H. CSANYI.

ELECTRIC LAMP.

APPLICATION FILED MAY 14, 1913.

1,102,009. Patented June 30, 1914.

Fig. 1.

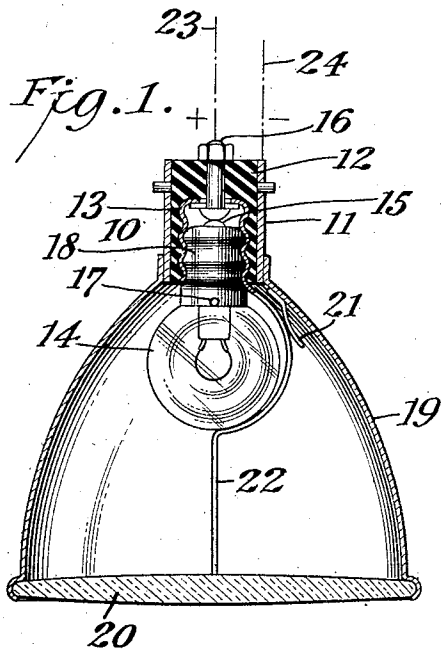


Fig. 2.

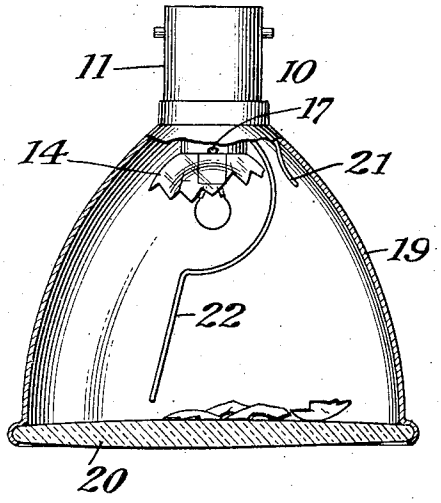
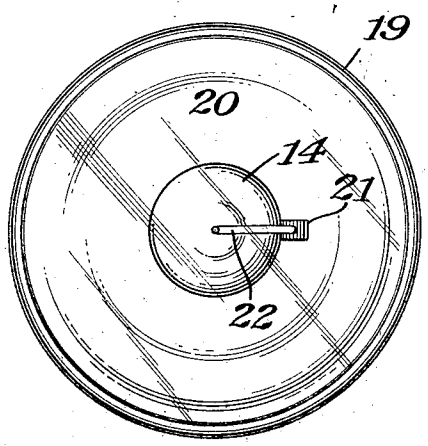


Fig. 3



Witnesses:
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UNITED STATES PATENT OFFICE.

HENRY CSANYI, OF NEW YORK, N. Y., ASSIGNOR TO MAXIVOLT PRIMARY BATTERY CO., OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

ELECTRIC LAMP.

1,102,009. Specification of Letters Patent. Patented June 30, 1914.

Application filed May 14, 1913. Serial No. 767,694.

To all whom it may concern:

Be it known that I, HENRY CSANYI, a subject of the King of Hungary, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Electric Lamps, of which the following is a specification.

This invention relates to electric lamps particularly to incandescent electric lamps for use in mines and other places where the atmosphere is liable to be permeated with gas, fine dust or other substances to such an extent as to cause an explosion if exposed to an open light, a spark, or a glowing filament of high temperature.

The object of this invention is to provide a safe incandescent electric lamp preferably of a portable type to be worn on the cap or other convenient place, or carried in the hand and operated by a low voltage current generated by a small battery of light weight supported from a strap around the waist of the user or in any other desirable manner. The lamp is made "safe" by means of an automatic switch or circuit interrupter connected to the lead in wires from the battery, that is automatically closed by the lamps when screwed into its socket, and continues closed so long as the bulb remains perfect, but the moment said bulb is broken, whatever the cause, the circuit interrupter or switch opens and cuts out the circuit through the filament, extinguishing the light.

A permissible or safe lamp for use in mines, particularly coal mines where explosive mixtures of gas and air are very common, should possess means for opening the circuit through the filament instantly upon breaking the bulb as from a blow on any part of the lamp or its mounting; furthermore the safety devices should be so simple in construction, positive in action and protected from injury or interference in such manner as to insure perfect operative conditions at all times and under all known conditions. To comply with the conditions called for the lamp, hereinafter described in detail has been designed. It is simple, of few parts, and functions instantly upon breaking the bulb which exposes a glowing filament to any explosive gas which may be present.

Various details of construction may be employed for carrying out the fundamental principle of the invention which is to include in the illuminating circuit means for normally holding said circuit open, said means to be actuated by the lamp when fully inserted in its socket to close the circuit and maintain it closed until the bulb of the lamp is broken whereupon said means will automatically open the illuminating circuit and cause the extinguishment of the light. One way of accomplishing the object desired which is the best now known to me, is illustrated in the accompanying drawings, in which—

Figure 1 is a central sectional view of a lamp socket and its shade or reflector with an incandescent lamp in position and one form of circuit interrupter in use therein. Fig. 2 is a similar view showing the lamp bulb broken and the circuit interrupter open. Fig. 3 is a front view of the lamp.

In the drawing, 10 indicates an incandescent lamp socket as a whole comprising an outer tubular sleeve 11 of metal fitting tightly around a cup shaped member 12 made of non-conducting material within which a screw threaded metal lamp holder 13 is cemented or otherwise secured, the sleeve 11 and holder 13 being thus insulated from each other. An incandescent lamp 14 is screwed in the holder, one terminal of its filament making contact at 15 with a screw or bolt 16 passing through the member 12, while the other terminal is soldered at 17, to the threaded metal collar 18 by means of which the lamp is connected to the holder 13.

Projecting forwardly from the sleeve 11 and over the lamp 14 is a sheet metal shade and reflector 19, closed in front by a transparent shield, here shown in the form of a lens 20. Soldered or riveted on one side of the shade and reflector 19 and within the same is a contact finger 21 projecting forwardly beyond the bulb of the lamp 14. A second finger 22 preferably resilient, extends from the lamp holder 13 between the lamp and the finger 21 to, and preferably in contact with the lens 20. The contact fingers 21, 22, which constitute the circuit interrupter, are insulated from each other at their point of support and are in contact only when the lamp 14 is in its socket 10. At other times the resiliency of one, or if desired both fingers keeps them apart. The lighting current enters the lamp from the screw 16, thence through the filament, to the collar 18. From the collar the current passes to the lamp holder 13, interrupter 21,

22, shade 19, sleeve 11, thence back to source. The current wires are indicated by dotted lines 23 and 24. The manner of electrically connecting these wires to the bolt 16 and sleeve 11 may be made in numerous ways, but as this connection forms no part of the present invention, the wires are merely indicated by dotted lines.

When there is no lamp 14 in the holder 13, the contact fingers will be separated as in Fig. 2, but on screwing a lamp into its holder, the bulb of the lamp will press upon the finger 22 and force it into contact with finger 21 so that as soon as the contact 15 engages the screw 16 the filament will become incandescent and continue to glow until the lamp is removed or broken. An unusual shock or jar, such as would result from a fall of the entire lamp, or a blow from a flying piece of coal or other hard object, sufficient to break the bulb would permit the fingers to separate and positively open the circuit, instantly extinguishing the light before communicating to any explosive gas should such be present in the mine. By extending the finger 22 to the lens 20, a blow of sufficient force to break the lens or deform the reflector would press said finger against the bulb and break it, thus permitting the fingers to separate and break the circuit as a matter of precaution.

It is to be noted that the contact fingers forming the interrupter are both contained within the shade or reflector 19 on one side of the lamp and its socket in position to be readily and positively closed upon placing the lamp in its holder. The fingers are convenient of access both to clean and adjust, yet out of the way of careless handling and protected from external injury.

As previously stated, the detail structure hereinabove described illustrates one form only which this invention may take, it is however to be distinctly understood that the invention covers to the fullest extent, the features set forth in the accompanying claims.

What I claim is:—

1. In an incandescent electric lamp in combination, a socket containing contacts for closing the circuit through the lamp, a supplemental circuit closer or interrupter forming a part of the lamp circuit comprising two members connected with said socket tending to separate from each other, one of said members being arranged to be pressed upon by the lamp when in said socket to automatically close and hold closed said interrupter and permit the same to open and break the circuit when the lamp bulb is broken.

2. The combination with an incandescent electric lamp, its socket, and a circuit closer therein, of a supplementary circuit interrupter mounted on the lamp socket and included in the lamp circuit, said interrupter being automatically closed and held closed by the bulb of the lamp pressing thereon and automatically opened to cut out said lamp when the bulb is broken.

3. The combination with an incandescent electric lamp, of a circuit interrupter included in the lamp circuit comprising two resilient fingers tending to spring apart but automatically closed and held closed by the bulb of the lamp pressing thereon, and opening automatically to cut out said lamp when the bulb is broken.

4. The combination with an incandescent electric lamp and its socket, of a shade or reflector connected to said socket and included in the lighting circuit, a lamp holder in the socket and insulated from the shade or reflector, a circuit interrupter forming a part of the lighting circuit comprising fingers tending to separate, one of said fingers being in circuit with said shade or reflector and the other connected to the lamp holder, said fingers being in contact only when a lamp is in position in its holder.

5. The combination with an incandescent electric lamp and its socket, of a shade or reflector for said lamp included in the lighting circuit, a transparent shield for the shade or reflector, a circuit interrupter forming a part of said lighting circuit comprising two fingers tending to separate, one of said fingers being attached to the shade or reflector, and the other to the lamp socket and extending forwardly beyond the lamp to said shield, said fingers being held in contact by the lamp bulb pressing thereon.

6. The combination with an incandescent electric lamp and its circuit closure, of a supplementary circuit interrupter included in the lamp circuit comprising two contacts tending to separate, one of said contacts being resilient and held against the other by the bulb of the lamp pressing thereon, a shade or reflector for said lamp, and a transparent shield for the shade or reflector against the inner surface of which the resilient finger of said interrupter bears when the circuit is closed through said interrupter and adapted to break the lamp bulb when undue pressure is applied to said shield.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

HENRY CSANYI.

Witnesses:
E. H. Bickerton,
J. Granville Meyers.