Feb. 23, 1926. 1,574,698

C. V. ROYALL

BLOWTORCH

Filed Jan. 21, 1925

Fig. 1.

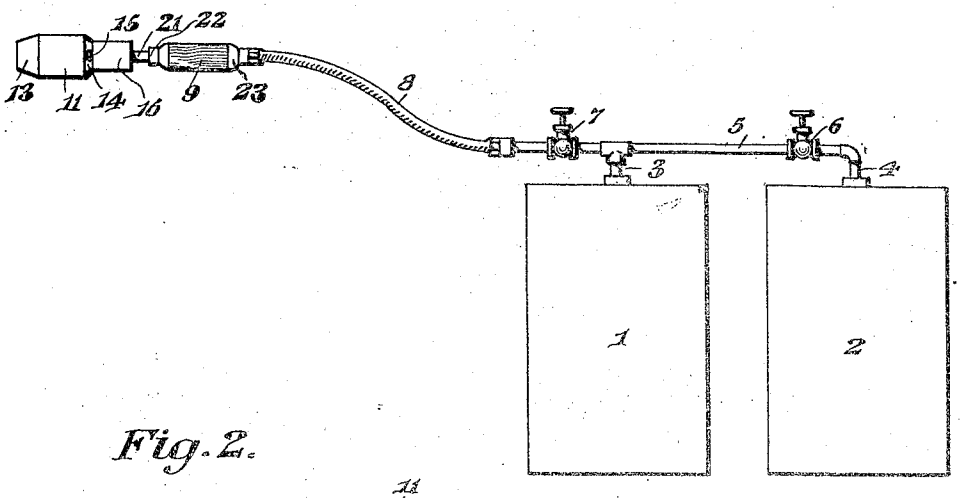


Fig. 2.

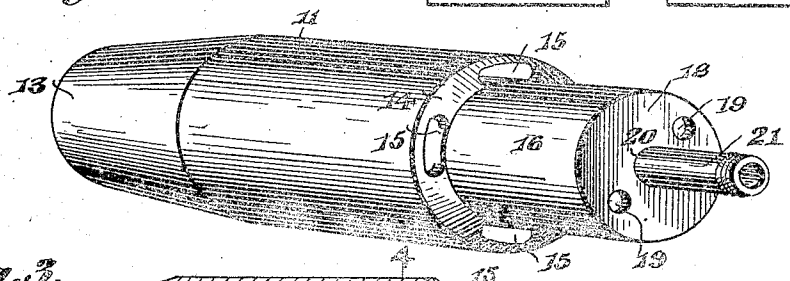


Fig. 3.

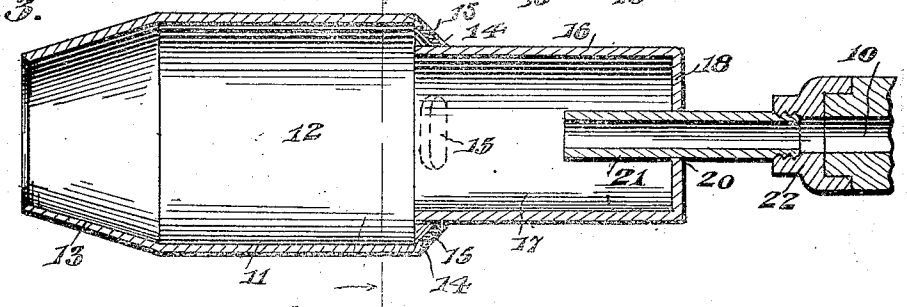
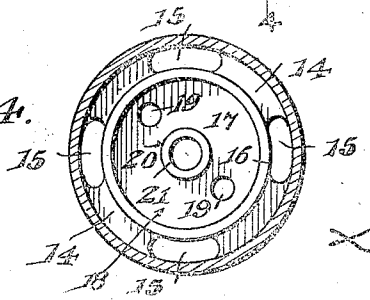


Fig. 4.



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Patented Feb. 23, 1926. 1,574,698

UNITED STATES PATENT OFFICE.

CLIFFORD V. ROYALL, OF RICHMOND, VIRGINIA.

BLOWTORCH.

Application filed January 21, 1925. Serial No. 3,853.

To all whom it may concern:

Be it known that I, CLIFFORD V. ROYALL, a citizen of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Blowtorches, of which the following is a specification.

This invention relates to a blow torch for pre-heating in acetylene welding and is designed primarily for heating metallic sheets, bars, plates, etc., or for heating any other objects for which it is found applicable, and the invention has for its object to provide, in a manner as hereinafter set forth, a torch of the class referred to for burning, when employed, low grades of oil effectively and efficiently, and further for overcoming the necessity of the pre-heating of the torch when starting.

A further object of the invention is to provide, in a manner as hereinafter set forth, a torch of the class referred to, whereby air at atmospheric pressure is drawn into the combustion chamber of the burner, on the supply thereto of a combustible mixture under pressure, said combustible mixture consisting of compressed air and fuel oil, and with the air under atmospheric pressure as it enters such chamber admixing with the combustible mixture to insure proper combustion thereby providing for a thoroughly efficient torch, and further effecting a material saving in the expense of fuel by the use of fuel oil in lieu of kerosene and gasoline.

Further objects of the invention are to provide, in a manner as hereinafter set forth, a blow torch, which is simple in its construction and arrangement, strong, durable, compact, thoroughly efficient and convenient in its use, readily assembled and comparatively inexpensive to manufacture.

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arrangement of parts, as hereinafter more specifically described and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which come within the scope of the claims hereunto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views:—

Figure 1 is an elevation of a blow torch, in accordance with this invention, showing the same connected to a fuel oil and a compressed air tank.

Figure 2 is a perspective view of the torch.

Figure 3 is a longitudinal sectional view thereof.

Figure 4 is a section on line 4—4, Figure 3.

Referring to the drawings in detail, 1 denotes a fuel oil tank, 2 a compressed air tank and the former is provided with an outlet 3 and the latter with an outlet 4. The outlets 3 and 4 are connected together by a feed pipe 5 having interposed therein a pair of regulating or controlling valves 6, 7, of any suitable construction. The valve 6 is arranged in the pipe 5 between the outlets 3 and 4, and the valve 7 is arranged forwardly of the outlet 3. Connected to and leading from that end of the feed pipe 5 which is arranged in proximity to the valve 7 is a flexible supply pipe 8, terminating in a handle 9, provided with a passage 10, which forms a continuation of the pipe 8.

The torch comprises a cylindrical body portion 11, forming a combustion chamber 12. The forward end of the body portion 12 terminates in a tapered nozzle 13, and its rear end is provided with an inwardly extending rearwardly inclined annular flange 14 provided with a series of spaced oval-shaped slots 15 open at one side thereof constituting inlets for supplying air under atmospheric pressure to the inlet end of the combustion chamber 12. Secured to the flange 14, as well as projecting forwardly and rearwardly with respect thereto is a hollow cylindrical member 16 forming a mixing chamber 17. The member 16 abuts against the free edge of the flange 14 and provides means for closing the open side of each of said slots 15. The member 16 is open at its forward end and communicates with the chamber 12 and has its rear end closed by a disk 18 provided with a pair of circular openings 19 and further formed with a centrally disposed opening 20. The openings 19 provide inlets for the supply of air under atmospheric pressure to the mixing chamber 17.

Extending through the opening 20 formed in the disk 18, as well as being secured to the latter, is a cylindrical nozzle 21 for supplying the combustible mixture formed of fuel oil and compressed air to the mixing chamber 17 and from there it enters the combus-

tion chamber 12. The openings 19 supply air under atmospheric pressure to the combustible mixture supplied into the chamber 17, and the openings 14 supply air under atmospheric pressure into the combustion chamber 12 to admix with the combustible mixture supplied thereto.

The nozzle 21 projects forwardly and rearwardly with respect to the disk 18 and is secured to a hollow cap member 22 mounted on one end of the handle 9. The other end of the handle 9 is provided with a cap member 23, to which is connected the pipe 8. The cap members 22 and 23 provide means for swivelly mounting the handle 9 in position.

The combustible mixture not only includes compressed air and fuel oil, but also air at atmospheric pressure, which is drawn into the chambers 12 and 17 as the mixture is supplied thereto, and the admixing of the air under atmospheric pressure, supplied to the combustible mixture of fuel oil and compressed air provides a proper mixture of air and oil so as to insure efficient combustion. The torch will burn the lower grades of oil effectively and efficiently, and as fuel oil can be employed, there is effected a great saving in cost of fuel by the use of fuel oil over the employment of kerosene and gasolene.

The combustible mixture of fuel oil and compressed air is supplied through a single pipe, and into the mixing chamber 17 and from there it enters the combustion chamber 12 and the force of the mixture will draw air at atmospheric pressure through the air inlet openings into the chambers 12 and 17 and the combining of the air at atmospheric pressure with the oil and compressed air will insure proper combustion, under such conditions setting up an efficient torch.

It is thought that the many advantages of a blow torch in accordance with this invention can be readily understood, and although the preferred embodiment of the invention is as illustrated and described, yet it is to be understood that changes in the details of construction can be had which will fall within the scope of the invention as claimed.

What I claim is:—

1. A blow torch comprising a hollow cylindrical body portion comprising a combustion chamber, a tapered nozzle extending from the forward end of said body portion, an inwardly extending and rearwardly inclined annular flange projecting from the rear end of the body portion and formed with a series of slots open at one side, a hollow cylindrical member extending through said flange, closing the open sides of said slots, forming a mixing chamber and having its forward end opening into the combustion chamber at the rear end thereof, a disk secured to the rear end of said member and provided with air inlets, and a nozzle extending through said disk and opening into said mixing chamber and leading from a combustible mixture supply.

2. A blow torch comprising a hollow cylindrical body portion providing a combustion chamber, a tapered nozzle extended from the forward end of said body portion, an inwardly extending and rearwardly inclined annular flange projecting from the rear end of said body portion and formed with a series of air inlets, a hollow cylindrical member extending through and abutting the free edge of said flange, forming a mixing chamber and having its forward end terminating at and opening into the rear end of said combustion chamber, a disk secured to the rear end of said member and provided with air inlets, and a nozzle extending through said disk centrally thereof and opening into said mixing chamber and further leading from a combustible mixture supply.

3. A blow torch comprising a hollow cylindrical body portion providing a combustion chamber, a tapered nozzle extended from the forward end of said body portion, an inwardly extending and rearwardly inclined annular flange projecting from the rear end of said body portion and formed with a series of air inlets, a hollow cylindrical member extending through and abutting the free edge of said flange, forming a mixing chamber and having its forward end terminating at and opening into the rear end of said combustion chamber, a disk secured to the rear end of said member and provided with air inlets, and a nozzle extending through said disk centrally thereof and opening into said mixing chamber and further leading from a combustible mixture supply, the air inlets in said flange being oval in contour and the air inlets in said disk being circular in contour.

In testimony whereof, I affix my signature hereto.

C. V. ROYALL.