

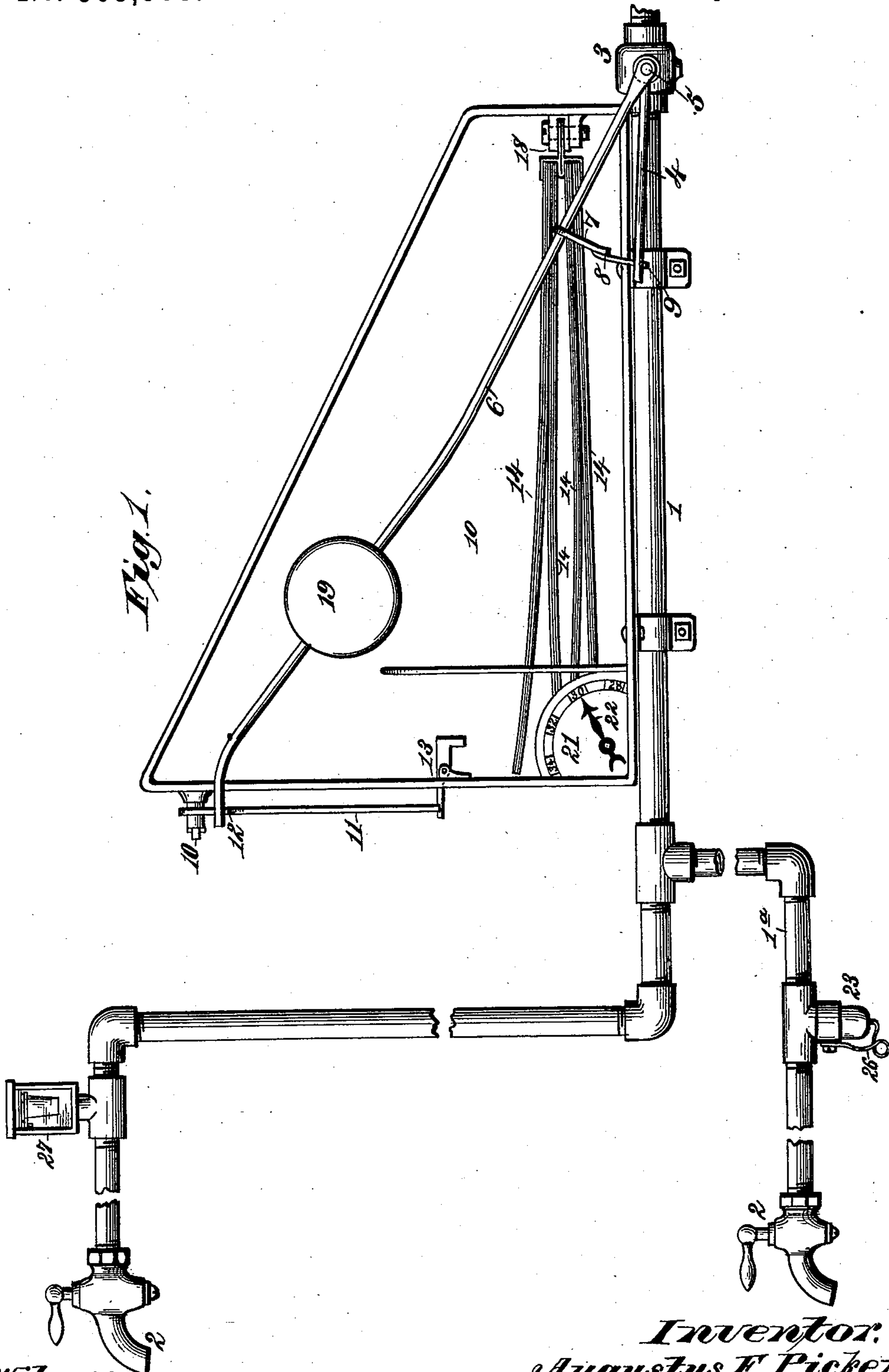
(No Model.)

2 Sheets—Sheet 1.

A. F. PICKERT.
AUTOMATIC CUT-OFF.

No. 363,965.

Patented May 31, 1887.



Witnesses.
Robert Everett.
J. L. Coombs

Inventor:
Augustus F. Pickert.
By James L. Norris
Atty.

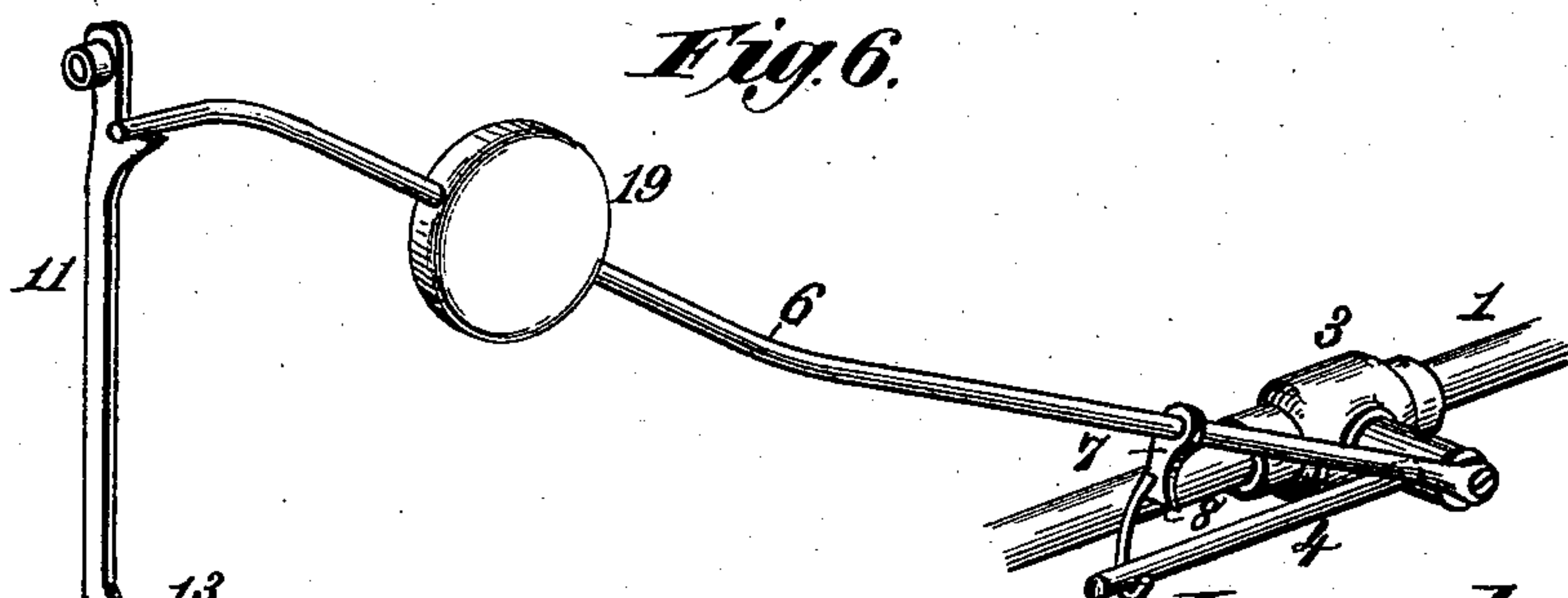
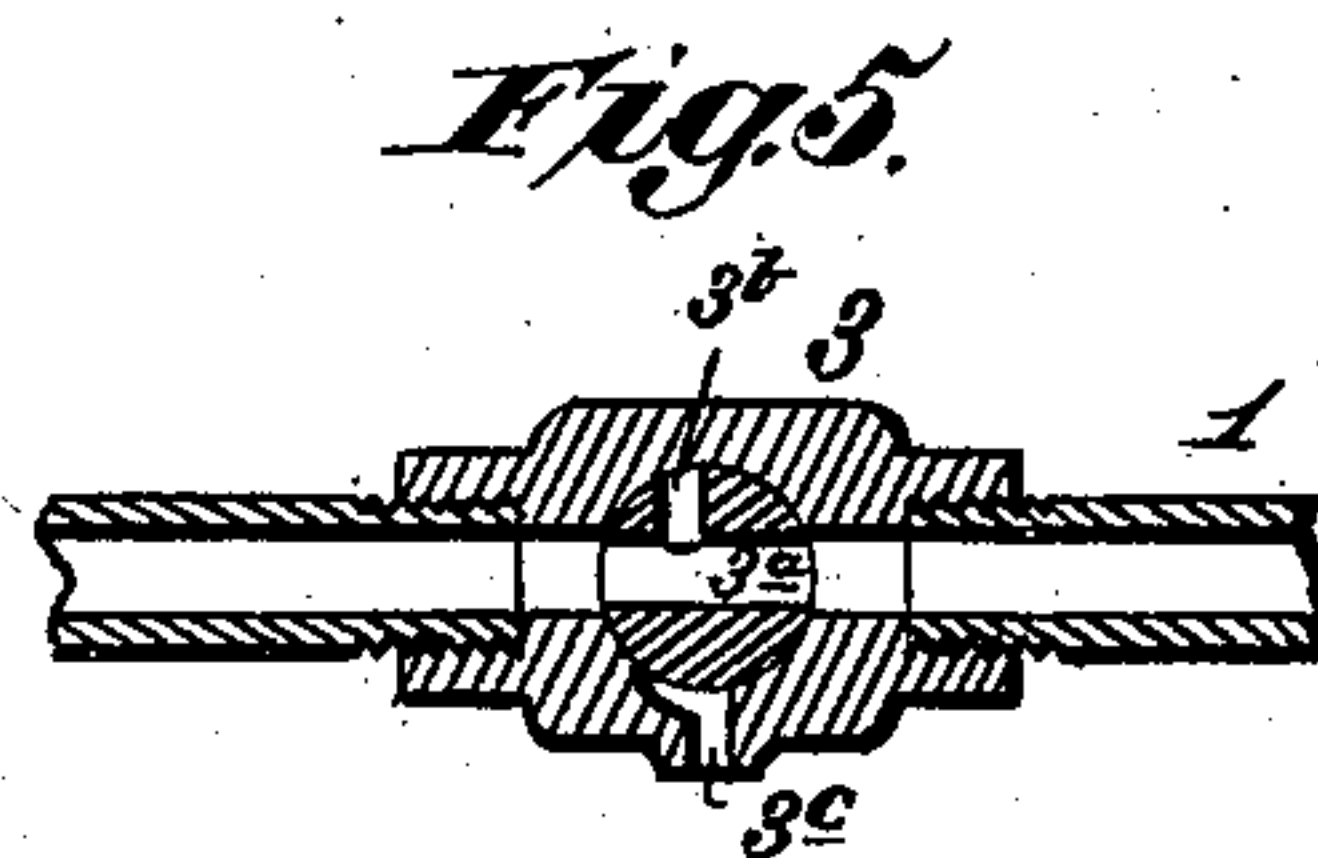
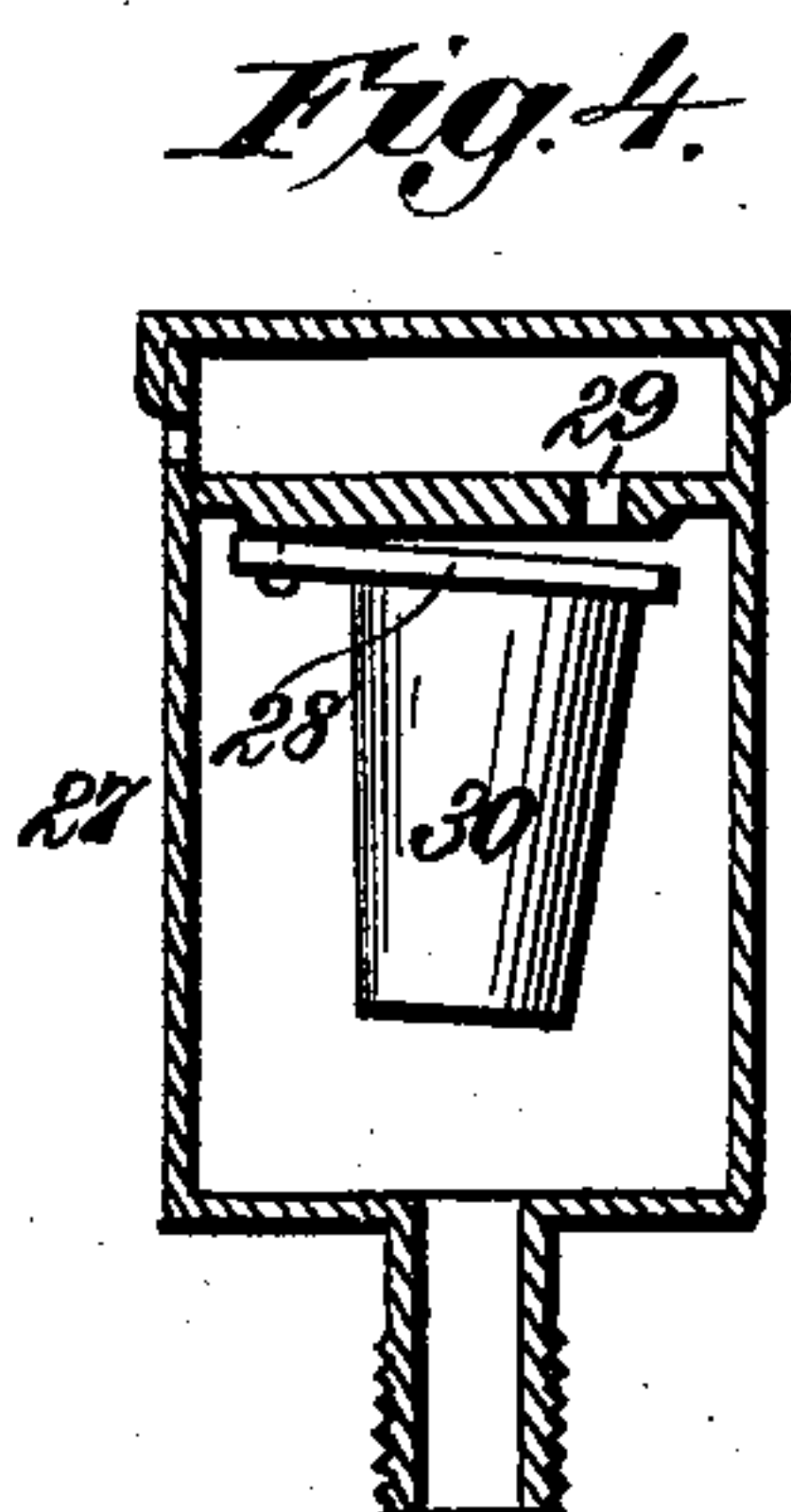
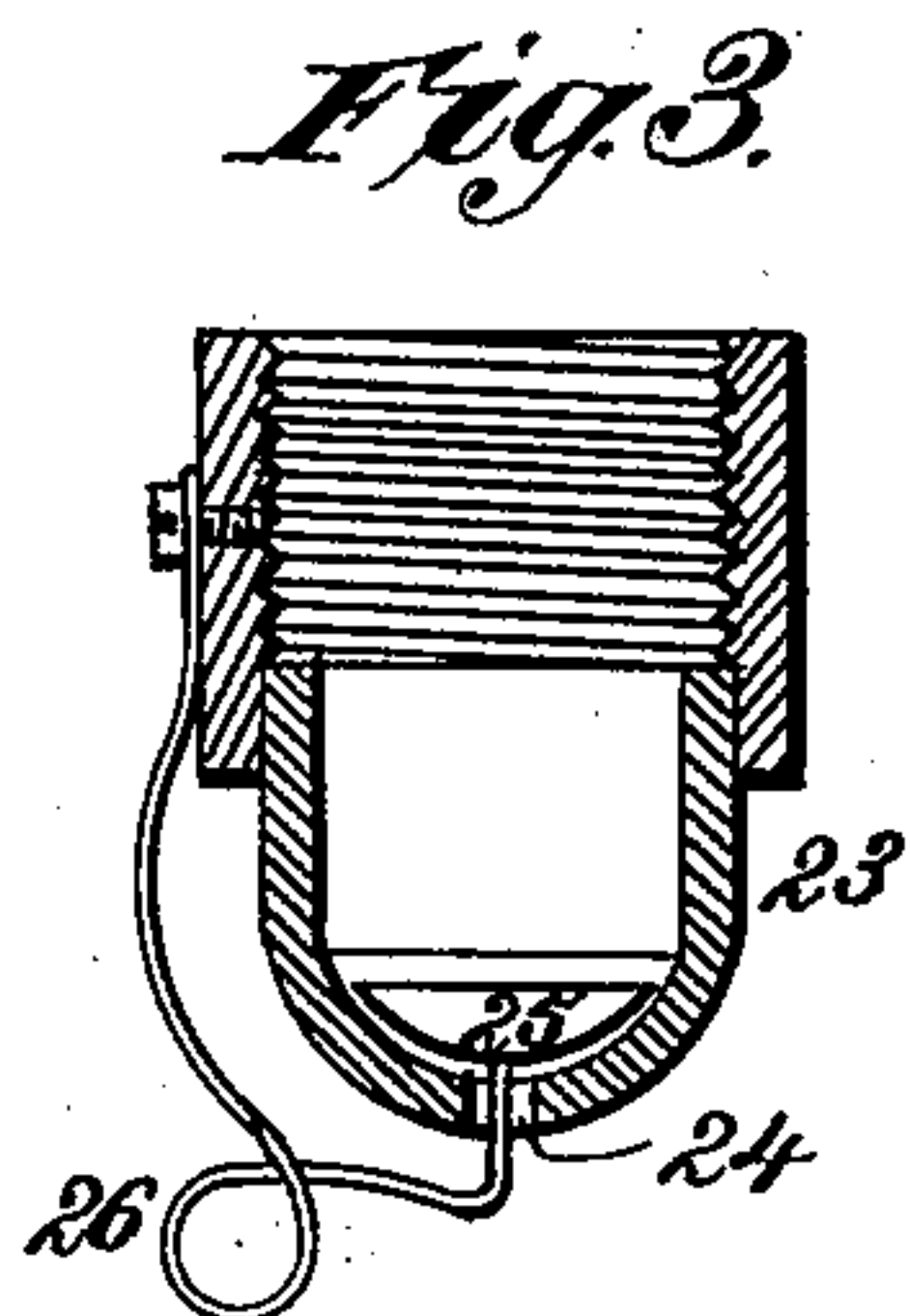
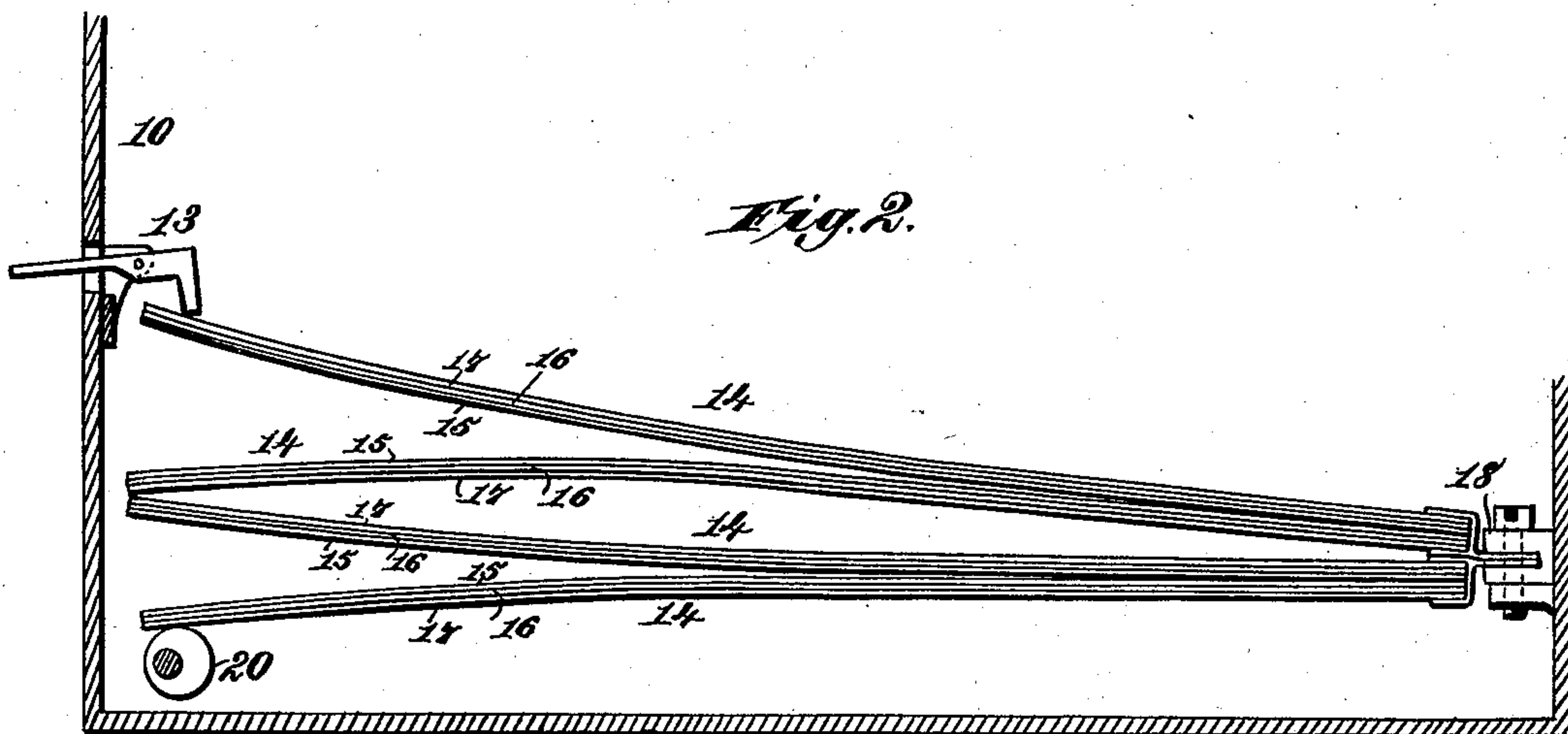
(No Model.)

2 Sheets—Sheet 2.

A. F. PICKERT.
AUTOMATIC CUT-OFF.

No. 363,965.

Patented May 31, 1887.



Witnesses,
Robert G. Pratt,
Jo. L. Coombs

Inventor,
Augustus F. Pickert.
By James L. Norris,
Atty.

UNITED STATES PATENT OFFICE.

AUGUSTUS F. PICKERT, OF ATLANTA, GEORGIA.

AUTOMATIC CUT-OFF.

SPECIFICATION forming part of Letters Patent No. 363,965, dated May 31, 1887.

Application filed January 4, 1887. Serial No. 223,362. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS F. PICKERT, a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented new and useful Improvements in Automatic Cut-Offs, of which the following is a specification.

My invention relates to automatic cut-offs for service-pipes whereby water is supplied to houses; and the purpose thereof is to provide simple means whereby the cut-off lever may be automatically operated at a given temperature, utilizing for this purpose the difference in expansion of different metals exposed to the same changes in temperature. It is my purpose, also, to provide means whereby the degree of temperature at which the cut-off is operated may be varied at pleasure and the valve closed whenever the temperature shall reach a point previously determined, to which the governing-index should be set.

My invention also comprises an improved form of outlet for the discharge of the water between the cut-off and the faucet, together with a simple and automatic vent to admit air to replace the water discharged by the outlet.

The invention consists in the several novel features of construction and combinations of parts, hereinafter fully set forth, and definitely pointed out in the claims annexed to this specification.

Referring to the drawings forming part of this application, Figure 1 is an elevation, partly in section, showing my invention. Fig. 2 is a longitudinal section of the tripping-plates shown in Fig. 1, with the index-governor. Fig. 3 is a detail view showing the outlet device. Fig. 4 is a detail section showing the vent device. Fig. 5 is a section of the cut-off, and Fig. 6 is a perspective of the cut-off and its operating-lever.

In the said drawings, the reference-numeral 1 designates the service-pipe, which is ordinarily brought into the cellar or at some point beneath the house, whence it is carried up to the point where the delivery-faucet 2 is located.

I place the cut-off at any convenient point, preferring that portion of the service-pipe where it emerges from the ground, that being

the point where it is usually exposed to a temperature which may freeze the water below the faucet.

The cut-off consists of an ordinary globe or plug valve, 3, to the stem of which is affixed a lever, 4, by which said valve is opened and closed. Upon a pin, 5, on the extremity of the valve-stem is pivotally mounted a long arm, 6, carrying a rigid bar, 7, having fingers 8 and 9, between which lies the end of the valve-lever 4, the distance between the said fingers being such that the long arm 6 may vibrate through a given arc before either of said fingers are brought into contact with the end of the valve-lever 4. Upon a suitable support, 10, mounted upon or above the service-pipe 1, is pivotally mounted a swinging bar, 11, having a hook, 12, which projects beyond the edge of the support 10 and receives the end of the long arm 6. The lower end of said arm is held by a trigger, 13, pivoted in the support 10, and having its inner end projecting inward beyond the point of pivotal support.

Upon the support 10 is mounted a series of plates, 14, each composed of three separate layers or films of metal, 15, 16, and 17, the first being steel, the second brass, and the third zinc, the separate layers being either soldered or riveted together. These plates are mounted at one end upon any suitable bracket, 18, to which they are fastened by a screw or bolt, the free ends of said plates being arranged to lie beneath the end of the trigger 13. I prefer to use three or more of these plates 14, though I may employ only two, and in all cases I arrange them in such manner that those metals having the same coefficient of expansion shall be adjacent to each other. In other words, the upper plate, 14, will have the metal of greatest contraction and expansion upon its upper face, and the second plate will have the same metal upon its lower face. In this manner the contraction of said metals by reduction of temperature will cause these plates to become arched in opposite directions. If a third plate is used beneath the two upper ones, then its metal of greater contraction is placed adjacent to the second plate, and the fourth or lower plate is turned to bring its metal of greatest contraction upon its under surface, the result

being that the adjacent plates 14 will, upon a reduction of temperature, be curved in opposite directions.

The several plates, each composed of the three different metals, as specified, being formed when at normal temperatures, it will be seen that a reduction of temperature will curve said plates and raise their free ends toward the trigger 13, and when the unequal contraction is sufficient the free end of the upper plate, 14, will strike said trigger and release the swinging bar 11, thereby permitting the long arm 6 to drop. A weight, 19, is mounted on said arm, and may be adjustable thereon to give increased momentum to it.

Beneath the free ends of the plates 14 is mounted a cam or eccentric, 20, upon which the end of the lower plate rests. By turning this cam or eccentric the ends of the said plates may be raised toward or drawn away from the trigger 13 and the degree of curvature required to operate the trigger correspondingly varied. To effect this adjustment and to guide in making the same, I may use a segmental plate, 21, having a graduated arc, over which travels an index-finger, 22, rigidly mounted on the cam or eccentric 20.

After the cut-off is operated it is necessary to remove the water below the faucet, and this I accomplish in the following manner: Upon the pipe 1, at a suitable point between the faucet and the cut-off, is mounted a shell, 23, preferably of glass, and having its end hemispherical. This shell communicates with the pipe, and its end has a perforation or opening, 24, of such size as to permit the discharge of the water. Within the shell is a hemispherical valve, 25, mounted upon a spring, 26, by the tension of which it is normally thrown away from the opening 24, when the pressure of water from the main pipe is removed by operating the cut-off. Upon the upper portion of the pipe, behind the faucet, I mount a shell, 27, of any suitable form, within which is hinged a valve-plate, 28, closing an air-vent, 29, in the upper end of said shell, a float, 30, of cork or other similar material, being attached to the valve-plate 28 and depending therefrom within the shell.

The operation is as follows: The long arm 6 being laid in the detent of the swinging bar 11 and the index 22 set upon its graduated arc, the cut-off valve will be and remain open until such time as the fall of temperature shall produce a curvature of the plate 14 sufficient to actuate the trigger 13. The long arm being thereby released drops, the construction of the fingers 8 and 9 allowing said arm to drop a certain distance before acting upon the valve-lever 4, thereby giving it sufficient momentum to overcome any "sticking" of the valve. The moment the cut-off is closed and the active water-pressure removed the spring 26 lifts the valve 25, and at the same time the air-pressure opens the valve-plate 28 and allows air to flow in as the water runs out.

Instead of the two arms 8 and 9, I may use

a single fork, which engages with the valve-lever as the long arm 6 swings downward.

I may place the outlet upon the service-pipe; but I have shown it mounted on a branch, 1^a, of the service-pipe below the cut-off. It may be placed anywhere, however, provided it is below the level of the cut-off.

As a matter of convenience, I construct the cut-off valve 3 as shown in Fig. 1, having a water-way, 3^a, with an outlet, 3^b, opening into the same at right angles, whereby the shutting off of the water by the cut-off will simultaneously open an outlet for the water between the faucet and the valve, the outlet 3^b communicating with an opening, 3^c, in the pipe. This insures the discharge of the water under all forms of arrangement of the service-pipe and its branches.

All joints and bearings may be made of bell-metal to prevent corrosion and dust.

What I claim is—

1. The combination, with a service-pipe, 1, and a cut-off valve, 3, having its stem provided with an attached projecting arm, 4, of a support, 10, a depending pivoted bar, 11, on said support, having a hook, 12, a trigger, 13, engaging the lower portion of said bar, a weighted inclined arm, 6, having attached fingers embracing the lever of the cut-off valve, and supported at its upper end by the hook on the depending bar, and horizontal plates composed of successive layers of metal of unequal expansion and contraction, one of said plates having its free end arranged under the trigger to lift the same and release the depending bar for permitting the inclined weighted arm to swing through a given space, and then by one of its fingers depress the lever of the cut-off valve, substantially as described.

2. The combination, with a cut-off valve and a valve-lever, of an arm actuating the same, a trigger releasing said arm, a series of plates each composed of three metals of unequal expansion and contraction, said plates being mounted at one end on a suitable support, and a cam underlying the free ends of said plates, to adjust the free ends of the plates to and from the trigger for varying the degree of temperature at which the trigger is operated and the cut-off valve closed, substantially as described.

3. The combination, with the releasing-trigger and a series of plates, each composed of three different metals of unequal contraction by reduction of temperature, of a cam or eccentric underlying the free ends of said plates, an index rigidly mounted on the shaft of said cam, and a graduated arc over which said index travels, substantially as described.

4. The combination, with the service pipe 1 and the cut-off valve 3, having a projecting lever, 4, rigidly attached to its stem, of an inclined weighted arm, 6, pivoted at its lower end on the said stem of the valve, a pivoted support for the upper end of the weighted arm, means for releasing said support to permit the arm to swing and actuate the lever of the cut-off valve, an air-inlet valve connected with the

service-pipe in rear of the faucet above the cut-off valve, and a spring-actuated water-escape valve connected with the service-pipe in rear of the faucet below the cut-off valve, substantially as described.

5 5. The combination, with the service-pipe 1 and the cut-off valve 3, having a projecting lever, 4, rigidly attached to its stem, of an inclined weighted arm, 6, pivoted at its lower
10 end, a pivoted support for the upper end of the weighted arm, means for releasing said support to permit the weighted arm to descend and actuate the lever of the cut off valve, a shell connected with the service-pipe in rear
15 of the faucet above the cut-off valve and having an air-inlet orifice, a valve-plate pivoted therein and having a cork depending from it to control said air-inlet orifice, and a shell connected with the service-pipe in rear of the faucet below the cut-off valve and containing a
20 spring-actuated water-escape, substantially as described.

6. The combination, with the service-pipe, the cut-off valve having a rigidly-attached projecting lever, 4, on its valve, and the weighted

swinging arm 6, having fingers to lower and raise the said lever for closing and opening the cut-off valve, of an air-vent connecting with the service-pipe in rear of the faucet above the cut-off valve, and a water-escape valve connected with the service-pipe in rear of the faucet below the cut-off valve, substantially as described.

7. The combination, with the service-pipe 1 and the cut-off valve 3, having its stem provided with a projecting rigidly-attached lever,
35 of a pivoted weighted actuating-lever, 6, having separated fingers embracing the said lever of the cut-off valve, and a trigger-actuating mechanism, substantially as described, for releasing the weighted lever to permit it to swing
40 through a given space, and to then depress the lever of the cut-off valve to close the latter, as and for the purposes set forth.

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

AUGUSTUS F. PICKERT.

Witnesses:

E. G. LEASH,

P. R. SILVERS.