ABSTRACT OF THE DISCLOSURE

A fire extinguishing system wherein a spring operated actuator for effecting release of fire extinguishing medium normally is restrained by a series of cable sections which are interconnected by fusible links.

The present invention relates to fire extinguishing, and more particularly to improved control apparatus for a restaurant kitchen range hood and duct fire extinguishing system adapted to detect and extinguish a fire at a plurality of locations.

In systems of the foregoing described type, a single source supplies the fire extinguishing medium to all locations where a fire is detected. It has been proposed to detect a fire at each location by an arrangement wherein fusible link releasable cables extend individually from each location to the discharge control mechanism of the source.

One of the disadvantages of such an arrangement is that a considerable amount of hardware is required. A second disadvantage is that each control cable must be tensioned separately.

Accordingly, an object of the present invention is to provide control apparatus for a fire extinguishing system of the foregoing described type which is not subject to the prior difficulties and disadvantages.

Another object is to provide such apparatus which requires a minimum amount of hardware which is readily arranged and installed.

A further object is to provide such apparatus which is reliable in operation.

Other and further objects of the invention will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

A preferred embodiment of the invention has been chosen for purposes of illustration and description, and is shown in the accompanying drawings, forming a part of the specification, wherein:

FIG. 1 is a schematic perspective view of kitchen range hood and duct fire extinguishing system equipped with control apparatus in accordance with the present invention.

FIG. 2 is an enlarged longitudinal sectional view of a discharge control valve for the source of fire extinguishing medium, a control head for the valve and an actuator for the control head.

FIG. 3 is an enlarged elevational view of an arrangement for anchoring one end of cable means.

Referring now to FIG. 1 of the drawings in detail, there is shown by way of example a kitchen range R having a deep frying kettle K at each end, and a hood H extending over the range having a ventilating duct D at each end. The system for protecting the foregoing arrangement generally comprises piping P for distributing fire extinguishing medium, a receptacle S containing a source of fire extinguishing medium under pressure, a valve V (FIG. 2) for controlling the discharge of the medium from the receptacle, a control head C for the valve, an actuator A for operating the control head, and fusible link-cable means L for controlling the actuator.

The fire extinguishing medium distributing piping P includes conduit means 10 connected to the outer end of the valve V (FIG. 2). A nozzle 12 in each duct D, a nozzle 14 facing each frying kettle K, and nozzles 15 for directing the medium across grease filters within the hood (not shown).

The fusible link-cable means include cable sections 16, 17, 18 and 19 and fusible links 20, 21, 22, 23. One end of the cable section 16 is held in a fixed position by a fusible link 20 on a hook 13 in the zone protected by the nozzle 14 at the right (FIG. 3); the other end of the cable section 16 is connected to one end of the cable section 17 by the fusible link 21 in the zone protected by the nozzle 14 at the left; the other end of the cable section 17 is connected to one end of the cable section 18 by the fusible link 22 in the zone protected by the nozzle 12 at the left; the other end of the cable section 18 is connected to one end of the cable section 19 by the fusible link 23, and the other end of the cable section is connected to the actuator A as shown in FIG. 2. The cable sections are strung from the fixed end of the cable means, through the hazard zones and to the actuator by a system of pulleys 24. Preferably, the intermediate portions of the cable sections are shielded by electric conduit 25 (FIGS. 2 and 3).

The source receptacle S, the valve V, the control head C and the actuator A are illustrated in detail in FIG. 2. The source receptacle may contain carbon dioxide. In such case, a pilot operated piston type valve as shown is connected to the outlet of the receptacle, the control head is mounted on the valve and the upstream end of the piping P is connected to the valve outlet 11.

Alternatively, the source receptacle may be a dry powder fire extinguishing medium. In such case, a smaller second receptacle having a valve under direct control of the control head is utilized. The second receptacle contains a gas under pressure and the outlet of its valve is connected to the source receptacle so as to pressurize the medium and to expel the same into the piping.

Both of these arrangements are well known in the fire extinguishing art and need not be described in greater detail. Likewise, it is known in the art to utilize appropriate nozzles 12 and 14 in each case.

The control head actuator and valve arrangement shown includes a slidable cam 27 which operates a pin 28 for unseating the pilot valve 29; a spring 30 having a fixed end and a free end connected to the cable section 19, the spring being extended to bias the cable sections while interconnected; and a cable section 31 having one end connected to the cam 27 and having its other end connected to the free end of the spring 30 so that upon folding of a link the spring is released and effects to pull the cable section 31 and the cam member to effect opening of the valve.

The foregoing arrangement further includes a slidable handle 35 locked by a pin 36 and contacting the cam so that when the pin 36 is removed the handle can be pushed manually inwardly to operate the cam 27.

Manual remote operation of the cam can be effected by a cable section 37 connected to the cam section 31 so that upon pulling the cable section 37 by means of a handle 38 the cam is pulled across the pin 28 to effect opening of the valve.

From the foregoing description it will be seen that the present invention provides an improved fire extinguishing system and control apparatus.
As various changes may be made in the form, construction and arrangement of the parts herein, without departing from the spirit and scope of the invention and without sacrificing any of its advantages, it is to be understood that all matter herein is to be interpreted as illustrative and not in any limiting sense.

We claim:

1. Control apparatus comprising an actuator, a single continuous cable means, one end of said cable means being connected to said actuator for control thereof, structure for holding the other end of said cable means in fixed position including a fusible link, said cable means including cable sections and fusible links connecting the adjacent ends of said cable sections in series, said actuator including spring means for biasing said cable means and effecting operation of said actuator upon fusing of one of said links, a control head, and a cable having one end connected to said spring means and having the other end connected to said control head to effect operation thereof.

2. Control apparatus according to claim 1, including a second cable having one end connected to said first-mentioned cable and having means at the other end thereof for effecting manual pulling thereof to operate said control head.

3. A fire extinguishing system for equipment having a plurality of spaced fire hazard zones, said system comprising a receptacle for containing a source of fire extinguishing medium under pressure and having a discharge outlet, conduit means connected to said outlet for conducting the medium upon discharge to the fire hazard zones, means for effecting discharge of the medium including a control head, an actuator for said control head including a spring, a cable having one end connected for operating said control head and having its other end connected to said actuator spring, cable means having one end connected to said actuator spring and having the other end fixed, said cable means including a series of cable sections, and fusible links for serially connecting said cable sections with each link located in a fire hazard zone, said actuator spring being tensioned by said cable means so that upon fusing of one of said links, said spring is released and pulls said control head cable to operate said control head.

4. A fire extinguishing system according to claim 3, wherein said actuator includes manually operable means for effecting operation of said control head.

5. A fire extinguishing system according to claim 4, including a second cable having one end connected to said control head cable and having its other end arranged for effecting manual pulling thereof to operate said control head.

References Cited
UNITED STATES PATENTS
976,448 11/1910 Emmons
1,597,516 8/1926 Epps
2,057,702 10/1936 Bel Knap.

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