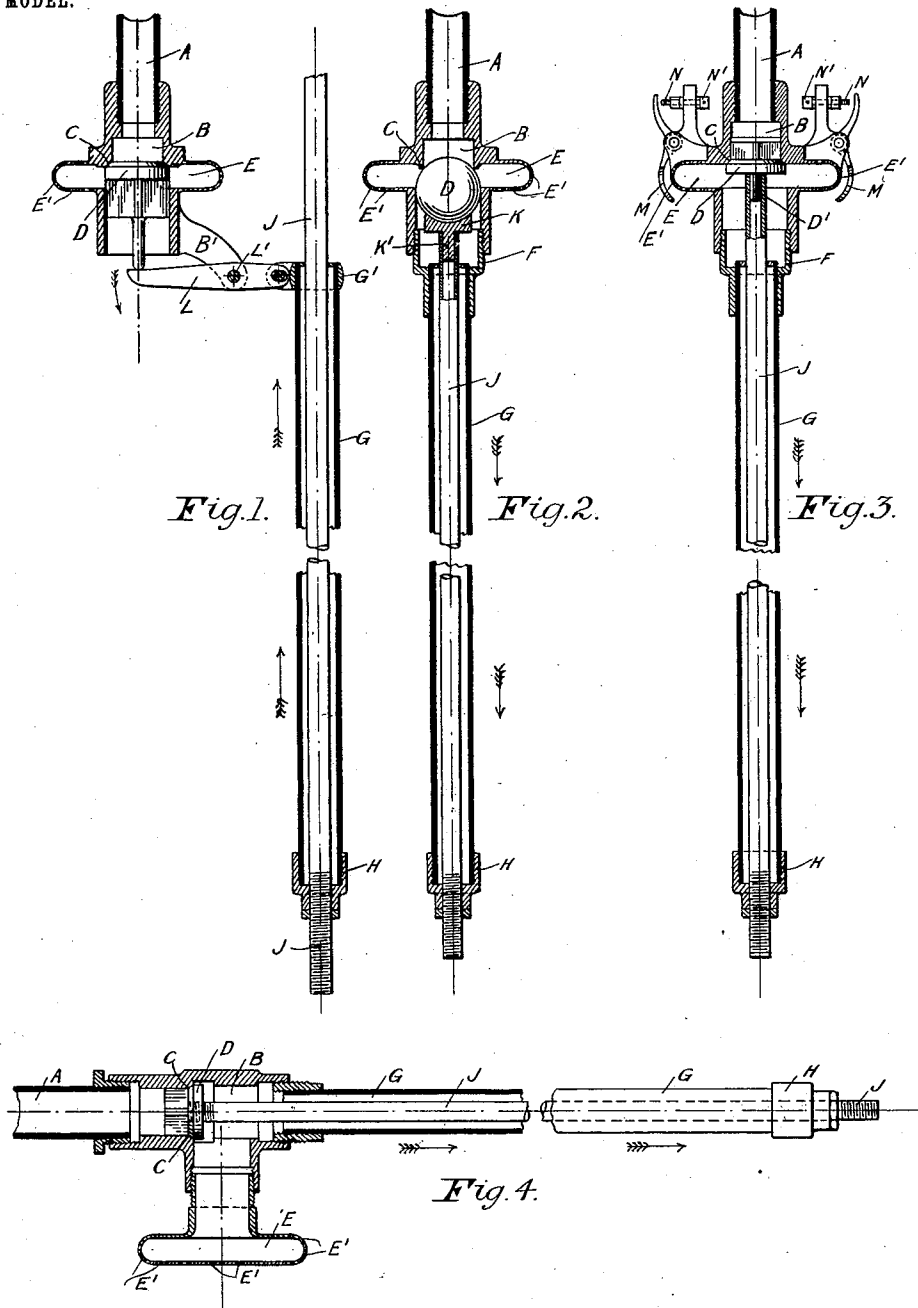


J. G. GRIMSLEY.

AUTOMATIC SPRINKLER FOR EXTINGUISHING FIRES.

APPLICATION FILED MAR. 24, 1902.

NO MODEL.



Witnesses.
T. L. Shouler.
Frank. W. H.

Inventor.
Joseph Garrett Grimsley

UNITED STATES PATENT OFFICE.

JOSEPH GARRATT GRIMSLEY, OF LEICESTER, ENGLAND.

AUTOMATIC SPRINKLER FOR EXTINGUISHING FIRES.

SPECIFICATION forming part of Letters Patent No. 735,756, dated August 11, 1903.

Application filed March 24, 1902. Serial No. 99,784. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH GARRATT GRIMSLEY, a subject of the King of England, and a resident of Halford street, Leicester, in the county of Leicester, England, have invented certain Improvements Relating to Automatic Sprinklers for Extinguishing Fires, of which the following is a specification.

This invention consists of improvements relating to automatic sprinklers for extinguishing fires, and is designed with the object of providing an effective fire-extinguisher to be automatically brought into operation by the action of a fire and which will cease to operate as the fire dies down.

I attain my object by the use of metal tubes affected to different degrees by the action of heat. For instance, I may connect a pipe up to any suitable source of water-supply and affix on the lower end of said pipe a valve-chamber provided with a valve-seating, and to the bottom of said chamber I connect a pipe, preferably of copper or brass, which depends or is suspended from said chamber. The valve is held in position up to the seating by means of an iron rod, tube, or pipe which is connected to the bottom of the before-mentioned copper or brass pipe by means of a reducing-nozzle. It will be readily seen that by supporting or holding the water-pipe at a suitable point at or above the valve-chamber and allowing the parts below said chamber to hang down that as the heat from a fire expands the copper or brass pipe, thereby lowering its terminal or bottom end, the iron rod, tube, or pipe before mentioned, which is connected to said terminal end and which supports upon its upper end the valve, will also be lowered and lower the valve from the seating and open a passage for the water.

The application of the invention in various forms will be more clearly understood upon referring to the accompanying sheet of drawings, in which—

Figure 1 is a central vertical section of one form of the apparatus embodying the application of this invention in which a lever is used to give greater movement to the valve and consequently a larger flow of water. Fig. 2 is a central vertical section of a second form of the invention in which a ball or sphere is used as a valve. Fig. 3 is also a central vertical

section showing a wing-valve and also means whereby an alarm may be given by means of electric apparatus. Fig. 4 is a plan, partly in section, showing a form of the apparatus used in a horizontal position.

In the several figures, A is the water-pipe, which is fixed securely in position and connected to a water-supply.

B is a valve-chamber, screw-threaded to receive the end of the pipe A.

C is the valve-seating and D the valve.

E is the spreader-chamber, provided with a series of holes.

All the several parts mentioned are merely illustrated as showing various forms the valves and chamber may take, but which do not constitute an essential part of this invention.

In Figs. 2 and 3 a reducing socket or nozzle F connects the lower part of the valve-chamber B with a copper or brass pipe G, and the latter pipe is connected at its lower end by means of a reducing socket or nozzle H to the lower end of the valve-support, shown as a pipe or tube J. In Fig. 2 a cap K, provided with a stalk K', which passes into the pipe J, supports the ball-valve D. In Fig. 3 a wing-valve D is shown, which also has a stalk D' to enter the pipe J, and in Fig. 4 the pipe J is shown as screwed into the valve D.

As before stated, the pipe A is securely fixed in position and the pipe G is free to expand with heat. Consequently, as will be readily understood, as the said pipe G expands with heat in the direction indicated by the arrow by its connection by means of the nozzle H with the pipe, rod, or tube J, whose expansion is considerably less, the valve D opens and the water passes from the pipe A into the spreader-chamber E and through a series of apertures E' therein. As the fire dies down and the pipe G cools and contracts, the valve D will gradually be caused to rise to its seating and stop the passage of the water. In the arrangement shown in Fig. 1 the pipe A is fixed, as in Figs. 2, 3, and 4, and the iron rod, pipe, or tube J is fixed at its bottom end and may be steadied or supported at its upper end. It will be seen, therefore, that as the heat expands the pipe G (in said Fig. 1) in the upward direction, as indicated by the arrow, the collar G', fixed on the pipe G, will

elevate one end of the lever L (pivoted at L' to an arm B' on the side of the valve-chamber B) and lower the other end, and consequently allow the valve D to drop and open a passage for the water, and as the pipe G cools the opposite movement is imparted to the lever and the valve D is closed.

In Fig. 3 I have shown how apparatus may be readily applied, so that as the water passes from the spreader-chamber E into contact with the wings M M the upper ends of said wings may be forced in contact with the screws N N (in the heads N' N' of which electrical wires are fixed) and so give an electrical alarm.

I believe I am the first to utilize the different expansion of metals to automatically operate a valve and provide a flush of water to be distributed over the fire which has itself brought the extinguishing apparatus into operation. Consequently, though the several figures of the accompanying drawings show the preferred forms of my invention, it is to be understood that my invention in its broadest aspect is susceptible of embodiment in various forms of mechanism and any person of average skill in the art can readily devise variations of mechanism and with no greater skill than is possessed by the average skilled mechanic.

What I claim is—

1. An apparatus for automatically controlling the supply of water to a sprinkler for extinguishing fires, comprising a valve-chamber connected to a water-supply pipe, a pipe of copper or equivalent metal connected at one

end to the valve-chamber and at the other end to an iron pipe, a valve normally held up to a seating in the valve-chamber and adapted to be moved with said iron pipe, whereby as the copper pipe expands the valve is opened and closed as the copper pipe contracts, substantially as described.

2. An apparatus for automatically controlling the supply of water to a sprinkler for extinguishing fires, comprising a valve-chamber attached to one end of a pipe of copper or equivalent metal, an iron pipe located in said copper pipe, said iron pipe being adapted to hold a valve up to a seating in the valve-chamber and means for connecting the copper pipe at its end farthest from the valve-chamber to the iron pipe substantially as described.

3. An apparatus for automatically controlling the supply of water to a sprinkler, comprising a valve-chamber a pipe of copper or equivalent metal connected to said valve-chamber an iron pipe located in and connected to said copper pipe, a valve normally in contact with the valve-seating, but withdrawn as the copper pipe expands and moved to its seating as the copper pipe contracts, substantially as described.

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

JOSEPH GARRATT GRIMSLEY.

Witnesses:

THOMAS SIDNEY SHOULER,
FRANK WEST.