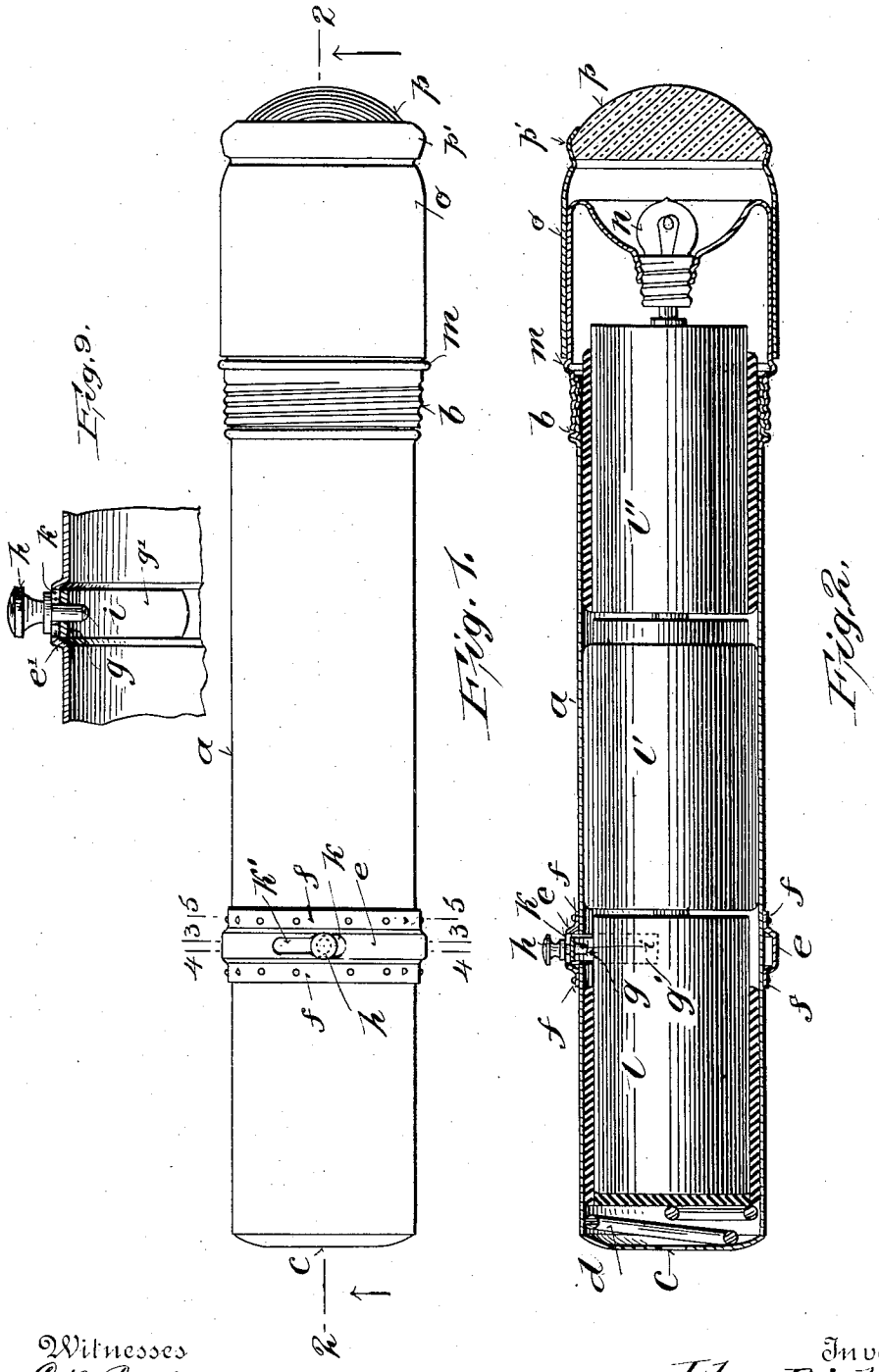
No. 864,957. PATENTED SEPT. 3, 1907.

J. DICKENS.

PORTABLE SEARCH LIGHT.

APPLICATION FILED OCT. 8, 1904.

2 SHEETS—SHEET 1.



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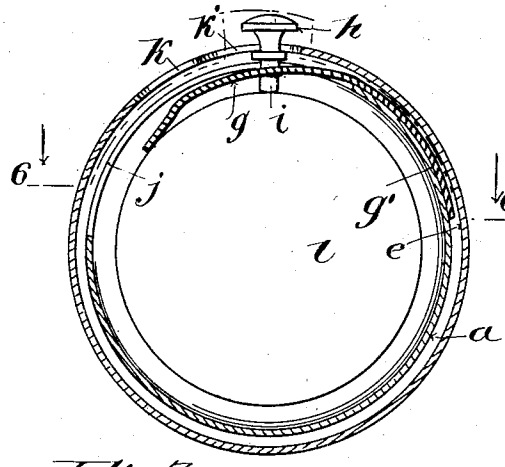


Fig. 3.

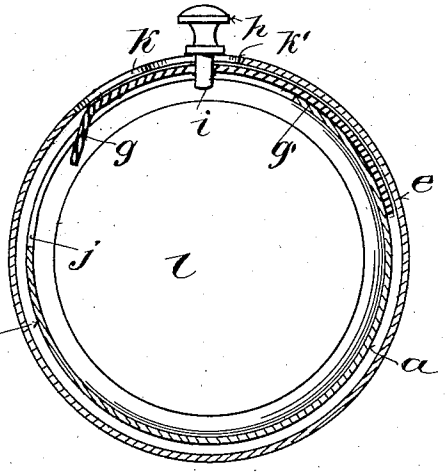


Fig. 4.

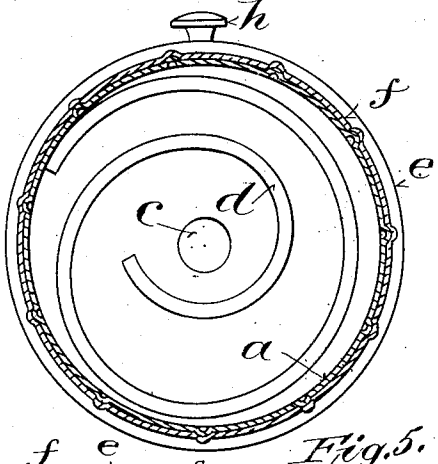


Fig. 5.

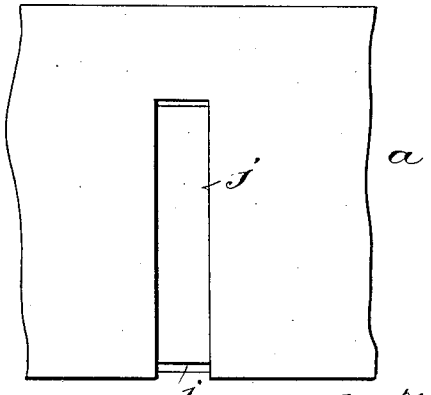


Fig. 7.

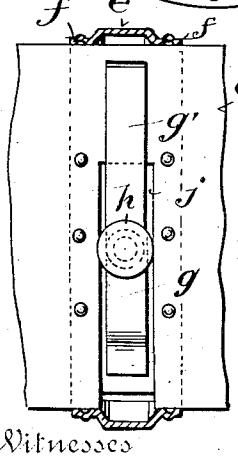


Fig. 6.

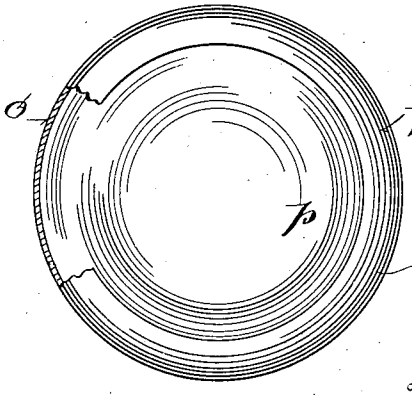


Fig. 8.

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UNITED STATES PATENT OFFICE.

JOHN DICKENS, OF PASSAIC, NEW JERSEY, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE STANDARD SHEET METAL COMPANY.

PORTABLE SEARCH-LIGHT.

No. 864,957. Specification of Letters Patent. Patented Sept. 3, 1907.

Application filed October 8, 1904. Serial No. 227,626.

To all whom it may concern:

Be it known that I, JOHN DICKENS, a citizen of the United States of America, and a resident of Passaic, Passaic county, New Jersey, have invented certain new and useful Improvements in Portable Search-Lights, of which the following is a specification, illustrated by the accompanying drawings.

This invention applies in particular to that class of portable search lights which may be carried about in the pocket or hand, and are provided with small electric lights which may be flashed when desired.

The object of this invention is to devise a simple, cheap and efficient light which will be more efficient than the flash lights now on the market.

In this device, the barrel or tube containing the cells and light is made of a seamless metal tube which is stronger than the paste board cartons now in use; the cells are each positively insulated from the barrel containing them, the reflector is made integral with the cover carrying the lamp, and the lens is carried in a separate removable cap, besides which, by means of an adjustable contact piece, the light may be used as an intermittent flash, a continuous light, or the button moved so as to prevent the light being flashed at all.

By the above enumerated and other improvements, many defects in the present mode of construction are obviated and a more useful and serviceable light is produced.

In the drawings: Figure 1 is an outside longitudinal view of the device. Fig. 2 is a cross section on the plane 2—2 of Fig. 1, one of the cells being shown with the insulator in full. Fig. 3 is a vertical cross-section on the plane 3—3 of Fig. 1, showing the contact button making permanent contact with the uninsulated part of one of the batteries. Fig. 4 is a vertical cross-section on the plane 4—4 of Fig. 1, showing the contact button permanently out of contact with the cell. Fig. 5 is a vertical cross-section on the plane 5—5 of Fig. 1, omitting the batteries. Fig. 6 is a section on the plane 6—6 of Fig. 3. Fig. 7 is a view of a portion of the barrel tube showing the slot in which the spring moves. Fig. 8 is an end view of the light, partly broken away. Fig. 9 is a detail of an alternative form.

In the preferred form of this device, the barrel or tube of the device is made of a seamless tube *a* of aluminium or other suitable metal, one end of which is open, this end being provided with a screw thread *b*, the opposite end of the tube or barrel is closed except for the small circular opening *c*, which is used for the purpose of inserting a rod in case the battery cells cannot be readily ejected from the barrel. In the closed end or bottom of the barrel is the helical spring *d*, one end of which may be readily fastened in the bottom of the barrel. The purpose of this spring is to keep the cells always tight pressed one to the other, and make contact with the lamp as shown in Fig. 2. Surrounding the barrel *a* is the contact band *e*. This band is constructed in such a manner as to fit tightly about the barrel when it is slipped into position, the band being provided with the projections *f* forming a double row of rivet-like points surrounding the band.

When the band is in position upon the barrel, a straight mandrel is inserted within the tube and the metal of the barrel forced outward and into the projections *f*, and in this manner preventing any slipping of the band when once in place on the barrel.

The band *e* is provided with the spring arm *g* which is hinged at one end as at *g'*, enough of the metal of the barrel being cut away to allow of the play of the spring arm as far as it may be pressed inwards. This arm *g* carries the contact button *h* riveted in the usual manner to the arm, the button *h* being provided with the projection *i*, seen in Figs. 3 and 4. This arm *g* is not fixedly hinged at *g'* but it is allowed a certain amount of freedom, limited by the movement of the button *h* in the slot *k*, and is held in place between the barrel *a* and the band *e*. It would thus be possible if the slot *j* in the barrel *a* corresponded with the slot *k* in the band *e* to freely move the arm *g* around a portion of the surface of the barrel and at the same time, by means of the button *h*, depress the end of the band at will. But this latter is not possible owing to the fact that the slot *k* is irregular, one end being contracted as at *k'*, which, when the button *h* is in the position shown in Fig. 4, it is impossible to depress the arm, owing to the fact that the projection *i* prevents the button being thus depressed.

As will be seen from a study of Fig. 3, which shows the button *h* in such a position as to give a permanent lighting effect, the button *h* and the spring arm *g* are both shown making contact with the battery *l*, this result can be obtained whenever the button *h* is pressed down when the button is over the wide portion of the slot *k*, in which case there is no interference between the projection *i* and the sides of the slot, and the spring arm is then pressed towards the right (Fig. 3) when the projection *i* will pass below the edges of the portion *k'* of the slot *k* and the button *h* and spring arm *g* will remain in the position shown in Fig. 3, until the button is pressed to the left and released.

If it is desired to prevent any waste of current from the batteries and keep the light in an inoperative position, the button is pushed towards the right without engaging with the edge of the slot *k'* (as shown in Fig. 4) and by reason of the projection *i* engaging with the rim of the slot *k'* neither the button *h* nor the spring arm *g* can make contact with the cells *l*.

It will thus be seen that three adjustments of the

lamp may be obtained, full and intermittent contact by depressing the button h at will within the slot k; full and uninterrupted contact by depressing the button and throwing it over when in a depressed position, as seen in Fig. 3, or by throwing the button over entirely undepressed, preventing any contact with the cells whatever. (Fig. 4).

By making a double contact of the button and the arm with the cell, greater efficiency is attained, as a better connection is thus had.

The barrel or tube a as shown in Fig. 2 is adapted to receive two or more dry battery cells, as l, l', l''; these are of the form and style usually used for this purpose and are insulated with a thickness of rubber as shown, the insulation on the cell l, it is to be noticed, extends over the end of the cell, thus preventing it from making contact with the spring d. The insulation on the cell l extends nearly but not quite to the front end of the cell, to allow the arm g and the button h to make contact with the cell. When the three cells are placed in position as shown, the cover m, which is also made of aluminium and is provided with screw thread to enable it to coöperate with the thread b, is screwed upon the end of the barrel. The top of this cover m is made concave, as shown in Fig. 2, so as to form a reflector for the lamp n. This lamp is of the type ordinarily used for this purpose, and fits within and is held in place by means of a short screw thread which corresponds with the thread on the base of the lamp, the terminals of the lamp making contact with the shell of the tube or barrel by means of the cover m. The cell l'' is provided with a suitable projection to enable it to make a good contact with the light. Surrounding the cover m is the cap o, this cap is also made of metal and can be readily removed from or placed upon the cover m. This cap consists of a plain cylinder whose inner diameter corresponds with the outer diameter of the cover m. The lens p is then inserted in one end of this cylinder and a bead is then turned upon the cylinder as at p' in Fig. 2, which bead serves to hold the lens p in position. It is of course to be understood that the depth of the reflector m constituting a slidable and adjustable telescope joint will bear a certain relation to the lens, in order that the rays from the lamp n may be properly focused by the lens p. By thus attaching the lens within the cap, it is believed a distinct improvement is had over the lens being attached by means of a spring or otherwise.

When the cells are placed within the barrel a and the cover m screwed down, by depressing the button h within the slot k, the button h and the spring arm g will each make contact with the uninsulated part of the battery l and the circuit will be completed through the batteries to the two contact points and by them to the lamp, by means of the barrel and the cover, and from the lamp, by means of the projection upon the cell l'' again back to the cells. When the two contact points break contact with the cell l the lamp will be extinguished by the breaking of the circuit. In this manner, even if two of the three cells are worn out or defective, the lamp would still be of service providing one cell would be sufficient to illumine the lamp.

In Fig. 9 is shown an alternative form of construction of the band. Instead of making the band of a separate piece of metal from the barrel or tube as in the preferred form; in Fig. 9 the band e' is made integral with the barrel a, by enlarging the barrel, in any convenient manner, at this point, sufficiently to allow the spring arm to slide free from contact with the battery cells.

When the cells are worn out, the cover is unscrewed, and the barrel or tube stood upright on its open end, when the cells can be readily ejected by introducing a rod through the hole c and thus ejecting the cells.

Without enumerating the many modifications of which this invention is capable, what I desire to secure by Letters Patent are the following new, novel and characteristic features of this invention.

1. In a portable flash light, the combination of a tube, an electric battery therein, an electric lamp secured in said tube, and means for making and breaking contact between the terminals of said lamp and said battery, said means including a spring arm adapted to assume three positions, being permitted in one position to be moved to make and break contact, in another position being locked in contact relation, and in a third position being locked out of contact relation, substantially as described.

2. A portable flash light consisting of a barrel or tube, a plurality of battery cells adapted to fit within the said barrel or tube, a removable cover inclosing one end of said barrel, an electric lamp in said cover, a cylindrical cap adjustably and slidably mounted on said cover and making a telescope joint therewith, a lens carried by said cap, means for reflecting the light from said lamp upon said lens, means for connecting said lamp with said cover, and means for making and breaking contact between said cells and said cover, substantially as set forth and described.

3. In a portable flashlight the combination of a seamless metallic barrel or tube having one end open and the other closed, dry electric battery cells adapted to be contained within said barrel or tube, a metallic screw threaded cover adapted to fit over the said open end and coöperating with a screw thread upon said barrel, said cover being provided with a reflector integral therewith, an electric lamp secured in the center of said reflector, means for connecting said cover with the terminals of said lamp, means for connecting said cells with the said lamp, means for making and breaking contact between the said cells and the said barrel or tube, means for adjustably focusing the light rays from the said lamp, said means consisting of a cylindrical metallic cap movable with relation to said cover, adapted to inclose said cover, and a lens fitting within said cap, substantially as described and set forth.

4. In a portable flash light and in combination with a barrel or tube, a plurality of dry electric battery cells, a lamp affixed at one end of said tube and connected with said cells and said tube, together with a reflector surrounding said lamp and means for focusing the rays from said lamp, of a metallic band surrounding said tube and secured thereto, of a rectangular slot within the surface of said tube, of a slot within said band above the first named slot, the width of a portion of said second slot corresponding with that of the first said slot, the other portion of the second said slot being contracted in width, a metallic spring arm, one end of which lies between the said band and the outer surface of said tube, the other end being free to move up and down within the first said slot, a metallic button on said spring arm, said button and said lever arm being adapted to make contact at a plurality of points with said battery cells, substantially as and for the purposes set forth.

Signed this sixth day of October, 1904, at Passic, N. J.

JOHN DICKENS.

Witnesses:
FREDERICK B. WILSON,
JOHN J. WOODRUFF.