

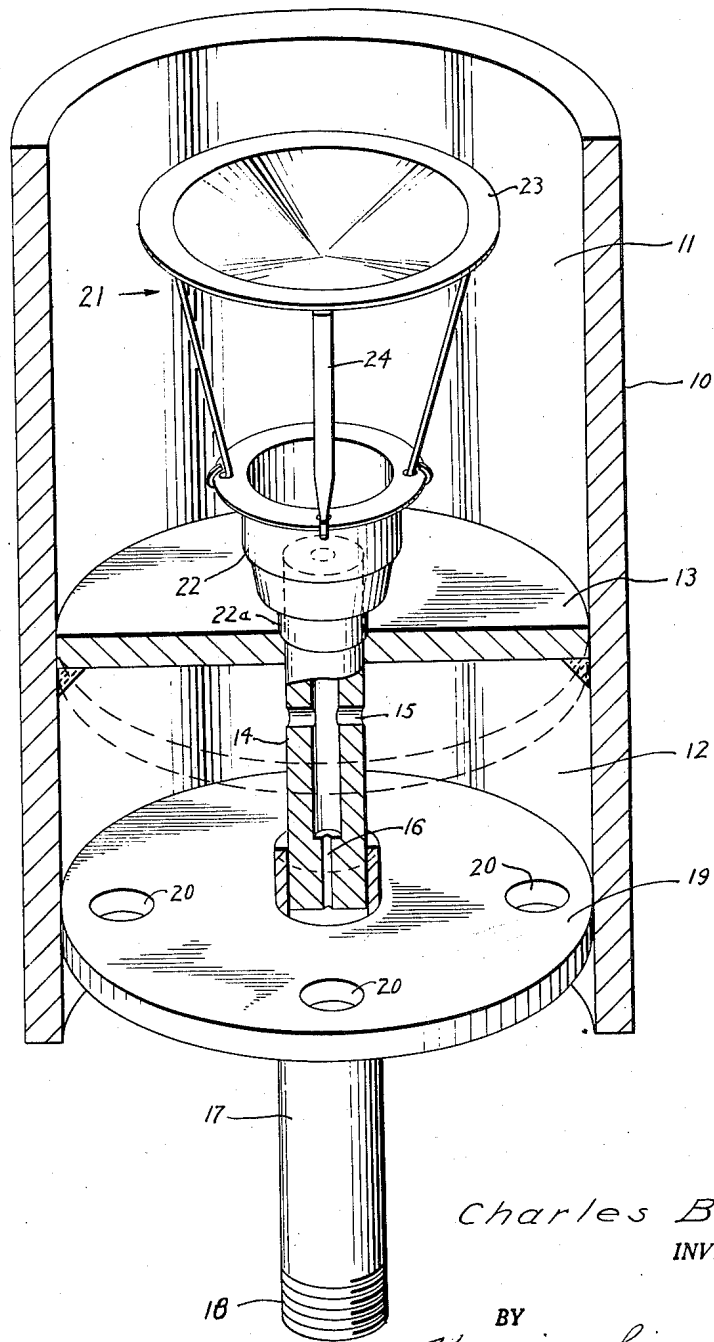
Oct. 7, 1958

C. B. JAHN

2,855,034

PILOT LIGHT

Filed Oct. 14, 1955



Charles B. Jahn  
INVENTOR.

BY  
*Browning Simms Hyer*  
ATTORNEYS

1

2

2,855,034

**PILOT LIGHT**

Charles B. Jahn, Houston, Tex.

Application October 14, 1955, Serial No. 540,526

5 Claims. (Cl. 158-115)

This invention relates to a pilot light and more particularly to a pilot light adapted to be exposed to the elements.

There are many instances, particularly in the petroleum production and gathering industry, where it is necessary to employ a pilot light which is exposed to the elements. For instance, in a separator tank for separating the oil, gas and water mixture which comes from a producing well it is frequently desirable to heat the well fluid to facilitate such separation. This may be accomplished by extending a U-tube-like burner from the side wall of the separator into the separator. In such instances, the pilot light may be located on the exterior of the separator tank and must be capable of remaining lit during all types of adverse weather conditions.

It is accordingly an object of this invention to provide a pilot light adapted to be exposed to the elements which will remain lit under all types of weather conditions.

Another object is to provide a pilot light adapted to be exposed to the elements in which the products of combustion cannot find their way into the unburned mixture in the mixing tube of the pilot light and possibly snuff out the flame.

Another object is to provide a pilot light adapted to be exposed to the elements with a quiescent air chamber from which air in measured amounts may be drawn and mixed with gas to be burned.

Another object is to provide a simple and economically fabricated pilot light.

It is another object to provide a pilot light adapted to be exposed to the elements in which all of the parts are secured to each other by press fitted or slip joint connections save one baffle which is welded to the barrel of the pilot light to thereby provide a simple and economical structure.

Other objects, advantages and features of this invention will be apparent from the specification taken in conjunction with the accompanying drawing and appended claims.

In the drawing wherein there is shown by way of illustration one embodiment of this invention, the single figure is an isometric view of a pilot light constructed in accordance with this invention with one-half of the barrel and separator baffle cut away to illustrate the construction of the pilot light and with a portion of the gas line broken away to expose the metering orifice.

Referring now to the drawing, the barrel 10 of the pilot light is preferably a short section of 2-inch tubing. The barrel may be secured to or adjacent a burner in any desired manner. The burner illustrated is designed to be positioned in an upright position with the axis of the barrel vertical.

The barrel is divided into an upper combustion chamber 11 and a lower quiescent air chamber 12 by an annular imperforate separator baffle 13 which is preferably welded in position in the barrel to form a seal between the two chambers. One-half of baffle 13 is shown in

the drawing and the other half indicated in dashed outline. The baffle 13 prevents the products of combustion from entering the quiescent air chamber therebelow and prevents cross flow of wind through the barrel.

A mixing tube 14 is provided for mixing air and gas to be burned in the combustion chamber. Tube 14 is preferably arranged concentric with barrel 10 and is press fitted into the separator baffle 13 with its outlet end projecting a slight distance above the separator baffle. At an intermediate section of the tube and within the quiescent air chamber there are provided inlet ports 15 for admitting air from the quiescent air chamber into the mixing tube to be mixed with gas therein and delivered to the outlet of the mixing tube.

At the inlet end of mixing tube 14 there is provided a metering orifice 16 to meter the desired amount of gas into the mixing tube. It will be understood that the velocity of gas rushing past inlet ports 15 will cause a predetermined amount of air to be sucked into the mixing tube through ports 15 and mixed with the gas to provide a combustible mixture.

A gas line 17 is press fitted about the inlet and of mixing tube 14 and is provided at its other end with a threaded portion 18 which may be secured to a gas supply line in the conventional manner.

To close the air chamber and provide a quiescent air chamber 12, an air baffle 19 is press fitted about gas line 17 and resides within barrel 10 in spaced relationship with the imperforate baffle 13. Air baffle 19 will prevent rapid movement of air within the quiescent air chamber 12 and permit the jetting action of gas passing through the mixing tube to draw a measured amount of air into the tube through ports 15. To provide air for the quiescent air chamber 12, a plurality of ports 20 are spaced about the air baffle 19. The air baffle 19 is press fitted about the gas line 17 so that the press fit joint between gas line 17 and mixing tube 14 will reside within the quiescent air chamber and any leakage which might occur through this joint will be into the air chamber 12 and be drawn into the mixing tube 14 through ports 15 with air from the chamber.

A flame guard indicated generally at 21 is provided to protect the flame at the outlet of mixing tube 14 from the elements. The flame guard includes a flame chamber 22 which has a neck portion 22a which has a sliding fit with the outlet of mixing tube 14. The flame chamber 22 flares upwardly and outwardly from neck 22a to provide an upstanding wall surrounding the flame at the outlet of the mixing tube to prevent the flame being snuffed out by wind. The flame guard also includes an umbrella shield 23 which is positioned immediately above the outlet of mixing tube 14 and overlies both the mixing tube and flame chamber 22 to protect them from the elements. Thus, rain, snow or the like falling into the upper end of the barrel will strike the umbrella shield 23 and be prevented from falling into the flame. The umbrella is supported on four upstanding members 24 which are carried by the flame chamber 22 so that with removal of the flame chamber 22 the umbrella shield 23 is also removed. The center section of umbrella shield 23 is dished in slightly so that the products of combustion will flow from the center of the shield outwardly and find their way out of the combustion chamber.

Preferably, all parts of the pilot light are fabricated of rust resistant material to insure long life.

In operation, the pilot light is positioned so that a flame within the flame chamber will ignite a gas burner and gas line 17 is connected to a source of gas. Gas is continuously fed through metering orifice 16 and due to its velocity, draws air from the air chamber 12 through ports 15 into the mixing tube 14 and the combustible

3

mixture is burned at the outlet of mixing tube 14. The separator baffle prevents the products of combustion from reaching the quiescent air chamber and prevents cross flow of wind through the barrel.

The umbrella shield 23 will become very hot from the pilot flame and the separator baffle 13 will also be warmed from the flame. Thus, heat will be provided to evaporate any water or snow which falls into the combustion chamber.

From the above, it will be seen that there has been provided a simple, economically fabricated pilot light which may be placed in an unprotected location and which will remain lit under all adverse conditions. It is protected both against the wind and against snow, rain, etc., and against the products of combustion finding their way to the mixing tube. Only two pieces, the barrel and imperforate baffle are permanently secured together with all of the other parts either having a slip or press fit. This principle is even carried to the connection between the mixing tube and the gas line where a press fit is used.

From the foregoing it will be seen that this invention is one well adapted to attain all of the ends and objects hereinabove set forth, together with other advantages which are obvious and which are inherent to the apparatus.

It will be understood that certain features and sub-combinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of the claims.

As many possible embodiments may be made of the invention without departing from the scope thereof, it is to be understood that all matter herein set forth or shown in the accompanying drawing is to be interpreted as illustrative and not in a limiting sense.

The invention having been described, what is claimed is:

1. A pilot light comprising, a barrel, a first baffle secured in the barrel and separating the barrel into an air chamber and a combustion chamber and preventing the products of combustion from contaminating the air chamber as well as preventing cross flow of air through the barrel, an air baffle in the barrel spaced from the first baffle and closing the open end of the air chamber to provide a quiescent air chamber from which air may be drawn in measured amounts and mixed with gas, said air baffle having a plurality of small holes through which air may pass into the air chamber, a mixing tube extending through the first baffle with its outlet end positioned in the combustion chamber adjacent the first baffle, said tube having a perforation located in the air chamber through which air from the air chamber may be drawn and mixed with gas in the tube to provide a combustible mixture at the outlet of the tube in the combustion chamber, said first baffle forming an imperforate separation between said air chamber and said combustion chamber exterior of said mixing tube, and a gas line for delivering gas under pressure to the mixing tube.

2. The pilot light of claim 1 in combination with a flame guard secured to the outlet end of the mixing tube and having an outwardly flaring flame chamber surrounding the end of the mixing tube and an umbrella shield spaced from and overlying the flame chamber and the outlet of the mixing tube to protect the flame within the flame chamber from the elements.

3. The pilot light of claim 1 wherein the gas line is press fitted to the mixing tube within the quiescent cham-

4

ber so that any leakage which may occur through the press fitting will be drawn into the mixing tube through the air inlet therein.

4. A pilot light comprising, a barrel, a first baffle secured in the barrel and separating the barrel into an air chamber and a combustion chamber and preventing the products of combustion from contaminating the air chamber as well as preventing cross flow of air through the barrel, a mixing tube concentric with the barrel and extending through the first baffle with its outlet end positioned in the combustion chamber adjacent the first baffle, said tube having a perforation therein in the air chamber through which air from the air chamber may be drawn and mixed with gas in the tube to provide a combustible mixture at the outlet of the tube in the combustion chamber, said first baffle forming an imperforate separation between said air chamber and said combustion chamber exterior of said mixing tube, a gas line press fitted to the inlet of the mixing tube and concentric with the mixing tube and barrel for supplying gas under pressure to the mixing tube, and an air baffle in the barrel spaced from the first baffle and closing the open end of the air chamber to provide a quiescent air chamber between the first baffle and the air baffle from which air may be drawn in measured amounts and mixed with gas, said air baffle press fitted on the gas line and having a plurality of small holes through which air may pass into the air chamber.

5. A pilot light comprising, a barrel, a first baffle secured in the barrel and separating the barrel into an air chamber and a combustion chamber and preventing the products of combustion from contaminating the air chamber as well as preventing cross flow of air through the barrel, a mixing tube concentric with the barrel and extending through the first baffle with its outlet end positioned in the combustion chamber adjacent the first baffle, said tube having a perforation therein in the air chamber through which air from the air chamber may be drawn and mixed with gas in the tube to provide a combustible mixture at the outlet of the tube in the combustion chamber, said first baffle forming an imperforate separation between said air chamber and said combustion chamber exterior of said mixing tube, a gas line press fitted to the inlet of the mixing tube and concentric with the mixing tube and barrel for supplying gas under pressure to the mixing tube, an air baffle in the barrel spaced from the first baffle and closing the open end of the air chamber to provide a quiescent air chamber between the first baffle and the air baffle from which air may be drawn in measured amounts and mixed with gas, said air baffle press fitted on the gas line and having a plurality of small holes through which air may pass into the air chamber, and a flame guard in the combustion chamber and secured about the outlet of the mixing tube, said flame guard having an outwardly flaring flame chamber surrounding the outlet of the mixing tube to protect the flame therein and an umbrella shield spaced from and overlying the flame chamber to protect the flame within the flame chamber from the elements.

References Cited in the file of this patent

UNITED STATES PATENTS

|           |          |                |
|-----------|----------|----------------|
| 16,031    | Shaw     | Nov. 4, 1856   |
| 1,390,296 | Kirkwood | Sept. 13, 1921 |
| 2,061,562 | Cartter  | Nov. 24, 1936  |
| 2,642,934 | Gunther  | June 23, 1953  |
| 2,704,119 | Spitzer  | Mar. 15, 1955  |