

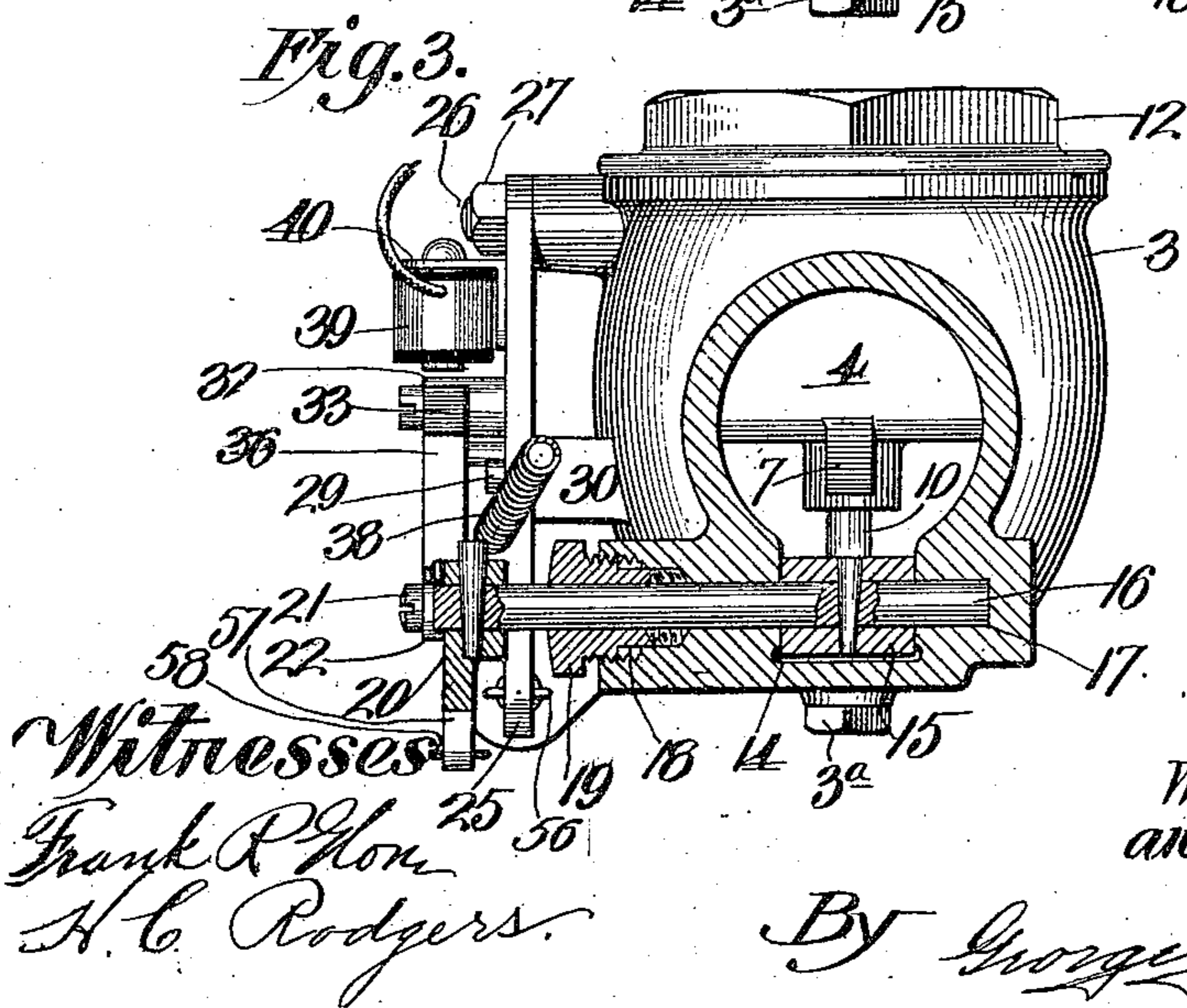
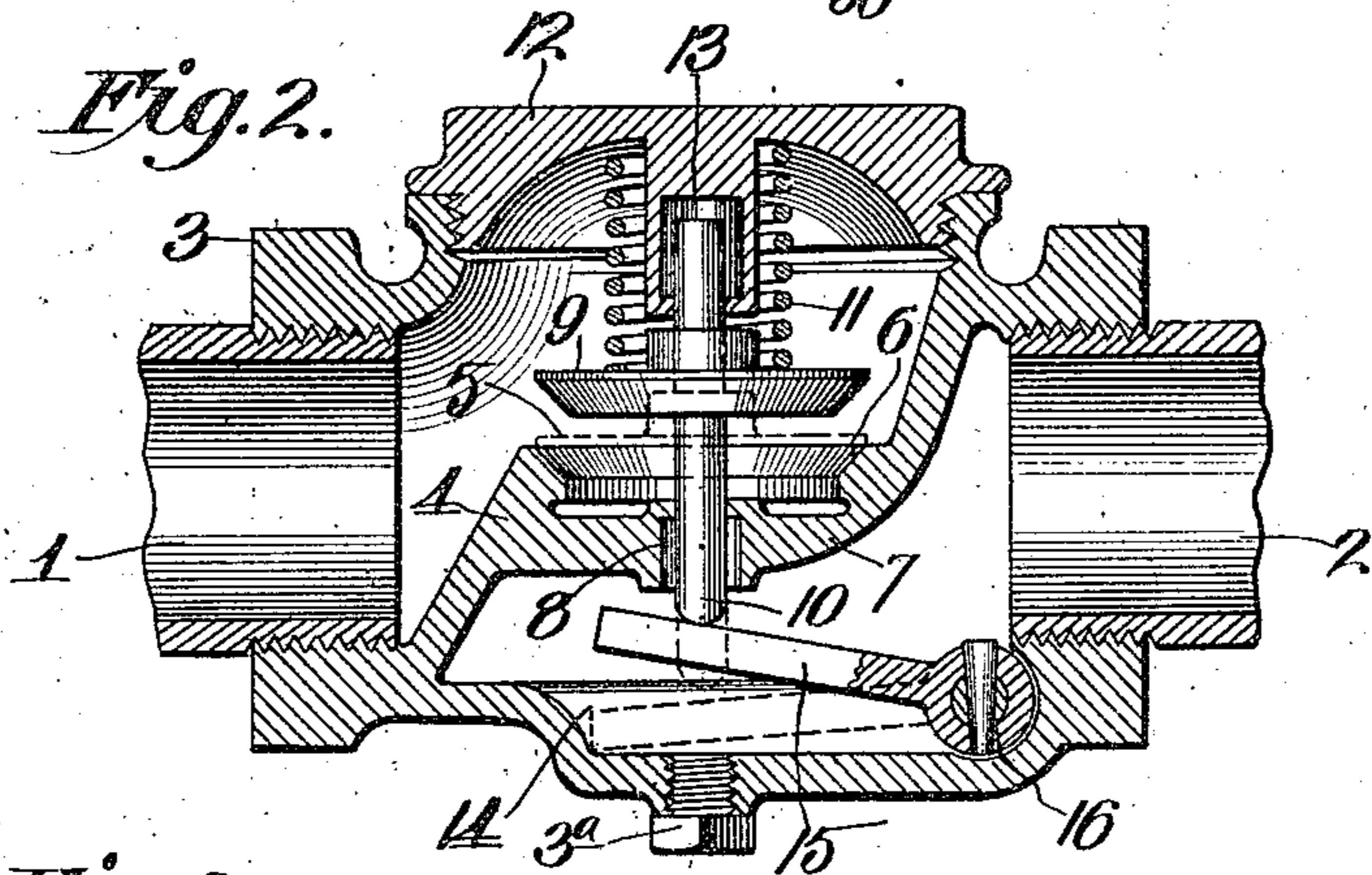
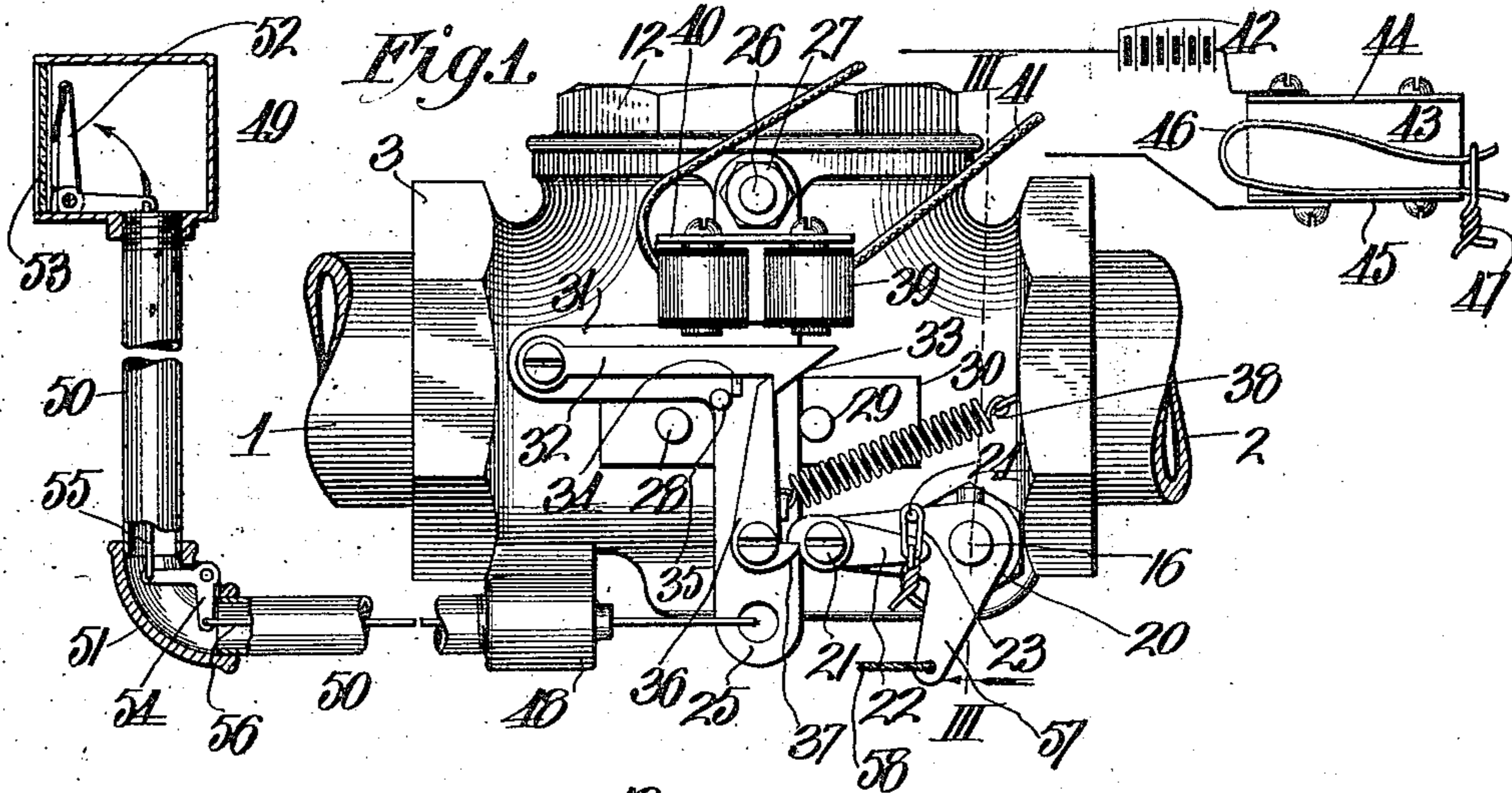
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FLUID CUT-OFF.

APPLICATION FILED MAR. 1, 1910.

994,050.

Patented May 30, 1911.



*Inventors:*  
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By George Thorpe Atty.

# UNITED STATES PATENT OFFICE.

WILLIAM E. APT AND EDMUND L. SCHOTT, OF ST. JOSEPH, AND WILLIAM H. GARLAND, OF KANSAS CITY, MISSOURI; SAID GARLAND ASSIGNOR OF HIS RIGHT TO SAID APT AND SAID SCHOTT.

## FLUID CUT-OFF.

994,050.

Specification of Letters Patent.

Patented May 30, 1911.

Application filed March 1, 1910. Serial No. 546,747.

*To all whom it may concern:*

Be it known that we, WILLIAM E. APT and EDMUND L. SCHOTT, citizens of the United States, residing at St. Joseph, Buchanan county, State of Missouri, and WILLIAM H. GARLAND, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Fluid Cut-Offs, of which the following is a specification.

This invention relates to fluid cut-offs of that character which can be operated manually through the instrumentality of a flexible connection, automatically through the breaking of a fusible link adjacent to the cut-off or automatically through the energization of an electromagnet, and our object is to produce an appliance of the character outlined which will operate efficiently and reliably and which is of simple, strong, durable and comparatively inexpensive construction.

With this general object in view and others as hereinafter appear, the invention consists in certain novel and peculiar features of construction and organization as hereinafter described and claimed; and in order that it may be fully understood reference is to be had to the accompanying drawing, in which—

Figure 1, is a side view of a fluid cut-off embodying our invention. Fig. 2, is a central vertical longitudinal section of the same. Fig. 3, is a vertical transverse section on the line III—III of Fig. 1.

In the said drawing where like reference characters identify corresponding parts in all the figures,—1 indicates a pipe for supplying gas or other fluid to a building, and 2 a pipe for distributing such fluid to the illuminating or heating appliances or both of such building, and secured to and connecting said pipes at the opposite sides of the meter, not shown, from the heating and illuminating appliances, is a valve casing 3, provided with a drain plug 3<sup>a</sup>, and with a diaphragm or partition 4, having a large valve opening 5, and a downwardly tapering seat 6; and also having a bridge 7, underlying the valve seat opening and provided with a vertical guide passage 8 for the lower portion of the stem 10, of valve 9, held yieldingly by means of a coil spring 11, upon the valve seat, the upper end of the

spring bearing against the cap 12 of the valve casing, and said cap is provided with a tubular depending stem 13 receiving the upper end of the valve stem and adapted to cooperate with the bridge-portion 7 in insuring direct vertical movement or reciprocatory action of the valve.

Below the bridge the casing is preferably provided with a longitudinal channel 14 for the reception of a lever 15 projecting from a rock-shaft 16, journaled at one end in a socket 17 of the casing and at its opposite end projecting beyond the front side of the casing and through a packing box 18, and the gland 19 of such box, and secured on the front end of the rock-shaft is a crank 20, equipped with a pin 21 to which a catch 22 is pivoted, one end of the catch being connected by a fusible link 23 to a pin or other fixed point 24 of said crank 20. The opposite end of the catch overlaps the front face of a vertical lever 25, pivotally depending from a pivot pin or stud 26, projecting from the casing 3, a nut 27 retaining the lever in position on the pivot pin or stud and between the pins 28 and 29 limiting the play of said lever, said pins projecting from a flattened projection 30 of the casing.

31 indicates an arm projecting from the lever and forming a pivotal support for the substantially horizontal catch 32 having a ratchet head 33 and a depending pin 34, and underlying the catch to limit its downward movement is a pin 35 projecting from said lever.

36 is a trigger pivoted to the lever 25, near its lower end and retained in a substantially vertical position by the catch 33 said trigger having a foot 37, underlying the adjacent end of the catch 22 to prevent the spring 11 from forcing the valve 9 to its seat, and in order to trip said trigger from engagement with the catch 32 under certain conditions, a retractile spring 38 connects the lever 25 with a fixed point of the casing to maintain it in a substantially vertical position and thus guard against the trigger being disengaged from the catch from accidental movement of the lever, it being noted in this connection that pin 34 of catch 32 limits the play of the trigger in one direction when engaged by the catch 32. The catch 32 constitutes the armature of an electro-magnet 39 carried by a bracket 40 secured to lever 25, and said magnet is wired or otherwise elec-

trically connected as at 41 to a battery 42 or other source of electric energy, and electrically connected to said battery and magnet is one or more circuit making devices, each consisting of an insulation plate 43 equipped at one side with a conducting plate 44 and at the other side with a conducting plate 45, provided with a spring terminal 46, which when unresisted will snap against conducting plate 44 and thus complete the circuit which will energize the electro-magnet. Normally however, the spring is held away from the conducting plate 44 by means of a fusible link 47. In practice there will be a number of these circuit-making devices arranged in different parts of the building, so that in the event that fire breaks out the nearest fusible link will break and result in the completion of the circuit and the energization of the magnet 39. The magnet will attract its armature 33 and thus release the trigger 36 which will be tripped from engagement with the catch 22 by the pressure imposed on the latter by the spring 11 which thus seats the valve. By thus cutting off the supply of gas to the building, danger from fire is minimized and if the fire is simply due to a defective fixture, the shutting off of the gas results in the extinguishment of the flame.

If the fire breaks out near the casing and melts the fusible link 23, the opposition to downward movement of the valve is removed because the catch 22 will swing out of the path of the trigger 36, as will be readily understood. Should it be discovered that the building is on fire before any of the fusible links is affected, the seating of the valve can be effected manually through the instrumentality of the following mechanism:—48 is a sleeve bearing a fixed relation to and preferably cast with casing 3, and communicating at one end with the said sleeve and at the other with a box 49, is a pipeway or conduit consisting of a plurality of pipes 50, each pair of pipes being connected by an elbow 51. Mounted in the box is a hand lever 52, accessible by opening or smashing the door 53 of the box, which door will preferably be of glass. Pivoted in each elbow is a bell-crank 54, and if there is only one bend, as shown in the conduit, said bell crank will be connected by a link rod 55 to lever 52 and by a link rod 56 to the lower end of lever 25, so that when lever 52 is operated in the direction indicated by the arrow Fig. 1, the lower end of the lever 25 will be swung to the left until trigger 36 is withdrawn from engagement with the catch 22, this action being immediately followed by the seating of the valve. It will thus be seen that provision is made for seating the valve under any contingency, that is, through the melting of the fusible link 23, or any of the links 47, or by hand, if the links remain in-

tact, the parts being restored to their original relation by hand.

It is to be understood of course that the box 49 will be located at some accessible point, preferably in the vestibule or hallway of the building, in order that it may be reached conveniently by a fireman or other person who realizes the necessity for shutting off the gas. To enable the operator to open the valve from the vestibule or other convenient point, the crank 20 may be provided with a depending arm 57, to which is attached a cable 58 or its equivalent leading to the vestibule or other convenient point. When the valve is closed a pull upon cable 58 will reëlevate the valve and in such operation the catch 22 will engage the trigger and impose sufficient pressure upon the same to force the lever 25 to the left, the spring 38 yielding under this pressure and immediately retracting to restore said lever to its original position and dispose the foot of the trigger below the adjacent end of the catch as will be readily understood by reference to Fig. 1.

From the above description it will be apparent that we have produced a fluid cut-off possessing the features of advantage enumerated as desirable in the statement of the object of the invention, and we wish it to be understood that we do not desire to be restricted to the exact details of construction shown and described as obvious modifications will suggest themselves to one skilled in the art.

Having thus described the invention what we claim as new and desire to secure by Letters Patent, is:—

1. A fluid cut-off, comprising a supply pipe and a distributing pipe, a valve casing connecting said pipes and provided with a perforated diaphragm forming a valve seat, a valve having a yielding tendency to engage the valve seat to arrest the flow of fluid through the casing, a pivoted lever adapted for unseating the valve, an arm movable with the lever, a catch carried by and pivoted to said arm, a fusible connection between said catch and arm to prevent independent movement of either, and means engaging said catch to prevent pivotal movement of said arm and lever and hence the seating of said valve.

2. A fluid cut-off comprising a supply pipe and a distributing pipe, a valve casing connecting said pipes and provided with a perforated diaphragm forming a valve seat, a valve having a yielding tendency to engage the valve seat to arrest the flow of fluid through the casing, a lever adapted for unseating the valve, an arm movable with the lever, a pivoted trigger, means movable with said arm for engagement with said trigger to prevent movement of said lever and the consequent seating of said valve,

a catch engaging the trigger, an electro-magnet to operate the catch and effect the release of the trigger, and yielding means for holding the trigger in the path of said catch.

5 3. A fluid cut-off, comprising a supply pipe and a distributing pipe, a valve casing connecting said pipes and provided with a perforated diaphragm forming a valve seat, a valve having a yielding tendency to en-  
 10 gage the valve seat to arrest the flow of fluid through the casing, a lever adapted for unseating the valve, an arm movable with the lever, a pivoted trigger, means movable with said arm for engagement with said  
 15 trigger to prevent movement of said lever and the consequent seating of said valve, a catch engaging the trigger, an electro-magnet to operate the catch and effect the re-  
 20 lease of the trigger, an electric circuit in which the electro-magnet is located, a pair of conductors located in said circuit, one of them having a spring terminal, a fusible link holding said spring terminal out of en-  
 25 gagement with the companion conductor, and yielding means for holding the trigger in the path of said catch.

4. A fluid cut-off, comprising a supply pipe and a distributing pipe, a valve casing connecting said pipes and provided with a  
 30 perforated diaphragm forming a valve seat, a valve having a yielding tendency to engage the valve seat, to arrest the flow of fluid through the casing, a lever adapted for unseating the valve, an arm movable with the lever, a trigger, means movable with  
 35 said arm for engagement with said trigger to prevent movement of said lever and the

consequent seating of said valve, a lever carrying said trigger, a box, a lever in said box, a tortuous pipeway extending from the  
 40 box to a point adjacent to the last-named lever, a bell-crank at and within the bending point of the conduit, and link rods pivotally connecting said bell-crank with the lever in  
 45 said box and with the free end of the lever carrying the trigger to operate said lever and trip the trigger from engagement with the said means movable with said arm.

5. A fluid cut-off, comprising a supply pipe and a distributing pipe, a valve casing  
 50 connecting said pipes, a valve controlling the passage of fluid through said casing, yielding means tending to seat said valve, a lever within and an arm without the valve casing and connected together, a second lever  
 55 pivoted to the casing adjacent to said arm, means for yieldingly holding the said second lever in a certain position, a trigger carried by said second lever, means movable with said arm for engagement with said trigger  
 60 to hold the valve unseated, and suitably connected means for simultaneously operating the said arm to cause the first-named lever to unseat the valve, and the means movable with said arm to engage the trigger and be  
 65 held elevated thereby.

In testimony whereof we affix our signatures, in the presence of two witnesses.

WILLIAM E. APT.

EDMUND L. SCHOTT.

WILLIAM H. GARLAND.

Witnesses:

HELEN C. RODGERS,  
 G. Y. THORPE.