Sept. 14, 1937. J. H. HORSLEY 2,093,274

TORCH BURNER

Filed Nov. 9, 1935

Fig. 1.

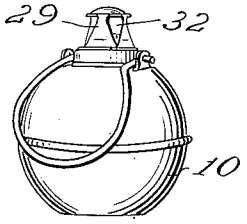


Fig. 2

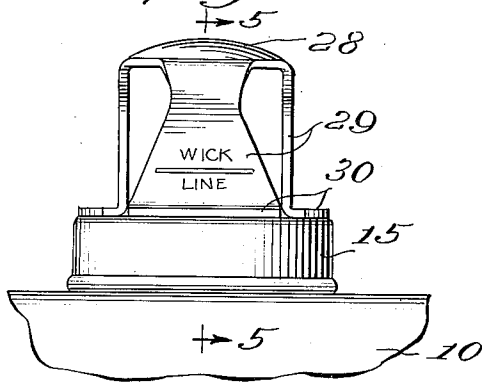


Fig. 3.

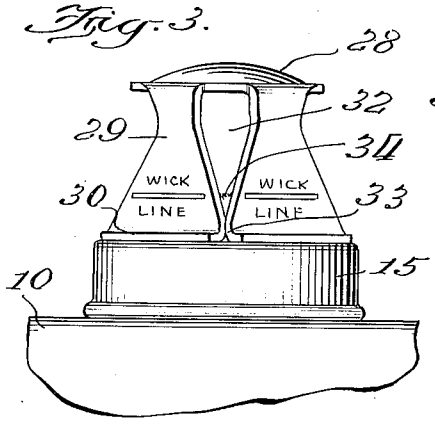


Fig. 4

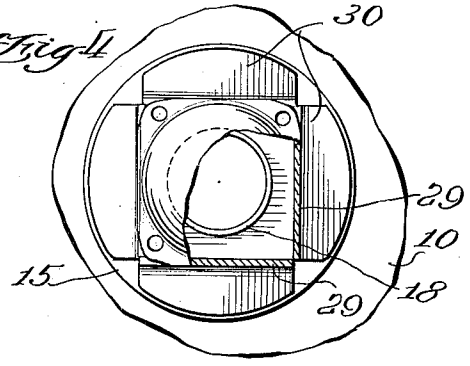


Fig. 5.

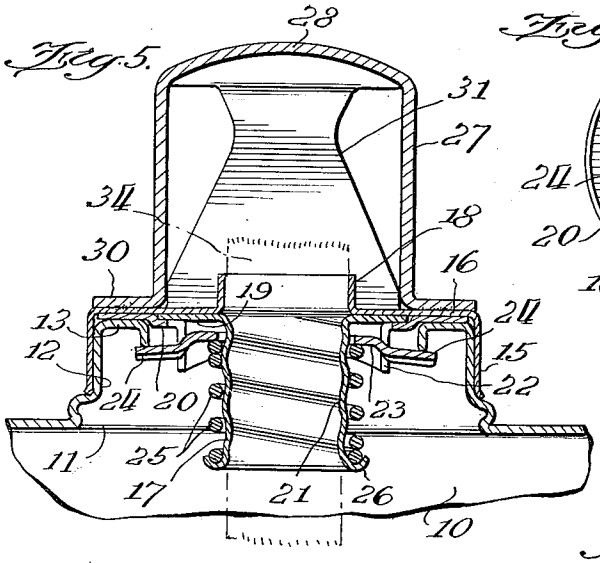


Fig. 6.

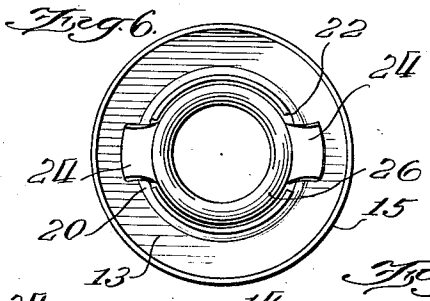
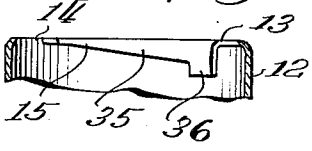


Fig. 7.



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UNITED STATES PATENT OFFICE

2,093,274

TORCH BURNER

James H. Horsley, Chicago, Ill., assignor to Shanklin Manufacturing Company, Chicago, Ill., a corporation of Illinois

Application November 9, 1935, Serial No. 48,978

5 Claims. (Cl. 67—55)

This invention relates generally to improvements in torches or flares, and more particularly to a torch burner adapted for use with torches of the type used for marking of road obstructions, excavations, and the like, as well as for the marking of trucks or other vehicles when left standing or parked on a highway. These torches must be of sturdy construction as they are subjected to relatively rough usage and must be of such construction as to ensure a bright and steady flame under all weather conditions.

It is an object of the present invention to provide a simple and at the same time a highly efficient burner for torches of the above character which will greatly increase the efficiency thereof and materially reduce the liability of extinguishment of the flame by high wind, rain, and falling snow, and at the same time afford the requisite illumination for the purposes contemplated.

Another object of the invention is to provide an improved burner for torches of the character described which will be of substantially rectangular cross section and which will be provided with substantially V-shaped openings extending along the full height thereof at the corners of said burner, said openings forming combined air and flame ports and producing a relatively wide obstruction for protecting the base of the flame against extinguishment by wind or rain, while at the same time providing for a relatively large flame opening adjacent the upper portion of the burner to give a highly luminous flare.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists in certain novel features of construction, arrangement and combination of parts hereinafter fully described, illustrated in the accompanying drawing, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportion, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

For the purpose of facilitating an understanding of my invention, I have illustrated in the accompanying drawing, a preferred embodiment thereof, from an inspection of which when considered in connection with the following description, my invention, its mode of construction, assembly and operation, and many of its advantages should be readily understood and appreciated.

Referring to the drawing in which the same characters of reference are employed to indicate corresponding or similar parts throughout the several figures of the drawing:

Figure 1 is a view in perspective of a torch of the character described having an embodiment of an improved burner associated therewith;

Fig. 2 is a side elevational view of the torch burner;

Fig. 3 is an elevational view of the burner looking towards one corner thereof;

Fig. 4 is a top plan view of the burner with parts broken away;

Fig. 5 is a vertical sectional view taken substantially along line 5—5 of Fig. 2;

Fig. 6 is a bottom plan view of the burner; and

Fig. 7 is a fragmentary sectional elevation of a portion of the neck of the torch body to which the burner is detachably secured.

Referring to the drawing more specifically by characters of reference, the numeral 10 designates a sheet metal torch body which affords a fuel receptacle. Formed in the top wall of the torch body is an opening 11 about which is formed a burner mounting 12 in the form of an upstanding flange or collar, the upper edge of which has an inwardly turned flange 13 which is notched as at 14, to form an element of a bayonet slot arrangement for demountably securing the burner in place. As the construction so far described forms no part of the present invention, the same having been fully disclosed in my Letters Patent No. 1,983,372, issued December 4, 1934, it is not believed necessary to describe the same in more detail.

The burner proper includes a mounting member 15 adapted for rotatable fit upon the upstanding flange or collar 12, the same being formed as a depending annular flange extending from a centrally apertured disk 16 adapted to rest upon the inwardly turned flange 13 of the neck portion 12. The burner includes also a wick holder comprising a short tube 17 and the annular upstanding flange 18 which is turned upwardly about the central aperture of the disk 16.

At the upper end of the tube 17 is an outwardly turned flange 19 held against the underside of the disk 16 by an annular ring member 20, the latter being secured to the underside of the disk 16 by spot welding or in some other suitable and well known manner. The tube 17 is thus secured in axial alignment with the central aperture of the disk 16. Portions of the annular ring 20 are slotted out to form spaced guides 22.

The tube 17 has a centrally apertured disk 23 arranged for sliding longitudinal movement thereon, and this disk is provided with wings 24

extending outwardly and disposed between the guides 22. The upper surfaces of these wings are preferably slightly convex. The disk 23 is pressed upwardly by a coiled spring 25 which is mounted on the tube 17, the upper end of the spring contacting the under surface of the disk 23, and the lower end of the spring abutting the outwardly flanged lower end portion 26 of the tube. The spring is thus held under compression but accommodates a limited downward movement of the disk 23 on the tube 17. The radial length of the wings 24 is such that their passage into the neck 12 is accommodated by the enlarged notched out portions 14 of the inwardly extending flange 16, but such that they will be overlapped by the under portions of the said flange 13. To facilitate the holding of the wick in place within the tube 17, the said tube may be provided with the internal threads 21, as shown in Fig. 5 of the drawing.

The burner further comprises a guard, generally designated by the reference character 27. The said guard is of substantially rectangular cross section and is provided with a top wall 28 which may be preferably slightly concave on its under surface, and the side walls 29, the lower portions of which are turned outwardly, as shown at 30, to provide a flange by means of which the said guard may be secured to the upper surface of the disk 16 in any suitable and well known manner, such, for example, as by spot welding or the like.

From the top wall 28 the side walls extend downwardly substantially at right angles to said top wall, thus forming a substantially box-like shield of rectangular cross section closed on all sides and forming a covered space for the upper end of the wick. Each of the side walls is cut away along each longitudinal edge thereof to form a substantially triangular shaped cut-out portion, as shown at 31. The said cut-out portions will thus produce a substantially V-shaped opening 32 at each corner of the guard or shield with the apex at the lowermost portion of the guard at which point the contiguous side walls are in abutting relation to each other, as shown at 33.

By reason of this arrangement it will be noted that the opening 32 forms a combined air and flame port, the lower portion of which will permit free and liberal access of air to the wick yet at the same time afford the latter adequate protection against wind and rain. The increased size of the upper portion of the opening will permit a relatively large luminous flare. It has been found from actual experiment that by reason of the shape of the lower portion of the opening 32 which forms the air inlet to the guard the liability of the same becoming clogged or otherwise fouled with dust, soot and carbon is greatly eliminated, thus preventing the smouldering of the flame or the weakening of combustion by diminution of the oxygen supply.

As shown in the drawing, the wick 34 extends to a point about one-fourth of the height of the guard at which point the obstruction furnished by the side walls 29 is relatively large, thereby preventing too large an amount of cool air striking the wick to such an extent that the same may be cooled with the result that the temperature of the oil passing up the wick may be reduced below the desired flashing point.

It has also been found from actual experiment that by reason of the shape of the guard or shield being of substantially rectangular cross section, as distinguished from circular cross section, the same will cause the formation of eddies around the corners of the guard with the result that more oxygen will be supplied to the flame, thereby making the same capable of withstanding higher wind velocities.

The shield or guard is made of metal having the proper strength and stiffness to retain its shape under rough usage. The height of the combustion chamber is such that the flame from the wick will impinge the upper part or top wall 28 of the guard quite extensively and strongly and will emerge from the upper portions of the openings 32 to produce a comparatively wide and luminous flare at each of the corners of the guard. Thus when the torch is burning in relatively still air, flame will issue through the upper portion of said corner openings in amounts sufficient to provide the desired illumination, although the zone of initial luminous combustion will be located well within the lower portion of the box-like chamber. Because of the impingement of the flame against the upper side walls of the guard, the same will be kept quite hot and will aid in keeping the combustible gases which are evolved from the fuel at a temperature conducive to their quick ignition and complete combustion. By reason of the construction hereinabove described, the shield will form a very effective baffling for protecting the flame against being blown out no matter what the direction of the wind may be.

It will thus be noted that the construction herein disclosed provides an arrangement wherein a very liberal supply of air is at all times available to the wick and combustion zone as the openings provided in the corners of the shield are of such a configuration as not to become clogged by accumulations of dust or soot, and at the same time the wick and combustion zone are effectively sheltered against strong or high velocity air movement and against falling rain.

In attaching the burner to the torch body, the mounting member 15 is placed upon the upstanding flange 12 and the burner is pressed downwardly and given a clockwise rotary movement. The wings 24 will drop through the notched out portions 14 of the inwardly extending flange 13 and will engage under the higher ends of the projecting portions of the flange, and with a continuation of the rotary movement of the burner will be cammed downwardly against the pressure of the spring 25 by the inclined portions 35 and will finally come to rest against the stop lugs 36. This engagement of the parts will hold the burner securely in place on the neck 12, the pressure of the spring 25 will act to press the disk 16 tightly upon the inwardly extending flange 13. The burner may be quickly demounted by rotating to any counter-clockwise direction and withdrawing it upwardly from the neck 12 when the wings 24 have ridden off the higher ends of the projecting portions 35 of the flange 13.

What I claim and desire to secure by Letters Patent of the United States is:

1. A torch burner comprising a wick holder adapted to retain a wick and affording a top opening permitting the protrusion of the end portion of the wick, and a guard of substantially rectangular formation in cross section associated with the wick holder and extending over the top opening to form a combustion chamber over the wick, said combustion chamber being closed except for diagonally opposed longitudinally arranged openings, said openings being of substan-

tially V-shaped formation with their apices arranged at the lowermost portion of said chamber.

2. A torch burner comprising a wick holder adapted to retain a wick and affording a wick aperture permitting the protrusion of the end portion of the wick, and a flame guard of substantially rectangular formation in cross section associated with the wick holder comprising a cap provided with diagonally opposed longitudinal openings of substantially V-shaped formation with their apices arranged at the lowermost portion of said cap.

3. A torch burner comprising a wick holder adapted to retain a wick and affording a top opening permitting the protrusion of the end portion of the wick, and a shield associated with the wick holder and extending over the top opening to form a combustion chamber over the wick, said shield being of substantially rectangular formation in cross section and having longitudinal openings provided therein at the corners thereof, said openings being relatively narrow at their lower portions to produce a substantial obstruction for shielding the flame while permitting a liberal access of air, and being relatively wide at their upper portions for permitting the emission of a wide luminescent flame.

4. A torch burner comprising a wick holder adapted to retain a wick and affording a top opening permitting the protrusion of the end portion of the wick, and a flame guard associated with the wick holder and comprising a cap of substantially rectangular formation in cross section and provided with corner flame openings and air ports.

5. A burner for a torch or the like adapted to be detachably secured to a fuel receptacle, comprising a tubular wick holder, a guard of substantially rectangular formation in cross section surrounding said wick holder having substantially rectangular side walls and a top wall, each of said side walls having their longitudinal edges cut away to produce substantially triangular cutouts, whereby substantially V-shaped openings will be provided at each corner of said guard with their apices arranged at the lowermost portion of said guard.

JAMES H. HORSLEY.