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- [54] **METHOD OF PREVENTING THE SPREAD OF AND EXTINGUISHING FIRES**
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[58] Field of Search..... **169/1 A, 16, 1 R**

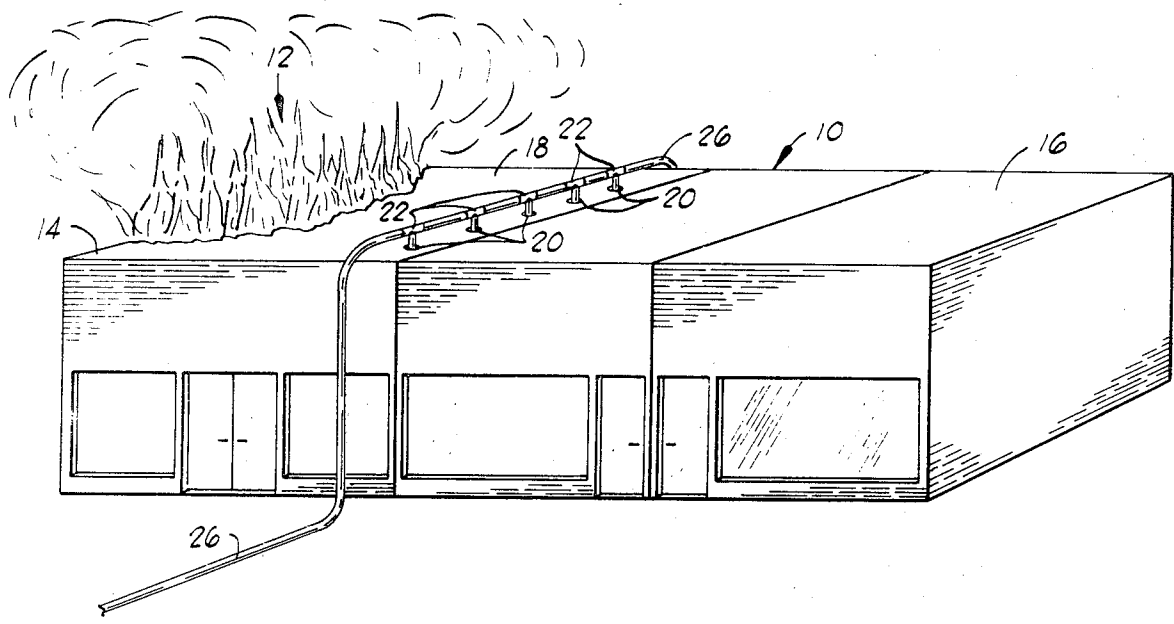
[56] **References Cited**

UNITED STATES PATENTS			
2,052,384	8/1936	Conran	169/1 R
369,636	9/1887	Eppelsheimer.....	169/1 R
2,813,753	11/1957	Roberts.....	169/1 R
3,653,444	4/1972	Livingston	169/16

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[57] **ABSTRACT**
The present invention relates to a method of preventing the spread of and extinguishing a fire in a building structure. By the present invention a plurality of holes are formed in the roof of the building structure positioned transversely to the path of the fire and a sprinkler nozzle apparatus is placed within each of said holes so that water flowing through the sprinkler nozzles is directed into the building structure. Each of the sprinkler nozzles is connected to a source of water, and water is caused to flow from the source through the sprinkler nozzles into the building at a rate sufficient to prevent the fire from spreading while the fire is extinguished.

5 Claims, 3 Drawing Figures



METHOD OF PREVENTING THE SPREAD OF AND EXTINGUISHING FIRES

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to methods of preventing the spread of and extinguishing fires, and more particularly, but not by way of limitation, to a method of preventing a fire from spreading in a building structure while the fire is being extinguished.

2. Description of the Prior Art

Many various methods and types of apparatus have been developed and used successfully for extinguishing fires in building structures. However, a continuing problem encountered in extinguishing such fires is the prevention of the spread of the fire in the attic area of the building structure just below the roof. This problem is particularly severe in fires started in building structures such as apartment buildings or business buildings connected end to end, e.g., shopping centers. Heretofore, in extinguishing fires in such building structures, it has been common practice to station men on the roof of the building for the purpose of preventing the spread of the fire in the attic area thereof. Generally, the men cut holes in the roof of the building and spray water therethrough into the building interior. This practice is highly dangerous to the men in that they are subjected to smoke inhalation and other dangers, and the cutting of holes in the roof often promotes the rapid spread of such fires by providing a source of oxygen thereto. While special nozzle devices have been developed which may be hammered or otherwise forced through the roof of a building, these devices require the presence of at least one man on the roof for the operation and movement thereof. By the present invention an improved method of preventing a fire from spreading in the attic area of a building structure while the fire is being extinguished is provided.

SUMMARY OF THE INVENTION

The present invention relates to a method of preventing a fire from spreading in a building structure having walls and a roof which comprises the steps of creating a plurality of holes in the roof of the building structure positioned transversely to the path of the fire, placing a sprinkler nozzle through each of the holes so that water passing through the sprinkler nozzles is directed into the building, each of the sprinkler nozzles being connected to a source of water, and causing water to flow through the sprinkler nozzles into the building at a rate sufficient to prevent the fire from spreading.

It is, therefore, a general object of the present invention to provide a method of preventing a fire from spreading in a building structure while it is being extinguished.

A further object of the present invention is the provision of a method of preventing the spread of a fire in the attic area of a building structure whereby the continuous presence of men on the roof of the building structure is not required.

Another object of the present invention is the provision of a method of preventing a fire from spreading in the attic or other similar area of a building structure wherein the cutting of holes in the roof of the building which provide a source of air for the fire is obviated.

Other and further objects, features and advantages of the present invention will be apparent from the follow-

ing description of preferred embodiments of the invention when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a building structure having a fire therein and apparatus for carrying out the method of the present invention installed thereon,

FIG. 2 is a view of the building structure of FIG. 1 in cross section showing the apparatus for carrying out the method of the present invention, and

FIG. 3 is an enlarged side view of a portion of the apparatus of FIGS. 1 and 2.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawings, and particularly to FIG. 1, a typical building structure 10 is illustrated having a fire designated by the numeral 12 at one end 14 thereof. As previously mentioned herein, a problem encountered in extinguishing fires in building structures is preventing the fire from spreading within the attic area just below the roof along the length of the building. That is, referring to FIG. 1, the fire 12 will rapidly spread along the attic of the building structure 10 from the end 14 thereof toward the other end 16 thereof.

In accordance with the method of the present invention, the spread of the fire 12 is prevented by first forming a plurality of holes 20 in the roof 18 of the building structure 10. The holes 20 are formed on a line positioned transversely to the direction of spread or path of the fire 12, and at a point in front of the fire. As soon as the holes 20 are formed, a plurality of sprinkler nozzle apparatus 22 which will be described further hereinbelow are positioned within the holes 20.

Referring to FIGS. 1 and 2, it may be seen that the sprinkler nozzles 22 are connected together in series by a plurality of hose lengths 24. The series of sprinkler nozzles 22 and hose lengths 24 are in turn connected to a source of water by one or more fire hoses 26. As will be understood, one hose 26 may be used connected to the series of sprinkler nozzles 22 with the opposite end of the series being closed in a conventional manner.

Referring now to FIG. 3, sprinkler nozzle apparatus 22 suitable for use in accordance with the method of the present invention is shown in detail. The apparatus 22 basically comprises a horizontal conduit member 28 having a pair of conventional union type hose connections 30 and 32 attached to the ends thereof. An elongated vertical conduit member 34 is provided having the upper end 36 attached to the horizontal conduit member 28 and the lower end 38 thereof formed in the shape of a point. A plurality of ports 40 are provided in the end 38 of the conduit member 34. In operation of the sprinkler nozzle apparatus 22, a stream of water flows into the horizontal conduit member 28 by way of one or both of the hose lengths 24 attached thereto. A portion of the stream of water passes through the vertical conduit member 34 and exits the nozzle apparatus by way of the ports 40. As the water passes through the ports 40 it is atomized and sprayed outwardly from the end 38 of the vertical conduit 34. Preferably, at least a portion of the ports 40 are positioned such that a portion of the water sprayed therefrom is directed upwardly. This insures that the roof 18 is continuously wetted during operation of the sprinkler apparatus. As

will be understood, a variety of designs of sprinkler nozzle apparatus 22 may be utilized in carrying out the method of the present invention. However, the nozzle apparatus must include an elongated member for extension through the holes 20 formed in the roof 18.

In carrying out the method of the present invention to prevent the spread of the fire 12 in the building 10, the plurality of holes 20 formed in the roof 18 of the building 10 are positioned across the roof 18 transversely to the direction of spread or path of the fire 12 at a point in front of the fire 12. The holes 20 may be formed in the roof 18 in any convenient manner such as by striking the roof 18 with the pick end of a pick-head ax. However, the holes 20 are preferably formed of a diameter substantially equal to the diameter of the vertical conduit members 34 of the sprinkler nozzle apparatus 22 so that once the sprinkler nozzle apparatus 22 are inserted in the holes 20, air is prevented from entering the interior of the building 10 by way of the holes 20. As will be understood, depending on the particular thickness of the roof 18, the nozzle apparatus 22 may be forced directly through the roof 18 in lieu of forming the holes 20 prior to inserting the nozzle apparatus therethrough.

The sprinkler nozzle apparatus 22 and hose lengths 24 are preferably preassembled in series with approximately six to fifteen sprinkler nozzles 22 contained in the assembly. One of the fire hoses 26 may be preconnected to the series of sprinkler nozzle apparatus 22 prior to transporting the apparatus to the roof 18 of the building 10. Once the holes 20 are formed in the roof 18 and the nozzle apparatus 22 are inserted therethrough, the second fire hose 26 may be connected to the sprinkler apparatus 22 opposite from the first hose 26 if desired. As will be understood, one fire hose 26 may be utilized with a conventional plug being installed in the hose connection 30 of the sprinkler nozzle 28 at the opposite end of the series of sprinkler nozzles.

Once the sprinkler apparatus is installed, water is caused to flow through the hoses 26 so that water is sprayed from each of the sprinkler nozzles 22 within the interior of the building 10. As mentioned previously, at least a portion of the water sprayed from the sprinkler nozzles 22 is preferably directed upwardly to maintain the roof 18 of the building 10 in a wetted condition thereby preventing the spread of the fire 12 along the roof past the nozzles 22. Also, the upward spray of the water tends to hold the nozzle apparatus 22 within the holes 20. The atomized water sprayed within the building 10 is generally converted to steam by the heat from the fire, and as a result, air is eliminated from the interior of the building 10 which contributes to the extinguishment of the fire. More importantly, however, the presence of the water and steam along the line of sprinkler nozzle apparatus 22 prevents the fire 12 from spreading in the building 10 from the end 14 towards the end 16 thereof. Once the sprinkler nozzle apparatus 22 have been installed in the roof 18 of the building 10, the apparatus is self operating or self sustaining and the presence of men on the roof is not required. Thus, these men are freed to help extinguish the fire 12 in other ways and are not subjected to the dangers of smoke inhalation, collapse of the roof 18, etc.

As will be readily apparent to those skilled in the art, any fire extinguishing fluid or foam may be caused to

flow through the nozzles 22 and sprayed within the building 10. In addition, the method of the present invention may be used to control the spread of and extinguish fires in multi-floor building structures by placing the nozzles 22 through holes formed in the floor above the level or floor where the fire is located.

Thus, the present invention is well adapted to carry out the objects and attain the ends and advantages mentioned as well as those which are inherent therein. While presently preferred embodiments of the invention and apparatus for carrying out the invention have been described for the purposes of this disclosure, it is to be understood that numerous changes in the invention may be made by those skilled in the art which are encompassed within the spirit of this invention and the appended claims.

What is claimed is:

1. A method of preventing a fire from spreading in a building structure having walls and a roof comprising the steps of:

creating a plurality of holes in the roof of said building structure positioned transversely to the path of said fire;

placing a sprinkler nozzle through each of said holes so that water flowing through said sprinkler nozzles is directed into said building structure, said sprinkler nozzles being connected in series by a plurality of hose lengths and to a source of water by a fire hose; and

causing water to flow from the source thereof through said sprinkler nozzles and into said building at a rate sufficient to prevent said fire from spreading.

2. The method of claim 1 wherein said sprinkler nozzles are connected in series by a plurality of hose lengths and to said source of water by a pair of fire hoses each connected to one end of said series of sprinkler nozzles.

3. The method of claim 1 wherein each of said sprinkler nozzles is of a design such that water passing therethrough is atomized and at least a portion thereof sprayed in an upward direction.

4. A method of confining a fire to a particular area of a building structure having walls and a roof comprising the steps of:

forming a plurality of holes in the roof of said building structure positioned in a line transverse to the direction of spread of said fire and at a point just in front of said fire;

placing a sprinkler nozzle in each of said holes so that water passing through said sprinkler nozzles is directed into said building structure, said sprinkler nozzles being connected in series by a plurality of hose lengths and to a source of water by at least one fire hose; and

causing water to flow from said source thereof through said sprinkler nozzles and into said building structure at a rate sufficient to prevent said fire from spreading beyond said line of sprinkler nozzles.

5. The method of claim 4 wherein each of said sprinkler nozzles is of a design such that water passing therethrough is atomized and at least a portion thereof sprayed in an upward direction inside said building structure.

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