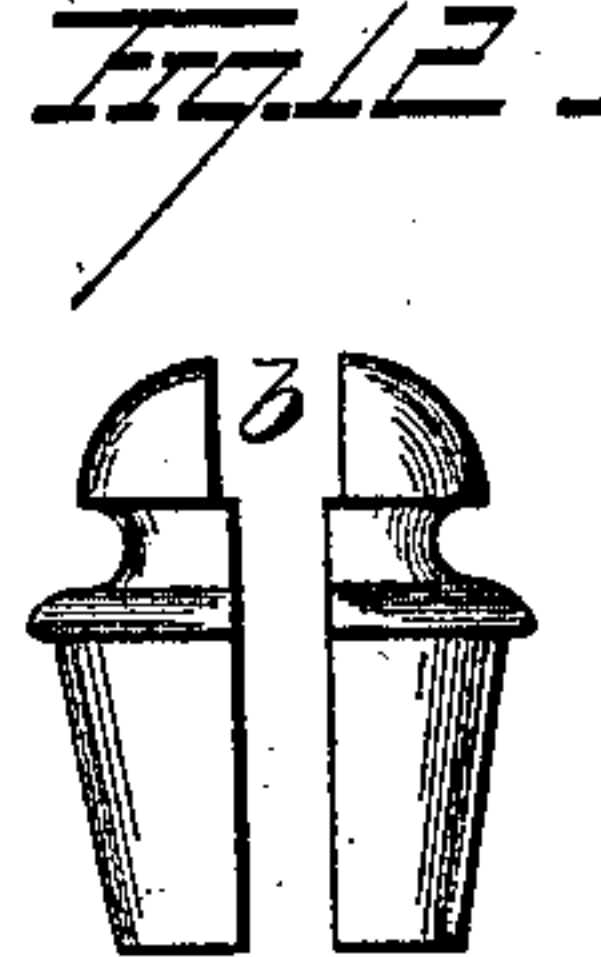
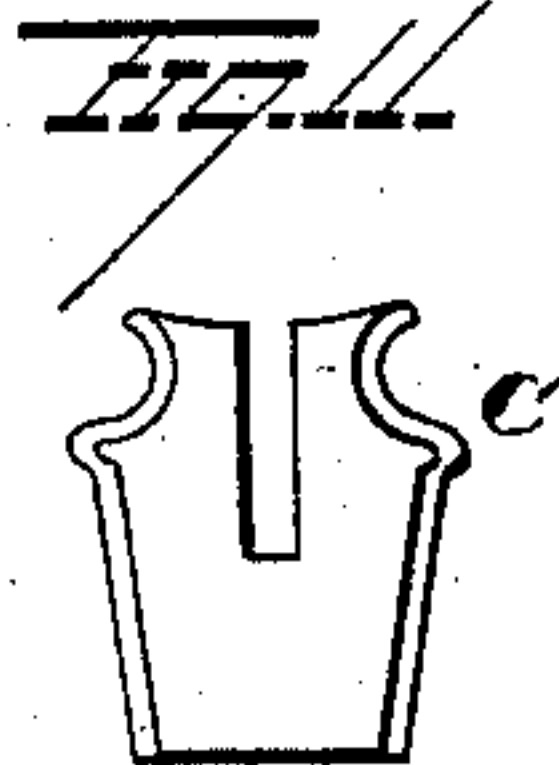
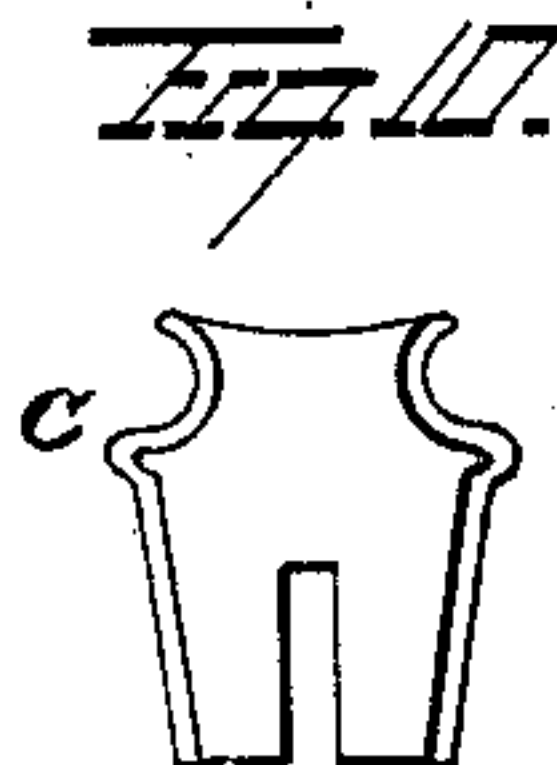
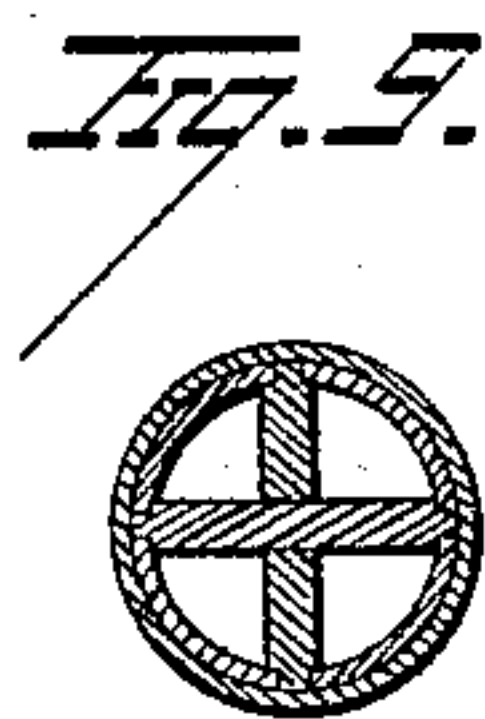
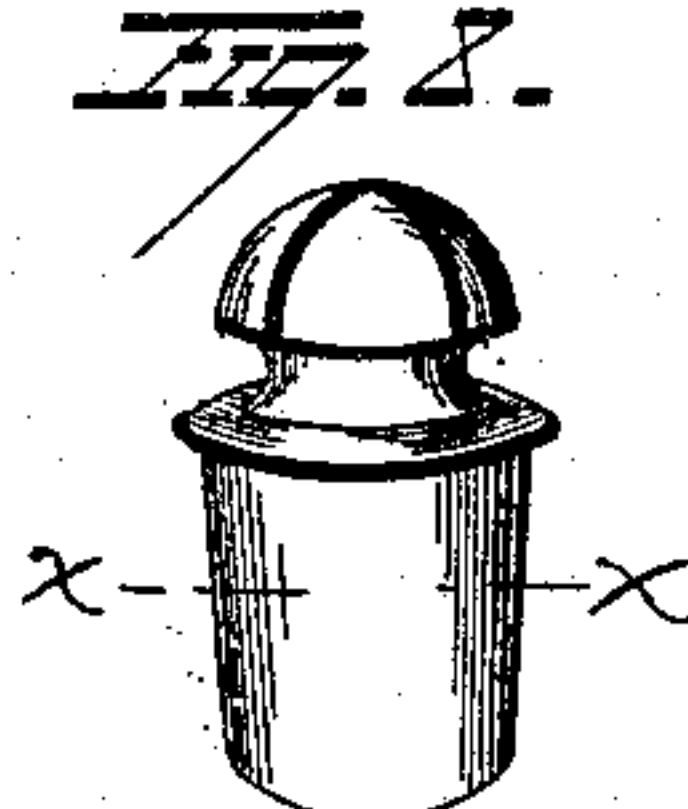
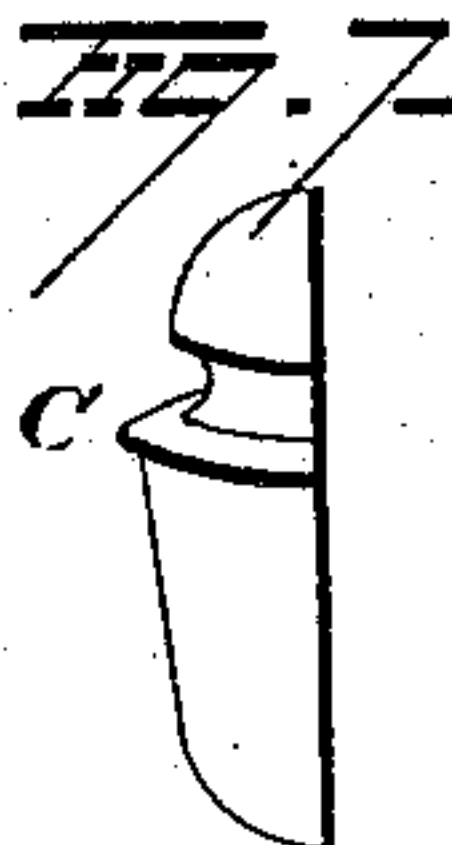
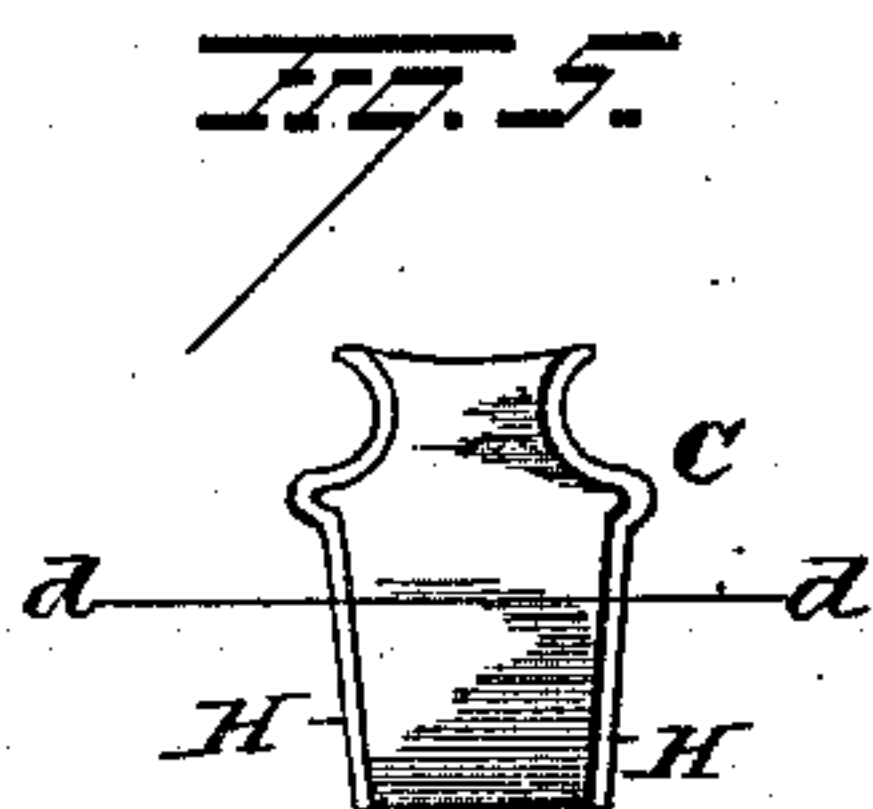
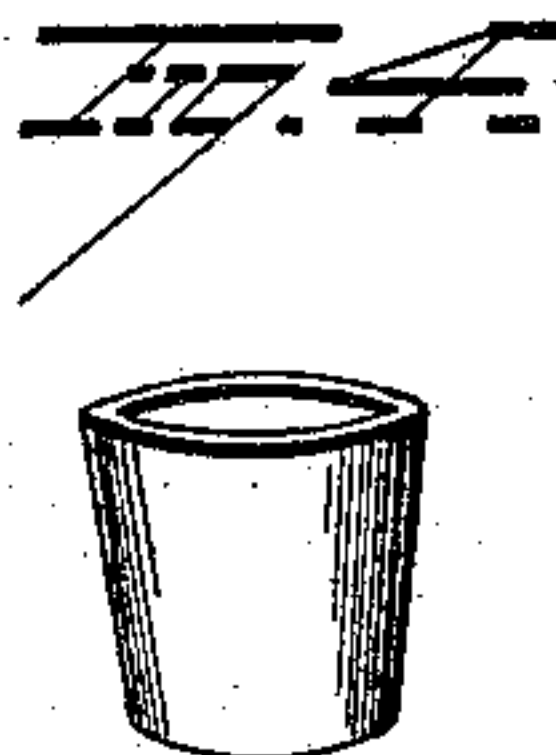
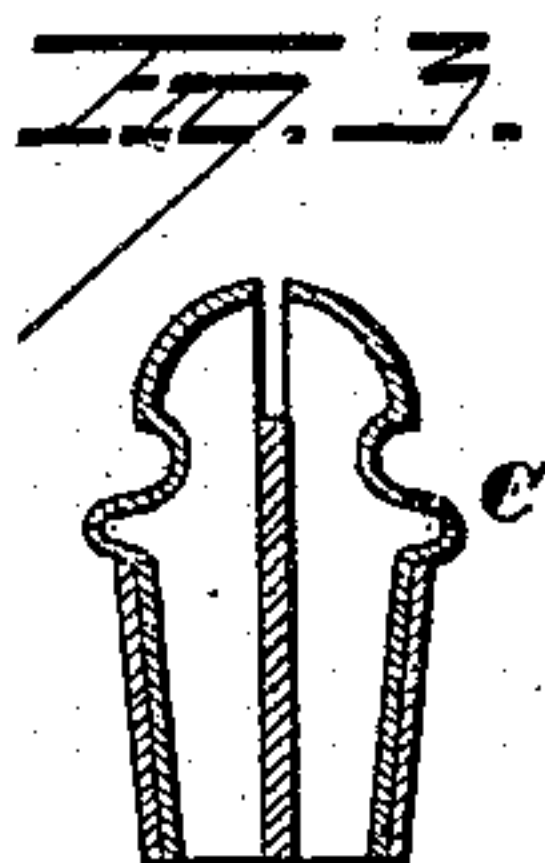
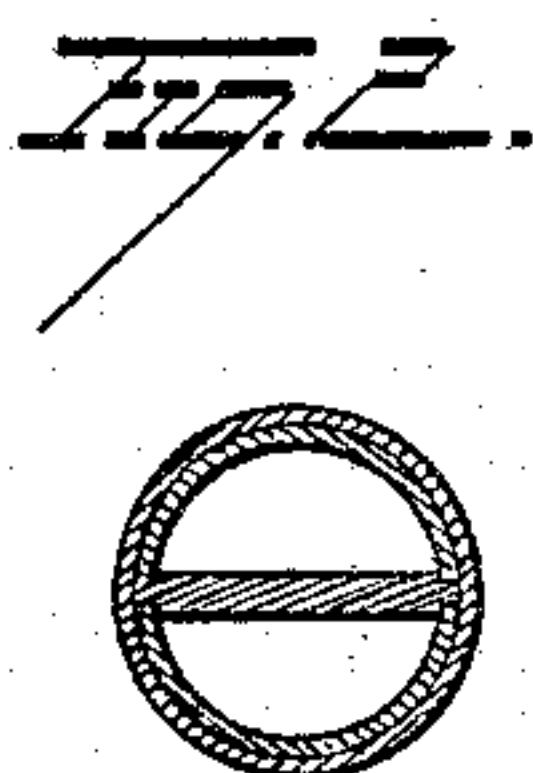
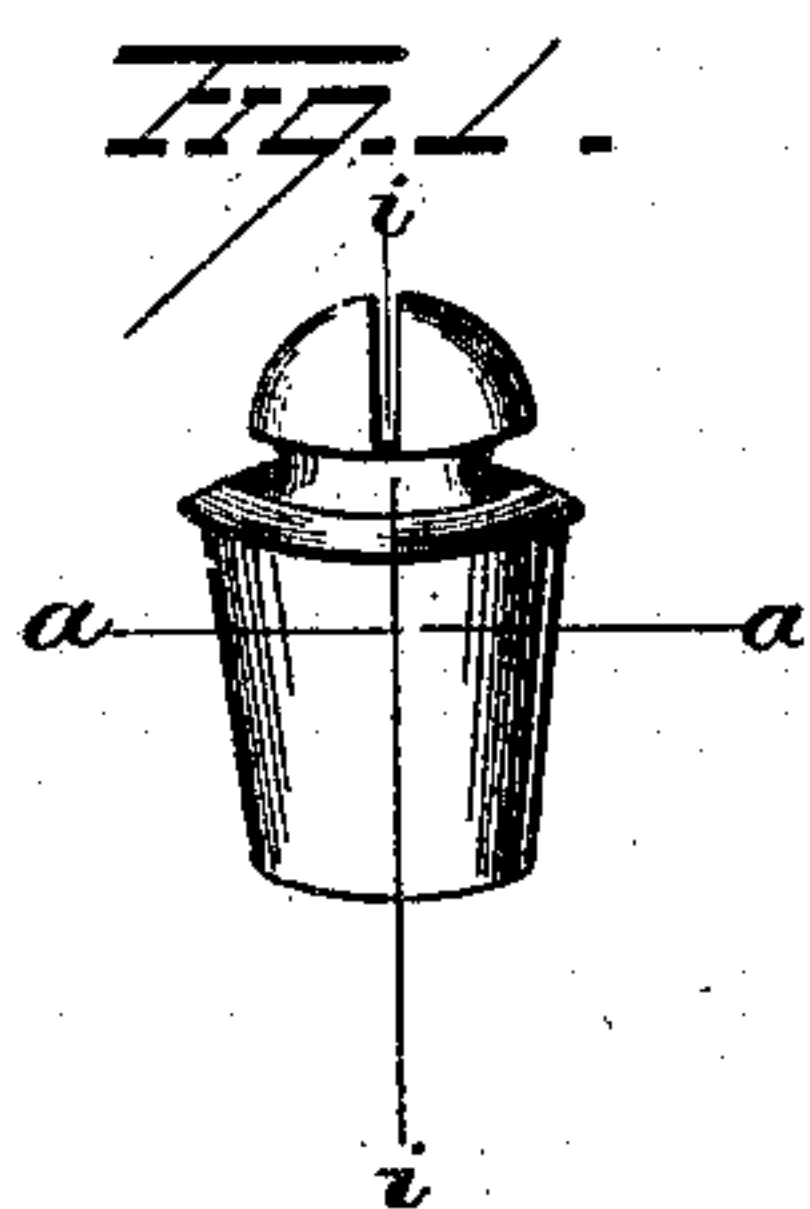


(No Model.)

W. M. JACKSON.
TIP FOR GAS BURNERS.

No. 361,160.

Patented Apr. 12, 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.

TIP FOR GAS-BURNERS.

SPECIFICATION forming part of Letters Patent No. 361,160, dated April 12, 1887.

Application filed June 9, 1886. Serial No. 204,636. (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 Tips or Outlets for 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
10 and use the same.

My invention relates to an improvement in tips or outlets for gas-burners.

The object is to provide a tip or outlet for gas-burners which may be easily adjusted in
15 any ordinary pillar or receptacle, will not heat excessively, and which can be constructed uniformly and at a very moderate initial cost.

A further object is to provide a slot or series of slots or gas-exit-openings, which will emit an
20 even and symmetrical flame, either singly or intersecting, and to construct such slots in tips of such material as will render them durable and not likely to be easily broken or damaged.

With these ends in view my invention consists in the parts and combinations of parts, as will be more fully described, and pointed out in the claims.

To make my invention clearly understood,
30 Figure 1 represents my improved tip complete as it appears ready for its insertion into the pillar. Fig. 2 is a horizontal cross-section of same, taken at the dotted line *a a* in Fig. 1. Fig. 3 is a vertical central cross-section of same taken transversely through the slot, as
35 indicated by dotted line *i i* in Fig. 1. Fig. 4 is a representation of the binding-shell. Fig. 5 illustrates the locking-plate. Fig. 6 is a horizontal cross-section of the locking-plate, taken
40 at dotted line *d d* in Fig. 5. Fig. 7 shows a half-shell struck complete and ready to be bound to the other half. Fig. 8 is an illustration of a tip designed to emit crosscut or intersecting flames. Fig. 9 is a horizontal cross-
45 section of same, taken at dotted line *x x* in Fig. 8. Figs. 10 and 11 show the manner of constructing an intersecting lock-plate for cross-cut slots. Fig. 12 is a modification showing

the two halves of the tip proper without the locking-plate, and intended to be held together
50 by the binding-shell only, the entire tip constructed of three pieces, instead of four or more, the slot created by being struck, one half in one side, the other in its mate.

Gas-tips have heretofore been made entire
55 of one piece molded from clay, the slot sawed, and the tip subsequently baked, and have also been made of iron, brass, or other metal, the latter having their slots formed by sawing or punching. The principal objection to the clay
60 or "lava" tip, as it is usually called, is its fragile nature, being easily broken, and the edges of its slot being liable to injury by being chipped, thus destroying its ability to produce symmetrical flames. Its high cost is another ob-
65 jectionable feature. Lava tips are generally preferred to those made of metal, because they are non-conductors of heat and do not become detrimentally hot, while the iron, brass, or metal tips heretofore used are decidedly ob-
70 jectionable because of their becoming highly heated, and also because of the difficulty experienced in forming the slots. I obviate these objectionable features by making the tip of a series of longitudinal sheet-metal sections
75 struck, cut, or pressed into shape, and may do away with sawing by creating a mechanical slot which is very nearly exact and practically uniform. Thus I have a large gasway within
80 my tip, and, its walls being very thin, I expose more internal and external surface for radiation than I have absorbing or heat-conducting capacity.

Lava tips have heretofore been preferred to metal because of their freedom from the fea-
85 ture of becoming excessively hot and their comparative less cost.

I claim, by means of my invention, to produce all that is desirable in both lava and metal as heretofore constructed, with none of
90 the objectionable features of either.

By the use of thin metal I am enabled to make an exceedingly light and durable tip, which does not heat excessively by cutting, striking, or pressing to produce the various
95 parts.

I first cut from the stock selected a half-tip, as shown in Fig. 7. This half-tip is made not quite equal to a half-circle and struck concavo-convex; so when two, which form the body of the tip, are placed with their concave surfaces opposed they form a hollow chamber. To make a complete circle they must be slightly separated, creating an open line between the two surfaces. I fill this line and close the circle by the insertion of the locking-plate shown in Figs. 5 and 6, and at the same time fix the depth and diameter of the slot or gas-outlet by the particular dimensions of the locking-plate. This locking-plate is also struck or cut from thin stock, and has a countersunk edge running perpendicularly from top to base on both surfaces, the letters H H in Fig. 5 indicating the countersink. (Better shown in Fig. 6.) The two edges of the half-tips articulate along the countersink and close the circle complete, the top of the locking-plate forming the limit of the gas slot or outlet and the thickness of the locking-plate determining the width of the same. To fasten the two half-shells together in combination with the locking-plate, I employ the binding-shell shown in Fig. 4, which is a hollow tapering cylinder drawn out of thin metal.

The locking-plate and half-shells have a slight re-enforce, (indicated by the letter C in Figs. 1, 3, 5, 7, 8, 10, 11, and 12.) The object of this re-enforce or expansion is to cover and hide the upper edge of the binding-shell; also to form a joint against the same after the half-shells and locking-plate are driven or swaged together, as shown in Fig. 1.

The half-shells, locking-plate, and binding-shell are all made cylindrical and tapering, in order that the combination may be readily adjusted gas-tight into any ordinary pillar or circular receptacle. After the half-shells, locking-plate, and binding-shell are combined and the device complete, I plunge the whole into a suitable cement or corrosive fluid, and placing a large number together throw them into a shaking or revolving rattler, thus finishing them for market, the object of the cement or corrosive fluid being to seal all joints gas-tight and firmly bind all parts in permanent union.

It is obvious that other ways of constructing my tip may be employed than those described and shown in this specification and drawings without departing from the spirit of my invention; hence I do not wish to limit myself to the particular mechanical devices described and shown as modifications in Figs. 8, 9, 10, 11, and 12.

Fig. 8 is a tip constructed with a double quadrangular leafed locking-plate, (shown in central cross-section in Fig. 9,) the device made of two flat plates locked together by means of slots alternately located in the top and base, as shown in Figs. 10 and 11, and when put together form four lateral wings. To conform to the particular construction of this quad-

angular plate, I construct the tip-shells in quarters instead of halves, and swage or drive the whole together inside of a binding-shell, as described, thus creating an intersecting or four-way gas-outlet slot throwing an intersecting or cross-cut flame, the whole device being made of seven pieces instead of four.

Fig. 12 illustrates another modification wherein I employ only three pieces. In this case I do away with the locking-plate entirely, forming the gas-outlet slot by striking in the half-spherical head of the tip-shells a flat sharp depression, (indicated by the letter b.) Thus when the edges of the shells are in contact the two sharp depressions determine the gas-outlet slot. The tip-shells are bound together by the binding-shell same as before described.

It is obvious that I can strike the tip-shells in thirds, quarters, fifths, or other divisions, thus creating intersecting gas-outlet slots and many varieties of intersecting flames, or can make the center solid, and thus stop off the gas from central exit, causing even intersecting or winged flames.

It will be readily seen from the foregoing description that when the tip-shells are cut, struck, or pressed in perpendicular sections I can produce any shaped slot desired—elliptical, even, straight, curved, uniform, or irregular—and that a tip constructed of thin sheet metal, drawn, struck, or pressed, is a novel and superior production.

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

1. A gas tip or outlet consisting of two or more longitudinal sections cut, struck, or pressed out of sheet metal, and a binding-shell embracing said sections and locking them together, substantially as set forth.

2. A gas tip or outlet consisting of a body composed of two or more longitudinal sections cut, struck, or pressed out of sheet metal, and a binding-shell embracing said sections and locking them together, the said body having a slot for the egress of gas, substantially as set forth.

3. A gas tip or outlet consisting, essentially, of a body composed of two or more sections, a locking-plate located within said body, and a binding-shell embracing the body for locking the parts together, substantially as set forth.

4. A gas-tip consisting of a body having intersecting slots for the exit of gas and composed of two or more sections, an angular locking-plate located within said body, and a binding-shell embracing said body and locking the parts together, substantially as set forth.

5. A gas-tip consisting of a body composed of two or more longitudinal sections, a locking-plate located within the body, with its side edges resting between the edges of the body-

sections, and a binding-shell embracing the body and locking the parts together, substantially as set forth.

5 6. A gas-tip consisting, essentially, of a body composed of two or more longitudinal sections, the latter being separated a slight distance to form a slot or means of exit for the gas, and a binding-shell embracing the sections, substantially as set forth.

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

WALTER MARSH JACKSON.

Witnesses:

GEO. T. GADEN,

GEO. M. WARD.