March 13, 1928. 1,662,333

E. J. QUINN ET AL

SAFETY LAMP

Original Filed May 13. 1926 2 Sheets-Sheet 1

Fig. 1.

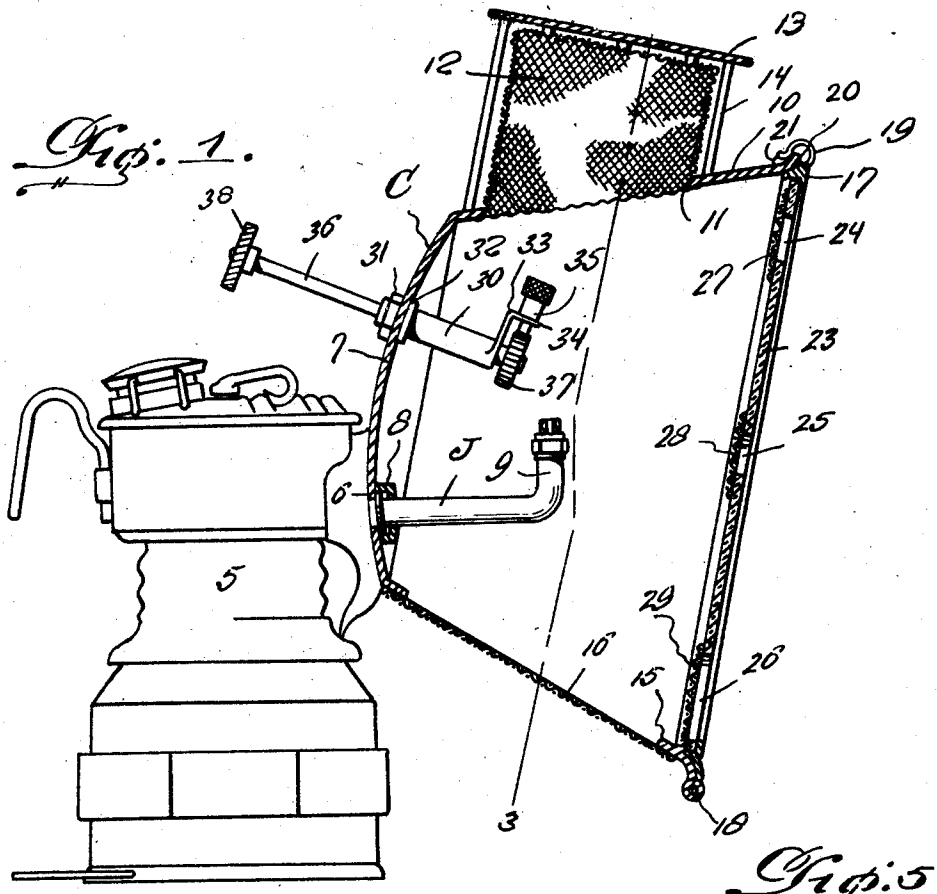


Fig. 5.

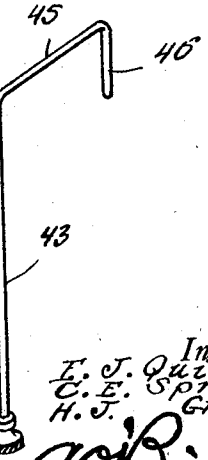
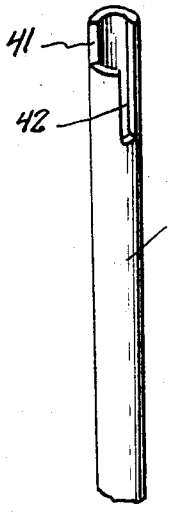


Fig. 4.



Inventors
E. J. Quinn,
C. E. Sprake,
H. J. Gritman,

By Clarence O'Brien

Attorney

March 13, 1928. 1,662,333

E. J. QUINN ET AL

SAFETY LAMP

Original Filed May 13. 1926 2 Sheets-Sheet 2

Fig. 2.

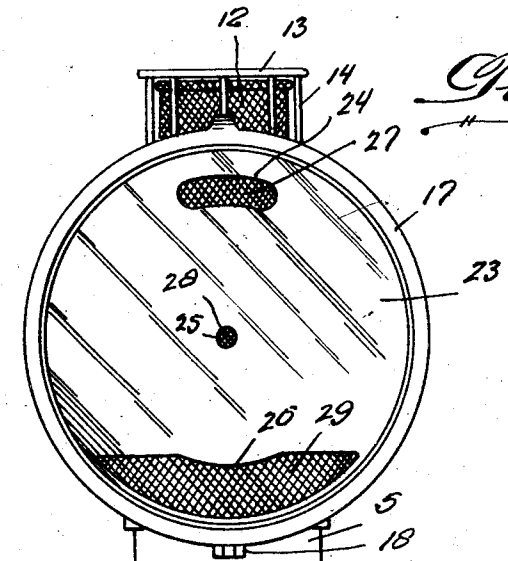
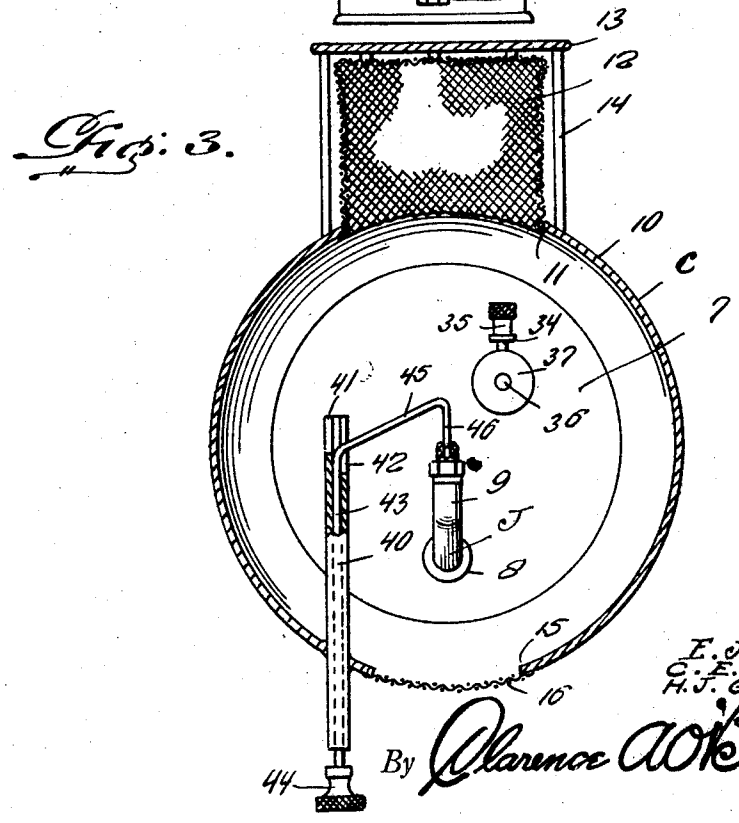


Fig. 3.



Inventors
E. J. Quinn,
C. E. Spranke,
H. J. Gritman,
By Clarence A. O'Brien
Attorney

Patented Mar. 13, 1928. 1,662,333

UNITED STATES PATENT OFFICE.

EDWARD J. QUINN, CHARLES E. SPRAKE, AND HUBERT J. GRITMAN, OF KINGSTON, PENNSYLVANIA.

SAFETY LAMP.

Application filed May 13, 1926, Serial No. 108,859. Renewed October 11, 1927.

The present invention relates to a safety lamp particularly adapted for use by miners and has for its principal object to provide an acetylene lamp utilizing a reflector for housing the flame thereof, and having means whereby if the lamp is brought into an area containg gas, the flame will be automatically put out.

Another very important object of the invention resides in the provision of an improved jet casing for an acetylene lamp which embodies gauze covered openings which will allow gas to pass therethrough into the lamp to be ignited so as to cause a slight explosion within the casing that will put out the flame but will not allow the flame to pass out of the casing to ignite the gases in the mines.

Another very important object of the invention lies in the provision of an improved jet casing for an acetylene lamp wherein the parts are compactly and conveniently arranged to obtain the maximum efficiency in the minimum amount of space, and to afford convenience in the care of the lamp.

Another important object of the invention lies in the provision of a closure for the jet casing which includes a glass panel having openings covered by gauze and also in the provision of a snap fastener which is adapted to be closed by a drop of solder so that after the lamp is lifted it will be necesary to destroy the drop of solder in order to obtain access to the interior thereof.

Another very important object of the invention lies in the provision of a jet cleaner which may be operated from the exterior of the lamp having means contained within itself for allowing it to be brought into proper registry with the bore of the jets.

A still further very important object of the invention is to generally improve upon safety lamps of this nature by providing an exceedingly simple structure, one which may be manufactured at a low cost, and yet be strong and durable, one which is not likely to easily get out of order, and otherwise well adapted to the purpose for which it is designed.

With the above and numerous other objects in view as will appear as the description proceeds, the invention resides in certain novel features of construction, and in the combination and arrangement of parts as will be hereinafter more fully described and claimed.

In the drawing:—

Figure 1 is a sectional view of the lamp embodying the features of my invention,

Fig. 2 is a front elevation thereof,

Fig. 3 is a vertical section taken through the reflector casing substantially on the line 3—3 of Fig. 1,

Fig. 4 is a perspective view of the guide tube of the jet cleaner, and

Fig. 5 is a perspective view of the jet cleaner per se.

Referring to the drawing in detail, it will be seen that the numeral 5 designates generally a well known type of miner's acetylene gas lamp, on which is mounted my improved reflector casing indicated generally by the letter C. This reflector casing C may be held in place by allowing a jet J to project through an opening 6 in the concavo-convex rear wall 7 of the casing C and the utilizing of a packing nut 8 for securely holding the reflector casing in place. This jet J is substantially L-shaped in formation and the shorter outer end or arm 9 thereof extends vertically and terminates in alinement with the axis of the casing C.

The body of the casing C is of a substantial frusto-conical formation, and indicated by the numeral 10. An opening 11 is provided in the upper portion of the body 10 and receives an inverted cup-shaped bonnet 12 of gauze, with which is disposed a cage including a top disk 13 and a plurality of posts 14 rising from the body 10 and arranged in an annular series about the bonnet 12. This cage protects the gauze bonnet from knocks and the like so as to prevent injury thereof. The bottom of the body 10 is provided with an opening 15 covered by gauze 16.

An annular closure frame 17 is hinged to the bottom of the body 10 as at 18 and at its upper end is provided with a spring catch or clip 19 adapted to engage over the annular bead 20 at the front end of the body 10. When the lamp is lit and the frame 17 is closed, a drop of solder 21 will be engaged with the extremity of the clip 19 and the body 10 to function as a seal so as to indicate whether the frame 17 has been opened while the miner is in the mine which, of course, is forbidden.

A glass panel 23 is disposed in the annular frame 17 and may have openings 24, 25 and 26 covered respectively by gauze strips 27, 28 and 29. The panel may be constructed of all glass or all gauze. It will be apparent from the description as it has thus far progressed, that if the lamp is lit and comes into a gas area, said gas will pass through the various gauze portions of the casing C as described in detail above. The gas which passes through the gauze into the casing will cause such an explosion as will put out the jet, but the gauze will prevent the escape of the flame out of the casing so that the gas in the mine will not be ignited.

A journal sleeve 30 is mounted through the rear wall 7 of the casing C above the axis of the casing and extends downwardly and forwardly at an acute angle to said axis and is held in place by a nut 31 and a flange 32 or in any other suitable manner. A bracket 33 is formed on the inner end of the journal sleeve 30 and extends upwardly therefrom and has a forwardly disposed extension 34 in which is threadedly mounted a flint supporting member 35. A shaft 36 is journaled in the bearings 30 and has at its inner end a corrugated steel wheel 37 for rubbing against the flint in the holder 35 while at its outer end, it is provided with an operating wheel 38.

The inner end of this lighting apparatus just described, is disposed above and slightly to the rear of the axis of the bore of the jet 9 so that by turning the wheel 38, the gas escaping from the jet may be readily lighted. This location of the steel and flint lighting apparatus allows for a compact and convenient arrangement and prevents the same from becoming overheated by the flame of the burner.

A guide tube 40 projects through the bottom portion of the body 10 and extends at a chord to the circumference of said body and so as to be in spaced parallelism with the vertical diameter thereof, as is clearly indicated in Fig. 3, and therefore extends in parallelism with the extremity 9 of the jet J. The inner end of this tubular guide 40 is cut away so as to provide a notch 41 having a longitudinally depending portion 42. A shank 43 is rotatably and slidably mounted in the bore of the tubular guide 40 and at its lower end is provided with an operating knob 44. At the upper end of the shank 43, there is provided an angularly extending arm 45 terminating in a depending pin 46 in spaced parallelism with the shank 43. The notch 41 allows for limited swinging movement of the arm 45, one edge thereof in continuation of the edge of the extension 42 functioning as at stop so that when the arm 45 is against said stop, the finger 46 is alined with the bore of the portion 9 of the jet J, and thus the shank 43 may be pulled downwardly and the arm 45 will pass into the extension 42 and the finger 46 into the portion 9 of the jet J.

It is to be noted that while the arm 45 is in the extension 42, said arm prevents any rotary motion being imparted to the shank 43, and therefore prevents the breaking off of the finger 46 in the bore of the jet. Thus this jet cleaning device is thoroughly foolproof and may be operated easily and quickly without any particular care on the part of the operator. The particular location of the jet cleaning contrivance enhances the compactness of the arrangement and affords the maximum convenience.

It is thought that the construction, utility, and advantages of this safety lamp with its improvements, will be readily understood by those skilled in this art without a more detailed description thereof. My novel contribution to the art lies in the idea of combination, involved, producing the superior compactness and convenience so desirable in a device of this nature, without sacrificing the efficiency of the lamp in any way. The present embodiment of the invention, however, has been disclosed merely by way of example, since in actual practice, it attains the features of advantage enumerated as desirable in the statement of the invention as the above description.

Numerous changes in the details of construction, and in the combination and arrangement of parts may be resorted to without departing from the spirit or scope of the invention as hereinafter claimed, or sacrificing any of its advantages.

Having thus described our invention, what we claim as new is:—

1. In a miner's safety lamp of the class described, an L-shaped jet including a horizontal portion and a vertical portion rising therefrom, a reflector casing including a rear concavo-convex wall having a pair of openings one above and one below the axis thereof, the horizontal portion of the jet being mounted in the lower opening, the inner terminal of said jet being alined with the axis of the casing, a bearing mounted in the upper opening, a bracket on the inner end of said bearing projecting upwardly and provided with a forward extension, a flint holder in said forward extension, a shaft journaled in said bearing, a corrugated steel wheel on the inner end of said shaft for cooperating with the flint holder, and an operating wheel on the outer end of said shaft.

2. In combination, a reflector casing, a jet in said reflector casing having a vertically disposed terminal, a tubular guide sleeve projecting vertically thru the bottom of the casing in spaced parallelism with the vertical portion of the jet and terminating at its inner end in a notch and an extension,

said notch and extension having a common edge, a shank rotatable and slidable in the sleeve, means on the lower outer end of the shank for operation thereof, an angularly extending arm on the inner end of the shank terminating in a depending vertical finger, said shank adapted to be rotated to place the arm in engagement with the common wall, at which time the finger will be alined with the bore of the vertical portion of the jet, so that the shank may be moved downwardly for moving the finger down into the bore.

In testimony whereof we affix our signatures.

EDWARD J. QUINN.
CHARLES E. SPRAKE.
HUBERT J. GRITMAN.