

No. 667,963.

R. E. VAIL.

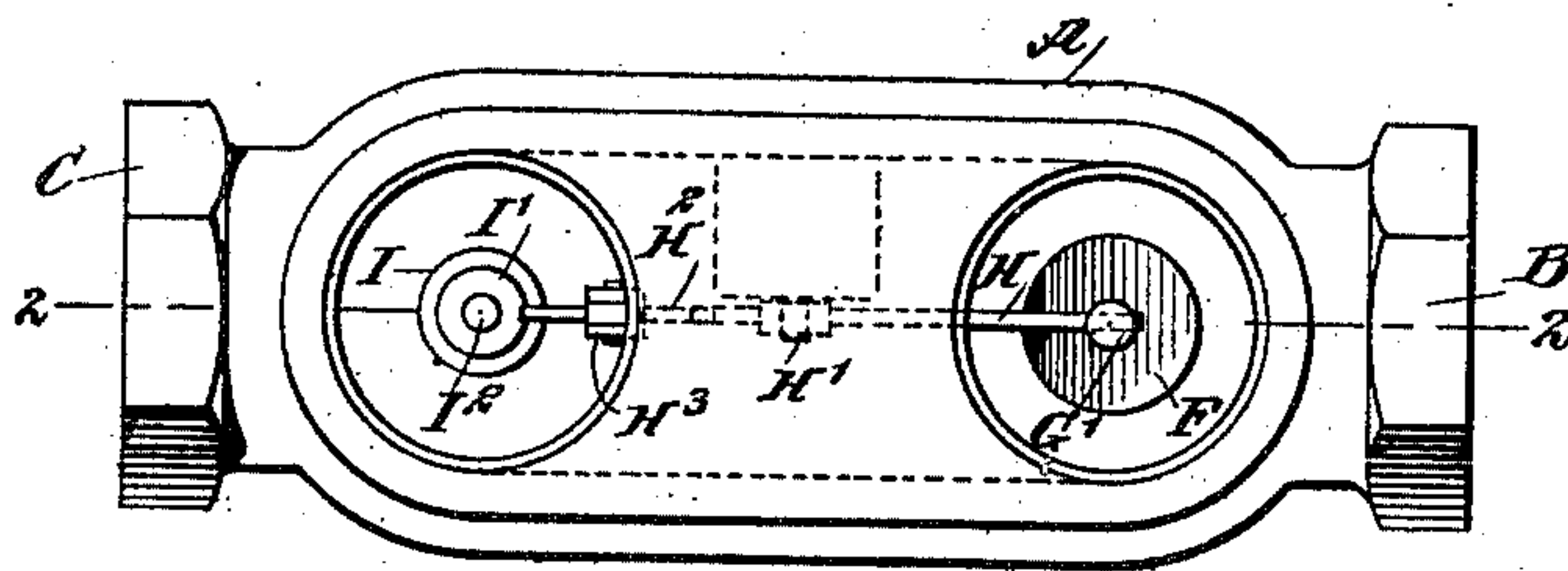
Patented Feb. 12, 1901.

**AUTOMATIC CUT-OFF VALVE.**

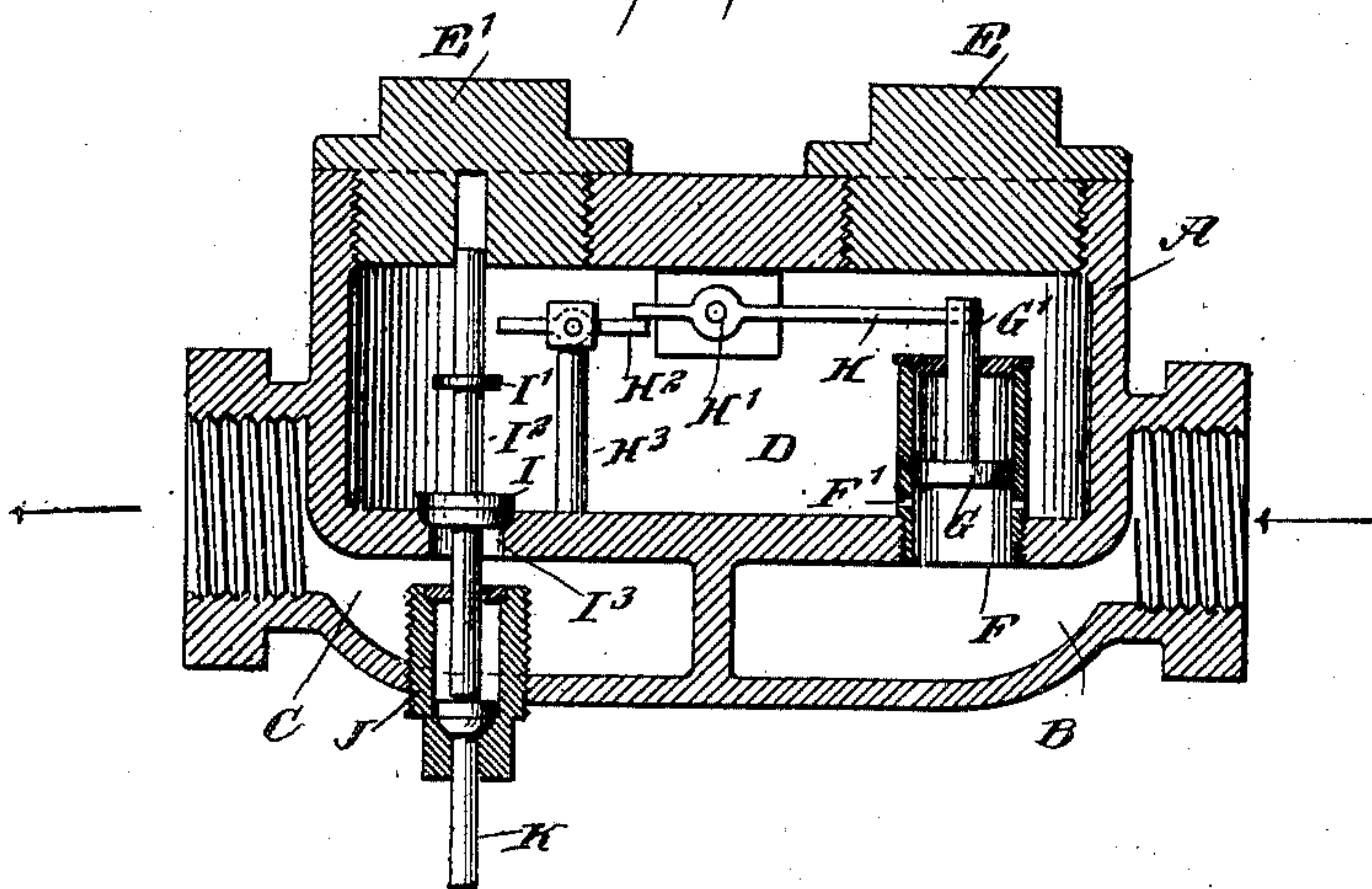
(Application filed May 24, 1900.)

(No Model.)

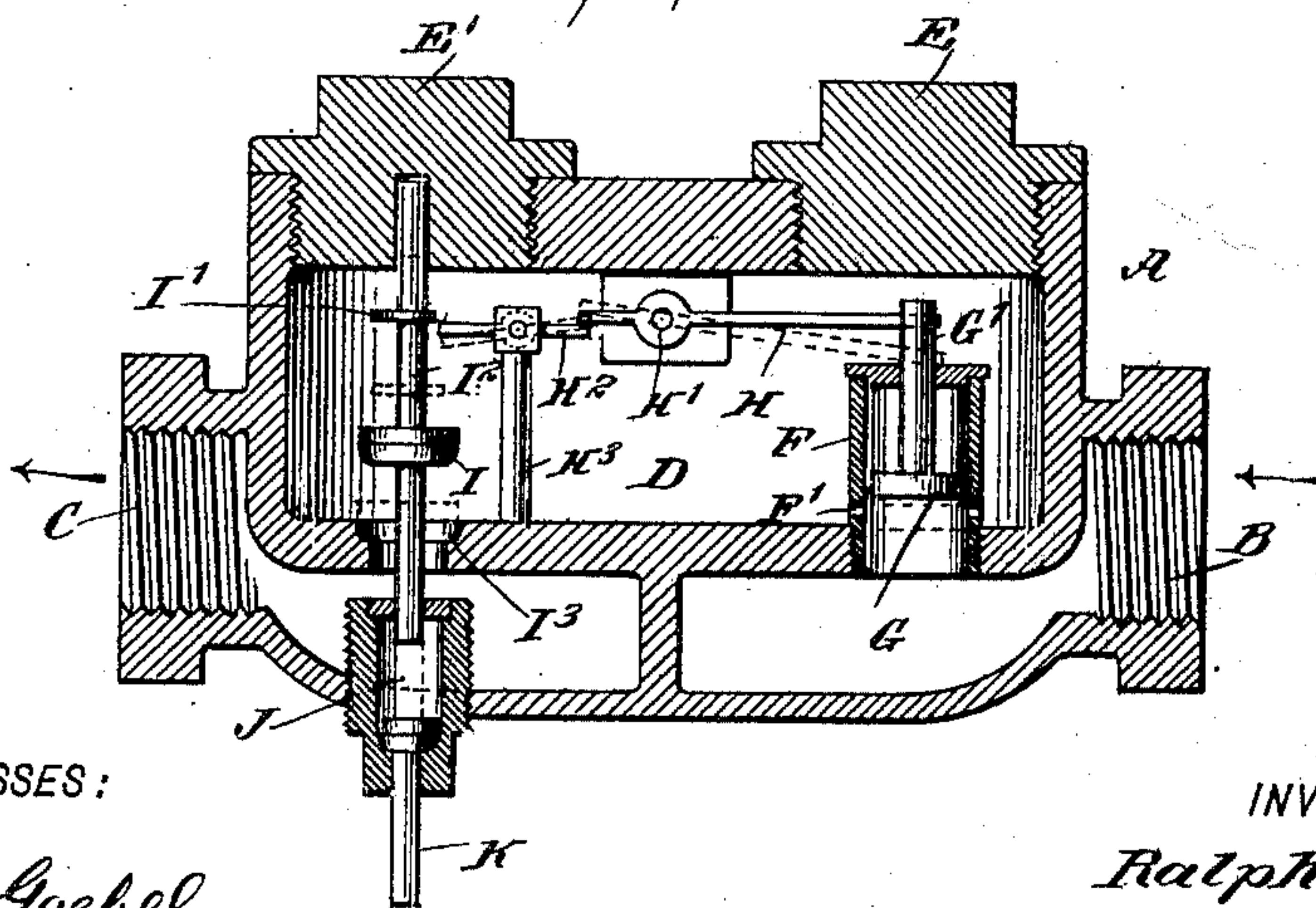
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



WITNESSES:

*William P. Goebel.*  
*Rev. J. Horst.*

INVENTOR

*Ralph E. Vail.*

BY

*Mum*  
ATTORNEYS



# UNITED STATES PATENT OFFICE.

RALPH EARNEST VAIL, OF MOUNT VERNON, OHIO.

## AUTOMATIC CUT-OFF VALVE.

SPECIFICATION forming part of Letters Patent No. 667,963, dated February 12, 1901.

Application filed May 24, 1900. Serial No. 17,822. (No model.)

*To all whom it may concern:*

Be it known that I, RALPH EARNEST VAIL, a citizen of the United States, and a resident of Mount Vernon, in the county of Knox and State of Ohio, have invented a new and Improved Automatic Cut-Off Valve, of which the following is a full, clear, and exact description.

The invention relates to safety-valves used on the supply-pipes leading from natural-gas pipe-lines.

The object of the invention is to provide a new and improved cut-off valve for gas or other fluid under pressure and arranged to regulate the supply of the fluid and to insure a free flow of the fluid as long as the fluid is under pressure and to at once shut off the flow as soon as the pressure ceases, the device requiring manual readjustment on the part of the operator when the pressure returns.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the improvement with the plugs removed. Fig. 2 is a sectional side elevation on the line 2 2 in Fig. 1, and Fig. 3 is a like view of the same with parts in a different position.

The casing A of the valve is provided with an inlet B, an outlet C, and a chamber D, through which passes the fluid from the inlet B in order to reach the outlet C. The interior of the chamber D and the parts contained therein can be readily examined from time to time by unscrewing the plugs E E' in the top of the casing. A cylinder F screws in the bottom of the chamber D and connects at its open end with the inlet-pipe B, its closed end extending within the chamber D, suitable ports or holes F' being formed in the side wall of said cylinder to allow the fluid under pressure to pass from the inlet B, through the open end of the cylinder and the said ports F', into the chamber D.

In the cylinder F is mounted to reciprocate a piston G, extending, with its piston-rod G',

through the closed end of the cylinder F, and the outer end of said piston-rod G' is connected with one end of a lever H, fulcrumed at H' within the chamber D and engaging with its free end a lever H<sup>2</sup>, fulcrumed on a post H<sup>3</sup>, extending in the chamber D. The lever H<sup>2</sup> is adapted to engage a collar I' on the stem I<sup>2</sup> of a valve I, normally held off its seat I<sup>3</sup> in the bottom of the chamber D and connecting the latter with the outlet C. The lower end of the valve-stem I<sup>2</sup> extends into a closed casing J, containing a pin K, reaching to the outside, to be taken hold of by the operator for moving the valve I upward off its seat and for engaging the collar I' with the free end of the lever H<sup>2</sup> to support the valve I off its seat while the apparatus is in a normal working position.

When the several parts are in a normal working position, as shown in Fig. 3, the fluid entering the inlet B under pressure passes through the cylinder F and its ports F' into the chamber D and from the latter through the valve-seat I<sup>3</sup> into the outlet C to the burner or other place of discharge. When the pressure ceases, then the piston G in the cylinder F slides downward by its own weight and in doing so causes the piston-rod G' to impart a swinging motion to the lever H, so that the latter disengages the lever H<sup>2</sup>, and said lever is now free to swing. The valve I now drops to its seat, and thereby disconnects the chamber D from the outlet C at the same time that said chamber is cut off from the inlet B by the piston G passing over the ports F'. When the pressure returns, the piston G is moved in the cylinder F, and the fluid can again pass into the chamber D, but is prevented from passing to the outlet C, as the valve I is seated on the valve-seat I<sup>3</sup>. Thus if the burner-valves are not shut off there is no danger to the occupants of a house upon the return of the fluid under pressure, as the valve I has to be moved off its seat by the operator manipulating the pin K, as above explained.

It is understood that the supporting and tripping device, consisting, essentially, of the levers H H<sup>2</sup>, is controlled by the piston G and normally supports the valve I off its seat, but allows the same to drop to its seat as soon as the pressure of the fluid ceases.

Having thus fully described my invention,

I claim as new and desire to secure by Letters Patent—

1. An automatic cut-off valve, comprising a casing provided with an inlet, a cylinder  
5 one end of which communicates with said inlet and provided with a peripheral aperture, a piston fitting into said cylinder tightly and movable therein beyond the said aperture so that the latter will be between the  
10 piston and the inlet, a connecting-chamber into which leads said aperture and provided with an outlet, a valve controlling said outlet, and a tripping connection between the piston and the outlet-valve.  
15 2. An automatic cut-off valve, comprising a casing having an inlet, an outlet, and a connecting-chamber, a cylinder open to the inlet, and having ports leading to said cham-

ber, a piston in said cylinder, a gravity-valve adapted to be moved to and from a seat for  
20 disconnecting and connecting the chamber and said outlet, and a supporting and tripping device for said valve and controlled by said piston, said device comprising a lever connected with the piston-rod of said piston,  
25 and a second lever adapted to be locked by the first-named lever and arranged to engage a collar on the stem of said valve, as set forth.

In testimony whereof I have signed my name to this specification in the presence of  
30 two subscribing witnesses.

RALPH EARNEST VAIL.

Witnesses:

ALLEN FINK,  
GUY J. TORBING.