELTING A SOLUBLE NYLON STRAND

Filed Oct. 13, 1964 2 Sheets-Sheet 1

FIG. 1



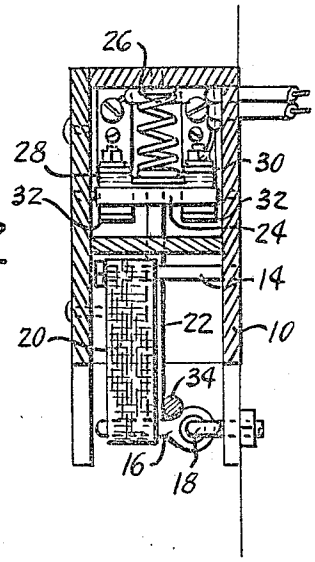


FIG. 2

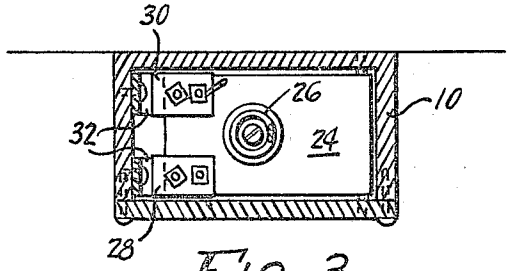


FIG. 3

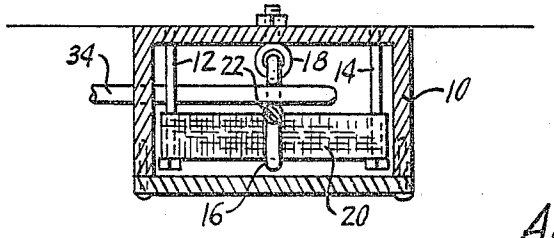


FIG. 4

INVENTOR.
ALPHERIE A. TRUDEAU
BY
Kimmel & Crowell
ATTORNEYS.

Nov. 29, 1966 A. A. TRUDEAU 3,288,224

FIRE ALARM AND SPRAY SYSTEM ACTUATED BY MELTING A SOLUBLE NYLON STRAND

Filed Oct. 13, 1964 2 Sheets-Sheet 2

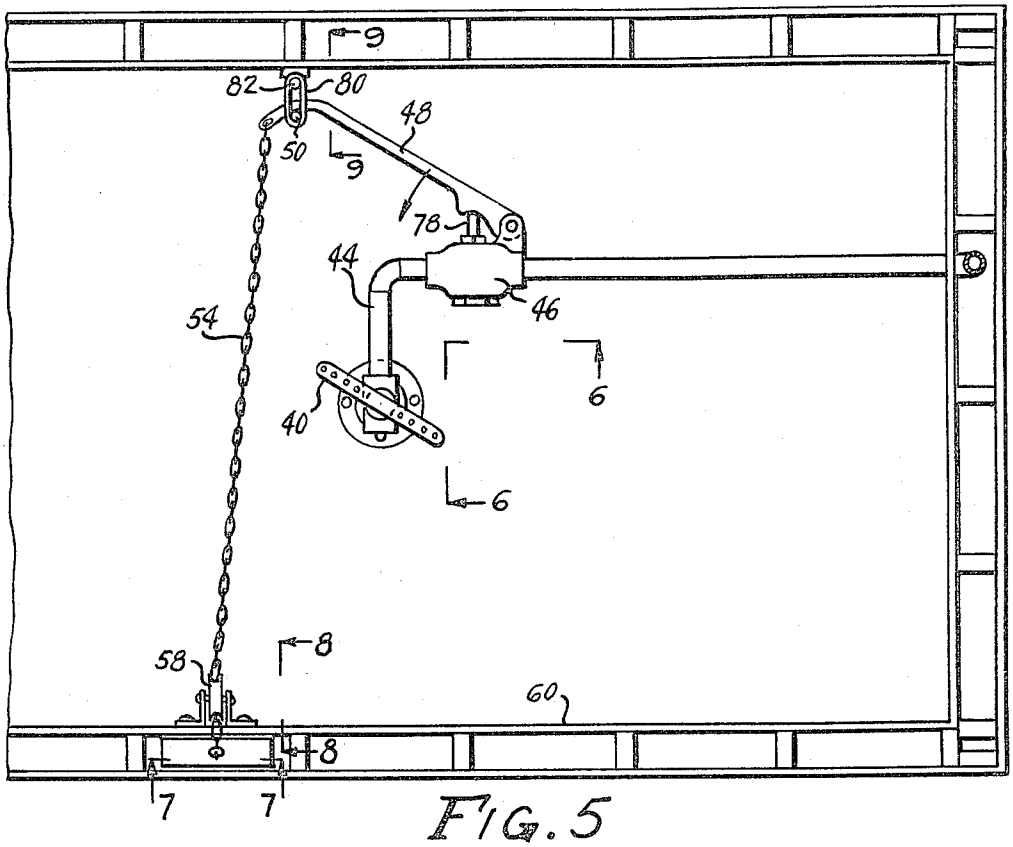


FIG. 5

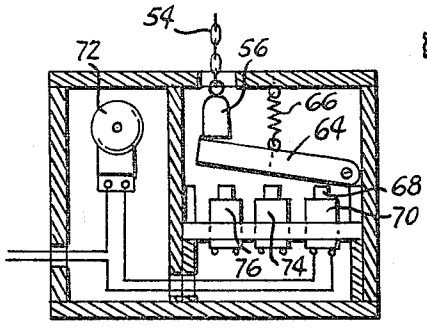


FIG. 7

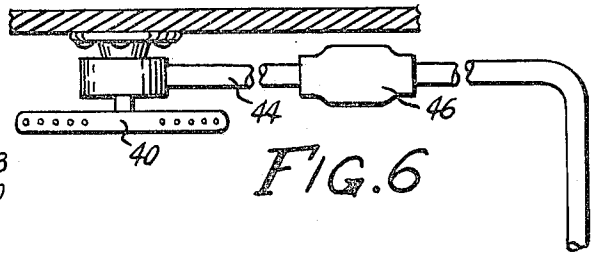


FIG. 6

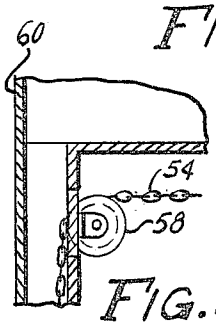


FIG. 8

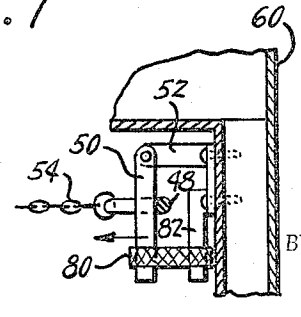


FIG. 9

INVENTOR.
ALPHERIE A. TRUDEAU

BY Kimmel & Crowell
ATTORNEYS.

United States Patent Office 3,288,224 Patented Nov. 29, 1966

3,288,224

FIRE ALARM AND SPRAY SYSTEM ACTUATED BY MELTING A SOLUBLE NYLON STRAND

Alpherie A. Trudeau, 1 5th Ave., Taftville, Conn.

Filed Oct. 13, 1964, Ser. No. 403,731
3 Claims. (Cl. 169—19)

The present invention relates to a fire alarm and spray system generally and in particular to a system which is actuated to turn on a spray and sound an alarm upon the melting of a heat soluble material such as a fabric strand fabricated of plastic material. A primary object of the present invention is to provide a fire alarm and spray system in which a plastic strand such as nylon mesh is employed to hold the system inactive but which melts under heat greater than ordinary so that a building or other area may be protected.

A further object of the present invention is to provide a firealarm and spray system which may be installed at demote locations and one which requires little or no maintenance attention over a relatively long interval of time, one which has improved mechanical means for operating the spray system to open condition, one which is economical to manufacture and assemble, and one which is highly effective in action.

These and other objects and advantages of the present invention will be fully apparent from the following description when taken in connection with the annexed drawings, in which:

FIGURE 1 is a side elevational view of the apparatus according to a first embodiment, a cover meaningly moved from a portion of the apparatus,

FIGURE 2 is a view taken on the line 2—2 of FIGURE 1,

FIGURE 3 is a view taken on the line 3—3 of FIGURE 1,

FIGURE 4 is a view taken on the line 4—4 of FIGURE 1,

FIGURE 5 is a view looking upwardly at a second form of the invention,

FIGURE 6 is a view on an enlarged scale, taken on the line 6—6 of FIGURE 5,

FIGURE 7 is a view on an enlarged scale, taken on the line 7—7 of FIGURE 5,

FIGURE 8 is a view on an enlarged scale, taken on the line 8—8 of FIGURE 5, and

FIGURE 9 is a view on an enlarged scale, taken on the line 9—9 of FIGURE 5.

With reference to the drawings in detail, and in which like numerals indicate like parts throughout the several views, in FIGURES 1 to 4, a first embodiment of the invention is shown in which there is a housing 10, shown with its cover removed, and in which there are horizontally projecting posts 12 and 14 and a horizontally disposed support member 16 connected by an eye bolt 18 to the back wall of the housing 10 as shown in FIGURE 2.

A strand 20 has its ends anchored on the posts 12 and 14 and holds the support member 16 against downword movement with a plunger 22 supported above the support member 16 and engageable therewith. The upper end of the plunger 22 bears against a midportion of a lever 24 having one end pivotally connected to the wall of the housing 10. A spring 26 biases the lever 24 to the downward position and the free end of the lever 24 carries contacts 28 and 30 which are engageable with fixed contacts 32 secured to the wall of the housing 10 upon downward movement of the lever 24.

An operating arm 34 projects outwardly from a valve 36 and serves, upon movement in a downward direction to release the valve plunger 38 and permit flow of water through the valve 36.

A weight 40 adjustably secured on the arm 34, acts as a means by which the arm 34 is moved to the valve open position upon release of the support member 16 from the position holding the arm 34 in the valve close position.

As shown most clearly in FIGURES 2 and 4, upon severing of the strand 20 by heat the support member 16 will swing to a downward position releasing the arm 34 and permitting the weight 40 to swing the arm 34 to the valve open position. Simultaneously the plunger 22 will drop, releasing the lever 24 and letting the contacts 20 and 30 make electrical contact with the fixed contacts 32. This will sound an alarm at a remote location with the valve 36 moved to open position permitting the spray system in the building to be in operation.

With reference to FIGURES 5 to 9, inculsive, a second form of the invention is shown in which a spray head 40 is connected by a pipe 44 to a valve 46.

In this form of the invention the valve has an actuating arm 48 which moves in a horizontal plane and is held against movement by a support member 50 hingedly connected at its upper end to a bracket 52 as shown in FIGURE 9.

The free end of the arm 48 is fastened to one end of a chain 54 and a weight 56 is secured to the other end of the chain 54 as shown in FIGURE 7.

The chain 54 travels over a pulley 58 rotatably mounted on the wall 60 of the building as shown in FIGURE 8.

The weight 56 is freely suspended on the end of the chain 54 within a housing and upon release of the chain 54 the weight 56 serves to bear downwardly against the lever 64 having one end pivotally connected to the wall of the housing. A spring 66 biases a lever to the upward position. Upon actuation of the lever 64 in its downward movement, it bears against the plunger 68 of a switch 70 which connects an alarm 72 in circuit with a source of current in the conventional manner.

Other switches 74 and 76 are also in the path of movement of the lever 64 and they in turn may be connected to other alarms remotely located if desired.

It will be understood that a plunger 78 of the valve 46 is normally in the close position shown in FIGURE 5 but when depressed upon movement of the arm 48 in the direction of the arrow the plunger 78 shifts to the open valve position.

The support member 50 is held against movement outwardly as in FIGURE 9 by means of a strand 80 fabricated of a heat reactive material such as nylon mesh or the like which melts under a degree of heat normally associated with fires.

The strand 80 is supported upon post 82 and the support member 50 and holds the support member 50 against swinging outward movement to the position in which the arm 48 would be released.

It will be seen therefore that in each of the inventions the strand supports the support member against movement and upon release by dissolution of the strand the support member moves away from the respective arm permitting the respective valve to be opened.

Simultaneously, means is associated with each of the support members which, upon release of the support member by the strand actuates the means to sound an alarm either locally or at a remote location as desired.

While only preferred embodiments of the invention are shown and described it is contemplated that other embodiments may be employed and that numerous changes or modifications may be made in the invention without departing from the spirit thereof as set forth in the appended claims.

What is claimed is:

1. In a fire alarm and spray system including a water supply valve, a valve actuating plunger and a normally

horizontal weighted arm pivotally supported at one end adjacent said plunger and operable by gravity to move said plunger to open said valve, a housing adjacent the other end of said arm, a pair of horizontal spaced apart posts in said housing, an arm support member pivotally mounted in said housing below said arm and between said posts, a plastic heat soluble strand having its ends secured to said posts and an intermediate portion extending beneath and supporting said arm support member and hence said arm, a switch actuating lever pivotally mounted at one end in said housing above said arm support member, a second plunger extending between said switch lever and said arm support member, spring means biasing said switch lever downwardly against said second plunger, an electrical contact carried by the other end of said switch arm, and a fixed contact carried internally of said housing adjacent said first contact and in the downward path of travel of said first mentioned contact, closure of said contacts being adapted to close a circuit to actuate an alarm, melting of said strand due to excess heat releasing said arm to fall by gravity to open said valve, and permitting said spring means to bias said switch lever downwardly to engage said first mentioned contact with said fixed contact to actuate the alarm simultaneously with the opening of the valve.

2. The structure of claim 1 wherein said plastic strand is composed of nylon.

3. The structure of claim 1 wherein said spring means comprises a compression spring mounted above said switch lever and between said switch lever and a fixed portion of said housing.

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M. HENSON WOOD, JR., *Primary Examiner.*

ROBERT B. REEVES, *Examiner.*

V. C. WILKS, *Assistant Examiner.*