H. H. M. KAMMERHOFF.

CURRENT SUPPLYING APPARATUS.

APPLICATION FILED DEC. 13, 1913.

1,266,814. Patented May 21, 1918.

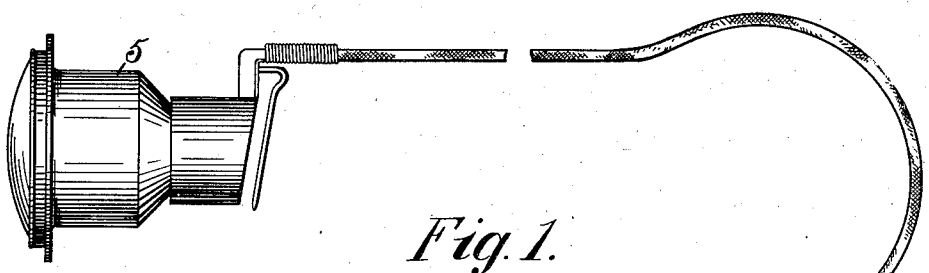


Fig. 1.

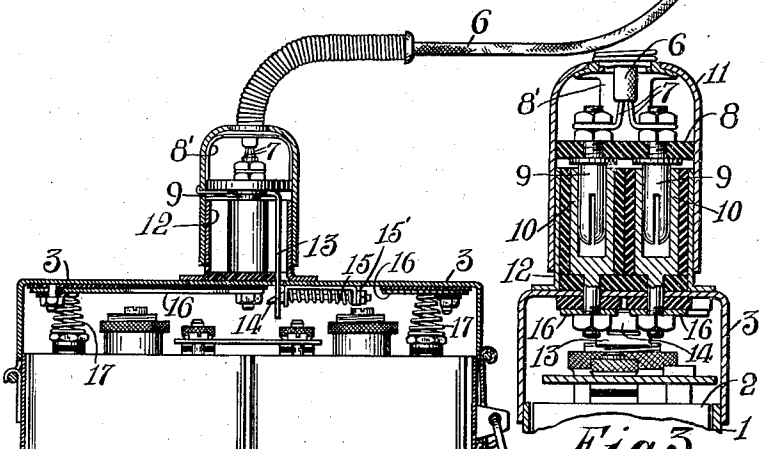


Fig. 3

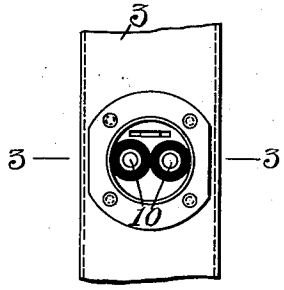


Fig. 4.

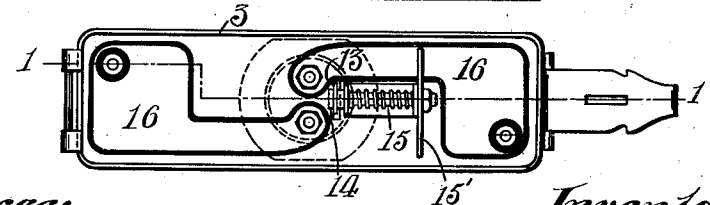


Fig. 2.

Witnesses:
J. A. Brophy
W. S. Ortow.

Inventor:
Heinrich H. Meno Kammerhoff
by Dyer & Holden
his Attys.

UNITED STATES PATENT OFFICE.

HEINRICH H. MENO KAMMERHOFF, OF ORANGE, NEW JERSEY, ASSIGNOR TO EDISON STORAGE BATTERY COMPANY, OF WEST ORANGE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

CURRENT-SUPPLYING APPARATUS.

1,266,814. Specification of Letters Patent. Patented May 21, 1918.

Application filed December 13, 1913. Serial No. 806,389.

To all whom it may concern:

Be it known that I, HEINRICH H. MENO KAMMERHOFF, a subject of the Emperor of Germany, and a resident of Orange, Essex county, New Jersey, have invented certain new and useful Improvements in Current-Supplying Apparatus, of which the following is a description.

My invention relates to current supplying apparatus of general application, and primarily relates to an electric battery-containing casing and connections therewith for use with miners' lamps.

One of the objects of my invention is to provide a portable lighting apparatus for use in mines, so arranged that after the apparatus has been locked and given to a miner, it cannot be tampered with, and the electrical connection between the lamp and the battery cannot be broken, thus adding to the safety of such apparatus by preventing the production of sparks, such as might be produced upon breaking a circuit, and the possible ignition and explosion of inflammable gases. For this purpose I provide a structure in which the conductors connecting the battery and lamp are automatically locked in place when the battery container is closed and locked. Another object of my invention is the provision of a compact, durable, unitary structure which is water and dust proof. My invention consists further in the details of construction and combinations of parts hereinafter more fully set forth and claimed.

In the drawings:

Figure 1 is a vertical sectional view through the cell casing taken on the line 1—1 of Fig. 2 and disclosing a preferred embodiment of my invention connected to operate a miner's head lamp.

Fig. 2 is a plan view of the under side of the detached cover.

Fig. 3 is a detailed vertical sectional view of the connection between the casing and the electric conductor leading to the lamp; and

Fig. 4 is a plan view looking down upon the central portion of the cover.

There is shown a battery comprising a casing 1 containing a pair of galvanic cells 2 and closed by means of a removable hinged cover 3 telescoping the outside of the casing and normally locked in position by some suitable means, such as the padlock 4. The battery is shown operatively connected for use by means of the flexible connection 6 with a miner's incandescent lamp 5, forming the subject matter of my copending application, Serial No. 809,864, filed January 2, 1914. This connection includes a properly sheathed pair of electric conductors 7, one end of each of which is supported by an insulating disk 8 which carries the spaced parallel split socket pins 9 which are electrically connected to the conductors 7. The pins project below the disk 8 and fit within open top sockets 10 mounted upon and insulated from each other and from the cover 3. The disk 8 is spaced from the connection 6 by a U-shape bracket 8′ straddling and fastened to the disk and, together with the pins, is preferably inclosed within a bell 11 carried by the connection 6 and arranged to have a telescoping fit over a sleeve 12 suitably affixed to the outside of the cover 3 and inclosing and insulated from the sockets 10. Depending from the disk 8 and extending through the cover 3 within the sleeve 12 is a latch element 13 adapted to engage with and be locked by the beveled head 14 of the spring pressed bolt 15 which is slidably mounted on the under side of the cover 3 and provided with a fingerpiece 15′ projecting laterally therefrom and constituting a means for retracting the bolt and for limiting the forward movement thereof.

The sockets 10 are respectively in electric contact with a pair of conducting plates 16 supported by and insulated from the under side of the cover, and each plate is in turn electrically connected with one of the poles of the battery by means of coiled springs 17 fixed to the battery poles, each of said springs preferably being in the form of a conical spiral.

In operation, the cells 2 are disposed within the casing 1, and the cover 3 brought into closed position and suitably locked. This will bring the poles of the cells into electrical contact with the sockets 10 respectively through the springs 17 and plates 16. The lamp 5 may then be attached to the battery by inserting the socket pins 9 into the sockets 10, which will automatically bring the member 13 into locking engagement with bolt 15, thereby assembling the parts in locked position so that it is impos-

sible to disconnect the conductors 7 from the battery unless the cover 3 is opened to permit access to bolt 15.

By means of this construction the parts may be locked in connected position before the user goes into the mine, and it is not possible to disconnect any parts either accidentally or intentionally until the user is in a position where any sparking caused by the breaking of the electric circuit could not cause any damage. Even should the lamp and connecting conductors be carried into the mine separated from the locked battery casing, the connection between the lamp and the casing could be made even within the danger zone, as the bell 11 telescopes the sleeve 12 before contact is made between the pins 9 and sockets 10 so that any sparking at this point will take place within the bell. By making the terminals 17 in the form of conical spirals they may be compressed by the cover along their axes with the coils nesting concentrically one on the other thus insuring a good contact between the battery poles and cover.

As the closed top bell 11 telescopes the sleeve 12 and as the cover 3 telescopes the casing 1, there is thus provided a construction which will shed any water dripping on the device, and these parts may have a fit to prevent the entrance of dirt and dust to the battery.

While I have described and shown a preferred embodiment of my invention, many changes may be made therein without departing from the spirit thereof, and I do not, therefore, wish to be limited to the specific structure shown and described.

Having now fully described my invention, what I claim as new and desire to protect by United States Letters Patent is as follows:—

1. In an apparatus of the class described, the combination with a closed casing, of a cell within said casing, a conductor adapted to be removably mounted on the exterior of said casing, and means within said casing adapted when said conductor is applied to the casing to automatically lock the same to said casing and in electrical connection with said cell, substantially as described.

2. In an apparatus of the class described, the combination with a closed casing, of a cell within said casing, a conductor exterior to said casing electrically connected to said cell, and locking means within said casing for maintaining said conductor electrically connected to said cell, said locking means being inaccessible from the outside of the closed casing, substantially as described.

3. In an apparatus of the class described, the combination with a closed casing, of a cell within said casing, a conductor exterior to said casing electrically connected to said cell, locking means within said casing for maintaining said conductor electrically connected to said cell, said locking means being inaccessible from the outside of the closed casing, and means providing access to said locking means, substantially as described.

4. In apparatus of the class described, the combination with a closed casing, of a source of current within said casing, a conductor leading from said casing, said conductor being removably applied to the outside of said casing and having a member extending into the casing, and means within the casing adapted to coact with said member to lock the conductor in place and in electrical connection with said source of current, substantially as described.

5. In apparatus of the class described, the combination with a battery and a container therefor, of a cover for said container, a pair of conducting plates carried by the under side of said cover and insulated therefrom, springs disposed within the container and between the terminals of the battery in the container and said plates respectively, and a pair of conductors leading from said container and removably associated with said plates respectively for electrical connection therewith, substantially as described.

6. In apparatus of the class described, the combination with a cell-casing-cover, of an electrical conductor having a socket attached thereto removably engaging said cover, and locking means comprising an element associated with said socket and adapted to extend through said cover and a coacting element carried by the cover adapted to engage the element carried by the socket to lock the same in place, substantially as described.

7. In apparatus of the class described, a cover having electrical conductors mounted on one side thereof, other electrical conductors removably connected to the opposite side thereof and electrically connected to the first named conductors, a latch supported from said last-mentioned side, and a latch engaging member carried by said removable conductors and adapted to project through said cover into operative engagement with said latch, substantially as described.

8. A casing containing a source of electric current, conducting means mounted exteriorly on said casing, and adapted to have an electrical conductor removably applied thereto, said conducting means being electrically connected with the source of electric current in said casing, and means within the casing adapted to automatically lock said electrical conductor in electrical connection with said conducting means when such conductor is applied to the conducting means, substantially as described.

9. A casing adapted to contain a source of electric current, a cover for said casing hav-

ing means for locking the same in casing-closing position, a pair of plates supported from said cover, insulated from the cover and from each other and adapted to be brought into locking engagement with the source, a pair of connections exterior of the cover for engagement with a pair of conductors, connecting means between said connections and said plates, and a latch mounted on said cover and adapted to lock said pair of conductors to the casing, substantially as described.

10. In apparatus of the class described, a closed casing containing a source of current, a conductor adapted to be removably connected to said casing and to extend therefrom, and means for automatically locking said conductor to said casing and in electrical connection with said source of current when the conductor is applied to the casing, substantially as described.

11. In apparatus of the class described, a closed casing containing a source of current, a conductor adapted to be removably connected to said casing and to extend therefrom, and means inaccessible when the casing is closed for automatically locking said conductor to said casing and in electrical connection with said source of current when the conductor is applied to the casing, substantially as described.

This specification signed and witnessed this 10th day of December, 1913.

HEINRICH H. MENO KAMMERHOFF.

Witnesses:
HENRY LANAHAN,
MARY J. LAIDLAW.