

No. 775,729.

PATENTED NOV. 22, 1904.

G. MILLS.
AUTOMATIC FIRE EXTINGUISHING SPRINKLER.

APPLICATION FILED JAN. 20, 1904.

NO MODEL.

Fig. 3.

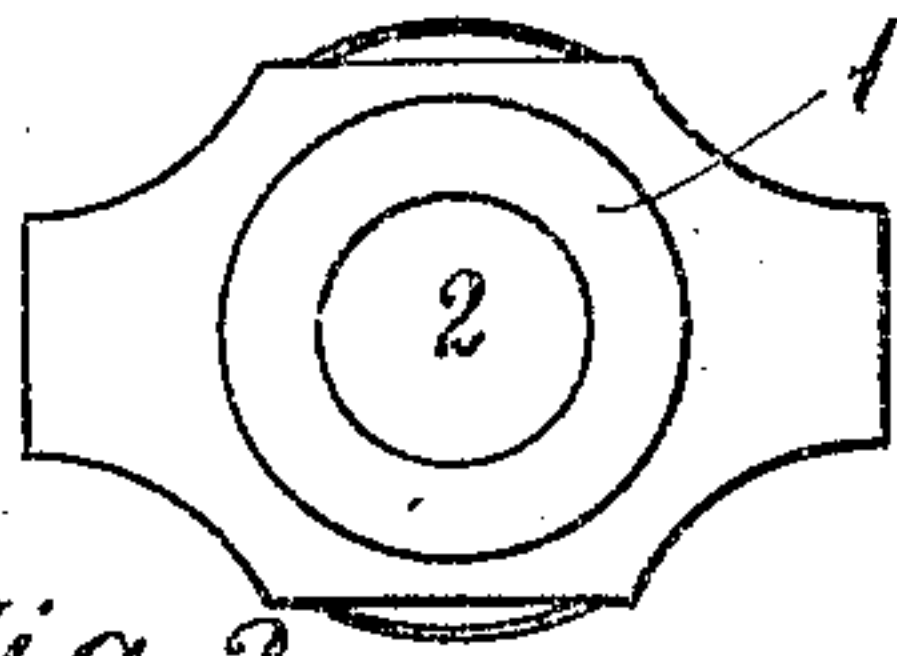


Fig. 1.

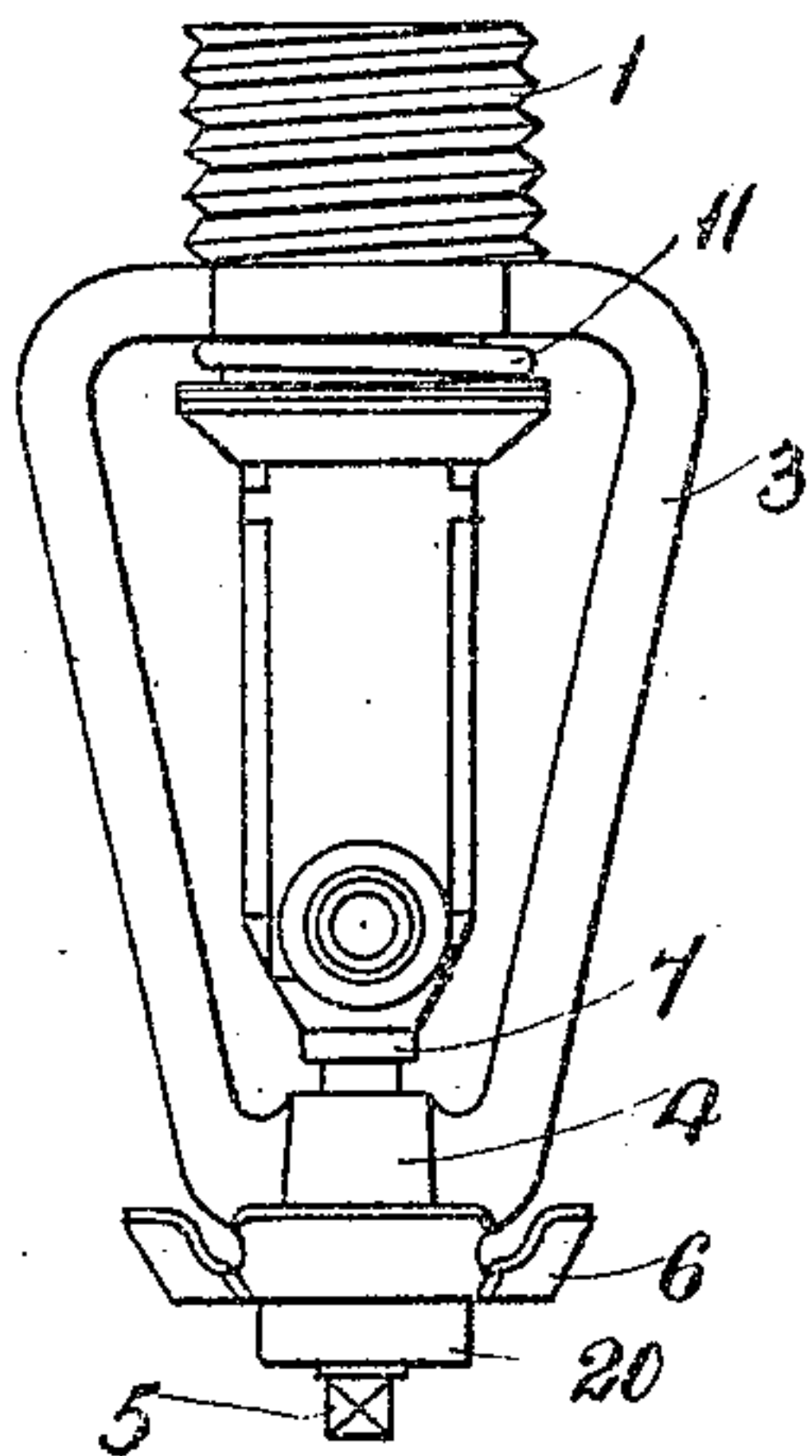


Fig. 2.

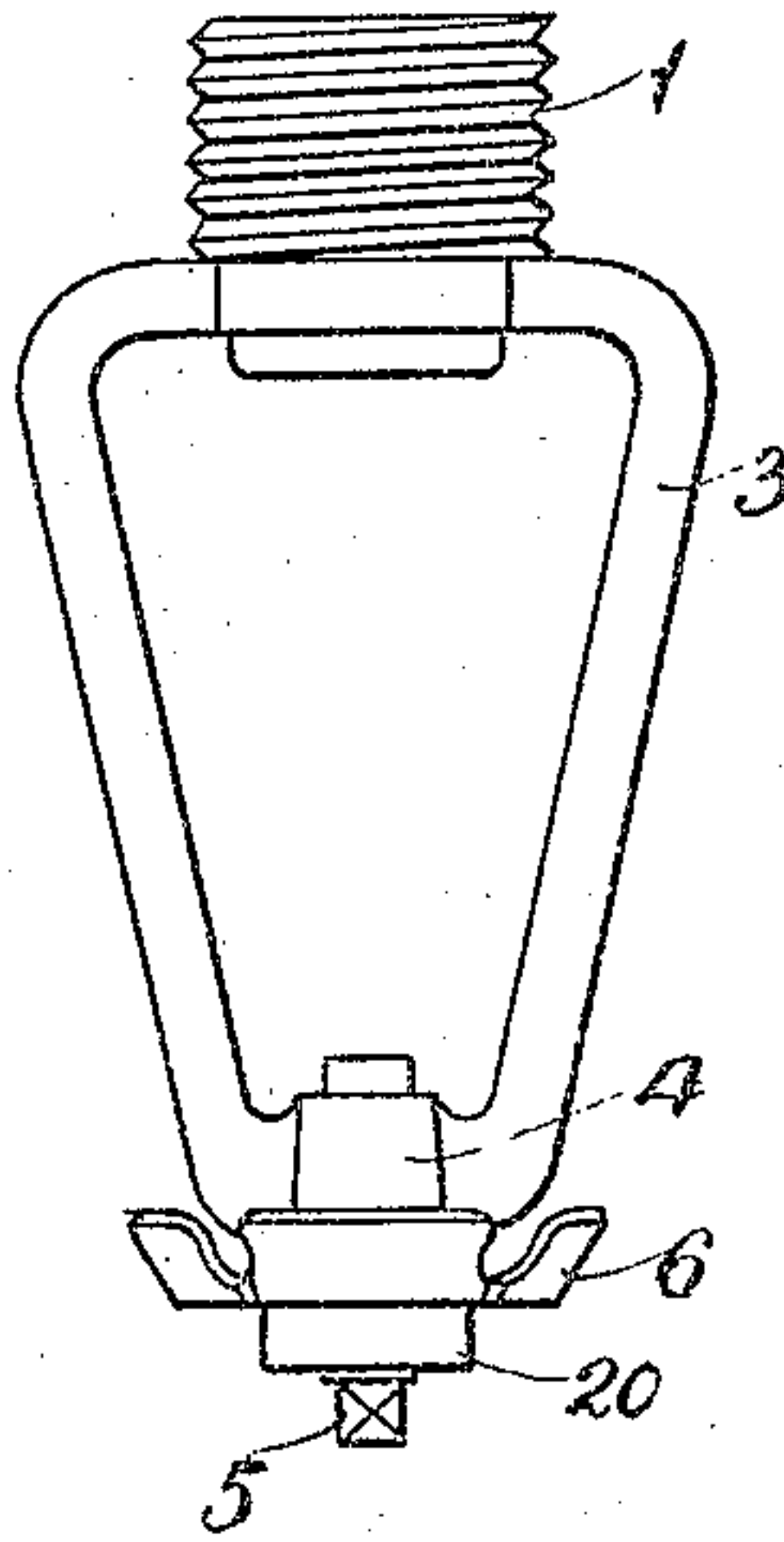


Fig. 5.

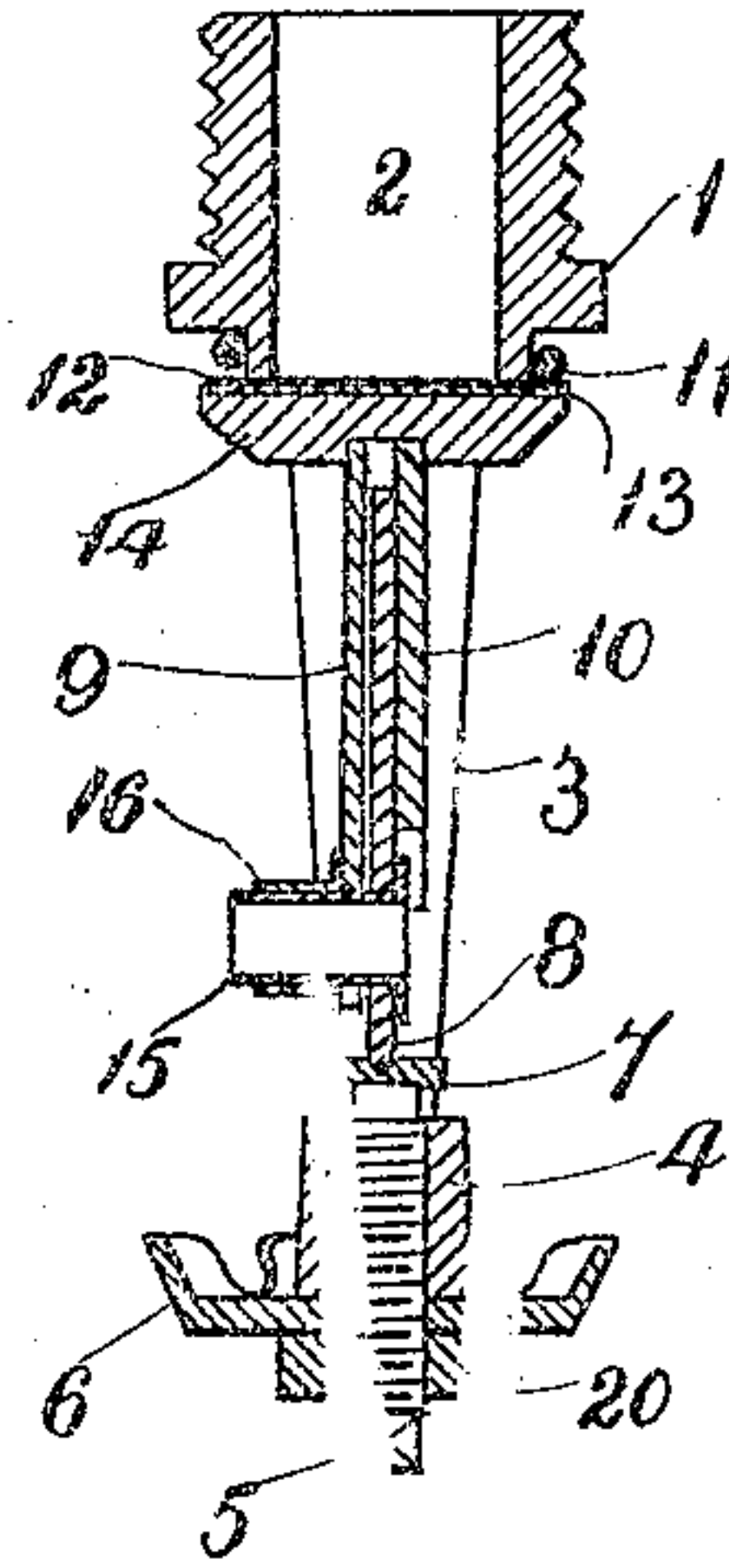


Fig. 4.

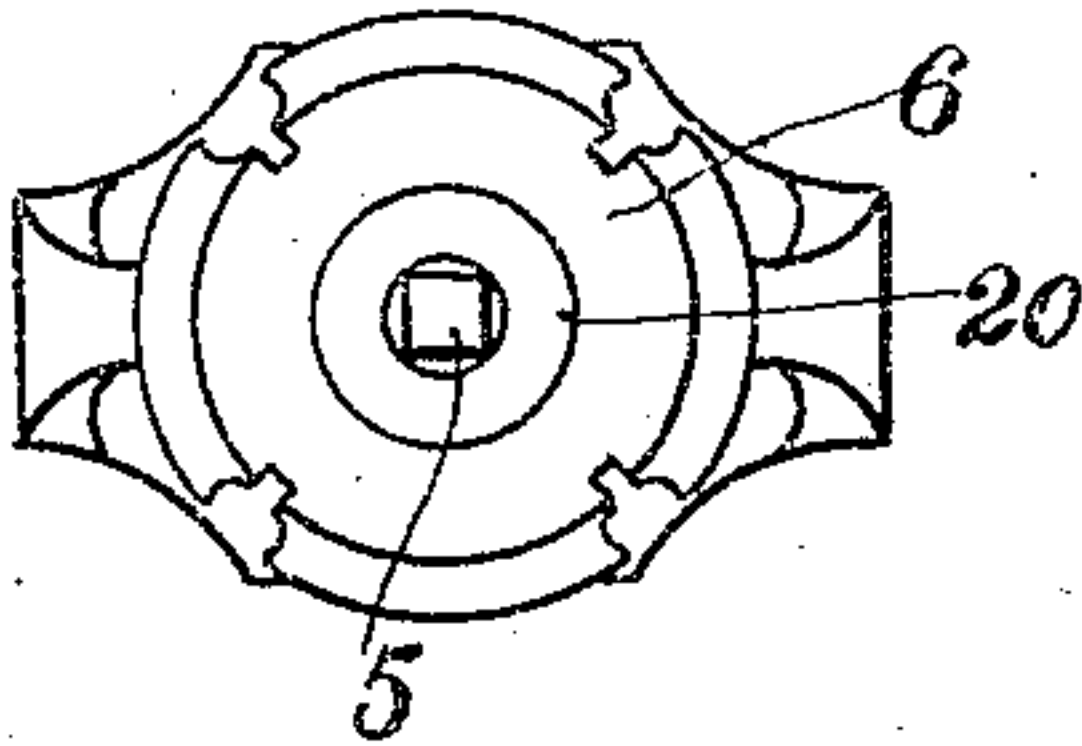


Fig. 9.

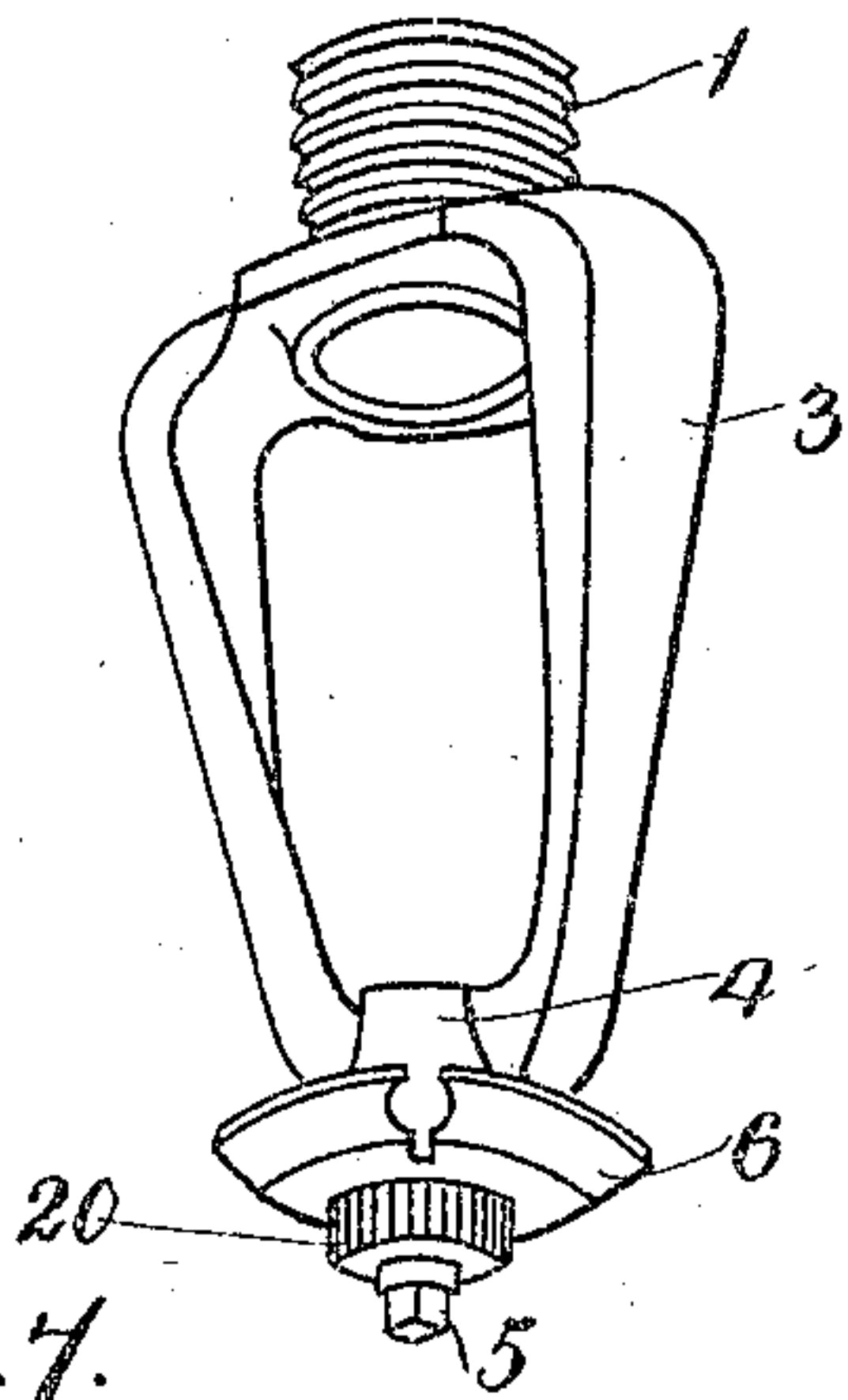


Fig. 6.

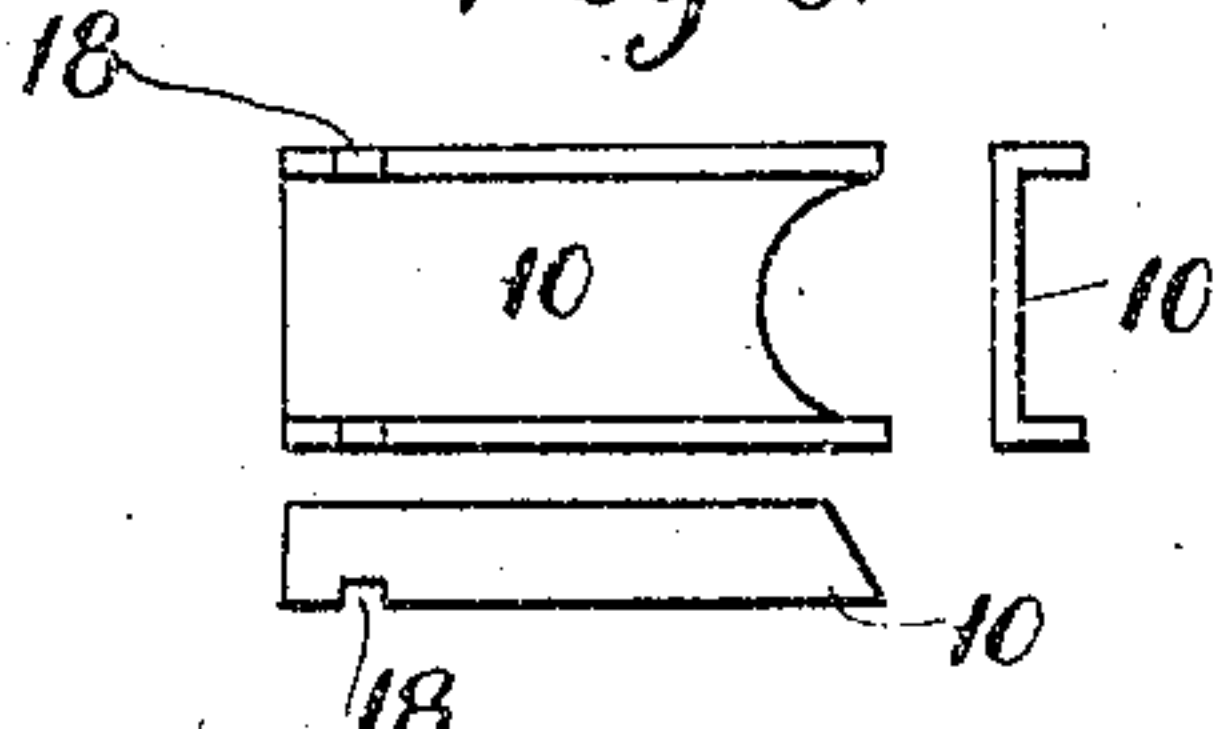


Fig. 7.

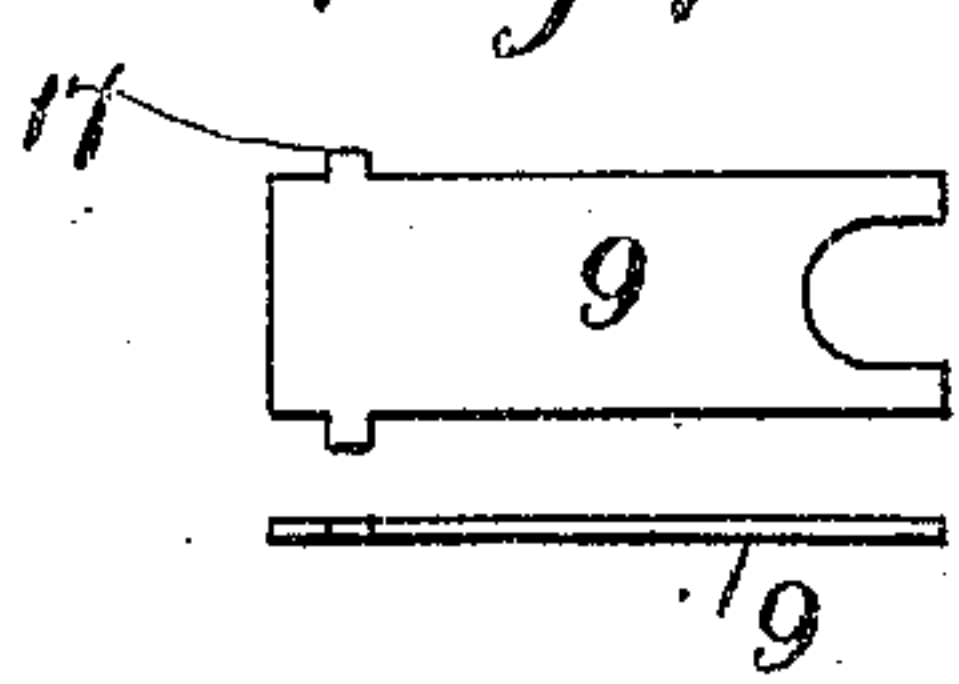
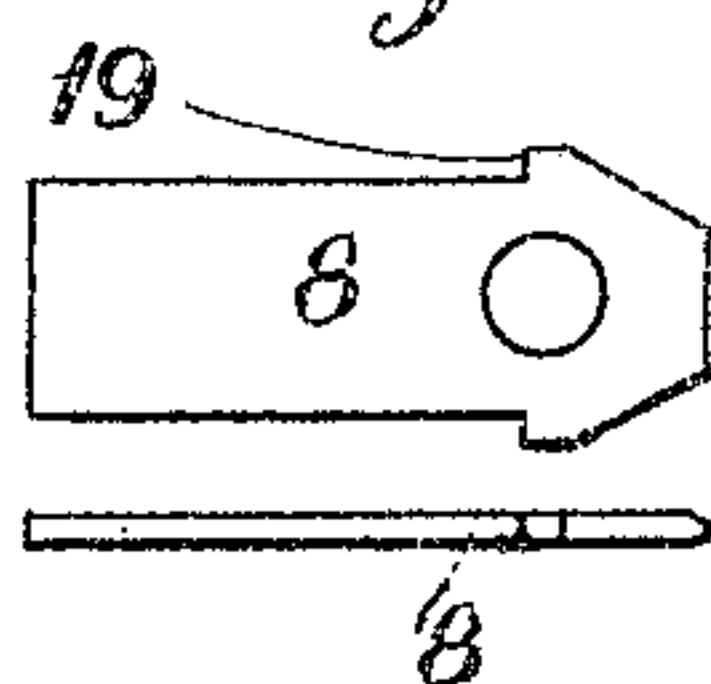


Fig. 8.



WITNESSES
H. M. Kuchner
John A. Pirewal

INVENTOR
George Mills
By Richard G. Richards
ATTORNEYS

UNITED STATES PATENT OFFICE.

GEORGE MILLS, OF RADCLIFFE, ENGLAND.

AUTOMATIC FIRE-EXTINGUISHING SPRINKLER.

SPECIFICATION forming part of Letters Patent No. 775,729, dated November 22, 1904.

Application filed January 20, 1904. Serial No. 189,832. (No model.)

To all whom it may concern:

Be it known that I, GEORGE MILLS, engineer, of the Globe Iron Works, Radcliffe, near Manchester, in the county of Lancaster, England, have invented certain new and useful Improvements in Automatic Fire-Extinguishing Sprinklers, of which the following is a specification.

My invention relates to improvements in automatic fire-extinguishing sprinklers; and the objects of my improvements are to render the sprinkler more sensitive and reliable in action, to render the distribution of water more uniform, and to prevent any possibility of water from the installation reaching the sensitive solder joint before the retaining-levers fall away and the sprinkler is fully open.

I attain these objects by the improved construction and arrangement of parts illustrated on the accompanying sheet of drawings, in which—

Figure 1 is an elevation of the improved sprinkler closed with the valve and retaining-levers in position. Fig. 2 is a similar view of the sprinkler when open, the sensitive solder joint having fused and allowed the valve and retaining-levers to fall away. Fig. 3 is a plan of the top of Fig. 1. Fig. 4 is a plan of the under side of Fig. 1. Fig. 5 is a longitudinal vertical section taken through the middle of Fig. 1. Figs. 6, 7, and 8 are detail views of the three retaining-levers, and Fig. 9 is a perspective view to show the special form of slots or openings in the deflector.

My improved sprinkler consists of a metal body 1, arranged to be screwed into the water-supply pipe (not shown) and provided with an orifice 2, surrounded by a valve-seating, and two arms 3, which terminate in a boss 4 directly in front of the orifice. Into this boss is screwed a pin or stud 5, upon which the deflector or water-distributor 6 is mounted and secured by a screwed nut 20, and the lower end of this pin 5 is squared or otherwise suitably prepared to receive a wrench or equivalent. The upper end of the screwed pin is formed to receive a small metal collar 7, which has a groove cut across its face to receive the end of the middle lever 8 (see Fig. 8) of a series of three compound levers

8, 9, and 10, respectively, secured together at this end by a fusible joint, as hereinafter described, the other end of the levers being fitted but not secured together. Round the mouth of the valve-seating 2 I place a divided and bent metal ring 11 to form a spring, and for the valve I employ a disk 12, preferably of tin or silver, which lies upon the seating when the split ring 11 is compressed. At the back of the valve 12 I place a lead or other soft-metal washer 13, behind which is placed a hard-metal disk 14 with a groove formed slightly out of center across its face to receive the upper ends of the compound levers 8 9 10.

The improved fusible joint to unite the ends of the compound levers consists of a short piece of metal tube 15, flanged at one end and to the other end of which I solder with a suitable sensitive solder a flanged eyelet 16. Before soldering the flanged eyelet 16 upon the metal tube 15 I pass the latter through a hole in the middle (first) lever 8, the flange of the eyelet 16 resting against the second lever 9, (see Fig. 7,) and so holding these two levers 8 and 9 together. These combined levers are now laid inside the third lever 10, (see Fig. 6,) which is of channeled metal, and the second and third levers are connected by a projection 17 and recess 18 or other suitable engagement at one end, while the channeled or third lever 10 is interlocked at the bottom by resting upon a projection 19 on the first-named lever 8 in such manner that when the two first-named parts have been put together and placed in the channeled lever 10 the compound levers are ready to be placed between the grooved metal collar 7 on the screw 5 and the grooved metal disk 14 under the valve. The screw 5 in the boss is then tightened to compress the split spring-ring 11 and force the silver or other disk-valve 12 firmly onto its seating.

My improved deflector 6 has no teeth, but is formed with the specially-shaped openings shown in the drawings and particularly in Fig. 9. These openings are of largest diameter in the sides of the deflector and are contracted slightly at the mouth or top, opposite which they terminate in short nicks or slots

toward the center, and in this manner a very even and efficient distribution of water is obtained. I prefer to employ four such openings, as giving the most uniform and effective
5 distribution; but I may employ any other suitable number if found advantageous or desirable.

For the purpose of insulating the soldered tube-joint from the mass of metal forming
10 the levers I may, if necessary, place under the flange on the tube 15 and the flange on the eyelet 16 a wood, fiber, or other insulating-washer; but in practice I find the joint sufficiently sensitive without such insulating-
15 washers.

In operation when an outbreak or fire takes place the sensitive solder joint fuses immediately the temperature reaches the predetermined degree, and the three retaining-
20 levers 8 9 10, with the valve and disks 12 13 14, acted on by the spring-ring 11, at once fall away and allow a clear and unobstructed flow of water issuing from the orifice 2 to impinge directly upon the distributor 6, by
25 which it is deflected and evenly and uniformly distributed over the area protected by the sprinkler.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. A fire-extinguishing sprinkler comprising a valve, arms extending from the sprinkler-body, a deflector carried by said arms
30 below the valve, an adjustable support above said deflector, levers 8 and 9 a fusible joint connecting said levers together, a channel-
35 lever 10 in which the levers 8 and 9 rest and means for connecting said lever 10 with the other levers, said levers resting on the support and holding the valve in place.

2. A fire-extinguishing sprinkler comprising a valve, a support below the same, and a series of levers resting on the support and
40 holding the valve in place, said series being composed of a channeled lever and two flat levers resting therein and means for fusibly
45 connecting the levers together, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

GEORGE MILLS.

Witnesses:

S. W. GILLET,

HERBERT ROWLAND ABBEY.