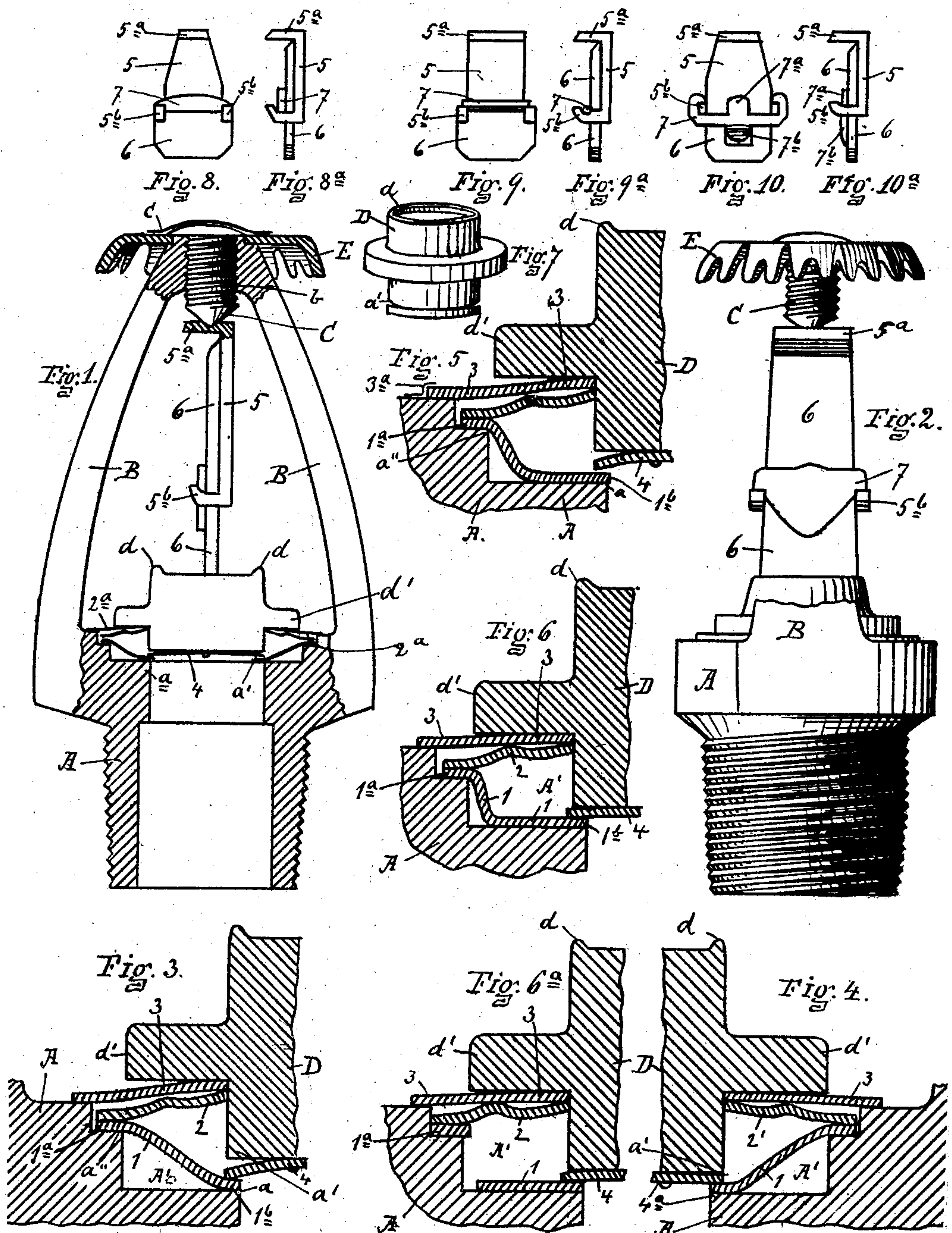


No. 891,279.

PATENTED JUNE 23, 1908.

H. W. MARTIN.
FIRE PLUG AND COLLAPSIBLE JOINT.
APPLICATION FILED JAN. 13, 1906.



WITNESSES.

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FIRE-PLUG AND COLLAPSIBLE JOINT.

No. 891,279.

Specification of Letters Patent.

Patented June 23, 1908.

Application filed January 13, 1906. Serial No. 295,859.

To all whom it may concern:

Be it known that I, HERMAN W. MARTIN, a citizen of the United States, residing at Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Fire-Plugs and Collapsible Joints, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to an improved fire-plug and collapsible joint, and I declare that the following is a full, clear, concise and exact description thereof, sufficient to enable one skilled in the art to make and use the same, reference being had to the accompanying drawings in which like letters and numerals refer to like parts throughout.

The invention relates to that class of devices which are in use in factories and other places, in connection with a water system, to provide protection against fire, by mounting a plug on the water outlet which under high temperature will automatically open the water pipes.

I show in the illustration an improved type of fusible joint and also an improved plug, the two being combined in a device of peculiar efficiency, simplicity and reliability.

In the drawings, Figure 1 is a side view in section, showing certain details, only in a general way; Fig. 2 is an edge view, part broken away; Fig. 3 is a section view showing details of construction of the plug and the water outlet, the plug being in loose contact; Fig. 4 is a detail view of the same, the plug being in close contact; Figs. 5 and 6 and 6^a are detail views of the same parts, showing a slightly modified form of construction, the latter indicating that the washer 1 may be in two parts not integral; Fig. 7 is a perspective view of the plug and its spring washer; Figs. 8 and 8^a are front and side views of a modified form of collapsible joint; Figs. 9 and 9^a are like views of a modified construction of the same; and Figs. 10 and 10^a are like views of a further modification.

Referring to the drawings more in detail, A represents the outlet end of a water pipe, having mounted thereon the strut or yoke B having a screw-threaded bore *b* at the end opposite the water outlet for the set screw C which is used to adjust the position of the collapsible joint which holds the plug D in place and which is sealed by wax or other-
wise, as indicated by *c*, after testing and ad-

justment to prevent any tampering with the device or altering the conditions.

E is a distributing cap to effect distribution of the water as it pours from the outlet.

The plug D may be formed of any solid substance, preferably metal, and has annular rim *d* on its upper surface to confine the lower end of the collapsible joint members. The plug has an annular flare *d'* to hold certain of the members which perform the function of sealing the plug on the outlet and has at its inner end a spring washer 4. The outlet member A is recessed at A', as clearly shown in Fig. 3, the inner edge of the recess, *a*, projecting slightly inwardly beyond the edge of the plug D so that the diameter of the outlet is slightly smaller than the diameter of the plug at that part, *a'*, which abuts on the outlet. The member A also has annular shoulder *a''* to support the outer rim of certain of the sealing members.

The sealing members comprise a number of rings or washers, some of them being resilient to insure a free opening for the water when the joint collapses and together forming a joint which is water tight on the water side, and air or vapor tight on the other side, some of the members being made of somewhat soft metal so as to form tight joints when the plug is forced on the outlet. In Figs. 3 and 4 I have shown one style of these members to illustrate their general form and principle of coöperation, while in Figs. 5 and 6 they are shown of a slightly different form, Fig. 6^a showing that one of the washers, 1, may be made in two parts. The said members comprise a ring or washer 1, made preferably of a non-corrosive, comparatively soft metal, such as pure tin or lead, so as to be adapted to form a tight joint with the adjacent housing and ring or washer. Its outer edge, 1^a, rests on shoulder, *a''*, of housing or pipe A and its inner edge, 1^b, rests on shoulder, 1^b, of the same. This washer or ring may be of the general shape shown in Figs. 3 and 4 or it may be cup shaped as shown in Fig. 5 or, further, may consist of two parts as shown in Fig. 6^a. In any case it is out of the way of the outpour of water from the outlet pipe. There is a concave spring disk, 4, on the inner end of the plug D, the edge of which overlaps the edge, 1^b, of washer, 1, being adapted to press firmly thereon when the plug is locked in and make a water-tight joint. Disk 4 may be of any

suitable metal, preferably non-corrosive and having a degree of resiliency to insure displacement of the plug when the joint collapses. Above washer 1 is a spring ring or washer, 2, which I prefer to make of German silver and is given considerable resiliency. Its outer edge rests on edge, 1^a, of washer 1, the two edges filling the space above shoulder *a''*. In Figs. 3 and 4 this ring is shown with an upward circumferential curve between the edges and against which adjacent washer 3 presses strongly when the plug is locked, thus putting the spring 2 under tension. In Figs. 5 and 6 ring 2 is shown of slightly convex form, the function being the same, however, in either case. I rely principally on this spring washer for the force necessary to separate the several parts of the seal when the joint collapses, and any suitable form or material may be adopted. Above this is a tin or other suitable non-corrosive ring or washer 3, and which also has some resiliency in order that the outer edge, which overlaps the edge of 1 and 2, may be crowded down in an air tight joint upon the housing A when the plug is locked, the washer being immediately under the part *d'* of the plug. The washer preferably has a slight upward curve around it, between the edges, to bear on plug D. An important function of this washer is to make a tight joint to exclude air or vapor from the spring washer 2 which is therefore protected on each hand from the deterioration naturally resulting from exposure to water or vapors and air, and which is to be guarded against in any successful device of this kind. A further function is that, being of a non-corrosive character adhesion of the parts at the joint is obviated. To further prevent corrosion the joint of washer 3 with housing A may be covered over, if desired, with a thin coat of wax or the like, as indicated by 3^a in Fig. 5.

In closed or locked position of the plug D the washer 3 forms a seal with spring washer 2, and I have by the construction shown provided a plurality of seals against the escape of water and yet have provided protection for the main spring member on each side and insured prompt release and displacement of the parts when the lock collapses.

The pressure of the joint members upon the plug crowds it against the several spring members, which tension is governed by the screw C. In case of fire, the collapsible joint yields and the resiliency of the rings or washers forces the plug from its seat while the same quality holds the joint doubly sealed and the spring member protected.

I do not limit myself to the identical form of construction, nor to any particular material.

Referring now to the joint members, 5 is a flat metallic strip having an offset 5^a at one

end against which the screw C bears at a point one side of the axis of the joint, and the other end has two offsets 5^b, one on each side of the bar 6. These offsets are disposed in a return position on the strip 5 so as to provide surfaces which are oblique to the bar 6. Part 6 at the lower end is adapted to fit into the recessed part of the plug D formed by the annular rim *d*, and at the other end bears against the offset 5^a of the other member, being beveled at that end as shown so as to provide for ready collapse of the joint. The natural tendency being for these members to separate under the pressure of the plug, I provide a transverse locking member 7 which may be designated as a rolling or escapement lock and may be given a variety of forms. Its ends lie between the inner face of the prongs or offsets 5^b and the adjacent face of the member 6 so that the force which tends to separate the members 5 and 6 is resolved and the lock member 7 needs to be secured only firmly enough to overcome the longitudinal element of that resolved force. The locking member 7 is thus exposed to the direct action of heat and may be secured in place by a fusible solder or other means, which at high temperature will release its hold against the longitudinal acting force. The solder may be applied to hold the locking member 7 to bar 6 or to the offsets 5^b.

The contact edges between 5^b and 7 may be of different angles so as to obviate any friction as is particularly shown in Fig. 9^a where the locking member consists of a round bar. The locking member may have a greater or less surface between the ends, which permits additional solder connection between it and the connected parts, such different forms being shown in Figs. 2, 8 and 10.

Fig. 2 shows a form of escapement lock somewhat different from those shown in Figs. 8 and 9. Fig. 10 shows a further variety where the lock has further lugs 7^a resting on the face part 6 and which, being bent from one end to the other, furnish a resiliency when the member is properly mounted and which tends to force the lock out of engagement when the heat has weakened the solder.

Various modifications may be made of my device without departing from the spirit and scope of my invention, and I do not mean to limit myself in any way to the particulars here given.

Having described my invention, what I claim as new and desire to secure by letters patent, is:

1. In a fire plug, the combination with an outlet member of a removable plug with an annular collar and ringlike members around the plug and between the outlet member and the collar of the plug comprising a resilient member to force the plug from its seat, substantially as shown

2. In a fire plug, a plug member to be mounted to close the outlet member, and washers around the plug and between the plug and the outlet member and providing a plurality of sealing contacts, substantially as shown.

3. In a fire plug, the combination with an outlet member of a removable plug with a resilient washer thereon capping the outlet and ringlike members between the outlet and the plug and around the plug, comprising a resilient member to force the plug from its seat, and a member preventing corrosion between the outlet portion and the plug portion, substantially as shown.

4. A fire plug having an outlet member with a portion recessed, a plug portion seated in said recessed portion and having a collar thereon and washer members disposed between the outlet and the collar, said members being adapted to provide a plurality of contacts to seal the outlet and comprising a

non-corrosive member, substantially as shown.

5. In a fire plug, the combination with an outlet member, of a removable plug with an annular collar, and ring-like members around the plug and between the outlet member and the collar of the plug, said members comprising a non-corrosive member, substantially as shown.

6. In a device of the character described, a plug with an annular collar, an outlet member with abutments around the plug, a spring ring between the plug collar and the abutments and means forming a tight joint at the inner and the outer periphery of said spring ring.

In testimony whereof I affix my signature in presence of two witnesses.

HERMAN W. MARTIN.

Witnesses:

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E. T. DE GIORGI