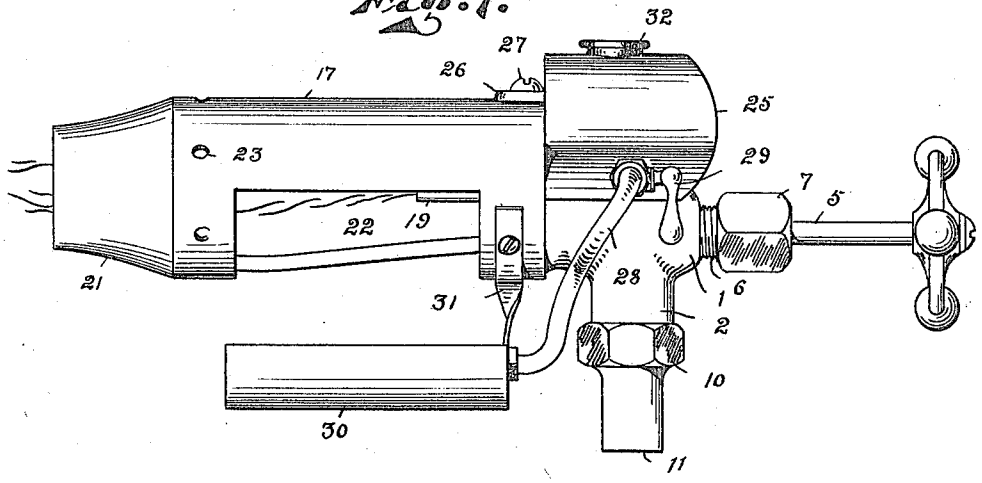
G. E. HOLMGREN.

BLOW TORCH.

APPLICATION FILED FEB. 23, 1917.

1,236,172. Patented Aug. 7, 1917.

Fig. 1.



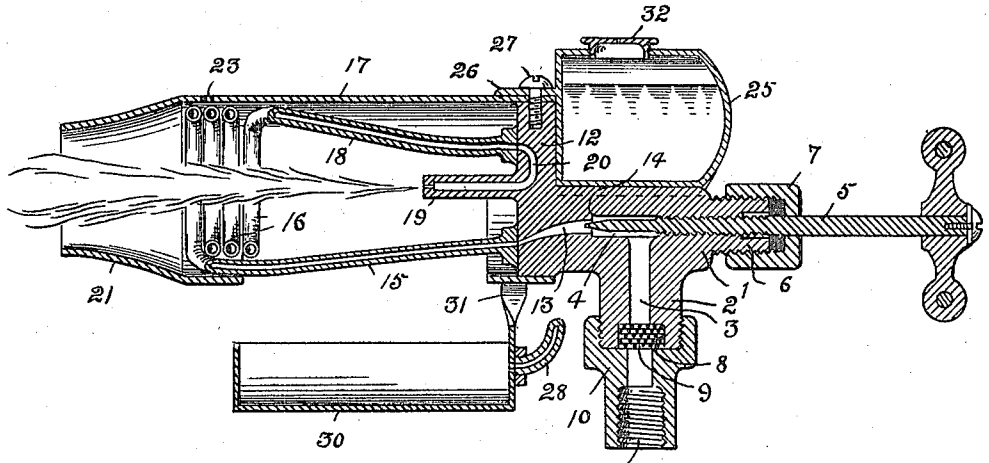


Fig. 2.

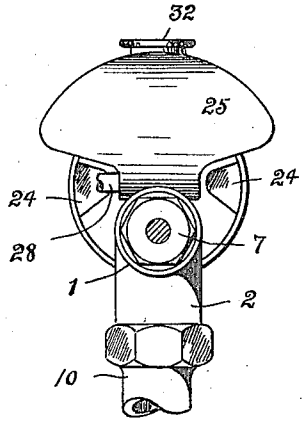


Fig. 3.

INVENTOR.

Gust E. Holmgren.

BY Geo. Stevens.

ATTORNEY.

UNITED STATES PATENT OFFICE.

GUSTAF E. HOLMGREN, OF DULUTH, MINNESOTA, ASSIGNOR OF ONE-HALF TO HUGO FREIMUTH, OF DULUTH, MINNESOTA.

BLOW-TORCH.

1,236,172. Specification of Letters Patent. Patented Aug. 7, 1917.

Application filed February 23, 1917. Serial No. 150,414.

To all whom it may concern:

Be it known that I, GUSTAF E. HOLMGREN, a subject of the King of Sweden, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Blow-Torches, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention consists of certain new and useful improvements in blowtorches and relates particularly to that class of torch used in connection with a container to which may be applied air pressure as in the common hand blowtorch well known to the trade.

The principal object is to produce a torch in which kerosene may be used in place of a more volatile liquid such as gasolene and the like which are commonly used in blowtorches.

Another object is to produce such a device having fully as great, if not greater, heating efficiency than the common gasolene torch.

Still another object is to provide simple and convenient means for heating and igniting the torch.

The torch, as herein illustrated, is designed to be screw threadedly attached to a suitable kerosene supply under pressure, such as a container or the like above referred to and as the container forms no part of my present invention, it is not considered necessary to illustrate same.

In the accompanying drawings forming part of this application and in which like reference characters indicate like parts:

Figure 1 is a side elevation of the improved torch.

Fig. 2 is a vertical, central, longitudinal, sectional view thereof, and:—

Fig. 3 is a rear elevation of the head of the torch with portions removed for better comprehension.

The head of the torch is of cast metal and comprises the cylindrical, horizontal portion 1 and depending vertical portion 2. A passage-way 3 is formed in the portion 2 and communicates with a similar passage-way 4 formed at right angles thereto in the horizontal portion 1 of the head.

A screw-threaded needle valve stem 5 protrudes within the passage-way 4 through the rear end 6 of the portion 1 and a leak proof joint therewith is accomplished in the usual manner by a stuffing nut or cap 7. This form of needle valve and its manner of attachment are old and well known in the art.

The lower end of the vertical portion 2 of the head is bored out some little distance larger than and concentric with the passageway 3 therein forming an enlarged cylindrical chamber 8 into which is placed a plurality of disks 9 of fine wire screen. In practice I employ preferably six such disks.

These pieces of screen are held in place by the end of the portion 2 being externally screw-threaded and the hollow cap member 10 screwed upon the portion 2 until it impinges the pieces of screen as clearly illustrated in Fig. 2.

The lower elongated end of the cap 10 is internally screw-threaded as at 11 for attachment to a suitably formed nipple on a container or on whatever device the torch is to be attached.

The object of the screens 9 is to break up the volume of kerosene as it enters the passage-way 3 and to a certain degree tend to vaporize same, as it is found that without such, when the flow of kerosene is uninterrupted, the efficiency of the torch is materially reduced.

The face plate 12 of the torch head is circular in form, eccentric to the horizontal portion 1 and formed integral therewith. Adjacent the lower edge of the face plate and communicating with the passage way 4 is a passage-way 13 which is controlled by the needle valve as at 14.

Attached to the face of the plate 12 and communicating with the passage-way 13 is the small copper or brass pipe 15 which extends forwardly for a distance approximately the length of the head and is bent upwardly and spirally into a coil 16 which is designed to snugly fit the sheet metal casing 17 which surrounds it. Then the pipe is returned toward the face plate 12 from the uppermost point of its last coil as indicated at 18 and is securely attached to the face plate 12 somewhat above the central protruding hollow nozzle 19 which is formed integral with the face plate. A U-shaped passage-way 20 is formed in the face plate 12 and provides a communication between the hollow nozzle 19 and the pipe 18.

By this arrangement it is seen that the liquid to be burned as fuel in the torch passes from the needle valve, through the

pipe 15, coils 16 and pipe 18 to and through the nozzle 19 the discharge of which is comparatively very small and designed only to discharge the fuel after being converted into a highly combustible gas.

The conversion of the kerosene from a liquid to a gas is caused by the prolonged heating process as it passes through the pipe and said heat after first being properly started is maintained by the continued combustion of the gas as it is discharged from the nozzle and passes through the coil on its ultimate mission of service beyond the front end of the torch.

This prolonged subjection to heat of the kerosene in passing through the coiled pipe is necessary to overcome the low volatility of the kerosene and the embodiment here disclosed has proved in practice to work admirably though it is to be understood various modifications within the scope of the invention may be resorted to without departing from the spirit thereof.

The metal casing 17 is of elongated cylindrical form and fits tightly over the face plate 12 which supports it. The walls of the opposite end just beyond the coils 6 converge slightly forming a somewhat funnel shaped terminus or nozzle 21, the object of which is to somewhat deaden the circulation of air in direct contact with the coils 6 and maintain the proper temperature thereabout.

The lower half of the barrel portion of the casing 17 is entirely cut away as at 22 excepting a relatively short portion at each end as clearly illustrated and a plurality of small vent holes 23 are formed through the forward portion thereof adjacent the end 21.

Through the face plate 12 adjacent the circumferential edge thereof are formed two opposed vent openings 24 24 for supplying air in back of the nozzle 19 and which are essential to the proper working of the device.

Intermediate of these vents, abutting the rear wall of the face plate and resting upon the top of the horizontal portion 1 of the head is a small tank 25. On the front end of the tank is formed a lug 26 which rests upon the adjacent end of the casing 17 and is fastened through the casing to the face plate by a suitable screw bolt 27 which holds the tank securely in place.

To one side of the lower portion of the tank 25 is attached a pipe 28 having a suitable spigot valve 29 installed therein for controlling the discharge through the pipe. The opposite end of the pipe 28 is attached to the rear end wall of the priming pan 30 which latter is suspended in any desired and convenient manner from the casing 17 as by the straps 31. This priming pan or cup may be of any desired form and is, as well known in the art, for holding the liquid used in the initial heating of the torch. In the common form of gasolene torch, this pan is filled directly from the fuel supply used in the torch but when kerosene is being used in the torch as herein described, need of some more volatile liquid such as gasolene or the like becomes essential for a quick and efficient initial heating or priming, thus I have provided the tank 25 for carrying a supply of such priming liquid. The tank is designed sufficiently large to supply a number of primings and forms a very convenient means for same, a common filling stopper 32 being installed in the top of the tank.

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

1. A blowtorch of the character described, comprising a substantially T-shaped head having an enlarged, eccentric, circular shaped face plate formed upon one end thereof, a fuel supply passage-way in the head and discharging below the center of the face plate, an axial nozzle protruding from the face plate and communicating with a passage-way above the center of the face plate, a spirally coiled tube, the coils of which are spaced a distance from the end of the nozzle and concentric therewith, the receiving and discharging ends of said coil communicating with the first and second mentioned passage-ways respectively, a cylindrical casing surmounting the pipe coil and attached to the face plate and means for controlling the supply of oil to the torch.

2. The combination with a substantially T-shaped blowtorch head having an angular passage-way therethrough, a needle controlling valve within the said passage-way and a spiral heating coil communicating with said passage-way, of a plurality of wire screen disks installed within the receiving end of the passage-way substantially as and for the purpose described.

3. The combination with a substantially T-shaped blowtorch head having an angular passage-way therethrough and a needle controlling valve installed in the angle of the passage way, of a vaporizing metal screen installed within the receiving end of the passage-way, a heating and conducting tube communicating with the discharge end of the passage-way and extending outwardly a considerable distance therefrom, a plurality of spiral coils in the extended portion of the tube and a return extension of the tube connected to the torch head, a discharge nozzle fixed to the head and discharging centrally through the spiral coils, a passage-way communicating between the return extension and the nozzle and a casing supported by the head and surrounding the coil.

4. The combination with a torch head

having an angular passage-way therethrough controlled by a needle valve and a vaporizing screen in the receiving end of the passage-way of a circular, eccentric face plate formed integral with the horizontal portion of the head, a discharge nozzle extending from the center of the face plate, a coiled conductor pipe extending outwardly from the face plate and attached thereto, one end of the pipe communicating with the nozzle and the opposite end with the supply passage-way in the head and the coils in the pipe being concentric with the nozzle, a casing carried by the face plate and surrounding the pipe, a portion of the lower half of the casing being cut away and horizontally opposed vent openings in the face plate substantially as and for the purpose described.

5. The combination with a kerosene blow-torch comprising a head having a horizontal portion, a circular upwardly extending eccentric portion, a cylindrical casing carried by the eccentric portion and a priming pan suspended below the casing, of a tank carried upon the horizontal portion of the head adjacent the eccentric portion and a valve controlled pipe connection from the tank to the priming pan whereby a more inflammable liquid than kerosene may be carried by the torch for priming purposes.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

GUSTAF E. HOLMGREN.

Witnesses:
S. GEO. STEVENS,
HUGO FREIMUTH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."