

(No Model.)

G. S. FAULKNER & G. K. POPE.

GAS PRESSURE REGULATOR AND CUT-OFF.

No. 369,445.

Patented Sept. 6, 1887.

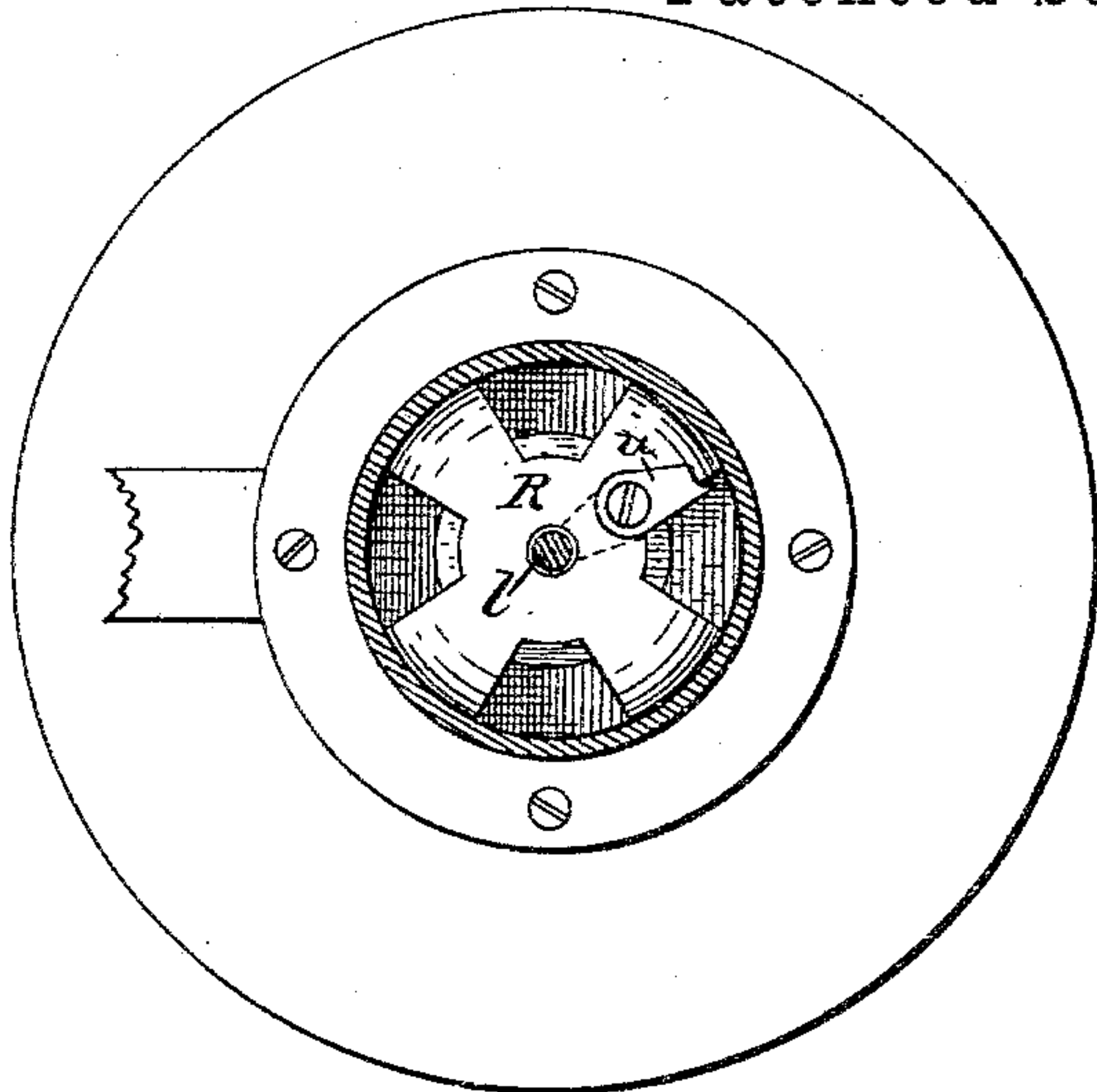


Fig. 3.

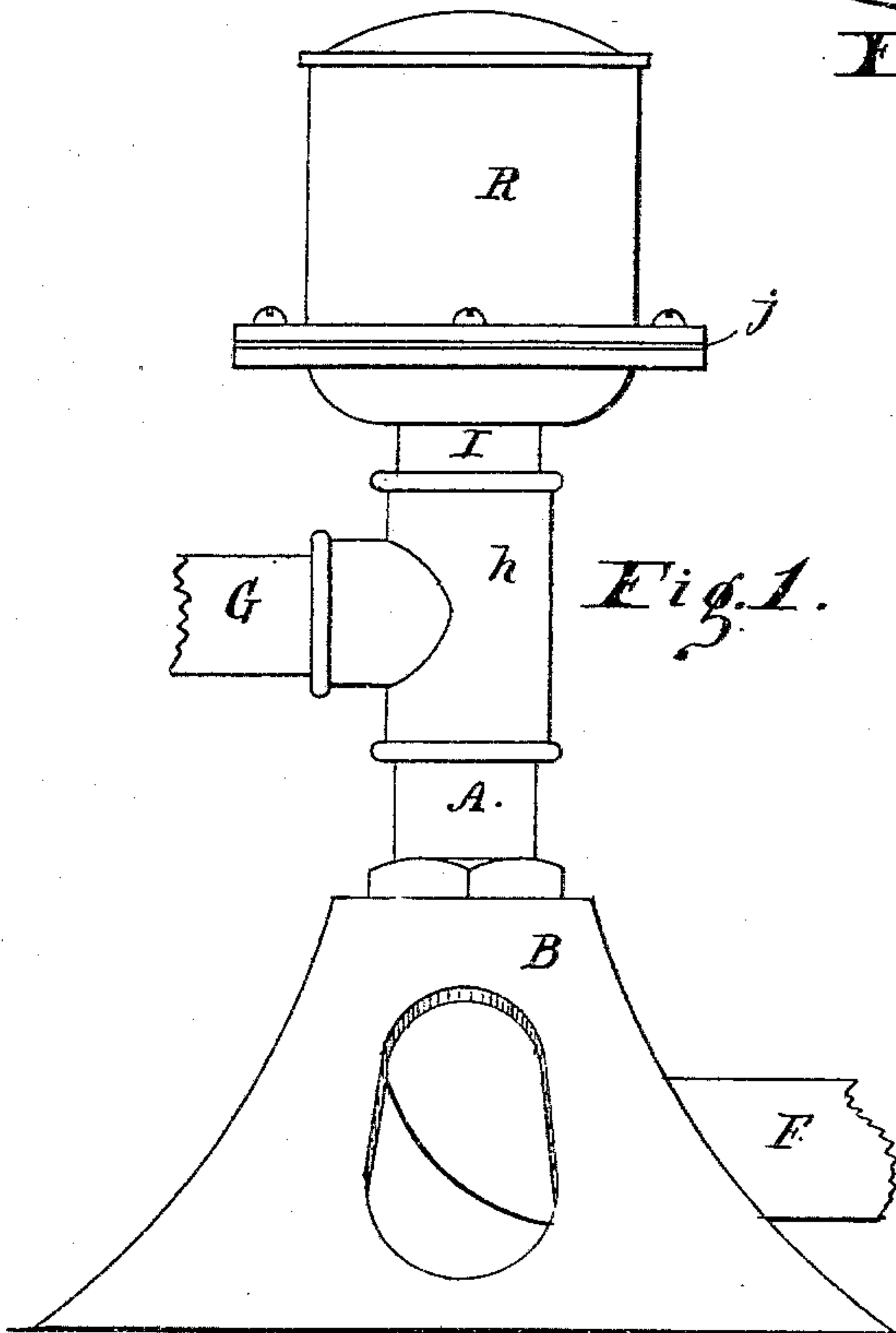


Fig. 1. Outlet

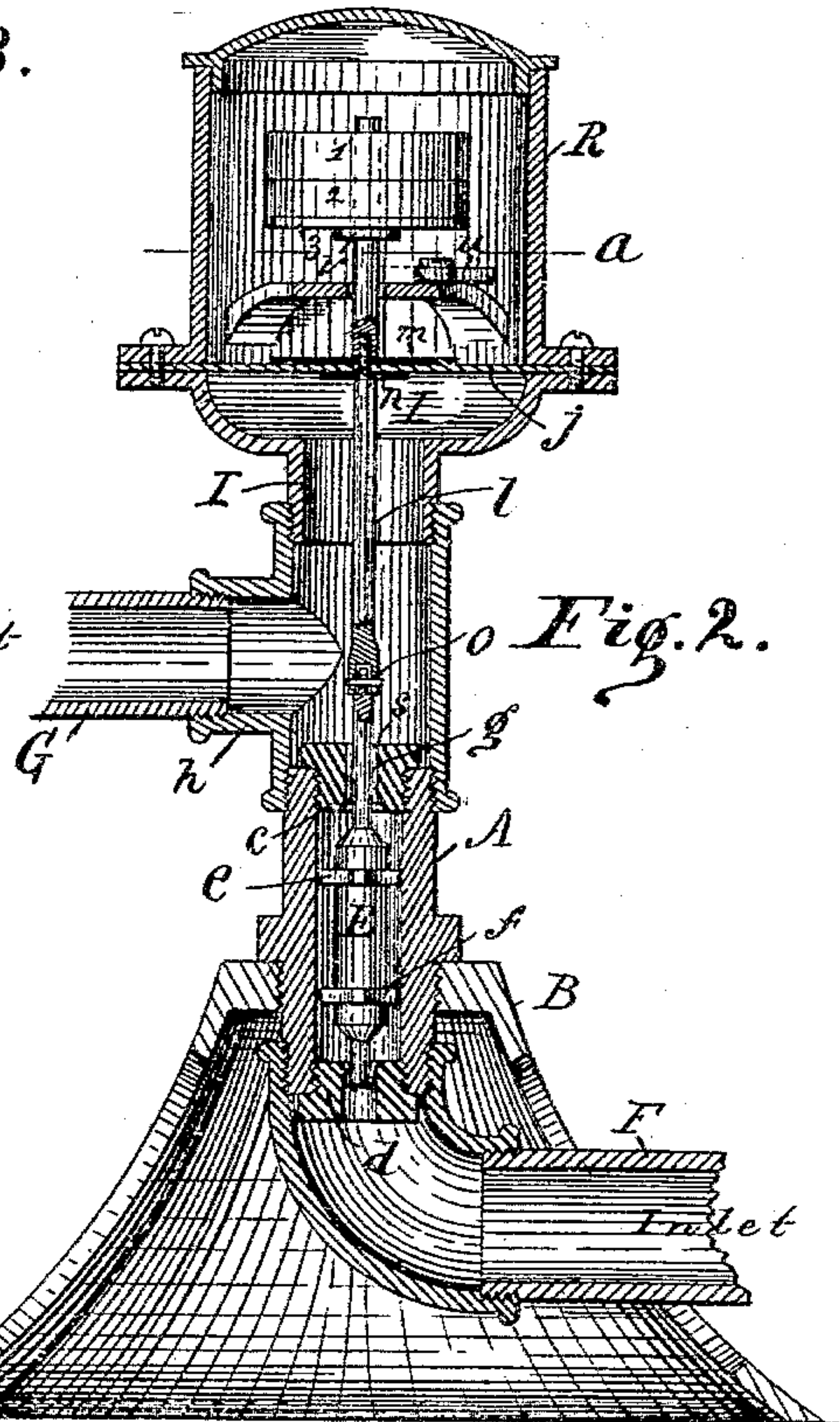


Fig. 2.

Witnesses:

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UNITED STATES PATENT OFFICE.

GEORGE S. FAULKNER AND GEORGE K. POPE, OF INDIANAPOLIS, INDIANA.

GAS PRESSURE-REGULATOR AND CUT-OFF.

SPECIFICATION forming part of Letters Patent No. 369,445, dated September 6, 1887.

Application filed May 20, 1887. Serial No. 238,842. (No model.)

To all whom it may concern:

Be it known that we, GEORGE S. FAULKNER and GEORGE K. POPE, citizens of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Improvement in Gas Pressure-Regulators and Cut-Offs, of which the following is a specification.

Our invention relates to an improved gas pressure-regulator and cut-off, designed, principally, for use in connection with natural-gas-supply systems.

The objects of our invention are, first, to so control the flow of gas from the mains to the consumer's system of supply-pipes that a uniform pressure will be maintained therein under ordinary conditions of use, and, second, to automatically shut off the supply of gas when a serious break in the consumer's system of pipes occurs, as in case of the burning or falling of the building, or when, on account of a checked flow of gas at the source of supply or from breakage of the mains, the pressure falls below the point necessary to sustain combustion, thereby preventing the flooding of houses and factories with gas when the normal flow is resumed.

The accompanying drawings illustrate our invention.

Figure 1 represents a side elevation, and Fig. 2 a vertical section. Fig. 3 is a section at *a*, Fig. 2.

A is a tubular valve-chamber, which is mounted vertically on the base B. The opposite ends of the valve-chamber are provided with the opposed interior valve-seats, *c* and *d*, which are removably secured to the valve-chamber and are perforated centrally to allow the gas to pass through them.

E is a double-faced valve arranged to engage either of the valve-seats and supported centrally in the valve-chamber by the guides *e* and *f* and extended to form the valve-rod *g*.

F is the inlet-pipe leading from the main and secured to the lower end of the valve-chamber.

G is the outlet or consumer's supply-pipe, which is connected with the upper end of the valve-chamber by a T-coupling, *h*.

I is the pressure-chamber, which is secured

to the upper branch of coupling *h*, and has an elastic diaphragm, *j*, extending across it. The valve-rod *g* is connected to the diaphragm by means of rod *l*, which is made in two sections which embrace the washers *m* and *n* and the diaphragm between them. Rod *l* is loosely coupled with the upper end of the valve-rod, as at *o*, so as to allow a certain degree of flexibility which permits the valves to seat truly and perfectly, and it extends above the pressure-chamber sufficiently to receive and support a series of weights, 1 2 3. The weights and the upper part of the rod *l* are protected from unwarranted interference by an inclosing-case, R.

The valve-rod is of smaller diameter than the perforation through the valve-seat *c*, so as to leave an annular space, *s*, through which the gas may pass from the valve chamber to the pressure-chamber.

The operation of our device is as follows: Pipe F having been connected with the main and all outlets from pipe G being closed, and one or more of the weights 1 2 3 being in position on the rod *l*, the lower face of valve E rests in the valve seat *d*, and no gas enters the regulator until the valve has been raised by hand. The valve having been raised, the gas passes through the valve-chamber A and annular space *s* to the pressure-chamber I, where, by its pressure on the extended area of the diaphragm, it operates to sustain the weights, thereby holding the valve open. The weights being adjusted to the pressure required, so long as the desired amount of pressure exists in chamber I the weights and the valve are held in a balanced position, the valve being about equidistant from the two seats *c* and *d*. If there is any considerable increase of pressure in the main or source of supply, then the diaphragm and weights are forced upward, thus drawing the valve upward against seat *c* and cutting off the supply until the pressure in chamber I has become normal again, when the valve falls and the flow of gas is resumed. If, however, a great reduction of pressure occurs in chamber I, such as would result from the breaking of the outlet-pipe G or a stoppage of the gas at the well or other source of supply, the valve will fall till it rests in seat

d , and the gas will not again enter the consumer's system of pipes until the valve has been raised by hand.

It is in some places undesirable to allow the flow of gas to be completely cut off when the pressure from the source of supply ceases. For the purpose of controlling this we pivot to the bottom of the case R, on the inside, a thin plate, u , one end of which may be turned so as to come between a collar, v , on the rod l and the bottom of the case, as shown in dotted lines, Figs. 2 and 3, or turned out of the way, as shown in full lines. When turned under the collar, plate u operates to arrest the downward movement of the rod and prevents the complete seating of the valve in seat d , so that when the pressure again returns in the main the flow of gas is automatically resumed through the regulator. A pressure-regulator and cut-off is thus formed which has but few parts, and in which the use of springs and stuffing-boxes is avoided.

We claim as our invention—

1. In a gas pressure-regulator and cut off, a valve-chamber, an inlet-pipe secured to one end of said valve-chamber, a pressure-chamber secured to the opposite end of the valve-chamber and having an outlet leading therefrom, a pair of perforated valve-seats secured in the opposite ends of the valve-chamber and

arranged to establish communication between the valve-chamber and inlet-pipe and the valve-chamber and pressure-chamber, respectively, a double-faced valve arranged to engage with either of said valve-seats and to thereby cut off communication between the inlet-pipe and the valve-chamber or between the valve-chamber and the pressure-chamber, an elastic diaphragm forming one side of the pressure-chamber, a rod connecting said valve and diaphragm and extending above the diaphragm, and removable weights arranged to resist the pressure on the diaphragm and to depress the valve, all combined and arranged to co-operate, substantially as and for the purpose specified.

2. In a gas pressure-regulator and cut-off, the combination, with the valve-chamber having seat d , the valve arranged to engage said seat, and the rod l , connected with the valve and having collar v , of the plate u , arranged to intercept the downward movement of the rod and to thereby prevent the complete closing of the valve upon its seat, substantially as and for the purpose specified.

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