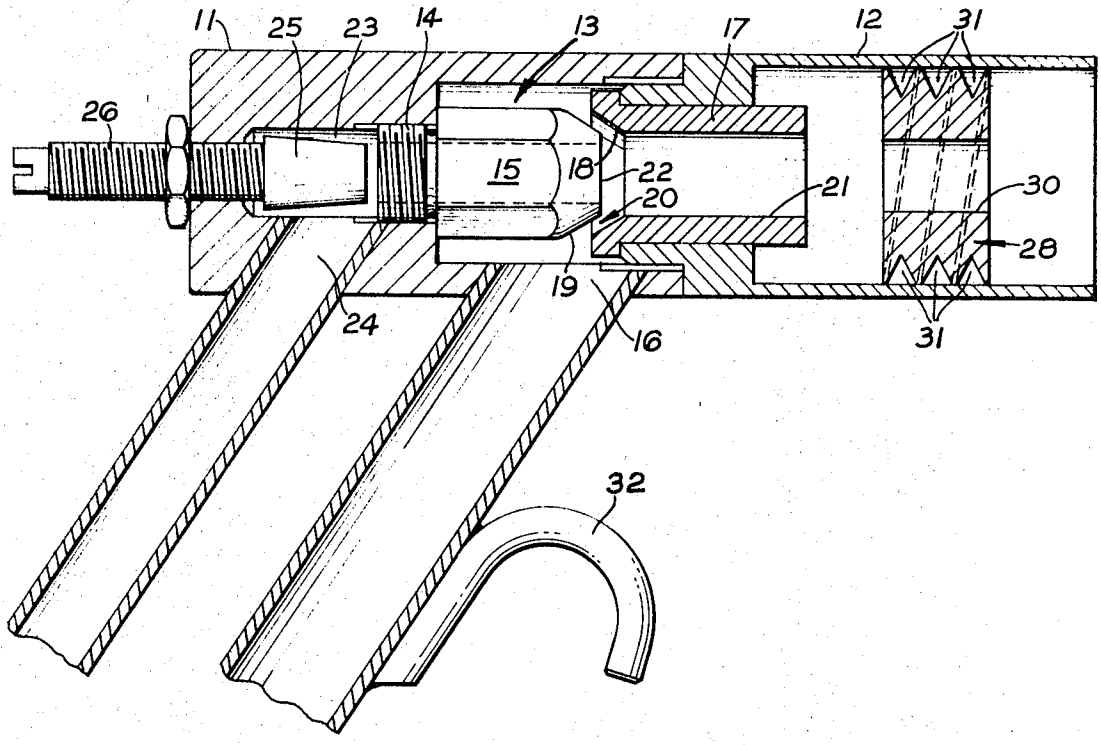
Jan. 26, 1971 W. C. SMITH ET AL 3,558,253

BLOW PIPES

Filed Nov. 26, 1968



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United States Patent Office

3,558,253

Patented Jan. 26, 1971

3,558,253

BLOW PIPES

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Filed Nov. 26, 1968, Ser. No. 779,144
Claims priority, application Great Britain, Dec. 2, 1967, 54,941/67
Int. Cl. F23d *15/02*
U.S. Cl. 431—353 7 Claims

ABSTRACT OF THE DISCLOSURE

A blowpipe head for burning gas fuel, for example natural gas, in combination with pressurized air having a chamber for connection to gas fuel and air supplies and a burner tube in which mixed gas fuel and air is burnt; wherein a restricted venturi throat passage leading from the chamber to the burner tube is axially aligned with an air nozzle in the chamber to direct a jet of the pressurized air through the throat, so that gas fuel fed into the chamber is drawn through the throat and mixed with the air.

This invention releates to blowpipe heads fuelled by inflammable gas particularly, but not exclusively, natural gas.

The object of the invention is to provide a blowpipe head which produces a stable flame with a wide range of control, while avoiding setting up back pressure in the gas fuel supply line.

According to the invention a blowpipe head including a chamber for connection to a supply of gas fuel and air pressure, and a burner tube in which a mixture of the gas fuel and air is burnt in use is characterised in that a restricted venturi throat passage between the chamber and the burner tube is axially aligned with an air nozzle aligned in the chamber to direct a jet of the pressurized air through the throat.

A preferred embodiment of the invention is now more particularly described with reference to the accompanying drawing showing a longitudinal cross section of a blowpipe head according to the invention.

The blowpipe comprises a body section **11** having an axial bore including at one end a screw threaded socket for engagement with a burner tube **12**. The bore is radially enlarged over part of its length to form a chamber **13** adjacent to the socket. The unenlarged part of the bore of the body has a threaded portion **14** for mounting an air nozzle **15** having its jet orifice aligned coaxial within the bore.

The air nozzle exterior and the internal wall of the chamber **13** define an annular cavity therebetween to which gas fuel is admitted by a duct **16** passing obliquely through the body wall for connection to a gas fuel supply.

Coaxially aligned with the jet orifice of its air nozzle **15** is a venturi tube **17** forming a reduced diameter throat opening between the chamber **13** and the burner **12**. Part **21** of the bore of the venturi tube **17** is parallel with a diameter greater than that of the air jet orifice and less than that of the chamber **13**, this part **21** adjoining the burner tube **12**. The remainder of the bore diverges from part **21** to form a tapered mouth **18** with its greatest diameter inner end projecting into the chamber **13** around but spaced from the tip **22** of the air nozzle **15**.

The tip **22** of the air nozzle **15** is of frusto-conical shape at **19**, complementary to the tapered mouth **18** of the venturi tube, so as to define a parallel sided axially converging annular outlet **20** at one end of the chamber, leading into the restricted throat formed by the bore **21** of venturi tube **17** and thence into the larger diameter burner tube **12**.

A part **23** of the smaller diameter bore in the end of the body section **11** most remote from chamber **13** has a duct **24** in its wall parallel to the duct **16** in the wall of the chamber, said duct **24** serving to admit a supply of pressurized air to the nozzle **15**, which supply is regulated by means of a needle principle valve **25** adjustably mounted in the extreme outer end of the body bore **23** by an exteriorly projecting screw stem **26**.

The burner tube **12** has an internal baffle **28** axially spaced from the venturi tube **17**, said baffle having a central bore **30** coaxial with the burner tube, and three outer helical passages **31** defined by the inner wall of the burner tube and the flanks of a three start very coarse "V" section thread turned in the outer cylindrical surface of the baffle **28** before insertion in the burner tube **12**.

The burner tube **12** and venturi tube **17** are integral or united and are removable as a unit by unscrewing from the threaded socket of body **11**. Thus different sizes or types of burner tube and venturi are interchangeable with a common body portion **11** for use in different applications.

A hook **32** is provided on the outer surface of duct **16** for suspending the blowpipe when not in use.

In operation the jet of pressurized air issuing from the nozzle **15** through the venturi tube **17** induces suction in the chamber **13** and gas duct **16** to draw the gas fuel with the air through the venturi tube into the burner tube **12**. The gas fuel and air flow are further mixed together as they pass through the baffle **28**, part of the flow being given a swirling motion through the spiral passages **31**.

The swirling of part of the burning gases ensures stable and effective combustion in a flame produced and retained at the outer end of the burner tube **12**, having especial application in the case of natural gas or other fuel gases which have slow combustion characteristics.

Variation in air pressure is compensated by adjustment of valve **25**. Control of the flow of gas fuel through duct **16** and air through duct **24** is effected by controls (not shown) on each of these ducts.

We claim:

1. A blowpipe head including a chamber for connection to a supply of gas fuel air pressure, a burner tube in which a mixture of the fuel and air is burned in use, means defining a restricted venturi throat interconnecting the chamber and the tube, means for supplying gas fuel to said chamber, an air nozzle located in said chamber in axial alignment with said throat to direct a jet of pressurized air therethrough, and a baffle located in said burner tube at a position remote and downstream from the throat, which baffle has an inner through passage coaxial with said tube and said throat and at least one outer substantially helical duct for inducing a swirling motion to a part of the gases passing through the baffle.

2. A blowpipe according to claim **1** wherein said baffle has a plurality of outer helical ducts.

3. A blowpipe head according to claim **2** for use with natural gas fuel wherein the internal cross-sectional area of the inner through passage of the baffle is substantially one-ninth of the like area of the burner tube bore, the internal cross-sectional area of the air nozzle bore is substantially one-third said burner tube bore area, and the total effective cross-sectional area of said outer helical ducts of the baffle measured on a plane normal to the direction of flow therethrough is substantially one-third said area of the inner through passage.

4. A blowpipe head according to claim **1** characterized in that a frusto-concial entrance (**18**) to the throat (**21**) within the chamber (**13**) and a frusto-

conical outer surface part (**19**) of the air nozzle (**15**) define therebetween an annular passage (**20**) through which the gas fuel is drawn from the chamber.

5. A blowpipe head according to claim **1** characterized in that the chamber is formed in a body portion (**11**) on which are mounted the air nozzle (**15**), throat (**17**) and burner tube (**12**), said body portion having connections (**16**), (**24**) to receive a supply of gas fuel and of pressurized air in use.

6. A blowpipe head according to claim **5** characterized in that the body portion (**11**) includes an adjustable valve (**25**) for regulating the flow of pressurized air through the air nozzle (**15**).

7. A blowpipe head according to claim **1** characterized in that the burner tube (**12**) and throat (**17**) are dismountable from the chamber (**13**) and interchangeable with burner tubes and throats of other types and sizes.

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U.S. Cl. X.R.

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