

No. 844,358.

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H. W. HILL.
GAS CONTROLLING VALVE.
APPLICATION FILED JUNE 25, 1906.

Fig. 1

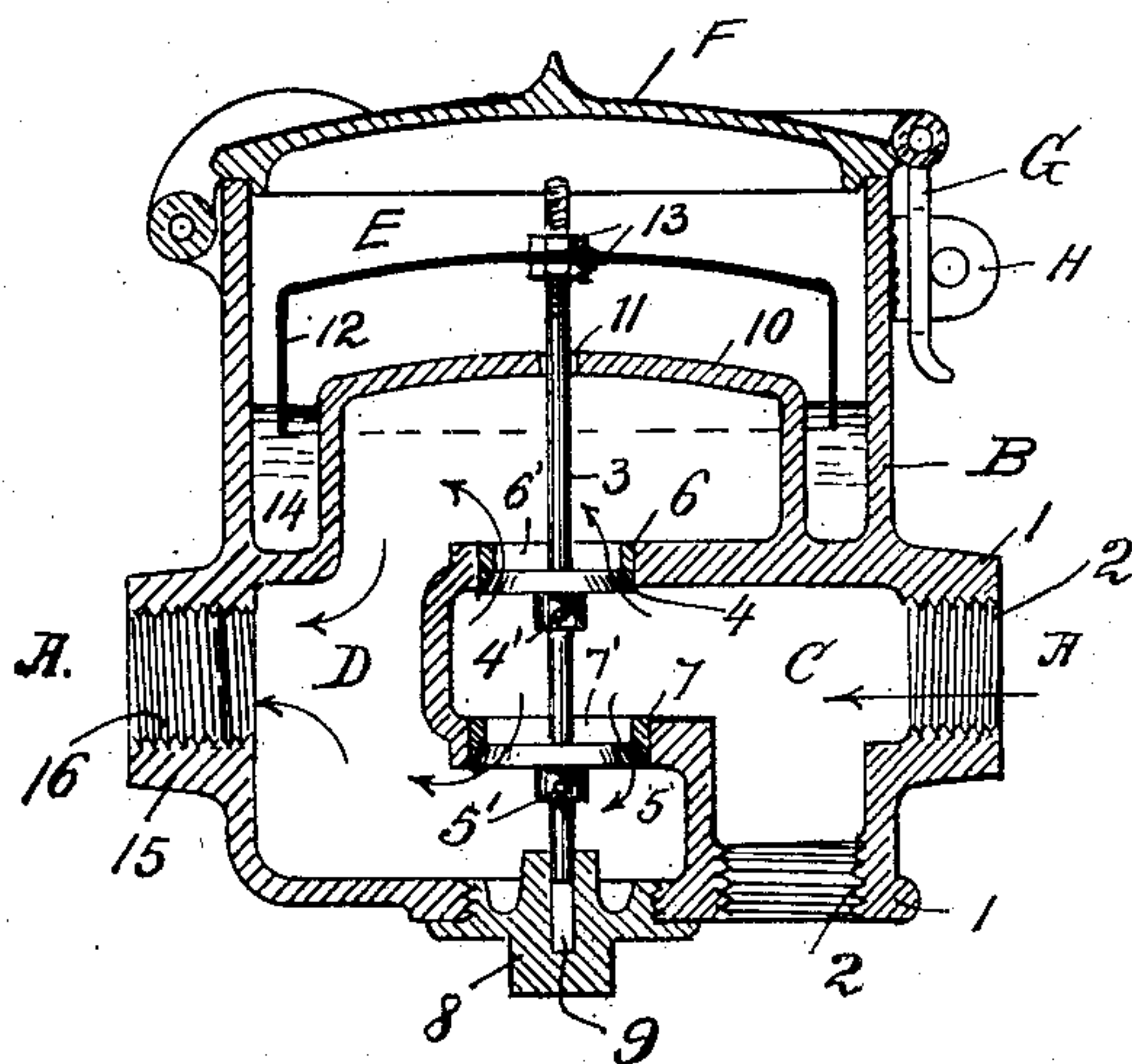


Fig. 2.

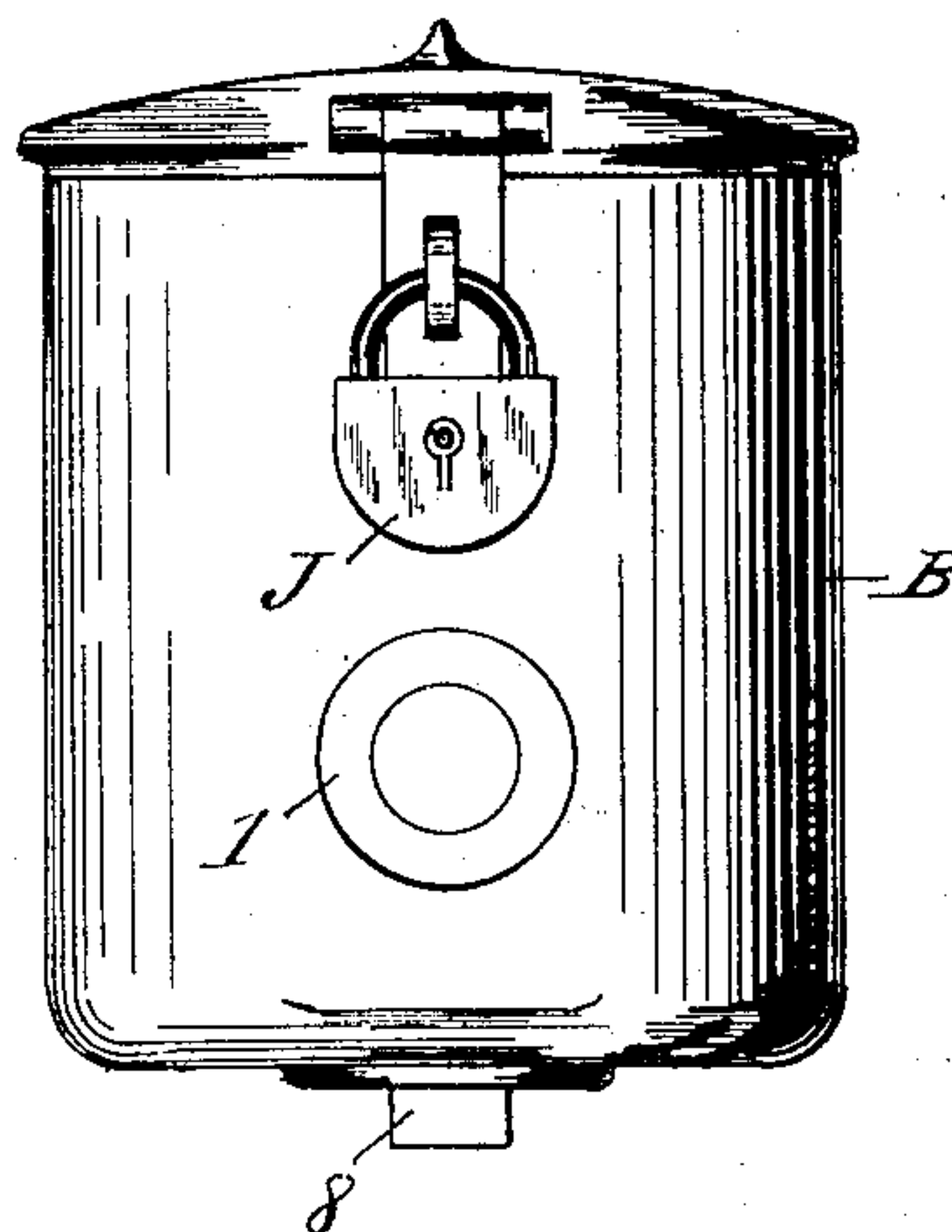


Fig. 3

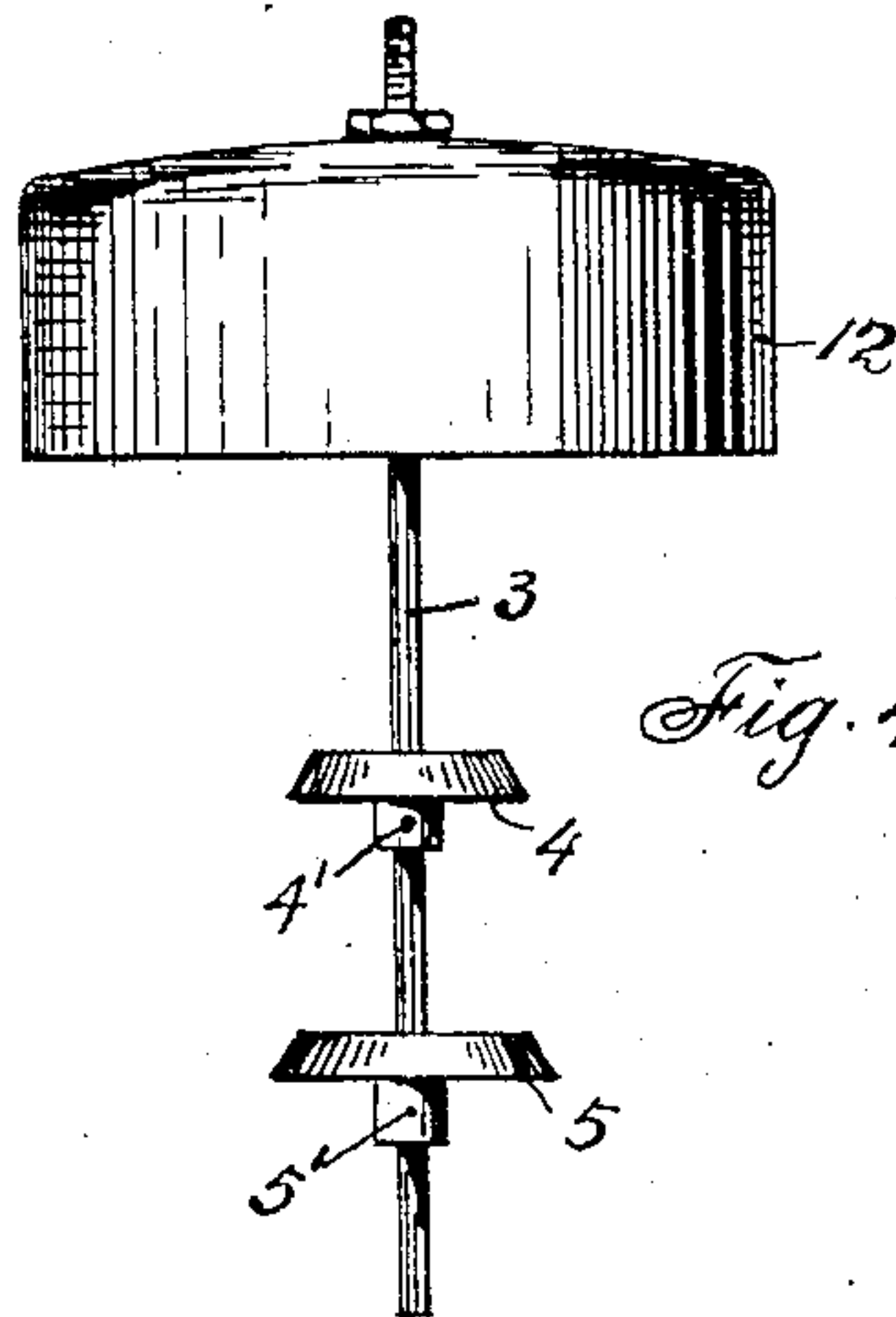
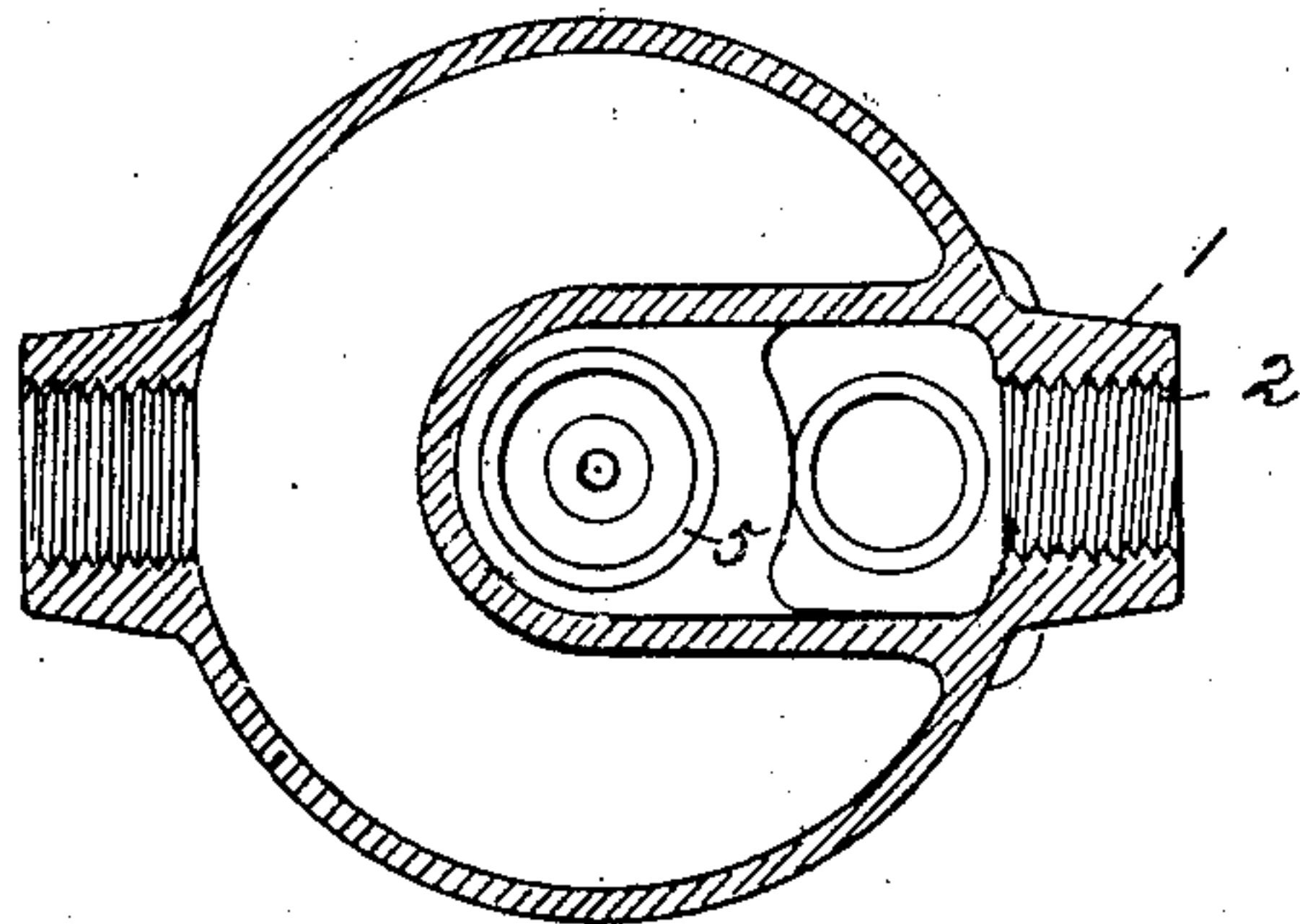


Fig. 4

WITNESSES

J. L. Goosmann
H. J. Chilton

INVENTOR

Herbert W. Hill
by Robt. Klotz
Atty.

UNITED STATES PATENT OFFICE.

HERBERT WATSON HILL, OF CHICAGO, ILLINOIS.

GAS-CONTROLLING VALVE.

No. 844,358.

Specification of Letters Patent.

Patented Feb. 19, 1907.

Application filed June 25, 1906. Serial No. 323,190.

To all whom it may concern:

Be it known that I, HERBERT WATSON HILL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Gas-Controlling Valves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a novel construction in gas-controlling valves, the object of which is to regulate the flow of gas into the gas-line, which feeds a number of lamps with illuminating-gas and maintain a steady pressure therein. The controlling-valve is so constructed as to increase the valve-opening automatically, thereby allowing a larger volume of gas to pass from the source of supply into the feeding-line whenever the consumption is increased by the addition of one or more lamps. The same valve-opening is decreased as soon as one or more of the lamps, which are fed from the supply-line, are extinguished. It will be apparent that the regulation of the gas-volume which passes into the feeding-line is at the same time a regulation of the gas-pressure, so that a steady flame is produced always, no matter how many lamps may be burning at the same time.

The object of my invention is to simplify the construction of the apparatus now in use for the above purpose by providing a valve-housing, in which the valve-seats are controlled by two V-shaped valve-disks, having a differential area, whereby the regulation of the volume of gas required in the feeding-line is greatly facilitated.

A further object of my invention is to allow the float to ride free and easy upon the gas without guiding it at its upper end, as this often leads to binding by friction or otherwise and interferes with the even flow of gas.

I attain these various objects by the novel construction of the apparatus with a simple valve-housing therein and differential valve-seats, as well as other features of combination of parts as are hereinafter fully described, and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical sectional view of a gas-controlling valve, showing the interior arrangement. Fig. 2 is an exterior view of the closed and locked apparatus. Fig. 3 is a sectional plan view at line A A, and Fig. 4 is

a detail of the float and the two differential V-shaped valve-seats.

Similar characters refer to similar parts throughout the several views.

The outer casing B, which is made preferably of cast-iron, contains the gas-inlet compartment C, the feeding-compartment D, and the float-compartment E. It is closed by means of a hinged cover F and secured in its closed position by a hinged latch G, a corresponding eyepiece H, and a lock J.

The inlet-compartment C has two bosses 1, which are provided with a standard pipe-thread 2, so that the gas-supply pipe may be connected with the shell B horizontally or vertically, as may be most convenient. Only one supply-pipe is used. The remaining opening is closed by means of a pipe-plug. The walls of the inlet-compartment C extend horizontally into the shell and are adapted to form the valve-seats for the gas-supply-regulating valve. The latter consists of vertical spindle 3 and V-shaped valve-disks 4 and 5, which latter are secured with the spindle by means of pins 4' and 5'. Seat-bushings 6 and 7 are secured with the metal of the inlet-compartment wall. They are adapted to be replaced by another seat-bushing and provide valve-openings 6' and 7'. The V-shaped valve-disks 4 and 5 are of a differential diameter, so that the valve-spindle may be inserted into its place from below through an opening in the bottom of the casing, which is subsequently closed by a screw-plug 8. The differential area of the valve-disks serves the further purpose of facilitating the valve movement, as will be more fully explained. Plug 8 is provided with bore 9, adapted to receive the lower end of spindle 3 for the purpose of guiding it. A partition-wall 10, forming part of the shell-casting, divides compartments D and E, and the small opening 11 in its center affords passage to the valve-spindle 3, as well as for the gas. Valve-spindle 3 extends into compartment E and carries at its upper end a float 12, which is adjustably secured thereto by lock-nuts 13. A groove 14 is formed between the outer wall of shell B and partition-wall 10. This groove contains mercury or any other heavy liquid, into which the lower rim of float 12 emerges for the purpose of forming a gas-tight seal therewith. The side of shell B adjacent to the feeding-compartment D and outwardly thereof is provided with boss 15, which is drilled and

tapped with pipe-thread 16 to receive a feed-pipe through which the gas is fed to a plurality of lamps. Float 12 is of the open gasometer-bell shape. Its weight is so calculated that the required large valve-opening between valve-seats 6 and 7 and V-shaped disks 4 and 5 is provided when the pressure of the gas is low and that its lower rim still forms a seal with the mercury in groove 14 when the gas-pressure is high and when the valves are closed, as shown in Fig. 1.

From the foregoing description it will be apparent that the pressure in feeding-compartment D is always stationary, regardless of the number of lamps which are fed from this compartment at the same time, for the reason that the valve-opening is increased and decreased automatically in a direct proportion with the volume of gas which the feeding-compartment D is called upon to supply.

In operation the controller-valve acts as follows: Gas is admitted into inlet-compartment C and passes into feeding-compartment D through valve-openings 6' and 7'. From this compartment it enters the feed-pipe attached to boss 15 and fills it. If no gas is drawn from the feed-pipe, the pressure in compartment D increases, and as this compartment is in communication with float-compartment E through opening 11 it enters the gas-space under the float 12, raises the latter, and with it valve-disks 4 and 5, until the latter are seated in their respective seats. This action is assisted by the fact that the area of valve-disk 5 on the side adjacent to compartment D is slightly larger than the area adjacent to compartment C, owing to its V shape. As soon as a number of lamps begin to draw gas from feeding-compartment D the pressure therein diminishes, and the float 12 sinks by reason of its weight, valve-disks 4 and 5 leave their seat, and valve-openings 6' and 7' are cleared for the passage of exactly the volume of gas which is required for the supply of the

number of lamps burning at that time. If more lamps are added, the pressure in compartment D has a tendency to drop still further. This allows the float to sink deeper into its seal, which increases both valve-openings. On the other hand, if the number of lamps is decreased, the pressure in D increases. This raises float 12 and decreases valve-openings 6' and 7', as will be obvious.

I am aware that prior to my invention gas-controllers have been made with a vertically-arranged valve, actuated by a float and adapted to regulate the flow of gas. I therefore do not claim such a combination broadly; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

In a gas-controlling valve, the combination, of a body consisting of one homogeneous casting comprising an inlet and an outlet chamber, with a valve-spindle, two V-shaped disks of a differential diameter mounted upon said valve-spindle, two valve-seats to correspond with the respective disks, a dome-shaped partition 10 forming one solid casting with the said body, an aperture in the dome-shaped partition 10 for the purpose of guiding the valve-spindle and allowing gas to pass from the outlet-chamber D through the same, a float secured with the upper end of the said valve-spindle, an annular chamber 14 formed by the outer shell of the valve-body and the said partition-wall 10 for retaining the fluid, a screw-plug 8 in said casting in line with the valve-seats, a bore 9 therein for the purpose of guiding the lower end of the said valve-spindle, a plurality of inlet-openings into the inlet-chamber and an outlet-opening from the outlet-chamber.

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

HERBERT WATSON HILL.

Witnesses:

J. C. GOOSMANN,
B. J. CHILTON.