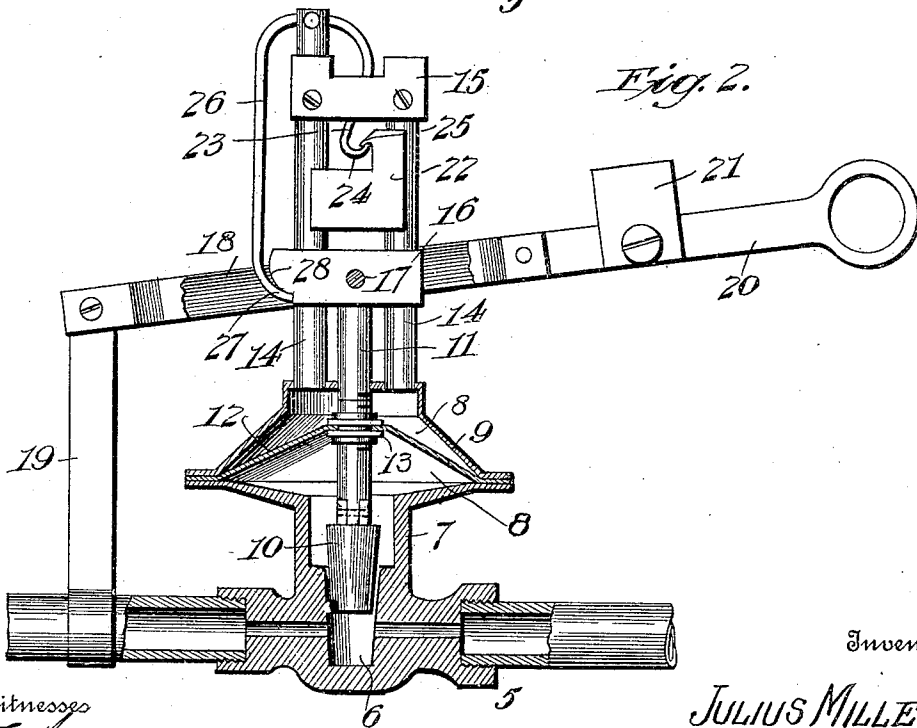
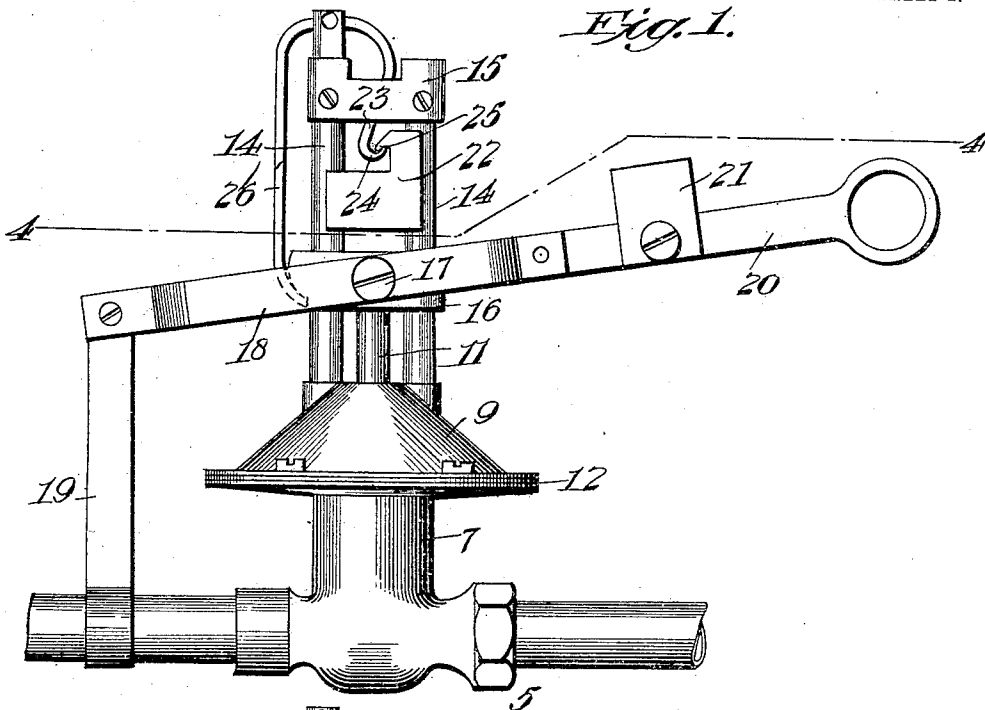


J. MILLER.  
 AUTOMATIC CUT-OFF VALVE.  
 APPLICATION FILED JUNE 12, 1909.

943,559.

Patented Dec. 14, 1909.  
 2 SHEETS—SHEET 1.



Witnesses  
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*Emory L. Giff*

By

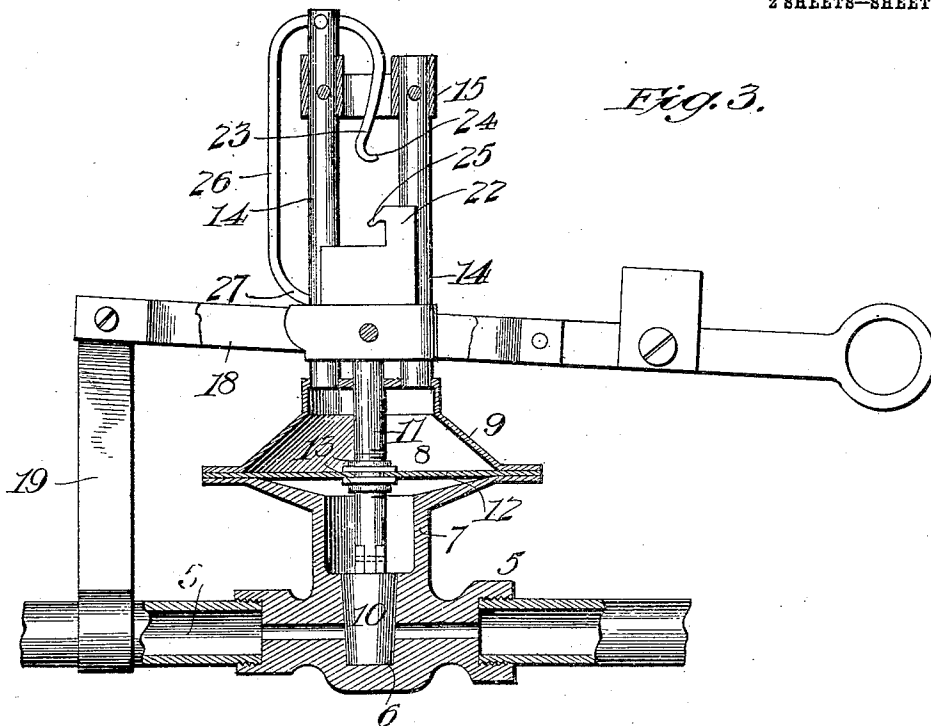
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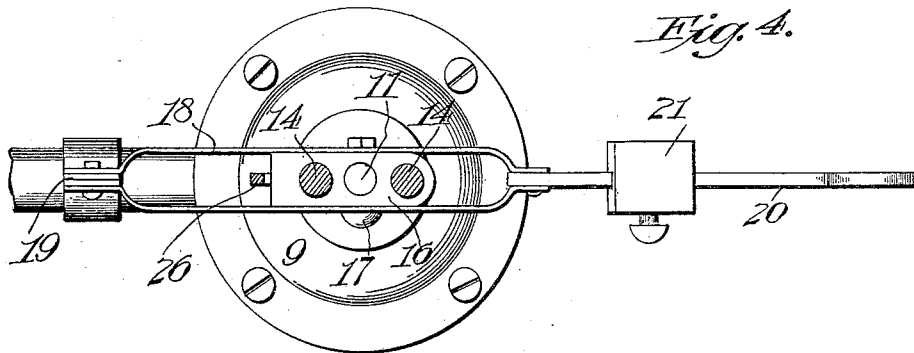
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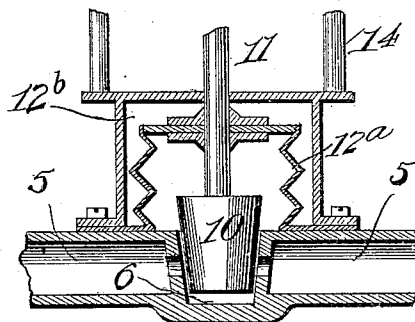
2 SHEETS—SHEET 2.



*Fig. 3.*



*Fig. 4.*



*Fig. 5.*

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# UNITED STATES PATENT OFFICE.

JULIUS MILLER, OF YOUNGSTOWN, OHIO.

AUTOMATIC CUT-OFF VALVE.

943,559.

Specification of Letters Patent.

Patented Dec. 14, 1909.

Application filed June 12, 1909. Serial No. 501,815.

*To all whom it may concern:*

Be it known that I, JULIUS MILLER, a citizen of the United States, residing at Youngstown, in the county of Mahoning and State of Ohio, have invented certain new and useful Improvements in Automatic Cut-Off Valves, of which the following is a specification.

The object of the present invention is to provide novel means of a simple character for automatically cutting off the supply of gas or other fluid when the pressure therein is decreased from any cause, below a predetermined point, said means insuring a complete closing of the valve and positively locking it against accidental reopening from any cause.

The preferred embodiments of the invention are illustrated in the accompanying drawings, wherein:—

Figure 1 is a side elevation of the structure. Fig. 2 is a vertical sectional view therethrough. Fig. 3 is a view similar to Fig. 2, but showing the position of the elements when the valve is closed. Fig. 4 is a detail sectional view on the line 4—4 of Fig. 1. Fig. 5 is a detail sectional view showing a slightly modified form of diaphragm.

Similar reference numerals designate corresponding parts in all the figures of the drawings.

In the embodiment disclosed in Figs. 1-3 inclusive, a portion of a supply conduit is shown at 5, and is provided with a valve seat 6. Surrounding the upper end of the seat, and projecting therefrom, is a neck 7, which communicates with the interior of a pressure chamber 8 having a detachable cap 9. A reciprocatory valve 10 moves into and out of engagement with the valve seat, transversely of the conduit, and has connected thereto, a valve stem 11 that passes through the pressure chamber, and projects above the same. A diaphragm 12, located in the pressure chamber, is connected with the stem by a pair of clamp nuts 13 threaded on to said stem on opposite sides of the diaphragm. With this structure, it will be evident that if the valve is raised or unseated, and there is pressure in the conduit, the fluid acting against the under side of the diaphragm 12 will maintain the same in

elevated position, and thus hold the valve open. If said pressure from any cause becomes decreased, the valve may then be permitted to drop to its seated position, and thus cut off the passage of gas or other fluid through the conduit. For the purpose of effecting the closing movement of the valve, the following mechanism is preferably employed. Secured to the cap 9 of the pressure chamber and projecting above the same on opposite sides of the valve stem 11 are guide rods or standards 14 connected at their upper ends by a cross head 15. A slide block 16 is mounted to reciprocate on the guide rods 14, and is connected to the stem 11 by set screws 17, which set screws also constitute the pivotal connection with said slide block of a yoke 18 that embraces the slide block. This yoke is pivoted at one end to a standard 19 mounted on the conduit, and to its other end is fixed an arm 20, on which is adjustably mounted a motor weight 21. With this structure, thus far described, it will be evident that while a sufficient pressure in the chamber 8 will hold the valve raised, if this pressure decreases below a predetermined point, the weighted arm will act to close the valve, and the said predetermined point can be varied by shifting the weight 21 along the arm 20.

For the purpose of insuring the tight seating of the valve, a hammer head 22 is slidably mounted on the standards 14 above the valve stem 11, and is arranged to drop upon the upper end of said stem. Normally this hammer head is held in elevated position by a latch 23 pivoted upon one of the standards 14 and having a terminal hook 24 that detachably engages an overhanging shoulder or hook 25 upon the hammer head. This latch also has a depending actuating arm 26 provided with an inturned terminal 27 disposed alongside the adjacent standard 14. The slide block 16 has one end beveled, as shown at 28, and the said inturned end 27 is arranged to ride against this inclined face, and also to engage over the top of the slide block, as disclosed in Fig. 3.

The operation of the structure is substantially as follows. Under normal conditions, the valve is elevated, the latch hook 24 is engaged beneath the hook 25, and the inturned

end 27 of the actuating arm is against the beveled face of the slide block. When the valve is open, it will be evident that fluid may flow freely through the conduit.

5 Should, however, this fluid be cut off, or the pressure decreased below a certain point, the weighted arm 18 will drop, effecting the downward movement of the valve, and as it reaches its closed position, the inclined face  
10 of the slide block 16 will cause the arm 26 of the latch to move outwardly sufficiently to disengage said latch from the hammer head, and said head will drop upon the stem 11, insuring a tight seating of the valve.  
15 At the same time, the slide block will move below the lower inturned end of the actuating arm 26, and said end will engage over the top of the block, positively locking said valve in its closed position.

20 Instead of the form of diaphragm shown in Figs. 2 and 3, that disclosed in Fig. 5 may be employed, in which a bellows structure 12<sup>a</sup> is provided that is connected to the valve stem, the other parts being the same  
25 as those already described, except that the said bellows 12<sup>a</sup> is preferably housed in a casing 12<sup>b</sup>.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction  
30 may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

What I claim as new, and desire to secure by Letters Patent, is:—

40 1. In mechanism of the character set forth, the combination with a conduit, of a reciprocatory controlling valve therein, a pressure chamber, a diaphragm in the pressure chamber, a valve stem connected to the  
45 diaphragm and projecting from the pressure chamber, guides carried by the pressure chamber, a pivotally supported arm, a weight adjustably mounted on the arm, a slide block pivotally connected to the arm  
50 and connected to the valve stem, and a latch pivoted on one of the guides and engaging over the slide block when the valve is in its closed position.

2. In mechanism of the character set forth, the combination with a valve, of a  
55 swinging arm for moving the same to closed position, a reciprocatory device connected to the arm and to the valve, an auxiliary hammer that strikes the reciprocatory device to  
60 seat the valve, and a latch normally holding the hammer against movement and automatically operated by the reciprocatory device.

3. In mechanism of the character set forth,

the combination with a conduit, of a controlling valve therein, a pressure chamber, a  
65 valve stem connected to the valve and projecting from the pressure chamber, a diaphragm located in the pressure chamber and connected to the valve stem, guides located  
70 on opposite sides of the projecting portion of the valve stem, a slide block connected to the valve stem and operating on the guides, a pivotally mounted weighted arm connected  
75 to the slide block, a hammer slidably mounted on the guides and arranged to strike the valve stem, and a latch pivoted on one of the guides and detachably engaging the hammer, said latch having an actuating arm  
80 disposed in the path of movement of the slide block.

4. In mechanism of the character set forth, the combination with a valve, of means for automatically closing the same, an auxiliary device for tightly seating the valve, and  
85 common means for automatically effecting the operation of the auxiliary device to seat the valve and locking the valve in seated position.

5. In mechanism of the character set forth, the combination with a valve, of automatic  
90 closing means therefor, a hammer for tightly seating the valve, and automatic means for releasing the hammer when the valve is closed, said means also constituting a lock  
95 for holding the valve in closed position.

6. In mechanism of the character set forth, the combination with a valve, of means for automatically closing the valve, a hammer  
100 for tightly seating the valve after it has been closed, a latch detachably engaging the hammer to hold it against operation, and means operated by the closing movement for actuating the latch to release the hammer, said  
105 means also constituting a device for positively locking the valve in closed position.

7. In mechanism of the character set forth, the combination with a conduit, of a controlling valve therein, a pressure chamber communicating with the conduit, a valve stem  
110 connected to the valve and projecting from the pressure chamber, a diaphragm located in the pressure chamber and connected to the valve stem, guide rods arranged on the opposite sides of the projecting portion of the  
115 valve stem, a slide block mounted on the guide rods and having an inclined face, a weighted arm pivotally connected to the guide block, a hammer slidably mounted on the guide rods above the stem, a latch pivoted  
120 on one of the guide rods and detachably engaging the hammer, and an actuating arm for the latch having a portion that rides against the inclined face of the slide block to actuate the latch and release the hammer,  
125 said portion also engaging over the slide block to hold the valve in closed position.

8. In mechanism of the character set forth,

the combination with a valve, of means for  
closing the same, a hammer for seating the  
valve, holding means for normally maintain-  
ing the hammer against movement, and ac-  
5 tuating means for the hammer automatically  
operating to release the same when the valve  
moves to closed position, said actuating  
means being first operated to release the

hammer and afterward taking a position to  
hold the valve against opening. 10

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

JULIUS MILLER.

Witnesses:

WM. W. ZIMMERMAN,

T. A. JACOBS.