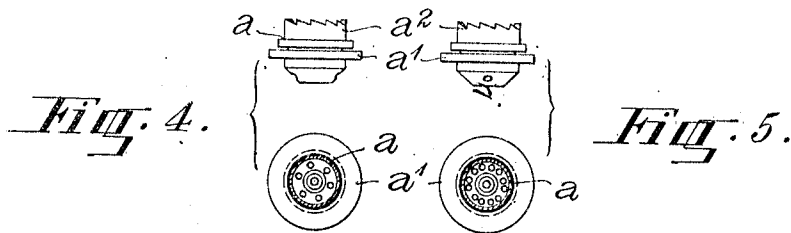
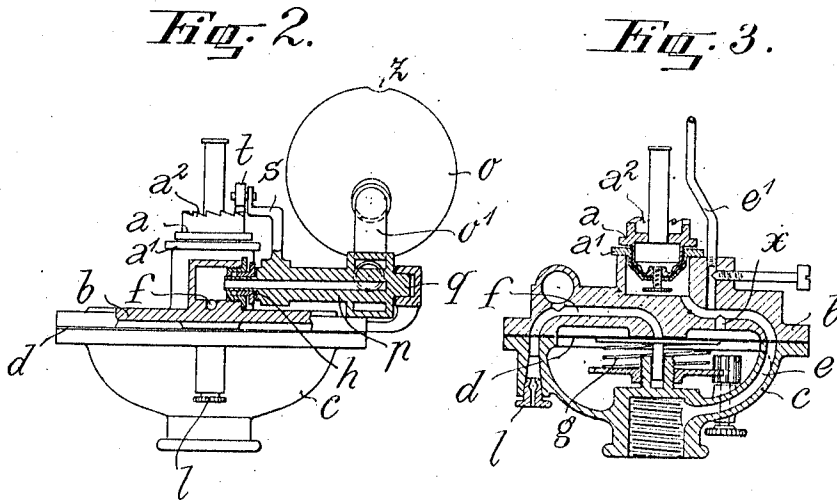
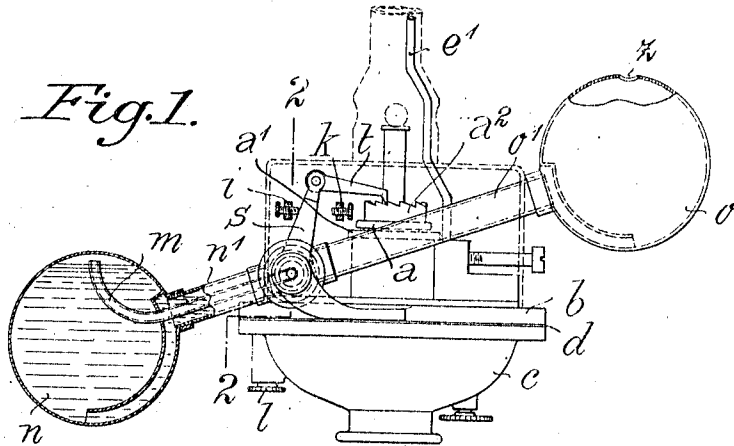


E. RENKEWITZ.
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APPLICATION FILED MAY 24, 1909.

980,334.

Patented Jan. 3, 1911.

2 SHEETS—SHEET 1.



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Fig. 6.

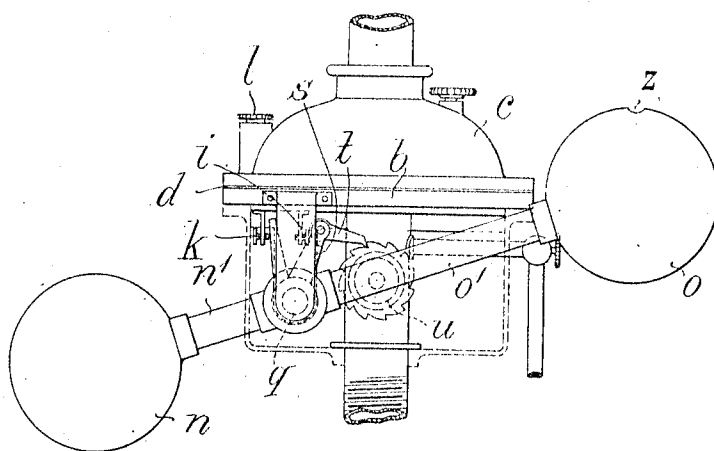
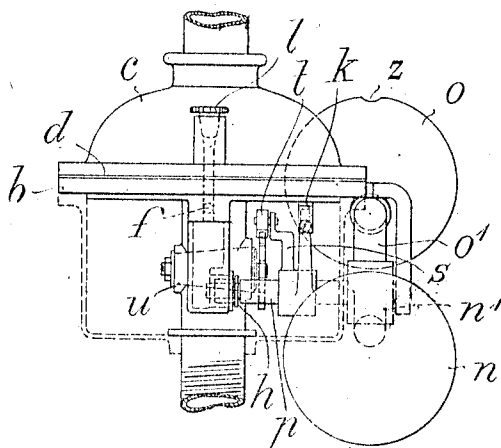


Fig. 7.



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UNITED STATES PATENT OFFICE.

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SYSTEM FOR OPENING AND CLOSING GAS-VALVES FROM A DISTANCE.

980,334.

Specification of Letters Patent.

Patented Jan. 3, 1911.

Application filed May 24, 1909. Serial No. 497,964.

To all whom it may concern:

Be it known that I, EMIL RENKEWITZ, a citizen of the Empire of Germany, and residing at Berlin, Germany, have invented certain new and useful Improvements in Systems for Opening and Closing Gas-Valves from a Distance, of which the following is a specification.

My invention relates to improvements in systems for opening and closing gas valves at a distance, such as are used for lighting street lamps, and more particularly to systems in which the valve is operated by means of communicating receptacles containing a liquid, which are supported in unstable equilibrium, and are alternately tilted over by forcing the liquid, by means of the pressure of the gas, from one receptacle into the other one.

The object of the improvements is to provide a system which is particularly simple in construction and very compact, so that the valve operating apparatus can be directly connected with the gas burner. For this purpose the gas controlling the rocking movement of the receptacles is admitted thereto through an axial bore of the pivot of the receptacles, so that a special conduit adapted to follow the rocking movement of the receptacles is dispensed with.

For the purpose of explaining the invention, two examples embodying the same have been shown in the accompanying drawings, in which the same letters of reference have been used in all the views to indicate corresponding parts.

In said drawings—Figure 1, is a front view, partly in section, of an embodiment of the invention which is adapted for use in connection with upright burners, Fig. 2, is a side view of Fig. 1 partly in section taken on the line 2—2, Fig. 3, is a vertical central cross-section of Fig. 1, Figs. 4 and 5, are plans and side views illustrating the construction of the valve, Fig. 6, is a front view of a second embodiment of the invention which is adapted for use in connection with inverted gas burners, and Fig. 7, is a side view of Fig. 6.

Referring particularly to the example illustrated in Figs. 1-5, the valve a , a^1 of the burner and its operating mechanism are mounted on a casing which consists of two sections b and c separated from each other by a diaphragm d so as to form two inde-

pendent chambers. Within both sections b and c a canal e is provided through which the gas flows to the valve a , a^1 constructed in the form of a drum. From the canal e a canal or bore x is branched off through which the said canal communicates with the upper one of the chambers. The valve drum a is constructed in the form of a disk valve. It consists, as is usual, of a fitting a^1 and a drum a seated therein in a gas tight manner and provided with a toothed edge a^2 , and the nozzle of the burner. The ratchet teeth a^2 of the drum correspond to the ports of the drum a , and when the latter is rotated, as will be described hereafter, the ports provided in the fitting are closed or opened in the usual way. The diaphragm d is normally pressed against the lower face of the section b of the casing by an adjustable spring g , and it closes a second canal f which, through a stuffing box h , is connected with the rocking system n , o , and is partly closed by a screw plug l provided with a minute aperture. The plug l is made hollow, and its hollow is preferably filled with some porous material, such as cotton, or the like, to prevent the access of dust to the canal f and the parts connected therewith.

The communicating receptacles consist of two hollow balls n and o connected with each other by tubes n' and o' , and rigidly secured to a hollow pivotal shaft p . The latter has a rocking support within a stuffing box h and a bracket provided on the section b , the latter receiving a pivot stud q . The rocking movement of the system consisting of the shaft p and the balls n and o is limited by means of an arm provided on the shaft p and rocking between stops i and k . Within the tube n' a small tube m is located which extends from the bore of the shaft p above the highest level of the liquid contained within the ball n , so that the canal f communicates with the said ball through the bore of the shaft p and the tube m . The ball o communicates with the atmosphere through an opening z . On the shaft p an arm s is provided which carries a pawl t engaging in the ratchet teeth a^2 of the drum a .

In the example shown in Figs. 6 and 7, the construction of the rocking system n , o , p is the same as that described with reference to Figs. 1 to 5. The pawl t , however, imparts rotary movement to a cock u seated

in the section *b* of the casing and provided with several ports corresponding to the number of the opening positions of the cock.

If, in the example shown in Figs. 1 to 5, the valve drum *a* is in its closing position, the function of the apparatus is as follows: The illuminating gas admitted under its normal pressure passes through a branch *e'* of the canal *e* to a pilot burner, while the chamber provided by the upper section *b* of the casing and connected with the canal *e* through the passage *x* is closed by the diaphragm *d*. If now the pressure of the gas is temporarily increased to about 10 millimeters above the normal, the diaphragm *d* is pressed backward against the action of the spring *g*, so that the canal *f* is brought in communication with the canal *e* and the gas supply. Now the gas flows through the bore of the shaft *p* and the tube *m*, exerts a pressure on the liquid contained within the ball *n* and forces the same into the ball *o*, the air within the latter escaping through the aperture *z*. The small amount of gas escaping through the aperture *l* under the increased pressure does not affect the function. The weight of the liquid forced into the ball *o*, causes the communicating balls *n* and *o* and the parts connected therewith to perform a rocking movement. Thereby the drum *a* is advanced the distance of two teeth, so that the gas can flow to the burner through the ports of the drum *a*. If the pressure of the gas is reduced to its normal, the spring *g* presses the diaphragm *d* against the opening of the canal *f*, so as to close the same. Now the gas contained within the ball *n* will slowly escape through the aperture *l*, and the liquid will flow backward from the ball *o* to the ball *n*, and finally the balls *n* and *o* and the parts connected there-

with will be rocked into their normal position. This operation is repeated whenever the pressure is increased. In the case of the example illustrated in Figs. 6 and 7 the balls *n* and *o* are rocked in the same way. The lever *s* advances the cock *u* by means of the pawl *t* a distance corresponding to the distance of the opening and closing positions, whereby the passage of the gas to the burner is closed or opened.

I claim:

In a system for opening or closing gas valves, the combination with the main valve, and a gas supply thereto, of two receptacles communicating with each other and partly filled with a liquid, one of said receptacles being hermetically closed at its top and the other one communicating with the atmosphere, a rigid connection between said receptacles, a pivot intermediate said receptacles providing a rocking support therefor and having a bore communicating with the closed receptacle at the upper part thereof and with the gas supply, a spring actuated valve adapted to close the communication between the gas supply and the bore of said pivot under the normal pressure of the gas and to open the same upon an increase of the pressure, the bore of said pivot communicating with the atmosphere through a minute aperture, and a connection between the rockable receptacles and the main valve adapted to operate the latter.

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

EMIL RENKEWITZ.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.