Jan. 11, 1927. 1,614,002

S. HORTON

VALVE FOR AUTOMATIC SPRINKLER APPARATUS FOR FIRE EXTINGUISHING

Filed Oct. 3, 1924 2 Sheets-Sheet 1

FIG. 1

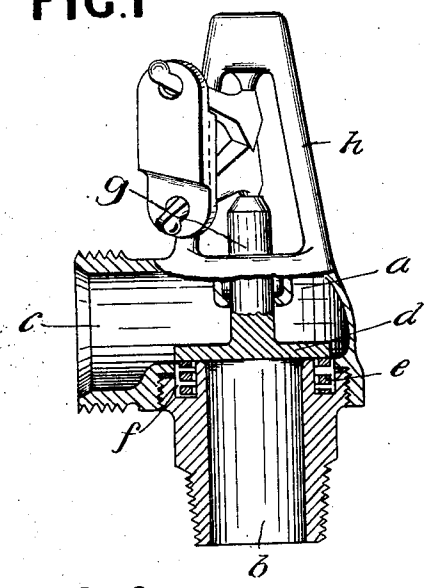


FIG. 2

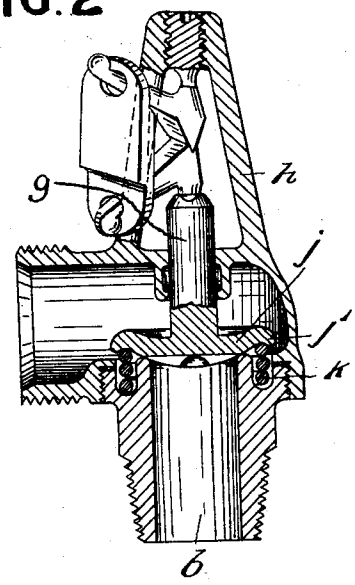


FIG. 3

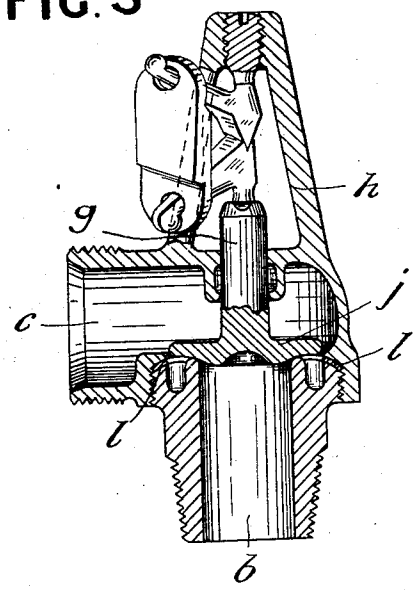
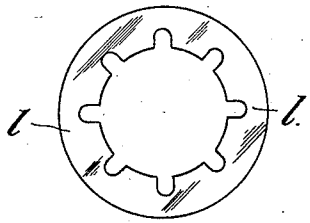


FIG. 4



Inventor:
Spencer Horton
By Kent W. Wonnell Atty.

Jan. 11, 1927. S. HORTON 1,614,002

VALVE FOR AUTOMATIC SPRINKLER APPARATUS FOR FIRE EXTINGUISHING

Filed Oct. 3, 1924 2 Sheets-Sheet 2

FIG. 5.

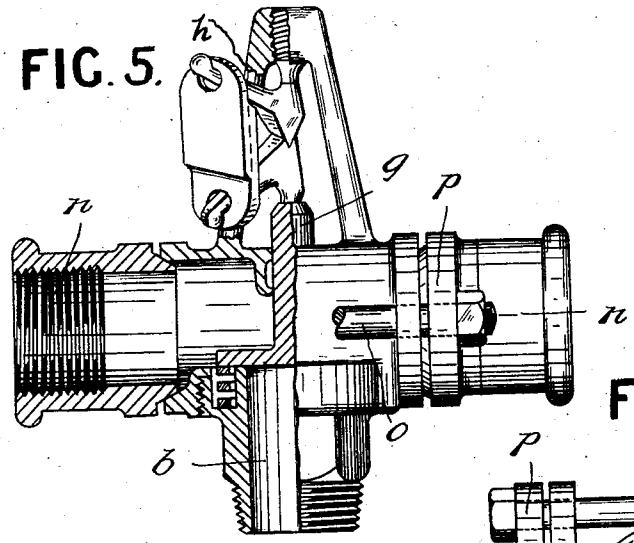


FIG. 6

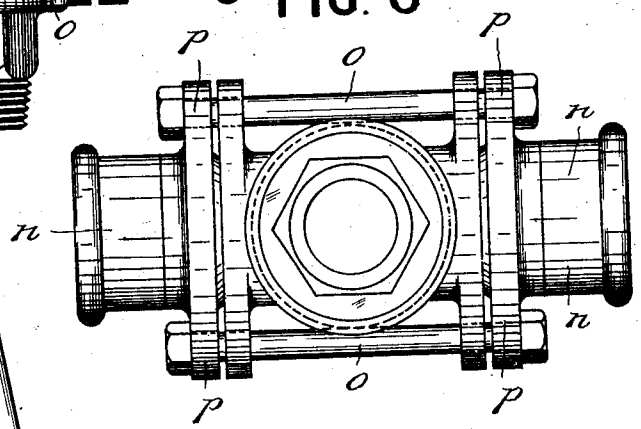
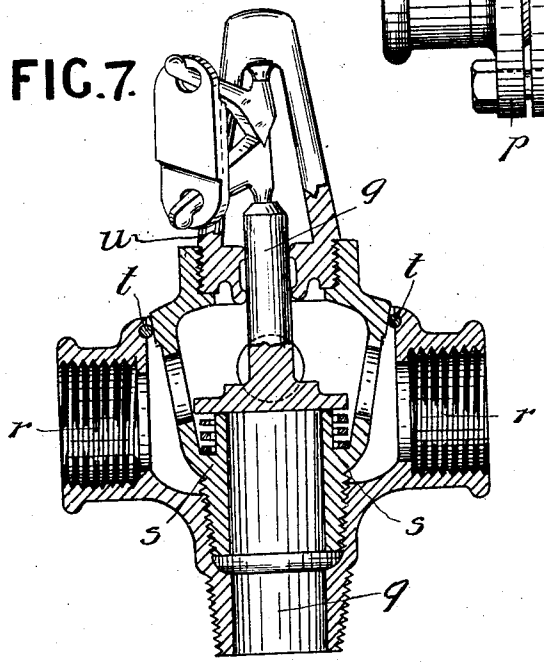


FIG. 7.



Inventor:
Spencer Horton
By Kent W. Wonnell Atty

Patented Jan. 11, 1927. 1,614,002

UNITED STATES PATENT OFFICE.

SPENCER HORTON, OF BIRMINGHAM, ENGLAND.

VALVE FOR AUTOMATIC SPRINKLER APPARATUS FOR FIRE EXTINGUISHING.

Application filed October 3, 1924, Serial No. 741,308, and in Great Britain December 5, 1923.

This invention relates to improvements in automatic sprinkler apparatus for fire-extinguishing, and refers particularly to apparatus of the type in which one or more sprinkler heads or jets are controlled by a single valve which is held against a seating by temperature-operated means and is automatically opened to admit fluid to the sprinkler heads when a certain temperature is reached in the vicinity of the valve.

The object of my invention is to provide an improved form of valve for such apparatus in which a direct-acting valve with a rigid seating can be employed without fear of the valve sticking on its seating and failing to open when the temperature-operated retaining means for the valve is released.

My invention essentially consists in employing a valve having a suitable head which is held against a rigid seating in a suitable body and obturates a passage leading from a source of fluid supply to outlet passages or pipes carrying sprinkler heads or jets, in combination with resilient means which normally tend to force the valve away from its seating, so that immediately the temperature-operated retaining means for the valve is released the valve will be opened by the resilient means independently of the pressure of the fluid in the supply pipe.

The sprinkler heads or jets will thus be brought into action simultaneously, and all danger of the valve sticking to its seating, as is liable to happen with the usual type of valve, is eliminated.

My invention may be carried into practice in a variety of different forms which will be evident to those skilled in the art, and a number of these have been illustrated by way of example in the accompanying drawings in which:—

Figures 1, 2 and 3 are vertical sections through three sprinkler valves embodying different forms of my invention,

Figure 4, is a plan of the resilient device employed in the valve illustrated in Fig. 3.

Figures 5 and 6 are respectively an elevation in part section and an inverted plan of a valve embodying a further modification.

Figure 7 is a vertical elevation through a valve showing another method of assembly.

In the form illustrated in Fig. 1 the valve body *a* is provided with a fluid inlet *b* and a fluid outlet *c*, adapted to receive a union by which it may be connected to a pipe leading to sprinkler heads or jets. Communication between the two passages is closed by a flat disc valve head *d* engaging an annular seating around the inner end of the passage *b*. The periphery of the valve head extends beyond the seating, and is adapted to be engaged to force the valve away from its seating by a coil spring *e* of rectangular-section metal housed in an annular recess *f* around the valve seating. The valve head is carried by a co-axial stem *g* projecting through the valve body, and a fusible or frangible device is interposed between the outer end of the stem and an abutment member screwed into the outer extremity of a skeleton cage member *h* projecting from the valve body to hold the valve against its seating until the fusible or frangible device is released in the known manner when a predetermined temperature is reached in the vicinity of the valve.

The construction of the valve shown in Fig. 2 is similar, but in this case a valve head *j* of dished form is employed having a recessed annular lip *j'* against which the coil spring *k* abuts.

A similar type of valve head is employed in Fig. 3, but in place of a coil spring a resilient sheet metal ring *l* is employed. The outer edge of the ring is clamped between an internal shoulder in the body and the inlet union member, so that the ring assumes a conical form, and its inner edge which is cut away as shown in Fig. 4 is engaged by the periphery of the valve head.

When the valve head is forced against its seating the inner edge of the ring is deformed and the natural resilience of the ring tends to force the valve head away from its seating immediately the valve stem is freed.

In Figs. 5 and 6 is illustrated a valve employing a valve head and coil spring as illustrated in Fig. 1, but in this case the valve is formed with two outlets provided with coned unions *n*, *n*, which are held in engagement with complementary surfaces on the valve body by bolts *o* passing through oval flanges *p* on the unions.

The valve body illustrated in Fig. 7 also has two fluid outlets, and employs a similar valve head and spring, but the construction of the valve body differs considerably. The inlet passage *q* and the outlet passages *r*, *r*, are formed as an integral unit, and the member *s* carrying the valve seating is screwed into a socket at the inner end of the inlet passage. A water-tight joint is formed between the member *s* and the body by making the

upper part of the member *s* conical and causing it to engage a compressible ring *t* housed in a recess near the upper end of the body. The cage *u* embodying a guide for the valve stem and an abutment for the valve retaining levers or frangible device is screwed axially into the upper end of the member *s*.

I claim:—

1. A valve for sprinkler fire-extinguishing apparatus, comprising a valve body, a fluid inlet passage for the admission of fluid to the body, a fluid outlet passage from the body, a valve seating at the inner end of the inlet passage, a valve head enclosed within the body for engaging said seating and normally releasably held in engagement therewith to close the inlet passage, means projecting from the valve head out of the body and engaged by outside valve retaining means, and resilient means enclosed within the body engaging the valve head and tending to force the said head away from its seating.

2. A valve for sprinkler fire-extinguishing apparatus, comprising a valve body, a fluid inlet passage for admission of fluid to the body, a fluid outlet passage from the body, a valve seating at the inner end of the inlet passage, a valve head enclosed within the body for engaging said seating and normally releasably held in engagement therewith to close the inlet passage, a valve stem projecting from the valve head out of said body and engaged by valve retaining means outside of the body, and resilient means enclosed within the body engaging the valve head and tending to force the said head away from its seating.

3. A valve for sprinkler fire-extinguishing apparatus, comprising a valve body, a fluid inlet passage for the admission of fluid to the body, a fluid outlet passage from the body, a valve seating at the inner end of the inlet passage, a valve head enclosed within the body for engaging said seating and normally releasably held in engagement therewith by means outside of the body to close the inlet passage, and resilient means enclosed within the body engaging the valve head and tending to force the said head away from its seating, the said means comprising a coil spring engaging a part of the valve head projecting beyond its seating.

4. A valve for sprinkler fire-extinguishing apparatus, comprising a valve body, a fluid inlet passage for the admission of fluid to the body, a fluid outlet passage from the body, a valve seating at the inner end of the inlet passage, a valve head enclosed within the body for engaging said seating and releasably held in engagement therewith by means outside of the body to close the inlet passage, and resilient means enclosed within the body engaging the valve head and tending to force the said head away from its seating, the said means comprising a coil spring engaging a part of the valve head projecting beyond its seating and located in an annular recess in the body around the valve seating.

5. A valve for sprinkler fire-extinguishing apparatus, comprising a valve body, a fluid inlet passage for the admission of fluid to the body, a fluid outlet passage from the body, a valve seating at the inner end of the inlet passage, a valve head enclosed within the body for engaging said seating and normally releasably held in engagement therewith by means outside of the body to close the inlet passage, and resilient means enclosed within the body engaging the valve head and tending to force the said head away from its seating, the said head having an annular shoulder beneath which the resilient means engages and which projects beyond the valve seating.

6. A valve for sprinkler fire-extinguishing apparatus, comprising a valve body, a fluid inlet passage for the admission of fluid to the body, fluid outlet passages from the body, a valve seating at the inner end of the inlet passage, a valve head enclosed within the body and normally releasably held in engagement with said seating to close the inlet passage, and resilient means enclosed within the body engaging the valve head and tending to force the said head away from its seating, the said fluid outlet passages from the body being provided with coned union members secured to the body by bolts passing through flanges on the union members.

In testimony whereof I affix my signature.

SPENCER HORTON.