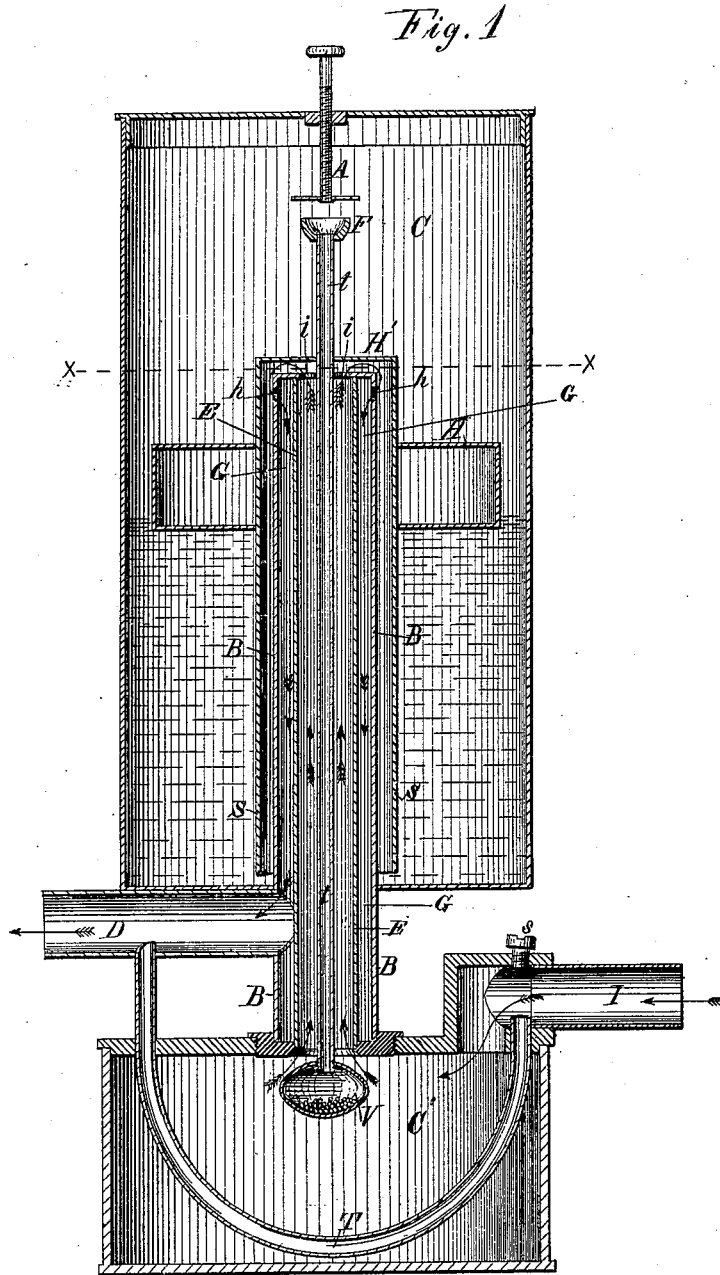


W. D. SNOW.
Gas-Governor.

No. 167,795.

Patented Sept. 14, 1875.



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Granville Lewis
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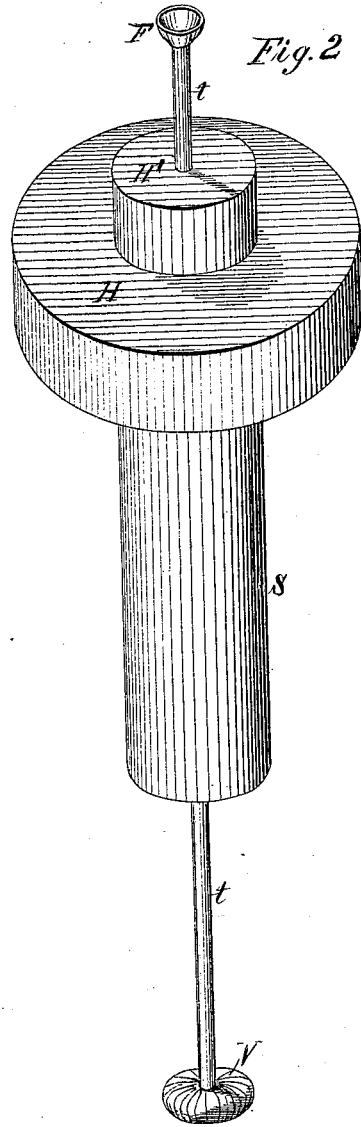


Fig. 2

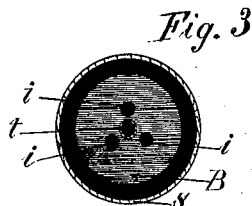


Fig. 3

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IMPROVEMENT IN GAS-GOVERNORS.

Specification forming part of Letters Patent No. **167,795**, dated September 14, 1875; application filed August 28, 1875.

To all whom it may concern:

Be it known that I, Wm. D. SNOW, of Brooklyn, New York, have invented an Improved Gas-Governor; and I do hereby declare the following to be a full and correct description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section of the apparatus. Fig. 2 is a perspective view of the gas-holder float. Fig. 3 is a horizontal section of the dome, immediately above the top of the column.

The same part is indicated by the same letter of reference wherever it occurs.

The nature of my invention consists in the peculiar construction of a gas-governor, operated without weights, pulleys, cords, chains, or springs, and provided with a gas-holder float, having a sheath and dome to play vertically over a vertical double column through which the gas is received and delivered, said float being weighted at a point far below its center of gravity, by means of a hollow ball-valve opening into a long tube attached to and projecting above the dome of the float, and provided with a funnel for the introduction of weighting material into the valve, and said sheath being of a length to operate in a depth of sustaining-fluid sufficient to prevent the percolation of gas through it at any pressure under which gas is usually delivered. It further consists in the application of a siphon-trap, to prevent the condense-water from the house-pipes from entering the governor.

The construction of my improved gas-governor is clearly represented in the accompanying drawings, in which C' marks the lower and C the upper chamber. The inlet-pipe I leads from the meter into the chamber C'. From the top of this chamber rises the receiving and delivering column B, which passes up into chamber C, and is closed at top by a perforated plate. (Shown in top view in Fig. 3.) Within column B is a tube, E, extending from bottom to top of B, and forming an annular space, G, between its exterior surface and the wall of the column. The tube E has three holes, *i i i*, in the top, as shown in Fig. 3, and the annular space G opens near the top by three lateral holes, *h h h*, Fig. 1. This space is closed at bottom, but the delivery-pipe D

opens into its side near the lower end, as shown. The gas-holder float H has the shape of a large flat cylindrical disk, nearly equal in diameter to the chamber C, having a dome, H', above, and a descending cylindrical sheath, S, extending down a distance of three or four inches and open at bottom. To the middle of the top of the dome is attached a long tube, *t*, provided at top with a funnel, F, and having a hollow ball-valve screwed to its lower end. The float, thus constructed, is placed over the column B, in the position shown in Fig. 1, the tube *t* passing down through the central hole in the top of column B, and out at the bottom of inner tube E into chamber C', when the valve V is screwed onto its lower end. This valve, it will be observed, can be weighted by the introduction of shot or other weighting material, through tube *t*, from funnel F. A screw-stop, A, whose shank passes through the top of chamber C, and which has a milled head on top, is used to limit the upward movement of the valve at any desired point. The inlet-pipe I and delivery-pipe D are connected by the inverted siphon T. An opening in pipe I, closed by a screw, *s*, enables the siphon to be filled when desired. As a sustaining-fluid for the float H, I prefer to use glycerine, which is introduced to the proper height into the chamber C. This chamber is provided with a cover which may be removable, or, if preferred, can be soldered down, so as to make the chamber perfectly gas-tight when in use.

The operation of the apparatus is as follows: The gas enters the governor from the meter through inlet-pipe I, passes the valve V, ascends tube E, inside column B, descends the annular space G, on the outside of tube E, and enters pipe D, whence it is distributed to the burners. The flow of the gas is controlled by valve V. When a large number of burners are in use, and the pressure is consequently low, the valve V is opened to its greatest extent and allows a free flow of gas to take place. When a few burners only are open and the pressure is less relieved, the float rises and raises valve V nearer to its seat, diminishing the flow of gas in proportion to the lessened demand and equalizing the pressure. When but a single burner is in use the

increased pressure, bringing the valve very near to its seat, might tend to produce, at the moment of adjustment, an intermittent closure of the valve, resulting in an objectionable flickering of the light or its extinguishment. To prevent this I use the stop A, which is so adjusted as to prevent the valve from rising so far as to be entirely closed by the pressure of the gas under any circumstances, sufficient space being at all times left between the valve and its seat to allow the passage of a full supply of gas for a single burner.

It will be noticed that the valve V, which weights the float H, is far below it, and therefore brings down its center of gravity and tends to keep the tube *t* in a vertical position, so as to prevent all friction between it and the parts through which it passes, the only place where contact can ever occur being at the center-hole of the top of column B. Friction being thus eliminated, the only adjustment required is that of the relation between the weight of the float and the pressure of the gas, and this can be made with the utmost precision by the introduction of small shot through tube *t* into the hollow ball-valve V.

The conditions with which we have to deal in an apparatus of this character are of such extreme delicacy, owing to the practically imponderable nature of the material which we seek to control, that the elimination from the problem of its management, of rude mechanical devices, such as pulleys, springs, weights, cords, and chains, is a point of the greatest importance to the perfection of the operation, and constitutes the most valuable feature of my invention. It enables me to balance the varying pressure of the gas by means entirely free from liability to any mechanical disturbance.

The condense-water from the house-pipes is conducted past the governor by means of the inverted siphon T. This siphon is filled to the level of its lower end with glycerine, to serve as a trap to prevent the direct passage of gas from pipe I to pipe D, through the siphon T. The condense-water, entering pipe D, is prevented by a lip from passing the upper end of siphon T. As it enters there, a corresponding quantity of fluid escapes from the lower end of the siphon into pipe I, and flows into the meter.

I claim—

1. The gas-holder float, consisting of the body H, dome H', and sheath S, tube *t*, and hollow ball-valve V, all constructed and combined in the manner and for the purposes specified.

2. The combination with the float H H' S, tube *t*, and valve V, of the chamber C', valve-seat, tube E, and column B, perforated at top with holes *i*, and laterally with holes *h*, all constructed and arranged as and for the purpose specified.

3. The combination, with a gas-governor, of the siphon-trap T, connecting the inlet and delivery pipes, to prevent the entrance of condense-water into the governor, and provide for its escape into the meter in the manner described.

The above specification of my said invention signed and witnessed at Washington this 25th day of August, A. D. 1875.

W. D. SNOW.

Witnesses:

JOS. T. K. PLANT,
CHAS. F. STANSBURY.