

3 Sheets—Sheet 1.

No. 557,943.

Patented Apr. 7, 1896.

FIG. 1.

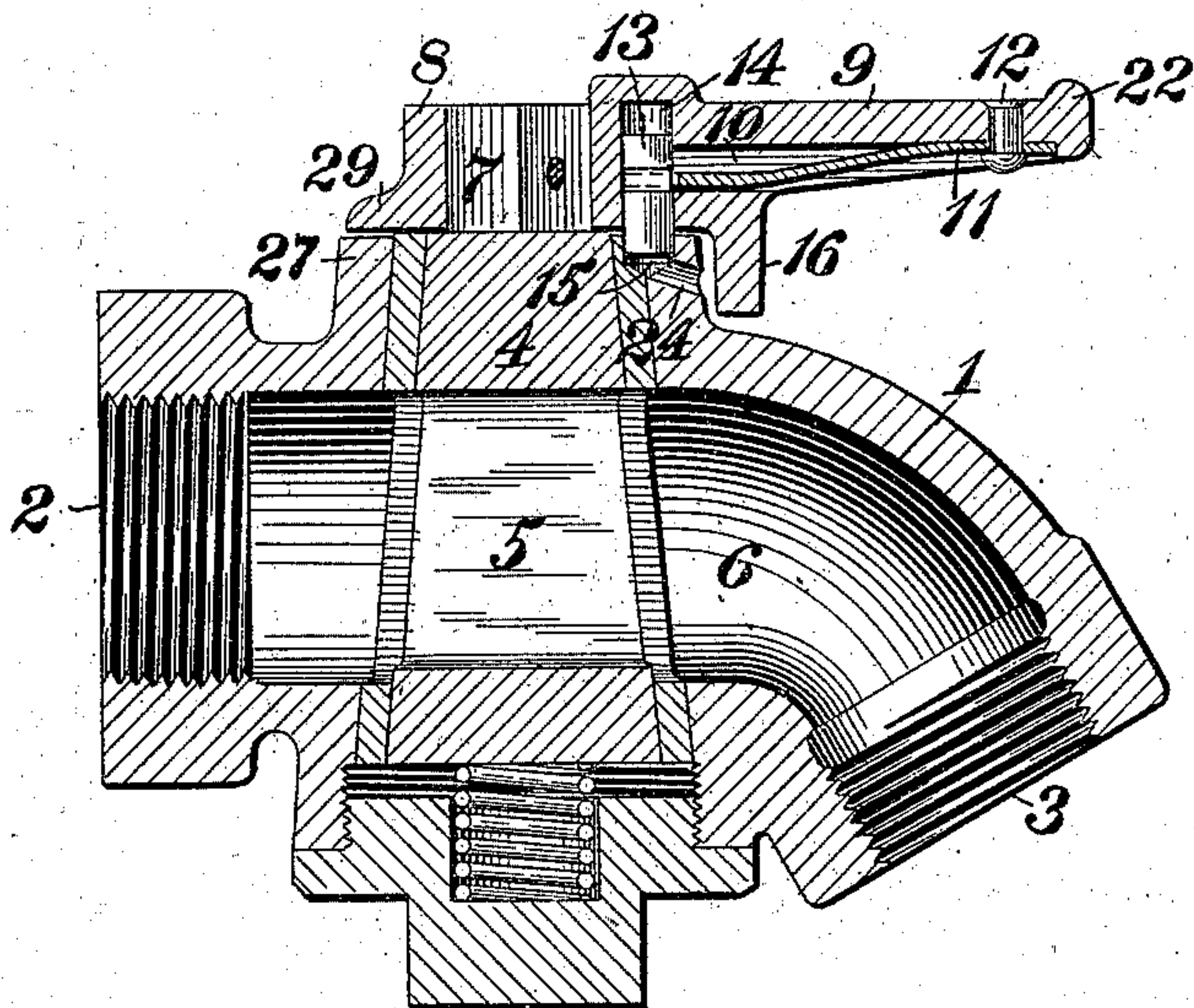


FIG. 2.

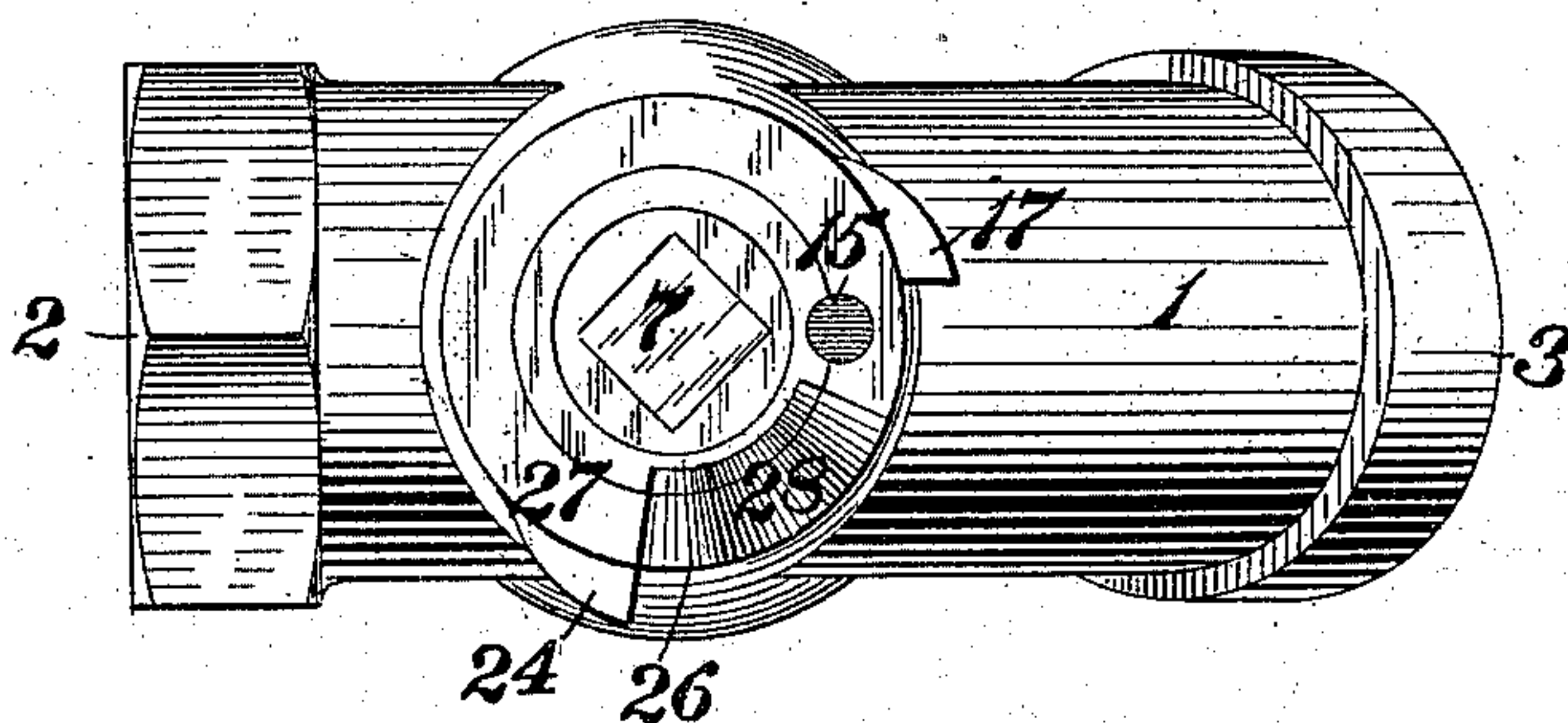
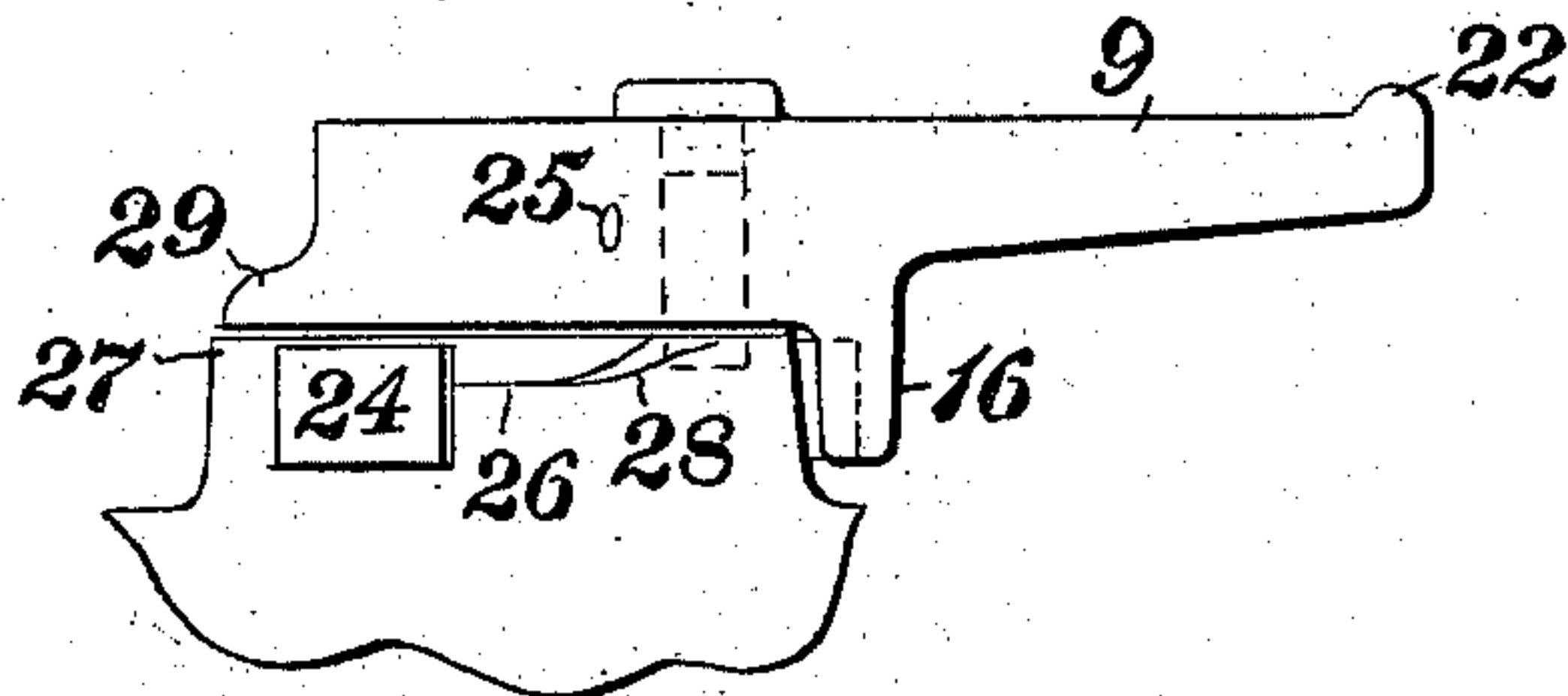


FIG. 3 -



WITNESSES:

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INVENTORS.

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R. W. Bayley.
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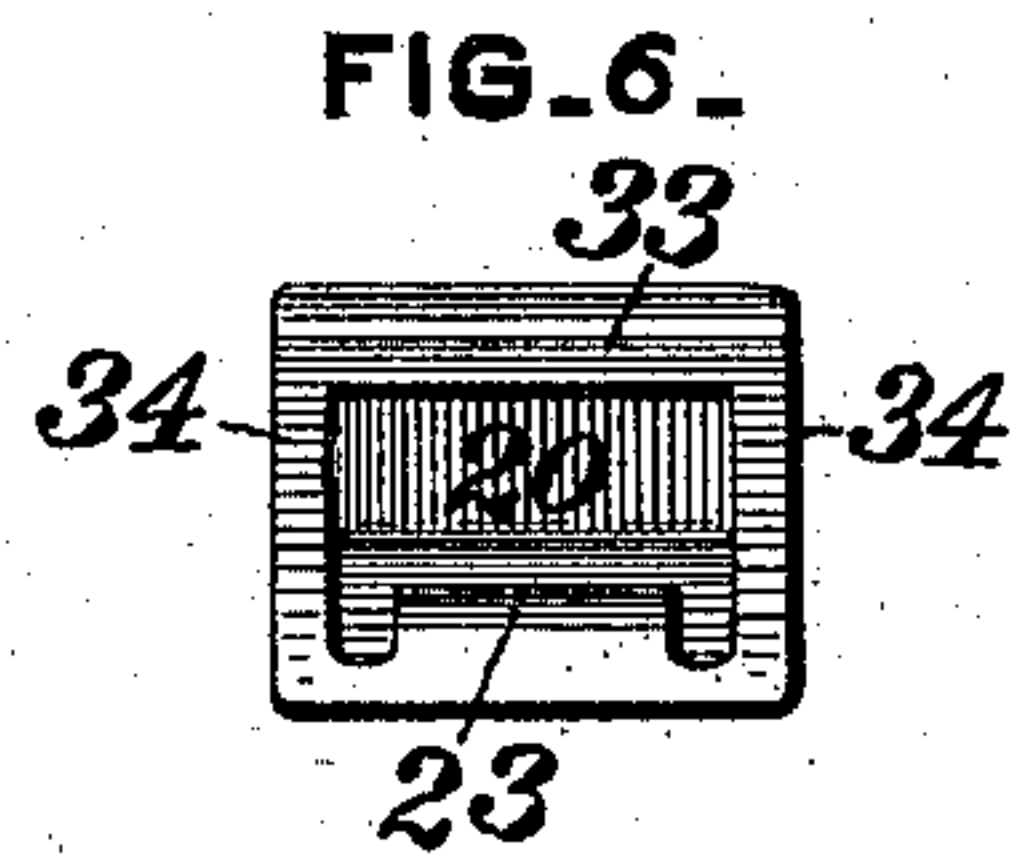
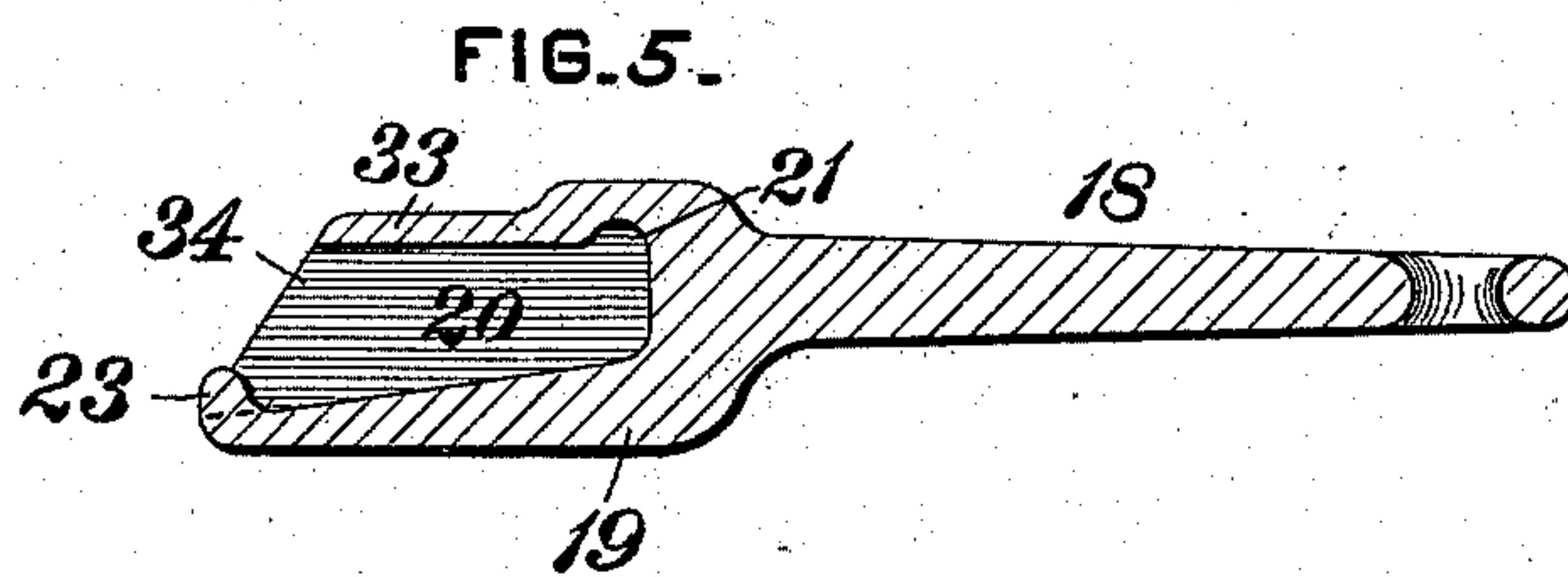
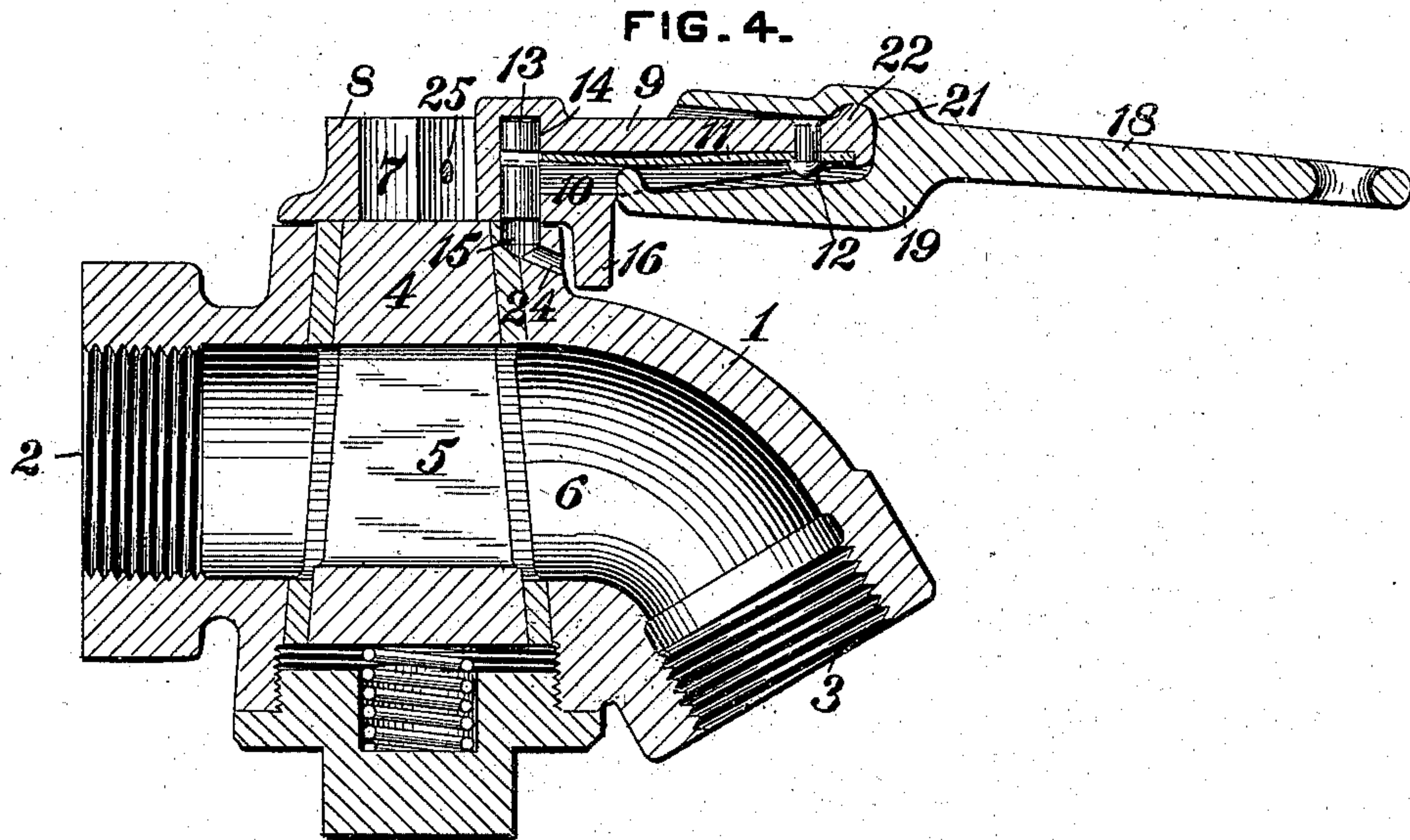
(No Model.)

3 Sheets—Sheet 2.

R. W. BAYLEY & F. L. CLARK.
DEVICE FOR LOCKING OR UNLOCKING VALVES.

No. 557,943.

Patented Apr. 7, 1896.



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T. J. Hogan

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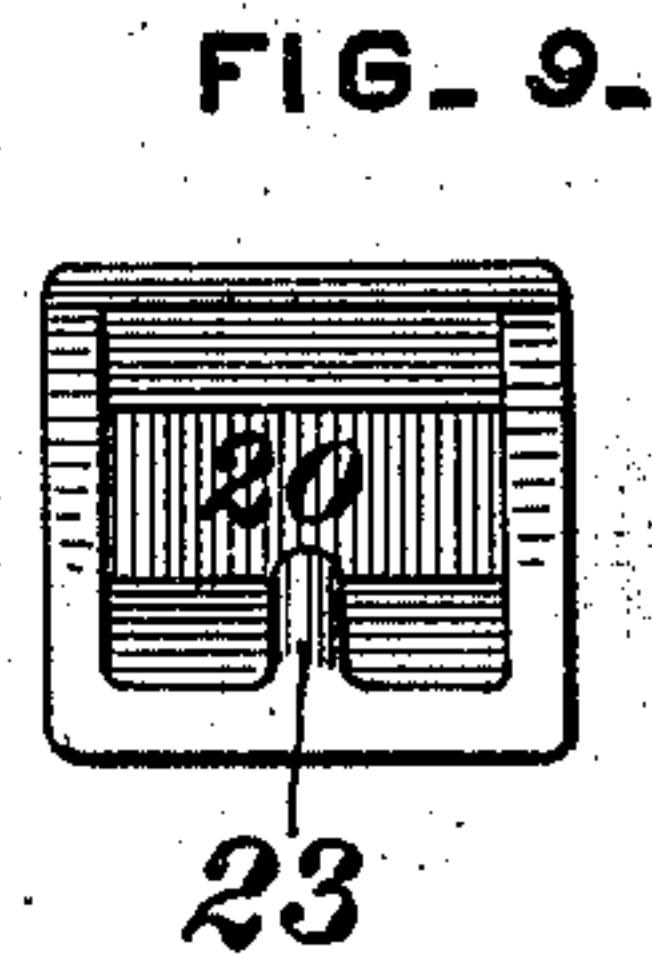
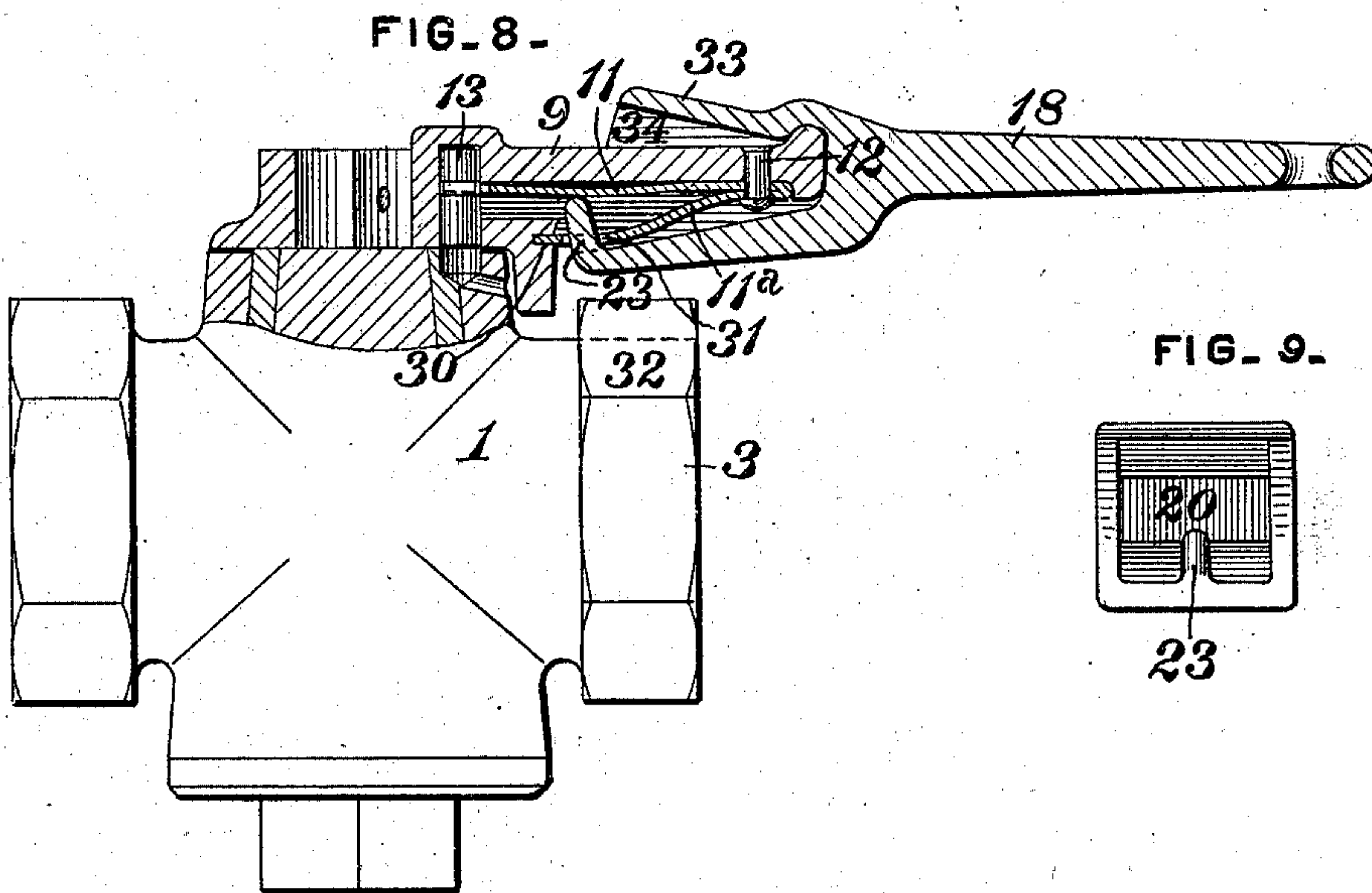
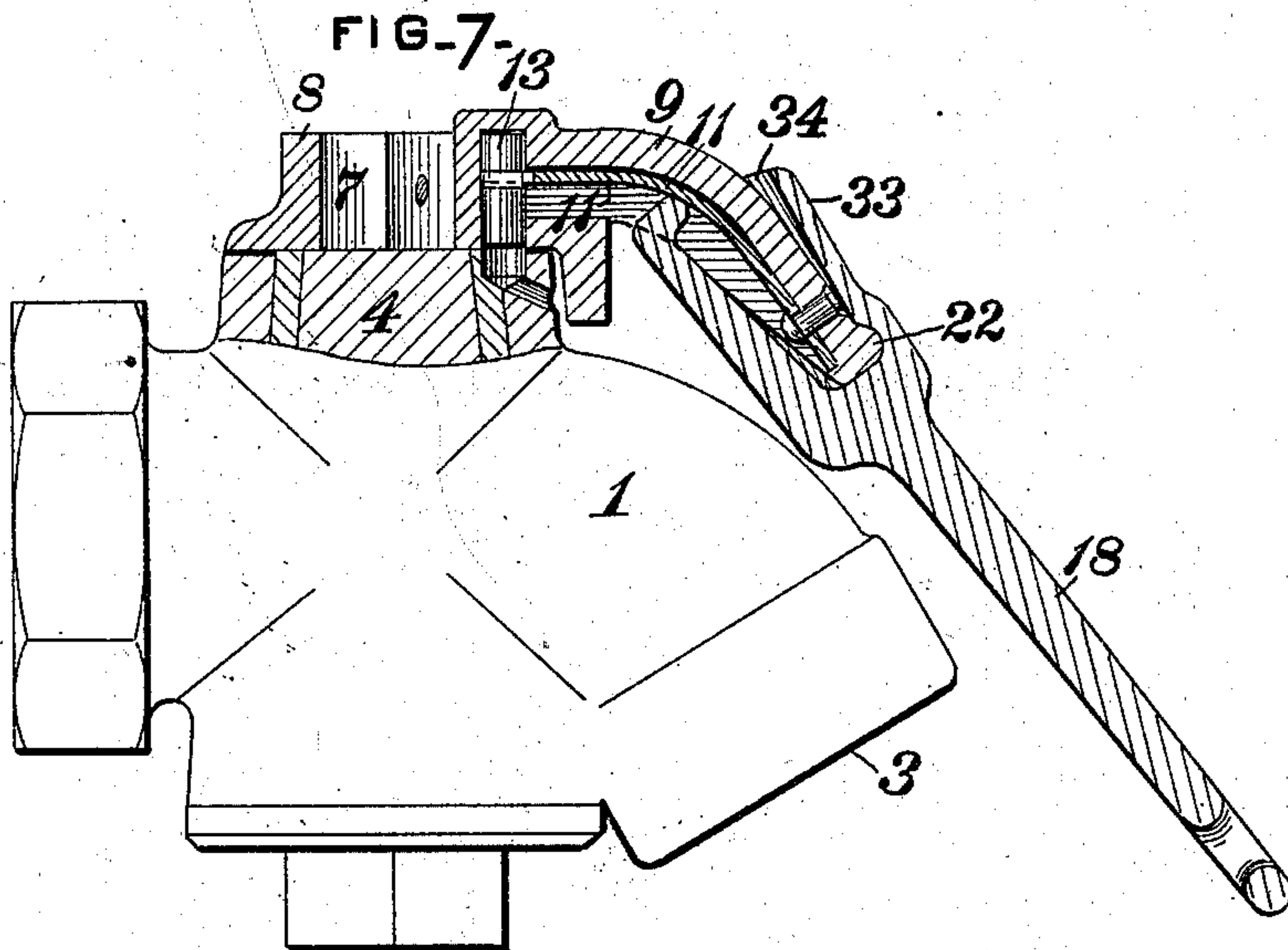
(No Model.)

3 Sheets—Sheet 3.

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DEVICE FOR LOCKING OR UNLOCKING VALVES.

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UNITED STATES PATENT OFFICE.

RICHARD W. BAYLEY, OF PITTSBURG, AND FRANCIS L. CLARK, OF WILKINSBURG, PENNSYLVANIA, ASSIGNORS TO THE WESTINGHOUSE AIR BRAKE COMPANY, OF WILMERDING, PENNSYLVANIA.

DEVICE FOR LOCKING OR UNLOCKING VALVES.

SPECIFICATION forming part of Letters Patent No. 557,943, dated April 7, 1896.

Application filed December 4, 1893. Serial No. 492,719. (No model.)

To all whom it may concern:

Be it known that we, RICHARD W. BAYLEY, residing at Pittsburg, and FRANCIS L. CLARK, residing at Wilkinsburg, in the county of Allegheny, State of Pennsylvania, citizens of the United States, have invented or discovered a certain new and useful Improvement in Devices for Locking or Unlocking Valves, of which improvement the following is a specification.

The object of our invention is to provide means for operating valves or cocks and effecting and controlling their movability or immovability; and to this end it consists of novel means whereby the cock or valve to which it is applied may be operated to open or close a port or ports and whereby the movability or immovability of the cock or valve is secured, and in the combination of such means with a valve or cock.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a central section through a plug-cock, illustrating an application of a portion of our invention; Fig. 2, a plan view of the same plug-cock, showing the means by which it is adapted to the application of our invention; Fig. 3, a partial side view in elevation; Fig. 4, a section similar to that shown in Fig. 1, with the unlocking device in position; Fig. 5, a longitudinal section through the unlocking device; Fig. 6, an end view of the same; Fig. 7, a view, partly in elevation and partly in section, showing a modification of the construction of Figs. 1 and 4; Fig. 8, a similar view illustrating an application of the locking and unlocking devices to a straight cock, and Fig. 9 an end view of the unlocking device shown in Fig. 8.

As illustrated in the drawings, our invention consists more particularly in means for locking a valve or cock in any desired position, so that it cannot be unlocked and moved except by the application of our unlocking device or some similar means, and while our invention is specially designed for the purpose of locking the valve in the open position it will be obvious that it may be employed for locking the valve in any position whatever.

In railroad automatic fluid-pressure-brake systems the train-pipe forms a continuous and uninterrupted passage for fluid from the engineer's brake-valve on the locomotive to the rear end of the last car, where the passage is closed by an angle-cock such as that shown in the drawings. A similar cock is located in the train-pipe under and near each end of each car, so that when the train-pipe is charged with fluid and the brakes thereby released the section of pipe under each car may be cut out from the remainder of the train-pipe and the cars disconnected without applying the brakes.

When the train is in running order, it is necessary to the operativeness of the brake system that all of these cocks shall be open except the one at the rear end of the last car, which must be closed. The closure of any other of these cocks in the train-pipe between the engineer's brake-valve and the rear end of the train deprives the engineer of the control of the brakes in rear of the closed cock. It is therefore important to prevent the closing of any of the cocks by accident or by the intentional interference of unauthorized persons.

Our invention is specially applicable for this purpose and we have, therefore, illustrated it in connection with a valve which is to be locked in the open position.

The casing 1 is adapted to be connected at one end by the screw-threaded connection 2 to the metallic section of train-pipe under a car and at the other end with a section of hose which forms a part of a flexible section of the train-pipe between two cars. The plug 4 which forms the valve has in the present instance but a single port or passage 5 formed through it, which registers with the passage 6 in the casing when the valve is in open position. The plug 4 is provided with a projection 7 on one end, to which is secured, by means of a pin 25, a flanged collar 8, having an arm 9 projecting from one of its sides. The arm 9 has a cavity 10 on its under side, in which is located a spring 11, which is secured in place by a rivet 12. One end of the spring 11 is bifurcated or slotted and projects into a cylindrical chamber or socket 14, in

which a locking plug or bolt 13 is fitted, so as to engage the end of the spring in such a manner that the bolt or plug and the end of the spring move together.

5 The chamber or socket 14 in which the plug or bolt 13 is located is open on the under side and in the open position of the plug 4, as shown in the drawings, registers with a socket or recess 15 in the casing 1. The spring 11 is
10 so adjusted that it tends to move the plug or bolt 13 out of its socket 14, so that when the chamber 14 is in line with the chamber 15 the spring 11 moves the bolt 13 into the chamber or socket 15 and locks the valve in place.
15 The bottom of the recess 15 is open to the atmosphere through the port or passage 24, which permits the escape of dirt or dust therefrom and also permits the recess 15 to be cleaned out without disconnecting the flanged
20 collar 8 and arm 9 from the end of the valve 4.

To insure the alinement of the chambers 14 and 15 when the port 5 registers with the passage 6 in the casing, a projection or lug 16 is formed on the arm 9, which abuts against
25 a stop 17, formed on the valve-casing, when the arm 9 is moved into position to open the valve 4.

The cavity 10 in the arm 9 is so formed and the spring 11 is so fitted in the cavity that
30 the bolt 13 cannot be lifted from engagement with the socket 15 by the hand alone, and the valve is so locked that it cannot be unlocked except by the employment of some suitable instrument by which the spring may be de-
35 flected so as to throw the bolt 13 from the socket 15. The arm 9 is purposely made short, so that even if the bolt 13 has been put in the unlocked position it will still be difficult to move the valve without the em-
40 ployment of a greater leverage than that afforded by the arm 9.

In order to unlock the valve and to move it easily from one position to another, we employ a device such as that shown in Figs. 4
45 and 5, which may be operated as a key to unlock the valve and as a handle or lever to turn it. The handle 18 of the unlocking device has an enlarged portion 19 on one end, in which there is formed a recess or cavity
50 20, adapted to fit over the arm 9 of the locking device, as shown in Fig. 4. The sides of the recess or cavity form a guide for the unlocking device in fitting it over the arm 9. When the enlargement 19 is fitted over the
55 arm 9, the rounded end 22 of the arm 9 fits in a corresponding curved recess 21 in the cavity 20, thereby forming a fulcrum about which the handle may be tilted, so as to cause a projection 23 at the end of the han-
60 dle to bear against and deflect the spring 11. The tilting of the handle 18, as shown in Fig. 4, by deflecting the spring 11 and pressing it toward the upper side of the cavity 10, lifts the bolt 13 from the socket 15 and unlocks
65 the valve. The valve 4 is then free to be moved to closed position by side pressure on the handle 18.

The movement of the valve 4 from the open to the closed position is checked by the lug or projection 16 coming in contact with the
70 stop 24 on the casing 1.

A recess similar to the recess 15 may be provided near the stop 24 to receive the bolt 13 when the valve 4 has been moved to closed position, or, as shown in Figs. 2 and 3, the
75 edge 27 of the casing 1 may be cut away sufficiently to permit the spring 11 to assume its normal position and the bolt 13 to project from its socket 14. The edge 27, as shown in Figs. 2 and 3, is cut away to form a recess
80 26 of the same depth as the recess 15, so that the bolt 13, when projecting from its socket 14 does not bear against the edge of the casing, and the spring 11 is therefore relieved from compression when the valve is moved
85 to closed position—that is, when the lug 16 on the arm 9 bears against the lug or projection 24 on the casing. One side of the recess 26 may be inclined, as shown at 28, so that the valve may be moved from the closed po-
90 sition to the open position without the application of a key to the spring 11, the movement of the bolt 13 to the unlocked position being effected by the contact of the bolt 13 with the surface 28 as the lug 16 is moved
95 away from contact with the stop 24.

The flange 29 on the collar 8 covers the edge 27 of the casing 1, so as to prevent access of dust and dirt and its accumulation in the locking-recess 15 or in any other similar
100 recess which may be formed in the edge 27 of the casing 1.

In Fig. 7 the arm 9 is shown as curved, so as to bring it as close to the casing 1 as possible without interfering with the insertion
105 of the unlocking device and its necessary movement in turning the valve. By this means, when the arm 9 is in alinement with and directly over the casing 1, the spring 11 is practically locked up in such a manner as
110 to prevent its being tampered with or moved to unlock the valve by any means except our unlocking device.

In Fig. 8 we have shown the spring folded, so as to form two leaves 11 and 11^a, the part
115 11^a being secured at one end in a slot 30, and at the other end by means of the rivet 12 in such a position as to form a shield for the movable part 11. An opening 31 is formed in the part 11^a, through which the projection
120 23 of the unlocking device (shown in Figs. 8 and 9) may be inserted for the purpose of deflecting the spring 11 and lifting the bolt 13.

The part 11^a may, if preferred, be separate from the spring 11, its only object being to
125 form a shield to prevent interference with the spring 11 and to make it difficult to unlock the valve except by the employment of our unlocking device or some similar instrument.
130

In Fig. 8 the arm 9, spring 11, and shield 11^a are brought down as near to the casing 1 as the operativeness of the device will permit, and the hexagonal end 3 of the casing 1

is slotted or recessed on top, as indicated by the dotted line 32, to permit the insertion and removal of the projection 23 of the locking device. Access to the spring 11, except by
5 some device similar to our unlocking device, is thereby prevented or made more difficult.

While we have shown our improvement as applied to a plug-cock, it is obvious that it may be applied to other forms of valves, and
10 may be employed to lock the valve in any desired position, either open or closed. Our invention is not, therefore, limited to the specific construction shown.

We claim as our invention and desire to
15 secure by Letters Patent—

1. The combination, with a cock or valve and its casing, of an arm secured to the valve, a recess in the arm, a spring in the recess, a locking-bolt operatively connected to the
20 spring, a shield for protecting the spring, and a detachable unlocking device for deflecting the spring, which is adapted to be used as a lever or handle, for turning the valve, substantially as set forth.

25 2. The combination, with a cock or valve, of an arm carrying a locking device, and a detachable unlocking device adapted to fit over the arm, a fulcrum or bearing on the arm on which the unlocking device may be
30 tilted in one direction to unlock the valve,

and a lateral bearing on the unlocking device for engaging with the arm, whereby the arm may be moved laterally in another direction to move the valve, substantially as set forth.

3. The combination, with a cock or valve, of an arm secured to the valve, a spring-actuated locking device carried by the arm, a detachable unlocking device adapted to be pivoted on the arm and a projection on the un-
40 locking device which is adapted to deflect the spring of the locking device when the locking device is turned on its pivot, substantially as set forth.

4. The combination, with a cock or valve, and its casing, of a spring-actuated locking-bolt, a socket or recess adapted to receive the bolt and thereby to lock the valve in one position, and a recess which is adapted to receive the locking-bolt when the valve is in
50 another position, thereby relieving the spring of compression, while permitting the movement of the valve, substantially as set forth.

In testimony whereof we have hereunto set our hands.

RICHARD W. BAYLEY.
FRANCIS L. CLARK.

Witnesses:

JOHN F. MILLER,
OTTO F. GUYTON.