United States Patent

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[54] **FIRE-SHIELDING DEVICE**
10 Claims, 5 Drawing Figs.

[52] **U.S. Cl.** **169/2,** 169/16, 239/200
[51] **Int. Cl.** **A62c 35/22**
[50] **Field of Search** 169/2, 5, 16; 239/207, 208, 209, 280, 200

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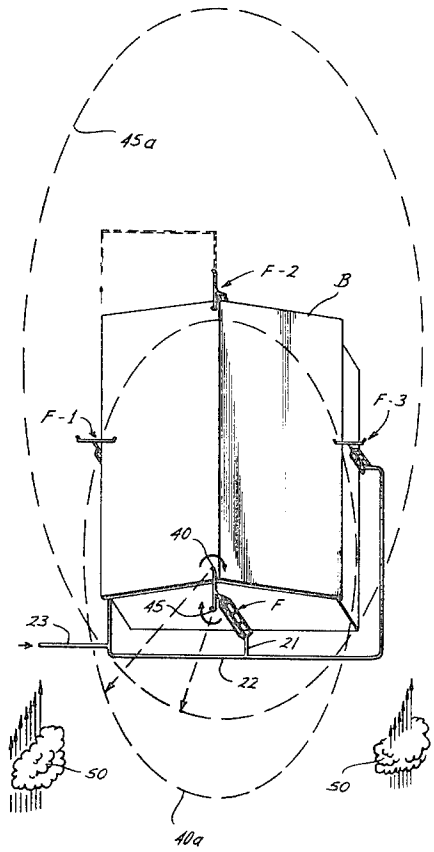
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ABSTRACT: A fire-shielding device adapted to be disposed adjacent a building for creating a water shield over the roof of the building and in an area adjacent the building which may be exposed to fire from an adjacent forest, building or other source.



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SHEET 1 OF 2

Fig. 1

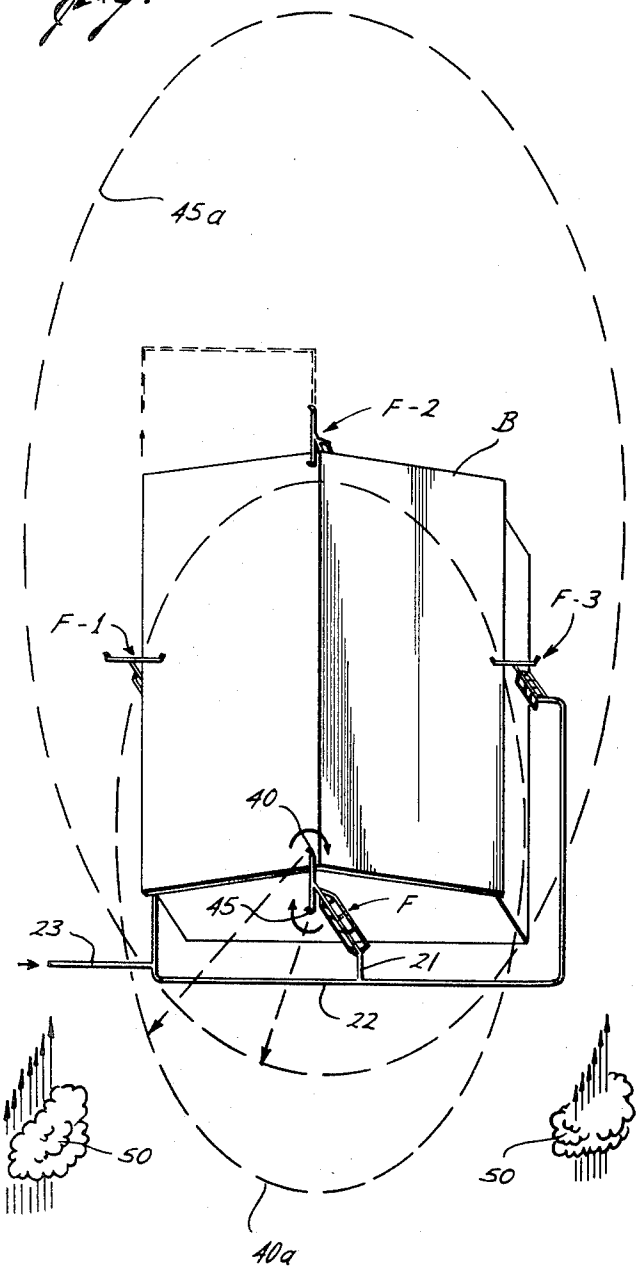
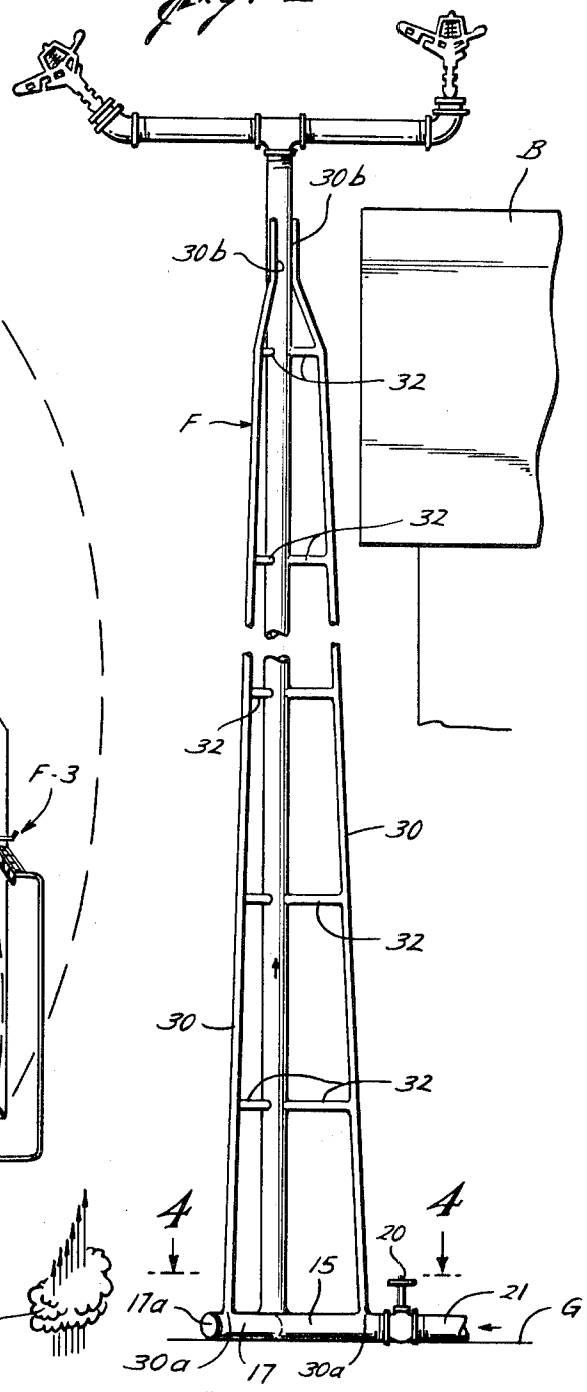


Fig. 2



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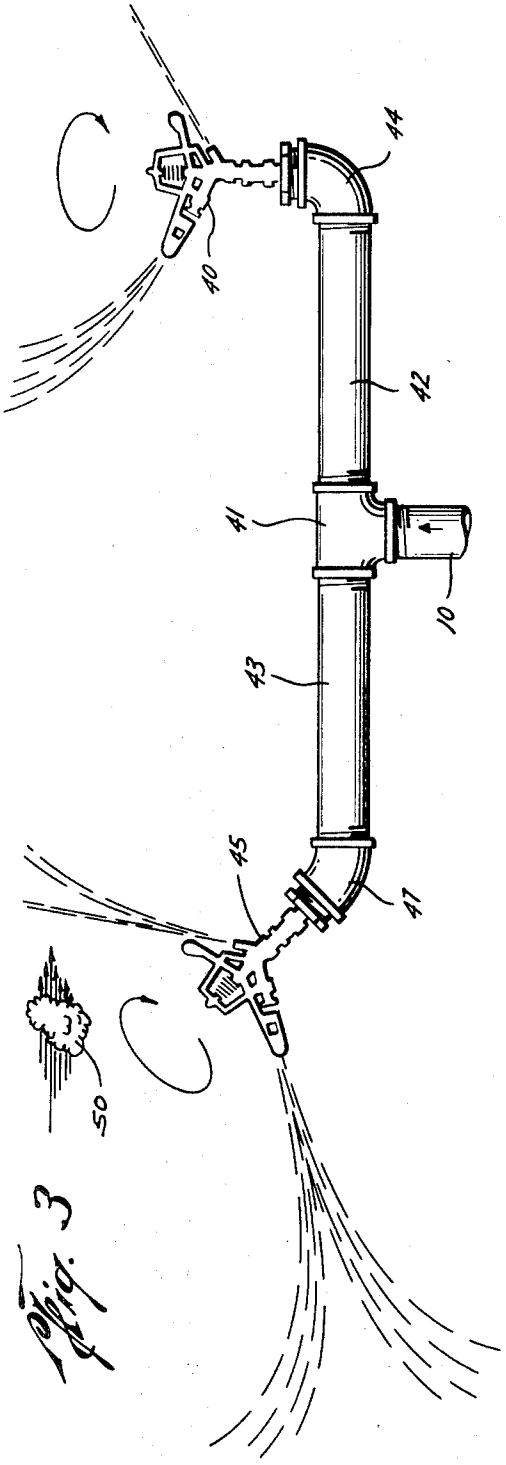


Fig. 3

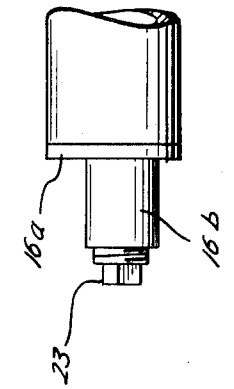


Fig. 5

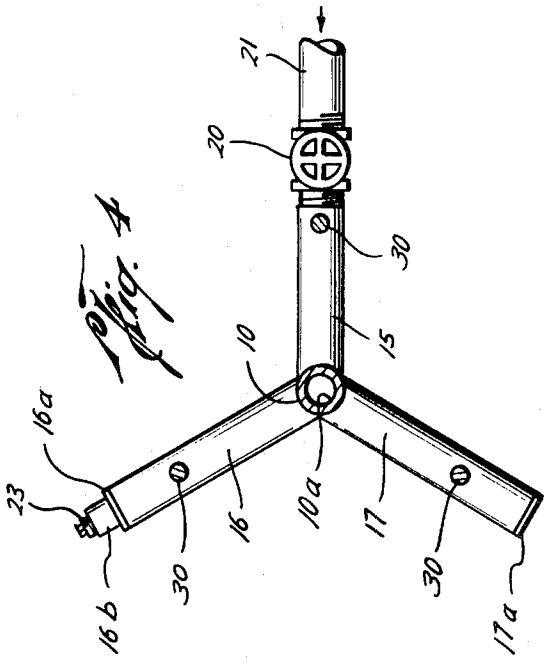


Fig. 4

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FIRE-SHIELDING DEVICE

BACKGROUND OF THE INVENTION

The field of this invention is fire protection apparatus.

In many areas of the U.S., as well as other countries, homes and buildings are built in close proximity to forests, large groups of trees, and other flammable materials. When such forests or trees are on fire, the flames reach terrifying proportions and are practically impossible to extinguish or control, except by large groups of experienced firefighters, using commercial firefighting equipment. Homes close to such forests are constantly threatened by such fires, especially in dry periods; heretofore, it has been virtually impossible for a private home owner to protect his own house when such fires have developed, since such owners have generally depended upon garden hoses manually applied to the houses.

SUMMARY OF THE INVENTION

This invention relates to a fire-shielding device which is adapted to be disposed adjacent a building, such as a house, for distributing water over the roof of the building and in an area adjacent the building to create a water shield for protecting the building from large fires such as occur in forests. The fire-shielding device may be actuated manually or by known heat-sensitive devices to place the device in operation almost instantaneously when the building is threatened by a fire from externally thereof. By utilizing a plurality of such devices in positions on each side of the building, the wind from any direction may be utilized for distributing water from one or more of the devices over a wide area.

Each of the fire-shielding devices has two sprinkler heads, with one sprinkler being tilted in a direction to spray a high arc of water into the air above the building to thereby utilize the wind for blowing the water over a greater area than is covered by the other sprinkler head. BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of a building having four of the fire-shielding devices of the present invention disposed on the sides thereof, with the area covered by water from one of the devices being shown in dotted lines;

FIG. 2 is an elevation of one of the fire-shielding devices of the present invention in position adjacent a house or building;

FIG. 3 is a view of the upper portion of a fire-shielding device of this invention, illustrating the pattern of the water being sprayed from the sprinkler heads on each end of the device;

FIG. 4 is a view taken on lines 4–4 of FIG. 2, and illustrating in detail the base of the device; and

FIG. 5 is an enlarged view of a portion of the base of FIG. 4, illustrating in particular the means for draining water from the device.

DESCRIPTION OF THE PREFERRED Embodiment

In the drawings, the letter F designates one of the fire-shielding devices of this invention which is adapted to be disposed adjacent to, or in proximity to, a house or other building B. As shown in FIG. 1, the fire-shielding device F is disposed adjacent one of the walls of the building B, while identical or similar fire-shielding devices F–1, F–2 and F–3 are disposed adjacent to or in proximity to, the other walls of the building B. As will be explained more in detail, each of the fire-shielding devices F, F–1, F–2 and F–3 is constructed so that water may be quickly distributed over the entire roof of the house or building B, and also over a relatively wide area surrounding the house or building B, to thereby provide protection from forest fires in an adjacent forest, or fires from other sources in proximity to the house or building B.

Considering now the details of the fire-shielding device F illustrated in particular in FIGS. 2—5, such device F includes a central substantially vertical pipe or duct **10** which has a central passage or inner bore **10***a* (FIG. 5) through which water is adapted to pass or flow. The vertical pipe **10** is

mounted on a supporting base which is preferably provided by three pipes **15**, **16**, and **17** which are welded to each other and to the lower end of the pipe **10** essentially as illustrated in FIGS. **2** and **4** of the drawings so as to maintain the pipe **10** in the substantially vertical position. The pipe **15** is provided with a hollow bore or an inner passage which communicates with the bore **10***a* of the pipe **10** so that water from any suitable source (not shown) may be supplied under pressure through the base pipe **15** to the vertical pipe **10**. A valve **20** is connected between the supply pipe **15** and the source of water under pressure so as to control the flow of the water to the pipe **10**. The pipe **21** which is connected to the valve **20** is also preferably connected to a network of pipes **22** which serves to interconnect all of the devices, F, F–1, F–2, and F–3 as shown in FIG. **1**, with an inlet pipe **23** connected thereto from the source of water under pressure, which may be a conventional city water supply, or it may be a private source of water under pressure such as from a well or stand pipe.

The pipe **16** is also preferably hollow and is in communication with the bore of the vertical pipe **10**, and it is provided with a cap **16** welded or otherwise affixed to the end thereof with a threaded coupler **16***b* extending therefrom. A removable drain plug **23** is threaded in the end of the coupler **16***b* so that when such drain plug **23** is removed, all of the water in the device F may be drained therefrom so as to prevent a freezing of the water in cold weather. The pipe **17** is preferably closed by a closure plate **17***a* which is welded thereto.

The The central pipe **10** is braced so as to prevent it from bending or shifting, particularly in high winds, by means of a network of braces which includes at least three substantially vertical brace members **30** which are welded at their lower ends to the base pipes **15**, **16** and **17**, and which are welded at their upper ends to the substantially vertical pipe **10**. The lower welds are indicated at **30***a* and the upper welds are indicated at **30***b*. It will be appreciated that of the securing means besides welding may be utilized for connecting the braces **30** to the pipes **10**, **15**, **16** and **17**, although welding is generally the most desirable. Additional lateral braces **32** extend from the substantially vertical braces **30** and are welded to such braces **30** and also to the vertical pipe **10** so as to strengthen the network of braces and to provide a derricklike assembly which includes the central pipe **10**.

A pair of sprinkler heads **40** and **45** are mounted at the upper end of the central pipe **10** by any suitable arrangement for supplying water thereto, an example of which is illustrated in FIGS. **2** and **3**, wherein a tee pipe fitting **41** is threaded or is otherwise connected to the extreme upper end of the pipe **10**, and wherein a first laterally extending pipe **42** is threaded or is otherwise connected to one of the side outlets of the tee fitting **41**. A second laterally extending pipe **43** is threaded or is otherwise connected to one of the side openings of the tee fitting **41**. The laterally extending pipe **42** has a 90° pipe elbow **44** threaded or otherwise secured thereto at its outer end for receiving the sprinkler head **40**. Since the pipe **42** is in a substantially horizontal position, the 90° pipe elbow **44** disposes a sprinkler head **40** so as to distribute a substantially horizontal plane of water therefrom. The sprinkler **40** may be of any conventional construction, but preferably is a conventional rotating type. However, a ring of water may be sprayed from the sprinkler **40** without any rotation thereof, although this would not be as effective under normal operating conditions.

Since the pipes **42** and **43** are both connected to the tee pipe fitting **41**, they are in alignment with each other and are both substantially horizontal. At the outer end of the pipe **43**, an elbow **47** disposed at approximately 45° is threaded or is otherwise secured for mounting the sprinkler head **45**. The sprinkler head **45** is thus mounted so that it will distribute a ring of water in a plane which is at an angle with respect to the horizontal plane of water distributed by the other sprinkler **40**. Again, the sprinkler head **45** may be a conventional type of rotating sprinkler, or it may be a fixed ring-type sprinkler

which distributes continuously a ring of water in the inclined plane with respect to horizontal. By disposing the plane of the water distributed form the sprinkler head 45 at an angle with respect to horizontal, and preferably approaching a vertical direction, wind which is indicated at 50 in FIGS. 1 and 3 can distribute water over a much wider area than is otherwise possible with the substantially horizontal spray of the sprinkler head 40. Thus, with the combination of the two sprinkler heads 40 and 45 arranged to provide the two planes of distributed water simultaneously with the present invention, the substantially horizontal plane of water will provide water to protect the building B in the vicinity of the wall on the side from which the wind 50 is blowing, and the wind will have only a small effect upon such water so that it is not displaced completely away from the wall of the building and the area in proximity to such wall. The other water from the other sprinkler head 45, on the other hand, is deliberately inclined so that it will be blown by the wind 50 to cover an area completely over the roof of the house or building B and a relatively wide area on each side of the building B, which area is a much larger and wider area than would be possible with just the sprinkler radius normally available from conventional sprinkler heads.

In the operation or use of the fire-shielding device F of this invention, the device F is kept drained of water in freezing weather by use of the drain plug 23. The valve 20 is closed until such time as the water is required for shielding the house or building B from a potential threat of a forest fire or other fire in the vicinity of the building B. With the plug 23 closed and with the valve 20 opened, water is supplied from any suitable source such as the city water pressure and such water is transmitted through the base supply pipe 15 upwardly through the central pipe 10 to the pipes 42 and 43 and thus to the sprinkler heads 40 and 45. The sprinkler head 40 distributes a plane of water which is substantially horizontal over the top of the roof of the house or building B in a substantially elliptical area designated by the dotted line 40A (FIG. 1). The elliptical nature of the area covered by the water sprayed from the sprinkler head 40 occurs because of the effect of the wind 50 and therefore it will be appreciated that the exact shape of such area may vary depending upon the extent of the wind at any particular time. If no wind is blowing, there will of course be a substantially circular pattern to the area covered by the sprinkler 40. The sprinkler head 45, on the other hand, sprays its water at an angle to intentionally take advantage of the wind which carries such spray in a path over the roof of the house B to protect both the house and the area around the house and this pattern is also elliptical as shown by the dotted line 45*a* in FIG. 1. The configuration of such area 45*a* covered by the sprinkler head 45 may also be varied depending upon the wind conditions, but essentially it will be observed that the bulk of the water is in a pattern over the house or building B and is a much wider area than the pattern for the sprinkler head 40. This is because of the angle of approximately 45° with respect to vertical at which the water is sprayed into the air from the sprinkler head 45. Such angle may be varied as long as the wind is effectively used in distributing the water from the head 45.

The present invention thus provides for fast cooling of the building or house in the event of an emergency such as an adjacent forest fire or a large fire from another building or in any other structure or area in proximity to the house or building being protected. The fire shielding device F is easily maintained since once it is erected in the form disclosed, it requires substantially no attention, except for the draining of water therefrom in cold or freezing weather. The device is capable of being manufactured with standard equipment and parts and is easy to assemble and install. Although the device F is adapted to be located on the ground G (FIG. 2) or any other foundation in a relatively permanent installation, it will be appreciated that the device F may be moved to another location with a minimum of difficulty. It should also be noted that the other devices F–1, F–2, and F–3 are preferably identical to the device F and are usually provided with water under pressure from the same source through the pipe 23 and the inner connecting pipe 22 which leads to each of the devices F, F–1, F–2 and F–3.

The foregoing disclosure and description of the invention are illustrative and explanatory thereof, and various changes in the size, shape, and materials as well as in the details of the illustrated construction may be made without departing from the spirit of the invention.

I claim:

1. A fire-shielding device for use adjacent the exterior of a building, comprising:

a. a substantially vertical pipe extending upwardly exteriorly of a building to a point above its roof and having an internal bore through which water may flow;

b. a base for said substantially vertical pipe adapted to rest on the ground or foundation exteriorly of the building and adjacent thereto for maintaining said pipe substantially vertical and having means therewith for supplying water under pressure to said bore of said pipe;

c. a first laterally extending pipe connected to the upper end of said vertical pipe and having internal passage means communicating with the internal bore of said vertical pipe;

d. a first sprinkler head on said first laterally extending pipe and having means for distributing water therefrom in a substantially horizontal plane;

e. a second laterally extending pipe connected to the upper end of said vertical pipe and having internal passage means communicating with the internal bore of said vertical pipe; and

f. a second sprinkler head on said second laterally extending pipe and having means for distributing water therefrom in a plane which is inclined with respect to horizontal to facilitate use of wind in distributing water therefrom over a wide area.

2. The structure set forth in claim 1, including braces extending from said base upwardly for a substantial portion of the height of said vertical pipe to maintain said vertical pipe in its substantially vertical position even in the presence of strong winds.

3. The structure set forth in claim 1, wherein:

a. said means with the base for supplying water to said vertical pipe includes a substantially horizontal supply pipe forming a part of said base;

b. said supply pipe has means therewith for connecting to a source of water under pressure; and

c. a valve operably connected between said supply pipe and said source for controlling the flow of water from the source to said supply pipe and thus to said vertical pipe and said first and second sprinkler heads.

4. The structure set forth in claim 1, wherein;

a. said first and second laterally extending pipes are substantially horizontal and are in alignment with each other; and

b. the connection between said laterally extending pipes and said vertical pipe is a tee pipe fitting.

5. The structure set forth in claim 1, wherein:

a. said first sprinkler head is adapted to be rotated by the water supplied thereto; and

b. said first sprinkler head is mounted on a substantially 45° elbow at the end of said second laterally extending pipe.

6. The structure set forth in claim 1, wherein:

a. said second sprinkler head is adapted to be rotated by water supplied thereto; and

b. said second sprinkler head is mounted on a substantially 45° elbow at the end of said second laterally extending pipe.

7. The structure set forth in claim 1, wherein:

a. said first sprinkler head is mounted on a substantially 90° elbow at the end of said first laterally extending pipe and is adapted to be rotated by water supplied thereto; and

b. said second sprinkler head is mounted on a substantially 45° elbow at the end of said second laterally extending pipe and is adapted to be rotated by water supplied thereto.

8. The structure set forth in claim 1, wherein:

a. said first and second laterally extending pipes are substantially horizontal and are in alignment with each other;

b. the connection between said laterally extending pipes and said vertical pipe is a tee pipe fitting;

c. said first sprinkler head is mounted on a substantially 90° elbow at the end of said first laterally extending pipe; and

d. said second sprinkler head is mounted on a substantially 45° elbow at the end of said second laterally extending pipe.

9. The structure set forth in claim 1, including:

a. at least one additional fire-shielding device disposed adjacent said building on another side thereof; and

b. means interconnecting both fire-shielding devices with a source of water under pressure, whereby either or both devices may be used for fire-shielding purposes.

10. The structure set forth in claim 1, wherein:

a. said first and second laterally extending pipes extend substantially perpendicular to the wall of the building which is adjacent to the device; and

b. said second laterally extending pipe and said second sprinkler head thereon are disposed further outwardly from the wall of the building than said first sprinkler head.