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H. H. DIKEMA.
GAS REGULATING AND SAVING APPARATUS.
APPLICATION FILED JULY 9, 1902.

NO MODEL.

Fig. 1.

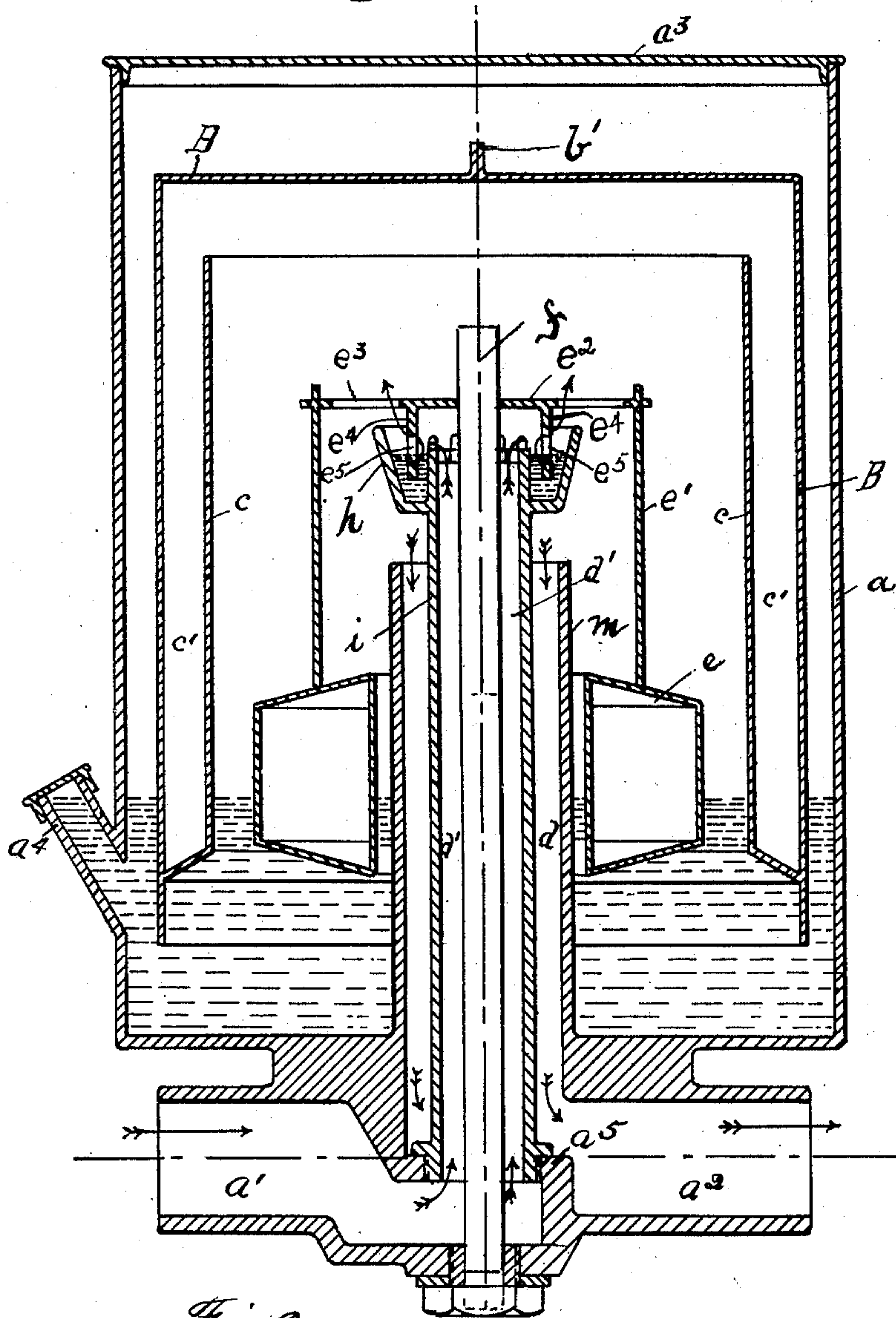
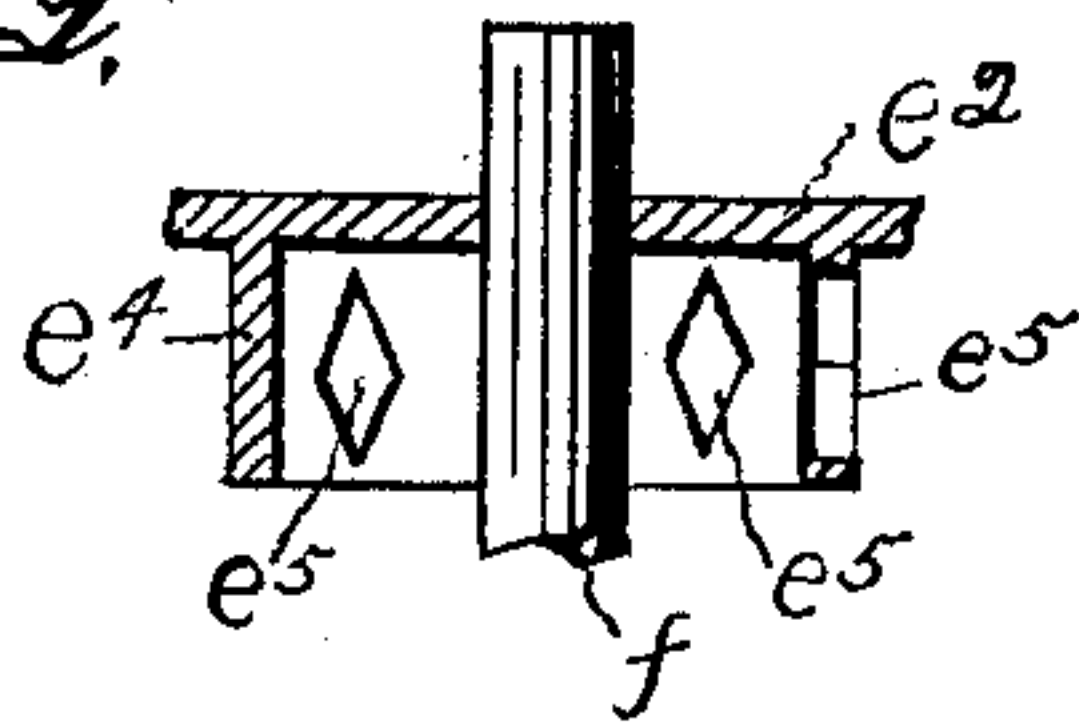


Fig. 2.



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GAS REGULATING AND SAVING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 737,593, dated September 1, 1903.

Application filed July 9, 1902. Serial No. 114,876. (No model.)

To all whom it may concern:

Be it known that I, HARING HARINGS DIKEMA, a subject of the Queen of the Netherlands, and a resident of Leipzig, in the Kingdom of Saxony, Germany, have invented certain new and useful Improvements in Gas Regulating and Saving Apparatus, of which the following is a specification.

This invention relates to improvements in gas-regulators.

The object of the present invention is to provide a device of the class named which is simple in construction and efficient and accurate in accomplishing the purposes for which it is intended.

Another object is to equip the device with a liquid-sealing valve constructed to act to gradually admit the gas to and cut it off from the gasometer, thereby to prevent a sudden overpressure of gas being admitted to the gasometer.

A further object is to provide an improved gasometer which may be regulated for different pressures of gas and which is so constructed that its movements in the tank will tend to displace considerable of the liquid therein to cause the liquid and the float operated thereby to be raised and lowered, thereby providing a very sensitive regulator.

The invention will be readily understood by reference to the illustration in the accompanying drawings, wherein—

Figure 1 is a longitudinal vertical section of the regulator. Fig. 2 is a detail in vertical section of the apertured flange which constitutes one member of the valve.

Referring to the drawings, *a* designates a tank having at its bottom a gas-inlet *a'*, which may be connected with the meter, and gas-outlet *a''*, which is connected with the supply-pipe for the burners. A suitable cover *a'''* is provided, and it may be formed removably or fixed, and from the side of the tank, near its bottom, extends a nozzle *a''''*, through which water may be introduced and by which the water-level may be determined.

Mounted to rise and fall within the tank is a gasometer B, provided at its upper end with a projection *b'*, which engages the cover *a'''* and limits the upper movement of the same to prevent the lower end thereof being raised above the water-level, whereby the gas is pre-

vented from escaping around the outside of the gasometer. From the lower end of the gasometer, in the inside thereof, extends an upwardly-directed sheath or casing *c*, which forms an annular space *c'* between the sheath and the outer wall of the gasometer. In this annular chamber there may be posited a weight or weights to cause the gasometer to drop farther down into the water and to regulate it for different pressures of gas. This sheath also provides an increased surface for immersion, so that when the gasometer drops a considerable displacement will be effected and the water-level caused to rise and fall, and this rising and falling of the water-level insures a more positive operation for the float and its valve, as will be more fully described hereinafter.

Fitted in the lower end of the tank is a guide-rod *f*, and extending upwardly from the bottom of the tank and preferably integral therewith is a tube *m*, which surrounds and is arranged concentric to the guide-rod. The upper end of this tube is open and in communication with the gasometer, while its lower end communicates with the outlet *a''*.

The casting constituting the inlet and outlet passages for the gas is provided with a central partition *a'''*, in which is fitted a pipe *i*, having a communication at its lower end with the inlet *a'* and extending upwardly into the gasometer and formed at its upper end with a cup *h*. This pipe is interposed between the tube *m* and guide-rod *f* and is arranged concentric therewith, so that two annular vertical passages *d* and *d'* are formed around the guide-rod, the passage *d'* serving to conduct the gas upwardly into the gasometer and the passage *d* serving to conduct the gas downwardly from the gasometer. Cup *h* is partially filled with quicksilver, glycerin, oil, or any other liquid which will not evaporate quickly or be absorbed by the gas or corrode the metal from which the parts are made.

Mounted in the gasometer and surrounding the tube *m* is a hollow float *e*, which is provided with a yoke or casing *e'*, the top *e''* of which is provided with openings *e'''* to permit the gas to freely flow into and from the gasometer. From the top *e''* depends an annular flange *e''''*, having apertures *e'''''* therein. These

apertures may be of any shape, but are preferably formed with divergent border-lines, which act very gradually to open or close the passage for the gas and thus carefully graduate the flow of gas into the gasometer. The float is guided in its up and down movements by means of the rod *f*, which pierces an aperture in the top of the yoke.

The operation may be briefly stated as follows: The gas enters the inlet *a'* and passes up through a passage *d'*, through the apertures *e⁵*, and into the gasometer, and it escapes by way of the passage *d* down to the outlet *a²*, from whence it is conducted to the burners. An increased pressure in the gasometer, owing to the increased pressure on the main or meter or the shutting off of some of the burners, causes the gasometer to rise until the projection *b'* engages the cover of the tank. The lower end of the gasometer has now been partially raised out of the water, causing the water-level to descend and the float to drop. The downward movement of the float causes the depending flange *c⁴* of the yoke to be immersed in the quicksilver contained in the cup, and when the upper edges of the apertures *e⁵* have reached the level of the quicksilver the flow of gas into the gasometer will be entirely cut off. This cutting off of the flow of gas is gradual, as above explained. When, however, the pressure is reduced on the main or considerable gas is being consumed, the gasometer will drop, and the displacement emanating from the sheath *c* will raise the water-level and the float and cause the depending flange to be partially withdrawn from the quicksilver and the apertures *e⁵* to be raised above the level of the same, thereby establishing a passage for gas from the inner passage *d'* to the gasometer. This operation it will be observed is positive and accurate, and the gas is gradually admitted to and cut off from the gasometer and thereby preventing the gasometer being subjected to a sudden pressure, which often causes a mechanical disturbance. It will be further observed that the improved construction of gasometer materially assists the float in its up and down movements and establishes a very sensitive and extremely delicate regulator well adapted for controlling gas.

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

1. A gas-regulator comprising a tank, a gasometer within the tank, a float within the gasometer, and a liquid-sealing valve in the gasometer above the float, said valve being operated by the float and the gasometer and having means for graduating the flow of gas to the gasometer.

2. A gas-regulator comprising a tank, a gasometer within the tank, a tube extending upwardly into the gasometer and provided at its upper end with one member of a liquid-sealing valve, a float within the gasometer and carrying the other member of the liquid-sealing valve, said other member being provided with means which coöperates with the first-mentioned member to graduate the flow of gas into the gasometer.

3. A gas-regulator comprising a tank, a gasometer within the tank, inlet and outlet passages for the gas extending upwardly into the gasometer, a cup at the top of the inlet-passage and having a liquid therein, a float within the gasometer, a member carried and operated by the float and adapted to coact with the liquid in the cup to graduate the flow of gas to the gasometer.

4. A gas-regulator comprising a tank, a gasometer within the tank, a float within the gasometer, concentrically-arranged inlet and outlet passages for the gas, a cup surrounding the inlet passage at its upper end and having a liquid therein, a yoke carried by the float, a depending flange on the yoke, apertures having divergent border-lines formed in the flange and adapted to coact with the liquid contained in the cup for graduating the flow of gas to the gasometer, and inlet and outlet ports at the bottom of the tank in communication with the concentric inlet and outlet passages respectively.

5. A gas-regulator having a gasometer provided with an interior upwardly-extending sheath which forms an annular chamber in the gasometer, said sheath acting to increase or decrease the water-level by its up and down movements, a float, and a liquid-sealing valve operated by the float.

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

HARING HARINGS DIKEMA.

Witnesses:

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RUDOLPH FRICKE.