April 14, 1936. D. C. DUNCAN 2,037,680

BURNER FOR ACETYLENE FLOODLIGHTS

Filed Dec. 28, 1932

Fig. 1.

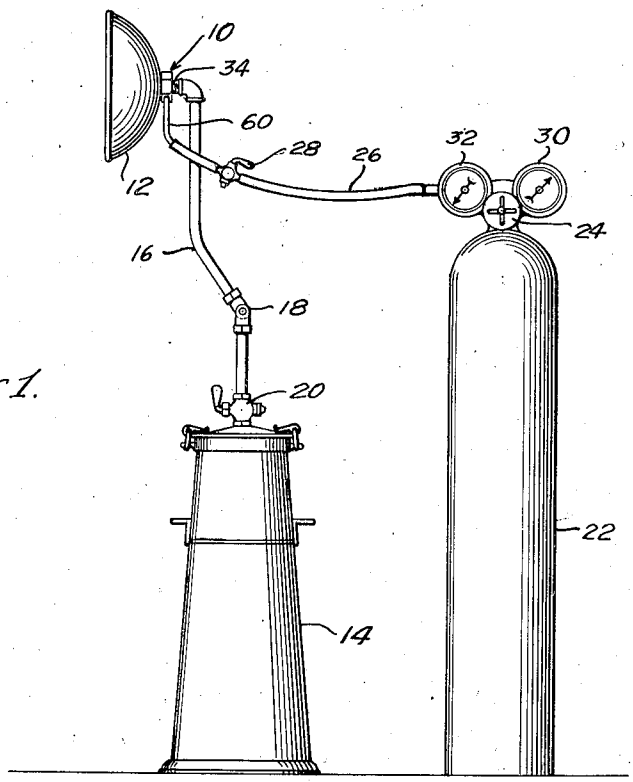


Fig. 2.

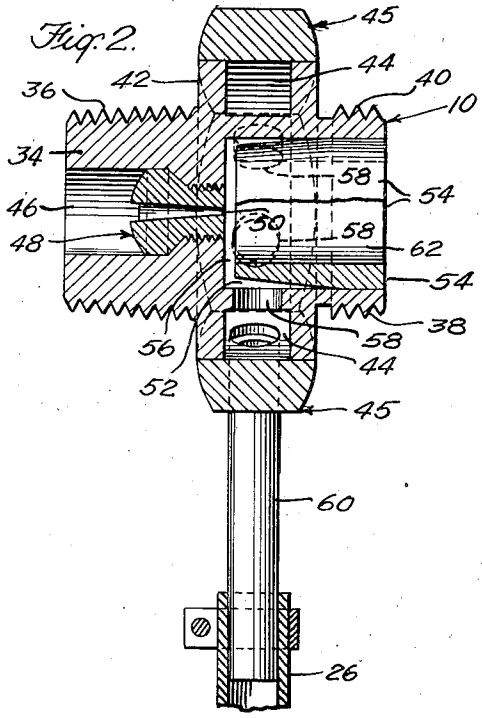
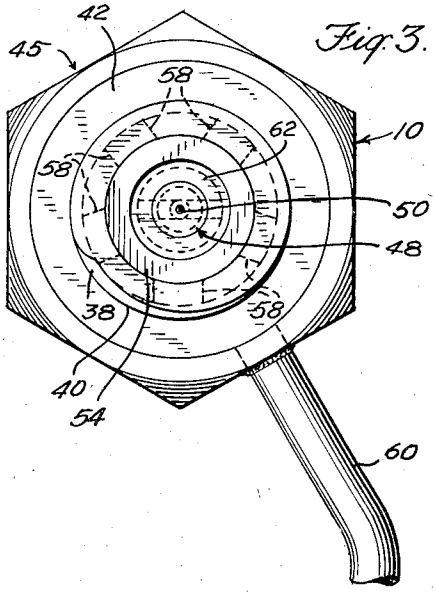


Fig. 3.



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BURNER FOR ACETYLENE FLOODLIGHTS

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2 Claims. (Cl. 67—105)

The invention pertains in general to acetylene burners for flood lights and more specifically to means for increasing the intensity of the flame and reducing the noise of combustion in such burners.

In acetylene flood lights the gas burns with a hissing noise that is objectionable, especially when used to illuminate scenes for motion pictures where sound is also recorded, and one of the objects of this invention is to eliminate or materially reduce this objectionable noise and also increase the intensity, brilliance, or whiteness, of the flame of such burners.

These and any other aims, objects, and novel features, will appear in the following specification and the accompanying illustration in which:

Fig. 1 is a reduced side view of a complete flood light embodying my invention.

Fig. 2 is an enlarged side view, partially in section, of the acetylene burner shown in Fig. 1, and

Fig. 3 is an enlarged front view of the same.

The flood light shown in Fig. 1 comprises a burner such as an acetylene burner 10 carrying a reflector 12 mounted on a base such as an acetylene generator 14 by a suitable pipe or conduit 16 that conducts illuminating gas from the base or generator to the burner and is provided with a movable joint 18 by which the position of the burner may be adjusted with respect to the generator and a valve 20 for controlling the flow of gas to the burner. The burner 10 is also supplied with a gas such as substantially pure oxygen, adapted to stimulate and intensify the flame, from a cylinder 22 through a pressure reducing valve 24 and a conduit or hose 26 having a gas control valve 28. Cylinder 22 may also be provided with suitable gauges 30 and 32 to indicate the gas pressure in tank 22 and hose 26 respectively.

The structure of my improved burner shown in Fig. 1 is shown more in detail in Figs. 2 and 3, and comprises a body having a reduced portion 34 at the rear provided with an external thread 36 by which the burner is mounted on the gas supply pipe 16, a reduced portion 38 at the front provided with an external thread 40 upon which the reflector 12 is mounted, and an enlarged central portion 42 provided with an annular oxygen distributing chamber 44 that is closed on the outside by a ring 45 secured to the body by suitable means such as solder and having a hexagonal outer face by which the burner may be rotated to make the threaded connections with the supporting pipe and reflector.

The rear of the burner body is provided with an acetylene inlet opening 46 having an internally threaded reduced portion at the bottom in which a correspondingly threaded acetylene nozzle 48 having an opening 50 therethrough is secured.

The forward end of the burner body is provided with a cylindrical chamber 52 in axial alignment with inlet opening 46 and nozzle 48 and in communication with the opening in the latter. Secured within chamber 52 by suitable means such as a joint of compression is a sleeve 54 having a cylindrical opening therethrough open at the front to admit air. The front end of the outer surface of sleeve 54 forms a joint with the interior surface of chamber 52 and the rear end of the outer surface is tapered inward and spaced from the wall of chamber 52 to form an oxygen passage. The rear end of sleeve 54 is also spaced from the bottom of chamber 52 to also form an annular oxygen passage or outlet 56 around acetylene outlet 50 and from which oxygen flows into the air in chamber 62 in a direction at right angles to the flow of acetylene from outlet 50 through this chamber. The wall between chamber 52 and chamber 44 is provided with a plurality such as five equally spaced radial openings 58 through which annular oxygen outlet 56 is supplied with oxygen from all sides. Chamber 44 is supplied with oxygen through a conduit such as copper pipe 60 having one end secured in ring 45 by suitable means such as solder, and the other end connected with hose 26.

During operation acetylene from generator 14 passes through pipe 16, inlet opening 46, and opening 50 in nozzle 48 from which it flows in a thin stream, burning jet, or flame of comparatively high velocity. Oxygene from cylinder 22 passes through reducing valve 24, hose 26, pipe 60, distributing chamber 44, openings 58, and annular outlet 56, from which it emerges into the air in chamber 62 at a comparatively low velocity in a direction at right angles to and toward the flame formed by the acetylene jet that flows from nozzle 48. The oxygen flowing from outlet 56 provides an atmosphere of oxygen, or an atmosphere of air rich in oxygen, in mixing or stimulating chamber 62 in sleeve 54, and the flame of the acetylene flowing from nozzle 48 in passing through chamber 62 is mixed with the oxygen or air enriched with oxygen therein so that it burns with an intense white light of much greater brilliance than a similar flame burning in air not supplied with an enriching component such as oxygen, and with no detrimental noise or hiss such as usual in burners for lights of this type.

The flame is in the form of a comparatively long thin jet that flows freely through the mixing chamber to the outer atmosphere. The base of the flame is within the mixing chamber which is larger in diameter than the flame and does not interfere with its shape as formed by the acetylene opening in the nozzle. Also, the stream of oxygen flowing into the mixing chamber is low in velocity and consequently does not materially change the natural form of the flaming jet. Therefore the shape of the flame or flaming jet is formed by the pressure of the acetylene and the shape of the outlet opening of the nozzle, and the shape of the jet of acetylene that flows from the nozzle through the mixing chamber to the outer atmosphere and forms the flame is not materially changed by the mixing chamber or oxygen stream.

My burner may also be used with combustible gases other than acetylene such as those shipped in cylinders under pressure, and with combustion supporting gases less rich in oxygen than that defined.

The component parts of the burner are preferably made of a non-ferrous metal such as brass, although other metals may be employed. Also, the form and arrangement of the component parts may be changed without departing from the range of the invention or the scope of the claims.

I claim:—

1. In an acetylene burner; a chamber; a sleeve in said chamber having the inner end thereof spaced from both the side and bottom thereof to form an annular oxygen inlet; means for supplying oxygen to said inlet at a plurality of spaced points therearound; and an acetylene outlet at the center of said oxygen inlet.

2. In a burner; a mixing chamber having an end open to admit air and an end closed to the air; means for passing a jet of combustible gas through said chamber comprising a gas outlet in the closed end of said chamber; and means for supplying a combustion supporting gas richer in oxygen than said air to the air in said chamber without destroying the shape of said jet, comprising an annular inlet of which one wall is on a plane with the closed end of said chamber.

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