

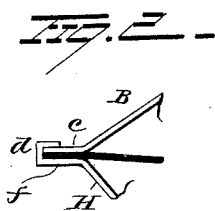
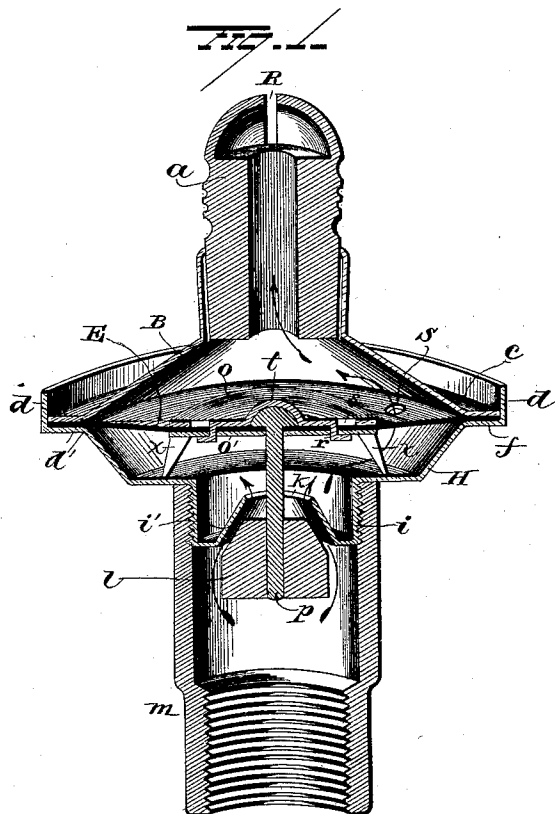
(No Model.)

W. M. JACKSON.

GAS BURNER.

No. 375,071.

Patented Dec. 20, 1887.



WITNESSES
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UNITED STATES PATENT OFFICE.

WALTER MARSH JACKSON, OF NEW YORK, N. Y., ASSIGNOR TO THE GAS CONSUMERS BENEFIT COMPANY OF THE UNITED STATES, OF SAME PLACE.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 375,071, dated December 20, 1887.

Application filed June 11, 1886. Renewed November 5, 1887. Serial No. 251,441. (No model.)

To all whom it may concern:

Be it known that I, WALTER MARSH JACKSON, of New York, in the county of New York and State of New York, have invented certain
5 new and useful Improvements in Gas-Burners; and I do hereby 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
10 the same.

My invention relates to an improvement in gas-burners.

In Letters Patent No. 316,626, granted to me on the 28th of April, 1885, a burner was shown
15 and described in which a shell provided with a gas-tip was separated into two compartments by means of a flexible diaphragm dividing the shells into an upper and a lower gas-chamber, the flexible diaphragm having a valve connected therewith adapted to regulate the flow
20 of gas into the lower chamber and openings therein of less capacity than the opening in the gas-tip, whereby a differential pressure of gas in the two gas-chambers was established
25 and the valve thereby caused to regulate the flow of gas into the chamber under the varying pressures of the supply.

The object of my present invention is to provide a burner which shall operate upon the
30 same general principles as the one above referred to, and which shall possess certain advantageous features of construction whereby the manufacture of an operative burner is rendered more certain.

35 With these ends in view my invention consists in certain features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1
40 represents a vertical central cross-section of the burner, the form shown being that of the ordinary house-burner, the shells being represented as they appear before they are swaged together; and Fig. 2 is a partial view
45 of the burner, showing the edges of the shells swaged together.

The tip *a* is the E. H. lava tip, (bat-wing,) with excavated head, located in the top of the burner, fitting by a beveled plane the whole
50 length of the contact-surface, thus insuring a

close fit and freedom from liability to leak or be accidentally displaced. I am not limited to a construction of this tip of lava, but can furnish the identical thing in effect, made of
bronze, brass, iron, or other suitable substance; 55 but prefer the lava for general use on coal-gas.

The upper shell is represented by the letter B, having a flat shoulder, *c*, or a lip projecting outward, the object of the flat shoulder being to press upon the flexible diaphragm E and
60 hold it gas-tight against the flat shoulder *f* on the lower shell, H, the lip *d* being intended to be turned over and clamped upon the edge of the upper shell, thus locking the two shells together and fixing the diaphragm between
65 them gas-tight. The inner edges of both flat shoulders are slightly rounded, as shown at *d'*, to prevent them from cutting the diaphragm when the shells are swaged together, and serving the same purpose in use when the dia-
70 phragm flexes on its center to control the pressure of the gas.

The base of the lower shell is provided with a projection, *i*, having a concave seat, *i'*, formed in its end, through the center of which is the
75 hole *k*, naturally four thirty-seconds of an inch in diameter. The projection *i* is threaded to receive and fit closely the pillar *m*, and the pillar *m* is provided with a threaded apex to receive the projection *i* and a female thread
80 at its base for attachment to the gas-fixture. The pillar is screwed and leaded to the projection, and, fitting it perfectly, makes a fixed and gas-tight joint.

To the central portion of the diaphragm E 85 are fitted two thin metallic plates, *o* *o'*, one on the upper the other on the lower side. These two plates are locked together by projections *r*, punched out and bent down from the upper plate, *o*, passing through slots *s* in the lower
90 plate, and turned over against the under surface of the lower plate, *o'*, upon the under side, and in the center of the upper plate is a small recess, *t*, made to receive the head of the pin
95 *p*, the pin passing through the diaphragm and then through a hole made for it in the lower plate. Thus the head of the pin holds the diaphragm down in the center, the head itself resting in the concavity in the upper plate, the pin itself passing downwardly through the 100

center of the lower shell and the hole k in its extreme base, and terminating in a weight, l , having a conical head made the same bevel or angle as the concave seat i' in the projection i .
 5 This weight is swaged or driven onto the pin by a machine which measures an exact distance, so that the weight is invariably placed the same distance from the diaphragm. Projecting from the lower side of the lower diaphragm-plate, o' , are sharp-pointed legs x ,
 10 which rest upon and at or nearly at right angles with the floor of the lower shell, H . These legs are preferably parts of the plate, and are punched out and bent down. The object of the legs is to prevent the weight l from exerting a stretching action upon the diaphragm by being constantly pendent, and drawing
 15 down when the burner is not in use and when there is no pressure in the pressure-regulating chamber beneath the diaphragm to hold it up. Thus, then, the distance between the point of contact of the legs and the point of contact of the cone of the weight with its seat determines the required motion to regulate the pressure
 20 of gas.

By the improved construction the diaphragm is countersunk in effect, and the flange d holds it true to the center while it is being secured. This feature, in connection with the simple and
 30 effective means for securing the diaphragm-plates to the diaphragm and supporting them in such a manner as to prevent undue strain on the diaphragm, combine to make the burner perfect in its action, durable, and hence economical.
 35

The relative sizes of the opening S in the diaphragm and R in the gas-tips, which are to be carefully determined in order to create the differential pressures necessary to operate
 40 the diaphragm and control the flow of gas, have heretofore been fully set forth and need not be discussed herein, as they form no part of my present invention.

It is evident that slight changes might be resorted to in the form and location of the several parts described without departing from the spirit and scope of my invention; hence I do not wish to limit myself strictly to the construction herein set forth; but,
 45

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

1. In a gas burner, the combination, with the shells, and a diaphragm separating the in-

terior of the shells into gas-chambers, of a 55 pair of interlocking diaphragm-plates, one located above and one below the diaphragm, one of the plates having tongues or spurs cut from the plate, and the other having slots adapted to receive the said tongues or spurs, 60 substantially as set forth.

2. In a gas-burner, the combination, with the shells, and a flexible diaphragm separating the interior of the shells into gas-chambers, of a valve-stem, a pair of interlocking 65 diaphragm-plates, the upper plate being provided with a recess in its under side adapted to receive the head of the valve-stem, and the under plate provided with a perforation for the passage of the valve-stem, substantially as 70 set forth.

3. In a gas-burner, the combination, with the shells and a flexible diaphragm separating the interior of the shells into gas-chambers, of a pair of diaphragm-plates, one located 75 above the diaphragm and the other below the diaphragm, one of said plates being provided with projections passing through the diaphragm and through slots in the other plate for locking both plates to the diaphragm, the 80 lower plate being provided with legs adapted to rest on an interior shoulder or floor of the burner-shell, substantially as set forth.

4. In a gas-burner, the combination, with the shells, a flexible diaphragm, and a pair of 85 diaphragm-plates located one above and one below the flexible diaphragm, of a gas-regulating valve-stem suspended from the flexible diaphragm, the head of the valve-stem being located in a recess in the under side of the upper 90 plate and resting on the diaphragm, substantially as set forth.

5. The combination, with a sheet-metal burner-shell the lower section of which is bent downwardly, inwardly, and upwardly, the upwardly-extending portion forming a valve-seat, of a diaphragm carrying a valve, the latter adapted to be moved against the valve-seat by the pressure of gas against the diaphragm, substantially as set forth. 100

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

WALTER MARSH JACKSON.

Witnesses:

F. O. WILLEY,
 GEO. T. GADEN.