SPRINKLER WITH SIDEWALL DEFLECTOR

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References Cited

UNITED STATES PATENTS
783,826 2/1905 Dinkel.......................... 239/523
1,667,425 4/1928 Loepsinger............... 169/37 X
2,046,169 6/1936 Knight..................... 169/37 X
2,295,088 9/1942 Kleucker................... 239/524 X
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ABSTRACT

A fire extinguishing sprinkler is provided with an improved deflector positioned on the frame thereof opposite the discharge opening and forming a caplike device having a relatively flat right angular section with respect to the frame of the sprinkler on which it is mounted with angularly disposed parallel flat sections on the sides thereof and a depending and downwardly and forwardly formed extension on one end thereof the sides of which are joined to the angular sections to form a horizontally positioned cup opening toward the frame of the sprinkler.

7 Claims, 5 Drawing Figures
SPRINKLER WITH SIDEWALL DEFLECTOR

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to fire extinguishing sprinklers incorporating sidewall deflectors as used in automatic fire extinguishing sprinkler systems.

2. Description of the Prior Art

Prior structures of this type may be seen in U.S. Pat. Nos. 868,459, 2,046,169 and 2,101,694. This invention discloses an uniquely shaped deflector which utilizes all of the water delivered through the discharge orifice of the sprinkler to create a desirable sidewardly directed pattern that will effectively control a fire in the area towards which it is directed with a minimum of water loss from the desired pattern. The deflector may be mounted on sprinkler frames of a standard and known configuration and utilizes the configuration of the sprinkler frame to enhance the pattern coverage obtained through the use of the improved deflector.

SUMMARY OF THE INVENTION

The present invention discloses an improvement in the deflector of a side-wall sprinkler used for fire extinguishing purposes. The improved deflector provides deflecting surfaces and a horizontally disposed cup formed in conjunction with the deflecting surfaces to receive and redirect a stream of fire extinguishing fluid around and about the upper portions of the frame of the sprinkler on which the deflector is mounted so that a desirable spray pattern covering a given area is produced.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front elevation of a fire extinguishing sprinkler with the improved deflector mounted thereon.

FIG. 2 is a side elevation on line 2—2 of FIG. 1.

FIG. 3 is a top plan view on line 3—3 of FIG. 2.

FIG. 4 is a vertical section on line 4—4 of FIG. 1, and

FIG. 5 is a vertical section on line 5—5 of FIG. 2.

DESCRIPTION OF THE PREFERRED EMBODIMENT

By referring to the drawings and FIGS. 1 and 2 in particular it will be seen that a fire extinguishing sprinkler comprises a sprinkler frame 10 having a base portion 11 exteriorty threaded at 12 and defining a vertical passageway axially thereof the upper end of which forms a discharge orifice normally closed by a cap 13. The upper central portion of the frame 10 is enlarged as at 14 and receives and retains an improved deflector generally indicated at 15, the subject of this invention.

The improved deflector 15 is secured to the sprinkler frame 10 by a fastener 16 positioned through an aperture therein and engaging the enlarged upper central portion 14 of the frame 10. The lower end of the fastener 16 forms a compression pin in axial alignment with the discharge orifice of the sprinkler and is normally engaged against a lever and heat releasable fastener assembly 17 such as shown in U.S. Pat. No. 3,599,723.

Those skilled in the art will observe that any approved lever and heat releasable fastener assembly may be employed in a fire extinguishing sprinkler along with the improved deflector of this invention.

The deflector 15 includes a relatively flat, rectangular top portion 18 the width of which is greater than the diameter of the enlarged upper central portion 14 of the frame 10 and the length which from front to back as seen in FIG. 2 of the drawings is only slightly less than the width of the sprinkler frame 10 at its widest point as seen in FIG. 1 of the drawings. The top portion 18 of the deflector extends sidewardly in oppositely disposed angularly related portions 19, the ends of which are also angularly formed relative to the ends of the rectangular top portion 18 as best seen in FIG. 3 of the drawings.

By referring now to FIG. 2 of the drawings, it will be seen that a cup-like portion is formed on the back of the deflector 15 and includes downturned right angularly disposed end portions 20 and 21, the portions 21 conforming with the angular ends of the portions 19 heretofore described. The cup-like portion of the deflector 15 is completed by turned angularly disposed continuing portions 22 and 23 which extend toward the sprinkler frame 10 and terminate in closely spaced relation thereto on a common transverse line 24. The lower edges of the angularly disposed portions 19 are joined to the upper edges of the oppositely disposed continuing portions 22 and 23 by sidewalls 25, on one side of the frame 10.

It will thus be seen that a deflector for a sidewall fire extinguishing sprinkler is formed of a plurality of interconnected angularly disposed deflecting surfaces which act to break up the vertical stream of fire extinguishing fluid directed thereagainst to a sidewardly projected spray pattern of substantially improved configuration. The improved spray pattern configuration realized with the sidewall deflector disclosed herein is believed to result from the plurality of angularly related flat planes defining the inner surface of the deflector and particularly its cup-like portion as hereinbefore described. The pattern is improved by the arrangement of the deflector relative to the upper portions of the sprinkler frame 10 and the enlarged upper central portion 14 thereof as which may be seen by referring to FIG. 1 of the drawings result in the creation of three separate forwardly directed spray areas. Of equal importance is the arrangement of the cup portion of the deflector with its inwardly and downwardly disposed continuing portions 22 and 23 and the vertical sidewalls 25 all of which insure that the portion of the initially vertically directed stream of fire extinguishing fluid striking the inner upper portion of the deflector will be almost completely directed oppositely and outwardly with respect to the cup portion of the deflector.

It will thus be seen that a simple, relatively inexpensive and easy to install deflector for a fire extinguishing sprinkler has been disclosed which is particularly suitable for use as a sidewall deflector.

Although but one embodiment of the present invention has been illustrated and described, it will be apparent to those skilled in the art that various changes and modifications may be made therein without departing from the spirit of the invention.

Having thus described my invention what I claim is:

1. A fire extinguishing sprinkler having a base with a discharge opening therethrough arranged for discharge of a fire extinguishing fluid, arms extending from said base to form a frame overlying the opening and a deflector mounted on the frame having at least one first deflecting surface at a right angle to the direction of
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3. The fire extinguishing sprinkler set forth in claim 1 and wherein angularly disposed additional deflecting surfaces are positioned on the sides of said first deflecting surface.

4. The fire extinguishing sprinkler set forth in claim 2 and wherein the first deflecting surface is rectangular and there are two additional deflecting surfaces, one on each side of said first surface.

5. The fire extinguishing sprinkler set forth in claim 4 and wherein the ends of said two additional deflecting surfaces are formed with an angular relation to the ends of the rectangular first deflecting surface.

6. The fire extinguishing sprinkler set forth in claim 1 and wherein said first deflecting surface has a central transversely flat section and angularly disposed sidewardly extending sections on either side thereof and wherein the second deflecting surfaces have a central transversely flat section with angularly disposed sections on either side thereof and wherein the further deflecting surface has a central transversely flat section with angular extensions on either side thereof so as to define a cup shaped portion that is deeper in the center than at its sides as defined by said sidewalls.

7. The fire extinguishing sprinkler set forth in claim 2 and wherein said side walls join said angularly disposed additional deflecting surfaces.

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