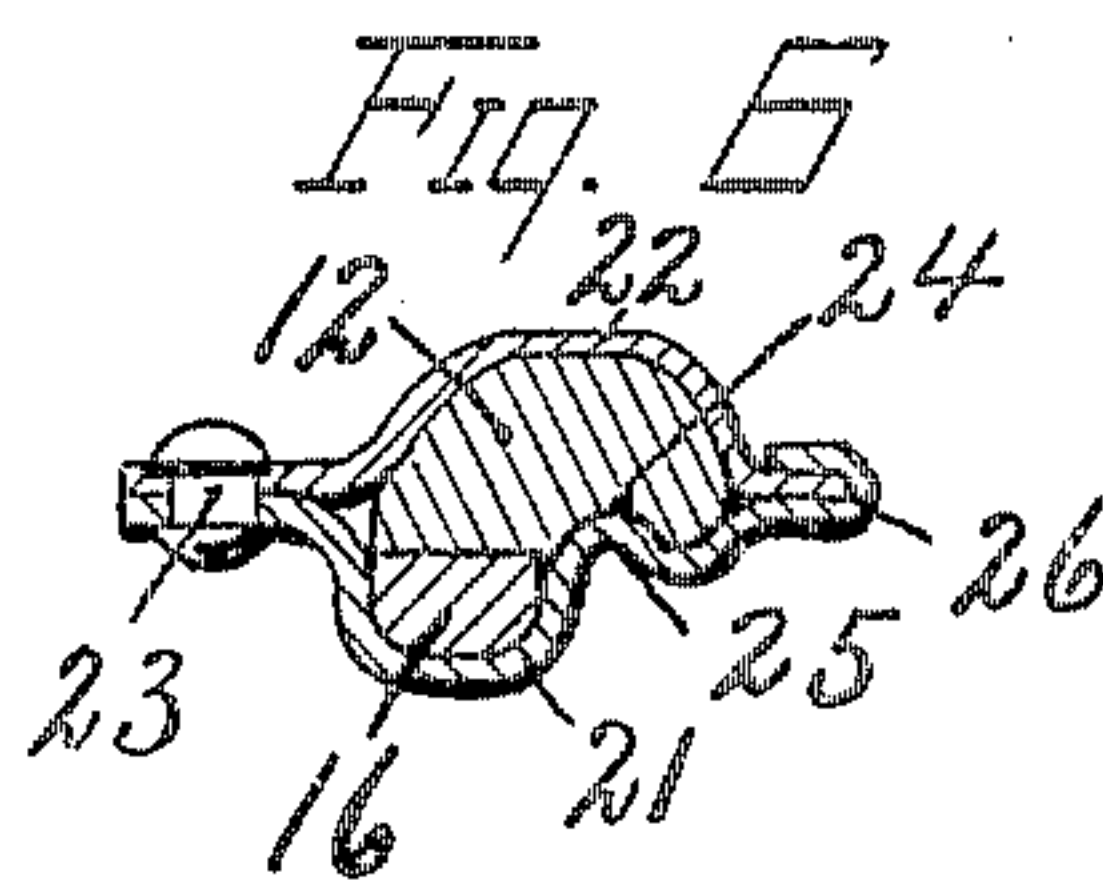
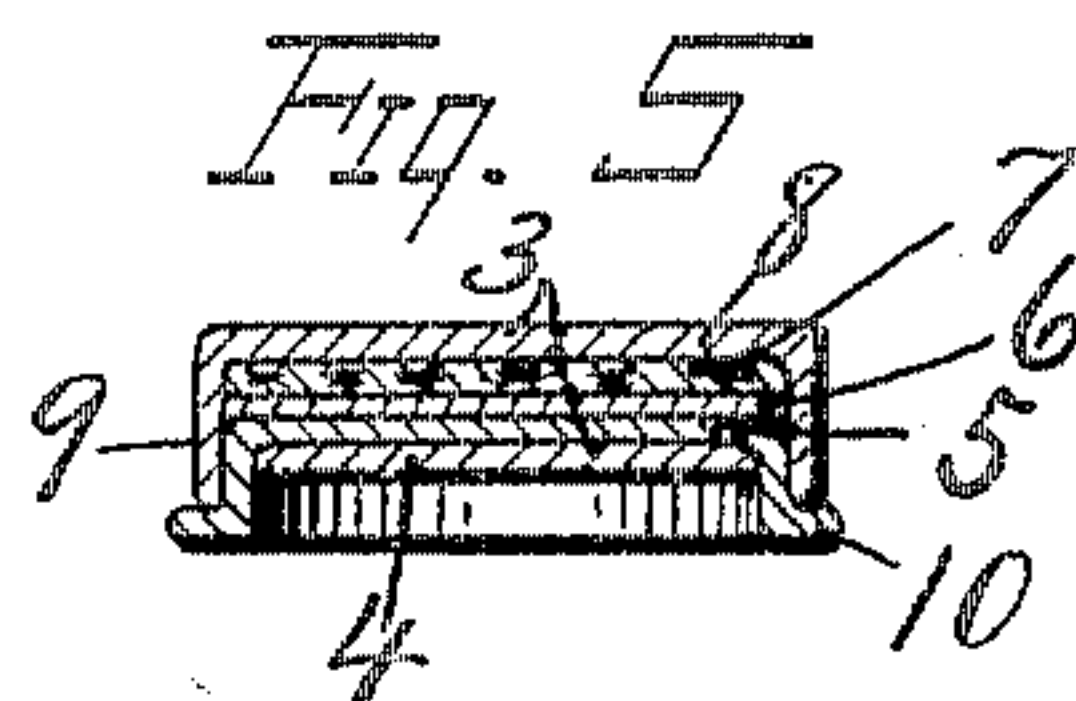
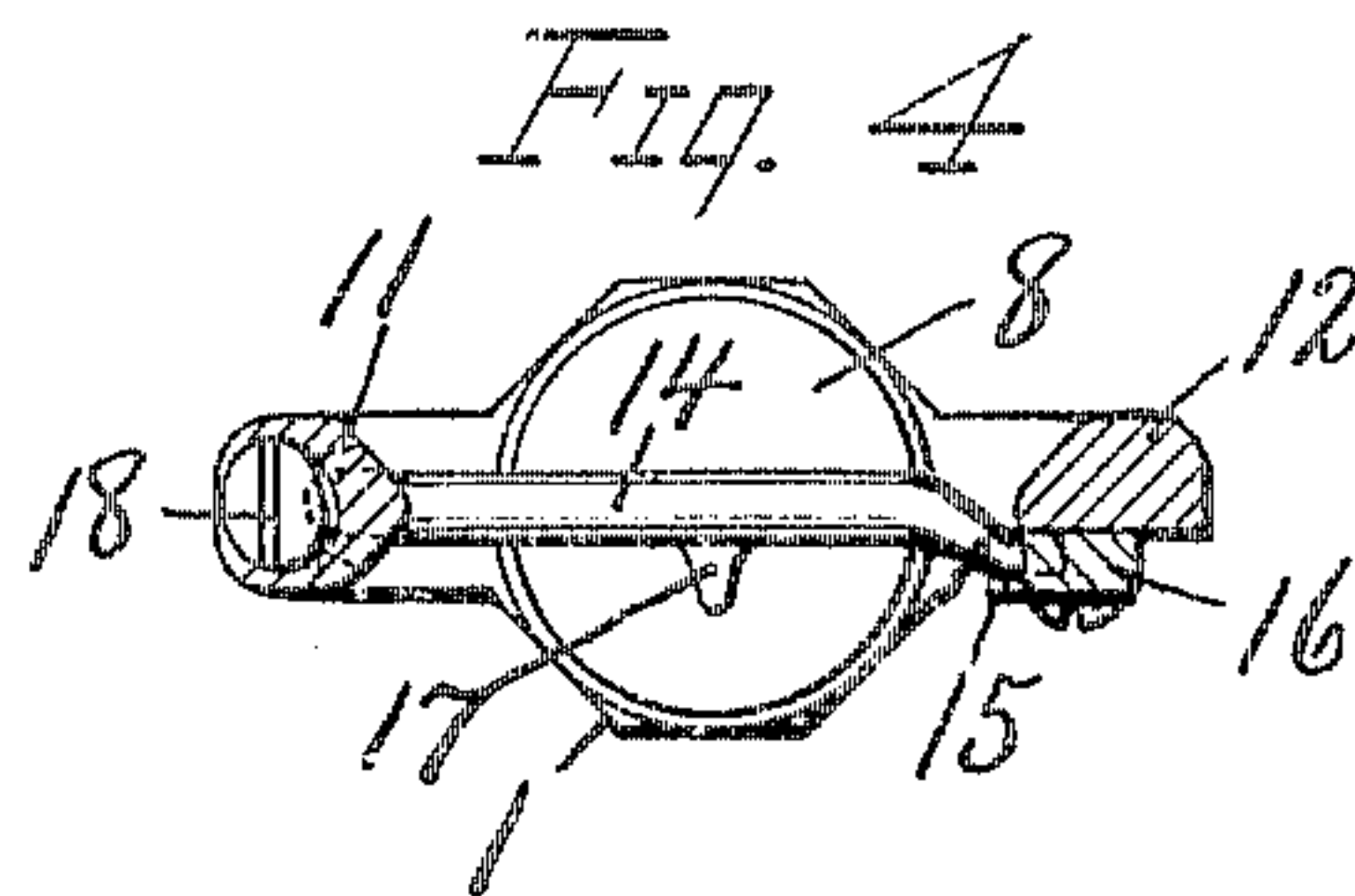
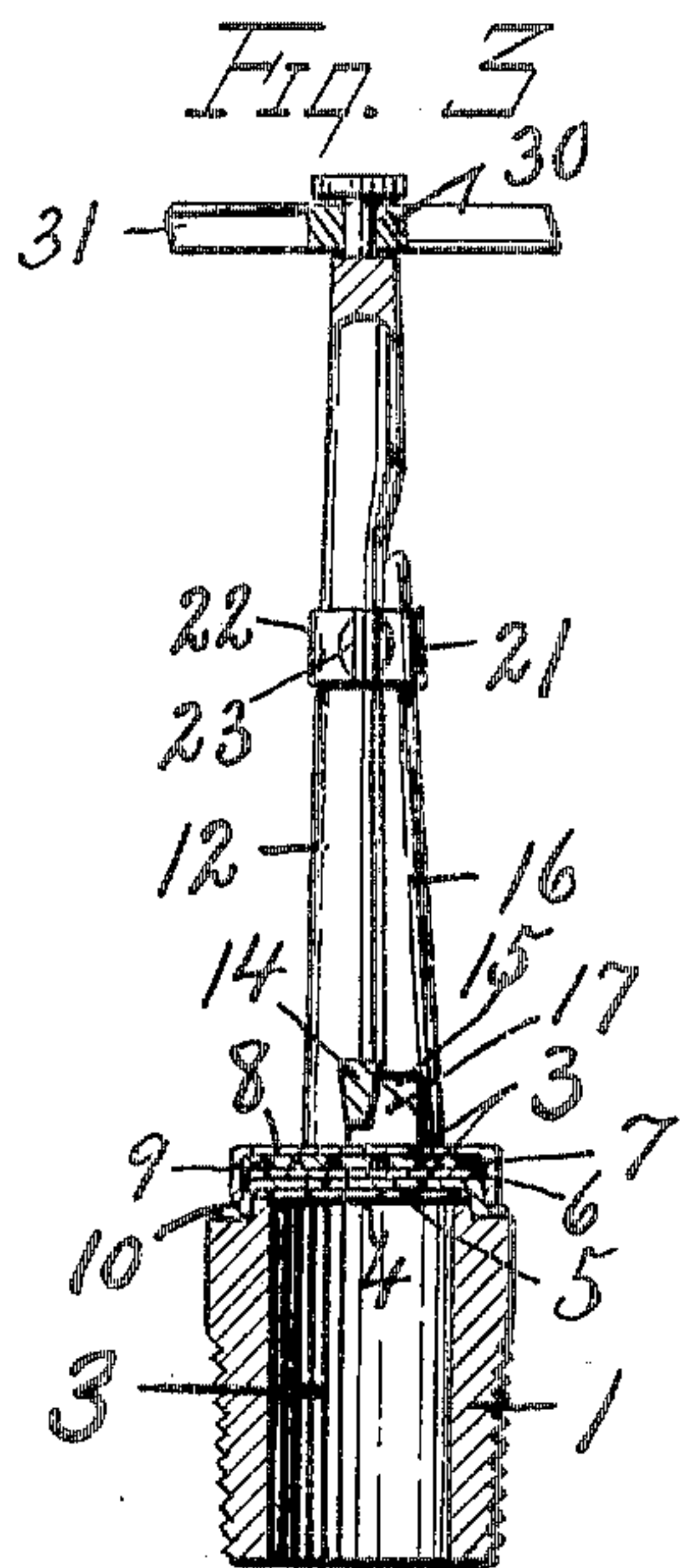
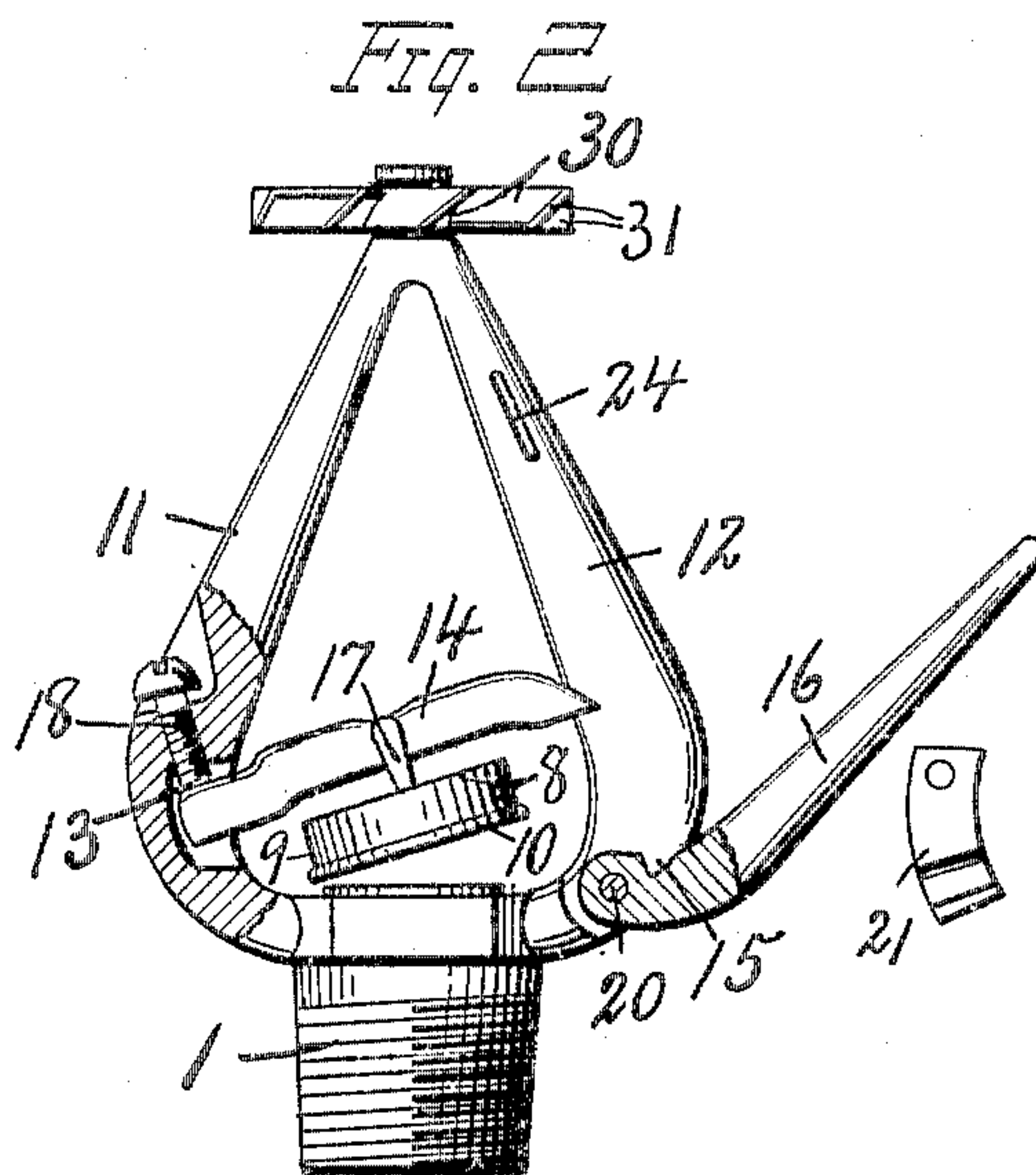
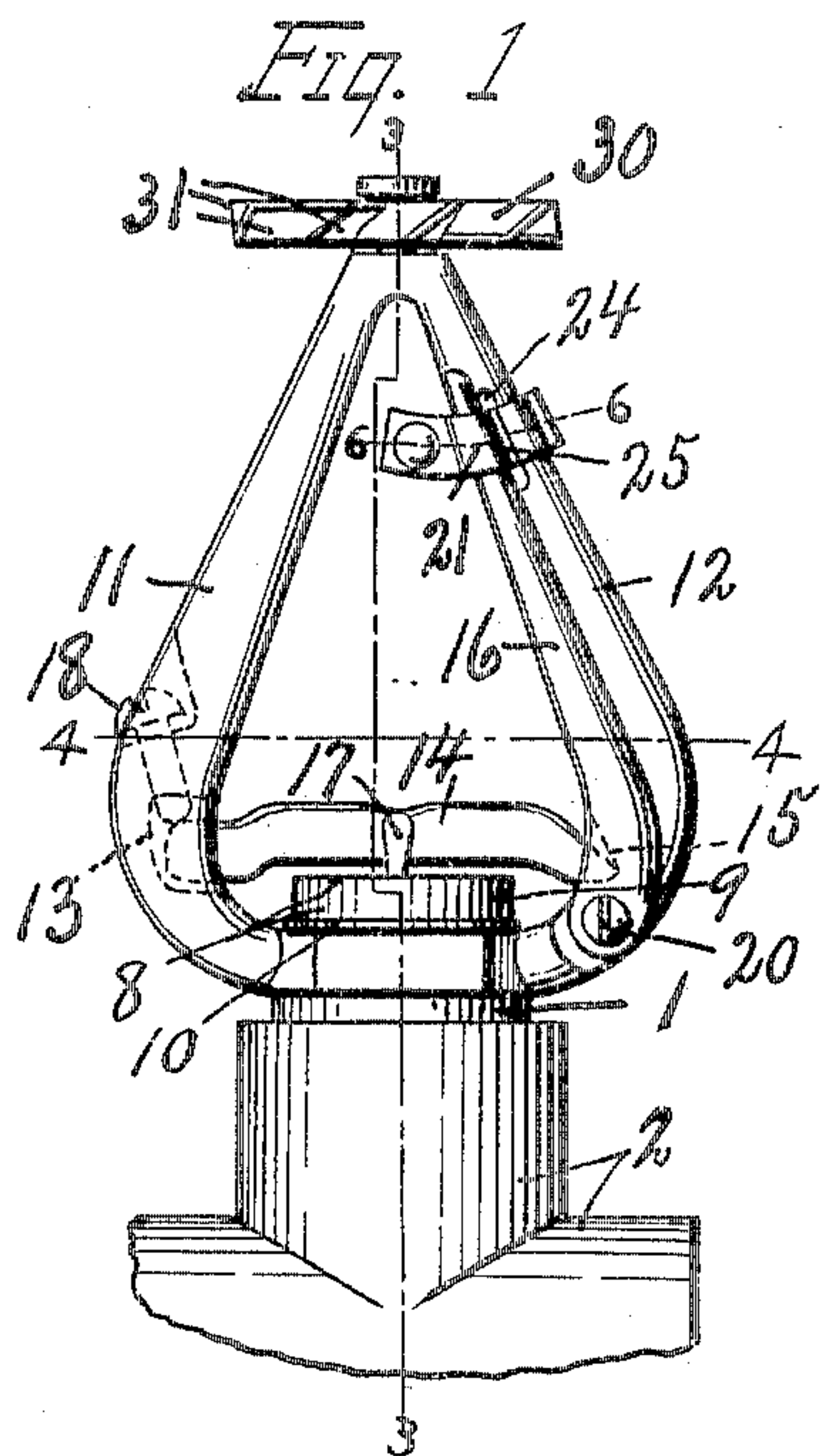


No. 793,821.

PATENTED JULY 4, 1905.

J. A. CASS, JR.  
FIRE EXTINGUISHER.  
APPLICATION FILED OCT. 11, 1904.



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# UNITED STATES PATENT OFFICE.

JAMES A. CASS, JR., OF SYRACUSE, NEW YORK.

## FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 793,821, dated July 4, 1905.

Application filed October 11, 1904. Serial No. 227,987.

*To all whom it may concern:*

Be it known that I, JAMES A. CASS, Jr., of Syracuse, in the county of Onondaga, in the State of New York, have invented new and  
5 useful Improvements in Fire-Extinguishers, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to certain improve-  
10 ments in automatic fire-extinguishers, and refers more particularly to the sprinkler-heads of what is commonly known as "automatic" sprinkler systems, in which the stoppers for the discharge-openings are held in place by  
15 fusible detents. These sprinklers are only adapted to be brought into action in case of fire or excessive heat sufficient to fuse the detent, and therefore the system may lie dormant for many years without even being test-  
20 ed or its parts inspected, so that the parts which were intended to release the stopper frequently become corroded or otherwise "set" to such an extent that in case of fire, even though the fuse may melt, the movable parts  
25 fail to perform their respective functions, which results in a considerable loss by fire.

The broad object, therefore, of this invention is to prevent corrosion of the parts and to particularly avoid any liability of the stop-  
30 per becoming set or fixed to its seat when its holding elements are liberated by the fusing of the detent.

Another more specific object is to simplify the construction and operation of the sprin-  
35 kler-head and to enable the inspectors to readily and easily test the working parts without destroying anything but the fuse.

Other objects and uses will be brought out in the following description.

40 In the drawings, Figure 1 is an elevation of my improved fire-extinguisher as applied to a pipe-T of the water-distributing system. Fig. 2 is a similar view, partly in section, showing the operation of releasing the stop-  
45 per. Figs. 3 and 4 are sectional views taken, respectively, on lines 3 3 and 4 4, Fig. 1. Fig. 5 is an enlarged sectional view of the detached stopper. Fig. 6 is a sectional view taken on line 6 6, Fig. 1.

50 In carrying out the objects stated a thread-

ed tubular head 1 is screwed into a pipe-T 2 or other part of the water-distributing system and has a central water-passage 2', which is closed at its outer end by a suitable laminated cap or stopper 3. This stopper is composed of a se-  
55 ries of thin flat layers or disks of different materials combined and arranged to resist corrosion or adhesion to the stopper-seat on the outer end of the head 1. The inner layer, which rests upon the seat, is preferably made  
60 of thin sheet-lead 4, which is at once non-corrodible and is readily compressed onto the seat to form a suitable packing and water-tight joint. Against the outer face of this  
65 lead disk is placed a thin aluminium cap 5, which has an inturned annular flange inclosing the marginal edges of the disk 4 to rein-  
70 force the latter and to prevent its spreading or yielding under pressure of the water, both of these disks 4 and 5 being of greater diame-  
75 ter than that of the passage 2, so as to have a broad bearing on the outer end of the head 1. A third disk 6, of thin sheet-brass, is placed against the outer face of the aluminium cap  
80 5, and against this disk 6 is placed a fourth disk or thin layer 7, of cork or equivalent yielding material which is not adapted to collect moisture. Upon the disk 7 is placed an  
85 outer cap 8 of comparatively heavy stiff brass, which has an inwardly-projecting annular  
90 flange 9 of sufficient depth to inclose the disks 8 and 7 and the greater portion of the disk or cap 6, this latter disk 6 having a lateral an-  
95 nular flange 10, against which the flange 9 may bear.

Springing laterally from the opposite sides of the outer end of the head 1 are two arms  
11 and 12, which are disposed at opposite sides of the stopper and converge outwardly,  
90 so as to meet some distance beyond the stopper to afford ample clearance for the movable parts and at the same time protect said parts from injury or accidental displacement. One  
95 of the arms, as 11, is formed with a recess 13 in its inner side and near the stopper and re-  
100 ceives one end of a movable lock-bar 14, which extends diametrically across and bears upon the outer face of the cap 8 and has its opposite end entering a recess 15 in an up-  
right lever 16 to hold the lock-bar in opera-



tive position. The main body of the bar clears the outer face of the stopper, but is formed with a central boss or projection 17, which bears against the center of the stopper to hold the latter in operative position, and at the same time when the fuse is melted the center bearing 17 allows the stopper to free itself first at the edges instead of by bodily axial movement. An adjusting-screw 18 is tapped into the arm 11, so as to project into the recess 13 and engage the adjacent end of the lock-bar, and thereby adjust the pressure of the latter upon the stopper after the parts are assembled. The lever 16 is fulcrumed at 20 to the arm 12 at the inner side of the adjacent end of the lock-bar 14 and recess 15, but extends outwardly along the arm 12 to a point near the junction of the arms 11 and 12, where it is clamped to the arm 12 by thin metal plates 21 and 22 and a soft-solder or other fusible rivet 23. The arm 12 is formed with an elongated recess 24 in its side adjacent to but at the outer side of the lever 16, and the plate 21 is fitted against corresponding sides of the arm 12 and lever and has a projecting rib 25, which enters the recess 24 to lock the plate against lateral movement for the purpose of relieving the strain upon the fusible detent or rivet 23. The outer side edge of this plate 21 is bent upon itself to form a groove 26, into which the adjacent end of the plate 22 is fitted, this latter plate being passed around the opposite side of the arm 12, and the inner ends of both plates are formed with aligned apertures, into which the fusible rivet 23 is inserted to further lock the plates together. It now appears that the plates 21 and 22 are clamped together around the arm 12 and lever 16 to lock the lever from movement, and thereby hold the lock-bar 14 and stopper in operative position against water-pressure in the head 1.

The outer sides of the recesses 13 and 15 and adjacent edges of the lock-bar 14 are beveled, so that when the fusible detent or rivet 23 is melted the outward pressure of the water upon the stopper will be transmitted to the bar 14, and the engaging beveled faces of the bar 14 and lever 15 will operate to rock the lever outwardly on its pivot, and thereby draw the plates 21 and 22 apart and away from the arm 12 until the lever 16, bar 14, and stopper are liberated, as shown in Fig. 2, to permit the free discharge of the water through the head 1 to extinguish the fire.

A rotary water-spreading wheel 30 is mounted in the junction of the arms 11 and 12 and is provided with a series of blades 31, which are set at an angle to receive the impact of the escaping water, whereby the wheel is rotated and the water is also spread or thrown in all directions over a large area.

Although I have shown the stopper and its holding parts 14, 16, 21, and 22 as displaced to certain positions, it is evident that all of

these parts, except the lever 16, may be forced to any other position than that shown and that in most cases they will be entirely separated from the head 1 and arms 11 and 12, so as to leave a clear passage for the water from the head 1 to the rotary spreader 30.

In reassembling the parts the stopper is first placed in position over the outer end of the passage, and the lock-bar is then placed against the outer face of the stopper with one end in the recess 13, after which the lever 16 is rocked inwardly until the adjacent end of the bar 14 enters the recess 15. The plates 21 and 22 are then interlocked and clamped upon the bar 12 and lever 16 and the soft-solder rivet 23 inserted therein, and, finally, the screw is adjusted to press the bar 14 firmly against the stopper to hold the latter firmly against the seat.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an automatic sprinkler of the class described, the combination with a tubular head having a central water-passage and opposite arms projecting therefrom, each of the arms having a recess, an adjusting-screw entering one recess, a stopper for the passage, a lock-bar bearing on the stopper and having one end inserted in one of the recesses and engaged by said screw, a lever engaging the other end of the bar, clamping-plates engaging and locking the lever to one of the arms, one of the plates entering the adjacent recess, and a fusible detent connecting said plates.

2. An automatic fire-extinguisher of the class described comprising a tubular head having a central water-passage, opposite upwardly-projecting arms rising from the head and united at the top, a stopper for the passage, a lever pivoted at one side of the stopper and extending upwardly along one of the arms, an adjustable member on the other arm, and a lock-bar bearing on the stopper and having one end engaged with the adjustable member and its other end engaged with the lever above its pivot, and means including a fusible part for locking the upper end of the lever to one of the arms.

3. In an automatic fire-extinguisher of the class described, in combination, a tubular head having a water-passage, a stopper for said passage, opposite arms rising from the head and united at the top, a revoluble spreader at the junction of said arms, one of the arms having a recess near its lower end, a lever pivoted at its lower end and extending upwardly along the other arm, a lock-bar bearing on the stopper and having one end entering said recess and its other end engaged with said lever, an adjusting-screw on one of the arms engaging one end of the lock-bar, and means including a fusible element for securing the upper end of the lever to one of the arms.

4. In an automatic fire-extinguisher of the



class described, in combination, a tubular head  
having a water-passage, a stopper for said pas-  
sage, opposite arms rising from the head and  
united at the top, a lever pivoted at one side  
5 of the passage and extending upwardly along  
one of the arms, a lock-bar engaging the stop-  
per and having one end engaged with the le-  
ver and its other end adjustably connected to  
the opposite arm, opposed clamping-plates

binding the upper end of the lever to the ad- 10  
jacent arm, and a fusible bond uniting the  
clamping-plates.

In witness whereof I have hereunto set my  
hand this 7th day of October, 1904.

JAMES A. CASS, JR.

Witnesses:

THOS. KELL BRADFORD,

AUG. W. BRADFORD.