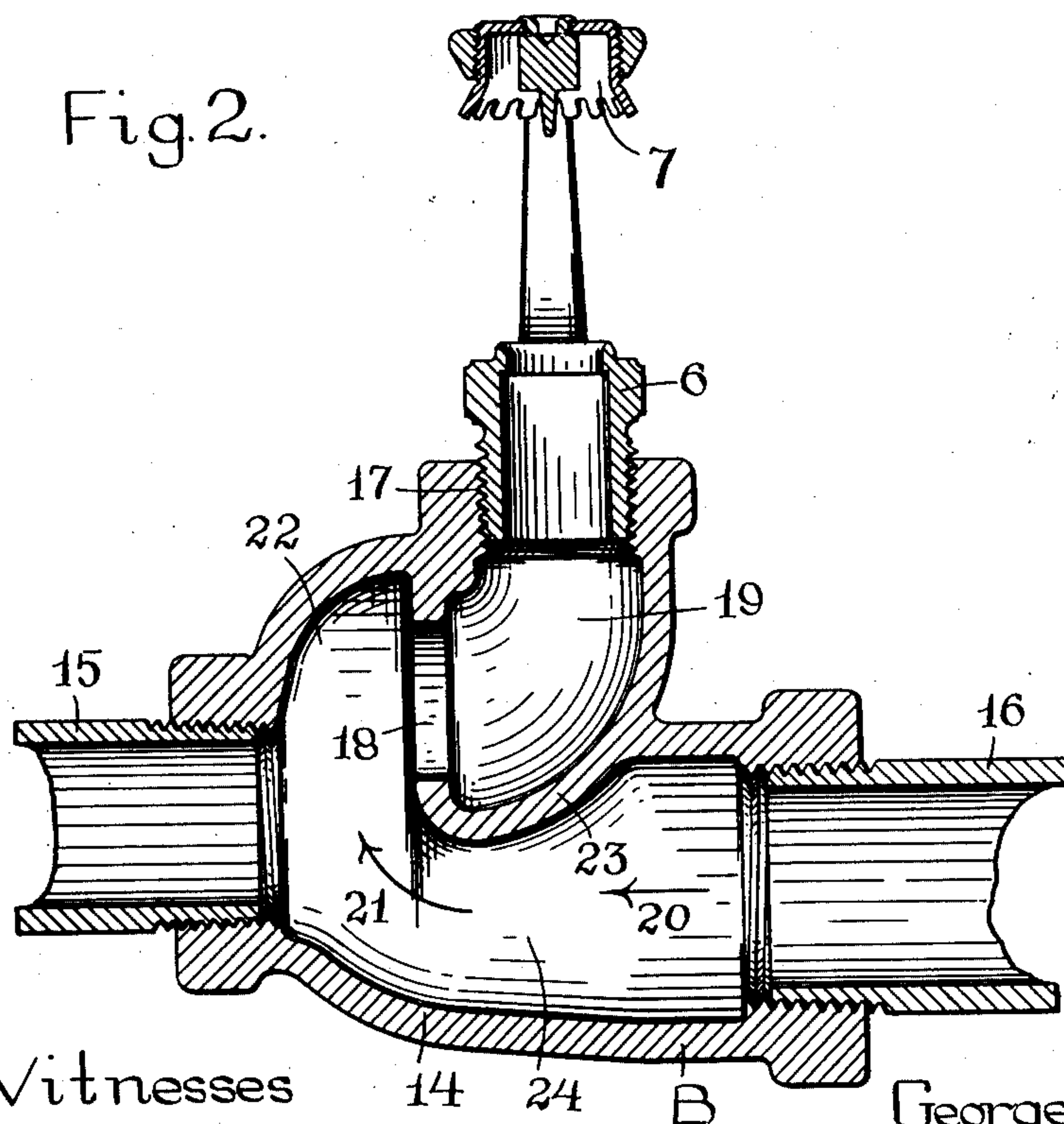
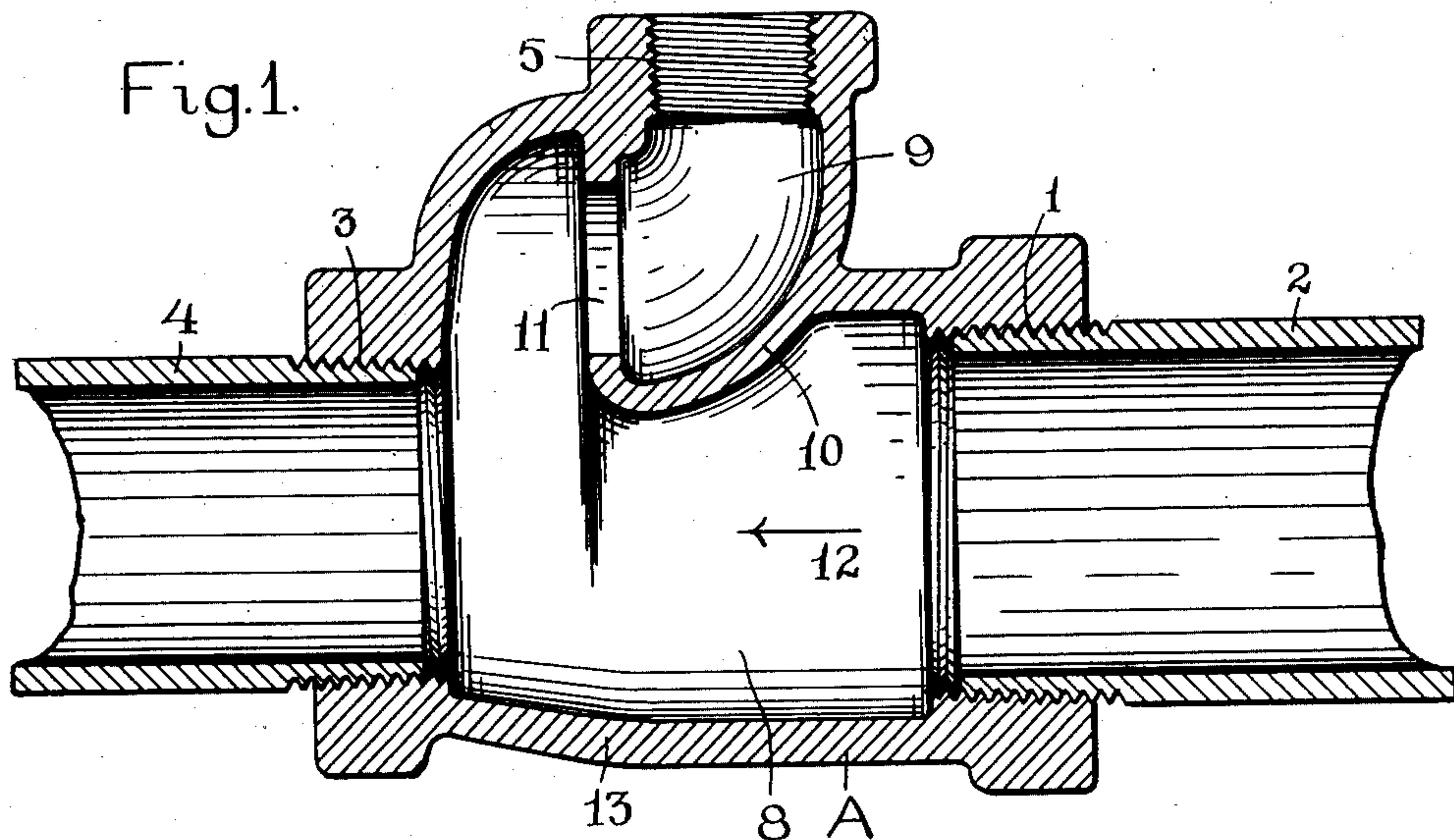


No. 826,611.

PATENTED JULY 24, 1906.

G. I. ROCKWOOD.  
FITTING FOR AUTOMATIC SPRINKLERS.  
APPLICATION FILED OCT. 13, 1905.



Witnesses

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# UNITED STATES PATENT OFFICE.

GEORGE I. ROCKWOOD, OF WORCESTER, MASSACHUSETTS.

## FITTING FOR AUTOMATIC SPRINKLERS.

No. 826,611.

Specification of Letters Patent.

Patented July 24, 1906.

Application filed October 13, 1905. Serial No. 282,668.

*To all whom it may concern:*

Be it known that I, GEORGE I. ROCKWOOD, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Fittings for Automatic Sprinklers, of which the following is a specification containing a full, exact, and clear description of my improvement.

The objects of my present invention are to provide means for regulating the pressure of water at the nozzle of a sprinkler relatively to the water-pressure in the water-supply pipe, whereby a uniform pressure may be secured at each of a series of nozzles connected with a common supply-pipe, and to provide means for securing the equal distribution of water at the diffuser of an automatic sprinkler, and I accomplish these objects by means of a novel fitting or T between the nozzle of an automatic sprinkler and the main line of water-pipe by which water is supplied to the sprinkler, as hereinafter described, and pointed out in the annexed claims.

In the accompanying drawings, which form a part of this specification, Figure 1 represents a T embodying my improvement, shown in central longitudinal sectional view; and Fig. 2 represents a similar T embodying my improvement, shown in central longitudinal sectional view, but having a modified form of waterway.

Similar reference letters and figures refer to similar parts in the different views.

Referring to Fig. 1, A denotes a pipe-fitting known as a "T" and having a screw-threaded opening 1 to receive an inlet water-supply pipe 2, a screw-threaded opening 3 to receive an outlet water-pipe 4 of smaller diameter than the pipe 2, said pipes 2 and 4 forming parts of a continuous line of pipe to which two or more automatic sprinklers are connected. The T A also contains a screw-threaded opening 5 to receive the nozzle of an automatic sprinkler, such as that shown at 6, Fig. 2, through which a stream of water is forced against an inverted-cup-shaped diffuser 7 in order to produce an evenly-distributed spray of water.

In an automatic-sprinkler system comprising an automatic sprinkler provided with a diffuser to receive the impact of a stream of water from a water-supply pipe the character of the spray and the efficiency of the sprinkler in the case of fire depends in some degree

upon the character of the stream which is delivered against the diffuser. This stream in general should partake of the shape of a symmetrical inverted cone having its axis coincident with the axis of the diffuser and having substantially a uniform force throughout the entire periphery of the stream, which should be directed against a properly-shaped diffuser placed at the proper distance from the delivery-nozzle to cause the stream of water to be evenly and widely distributed in a spray consisting of drops or globules of water, and this result must be secured regardless of a variation in the pressure of the water in the supply-pipe. As the result of experiment I accomplish this object by means of a peculiar fitting interposed between the sprinkler and the water-supply pipe, as hereinafter described.

In installing an automatic-sprinkler system the supply-pipe 2 connects the T A with a source of water-supply and the pipe 4 leads from the T A to the next succeeding T and is preferably of less diameter than the pipe 2. Between the ends of the pipes 2 and 4 is a chamber 8, inclosed within the T, and to which water is supplied by the pipe 2 and from which water is discharged to the next succeeding sprinkler through the pipe 4. The screw-threaded opening 5, in which the nozzle of the sprinkler is held, communicates with a water-pipe 9, inclosed within a wall 10 and having a diaphragm 10<sup>a</sup> at its receiving end, but communicating with the chamber 8 through an opening 11, said opening 11 being of less diameter than the diameter of the waterway 9. The opening 11 is formed in the inclosed wall of the waterway 9 upon the side opposite the supply-pipe 2, so that the stream of water in passing through the line of main pipe formed of the sections 2 and 4 and moving in the direction of the arrow 12 is obliged to turn back upon itself in passing through the opening 11 into the waterway 9, thereby producing a regurgitation of the stream of water passing from the chamber 8 into the waterway 9, and as the diameter of the opening 11 is less than the diameter of the waterway 9 a sudden expansion of the stream of water as it passes through the opening 11 takes place as it enters the waterway 9. The axis of the opening 11 is at right angles to the axis of the opening 5, so that the axis of the intervening waterway 9 is oblique to both the openings 5 and 11 and is preferably curved, although I do not confine myself to the



curved form of waterway 9. The obliquity of the axis of the waterway 9, however, deflects the stream of water or changes its line of movement approximately ninety degrees before it reaches the nozzle of the sprinkler. In delivering water, therefore, from the chamber 8 to the nozzle of the sprinkler I produce, first, a regurgitation of the stream of water as it leaves the chamber 8; second, an expansion of the stream of water as it is delivered through the opening 11 into the waterway 9, and, third, a deflection of the stream through the oblique waterway 9 as it is delivered to the nozzle of the sprinkler. I have found by practice that these three functions of my improved fitting are factors in producing the desired spray when the stream of water reaches the diffuser 7, and, furthermore, that this form of construction secures a more even distribution of water at the diffuser.

By referring to Fig. 1 it will be seen that the curved wall 10, inclosing the waterway 9, projects into the direct stream of water between the pipes 2 and 4, so that the stream of water in passing from pipe 2 to pipe 4 is not only contracted between the curved wall 10 and the lower wall 13 of the T, but that a slight deflection of the stream of water takes place as it passes from the pipe 2 to the pipe 4 notwithstanding that the axis of the pipe 4 is substantially coincident with the axis of the pipe 2.

In Fig. 2 I have shown a T B in which the lower wall 14 of the T is curved more than the wall 13 of the T A and the axis of the discharge-pipe 15 is not coincident with the axis of the receiving-pipe 16, but is raised toward the nozzle-opening 17, so that the pipe 15 overlaps the opening 18, leading to the oblique waterway 19. By this modification the stream of water passing from the receiving-pipe 16 in the direction of the arrow 20 is deflected upward by the curved wall 14 in the direction of the arrow 21 into the space 22, whereby the pressure of the stream passing through the opening 18 is increased relatively to the pressure of the stream passing through the discharge-pipe 15.

In the form shown in Fig. 1 the deflection of the direct stream of water through the pipes 2 and 4 is slight, so that the pressure of the water passing through the discharge-pipe 4 is relatively greater than the pressure of the stream passing through the opening 11, whereas in Fig. 2 the stream of water is subjected to a greater deflection, which increases the pressure of the stream passing through the opening 18 relatively to that passing through the discharge-pipe 15. The stream of water in passing through a long line of pipe having a series of sprinklers attached thereto has its pressure gradually reduced, so that the pressure in the water-supply pipe at the last sprinkler in the series is considerably less than the pressure of water-supply at the

first sprinkler in the series; but by increasing the deflection of water at each succeeding T the water-pressure at each succeeding sprinkler is applied at a relatively increased force at the nozzle, thereby tending to equalize the pressure of water discharged through the nozzle of each sprinkler in the series.

In the form shown in Fig. 2 the shell B has not only its lower wall 14 curved more than the corresponding wall 13, but the curved wall 23 of the waterway 19 is projected farther into the chamber 24, overlapping the mouth of the water-supply pipe and causing a deflection of the current of water, as shown by the arrow 21.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In an automatic-sprinkler system, the combination with an automatic sprinkler and a supply-pipe, of a fitting connecting said supply-pipe and said sprinkler, comprising a shell inclosing a water-chamber having inlet and outlet openings for a current of water through said chamber, a nozzle for an automatic sprinkler, a waterway between said chamber and said nozzle having its axis oblique to the axis of said nozzle, and arranged to receive water upon the side of said water-chamber opposite its inlet-opening.

2. In an automatic-sprinkler system, the combination with an automatic sprinkler and a water-supply pipe, of a fitting connecting said supply-pipe and said sprinkler, comprising a shell inclosing a water-chamber, having inlet and outlet openings for a current of water through said chamber, and a nozzle-opening for an automatic sprinkler, a waterway between said chamber and said nozzle-opening arranged obliquely to the axis of the nozzle-opening and having at its receiving end a diaphragm provided with a central opening of less diameter than the diameter of said waterway.

3. In an automatic-sprinkler system, the combination with an automatic sprinkler and a water-supply pipe, of a fitting connecting said sprinkler and said supply-pipe, comprising a shell inclosing a water-chamber having inlet and outlet openings for a current of water through said chamber, and a nozzle-opening for an automatic sprinkler, a waterway between said nozzle-opening and said chamber and arranged obliquely to the axis of said nozzle-opening, a diaphragm at the receiving end of said waterway having a central opening of less diameter than the diameter of said waterway.

4. In an automatic-sprinkler system, the combination with a water-supply pipe and an automatic sprinkler, comprising a diffuser to receive the impact of a stream of water, of a fitting connecting said sprinkler and said supply-pipe, comprising a shell inclosing a water-chamber having an inlet-opening for the admission of water, and a nozzle-opening to



deliver water to said diffuser, a curved waterway leading to said nozzle-opening, and a diaphragm at the receiving end of said waterway, having an opening of less diameter than  
5 the diameter of said waterway.

5: As an article of manufacture, a fitting for an automatic-sprinkler system, comprising a shell inclosing a water-chamber and having an inlet-opening to admit water to  
10 said chamber and a nozzle-opening to deliver

water to an automatic sprinkler, a curved waterway leading from said water-chamber to said nozzle-opening and a diaphragm at the receiving end of said waterway having an opening of less diameter than the diameter of  
15 said waterway.

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Witnesses:

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