E. W. SEYMOUR.

FLASH LIGHT.

APPLICATION FILED APR. 10, 1917.

1,265,820. Patented May 14, 1918.

Fig. 1.

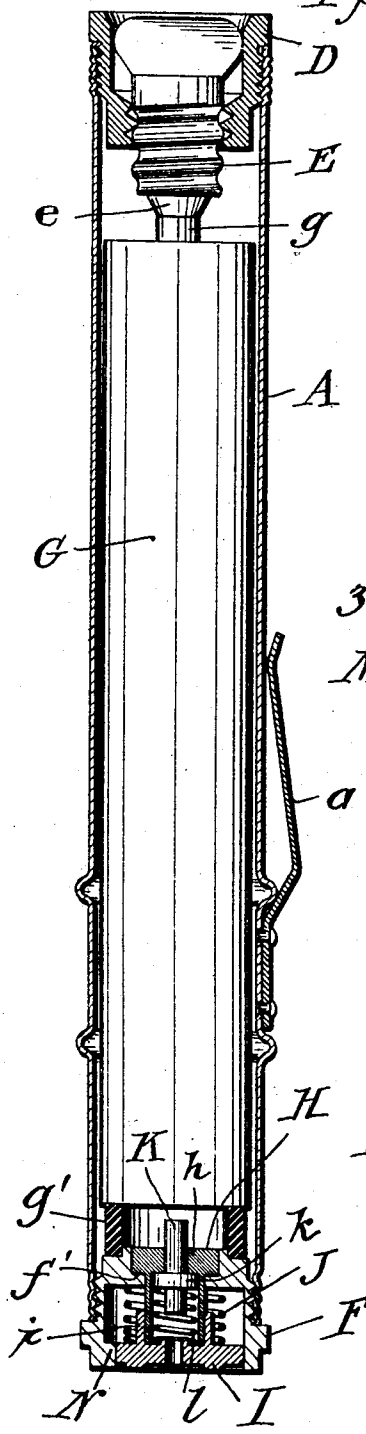


Fig. 3.

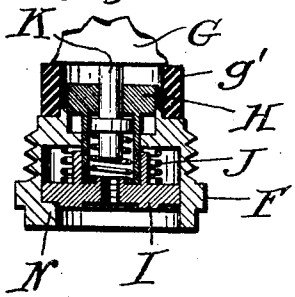
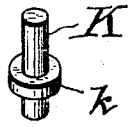


Fig. 5.



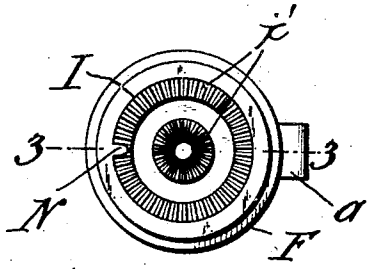
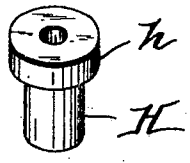


Fig. 2.

Fig. 6.



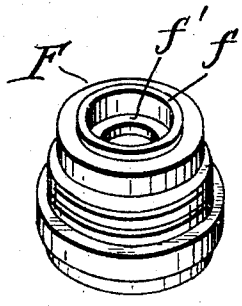
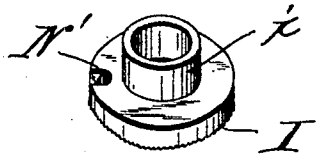


Fig. 4.

Fig. 7.



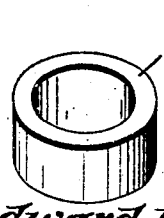


Fig. 8.

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UNITED STATES PATENT OFFICE.

EDWARD W. SEYMOUR, OF NEW YORK, N. Y.

FLASH-LIGHT.

1,265,820. Specification of Letters Patent. Patented May 14, 1918.

Application filed April 10, 1917. Serial No. 160,913.

To all whom it may concern:

Be it known that I, EDWARD W. SEYMOUR, a citizen of the United States of America, and resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Flash-Lights, of which the following is a specification.

The object of the present invention is to provide an improved pocket light, the invention being directed, more particularly, to improved means for completing the circuit between the lamp and the battery generally employed as the source of current supply, in such manner that either a flash-light may be produced or the circuit completing means automatically maintained in such condition as to produce a steady light of prolonged duration.

This invention thus has for its object the improvement of the construction of the lamp forming the subject matter of my prior application Serial No. 121,712, filed September 23, 1916, for a "pocket flash-light". In this prior application, means are provided for completing the circuit specified, and the circuit may be maintained as long as the operator presses the push-button therein embodied for completing the circuit. However, no means is provided in this prior application for locking the push-button in circuit-closing position, and, accordingly, the push-button is retracted upon the relaxing of the pressure of the finger, so that, if a prolonged light is desired, it is incumbent upon the operator to maintain this pressure.

It has been suggested heretofore to embody in pocket flash-lights means for locking the circuit-making means in circuit-closing position, but, in every case, such locking means embodied some protuberance extending beyond the casing in such manner as to encumber the casing and make it difficult to position the device within, or remove it from, a garment pocket. This invention provides a construction whereby either a flash or a steady light may be had, without requiring the addition of bulky or projecting devices on the exterior of the casing, and in a most simple, efficient and economical manner.

Features of the invention, other than those specified, as well as the advantages thereof, will be apparent from the hereinafter detailed description taken in conjunction with the accompanying drawings.

In the accompanying drawing I have illustrated one practical embodiment of the invention, but the construction therein shown is to be understood as illustrative, only, and not as defining the limits of the invention.

Figure 1 shows a pocket light embodying the present invention, parts of said structure being shown in section, in the interest of clearness.

Fig. 2 is an underneath plan view of the structure of Fig. 1.

Fig. 3 is a section on line 3—3 of Fig. 2, and

Figs. 4 to 8, inclusive, are perspective views of the various elements entering into the circuit completing means.

Referring to the drawings, A designates a casing within which the parts of the lamp are housed. This casing may be of any desired shape or material, but is preferably of cylindrical form and of such size and proportions as to readily fit into the pocket of a coat or vest, it being provided on its exterior with a clip *a* for the purpose of securing the casing against inadvertent displacement from the pocket, in the same manner as fountain pens, pencils, etc., are maintained within garment pockets.

Casing A, which is preferably of metal, is threaded at both ends, and the forward end is adapted to be closed by a threaded plug D which, in turn, is interiorly threaded to allow of the mounting of a lamp E therein. The rear end of the casing is similarly closed by a plug F, shown in detail in Fig. 4, screwed into the end of the casing and within which plug the circuit completing means is supported. Within casing A is housed a battery G, provided at its forward end with a contact *g*, adapted to engage with the contact *e* of lamp E. The inner face of rear plug F is provided with a forwardly extending, annular flange *f*, adapted to be encircled by the after-portion of an insulating ring or bushing *g'*, shown in detail in Fig. 8, of such dimensions that, when plug F is screwed tightly within the end of the casing, battery G will be tightly clamped between contact *e* of the lamp and the forward edge of bushing *g'*. This bushing, moreover, preferably fits the flange *f* so tightly

that it will not become inadvertently disengaged from plug F when these parts are removed.

Plug F is entirely open at its rear end and closed at its forward end, except for a stepped, circular opening through said forward end which provides an off-set *f'*, against which may be seated the enlarged end *h* of a thimble-like member H, shown in detail in Fig. 6. Thimble H, in the assembling operation, is inserted from the forward end of plug F so that the open end of the thimble projects rearwardly of the plug and is received within an annular flange *i* provided on a finger-piece I, shown in detail in Fig. 7. The finger-piece is circular and is adapted to fit within the open rear end of plug F. That portion of thimble H which coöperates with flange *i* has a driving fit therewith, so that the parts, after being initially assembled, will not inadvertently come apart, and a helical spring J is interposed between finger-piece I and the base of plug F, to normally maintain said finger-piece in retracted position. By virtue of the tight engagement between thimble H and finger-piece I, this spring is precluded from forcing the finger-piece free from engagement with the plug and normally maintains the enlarged end *h* of said thimble seated on the off-set *f'* of the plug.

The base of thimble H is provided with a central aperture, through which extends a pin or plunger K, shown in detail in Fig. 5, provided with a fixed collar *k*, adapted to be normally seated in the base of the thimble by a second helical spring *l*, interposed between collar *k* and finger-piece I.

With this construction and arrangement of parts, it will appear that finger-piece I is normally maintained by spring J in retracted position, while plunger K is normally maintained in forward position by spring *l*. The parts are so proportioned that, when this normal condition obtains, the forward end of plunger K will be free from contact with the adjacent end of the battery. However, if pressure is applied to finger-piece I, to force the same forwardly against the tension of spring J, plunger K will be carried forwardly thereby, so that the forward end of said plunger will come into engagement with the adjacent or rear end of battery G, as shown in Fig. 3. Plug D, casing A, plug F, thimble H and plunger K, being of conductive material, will complete a circuit through the lamp as soon as plunger K contacts with the rear end of the battery, and lamp E will be illuminated. During this operation, spring *l* will yieldably maintain plunger K in contact with the battery, so that proper electrical engagement between these parts will result. However, when the pressure on finger-piece I is relaxed, spring J will return the parts to their normal positions, shown in Fig. 1, and render the lamp "dead".

The foregoing mechanism operates with great efficiency in controlling a lamp where illumination of relatively short duration is desired, but, in cases where illumination for a prolonged period is necessary, such construction is inconvenient, in that it requires that the operator maintain the pressure of his finger upon finger-piece I as long as the illumination is desired. Means is, therefore, provided whereby plunger K may be locked in its circuit-closing position. This means is of a most simple, yet highly efficient, character. It is embodied in the formation on the inner surface of plug F, near its rear end, of a tooth or stop N, and in the formation within the circumference of finger-piece I of a complementarily shaped slot or a longitudinally extending passage N'. It will be apparent that, with this construction, finger-piece I will be precluded from rotation as long as it is in the normal position shown in Figs. 1 and 2, but, when in the forward or circuit-making position shown in Fig. 3, it may be then rotated to bring the slot N' out of register with the tooth N, so that said finger-piece will be locked by said tooth against returning to its normal position under the tension of spring J. This is clearly shown in Fig. 3. As long as the parts are in these positions, contact plunger K will be maintained in engagement with the terminal at the rear of the battery, thus completing the circuit and causing the illumination of the lamp to be continuous. When it is desired to deënergize the lamp, finger-piece I is again rotated to bring slot N' into register with tooth N, whereupon spring J will return the parts to the normal positions of Fig. 1, thereby breaking the circuit and extinguishing the lamp.

To allow of this rotation of the finger-piece without necessitating the incorporation therein of a handle, which would project beyond the casing, said finger-piece is corrugated or serrated radially, as at *i'* in Fig. 2, so that proper traction may be had between the finger of the operator and finger-piece I, and slipping of these parts will be precluded, when it is desired to rotate the finger-piece.

From what has been said, it is apparent that the structure of this invention is extremely compact, may be easily and expeditiously assembled, and is absolutely reliable in its operation, there being no parts to get out of order, except, of course, the renewing of the battery when the same has "run out." Moreover, the feature of locking the finger-piece in circuit-closing position is incorporated in this structure without the necessity of adding any parts over and above those required for producing a flash-light, this ad-

ditional function being secured, theoretically, by merely cutting out a part of the finger-piece and securing it to plug F, with the result that the cut-out portion forms the tooth N, and the space left the slot N'. There are absolutely no openings in the casing or associated parts through which moisture can find its way into the casing and short-circuit the parts. The battery is thus housed within a moisture-proof envelop and is confined within a dead air space, which is conducive to the maximum efficiency of the device. Even though the lamp be inadvertently dropped by the operator into a liquid, it will not be rendered inoperative, as is so frequently the case with prior art devices.

Furthermore, it will appear that, so far as the operating mechanism of the device is concerned, no part thereof protrudes beyond the casing, as has heretofore generally been the case, particularly in the circuit-making means. The exterior of the casing is thus entirely unencumbered, except for the clip *a*, which may, if desired, be omitted.

In the construction shown and described, practically all of the parts, with the exception of the battery cell and insulating bushing *g'*, are metallic, and the circuit is completed through these parts. In this construction, the battery cell is provided with paper, or other insulating means, wound about its circumference to preclude short-circuiting between the battery cell and the casing. For these reasons, the present invention is not limited to the specific structural features herein shown and described, but is to be understood to be as broadly novel as is commensurate with the appended claims.

Having thus fully described the invention, what I claim as new, and desire to secure by Letters Patent, is:

1. In a device of the class described, the combination of a casing provided at its forward end with a lamp, a battery cell within the casing, a plug for closing the rear end of the casing, push-button mechanism mounted in the plug for completing a circuit through the lamp when said mechanism is pressed into advanced position, means for normally retracting the push-button mechanism, and means for locking said mechanism in advanced position, whereby the lamp may be mechanically maintained in illuminated condition.

2. In a device of the class described, the combination of a casing provided at its forward end with a lamp, a battery cell within the casing, a plug for closing the rear end of the casing, push-button mechanism mounted in the plug for completing a circuit through the lamp when said mechanism is pressed into advanced position, means for normally retracting the push-button mechanism, and means operable when the push-button mechanism is rotated, while in advanced position, whereby the lamp may be mechanically maintained in illuminated condition.

3. A device of the class described embodying a casing provided at its forward end with a lamp, a battery within said casing and electrically connected to one pole of the lamp, and push-botton mechanism embodying, in combination, a push-button carrying a member electrically connected with the other pole of the lamp and adapted, when the push-button is pressed into advanced position, to make contact with the battery and complete a circuit through the lamp, means for normally retracting the push-button, and means operable when the push-button is rotated, while in advanced position, to lock the contact member in engagement with the battery.

4. A device of the class described embodying a casing provided at its forward end with a lamp, a battery within said casing and electrically connected to one pole of the lamp, and push-button mechanism embodying, in combination, a push-button yieldably carrying a member electrically connected with the other pole of the lamp and adapted, when the push-button is pressed into advanced position, to make contact with the battery and complete a circuit through the lamp, means for normally retracting the push-button, and means operable when the push-button is rotated, while in advanced position, to lock the contact member in engagement with the battery.

5. A device of the class described embodying a casing provided at its forward end with a lamp, a battery within said casing and electrically connected to one pole of the lamp, and push-button mechanism embodying, in combination, a push-button carrying a member electrically connected with the other pole of the lamp and adapted, when the push-button is pressed into advanced position, to make contact with the battery and complete a circuit through the lamp, resilient means for yieldably forcing said contact member into engagement with the lamp when the push-button is in advanced position, means for normally retracting the push-button, and means for locking the push-button in advanced position.

6. A device of the class described embodying a casing provided at its forward end with a lamp, a battery within said casing and electrically connected to one pole of the lamp, and push-button mechanism embodying, in combination, a push-button carrying a member electrically connected with the other pole of the lamp and adapted, when the push-button is pressed into advanced position, to make contact with the battery and complete a circuit through the

lamp, resilient means for yieldably forcing said contact member into engagement with the battery when the push-button is in advanced position, means for normally retracting the push-button, and means operable upon the rotation of the push-button, while in advanced position, to lock the push-button in such circuit-closing position.

7. A device of the class described embodying a casing provided at its forward end with a lamp, a battery within said casing and electrically connected to one pole of the lamp, and push-button mechanism embodying, in combination, a push-button, a spring-pressed plunger extending in the direction of the battery and in electrical connection with the other pole of the lamp, means for normally retracting the push-button, and a slot in the push-button adapted, when said push-button is in retracted position, to be occupied by a tooth mounted in fixed relation to the casing, whereby, when the push-button is actuated to bring the plunger into contact with the battery, the push-button is freed from engagement with the tooth and may be rotated to bring the slot out of alinement with said tooth, for the purpose of locking said push-button in circuit-closing position.

8. In a device of the class described, a casing provided at its forward end with a lamp, a plug for closing the rear end of the casing, a battery cell clamped between the plug and the contact of the lamp, push-button mechanism mounted in the plug for completing a circuit through the lamp when said mechanism is pressed into advanced position, means for normally retracting the push-button mechanism, and means operable when the push-button mechanism is rotated, while in advanced position, whereby the lamp may be mechanically maintained in illuminated condition.

9. In a device of the class described, a casing, an electric lamp, provided with a contact, at the forward end thereof, a battery cell, provided at its opposite ends with contacts, positioned within the casing, a member for closing the rear end of said casing and simultaneously forcing the forward contact of the battery cell into engagement with the contact of the lamp, a spring-retracted push button operable through said member to engage with the rear contact of the cell, said push button being, in its retracted position, insulated from the cell but in electrical communication with the lamp, whereby, when the button is actuated to engage with the rear contact of the cell, a circuit is completed through the lamp, and means for locking the push button in circuit-closing position.

10. In a device of the class described, the combination of a casing provided at its forward end with a lamp socket, a lamp, provided with a contact, seated in said socket, a plug for closing the rear end of the casing, and a battery cell, provided at its opposite ends with contacts, positioned within the casing and clamped between the plug and the lamp, with the contact of the lamp in engagement with the contact of the cell, in combination with push button switch mechanism mounted on said plug and insulated with respect to the cell, said push button mechanism being coöperable with the contact at the rear of the cell for completing a circuit through the lamp, and means for locking the push button mechanism in circuit-closing condition when desired.

Signed by me at New York city, N. Y., this 9th day of April, 1917.

EDWARD W. SEYMOUR.

Witnesses:
ANNA F. DAVIDSON,
MARGARET VOGEL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."