

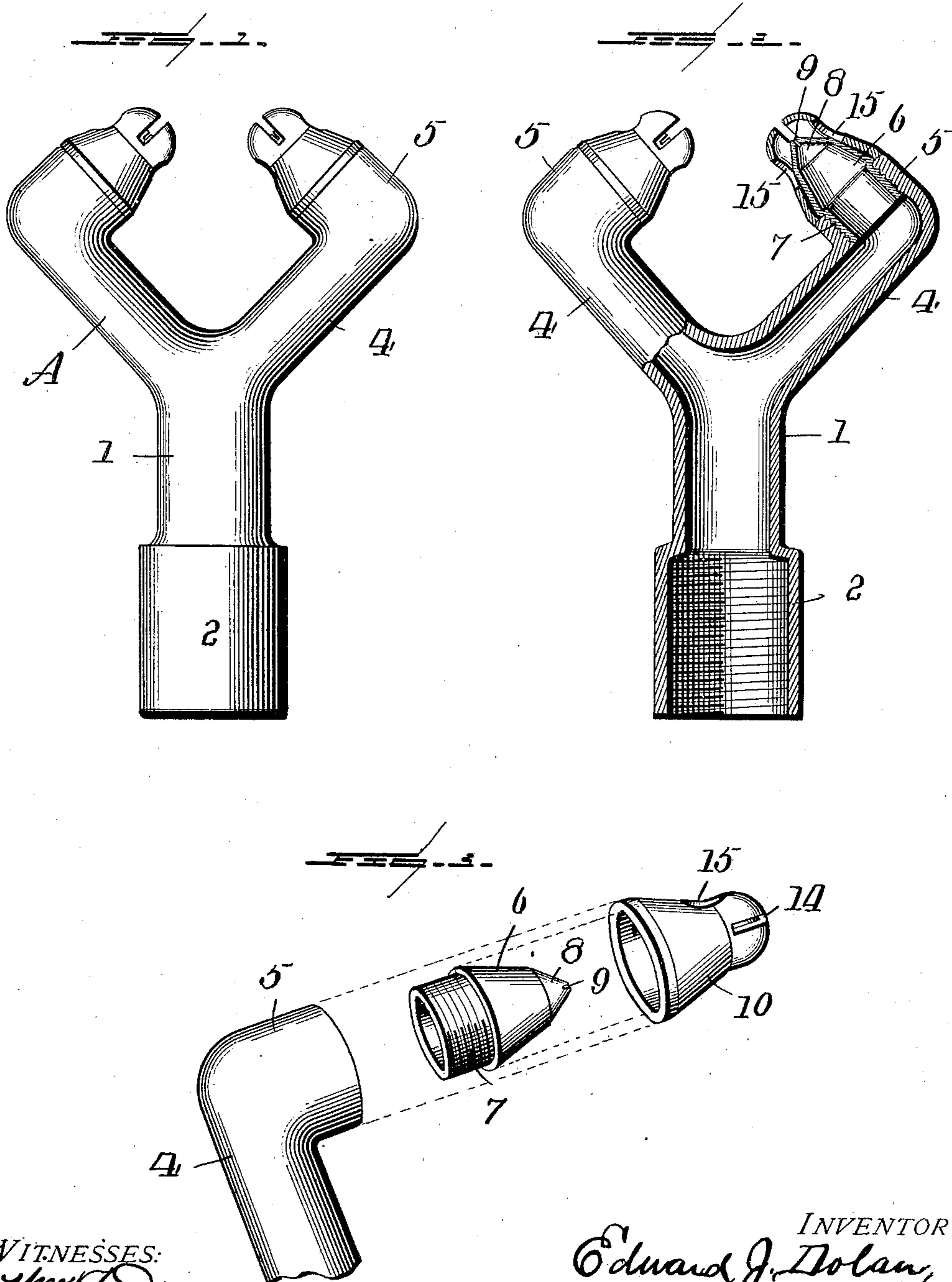
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E. J. DOLAN.
GAS BURNER.

(Application filed Oct. 5, 1901.)

(No Model.)



WITNESSES:

Wm. F. Doyle
A. L. Hough

INVENTOR

Edward J. Dolan,
BY *Franklin H. Hough*
Attorney

UNITED STATES PATENT OFFICE.

EDWARD J. DOLAN, OF PHILADELPHIA, PENNSYLVANIA.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 692,254, dated February 4, 1902.

Application filed October 5, 1901. Serial No. 77,716. (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 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 figures of reference marked thereon, which form a part of this specification.

This invention relates to certain new and useful improvements in gas-burners, and more particularly to that class which are known as "duplex" burners.

I have found as the result of an extensive experience with the use of duplex burners, especially when used in burning acetylene and other gases rich in hydrocarbons, that a very serious objection to the burners has been due to the fact that the burner-tips have been put out of alinement. Thus upon account of the very small contact at the point of impingement of the two jets or streams of gas an imperfect flame has been produced. I have found also in practice that a very small portion of dirt or other impediment lodging in or adjacent to the gas-opening will serve to divert the stream of gas to either side, thereby causing imperfect impingement of the jets.

The present invention has for its object the obviation of these difficulties experienced in the use of duplex burners heretofore constructed and to provide a duplex burner adapted especially for use in burning acetylene and other gases rich in hydrocarbon, in which the use of an air-mixing device is necessary.

More specifically, the invention has for its object the provision of a duplex burner of this character in which the impingement of two flat jets serves to produce a flat flame and to provide in connection with the burner-tips caps having slots therein registering with the slots in the burner-tips, but of considerably greater width. These caps, being provided with suitable air-openings, are so arranged relative to the inclosed slotted tips as to afford an adequate and uniform supply of

air to the gas within the space intervening between the burner-tip and the outer end of the inclosing cap, the slot in said cap forming a seat for the flame.

To these ends and to such others as the invention may pertain the same consists in the novel construction and in the peculiar arrangement, combination, and adaptation of parts, all as more fully hereinafter described, shown in the accompanying drawings, and then specifically defined in the appended claims.

The invention is clearly illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of a gas-burner embodying my invention. Fig. 2 is a like view, partly in section. Fig. 3 is a detail perspective of one of the arms of the burner with the burner-tip and slotted cap detached, but in their relative positions.

Reference now being had to the details of the drawings, 1 represents the burner, the enlarged lower end tube of which is interiorly threaded to engage the gas-pipe.

4 4 are the arms of the burner, the body portions of which are inclined outwardly in opposite directions, and at their upper ends the said arms are bent inwardly, as at 5.

6 is the burner-tip, which is at its lower end provided with a screw-threaded portion 7, adapted to engage the interiorly-screw-threaded end of the arm 4. The body portion of this tip 6 is substantially in the form of a truncated cone, having at its extreme end a conical portion 8, the tip of which is provided with an exceedingly narrow slot 9. This tip 6 may be constructed of metal or any other substance adapted to the purpose, as, the flame being seated upon the outer edge of the cap, the tip 6 will not be subjected to the extreme heat that it would be if it served as a seat-flame.

10 is the cap, which is preferably constructed of lava, talc, or other material, such as is commonly used in the construction of gas-tips. The body portion of this cap 10 is of substantially the same form as the body portion of the tip 6, over which it is fitted. The extreme end of the cap is substantially semi-circular or dome-shaped, thus providing an annular chamber between the conical portion

8 of the inclosed gas-tip and the interior of the dome-shaped tip of the cap. 14 is a slot attached when the cap is in place to register with the slot 9 in the gas-tip; but it will be
5 noted that the slot 14 is of considerably greater width than the slot 9 in the gas-tip.

The cap 10 is provided upon its upper and lower sides with openings 15, through which air is supplied to the gas within the space
10 intervening between the conical tip of the burner and the inclosing cap.

It will be noted that the burner-tips are inclined toward one another and that the slots are so arranged relatively as to cause the two
15 flat jets therefrom to impinge at a point slightly above and midway between the tips, so as to form a perfect flat flame.

From the foregoing description some of the advantages gained by my construction will
20 be at once evident. It will be seen that as the gas emerges from the slots, which are of a considerable length, instead of passing through very small holes, as heretofore, this arrangement will admit of the gas-slots be-
25 coming somewhat clogged without diverting the streams of gas to such an extent as would spoil the shape of the flame after impingement. The impingement of two flat (or partly flat) flames has also the advantage of
30 producing a more perfect combustion than could be produced by two round jets, by reason of the fact that the round jets are thicker in cross-section than flat flames, thereby preventing as thorough a mixture of air with the
35 central portion of the jets as in the case of the flat flames.

Another and very important advantage claimed for this invention is the accuracy and economy with which it can be manufac-
40 tured, the gas-slots being cut by the use of ordinary circular saws—a very simple operation compared with that of drilling the small

gas-hole, such as has heretofore been used in producing the round-flame duplex burner. A further advantage resides in the ease with
45 which the burner may be cleaned. In cleaning the exceedingly minute round hole that has heretofore been used the operation frequently results in the spoiling of the burner through the non-impingement of the jets, it
50 being found that a very slight diversity of the jets will cause this. In my burner the gas-slots are readily cleaned by drawing a thin material through them.

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

1. In combination with a duplex gas-burner, a slotted tip with wall tapering in two directions, mounted one in each arm of the burner, 60 a slotted cap tapering a portion of its length and frictionally engaging the outer tapered wall of each tip, the outer portion of each cap being contracted beyond its tapered portion, and forming a mixing-chamber with air-inlet 65 apertures, as set forth.

2. In combination with the hollow arms 4, of a duplex gas-burner, the slotted tip 6, mounted in said arms, each tip having a shoulder abutting against the end of an arm, 70 the wall of each tip tapering in two directions, a slotted cap abutting against the end of each arm, and frictionally engaging the tapering wall of a tip, and having its outer end contracted and forming an air-mixing 75 chamber with apertures in the wall thereof, as set forth.

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

EDWARD J. DOLAN.

Witnesses:

ARTHUR E. NITZSCHE,
LILLIAN M. STUBEL.