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2,784,778

TORCH TIP

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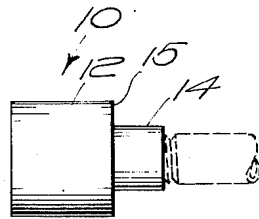


FIG. 1

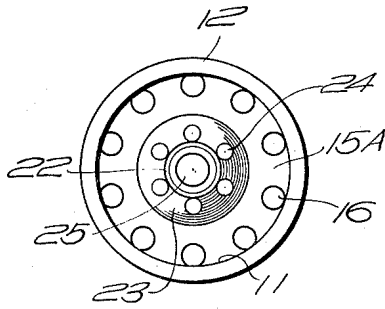


FIG. 2

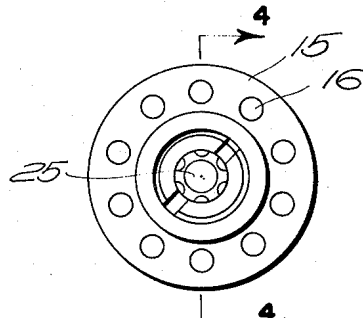


FIG. 3

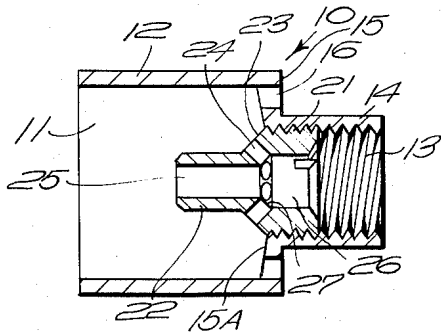


FIG. 4

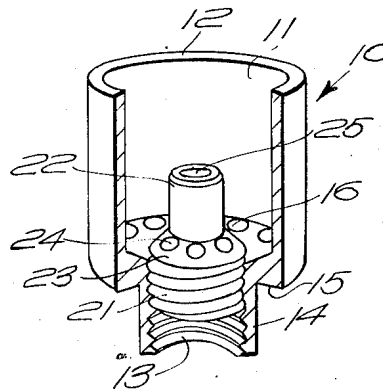


FIG. 5

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TORCH TIP

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2 Claims. (Cl. 158—116)

This invention relates to torch tips and more particularly to torch tips for attachment to commercial forms of torches using natural gas as a fuel.

A general object of the invention is to provide a simple yet inexpensive and efficient tip for attachment to conventional torches used in the manufacture of jewelry, dentures and other delicate items wherein natural gas in whole or in part replaces coke manufactured gas as a fuel.

A further object of the invention is to provide an improved torch tip wherein the variation of the flame temperature is held to a minimum or completely eliminated.

And still another object of the present invention is to provide a torch tip which will allow a great variety of flame shapes.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

With the advent of natural gas as a commercial fuel, many problems were created in the conversion from coke made gas to natural gas due to the difference in B. t. u.'s and other chemical differences. Conventional torch tips were found to be inadequate when used with natural gas.

The present invention provides a torch tip which not only successfully employs natural gas as a fuel but it also provides an improved torch tip which greatly facilitates the use and application of the torch.

For a fuller understanding of the nature and objects of the invention reference should be had to the following detailed description taken in connection with the accompanying drawing, in which:

Figure 1 is a side elevational view of the new and improved torch tip.

Figure 2 is a left hand end view of Figure 1.

Figure 3 is a right hand end view of Figure 1.

Figure 4 is a longitudinal sectional view taken along line 4—4 of Figure 3 looking in the direction of the arrows.

Figure 5 is a perspective view, partially broken away for clarity of the new and improved torch tip.

Referring to the drawings, wherein like reference characters refer to like parts, the torch tip 10 comprises a hollow cylindrical body 12 open on one end and provided with a wall 15 closing the other end to form a chamber 11. Chamber 11 has a diameter approximately equal to its length. A neck 14 is integrally formed in said wall 15 and projects away from wall 15. An axially threaded 13 core is provided projecting the length of said neck and terminating in said chamber 11. A plurality of orifices 16 exceeding seven in number are provided in wall 15. Orifices 16 equal a diametral area greater than one third the diametral area of wall 15 within said chamber 11.

A nozzle having an enlarged body portion provided with threads 21 terminates in a tip 22 which is approximately one half the diameter of the enlarged body portion. A chamfer 23 is provided between tip 22 and said enlarged body portion. Said chamfer has an angle approximating forty-five degrees with a horizontal axis passing through

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said body portion and tip 22. An enlarged bore 26 is provided in said enlarged body portion and terminates in a reduced port 25 in said tip 22. A bevel 27 is provided between bore 26 and port 25 and is generally parallel to chamfer 23. Port 25 has a diametral area approximately equal to one half the diametral area of enlarged bore 26. Threads 21 engage threads 13 to secure the enlarged body portion in said axially threaded 13 core with tip 22 projecting into chamber 11 approximately one half the length of chamber 11.

A series of pilot ports 24 are provided in the body of chamfer 23. Pilot ports 24 equal approximately eight in number and have a diametral area equal to the diametral area of said port 25. Pilot ports 24 connect enlarged bore 26 with chamber 11. Chamber 11 has a diameter approximately six times the diameter of said port 25.

In operation torch tip 10 will be connected to a torch through threads 13. A combustible mixture of natural gas and air will enter enlarged bore 26 and divide into two directions. One portion will pass through port 25 into chamber 11. The other portion will pass through pilot ports 24 into chamber 11. These two mixtures circulate in chamber 11 where they are ignited and emerge from chamber 11 as a flame. This flame has characteristics of shape and temperature which is greatly improved by the air drawn into chamber 11 through orifices 16. These orifices or secondary air holes increase the temperature of the flame and give a wider variety of flame shapes from needle to brush.

Having shown and described a preferred embodiment of the present invention, by way of example, but realizing that structural changes could be made and other examples given without departing from either the spirit or scope of this invention.

What I claim is:

1. A torch tip comprising a hollow cylindrical body open on one end and provided with a wall closing the other end to form a chamber, said chamber having a diameter equal to its length, a neck integrally formed in said wall and projecting away from said chamber, an axially threaded core projecting the length of said neck and terminating in said chamber, a plurality of orifices in said wall between the outside diameter of said neck and the inside wall of said hollow cylindrical body, exceeding seven in number and equalling a diametral area greater than one third the diametral area of said wall within said chamber, a nozzle having an enlarged body portion, a tip integrally connected to said body portion by means of a chamfered area, said chamfer having an angle of approximately forty-five degrees with the horizontal axis of said body portion, an enlarged bore in said body portion terminating in a reduced port in said tip, said port having a diametral area approximately half the diametral area of said enlarged bore, an external thread on said body portion, said external threads engaging said internal threads to secure said enlarged body portion in said neck with said tip projecting into said chamber a distance approximately half the length of said chamber, said chamfer facing the wall of said chamber, a series of pilot ports in said chamfered area, equal in diametral area to the diametral area of said port, said chamber having a diameter approximately six times the diameter of said port, said pilot ports connecting said enlarged bore with said chamber.

2. A torch tip comprising a hollow cylindrical body open on one end and provided with a wall closing the other end to form a chamber, said chamber having a diameter equal to its length, a horizontal axis passing through said hollow cylindrical body, a neck integrally formed in said wall and projecting along said horizontal axis away from said chamber, said neck having a diameter approximately one half the outside diameter of said

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hollow cylindrical body, an axial hollow core projecting along said horizontal axis projecting the length of said neck and terminating in said chamber, a circular series of orifices concentric with said neck, approximating ten in number, located in said wall to vent said chamber through said wall, the diametral area of said series of orifices approximating one third the diametral area of said wall within said chamber, a nozzle having an enlarged body portion, a tip integrally connected to said body portion, a horizontal axis passing through said enlarged body portion and said tip, an enlarged bore on said horizontal axis in said enlarged body portion terminating in a reduced port on said horizontal axis in said tip, said port having a diametral area approximating half the diametral area of said enlarged bore, said enlarged portion secured in said axial hollow core with said tip projecting into said chamber a distance approximately half

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the length of said chamber, a series, approximately eight in number, of pilot ports, in said enlarged body portion equal in diametral area to the diametral area of said port, said series of pilot ports being outwardly inclined from said horizontal axis so as to be directed to the wall of said chamber and connecting said enlarged bore with said chamber, the area of said chamber being approximately thirty six times the area of said reduced port.

References Cited in the file of this patent

UNITED STATES PATENTS

1,311,731	Washburn	July 29, 1919
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FOREIGN PATENTS

259,051	Italy	June 14, 1928
428,878	Great Britain	May 21, 1935
552,876	Great Britain	Apr. 28, 1943