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H. A. BOND

ELECTRIC BLOWTORCH

Filed Feb. 24, 1926

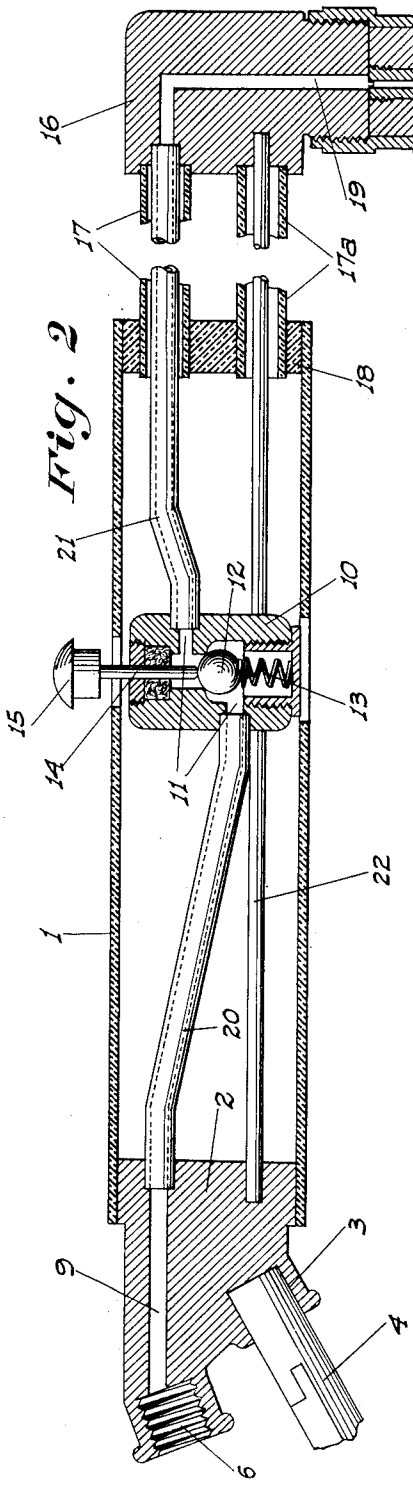


Fig. 2

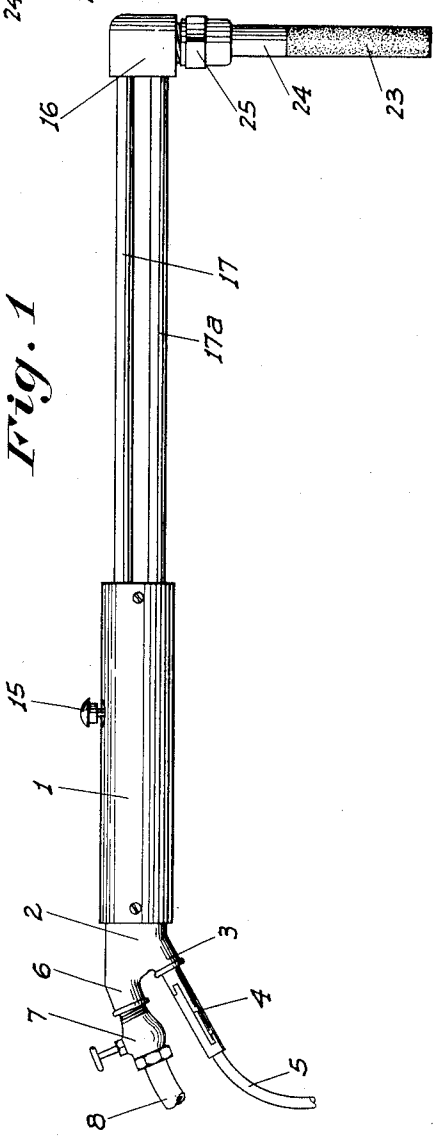


Fig. 1

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UNITED STATES PATENT OFFICE.

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ELECTRIC BLOWTORCH.

Application filed February 24, 1926. Serial No. 90,265.

This invention relates to improvements in blow or cutting torches such as are used for melting or cutting metal, my principal object being to provide a device for the purpose in which an electric arc in connection with an air blast is used as the heating and cutting medium.

The advantages of my torch over the oxyacetylene torch commonly used are not only greater speed of cutting, but lessened cost of operation, since the expense of acetylene gas and oxygen is eliminated.

Another object of my invention is to construct the nozzle of the torch, to which the electric current passes, in such a manner that the air blast does not cause deterioration and heating away of the material of which the nozzle is made.

A further object of the invention is to produce a simple and preferred construction of the device, and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Fig. 1 is a side elevation of the torch.

Fig. 2 is a full sized sectional elevation of the same, broken away intermediate its ends.

Referring now more particularly to the characters of reference on the drawings, numeral 1 denotes the handle member of the torch, preferably formed as a sleeve of fiber or the like of suitable size and length. At the rear end of the sleeve a metal head 2 is fitted therein. This head has a socket 3 to receive one member of a detachable coupling 4 having an electric cable 5, and a tapped socket 6 above the socket 3 for connection to a valve 7 to which a compressed air hose 8 may be attached.

A passage 9 leads through the head from its inner end to the socket 6. Mounted in the sleeve intermediate its ends is a valve body 10 having passage means 11 therethrough normally closed intermediate its ends by a ball 12 which is held upwardly and in closed position by a spring 13. The ball is depressed at will to open the passage means by means of a stem 14 engaging the same and projecting upwardly through the body and sleeve, said stem having a head or button 15 on its upper end.

Disposed some distance from the sleeve 1 is a metal nozzle head 16 rigidly connected to the sleeve 1 by vertically spaced tubes 17 and 17ª. These tubes are secured at one end to the head and at the other end are secured in a block 18 which is fitted into the sleeve 1 in the end thereof opposite to the head 2. A passage 19 through the head 16 leads from the tube 7 to the outer end of the head, and projects downwardly in a plane at right angles to the tubes.

A pipe or tube 20 concealed in the sleeve 1 extends from the inner end of the passage 9 to one end of the valve passage 11, while another tube 21 extends from the opposite end of the passage 11 to the passage 19 through the tube 17. A heavy copper wire 22 extends through the tube 17ª and through the sleeve, being rigidly connected at one end to the head 2 and at the other end to the head 16. A current in the cable 5 will therefore pass to the head, the operator being protected by the handle sleeve 1 which is of insulation material, as are the tubes 17 and 17ª.

Depending from the inner end of the head 16 and alined therewith is a tubular nozzle 23 of carbon. This tube at its upper end is fixed in a retainer 24 perferably of copper, the end of which opposite to the nozzle abuts against the outer end of the head 16 and is removably secured thereto by a coupling nut 25. The nozzle 23 is lined with a tube 26 of silicon. Removably fitted in the retainer 24 and extending from the end thereof adjacent the head 16 into the nozzle 23 for a certain distance is an air nozzle 27 whose bore alines with the passage 19. To operate the device, assuming that the air and electric current are turned on, the operator grasps the tool by the sleeve 1, operating the valve knob 15 by one finger to control the flow of air through the nozzle. The nozzle 23 is held adjacent the metal to be cut, the arc being formed between said nozzle and the metal, the former of course being gradually worn away.

The nozzle being removable it can be renewed at any time without having to discard the entire tool. The blast of air passing through the energized nozzle serves to confine the electric arc frame within narrow limits, so that it will cut a narrow path through the metal, instead of causing the

arc to act over a wide area as would otherwise be the case.

The silicon lining for the nozzle is an important feature, preventing air from contacting with the carbon, which would cause a rapid heating away of the same.

The member 27 not only forms a small high pressure jet of air but provides a metal passage for the air from the passage 19 to the lining 26, past the junction of the nozzle 23 with the retainer 24, and thus preventing air from contacting with the carbon at its upper end, which would also cause an eating away of the carbon to take place. Compressed oxygen can also be used instead of compressed air but the latter gives excellent results and of course is far cheaper to use.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described my invention what I claim as new and useful and desire to secure by Letters Patent is:—

1. An electric blow-torch including a carbon nozzle having a longitudinal air-blast passage therethrough, and a lining-tube in said passage to protect the carbon from contact with the air blast.

2. An electric blow torch including a carbon nozzle having a longitudinal air-blast passage therethrough, and a lining of silicon in said passage.

3. An electric blow torch including a carbon nozzle having a longitudinal air-blast passage therethrough, a metal member to which one end of the nozzle is connected, said member having a passage alined with the nozzle passage, a silicon lining in the nozzle, and a tubular element fitted into the passage of said member and projecting into the nozzle passage past the adjacent end of the silicon lining.

4. An electric blow-torch comprising a hollow handle member, a head spaced from the handle, a current conducting tubular nozzle connected to the head, the latter having a passage therethrough alined with the bore of the nozzle, air passage means extending through the handle from the head-passage to the outer end of the handle a hand controlled valve mounted in the handle and interposed in the air passage means, and current carrying means from the outer end of the handle to the nozzle.

5. An electric blow-torch comprising a hollow handle member, a metal head spaced from the handle a current conducting tubular member depending from and secured to the head, the latter having a passage therethrough alined with the bore of the nozzle, tubular members connecting the head and handle, one such member connecting with the head-passage, air passage means extending from said head-passage through the adjacent tubular member and through the handle to the outer end thereof, and a current carrying member connected to the head and extending through the other tubular member and through the handle to the outer end thereof.

In testimony whereof I affix my signature.

HERMAN A. BOND.