

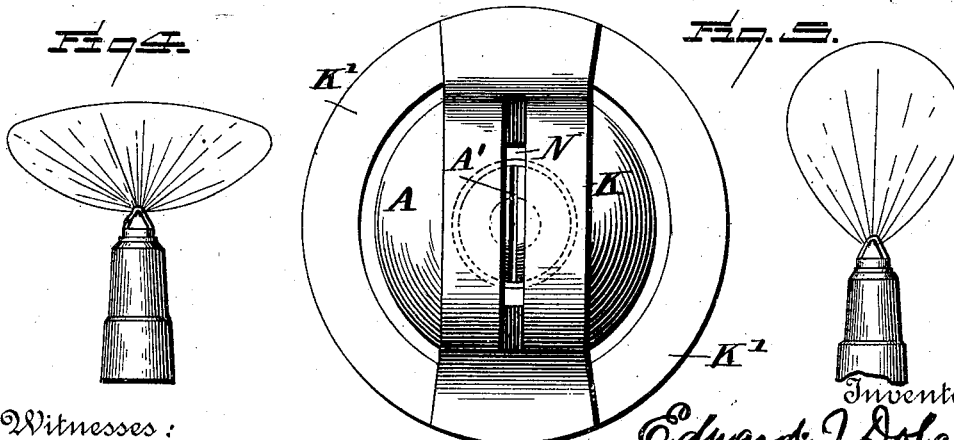
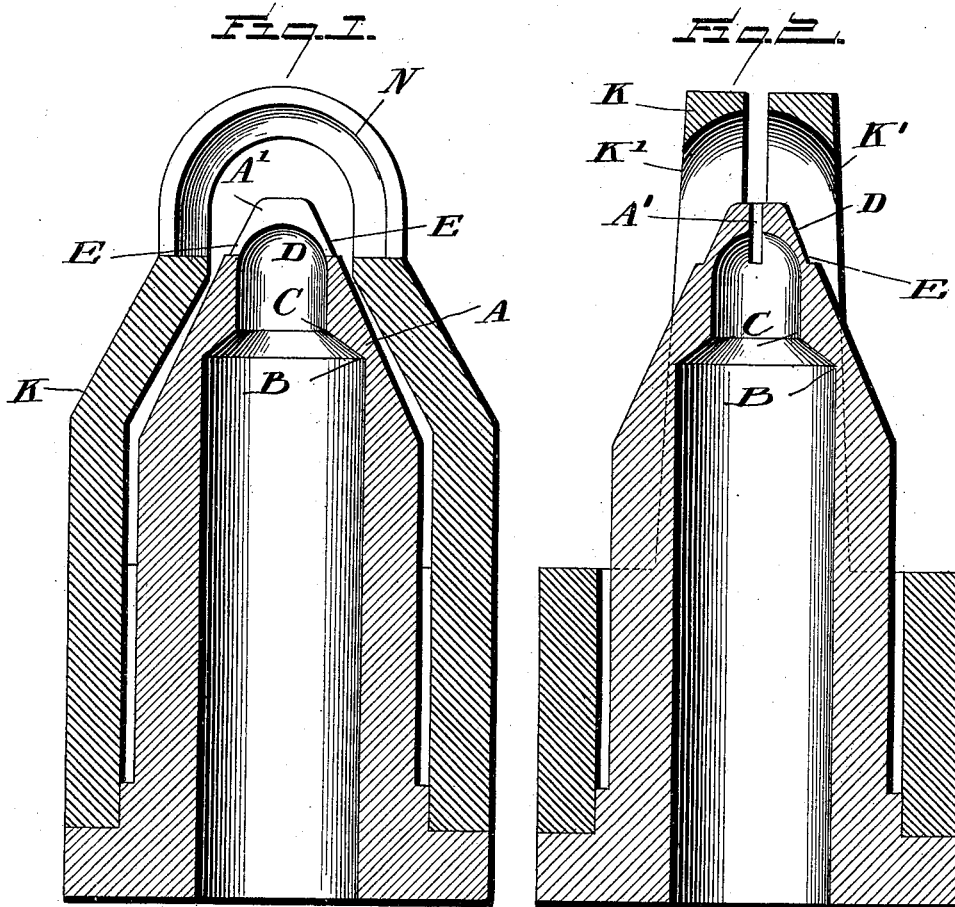
No. 649,278.

Patented May 8, 1900.

E. J. DOLAN.
ACETYLENE GAS BURNER.

(Application filed Jan. 4, 1900.)

(No Model.)



Witnesses:
L. C. Mills.
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Fig. 5.
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UNITED STATES PATENT OFFICE.

EDWARD J. DOLAN, OF PHILADELPHIA, PENNSYLVANIA.

ACETYLENE-GAS BURNER.

SPECIFICATION forming part of Letters Patent No. 649,278, dated May 8, 1900.

Application filed January 4, 1900. Serial No. 375. (No model.)

To all whom it may concern:

Be it known that I, EDWARD J. DOLAN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Acetylene-Gas Burners; and I do 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in gas-burners, and especially to a burner adapted for use in burning acetylene gas or gases rich in hydrocarbon, and has for its object the production of an improved flat-flame burner, whereby acetylene gas may be burned without causing deposit of carbon or smoking.

The general type of duplex burners commonly in use are objectionable on account of their being expensive to make and of their liability to get out of order quickly, the deposit of carbon on the tips causing non-impingement. I have found from experimenting that a perfectly-formed and upwardly-spreading flame can be produced by making the extreme top walls of the under gas-tip considerably thicker than the sides and that the shape of the flame may be varied at the point by flattening the top of the tip or slightly hollowing the same. The shape of the flame produced by my improved burner has an upwardly-spreading angle, which is the shape I prefer in this type of burner. I find that by varying the depth of the slot in the end of the gas-tip the shape of the flame may be varied. A deep slot—for instance, one-half the radius of the diameter of the tip—will produce a wide or highly-spread flame, whereas a slot of a less depth will cause a flame considerably longer and narrower.

Another advantage derived in the present invention, in which the walls of the tip are thicker at the top of the slot than at the sides, is that the flame is caused to become gradually hollow in the center as it is turned down, thereby preventing the flame from going together and forming a point of smoking gas.

I have found also that an upwardly-spreading flame is a great improvement over wide or more highly spreading flames, especially when burning acetylene gas, for the reason that it causes a stronger and more concentrated upward draft around the burner, thereby keeping it cool and feeding to the gas air of a lower temperature, it being understood that acetylene gas gives the best illuminating results when the burner is kept cool and also the supply of air mixing with it.

My invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this application, and in which—

Figure 1 is a central longitudinal sectional view through the burner in the line of the slot. Fig. 2 is a central longitudinal view through the burner at right angles to the slot in the tip. Fig. 3 is a top plan view of the burner and tip. Fig. 4 is a detail view showing a wide-spreading flame caused by a deep slot; and Fig. 5 is a narrower and upwardly-disposed flame, caused by having a shallower slot in the tip.

Reference now being had to the details of the drawings by letter, A designates the body portion of the burner, having a tapering tip which is slotted at A'. The inner wall of the bore of the burner tapers from the points B inward and upward to the points C C, and thence the bore in a contracted form continues toward the tip of the burner and terminates in a curved wall D, through which wall the slot A' leads, as shown in the drawings. It will be noted that the walls of the slot A' are thicker above the curved end of the bore than at the sides at E, thus allowing a less frictional resistance to the gas which passes out of the slot at the sides than through the slot directly above, thus equalizing the pressure at all parts of the slot. By extending the bore of the burner well up into the tapering tip and making the slot A' in the tip so that its lower end will be through the thinnest portion of the wall of the burner-tip a flame with an upwardly-spreading angle is produced, as illustrated in Fig. 5 of the drawings. This is the preferable shape of the flame, which is perfectly formed without broken parts or tails, this being produced by having the sides of the slot, as illustrated, thinner than the

top wall, in about the proportion of one to five, whereby the gas may rush out at the sides with greater force than it does directly above, where its passage is impeded by its frictional contact with the opposite surfaces of the thicker portions of the walls of the tip. In producing the shape of flame described by means of my improved burner the burner is kept comparatively cool, and the air being fed to the flame is prevented from becoming heated, both of which are desiderata in producing a satisfactory acetylene flame.

Seated over the tip is my improved flame-seating portion K, which may be secured in any suitable manner to the burner. This seating portion has its sides cut away, as seen at K', Fig. 2, and has a slot N, which is in alignment with the slot A' in the gas-burner. By the use of this flame-seating portion the air from the outside is allowed to come in contact with the gas as the latter issues from the slotted tip of the burner.

While I have shown a particular shape of gas-tip in the drawings, I do not confine my invention to any shape, as it is evident that various modifications may be made without departing from the spirit of the invention—as, for instance, the top of the tip may be rounded, if desired, instead of flattened, as shown in the drawings.

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

1. A burner-tip for burning acetylene and other gases rich in hydrocarbon, having a cylindrical and dome-shaped bore therein, the upper portion of the tip tapering and having a slot extending through into the dome of said bore, the walls of the slot being thickest at the top of the tip and thinnest at the lower margin of the slot.

2. A burner-tip for burning acetylene and other gases rich in hydrocarbon, having a cylindrical and dome-shaped bore therein, the upper portion of the tip tapering and having a slot extending through into the dome of said bore, the walls of the slot being thickest at the top of the tip, and thinnest at the lower margin of the slot, the thickness of the slotted wall gradually increasing from the lower margin of the slot, to the highest part of the dome, as set forth.

3. A tip for burning acetylene and other gases, having a tapering tip which is slotted at its extreme upper end, the walls of the slot being thinnest at its lower margin, and gradually increasing in thickness toward the end of the tip, combined with a skeleton flame-seating portion having a slot registering with the slot in said tip, as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD J. DOLAN.

Witnesses:

ARTHUR E. NITZSCHE,
EDWARD C. NAPHEYS.