

(No Model.)

J. B. HARRIS, J. T. GRIFFITH & T. B. HARRIS.
MINER'S SAFETY LAMP.

No. 469,918.

Patented Mar. 1, 1892.

Fig. 1.

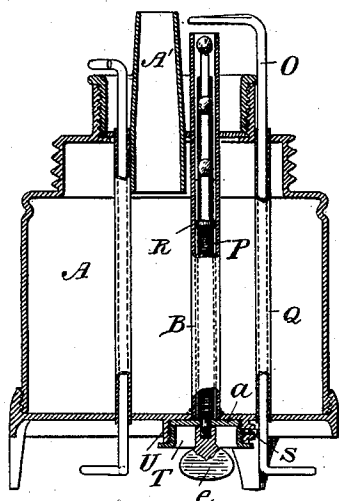


Fig. 3.

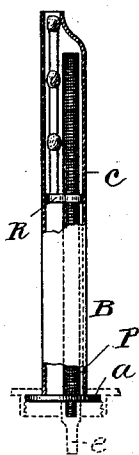


Fig. 4.

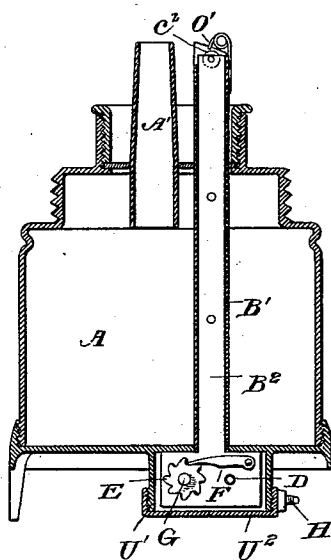


Fig. 7.

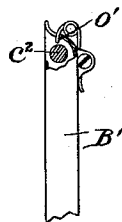


Fig. 2.

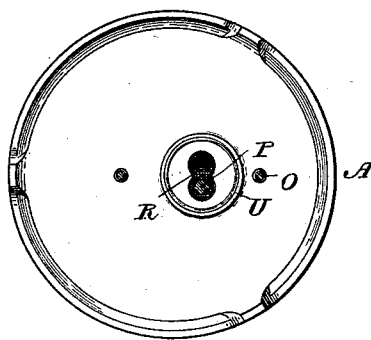


Fig. 5.

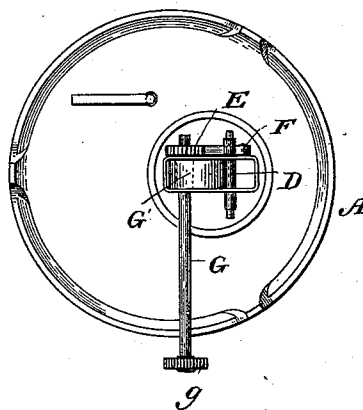
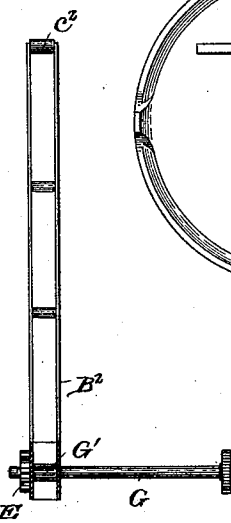


Fig. 6.



Witnesses

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MINER'S SAFETY-LAMP.

SPECIFICATION forming part of Letters Patent No. 469,918, dated March 1, 1892.

Application filed March 16, 1891. Serial No. 385,318. (No model.)

To all whom it may concern:

Be it known that we, JOHN BOWEN HARRIS, JOHN THOMAS GRIFFITH, and THOMAS BENJAMIN HARRIS, citizens of the United States, residing at Wilkes-Barré, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Miners' Safety-Lamps; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our present invention relates to miners' safety-lamps of the character illustrated in our patent, No. 444,435, dated January 13, 1891, and is designed as an improvement upon the invention illustrated in said patent.

The primary object of the invention is to provide efficient safety devices for lighting and relighting miners' lamps of the character referred to, so that it may not be necessary for the miner to leave the mine when he desires to light or relight his lamp, these results being accomplished with perfect safety by the means hereinafter described.

With these objects in view our invention consists in the improvements hereinafter described, and particularly pointed out in the claims at the end of this description.

In the accompanying drawings, forming a part of this specification, Figure 1 represents a vertical sectional view of the oil-reservoir or base of a lamp embodying our improvements. Fig. 2 is a bottom plan of the same. Fig. 3 is a vertical section through the fulminate container or casing which incloses the fulminate-carrier. Fig. 4 is a vertical section of the oil-reservoir, showing a modification of the safety lighting devices. Fig. 5 is a bottom plan of the same. Fig. 6 is a side elevation of the supporting-frame of the fulminate-carrier removed from the inclosing casing shown in Fig. 4. Fig. 7 is a detail representing a modification of the upper portion of the inclosing casing shown in Fig. 4.

Referring particularly to the drawings, in which like letters of reference are used to designate like parts, the letter A represents an oil-reservoir of the usual or any desired construction, which constitutes the base of a

lamp and is adapted to be screwed or otherwise removably secured to the lower section of a lamp, preferably of the construction illustrated in our aforesaid patent. This reservoir may be provided with the usual wick-tube and wick-raising devices, as shown, and in proximity to the wick-tube A' is arranged the open-ended tube or casing B, within which is arranged the traveling fulminate-carrier, which may consist of a flat elongated plate R, having a screw-threaded opening therein at one side of the portion upon which the fulminates are adapted to rest, through which opening passes the screw-threaded rod P, which is suitably swiveled at its lower end in a cap-plate a, which latter rests upon the end of the nut or screw-threaded ring T, which is detachably secured to the bottom of the oil-reservoir by screwing the same into the depending screw-threaded ring or circular flange U, said cap-plate serving also as a cover for the lower end of the tube B, so that when the ring T is screwed to position with the fulminate-carrier and supporting-rod in place within the inclosing casing or tube the opening in the lower end of said casing will be closed, thereby cutting off all communication with the atmosphere from the lower end of the casing, and thus preventing the admission of air and gases through the same, the carrier for the inflammable substances being thus completely housed within the containing tube or casing. The tube or casing B is preferably formed with a lateral extension or bulged portion c at one side thereof, which provides an interior recess or niche to receive the rod P, which latter is provided at its lower end with a thumb-nut or handle e, by which it may be rotated so as to cause the fulminate-carrier R to move up or down for the purpose of bringing a pellet or the end of a match-stub into position to be operated upon by the igniting device O, for the purpose of lighting the lamp, the formation of the tube or casing being such that a number of match-stubs, as shown in Fig. 3, or other suitable inflammable substances may be placed therein at one side of the rod P and supported upon the carrier, one above another, so as to be brought successively into

position to light the lamp. These simple contrivances afford a ready means for supplying a miner's lamp with a number of fulminating-pellets, which may consist of any suitable inflammable substance—for instance, short stubs of matches or the like—which may be moved successively into position to be ignited by contact with the upper roughened end of the bent rod O or any suitable igniting device, for the purpose of lighting or relighting a lamp by manipulating the igniting device from the outside thereof, without danger of explosion or the necessity for leaving the mine for the purpose of lighting the lamp in order to avoid explosions.

To prevent accidental displacement of the removable cap-plate α , which forms a close-fitting cover for the lower end of the casing B, a set-screw S may be used to lock the supporting-ring in position when screwed snugly against said cap-plate.

In the modification shown in Figs. 4 to 7 of the drawings the fulminate-carrier consists of a tape G', having pellets placed at suitable distances apart throughout its length, these pellets being adapted to be moved successively into position to be ignited by contact with the igniting device O', secured to the top of the inclosing casing or tube B'. This fulminate-carrier or tape is preferably supported upon a removable frame B², which carries a roller c^2 at its upper end and a tape reel or spindle G at its lower end, about which the tape is wound as the pellets are brought successively into engagement with the igniting device, the reel G being prevented from moving backward by means of a pawl F, which engages a toothed wheel or ratchet E, fixed upon the reel or spindle G. The shaft or spindle G is provided with a hand-wheel g , by which it may be rotated, so that when the free end of the tape G' upon the roll D is passed from said roll over the roller c^2 and thence to said shaft or spindle, to which it is secured, the revolutions of the shaft will cause the pellets upon the tape to be brought successively into engagement with the igniting device O' for the purpose of lighting the lamp after it has been extinguished. The detachable frame B² is housed within the casing B' the same as the adjusting-screw and fulminate-carrier P R in Figs. 1 and 3, and the depending exteriorly-screw-threaded ring or circular flange U' is provided with a removable cap-plate or cover U², which forms a close-fitting cover for the lower end of the casing B' and prevents the entrance of air and gases from the outside of the lamp, while allowing the igniting devices to be manipulated from the outside, the same as described with reference to the construction shown in Fig. 1. A locking device is also provided, so as to retain the cap-plate or cover U' in position upon the ring U². If desired, the roller c^2 may be journaled in the upper end of the casing B', as shown in Fig. 7, and the lower tape-carrying roll and spindle may be jour-

naled in the enlarged depending screw-capped ring U² of the oil-reservoir, so as to dispense with the removable supporting frame B².

We are aware that safety lighting devices have heretofore been devised in which provision has been made for manipulating the igniting devices from the outside of the lamp for the purpose of igniting matches or other inflammable substances in the form of pellets upon a tape arranged to travel in proximity to the wick-tube; but in previous constructions the devices have usually been so constructed as to render them expensive in manufacture and more or less unreliable in use.

The principal object of our invention is to provide devices of this character which may be safe and reliable in use and which may also be manufactured at a small cost, so as to place the same within reach of men of limited means, by whom such lamps are generally required.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A safety-lamp comprising an oil-reservoir and wick-tube, a fulminate-containing tube extending through the oil-reservoir in proximity to the wick-tube, a traveling fulminate-carrier inclosed within said containing-tube, means for operating the carrier from the outside of the lamp, and an igniting device, said fulminate-containing tube being open at both ends and provided at its lower end with a removable cap-plate or cover, whereby said carrier and inflammable substances supported thereon are adapted to be withdrawn at the base of the lamp from the lower end of the containing-tube, substantially as described.

2. In a safety-lamp, the combination, with the oil-reservoir and the wick-tube, of the fulminate-containing tube arranged in proximity to said wick-tube and open at both ends, the traveling fulminate-carrier removably housed within said tube, means for actuating the carrier from the outside of the lamp, so as to cause a series of pellets to be brought successively into position to be ignited, an igniting device located in proximity to the upper end of the fulminate-containing tube and adapted to be operated from the outside of the lamp, and a detachable cover for closing the lower end of said containing-tube, whereby the fulminates are housed within the containing-tube and adapted to be withdrawn therefrom at the lower end thereof, substantially as described.

3. In a safety-lamp, the combination, with the usual oil-reservoir and wick-tube, of a safety lighting device comprising a tube open at both ends, extending through the oil-reservoir and having its upper end located in proximity to said wick-tube, open at both ends, a traveling fulminate-carrier inclosed in said open-ended tube, a series of inflammable substances supported upon said carrier, means for actuating the carrier from the outside of

the lamp, an igniting device extending through the oil-reservoir, a removable cap-plate for closing the lower end of the open-ended tube, and means for locking said cap-plate to its seat, substantially as described.

4. In combination with the oil-reservoir and wick-tube, a safety lighting device comprising a tube or casing extending through the oil-reservoir, open at both ends, and provided with a lateral extension or offset to receive an adjusting device, a screw-threaded adjusting-rod located in said recess and swiveled at its lower end, a traveling fulminate-carrier consisting of an elongated plate having a screw-threaded opening therein fitted on said rod, a cap-plate supporting said screw-threaded rod and serving as a cover for the lower end

of said casing, a thumb-nut or handle secured to said rod beneath the cap-plate, and an igniting device extending through the oil-reservoir adjacent to said casing, whereby a series of inflammable substances may be brought successively into proximity to said wick-tube and ignited from the outside of the lamp, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN BOWEN HARRIS.
JOHN THOMAS GRIFFITH.
THOMAS BENJAMIN HARRIS.

Witnesses:

W. S. PARSONS,
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