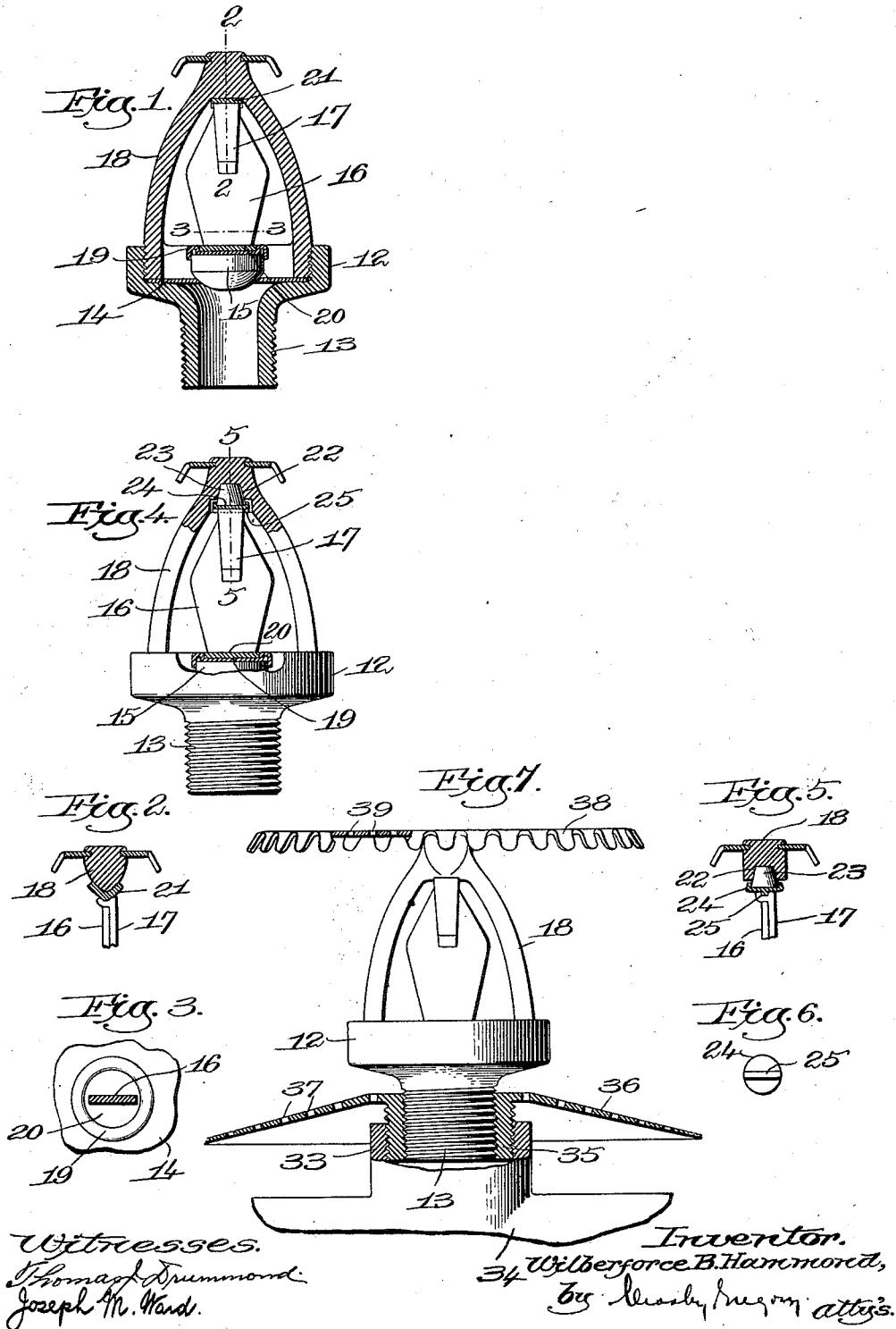


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AUTOMATIC SPRINKLER HEAD.
APPLICATION FILED OCT. 22, 1909.

1,030,299.

Patented June 25, 1912.



UNITED STATES PATENT OFFICE.

WILBERFORCE B. HAMMOND, OF BOSTON, MASSACHUSETTS.

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1,030,299.

Specification of Letters Patent.

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Application filed October 22, 1909. Serial No. 524,080.

To all whom it may concern:

Be it known that I, WILBERFORCE B. HAMMOND, a citizen of the United States, and resident of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Automatic Sprinkler-Heads, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

In another application, Serial No. 511,174, filed by me the fourth day of August, 1909, I have shown and described means whereby a fire-extinguishing sprinkler system can be utilized under normal conditions to serve as a hot water heating system without detracting from the efficiency or interfering with the performance of the usual functions of the sprinkler system when demanded. In such invention I have provided means for effecting the circulation of hot water through the usual piping of the sprinkler system, so that the piping will be maintained hot and will radiate heat for the requisite heating of the room or building equipped with the system. As the piping is thus raised to a relatively high temperature the conduction of the heat therefrom to the metallic sprinkler heads is rapid and continuous, and inasmuch as the heads are frequently set to operate at a temperature of about 155° I provide means in my said application to insulate the sprinkler heads from the heat of the circulating water, forming heat-insulating bodies of dead air and water adjacent the sprinkler heads.

My present invention has for its object the production of means to prevent the operation of a sprinkler head by conducted heat, so that in a combined sprinkler and heating system the operation of the thermostatic controlling device of a sprinkler head will depend upon the rise in temperature of the adjacent air, and cannot operate through the action of conducted heat.

As my present invention may be embodied in various practical forms I have selected for description and illustration several practical constructions, but it is to be understood that they are illustrative of my invention and the same may be varied in many particulars as to general construction and arrangement without departing from the spirit and scope of my invention.

Figure 1 is a vertical sectional view of a well known form of automatic sprinkler

head with one form of my present invention embodied therein; Fig. 2 is a sectional detail thereof on the line 2—2, Fig. 1; Fig. 3 is a transverse sectional detail, looking down, taken on the line 3—3, Fig. 1; Fig. 4 is a side elevation and part section of a sprinkler head embodying yet another form of my invention; Fig. 5 is a vertical sectional detail thereof on the line 5—5, Fig. 4; Fig. 6 is an underside view of the metallic cap on the insulating plug shown in Figs. 4 and 5; Fig. 7 is a similar view of another embodiment of my invention, to be referred to.

In the several embodiments of my invention herein illustrated the metallic base 12 of the sprinkler head, having a threaded, tubular nipple 13 constituting the discharge outlet for the water, the centrally apertured diaphragm 14, Fig. 1, normally closed by a glass or porcelain button-valve or closure 15, the metal links 16, 17 connected by solder fusible at a predetermined temperature, and the arms 18 fixedly connected with the base 12, may be and are all of usual or well known construction, the connected links interposed between the valve 15 and the connected ends of the arms 18 retaining the valve seated and thereby maintaining the discharge outlet closed until a predetermined rise in temperature fuses the solder and permits the links to separate. Ordinarily a thin metal plate 19 caps the valve, the end of link 16 bearing thereon, and it is very common practice to run the fusible solder up around the outer end of the link 17 and upon the adjacent metal at the junction of arms 18, so that if the sprinkler head is subjected to a rise in temperature the heat therefrom is transmitted directly and rapidly by conduction to the sensitive or controlling element, viz: the solder. Should such a sprinkler head be connected by the usual coupling with the supply or service conduit or pipe and hot water circulated therethrough the pipe and the whole sprinkler head would be subjected by conduction to a very rapid and extensive rise in temperature, so that the solder would fuse when there was no demand for the operation of the head. This will be readily understood when it is remembered that the operating temperature of the head is about 155°, while the temperature of the circulating water may be anywhere from 200° up to 240° and the containing piping would then have a temperature far above the operating tem-

perature of the head. To prevent the head from operating by conducted heat under such circumstances I provide heat insulating means, and in the structure shown in Figs. 1, 2 and 3 I interpose a disk 20 of heat-insulating material, such as asbestos fiber, between the end of the link 16 and the plate 19 on the valve 15, and a second insulating member 21 of similar material is interposed between the junction of the metal arms 18 and the adjacent end of the link 17, as clearly shown in Fig. 2. By reference to said figure it will be seen that the offset end of said link 17 fits around and receives the bent portion of the insulating member 21, and by the members 20 and 21 the sensitive solder is effectually insulated from the action of conducted heat through the arms or through the valve. Consequently the operation of the sprinkler head is prevented until through radiation the solder is fused by a rise in the temperature of the surrounding air to the predetermined or abnormal point, notwithstanding the fact that the base and arms of the head may, by conduction of heat from the hot water piping, be at very much higher temperature.

Should it be desired to solder the end of the link 17 to its supporting means it may be accomplished by the construction illustrated in Figs. 4, 5 and 6, wherein the junction of the arms 18 is socketed at 22 to receive a plug 23 of heat-insulating material, having on its projecting end a metal cap 24 provided with a transverse rib 25. This rib fits into the offset end of link 17, and the fusible solder connecting the links can be extended to solder the link and the cap 24 together, the cap being held away from contact with the metal of the sprinkler head by the projecting end of the plug 23. The rib 25 serves to position the end of link 17 and prevents it from slipping out of place.

In the construction shown in Fig. 7 the hub 33 of the coupling or T 34 has screwed into it an internally threaded sleeve 35 provided with a very thin, radially-extended and circular flange 36, preferably slightly coned, as shown, and provided with small perforations 37, this flange radiating heat very rapidly by reason of its large area and small amount of metal. The nipple 13 of the sprinkler head is screwed into the sleeve 35, and the heat is given off from the sleeve so rapidly by radiation over the surface of the flange that very little will pass to the sprinkler head, and such heat is radiated or

diffused from the head into the surrounding air by the deflector 38, made very thin and of large area for the purpose, and also provided with small perforations 39. While the deflector thus serves as a heat radiator and diffuser it is ready to act as a deflector for the water when the sprinkler head operates.

From the foregoing it will be seen that the essential result to be secured in a sprinkler head used in a sprinkler system used also for hot water heating is the prevention of an undue rise in the temperature of the sensitive element of the head by conduction of heat thereto, and I have shown several ways by which the result desired may be secured in a practical and simple manner without in any way detracting from the efficiency of the sprinkler head when its operation is called for.

As many different constructions have been devised for sprinkler heads it is impossible to illustrate my invention in all of its applications, nor is it necessary so to do, for in all types of sprinkler heads known to me the thermostatic controlling member or element sensitive to abnormal heat is an essential feature, and my invention comprehends means to insulate such part, element or device from the action of conducted heat.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A metallic sprinkler-head adapted to be connected with a water-supply conduit and having a thermostatic controlling member, combined with means carried by the head to diffuse the heat transmitted thereto by conduction from the supply conduit.

2. A sprinkler-head adapted to be connected with a supply conduit arranged for the circulation of hot water, said head having a controlling member operative upon a predetermined rise in the temperature of the adjacent air, combined with means carried by the head and normally acting to diffuse the heat transmitted to the head by conduction from said conduit, to thereby prevent improper operation of said controlling member.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

WILBERFORCE B. HAMMOND.

Witnesses:

JOHN C. EDWARDS,

THOMAS J. DRUMMOND.