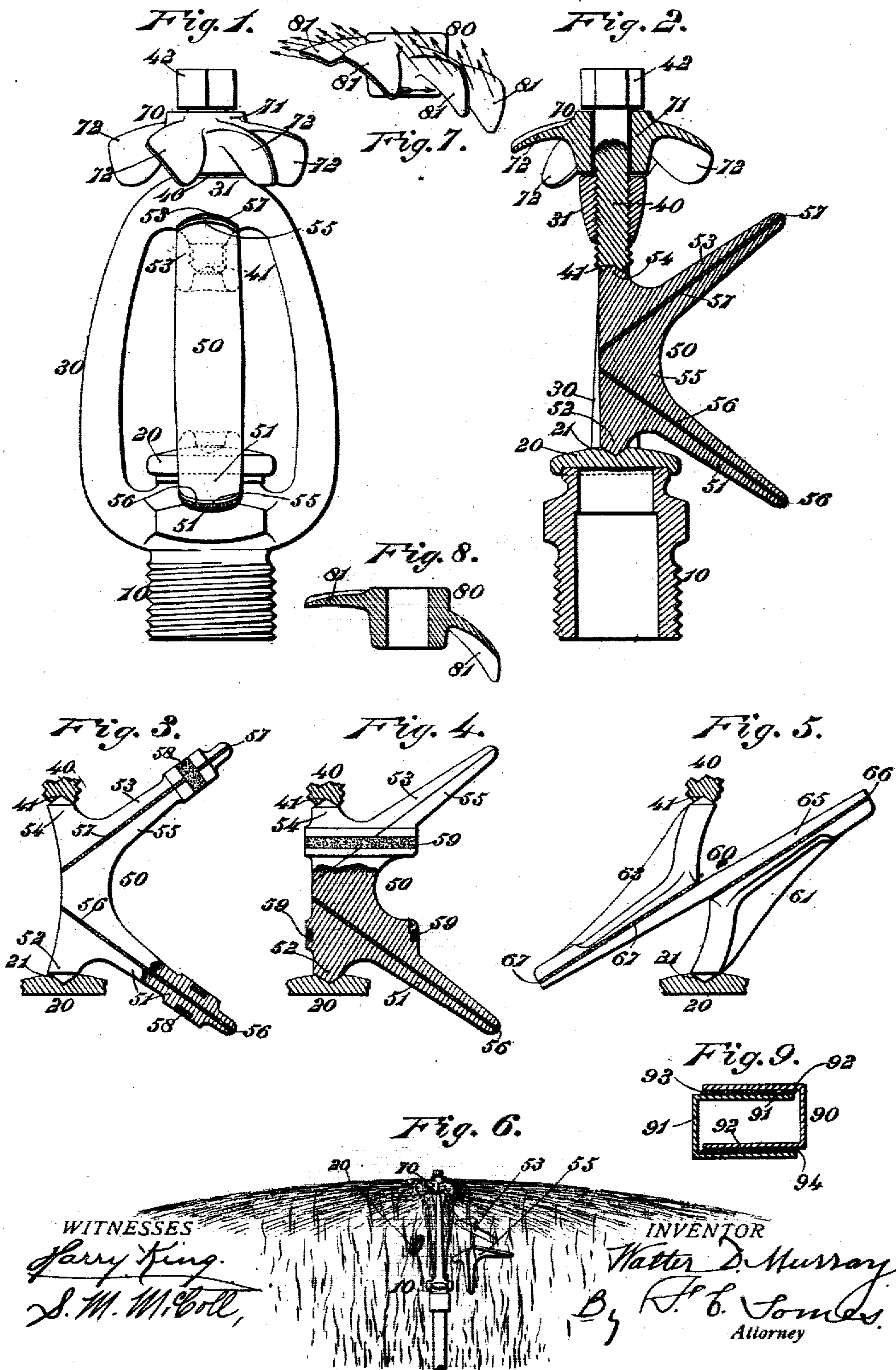


No. 826,866.

PATENTED JULY 24, 1906.

W. D. MURRAY.
AUTOMATIC SPRINKLER FOR FIRE EXTINGUISHERS.
APPLICATION FILED APR. 11, 1905.



UNITED STATES PATENT OFFICE.

WALTER D. MURRAY, OF PORTLAND, MAINE, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO MAINE SPRINKLER COMPANY, OF PORTLAND, MAINE, A CORPORATION OF MAINE.

AUTOMATIC SPRINKLER FOR FIRE-EXTINGUISHERS.

No. 826,866.

Specification of Letters Patent.

Patented July 24, 1906.

Application filed April 11, 1905. Serial No. 254,931.

To all whom it may concern:

Be it known that I, WALTER D. MURRAY, a citizen of the United States of America, and a resident of Portland, in the county of Cumberland, in the State of Maine, have invented certain new and useful Improvements in Automatic Sprinklers for Stationary Fire-Extinguishers, of which the following is a specification.

10 Stationary fire-extinguishers commonly used in factories, warehouses, and other places comprise a system of pipes extended throughout the buildings and connected with a source of water-supply under pressure and
15 provided at intervals with sprinklers having valves which are released automatically by the heat of a fire in the building or room and distributors which spread the discharged water for drenching the room and quenching
20 the fire.

The object of the invention is to avoid accidental release of the valve at normal temperatures and to secure a quick release in case of fire. To accomplish this object, the valve-
25 holding means comprises a composite strut, the members of which are united by separate fusible connections which in the aggregate afford a strong sealing contact and are so disposed that the fusion of either of them will
30 dismember the strut even though the other remain intact. Thus for normal temperatures a maximum of strength is secured which permits a high pressure to be used in the pipes and for abnormally-high temperatures due
35 to a fire the maximum of weakness is provided.

Figure 1 of the accompanying drawings represents a side elevation of an automatic sprinkler disposed in upright position and embodying one form of this invention. Fig. 2
40 represents a vertical longitudinal section thereof turned a quarter-turn from the position of Fig. 1. Fig. 3 represents a side elevation, partly in section, of a valve-holding
45 strut embodying this invention, the members thereof being united by bands of fusible metal at the tips of the arms as well as by fusible solder along their sealing-surfaces. Fig. 4 represents a side elevation, partly in
50 section, of a strut embodying this invention, the members thereof being united by bands of fusible metal as well as by solder

between the sealing-surfaces, said bands being disposed near the base of the arms of the strut. Fig. 5 represents a side elevation of a
55 composite valve-holding strut embodying this invention, the intermediate member being an elongated bar disposed at an angle of thirty to forty-five degrees more or less to the axis of the head and the brace members being
60 attached to opposite faces of opposite ends thereof. Fig. 6 is a pictorial illustration of the sprinkler, representing the strut dismembered by heat, the valve as forced off
65 its seat, and the water being distributed to extinguish the flames. Fig. 7 represents a distributor embodying one feature of this invention, the wings being set at different
70 angles for the distribution of the water over a large area. Fig. 8 represents a vertical section of the distributor shown in Fig. 7. Fig. 9 represents a longitudinal section of a fusible connection for the members of the strut in the form of a composite band.

The same reference characters indicate corresponding parts in all the figures.

A nozzle 10 constitutes the base of this automatic sprinkler. This nozzle is preferably detachable from the system of distributing-pipes above referred to, and it is preferably
80 provided at its inner end with screw-threads, whereby it is adapted to form connection with one of the T's disposed at intervals in said distributing-pipes and it may be contracted at its outer end. The distributing-
85 pipes referred to are commonly located along the floor, side walls, or ceilings of rooms and the sprinklers are disposed in upright position, as shown in the drawings, independent or horizontal positions or at any desired
90 angle, as the case may require.

A separable valve 20 serves to close the nozzle 10, and this valve is preferably in the form of a cap covering the outer end of the nozzle. This cap is provided on its outer
95 face with a central recess or other bearing 21.

A frame 30, attached to the nozzle 10 by integral connections or otherwise, projects outward therefrom and is provided at its outer end with a screw-threaded socket or
100 eye 31 in axial alinement with the nozzle 10. A screw-threaded spindle 40 is adjustable in the eye 31 and provided at its inner end opposite the bearing 21 of the valve 20 with

a recess or other bearing 41. This spindle extends beyond the frame 30 and is provided at its outer end with a head 42.

A composite strut 50 serves as a valve-
5 holding device to keep the valve 20 normally closed at ordinary temperatures and operates to release said valve when the temperature is raised beyond certain limits by fire. This strut is composed of three or more mem-
10 bers, one of which is united to the others by fusible connections so disposed that the fusing of one of said connections dismembers the strut and releases the valve. The drawings illustrate two forms of strut comprising
15 inner and outer members in the form of brace-arms and an intermediate member fusibly connected therewith, said arms being disposed, respectively, at an angle to the axis of the nozzle and either in the same or
20 different angles relatively to each other. In the form shown in Figs. 2, 3, 4, and 6 the strut 50 comprises two inclined members 51 and 53, disposed at opposite inclines to the axis of the nozzle and both on the same side
25 of said axis approximately at a right angle to each other and an intermediate V-shaped member 55, the two arms or parts of which extend parallel, respectively, with the arms of said inner and outer members. The in-
30 clined arm 51, constituting the inner member, is provided with a stud 52, which projects toward the nozzle 10 and has a bearing engaging the bearing 21 of the cap-valve 20, and the inclined arm 53, constituting the
35 outer member, is provided with a stud 54, which projects toward the spindle 40 and engages the bearing 41. In Figs. 2 and 3 the elongated face of the member 51 and the elongated face of the member 53 constitute
40 sealing-surfaces, and the inner and outer faces of the intermediate member 55 also constitute sealing-surfaces. The inner sealing-surface of the intermediate member 55 is united with the sealing-surface of the inner
45 member 51 by a fusible connection 56 and the outer sealing-surface of said intermediate member is united with the sealing-surface of the outer member 53 by a similar fusible connection 57. In Fig. 3 the strut is pro-
50 vided with additional or supplemental fusible connections in the form of links or bands 58, of fusible material, encircling the outer adjacent ends of the connected members and preferably cast in recesses therein. In Fig.
55 4 the fusible connection 57 is omitted and the strut is provided with fusible connections in the form of bands 59, encircling the adjacent members at the bases of the arms of the strut, said bands being preferably set in recesses.

60 In Fig. 5 a strut 60 is shown comprising inner and outer members 61 and 63, similar to the members 51 and 53, but disposed approximately in alinement and extending in opposite directions from the axis of the noz-
65 zle, and an intermediate member 65 in the

form of a straight bar united on one side of the axis to the member 61 by means of a fusible connection 66 in contact with the under side of said intermediate bar and united on the other side of said axis to the
70 member 63 by a fusible connection 67, disposed between the outer face of said intermediate bar and the sealing-face of said outer member.

A fusible connection 90, comprising a com-
75 posite band of hard and fusible metal, is shown in Fig. 9. This composite band may be used in place of the band 59 (shown in Fig. 4) or as a substitute for other fusible connections. It is preferably composed of two
80 U-shaped hard metal members 91 and 92, disposed with their closed ends outward and their limbs interlapped and united by layers of fusible metal or solder 93 and 94.

The fusible connections herein referred to
85 comprise a metal, alloy, or other material of sufficient strength to hold the component parts of the strut intact under the pressure of the water in the pipes and having a comparatively low fusing-point—say 160° Fah-
90 renheit, more or less—to enable the parts to separate when subjected to the heat of a fire.

A rotary distributor 70 is disposed at the outer end of the frame 30 and adapted to
95 rotate in a plane at right angles to the axis of the nozzle. This distributor may be supported on the outer end of the spindle 40 between its head 42 and the frame 30. This distributor comprises a hub 71 and a se-
100 ries of propeller-blades 72, disposed at an inclined angle to the axis of the head and in position for impact of the column of water discharged from the nozzle when the valve is released. The impact of the water causes
105 the distributor to rotate and the distributor in turn divides and sprays the column over a considerable area.

In Figs. 7 and 8 a rotary distributor 80 is provided with blades 81, which are severally
110 set at different angles, so as to increase the area of distribution of the column of water.

In the use of this device the valve 20 is placed in position to close the nozzle 10, the distributor 70 or 80 is disposed on the spindle
115 40, and the latter is screwed through the eye of the frame 30. Then the compound strut 50 or 60 is adjusted with its opposite bearings, as 52 and 54, in contact, respectively, with the bearing 21 of the valve 20 and the
120 bearing 41 of the spindle 40, and said spindle is screwed into tight connection with the strut. Then the nozzle 10 is screwed into the socket of the T of a distributing-pipe of the water-supply. (Not shown.)
125

The large area of sealing contact between the connected members of the strut enables the latter to resist the high-water pressure in the pipes and the division of the sealing
130 contact-surface into separate and distinct

connections in such manner that the fusing of one connection only permits the dismemberment of the strut renders the latter quickly operative for releasing the valve in case of fire.

I claim as my invention—

1. A composite strut for an automatic sprinkler for a fire-extinguisher composed of members all the adjacent faces of which are united by separate fusible connections, the fusion of either of said connections being operative to dismember the strut.

2. A strut for an automatic sprinkler for a fire-extinguisher comprising three or more members all the adjacent faces of which are united one to others by fusible connections so disposed that the fusing of either connection dismembers the strut.

3. A strut for an automatic sprinkler for a fire-extinguisher comprising two brace members having arms extending in the same lateral direction, and an intermediate member disposed between them and united therewith by separate fusible connections, the fusing of either of which dismembers the strut.

4. A strut for an automatic sprinkler for a fire-extinguisher comprising two brace members having arms extending in the same lateral direction at different angles, and an intermediate member disposed between and united to said brace members by separate fusible connections, the fusing of either of which dismembers the strut.

5. A strut for an automatic sprinkler for a fire-extinguisher comprising two braced members having divergent arms extending in the same lateral direction, and an intermediate member having converging faces united with said divergent arms by separate fusible connections, the fusing of either of which dismembers the strut.

6. A composite strut for an automatic sprinkler for a fire-extinguisher composed of members all the adjacent faces of which are united by separate elongated fusible connections disposed between them, the fusion of either of said connections being operative to dismember the strut.

7. A strut for an automatic sprinkler for a fire-extinguisher composed of two brace members having inclined arms extending in the same lateral direction, and an intermediate member disposed between said arms and united therewith by separate fusible connections, one of said connections being disposed between said intermediate member and the arm of one of the brace members and the

other fusible connection being disposed between said intermediate member and the arm of the other brace member, the relations of the several parts being such that the fusing of either of said fusible connections is operative to dismember the strut.

8. A strut for an automatic sprinkler for a fire-extinguisher composed of two brace members having elongated inclined arms extending in the same lateral direction, and an intermediate member disposed between said arms and united therewith by separate elongated fusible connections, one of said fusible connections being disposed between the intermediate member and the elongated inclined arm of one of the brace members, and the other fusible connection being disposed between said intermediate member and the inclined elongated arm of the other brace member, the relations of the parts being such that the fusing of one of said fusible connections is operative to dismember the strut.

9. A strut for an automatic sprinkler for a fire-extinguisher composed of two brace members having elongated arms extending in the same lateral direction at different angles, and an intermediate member united to said brace members by fusible connections disposed between them, the relations of the parts being such that the fusing of either of said connections is operative to dismember the strut.

10. A strut for an automatic sprinkler for a fire-extinguisher composed of two brace members having arms extending in the same lateral direction, and an intermediate member disposed between and completely separating said brace members and united therewith by separate fusible connections, the fusing of either of which will dismember the strut.

11. A composite strut for an automatic sprinkler for a fire-extinguisher composed of members the adjacent faces of which are united throughout their length by separate fusible connections, the fusion of either of which dismembers the strut.

12. A composite strut for an automatic sprinkler for a fire-extinguisher composed of two brace members having laterally-extending arms, and an intermediate member disposed between and completely separating said brace members and united therewith by separate fusible connections, the fusing of either of which dismembers the strut.

WALTER D. MURRAY.

Witnesses:

WILLIAM J. KNOWLTON.
MARION L. DUNBAR.