

No. 616,543.

Patented Dec. 27, 1898.

D. LAMOND.  
VALVE.

(Application filed Dec. 30, 1897.)

(No Model.)

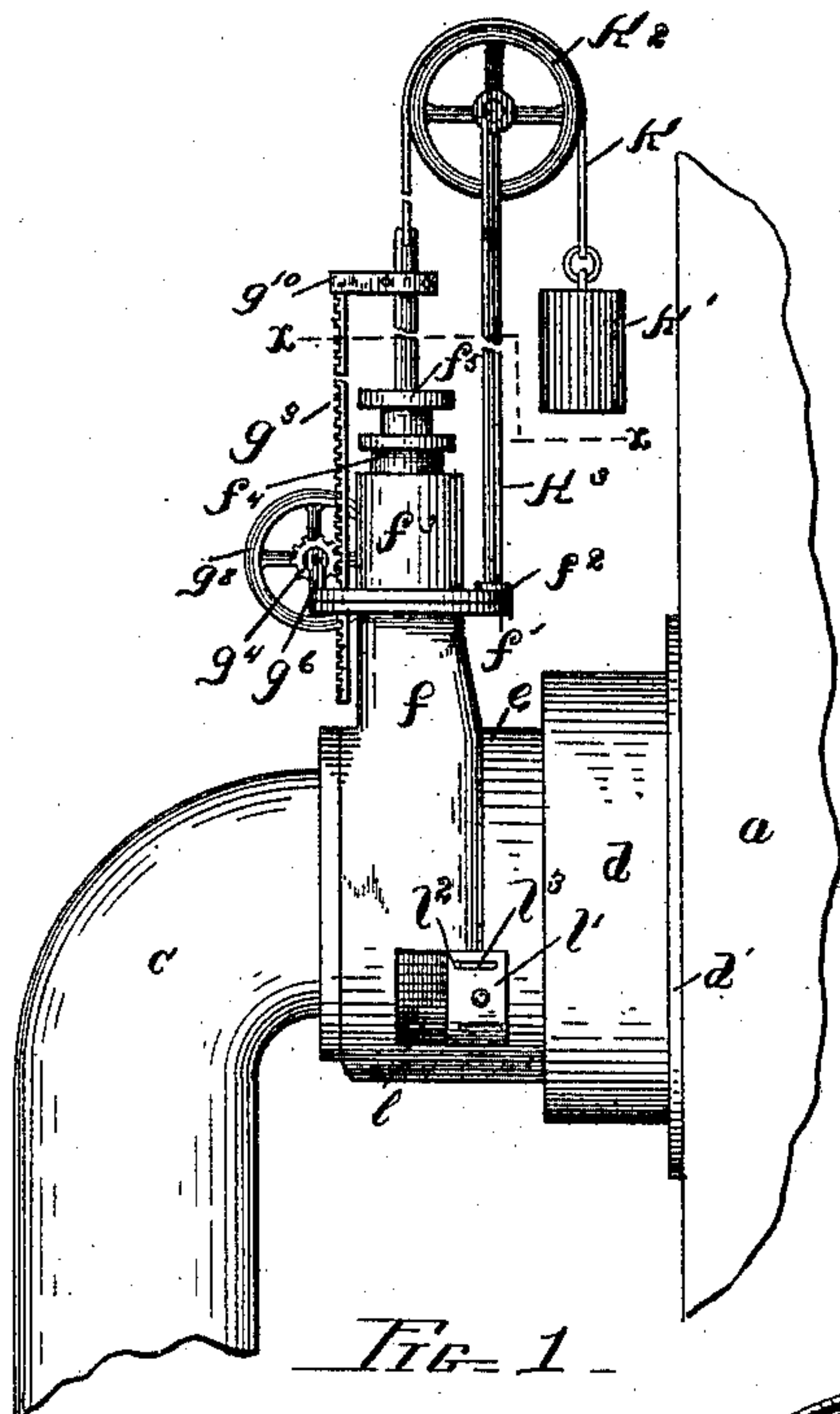
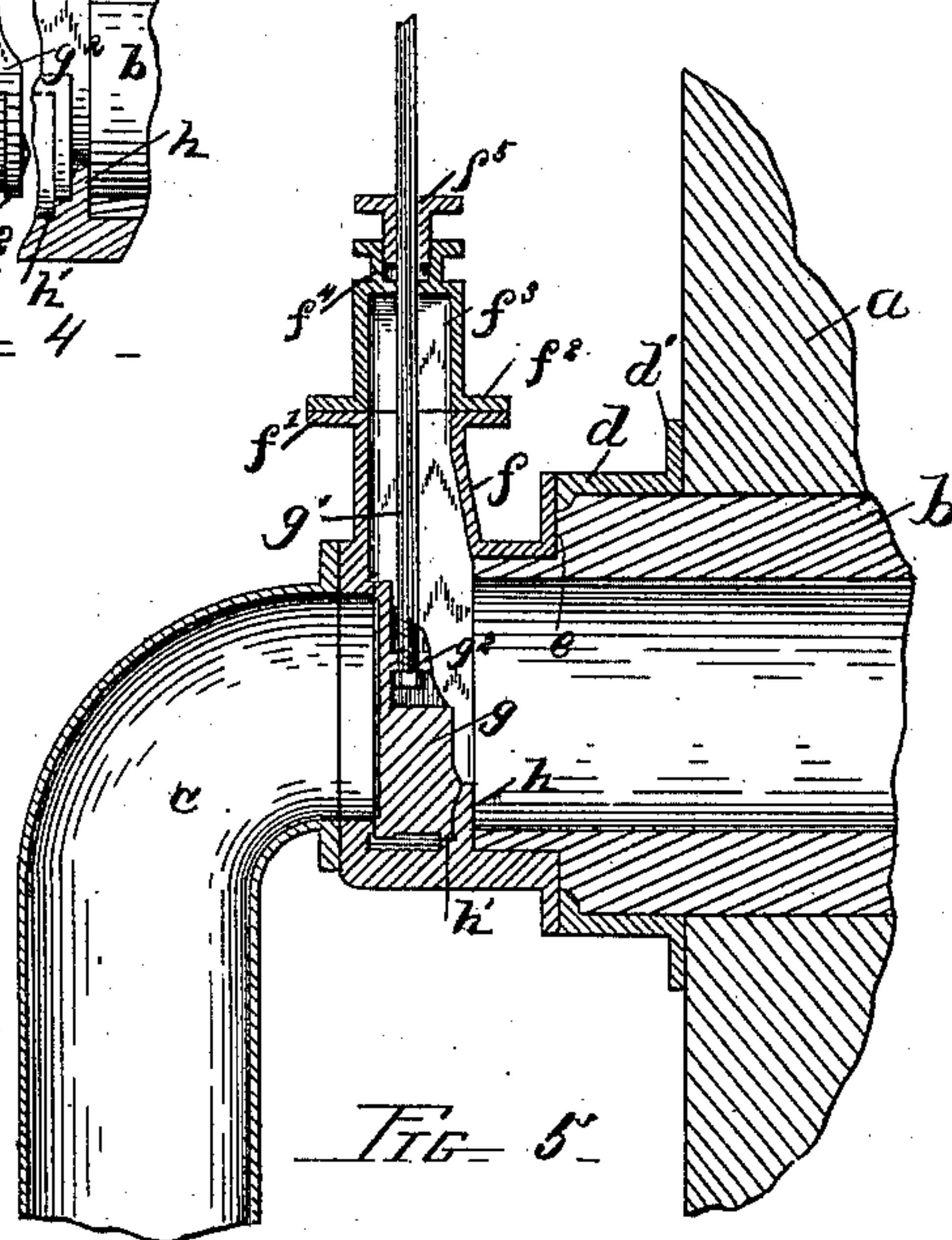
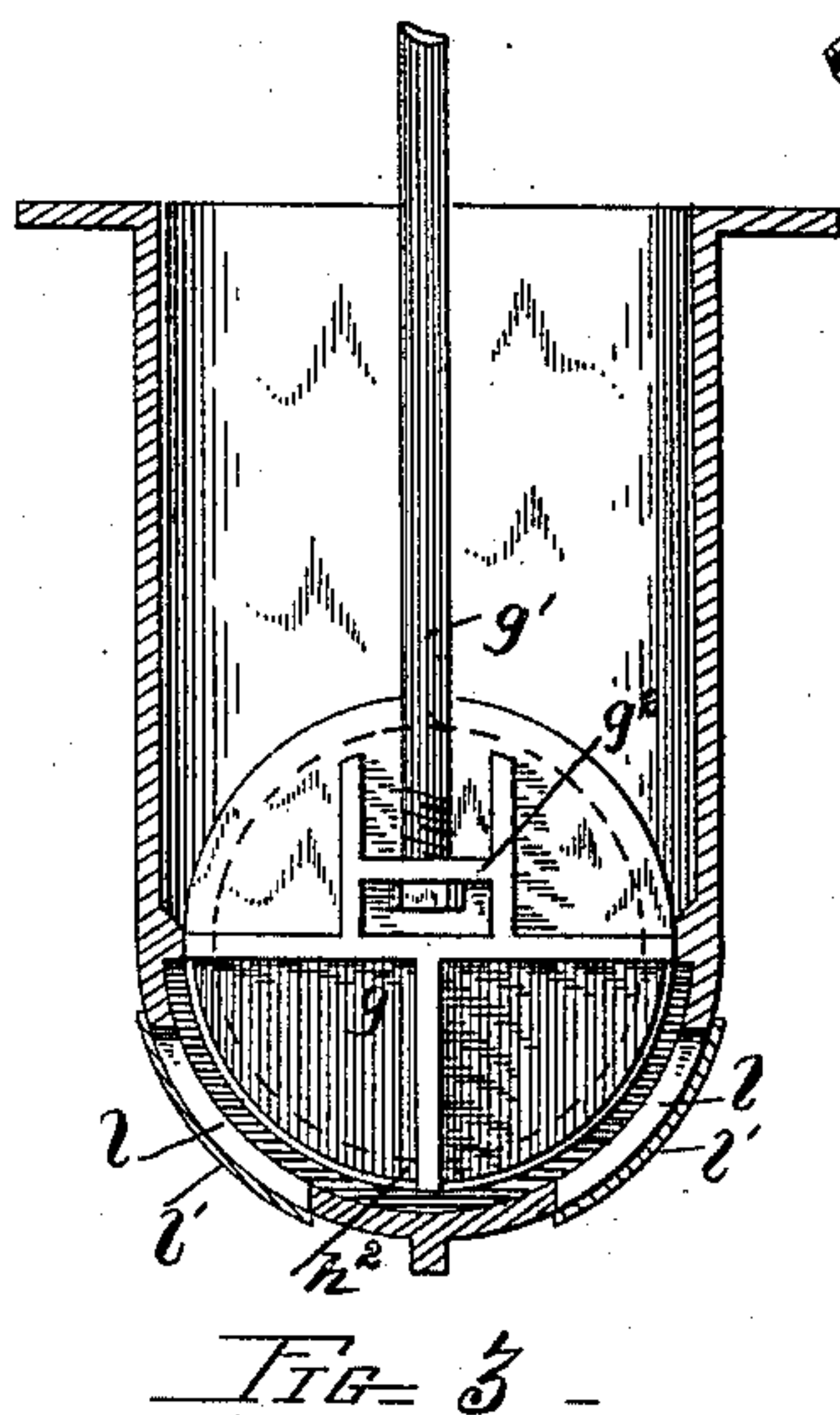
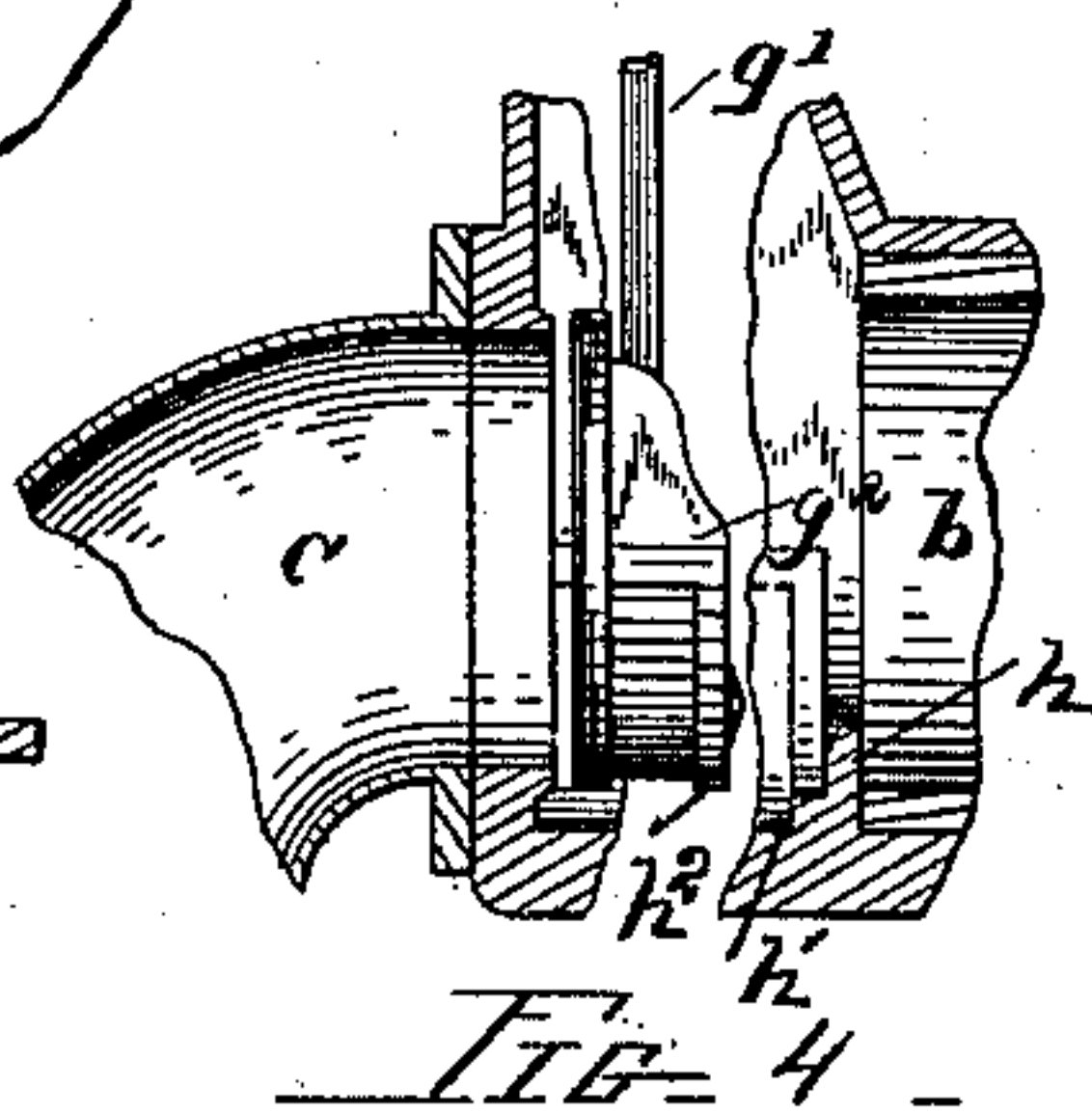
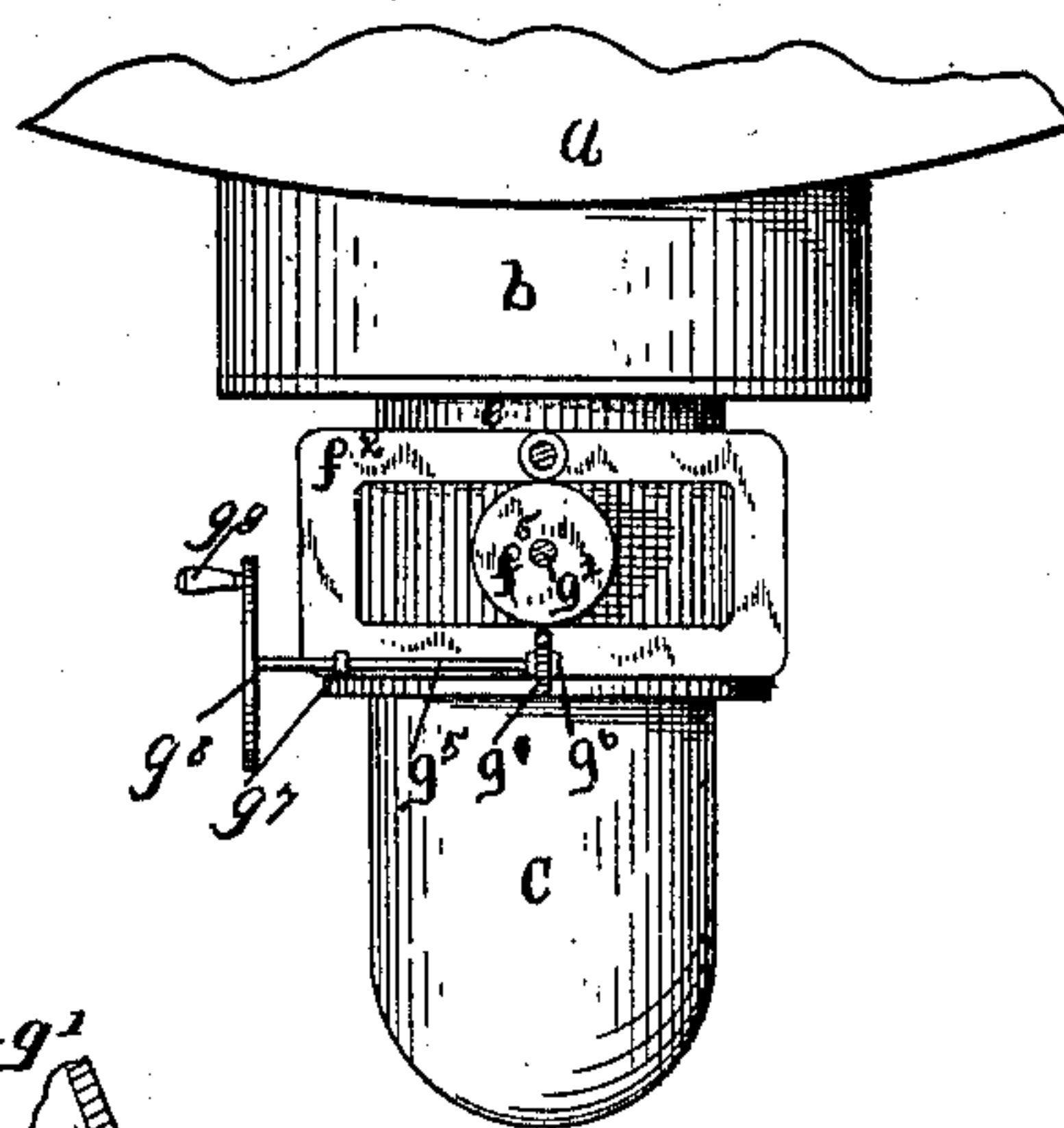


Fig. 2.



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# UNITED STATES PATENT OFFICE.

DAVID LAMOND, OF PITTSBURG, PENNSYLVANIA.

## VALVE.

SPECIFICATION forming part of Letters Patent No. 616,543, dated December 27, 1898.

Application filed December 30, 1897. Serial No. 664,692. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID LAMOND, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Valves; and I do 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to certain new and useful improvements in valves, and has for its object to provide means for admitting any desired quantity of air into contact with a gas-supply, so that the air and gas will be thoroughly commingled before the same reaches the point of ignition.

The device is adapted particularly to be used with blast-furnaces and the like; and it consists, mainly, in the sliding gate that is arranged at the point where the gas passes from the supply-pipe into the furnace, the said gate being controlled and operated by means of a rack-gearing by which it is elevated or lowered, so as to admit a desired quantity of gas. Sliding doors are arranged at the sides of this gate which are opened to admit the desired quantity of air, and thereby permit the same to mingle with the gas before the same reaches the fire and through this means obtain a more perfect combustion.

The above details will be hereinafter more specifically pointed out, and described in the claim, and reference will be had to the accompanying drawings, forming a part of this specification, and wherein like letters of reference indicate similar parts throughout the several views, in which—

Figure 1 is a side view of my improved valve in position. Fig. 2 is a horizontal sectional view taken on the line X X of Fig. 1. Fig. 3 is a vertical sectional view. Fig. 4 is a vertical sectional view of a portion of the two connecting-pipes. Fig. 5 is a vertical sectional view of the pipes and the valve, showing a portion of the furnace-wall.

Referring now to the drawings by reference-letters, *a* indicates the furnace-wall, in which

is secured at a suitable point a flue or pipe *b*, which is or may be of the same size as the gas-supply pipe *c*, or the same may be of any desired size, and serves as a mixing-chamber for the gas and air. This flue or pipe *b* projects outwardly beyond the furnace and has mounted thereon a collar *d*, having a flange *d'* for securing the same to the side wall. The pipe is also formed with a reduced outer end, thus providing a shoulder *e*, against which and to the collar *d* is secured the valve-casing *f*. This valve-casing has arranged therein the sliding gate *g*, by which the quantity of gas admitted to the furnace is controlled, the said gate being operated by a valve-stem *g'*, that is secured to cross-ribs or flanges *g<sup>2</sup>*, formed for this purpose on the inner face of the sliding gate. A valve-seat is formed for this sliding gate by arranging the upwardly-extending flange *h* within the casing, and adjacent to the same a groove *h'*, that is adapted to receive a flange *h<sup>2</sup>*, arranged on the gate *g*. This flange *h<sup>2</sup>*, resting in a groove *h'* when the gate is closed and against the flange *h*, prevents any leakage of the gas through its supply-pipe into the mixing-chamber and from thence to the furnace. At its upper end the valve-casing *f* is provided with an outwardly-extending flange *f'*, which receives a correspondingly-shaped flange *f<sup>2</sup>* of the cap or guide *f<sup>3</sup>* for the valve-stem *g'*. Said cap is provided with a cup *f<sup>4</sup>*, closed by a nut *f<sup>5</sup>*, through which the valve-stem passes and which may be employed for packing, if desired. The valve-stem carries near its upper end a plate *g<sup>10</sup>*, to which is attached a rack-bar *g<sup>8</sup>*, passing downward through the flanges *f'* and *f<sup>2</sup>* and engaging the spur-gear *g<sup>4</sup>*, supported by a rod *g<sup>5</sup>*, that is journaled within the standard *g<sup>6</sup>*, carried on the aforesaid flange *f<sup>2</sup>*. This rod is also supported and retained in perfect alinement by means of the standard or keeper *g<sup>7</sup>*, supported by the said flange, and it carries on its outer end a wheel *g<sup>8</sup>*, having a suitable handle *g<sup>9</sup>* for operating. To assist the gear in raising the gate, I have attached to the upper end of the valve-stem *g'* a cord or chain *k*, carrying on its free end a weight *k'* and passing over a suitable pulley *k<sup>2</sup>*, journaled in standards *k<sup>3</sup>*, supported by the flange *f<sup>2</sup>*. The valve-casing *f* is provided on its two



sides at a point near the base of the gate  $g$  with suitable openings  $l$ , that are closed by means of sliding doors  $l'$ , retained in position by means of pins  $l^2$ , arranged in the valve-casing and engaging in slots  $l^3$ , provided therefor in the doors. The supply-pipe  $c$  is attached to the casing in any desired manner.

Assuming that it is desired to admit the gas into the furnace, the doors  $l'$  for admitting the air are opened, so as to admit a desired quantity of air, either before or after operating the gear to raise the gate, which operation will, it is thought, be understood from the foregoing description. By providing the mixing-chamber at a point between the gate and where the gas is ignited the same becomes thoroughly mingled with the air and a more perfect combustion is thereby obtained.

While the construction as herein shown and described is a preferable embodiment of my invention, yet I do not wish to limit myself to the exact construction herein shown, but reserve the right to change the same at will,

as may be covered by the protection prayed for.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

A gas-valve consisting of a casing provided at its upper portion with a cap, a cup fitted within said cap, an air-opening in the lower portion of said casing, a sliding door adapted to close said air-opening, a valve-seat within said casing, said valve-seat consisting of an upwardly-extending flange  $h$  and a groove  $h'$ , a sliding valve within said casing, said valve being provided with cross-ribs, and a flange  $h^2$  adapted to fit within the said groove, and a stem attached to said cross-ribs, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

DAVID LAMOND.

Witnesses:

JOHN GROETZINGER,  
H. J. LEVIS.