(No Model.)

W. M. JACKSON.

GAS BURNER TIP.

No. 386,588. Patented July 24, 1888.

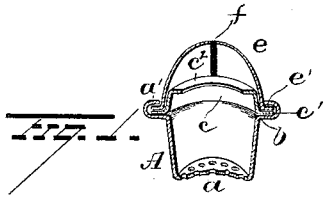


Fig. 1.

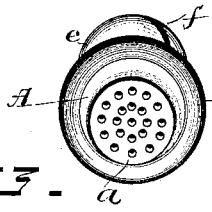
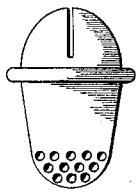


Fig. 2.

Fig. 3.



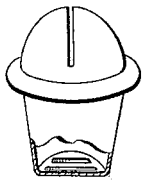


Fig. 5.

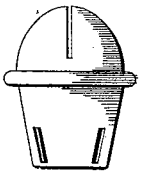


Fig. 6.

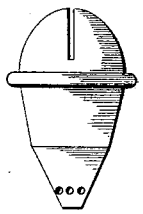


Fig. 4.

Witnesses
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Inventor,
Walter M. Jackson.
By his Attorney
H. A. Seymour.

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 TIP.

SPECIFICATION forming part of Letters Patent No. 386,588, dated July 24, 1888.

Application filed April 14, 1887. Serial No. 234,828. (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 new and useful Improvements in Gas-Burner Tips; 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 the same.

My invention relates to an improvement in tips for gas-burners, the object being to combine with a gas-tip, preferably made of sheet metal, an integral regulator that will break up the direct current of gas, and by the subdivision of the moving column of gas reduce the delivery-pressure at the tip, and in this way render the combustion of gas uniform under varying pressures in the service-pipe.

A further object is to provide a gas-tip that from its manner of construction renders unnecessary the employment of screens of gauze-wire that are usually placed in the pillars of gas-burners as a check to prevent gas from "blowing" at the burner-tip, and also to afford a device that can be readily cleaned in case there is a deposit of impurity that has a clogging action, and which renders ordinary gauze-screens useless as well as the burner in which they are placed.

With these objects in view my invention consists in a closed tip-shank having perforations or restricted openings therein to check and break up the direct flow of gas in its passage from the pillar below the tip to the burner-slit.

My invention further consists in certain features of construction and combinations of parts that will be hereinafter described, and pointed out in the claim.

Referring to the drawings, making a part of this specification, Figure 1 is a sectional perspective view of the burner-tip in section through the center. Fig. 2 is a perspective view of the burner-tip with the lower surface shown. Figs. 3, 4, 5, and 6 are views showing modified forms of the improved burner-tip.

In Figs. 1 and 2, in which the preferred form of tip is shown, A represents the shank or slightly conical wall adapted to fit the upper end of the burner-pillar. This shank is cut, struck, or pressed into form from sheet metal, and has its lower end closed with a head, *a*, that is integral with or of the same piece of material of which the tapered wall of the shank is made. The upper edge, *b*, of the shank A is given an offset laterally, and then upwardly to produce a seat on which the short conical ferrule *c* is supported, the flange *c'* of this piece *c* affording a base on which it rests.

On the upper surface of the flange *c'* the conoidal head *e* of the tip is seated, its flange *e'* being of such a relative diameter from edge to edge that it will neatly fit into the recess formed by the upturned flange *a'* of the shank A, these several parts being secured together by the turning down of the flange *a'* upon the flange *e'* of the conoidal head *e* to produce a neat rimmed edge.

The conoidal ferrule *c* has an inwardly-extended flange, c^2, formed on its upper edge, this conoidal ferrule being intended to approach near the inner surface of the conoidal head of the tip, and in effect to form an excavated head that by its deflection of the gas passing through it and reacting on its flanged upper edge, c^2, spreads the gas evenly as it passes through the slit *f* of the tip-head, and on ignition an even fan-like flame peculiar to the bat-wing burner is produced, providing a current of gas of regulated proper pressure is supplied.

In the form of tip just described the lower end or head, *a*, is given a concave or inwardly-dished form, the surface being perforated in concentric circles that are such a distance separated as to produce a screen, the size of the perforations being such as to provide a check to the current of gas which is broken up into numerous small jets, the combined column of which furnishes a supply of gas to the burner-slit immediately above it, the conoidal ferrule *c* coacting with the perforated lower end of the tip-shank to produce an even regulated pressure at the burner-slit and afford a flame that is devoid of the ragged edges and blue core shown in the flame of a gas-tip of usual form, that is not provided with a means

of regulation exterior to itself. In the other figures an integral closed lower end of the tip-shank is shown with a concave head, a convex or exteriorly rounded head, a conoidal or tapering closed lower end, as well as a flat disk to close the lower end. I have shown these several forms to illustrate the various shapes that are available to carry into effect the principle involved, which is the closed lower portion of the body of the shank. Any of the several forms shown, or other forms that are modifications of these, may be employed. I prefer to perforate the closed lower end or head, or the head and body, or the side of the lower end of the shank may be perforated to produce a number of small holes, that are preferably arranged in regular order to allow spaced intervals between them, the object being to produce a fine sieve like screen, through which the gas will pass and be measurably retarded by frictional contact with the edges of these holes, and in case the end of the tip-shank is dished inwardly to render it concave, the gas in its passage through the perforations made in the concave surface of the head will be deflected from a direct course to the tip-slit and by this break in direction of the subdivided current a regulation of flow is effected and a full clear light is afforded at the tip-slit, as has previously been described.

It is evident that in place of the series of perforations made in the lower portion of the closed tip-shank one or more slits may be made through the wall of the shank or its head, as shown in Figs. 6 and 5, to restrict the flow of gas and measurably obtain the same results. I am aware that burners have been used in which two separate slitted tips have been employed—one as a regulator the other as a burner; hence I make no claim to such a construction.

By perforating or slotting the lower closed end of the tip the direct current of gas is broken up and the delivery-pressure at the tip reduced, and in this way the combustion of gas is rendered uniform under varying pressures; and by the arrangement of the conoidal gas-regulator within the head a substantially hemispherical gas chamber is formed in the extreme upper end of the head, into which the gas under the reduced pressure enters. As the gas issues from the slot or opening formed by flange c^2, it impinges against the converging surfaces of the inner surface of the head of the tip, which operates to deflect the flow against the flattened upper surface of flange c^2, causing the gas to flow uniformly toward and through the flame-slot in radial lines in all directions within the boundaries of the flame-slot.

I do not desire to restrict myself to the use of the closed tip-shank, in combination with the conical ferrule c, which affords a substitute for an excavated head when placed in the tip above the screen, as this may be dispensed with or possibly modified in form. The proportion of size of the holes or number of the same may give a fair degree of regulation of the flame.

Other slight changes might be made in the details of construction of this burner-tip without departure from the scope of my invention. I do not therefore wish to restrict myself to the exact forms shown; but,

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

As a new article of manufacture, a tip for gas-burners, consisting of a slightly-conical shank having a perforated lower end and a flanged upper end, a ferrule having an outwardly-projecting flange adapted to rest in contact with the flange of the shank and an inwardly-projecting flange for deflecting the gas in its passage to the exit-slit in the head, and the rounded or curved head having a slot extending across the top and sides of the head, the ends of the slot being in or approximately in a plane with the inwardly-projecting flange, substantially as set forth.

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

WALTER MARSH JACKSON.

Witnesses:
WILLIAM D. TILDEN,
GEO. T. GADEN.