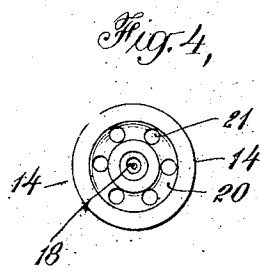
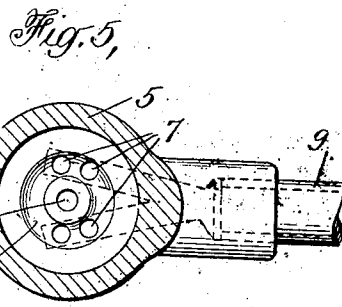
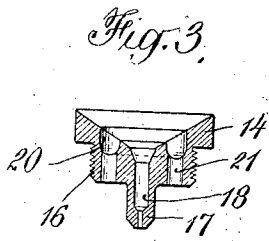
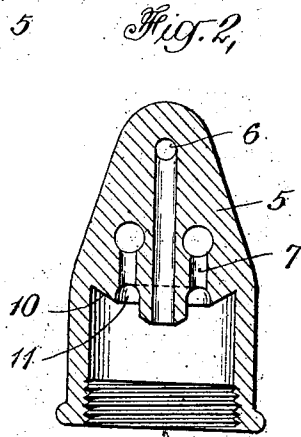
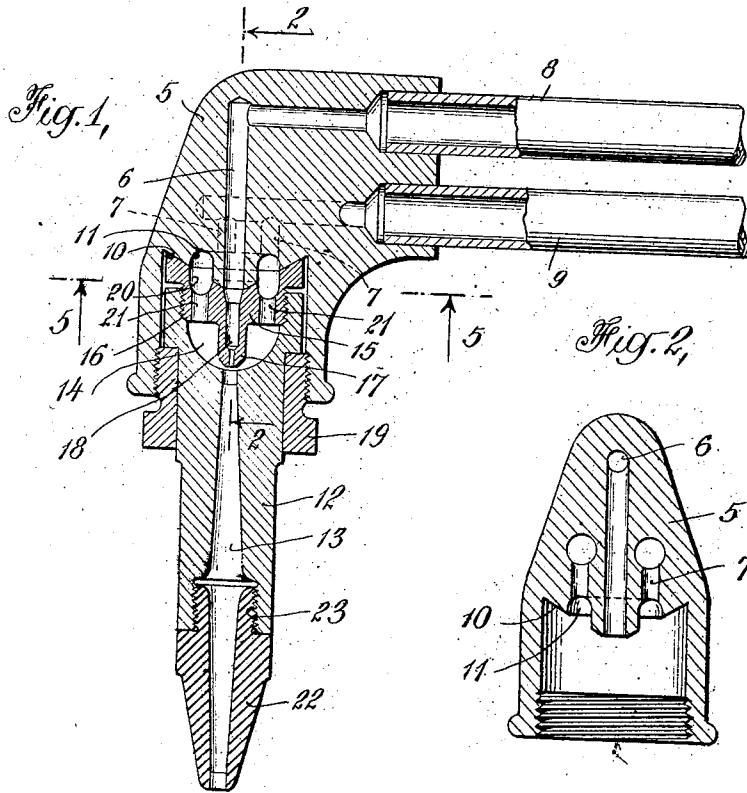


G. H. ZOUCK.
BLOWPIPE.

APPLICATION FILED JAN. 8, 1919.

1,310,107.

Patented July 15, 191



George H. Zouck INVENTOR
BY
Bernie Davis Marvin & Edwards
ATTORNEYS

UNITED STATES PATENT OFFICE.

GEORGE H. ZOUCK, OF ORANGE, NEW JERSEY, ASSIGNOR TO AIR REDUCTION COMPANY, INC., A CORPORATION OF NEW YORK.

BLOWPIPE.

1,310,107.

Specification of Letters Patent.

Patented July 15, 1919.

Application filed January 8, 1919. Serial No. 270,113.

To all whom it may concern:

Be it known that I, GEORGE H. ZOUCK, residing at Orange, in the county of Essex, State of New Jersey, have invented certain new and useful Improvements in Blowpipes; and I do hereby 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.

My invention relates to blowpipes, and more particularly to a blowpipe of the "low-pressure" type, although gases at "high pressure" may be successfully utilized in the blowpipe hereinafter described, and the invention is not therefore limited or restricted to use with gas at any specific pressure.

Among the objects of my invention is the provision of a blowpipe having interchangeable tips which may be readily inserted and removed and which when assembled with the head form a perfect seal, preventing escape or mixing of the gases in other than the predetermined manner.

Another object of my invention is the provision of a blowpipe of the character described in which the proportioning of the gases employed is governed by the tip so that a proper mixture is insured in tips intended to produce flames of different sizes and heating capacities, the only adjustment necessary to produce a flame of given size being the insertion of a tip adapted for this purpose.

Another object of my invention is the provision of a blowpipe tip constructed in two or more sections of different metals joined in such a manner that escape of gases at the joint is impossible.

Further objects and advantages of my invention reside in the various combinations hereinafter described and claimed as will be apparent as it is better understood by reference to the following specification when read in connection with the accompanying drawings illustrating the preferred embodiment of my invention, in which

Figure 1 is a longitudinal section through a blowpipe constructed in accordance with my invention.

Fig. 2 is a section on the line 2—2 of Fig. 1;

Fig. 3 is a sectional view of the filler at the rear of the tip;

Fig. 4 is a rear elevation of the filler and Fig. 5 is a section on the line 5—5 of Fig. 4.

One of the most perplexing problems which has heretofore engaged designers of blowpipes is the difficulty of sealing the connection between the tip and head to prevent escape of gases and to insure the desired proportioning essential to successful operation. While this problem is most acute in "high pressure" blowpipes, it is also present in "low pressure" work. The present invention is operable independent of pressures employed and is constructed to provide the essential sealing under any conditions.

Referring to the drawing, which illustrates the best mode of embodying my invention in a practical blowpipe, 5 indicates a head provided with passages 6 and 7 to which oxidizing and combustible gases are respectively delivered through pipes 8 and 9. The passage 6 is preferably axially disposed within the head and terminates at the apex of a conical seat 10. An annular channel 11 is formed in the seat concentric with the passage 6 and the passages 7 terminate in this channel.

A tip 12 is provided with a longitudinal discharge passage 13 terminating at its inner end in a chamber 14. A filler 15 is threadedly secured to the tip within the chamber 14, and is preferably provided with a beveled edge 16 engaging a cooperating beveled shoulder surrounding the chamber 14, to form a secure seal, preventing escape of gases from the chamber 14. The filler 15 is provided with an injector nozzle 17 having a passage 18 which aligns with the passage 6 when the tip is held in assembled relation with the head by a nut 19.

A conical recess is formed in the end of the filler 15 which cooperates with the seat 10 in the head on both sides of the channel 11 to seal the joint between the head and tip and prevent escape or premature mixing of the gases issuing from the passages 6 and 7. Preferably an annular channel 20 is provided in the surface of the conical recess, registering with the channel 11. A plurality of openings 21 in the filler 15 surrounding the injector nozzle 17 permit the passage of gas from the channel 20 to the mixing chamber 14.

In operation, the oxidizing gas, issuing from the passage 18 in the injector nozzle 17 into the chamber 14, draws combustible gas properly proportioned by the size of the injector nozzle and its relation to the passage 13. The gases are mixed in passage 13 and the mixture is discharged at the outlet end of the tip. Owing to the provision of the gas-tight seal at the junction of the head and filler, no mixture of the gases other than as described can occur and proper proportioning is therefore insured. Nor can any gas escape from the passage in the head or from the mixing chamber. The proportion of the gases mixed is controlled within the tip so that removal and substitution of another tip is the only adjustment necessary to obtain flames of any desired size within the range of the device.

It is sometimes desirable to construct that portion of the tip which is subjected to the highest heat of copper while the remainder is, for various reasons, constructed of a metal having a lower coefficient of expansion, such, for example, as phosphor bronze. I have discovered that a gas-tight joint may be formed between the two sections by internally threading the rearward portion of the tip and externally threading the copper end 22 at 23. When the two parts are joined and subjected to heat in use, the expansion of the copper exceeds that of phosphor bronze sufficiently to seal the threads but not enough to disrupt the tip.

The advantages of my invention as hereinbefore outlined may be achieved with various modifications of the structure as shown, these modifications being within the spirit

and scope of my invention as hereinafter defined in the claims.

What I claim is:

1. In a device of the character described the combination with a solid head having passages therein for oxidizing and combustible gases, a projecting conical seat and a wall integral with said head and extending beyond said seat, of a tip having a discharge passage, a chamber communicating therewith and a filler at the rear of said chamber, and provided with inlets for the two kinds of gases communicating with the passages in said head, said filler having a conical recess cooperating with said seat to prevent premature mixing or escape of said gases and a nut engaging said wall and tip to hold the latter in assembled relation with said head.

2. In a device of the character described the combination with a solid head having passages therein for oxidizing and combustible gases, a projecting conical seat and a wall integral with said head and extending beyond said seat, of a tip having a discharge passage, a chamber communicating therewith, a filler at the rear of said chamber and threadedly engaging said tip and a beveled shoulder on said tip within said chamber, said filler having a cooperating beveled edge engaging said shoulder and a surface cooperating with said seat to prevent premature mixing or escape of said gases and a nut engaging said wall and tip to hold the latter in assembled relation with said head.

In testimony whereof I affix my signature.

GEORGE H. ZOUCK.