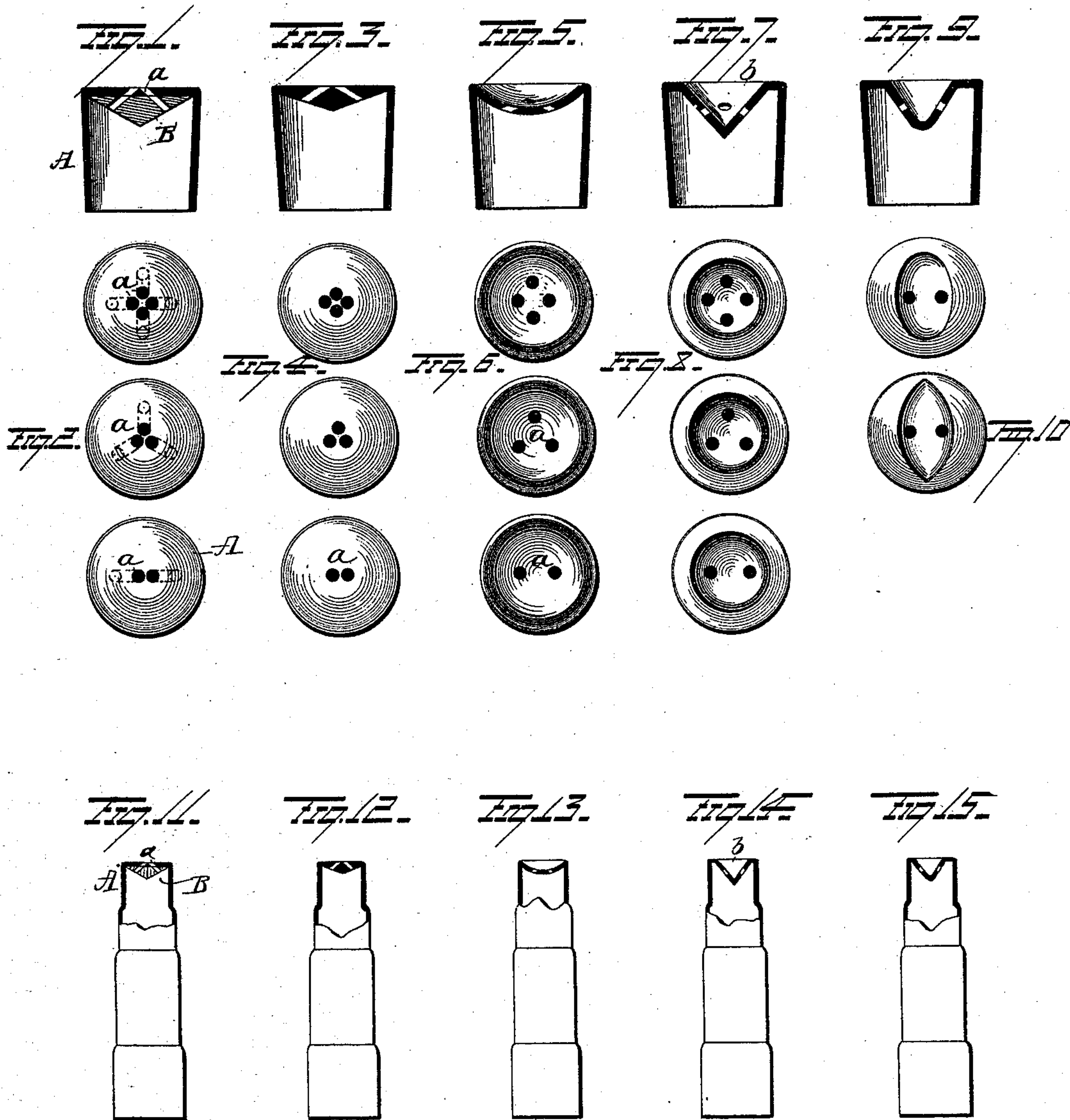


(No Model.)

W. M. JACKSON.
METHOD OF FORMING GAS OUTLETS.

No. 400,683.

Patented Apr. 2, 1889.



Witnesses
S. W. Nottingham
V. E. Hodges

Inventor.
Walter M. Jackson.
By his Attorney
H. A. Symmon.

UNITED STATES PATENT OFFICE.

WALTER MARSH JACKSON, OF NEW YORK, N. Y.

METHOD OF FORMING GAS-OUTLETS.

SPECIFICATION forming part of Letters Patent No. 400,683, dated April 2, 1889.

Application filed November 6, 1888. Serial No. 290,103. (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 the Method of Forming Gas-Outlets; 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 apper-
10 tains to make and use the same.

My invention relates to an improvement in the method of forming gas-outlets.

In Patent No. 381,380, granted to me April 17, 1888, I claim a process consisting in first
15 forming a series of openings through the flat or externally-convex surface of the top of a closed pillar or tip and subsequently changing the directions or axis of said openings by depressing or countersinking the top. By such
20 process, in order to give a material change to the axis of the openings, the top of the pillar must be quite thick and of a single piece of metal, or the countersink quite deep. In the present process the top can be thickened by
25 separate blocks, and the depth of the cavity in the top is immaterial, as the holes are formed after the end of the tip has been shaped.

In the accompanying drawings, Figure 1 is a vertical section through a tip having the separate conical disk. Fig. 2 shows plan views of the same with two, three, and four perforations. Fig. 3 is a vertical section of a second form. Fig. 4 shows plan views of the same. Figs. 5 and 6 show vertical section and plan
35 views of a third form. Figs. 7 and 8 show similar views of a fourth form. Figs. 9 and 10 are similar views of a fifth approved form; and Figs. 11, 12, 13, 14, and 15 show the heads applied to gas-pillars.

40 A very large class of gas-consumers prefer to use what is known as the "Scotch tip" or "jet-outlet," which consists, broadly, of two converging perforations meeting in the top of a tip or pillar. It is therefore desirable that such
45 outlets should be made properly to insure the greatest amount of light with the least consumption of gas and with freedom from smoke when passing gases of high candle-powder. In order to obtain such results, it is necessary to
50 so construct the apertures or gas-outlets that the gas cannot rise through them in a vertical

line, but so that instead it shall take the direction of the apertures, and thus be directed into each other's current or discharge at the extreme apex of the apertures. Now a tip- 55 head or a gas-burner pillar-head is necessarily too thin when formed from sheet metal by drawing or other means to afford stock enough to obtain the kind of perforation or aperture desired. It therefore becomes necessary to 60 change the form of the inner surface of the head of the tip or pillar to secure the desired result. This change may be made in two ways, both of which accomplish the same result—one by inserting a separate piece of stock 65 or a disk in the tip or pillar and driving the same snugly into position against the under surface of the head, and the other by forcing the metal, after drawing or at the time of drawing, into a head the inner surface of which 70 is convex, accomplished by forcing the metal by dies or other suitable means and then drilling the holes or apertures. In other words, in one case the result is accomplished by the use of two distinct pieces—the head and the 75 disk—and in the other by a single integral piece properly shaped. The former construction is illustrated in Figs. 1 and 11. In these the head A is flat, and being drawn from sheet metal is too thin to accomplish the result 80 sought, and so a disk, B, preferably pointed, is inserted in the tip or pillar and driven snugly against the under surface of the head. In the case of tips the shank may be shrunk 85 in after the disk is inserted, and thus the desired taper may be given to the shank to fit a pillar when screw-threads are not used. Now the perforations *a*, two, three, or four, whatever the number may be, are oblique, 90 converging at the apex or the head into a single aperture. In all the other constructions the tip or pillar is made in one integral piece. In Figs. 3 and 12 the inner surface is made convex by forcing by means of dies or similar instruments. The perforations are then 95 drilled in, as before. The head shown in Figs. 5 and 13 is also formed by forcing. In Figs. 7 and 14 a circular countersink, *b*, is made in the center of the head and provided with two or more perforations, *a*, while in Figs. 9 and 100 15 this countersink is preferably oval or elliptical, with two holes *a* therein. By forming

the heads with several perforations a duplex, triplex, or other form of flame results, according to the number of the perforations. The general form of the tips and pillars is the same as those in ordinary use, with the exception of the form of the head, and this constitutes the feature of improvement.

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

1. The herein-described method of forming gas-outlets, consisting in forcing the head of a closed sheet-metal pillar or tip into shape and at the same time or subsequently giving the under or inner surface of the head a convex shape, and then making apertures through the latter in such directions that none of the escaping gas shall pass vertically while in the apertures, substantially as set forth.

2. The herein-described method of forming gas-outlets, consisting in forcing the head of a closed sheet-metal pillar or tip into shape, then thickening the head or apex of the same by the insertion of a separate piece of material, and finally making apertures through the latter in such directions that none of the escaping gas shall pass vertically while in the apertures, substantially as set forth.

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

WALTER MARSH JACKSON.

Witnesses:

GEORGE T. GADEN,
GEORGE M. WARD.