This invention relates to pop-up sprinklers with slide connections and included in the objects of this invention are:

First, to provide a sprinkler having an axially slideable connection for sprinklers which includes a fixed collar and slideable tube so arranged that, except for the extended position of the tube, a flow passage is maintained between the tube and collar so as to flush the parts free of sand, mud or solids contained in the water, but which on full extension of the tube forms not only a fluid tight seal but also holds the tube and the axis of a sprinkler carried thereby in concentric relation with the collar.

Second, to provide an axially slideable connection for pop-up sprinklers which utilizes a collar having a conical bore, and a tube having axially extending tapered ribs which, on axial extension of the tube, form bearing means securing the tube in coaxial relation with the collar.

With the above and other objects in view as may appear hereinafter, reference is directed to the accompanying drawings in which:

FIGURE 1 is a partial elevational partial sectional view of the pop-up sprinkler, showing particularly the slide connection in its retracted position and indicating by broken lines the raised position of the sprinkler head.

FIGURES 2, 3 and 4 are transverse sectional views taken respectively through 2-2, 3-3 and 4-4 of FIGURE 1.

FIGURE 5 is a fragmentary longitudinal sectional view taken through 5-5 of FIGURE 4 and showing the slide connection in its retracted position.

FIGURE 6 is a similar sectional view showing the slide connection in its extended position.

The sprinkler includes a sprinkler housing 1 preferably molded of plastic material and including at its lower end a hollow stem or sleeve 2. The lower end of the hollow stem is provided with a fitting 3 for attachment to a water supply pipe line. The upper end of the hollow stem 2 is joined to an enlarged hollow stem 4 which, in turn, is further enlarged to form a sprinkler chamber 5.

The upper end of the hollow stem 2, which projects a short distance within the enlarged hollow stem 4, is internally screw-threaded to receive a collar 6 having an externally screw-threaded portion 7. The collar 6 is provided with a tapered bore 8 and is provided at its lower extremity with an annular seat 9. The bore 8 is provided with a pair of axially extending diametrically disposed key slots 10.

The collar 6 is adapted to receive a flow tube 11 which is provided on diametrically opposite sides with key ribs 12 that mate with the key slots 10 so that the flow tube may slide axially in the collar 6 but is restrained against rotation relative to the collar. The flow tube 11 is also provided with four tapered ribs 13 arranged in diametrically opposite pairs. The ribs 13 mate with the walls of the tapered bore 8 when the flow tube is in its axially extended position. One pair of ribs 13 may be disposed in flanking relation with the key ribs 12 as shown best in FIGURE 2.

The lower extremity of the flow tube 11 is provided with an external flange 14 which forms a shoulder to support a seal ring 15 which engages the annular seat 9 when the flow tube is in its extended position. The tapered ribs 13 and the key ribs 12 are notched adjacent the flange 14 to form means for retention of the seal ring 15 on the flange 14 as shown in FIGURE 5.

The upper end of the flow tube is provided with internal screw threads which receive the externally screw-threaded shank of a sprinkler head 16. The sprinkler head may be conventional and may be of the type which rotates.

Operation of the slide connection is as follows:

When the sprinkler head is in its retracted position, substantial clearance is provided between the flow tube 11 and the collar 6. Thus on activating the sprinkler, some water washes upwardly through the collar while the flow tube 1 is rapidly forced upwardly to its sealing position. The tapered portions 13 do not wedge in the tapered bore, but fit freely so that the ring 15 may seal, yet, at the same time, the flow tube has minimal wobble when the sprinkler rotates. When the water pressure is shut off, the flow tube, weighted by the sprinkler head, falls freely.

While the particular embodiments of the present invention have been shown and described, it will be obvious to those skilled in the art that changes and modifications may be made without departing from the invention in its broader aspects and, therefore, the aim in the appended claims is to cover all such changes and modifications as fall within the true spirit and scope of this invention.

1 claim:

1. A pop-up sprinkler having an axially slideable connection and comprising:

(a) a sprinkler housing including a sleeve having means at its lower end for connection to a water supply;

(b) a collar secured to the upper end of said sleeve and having an elongated downwardly diverging tapered bore and a seat at its lower end;

(c) a flow tube extending downwardly through said collar and into said sleeve for axial movement between a retracted and an extended position;

(d) a sprinkler head carried by said flow tube;

(e) sealing means at the lower end of said flow tube engageable with said seat when said flow tube is extended;

(f) and tapered guide ribs on said flow tube extending axially from said sealing means for mating engagement with the tapered bore of said collar, when said flow tube is extended for holding said flow tube in coaxial relation with said collar;

(g) said collar and flow tube forming a flushing passage between and around said ribs therebetween, when said flow tube is retracted.

2. A pop-up sprinkler having an axially slideable connection and comprising:

(a) a sprinkler housing including a sleeve having means at its lower end for connection to a water supply;

(b) a collar secured to the upper end of said sleeve and having an elongated downwardly diverging bore, an axially extending key slot in said bore, and a seat at its lower end;

(c) a flow tube extending downwardly through said collar and into said sleeve for axial movement between a retracted and an extended position;

(d) a longitudinal key rib on said flow tube fitting said key slot to restrain said flow tube against rotation;

(e) a rotatable sprinkler head mounted on said flow tube;

(f) sealing means at the lower end of said flow tube engageable with said seat when said flow tube is extended;

(g) and tapered guide ribs on said flow tube extending axially from said sealing means for mating engagement with the tapered bore of said collar, when said flow tube is extended, for holding said flow tube in coaxial relation with said collar;
said collar and flow tube forming a flushing passage between and around said guide ribs there between, when said flow tube is retracted.

3. A pop-up sprinkler comprising:
   (a) a tubular sprinkler housing having means at its lower end for connection to a water supply, walls defining an elongated upwardly tapering bore at its upper end, and a seat at the inner end of said bore;
   (b) a flow tube slidable in said housing, between a lower and an upper position, and projecting through said bore;
   (c) a sprinkler head carried by said flow tube;
   (d) sealing means at the lower end of said flow tube for sealing engagement with said seat, when said flow tube is in its upper position;
   (e) and a plurality of upwardly tapered guide ribs disposed on the outer surface of said flow tube to space said flow tube from the walls of said bore, for flow of flushing water between said flow tube and the walls of said bore when said flow tube is below its upper position, said ribs mating with the walls of said bore to hold said flow tube in coaxial relation with said housing, when said flow tube is in its upper position.

4. A pop-up sprinkler, according to claim 3, wherein:
   (a) said bore has at least one key slot, and a key rib, dimensioned to be received in said key slot, is superposed on at least one of said guide ribs.

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