Nov. 30, 1948. S. C. BRODY 2,455,222

BLAST TORCH

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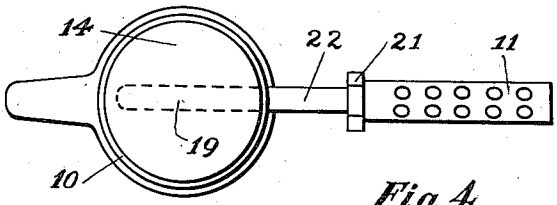


Fig. 4

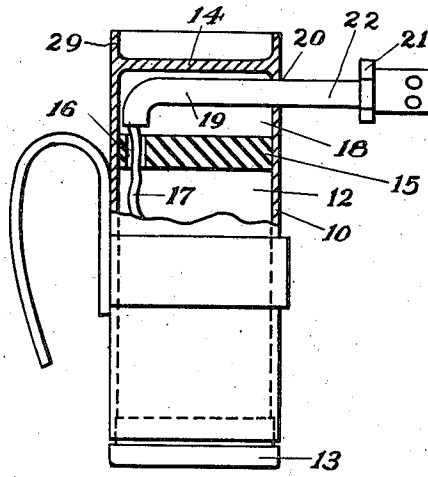


Fig. 1

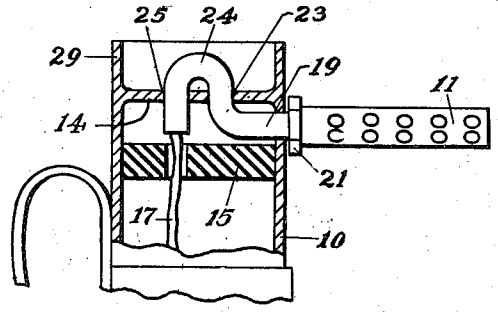


Fig. 2

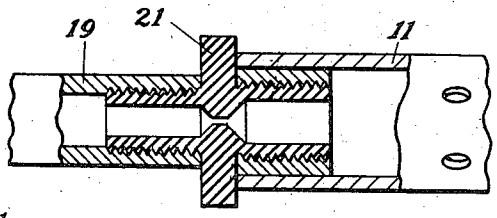


Fig. 5

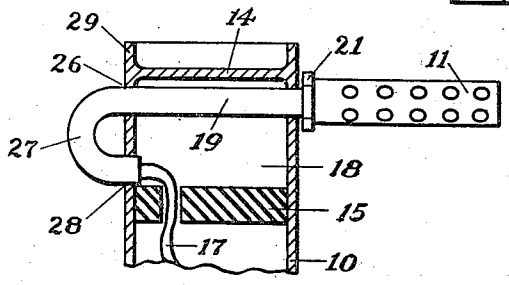


Fig. 3

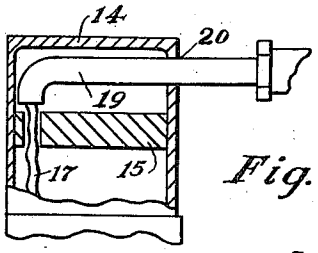


Fig. 6

Inventor

SAMUEL C. BRODY

By

Attorney

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BLAST TORCH

Samuel C. Brody, Newton, Mass.

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6 Claims. (Cl. 158—33)

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This invention relates to automatic blast torches of the self-generating type and discloses various torch constructions for efficiently utilizing the continuous heat developed by the combustion burner for quickly and thoroughly vaporizing the fuel supplied to said burner from the fuel chamber of the torch before it reaches said burner and is combusted therein.

According to my present invention, the pressure generating tube to which the combustion burner is assembled is located, in part at least, within a gas chamber defined by the top end closure of the casing of the torch and the fuel barrier within the fuel chamber so that when the torch is operating, said tube efficiently conducts heat from the burner to the casing walls and top closure to cause thorough vaporization of the fuel and thereby produce a uniform and steady blast flame of high intensity at the blast flame end of the burner in all operating positions of the torch.

By locating a substantial portion of the pressure generating tube below the top closure of the casing and sealing said tube portion within the casing and by mounting the combustion burner in close proximity to said top closure, I obtain a sealed-in heating chamber, which, when the torch is operating not only becomes intensely heated by the continuous heat conducted from said burner to said tube but also continuously heats the top closure and the casing walls. This heat retention chamber because of its sealed-in construction effectively and continuously retains the heat therein and this causes quick and thorough vaporization of the fuel into gas before it enters the gas inlet end of the said tube. After gas enters said tube it is super-volatilized as it passes along said tube to the burner for combustion therein.

Alternatively the barrier may be omitted and the raw fuel permitted to contact the interior portion of the pressure generating tube which is sealed within the casing and/or the intensely heated casing walls and top closure so that the fuel will be immediately volatized into gas which will enter the gas inlet end of said tube and pass directly through to the combustion burner for combustion therein.

Other advantages of my torch will appear as this description proceeds.

In the accompanying drawing wherein I have shown several embodiments of my invention—

Fig. 1 is an elevation, partly in section, of one form of my torch.

Figs. 2 and 3 show modifications thereof.

Fig. 4 is a top plan view of Fig. 1.

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Fig. 5 is a detail of a jet unit which may be used with any of the illustrated forms of my invention, and

Fig. 6 shows a further modification.

I have designated generally at 10 the pressure-generating unit of an automatic blow torch of the self-generating type and at 11 the combustion burner therefor.

Unit 10 includes a casing of cylindrical, oval or other cross-section which is formed to provide a fuel chamber 12 closed at its lower end by a closure 13 and at its upper end by another closure 14.

Mounted within the fuel chamber is a barrier 15, preferably of permeable material, which may have an opening 16 therein for the passage of suitable wicking 17. Barrier 15 may be spaced from top end closure 14 to provide a gas chamber 18 within which is located, in part at least, a pressure generating tube, sometimes called a wick tube or "gooseneck" 19. The outer end of tube 19 is extended through a hole 20 in the side wall of the casing and the combustion burner 11 is assembled to said outer end in a suitable manner as by means of a jet unit 21 such as that shown in my prior Patent No. 2,102,404, dated December 14, 1937.

In the form of my invention shown in Figs. 1 and 4, tube 19 extends horizontally through and across the gas chamber 18 substantially from side to side thereof, and projects beyond the wall of the casing for a distance at its gas outlet end, as indicated at 22, to furnish a priming area which may be heated by an open flame or otherwise in starting the torch. The gas intake end of tube 19 is bent downwardly to register with the wick opening 16 in barrier 15 and is open to the gas chamber so that gases in said chamber may enter and expand within said tube and be further volatilized and carried by said tube to the burner.

In the form of my invention shown in Fig. 2, tube 19 extends horizontally through and across the gas chamber 18 for a distance and is then carried upwardly and passed through a hole 23 in the end closure 14 so as to overlie said closure, as indicated at 24, before being carried downwardly and passed through another hole 25 in said closure 14 so as to communicate with the gas chamber. Hole 25 is preferably in alignment with hole 16 in barrier 15 and the portion 24 of tube 19 which overlies closure 14 constitutes a priming area by means of which the torch may be started.

In the form of my invention illustrated in Fig. 3 the construction is generally similar to that of

Fig. 2 except that tube 19 is of a length to extend through and entirely across the gas chamber 18 and at the end thereof which is remote from the burner to pass through the wall of the casing, as at 26, and to extend externally of said casing, as at 27, before re-entering the gas chamber, as at 28. The area 27 of the tube 19 which is external of the casing constitutes a priming area by means of which the torch may be started.

In all the illustrated forms of my invention, the casing is extended upwardly as at 29 beyond the top closure 14 to provide with said closure a priming pan which may be used in starting the torch, if desired. However, the extension of the casing may be omitted and the casing wall be terminated at the top closure, if desired, as illustrated in Fig. 6.

In all forms of my invention, the heat from the burner is continuously conducted to the interior of the torch by means of tube 19 and also by means of the wall of the casing through which said tube extends and also by the top closure which is fixed to the casing. As a result of this construction the fuel is quickly and thoroughly vaporized into gas before delivery to the burner for combustion therein.

When the barrier is eliminated the gas chamber is then created by that portion of the casing between the top level of the fuel and the top closure 14 so long as the torch is operated in a reasonably vertical position. However, when the torch is operated in fully or substantially inverted positions the gas chamber is temporarily displaced and that portion of the pressure generating tube which lies within the casing acts as an intensive heating element to heat and volatilize the fuel in contact with said tube.

The described embodiments of my invention are illustrative of some of the modifications which may be made therein. However I recognize that various other modifications are possible and accordingly all such are to be regarded as within the scope of my invention as suggested by the appended claims.

I claim:

1. In a torch, a pressure generating unit comprising a casing having a side wall and formed to provide a fuel chamber provided with a closure at its upper end, a barrier within said casing and spaced from said closure to provide a gas chamber, a pressure generating tube extending transversely of the casing and lying in part at least within said gas chamber in close proximity to and

in heat exchange relationship with said closure and said barrier, said tube having its gas inlet end disposed within said gas chamber and having its gas outlet end extending through the side wall of said casing, and a combustion burner assembled to the gas outlet end of said tube so that when the torch is operating heat from said burner is conducted by said tube to the interior of the casing to heat said closure and barrier and direct heat exchange occurs between said tube and the side wall of the casing.

2. The torch of claim 1 in which the side wall of the casing extends upwardly above said closure to provide with the closure an open top priming pan.

3. The torch of claim 1 in which the gas outlet end of the pressure generating tube is extended beyond the wall of the casing a distance sufficient to provide an exposed priming area.

4. The torch of claim 1 in which the gas intake end of the combustion burner is in contact with the side wall of the casing and a portion of the pressure generating tube protrudes above the closure to provide an exposed priming area.

5. The torch of claim 1 in which the gas intake end of the combustion burner is in contact with the side wall of the casing and the gas inlet end of the pressure generating tube extends outwardly through the casing wall at a point substantially opposite the burner, then extends externally of the casing to provide an exposed priming area, and then re-enters the casing wall above said barrier to communicate with said gas chamber.

6. The torch of claim 1 in which the pressure generating tube is bent between its ends and protrudes through the closure at laterally spaced points to provide an exposed priming area above said closure.

SAMUEL C. BRODY.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,966,252	Lasher et al.	July 10, 1934

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