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SAFETY LIGHT

Filed June 29, 1932

Fig. 1.

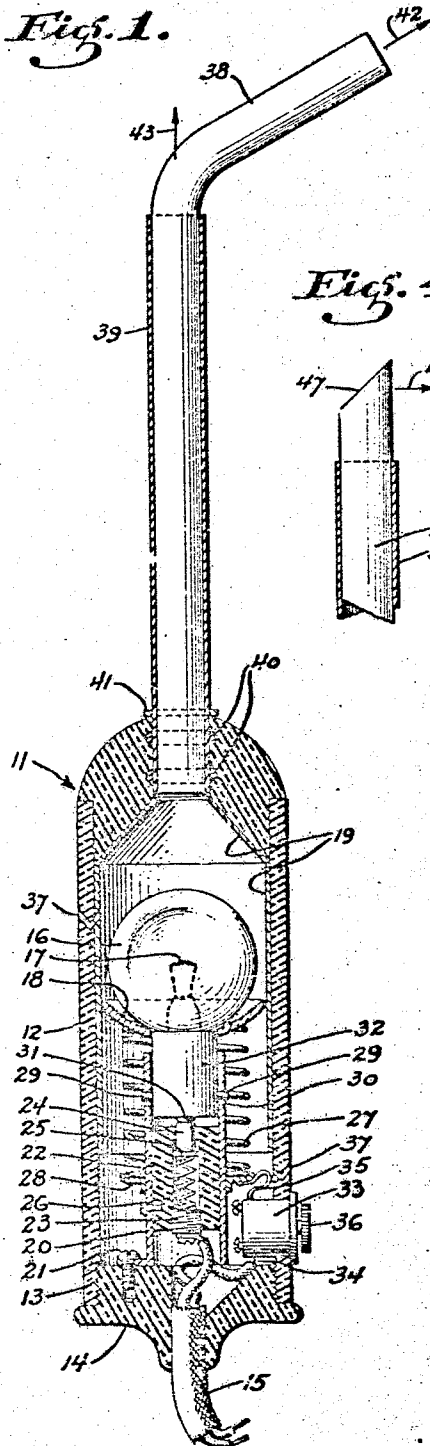


Fig. 3

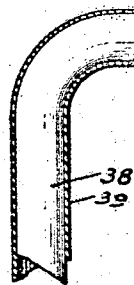


Fig. 5.

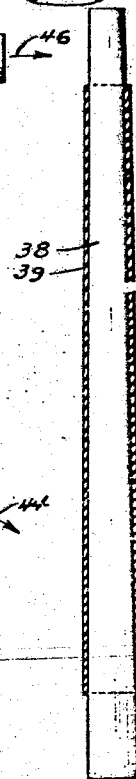


Fig. 4.

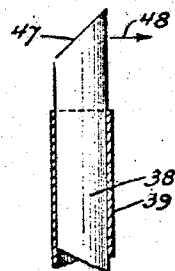


Fig. 2.

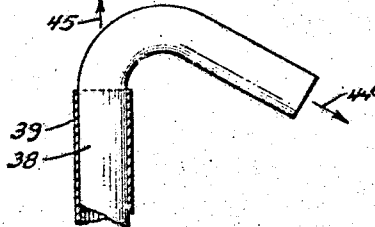


Fig. 6.

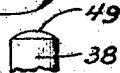


Fig. 7.



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SAFETY LIGHT

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4 Claims. (Cl. 128—23)

This invention relates to lights that may be used in places and for purposes where a higher degree of safety than is possible with present day lights is desired.

5 An object of the invention is the production of a light emitting body, the temperature of which is not raised to any substantial degree by the light rays or by the conditions attendant upon their emission.

10 Another object of the invention is the production of a light emitting body which has a much less tendency to break than present day devices.

Another object of the invention is the production of a light emitting body which, if it does break, will not expose the surroundings to any heat, electrical current, electrical sparks, or other similar effects.

Another object of the invention is the production of a light emitting body which may be easily sterilized.

Other objects of the invention will become apparent on reading the appended specification taken in connection with the accompanying drawing, in which—

25 Fig. 1 is a view partially in section of a complete device according to my invention.

Figs. 2 to 6, inclusive, are views partially in section illustrating various details and modifications, while

30 Fig. 7 is an elevation of a further modification.

I provide a casing 11, this preferably comprising a cylindrical wall 12 which may be of hard rubber, bakelite, or any other desired material useful for the purpose, which is interiorly screw threaded as at 13 at the lower end thereof to accommodate a correspondingly threaded closure cap 14 having a perforation therein to accommodate the flexible electric cord 15, the wires of which supply current to an electric light 16, which preferably has a concentrated filament 17 and which is preferably backed by a reflector 18. The interior of the casing is preferably lined with a reflector 19 and especially that part thereof which is above the lamp.

45 The lamp may be mounted within the casing in any suitable manner as, for example, on a hollow standard 20 of conducting material fastened to the cap 14 by one or more screws 21 passing through a foot forming a part of the standard or suitably attached thereto. Within the standard I provide a cylindrical member 22 of insulating material having a central perforation open at both ends, the upper opening being somewhat smaller than the balance of the perforation. A conducting plug member 23 is screw threaded into the lower end of the cylindrical member 22, while at the upper end is a plunger member 24 slidable in the opening but held from passing outwardly therefrom by the enlarged collar 25 thereon. A compression spring 26 is interposed be-

tween the plug member and the plunger to force the plunger resiliently upwardly. A second compression spring 27 is interposed between the stop member 28 on the standard and the reflector 18.

The lamp is provided with two contacts 29 65 which are adapted to enter a bayonet joint 30 in the standard which is formed of such shape that the lamp is first pushed down and then turned to hold it in lowered position. As the lamp is pushed downwardly in place, it forces down the reflector which is always maintained in the correct position by the spring 27, while the contact 31 of the lamp is always maintained against the plunger 24 by the upward pressure against said plunger of the spring 26. The base member 32 75 forms the other contact of the lamp, this being in electrical contact with the standard 29. For the purpose of convenience, a switch is interposed in the circuit and this may be carried on the casing as at 33, and when the switch is used in such position, one lead wire is connected to one contact of the switch, as at 34, while the other contact of the switch is electrically connected to the standard or to the stop member 28 thereon by a looped flexible connector 35. The switch, of course, is provided with an operating member 36 for making and breaking the circuit. 85

It is desirable with a view to maximum efficiency, that no light rays pass from the inside of the casing to the outside thereof, except through an opening at the top thereof, although for purpose of cooling, the casing may be provided with ventilating openings 37, which preferably are other than rectilinear to avoid bright spots as much as possible. 90

Within the opening at the top of the casing I have positioned a rod 38 consisting of quartz (SiO_2), the surface of which is preferably polished or bright. This rod is provided with a protective shield 39 which is preferably strong and non-transparent to light, it being preferred that said protective shield be not in direct or adhesive contact with said rod so that there will be at least a slight air film in between. The protective shield may be made in any convenient manner, as for example, by molding any non-transparent material into shape and then slipping it over the rod, by wrapping a copper or other metal band spirally about the rod and then electro-plating with copper to form a unitary tube which may then, if desired, be electro-plated with nickel, or said shield may be made in any other suitable manner. I prefer not to mold and bake material onto the rod, since this sometimes results in a direct contact between the shield and the rod, which again results in decreased efficiency of my novel safety light. 105 100 110 115

I prefer that the shield be extended to the lower end of the rod, as seen in Fig. 1, and to have it enter the opening at the upper part of 120

the casing so that it may act as a reinforcement of and support therefor. The shield fits easily but snugly into the opening at the top of the casing and for the purpose of holding it in fixed position when inserted, I provide soft rubber washers 49 in the wall of the opening at the top of the casing 11, and I also provide a stop member 41 on the shield in order that the rod and shield may be inserted just the right distance.

With the structure thus far described and with the lamp emitting light rays, light is emitted at the upper end of the rod 38 irrespective of whether said rod be straight or bent, irrespective of the degree or kind of bending, irrespective of whether or not the shield extends beyond the bend, irrespective of whether or not the shield extends to the very end of the rod, and irrespective of the shape of the emitting end of the rod. For the purpose of illustration only, I have shown on the drawing various features, as for example, in Fig. 1, wherein the rod is shown as bent at an obtuse angle and with the shield extending not quite to the bend, and with this arrangement of features light will be emitted in the direction of the arrow 42, while some light will also be emitted in the direction of the arrow 43. It is to be understood, however, that the shield may be extended beyond the obtuse angle almost to the end of the rod or quite to the end of the rod, as hereinafter described, with respect to Figs. 3 and 7, and it is also to be understood that the end of the rod may have any desired shape, two examples of which are hereinafter described with respect to Figs. 4 and 6, and it is also to be understood that the rod itself may have any desired shape.

In Fig. 2 I illustrate the rod as bent at an acute angle and with the casing extending almost to said angle, but it is to be understood that all the variants possible with the obtuse angled device are applicable to the acute angled device. In the device of Fig. 2, light will be emitted in the direction of the arrow 44 and some light will also be emitted in the direction of the arrow 45.

In Fig. 3 I illustrate the rod as bent at a right angle with the shield extending beyond the angle so that practically all the light will be emitted in the direction of the arrow 46. It is to be understood, however, that there is no particular relationship between a right angled bend and the shield extending beyond said bend, and that all the variants possible with respect to the modifications of Figs. 1 and 2 are applicable to the modification of Fig. 3.

In Fig. 4 I show the end of the rod as having an oblique face 47 and in this type of device light will be emitted in the direction of the arrow 48, while some light will be emitted in other directions.

In Fig. 5 I show the rod as being tapered; and I also show another feature not particularly related to the tapered feature, namely, the shield as not extending to the very end of the rod which is inserted into the casing; and also a further feature not particularly related to the other two just mentioned, namely, that of the rod being straight and unbent.

Where it is found desirable, the emitting end of the rod may be lens shaped, as at 49 (Fig. 6), it being understood that any suitable lens may be applied to any variant of rod.

The shield may be extended right up to the emitting end of the rod with any variant of rod

or other features, as illustrated, for example, in Fig. 7.

My novel safety lamp is applicable to medical and surgical work since the rod and shield may be removed, sterilized and replaced as a unit, and a number of rods and shields of different types, some being possibly of the same types, may be used with the same source of light. It can also be used under any circumstances where a cold light source is desired, and it may have other uses as well.

I have shown and described a number of modifications of my invention by way of illustration only and not as a limitation thereof, the scope of the invention being defined in the appended claims.

The word "rod" as used in the claims is intended to cover either a solid or hollow rod, since the invention is effective to a degree with either.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A safety light comprising a hollow handle forming a chamber, an electric lamp bulb within said chamber, means to supply electric current to said bulb, said handle having an opening communicating with said chamber and in line with said bulb, a quartz rod adapted to be inserted into and removed from said opening, said handle having tortuous perforations therethrough and communicating with the outside thereof and with said chamber automatically to cause ventilation of said chamber on generation of heat therein and to interrupt light rays tending to exit there-through.

2. A safety light comprising a hollow handle forming a chamber, an electric lamp bulb within said chamber, means to supply electric current to said bulb, a switch on said handle for controlling the supply of current to said bulb, said handle having an opening communicating with said chamber and in line with said bulb, a quartz rod adapted to be inserted into and removed from said opening.

3. A safety light comprising a hollow handle forming a chamber, an electric lamp bulb within said chamber, said lamp bulb being smaller than said chamber, means to supply electric current to said bulb, a switch on said handle for controlling the supply of current to said bulb, said handle having an opening communicating with said chamber and in line with said bulb, a quartz rod having a protective shield therearound adapted to be inserted into and removed from said opening, means for mounting said quartz rod light-tight and resiliently in said opening, said handle having perforations therethrough and spaced longitudinally thereof and communicating with the outside thereof and with said chamber automatically to cause ventilation of said chamber on generation of heat therein.

4. A safety light comprising a hollow handle forming a chamber, an electric lamp bulb within said chamber, said handle having an opening in optical communication with said chamber and in line with said bulb, a quartz rod in said opening, perforations in said handle above and below said bulb, reflecting means in said chamber to reflect light rays emanating from said bulb to said rod, the outer end of said perforations being optically out of line with light rays emanating from said bulb or reflected by said reflecting means.

JOHN L. THOMPSON.