

J. F. WELLS.
GAS CUT-OFF.
APPLICATION FILED DEC. 30, 1909.

962,280.

Patented June 21, 1910.

Fig. 1.

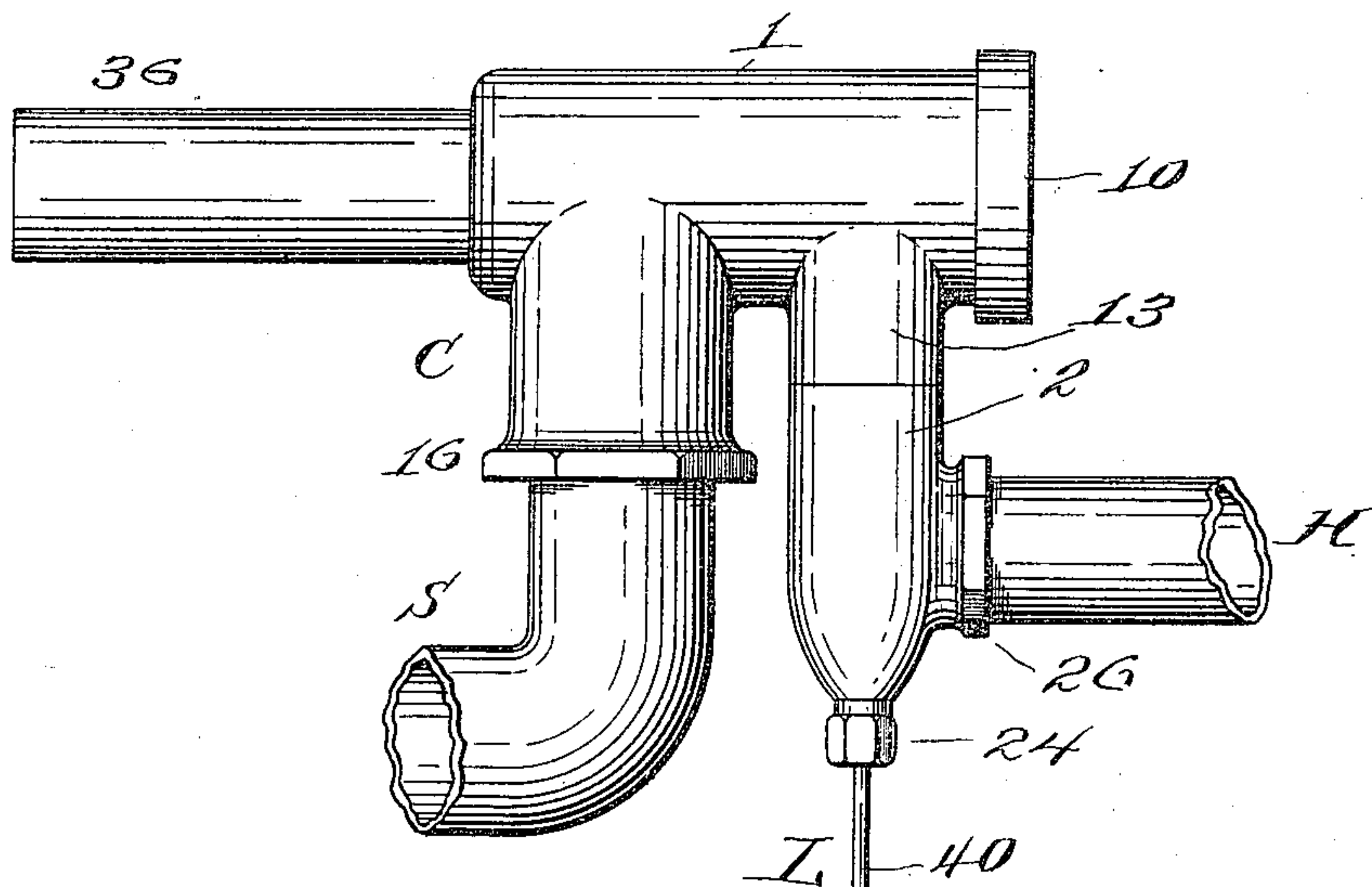
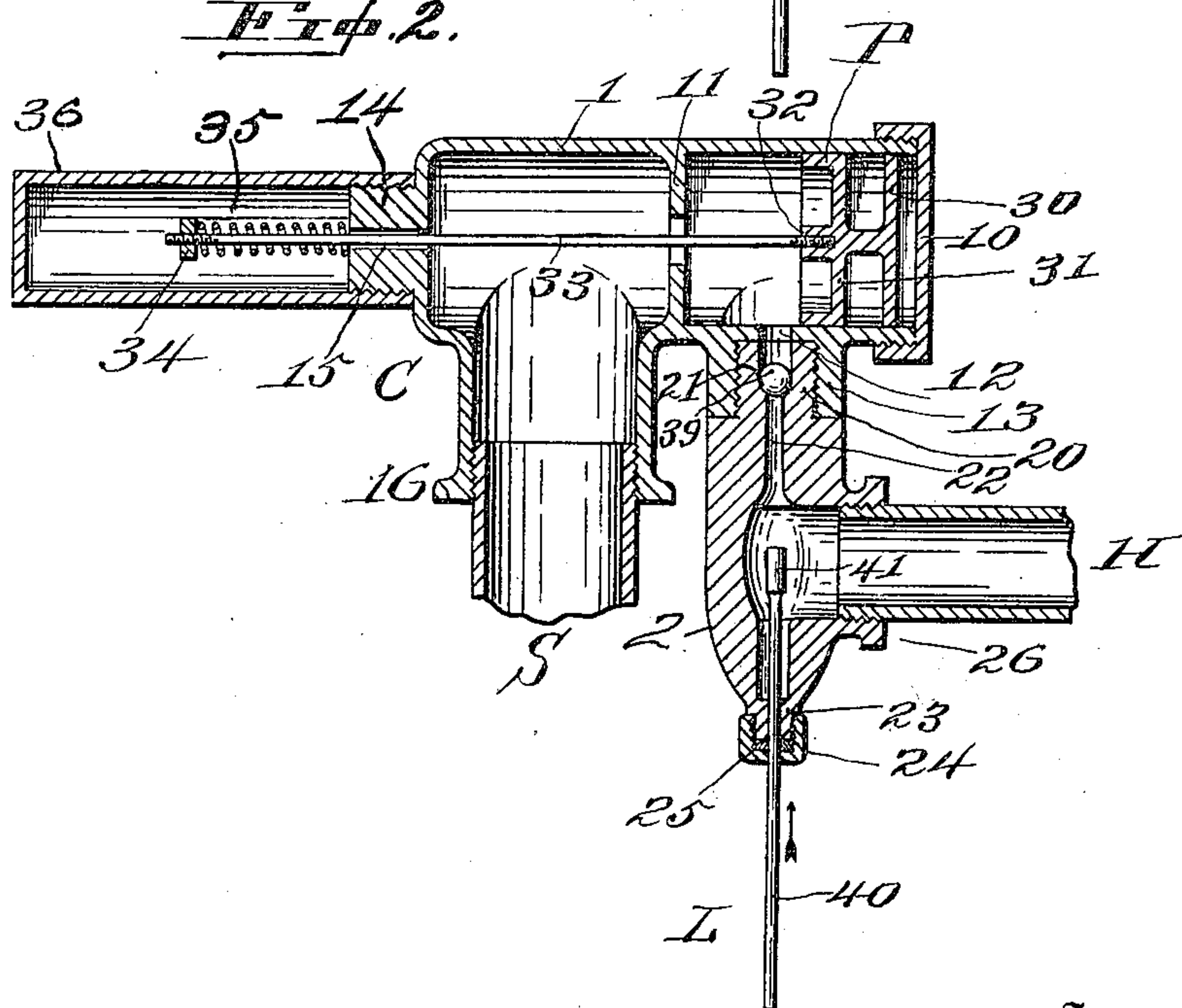


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOSEPH F. WELLS, OF PINKSTAFF, ILLINOIS.

GAS CUT-OFF.

962,280.

Specification of Letters Patent. Patented June 21, 1910.

Application filed December 30, 1909. Serial No. 535,722.

To all whom it may concern:

Be it known that I, JOSEPH F. WELLS, a citizen of the United States, and resident of Pinkstaff, Lawrence county, State of Illinois, have invented certain new and useful Improvements in Gas Cut-Offs; and my preferred manner of carrying out the invention is set forth in the following full, clear, and exact description, terminating with claims particularly specifying the novelty.

This invention relates to gas fittings, and more especially to automatic cut-offs; and its object is to produce a safety cut-off to be located between the service pipe and the house connections and to contain a check valve which will close automatically upon decrease of the service pressure but cannot open automatically again and hence requires to be opened by hand.

The invention is an improvement on the construction set forth in my former Patent No. 904,662 issued Nov. 24, 1908 and it consists in the novel points set forth below and shown in the accompanying drawings, wherein—

Figure 1 is a side elevation of the cut-off connected up and with gas under normal pressure and the parts at rest. Fig. 2 is a central vertical longitudinal section with the parts in the position they assume after the flow of gas has been automatically cut off, the pin being lifted part way to its working position.

In the drawings the letter S designates the service pipe leading into the bottom of the casing C of this device, and the letter H the pipe leading to the house connections, while P is the piston moved by the gas pressure to seat the check-valve and L is the lifting pin for permitting it to be again unseated by hand.

The pipes need not be further described, but my preferred construction of the remaining parts is as follows: For convenience of manufacture and assembly, the casing is by preference made in two parts or castings, a cylinder 1 and a valve casing 2. The cylinder 1 stands horizontal across the top of the casing as shown, is smooth internally so as to permit the piston P to move freely within it, has its large end closed as by a screw cap 10, its interior provided with a stop 11 if desired, between them in its bottom a hole 12 surrounded by a boss 13 adapted to receive the second member 2, at the small end of the cylinder a boss 14

pierced with a central hole 15, and between this boss and said stop a coupling 16 to which the service pipe S is attached in any suitable manner. The other member 2 stands vertical and below the first member 1, by preference having its upper end 20 reduced so as to engage said boss 13 (by screw threads if desired, as shown), and within said reduced end a valve seat 21 registering accurately with said hole 12 and a port 22 of less size than the seat continuing downward in axial line with it into the interior of this member. Its lower end is formed with a boss 23 having a hole in line with the port 22, and over the boss screws a cap 24—packing 25 being used within it if desired. The interior of this member opens out one side of the casing, where it has a coupling 26 to which the house pipe H is attached in any suitable manner. This construction of the casing permits its cheap manufacture and the easy assembly of parts, while yet allowing access to its interior when necessary as will be obvious.

The piston P has a double head moving within the cylinder as shown, and the parts 30 and 31 of this head may be cast in one or otherwise as desired. I prefer, however, to make them in one piece, nicely turned off on the exterior so as to fit the cylinder without the necessity for packing rings; and the innermost member 31 may have a threaded socket 32 into which is fitted or screwed the piston rod 33 which extends thence horizontally, past the stop 11, and through the hole 15 in the boss 14. On the outer end of this rod is a nut 34, between which and the boss 14 is disposed on the rod a coiled expansive spring 35 of such strength that the normal pressure of the gas will overcome it as set forth below. Between the two parts of the piston head a ball valve 39 moves freely within the cylinder as the piston moves to and fro, and its size is such that it will fall through the hole 12 and seat by gravity against the valve seat 21.

The protruding end of the rod 33 and the nut and spring thereon may, if desired, be protected from dust by a long cap 36 which by preference screws onto the boss 14 as shown, although this detail is not essential.

A lifting pin L is employed for unseating the ball as set forth below. By preference this is a rod 40 of a size to move through the hole in the boss 23 and the hole in the cap 24 (with possibly some little friction

through the packing 25 if used), and a head 41 at its upper end of a size to enter the port 22 in the reduced upper end 20 of this part of the casing C; although obviously the head is needed only to keep the pin from falling out of place as it stands vertical. The port 22, will be of a size to permit the insertion of this pin and its head from above through the valve seat 21, when the parts of the casing are disconnected.

In use the parts are assembled as shown and the couplings 16 and 26 connected respectively with the service S and the house pipe H as will be clear. Initially the ball valve rests on the valve seat as seen in Fig. 2, and to put the cut-off into use the outer end of the rod 35 is grasped in the hand (the long cap 26, if employed, being of course temporarily removed) and drawn outward until the opening between the two parts of the piston stands over hole 12; the lifting rod L is then pushed slowly upward as indicated, and its head enters port 22, lifts ball 39 off seat 21, and raises it through hole 12 into the cylinder between the parts 30 and 31 thereof. While the pin L is so held the rod 35 is released, and the gas turned on; and its pressure flowing into the cylinder in rear of the piston P and past stop 11 will move the piston toward the cap 10 and carry ball 39 with it away from hole 12 so that the ball is supported by resting free on the lower inner wall of the cylinder. Thereafter the normal pressure of gas will hold the piston in about this position and compress spring 35, and the parts will so stand under ordinary conditions. When the gas is in use throughout the house, it finds its way through hole 12 and port 22 to the interior of casing member 2, and thence through house pipe H; and the packing 25 within cap 24 prevents escape and leakage.

If now the pressure in the main should fall for any reason, after jets have been lighted and say during the night or while the family was absent, the spring 35 expands under the decreased pressure until the outward movement of rod 33 and with it the piston carries the ball 39 over the hole 12; when it drops by gravity into it and seats itself under whatever pressure remains and in the direction of its flow. If later the pressure in the main is resumed it cannot cause leaks through the open jets, because movement of the piston horizontally back toward or to its normal position will not carry with it the ball which has fallen out of its path. When the user discovers that his jets are open and no gas flowing, he has but to go to this cut-off, draw out rod 33, and press upward the lifting pin L; this causes its body 40 to slide through the packing 25 and its head 41 to pass upward into and through port 22 until finally it lifts the ball from seat 21 upward through hole 12

into the cylinder between the parts 30 and 31 of the piston, as first above set forth, and the cut-off resumes operation. The pin L is then drawn down to its lowermost position, but if this is overlooked the resumption of pressure and the flow of gas through port 22 will force the pin down at least to a point where its head will be below said port and it will not interrupt the flow of gas. Obviously the long cap 36 could be omitted, or one might be added to cover the exposed end of the pin; but it or they must be removed each time the ball is restored to the cylinder.

All parts except packing are by preference of metal, but the size and precise shape is a matter of preference. I have given merely the preferred construction of the casing because experiment has proven that to be cheap and effective, but I reserve the right to make alterations in its details as well as in other respects so long as the idea remains within the scope of the following points of novelty.

I claim—

1. In an automatic cut-off, the combination with a casing having a horizontal cylinder between the service pipe and house connections, a hole in its bottom, an upright valve seat, and a port leading thence downward in the direction of the flow of gas; of a piston in two connected parts movable in said cylinder across said hole and adapted to stand beyond it under gas pressure, a spring for retracting the piston as said pressure decreases, and a free ball valve in the cylinder between said parts of the piston and of a size to drop into said hole when the piston is sufficiently retracted.

2. In an automatic cut-off, the combination with a casing having a horizontal cylinder with a hole in its bottom, and an upright valve seat and aligned port below said hole, connections between the service pipe and the inlet end of the cylinder, and connections between the house pipe and the casing beyond said port; of a piston in two connected parts movable in said cylinder across said hole under pressure, means for retracting the piston as the pressure falls, a free ball valve in the cylinder between said parts of the piston, and a lifting pin slidable upward through the casing in line with said port and seat for restoring the ball to the cylinder, as described.

3. In an automatic cut-off, the combination with a casing having a horizontal cylinder with a hole in its bottom, and an upright valve seat and aligned port below said hole, a boss at the end of the cylinder remote from said hole therein, and a depending boss around said valve seat having a hole in line with said port; of a piston in two connected parts movable within the cylinder, a piston rod extending through the hole in the end-boss and having a nut exterior thereof, an expansive spring between this boss and nut,

5 a free ball valve in the cylinder between said parts of the piston, a lifting pin extending through the hole in the depending boss, and a perforated cap and packing around the latter boss and the pin.

10 4. An automatic cut-off comprising a casing in two members, one being a horizontal cylinder with a hole in its bottom, one end closed, an interior stop, a perforated boss at its other end, and a coupling for the service
15 pipe between said boss and stop, and the other member standing vertically beneath the first and having an upright port and valve seat communicating with said hole, a perforated boss in line with said port, and
20 between them a coupling for the house pipe; combined with a piston movable in the cylinder and having a rod extending through the cylinder-boss, an exterior spring thereon of less strength than the normal gas pressure, a free ball valve within the cylinder
25 and adapted to be moved by the piston until it drops through said hole, and a ball-lifting pin extending slidably through the boss below said port, for the purpose set forth.

5. In an automatic cut-off the combina-

tion with a piston and rod, a spring for the rod, and a free ball valve moved by the piston; of a casing in two members, one being a horizontal cylinder with a hole in its bottom, a depending boss surrounding said hole, a removable cap closing one end of the piston, a boss at its other end centrally perforated and externally threaded, and an inlet adjacent this boss, and the other member
35 having a reduced upper end engaging said depending boss and pierced with a valve seat and an aligned port adapted to register with said hole, a threaded boss opposite said port centrally perforated and externally threaded, and an outlet between this boss and port,
40 caps closing over said threaded bosses, and a lifting pin through the cap and threaded boss on the second member, for the purpose set forth. 45

In testimony whereof I have hereunto subscribed my signature this the 27th day of December, A. D. 1909.

JOSEPH F. WELLS.

Witnesses:

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W. G. WARNER.