April 14, 1931. P. M. FORSTER 1,800,617

TORCH NOZZLE

Filed Dec. 23, 1929

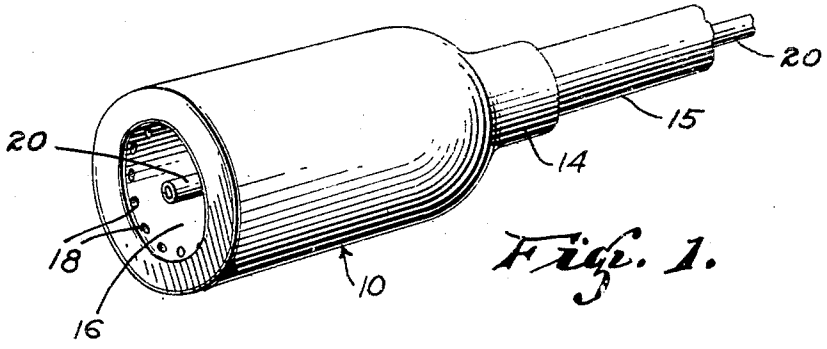

Fig. 1.

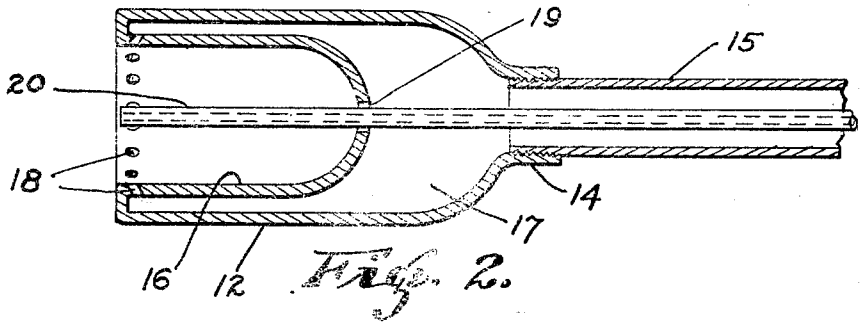

Fig. 2.

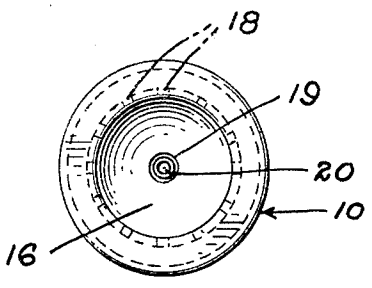

Fig. 3.

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UNITED STATES PATENT OFFICE

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TORCH NOZZLE

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This invention relates to gas torches and particularly pertains to burner tips therefor.

It is the principal object of the present invention to provide a generally improved tip or nozzle for gas torches wherein the gas is preheated before being discharged from the tip so as to create a flame of intense heat.

In carrying the invention into practice I provide a tip having a bowl-shaped recess in its end. Surrounding the wall of the bowl-shaped recess is a preheating chamber to which the gas is directed, the gas being discharged from this preheating chamber around the mouth of the bowl through fine jets. The wall of the bowl-shaped recess is caused to be heated during the operation of the torch so that the gas discharging from the jets will be preheated so as to create a hotter flame. I also provide means to permit oxygen or compressed air to be discharged at the mouth of the bowl-shaped recess to increase the intensity of the flame.

One form which the invention may assume is exemplified in the following description and illustrated by way of example in the accompanying drawings, in which:

Fig. 1 is a perspective view of a tip embodying the preferred form of my invention.

Fig. 2 is a longitudinal central section therethrough.

Fig. 3 is an end view thereof.

Referring more particularly to the accompanying drawings, 10 indicates a burner tip or nozzle for torches utilizing natural or artificial gas as a fuel.

The tip 10 comprises a cylindrical body portion 12 having a reduced inner end 14 which is connected with a pipe 15. The pipe 15 may be connected in any suitable manner either directly to a gas connection or to a primary mixing chamber wherein natural gas and air are caused to thoroughly mix. Arranged concentrically within this cylindrical body portion 12 is a bowl 16 which projects inwardly from the open outer end of the cylindrical body portion 12. The outer ends of the bowl 16 and the body 12 are connected together so that the space therebetween is closed as illustrated.

The bowl 16 is as shown in the drawing of a smaller diameter than the cylindrical body portion 12 and also is somewhat shorter than the body portion so that a preheating chamber 17 will be formed within the body portion surrounding the bowl. This preheating chamber 17 is in communication with the pipe 15 so that the gas and air entering the preheating chamber from the pipe 15 will envelop the bowl 16.

In order to discharge this gas at a proper point a plurality of obliquely disposed jets 18 are formed through the bowl adjacent the outer end thereof. These jets are arranged in circular form about the mouth of the bowl as illustrated so that a number of fine streams of gas will be ejected at the mouth of the bowl which streams will converge toward the axis of the tip.

At the axial center of the bowl its inner end is formed with an opening 19. A compressed air or oxygen tube 20 is disposed concentrically of the pipe 15 and projects through the opening 19 in the bowl to a point approximately at the mouth of the bowl as illustrated. It is intended that this tube 20 be connected both with a source of oxygen and compressed air so that either may be delivered at the mouth of the bowl to create a flame of more intense heat than that which would be produced solely by the gas.

It is desired to point out, however, that the opening 19 is somewhat greater in diameter than the outer diameter of the tube 20 so that some of the gas entering the preheating chamber will pass through the opening 19 into the bowl.

In operation of the device it is constructed and assembled as illustrated in the drawings and mounted on a torch of suitable construction. As the gas and air enter the preheating chamber through the pipe or tube 15 a portion thereof will pass through the opening 19 and it is ignited and acts somewhat as a pilot light. The remainder of the gas will discharge through the jets 18 and will be ignited by the flame within the bowl.

As the bowl becomes hot the gas entering the preheating chamber 17 will be pre-

heated which creates a flame of more intense heat at the mouth of the tip. If it is desired to increase the intensity of the flame compressed air or oxygen may be discharged at the mouth of the bowl through the tube 20. This, as is well known, will cause the flame to be more intense.

From the foregoing it is obvious that I have provided a very simple tip for gas torches by means of which a flame of very intense heat may be created and wherein the likelihood of the flame blowing out is minimized.

While I have shown the preferred form of my invention, it is to be understood that various changes may be made in its construction by those skilled in the art without departing from the spirit of the invention as defined in the appended claims.

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

1. A burner tip of the character described including a body portion having a recess extending inwardly from one end thereof, a chamber surrounding the recess to which gas may be delivered, and means for directing a portion of the gas into the recess at the inner end thereof and discharging the remainder of the gas about the periphery of the mouth of the recess.

2. A burner tip comprising a body portion having a recess extending inwardly from one end thereof, said body portion having a chamber formed therein surrounding the recess, a plurality of jets formed at the mouth of the recess and in communication with said chamber whereby gas in the chamber will be directed outwardly from the mouth of the recess, said body portion being formed with an opening between the inner end of the recess and said chamber whereby gas will be directed from the chamber into the inner end of the recess.

3. A burner tip comprising a hollow body portion, a bowl-shaped member extending into one end thereof, the spacing between the bowl-shaped member and the body portion being closed at one end whereby a chamber will be formed within the body portion surrounding the bowl-shaped member, a gas connection at the other end of the body portion for delivering gas to said chamber, a plurality of jets formed through the bowl-shaped member at the mouth thereof and communicating with said chamber, said jets being obliquely disposed whereby the gas discharged will be directed toward the axis of the body portion, said bowl-shaped member having an opening at the inner end thereof communicating with said chamber whereby a portion of the gas in the chamber will enter the bowl at the inner end thereof so that the ignition of the gas will cause heating of the bowl-shaped member and preheating of the gas passing through the chamber to the jets.

4. A burner tip comprising a hollow body portion, a bowl-shaped member extending into one end thereof, the spacing between the bowl-shaped member and the body portion being closed at one end whereby a chamber will be formed within the body portion surrounding the bowl-shaped member, a gas connection at the other end of the body portion for delivering gas to said chamber, a plurality of jets formed through the bowl-shaped member at the mouth thereof and communicating with said chamber, said jets being obliquely disposed whereby the gas discharged will be directed toward the axis of the body portion, said bowl-shaped member having an opening at the inner end thereof communicating with said chamber whereby a portion of the gas in the chamber will enter the bowl at the inner end thereof so that the ignition of the gas will cause heating of the bowl-shaped member and preheating of the gas passing through the chamber to the jets, and a tube extending through the gas connection and through the bowl to a point contiguous to the mouth thereof for delivering compressed air or oxygen to the flame.

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