United States Patent [19]

Caron

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[54] **KEY HOLDER WITH FLASHLIGHT**

[76] Inventor: **Joseph Adalbert Caron,** 890 11th Ave., Grand Mere, Quebec, Canada

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[52] **U.S. Cl.** ..... **240/6.4 K,** 240/2 S, 240/10.68

[51] **Int. Cl.** **F21v 33/00**

[58] **Field of Search** ..... 240/6.4, 6.4 K, 10.68, 240/10.67, 10.65, 2 S

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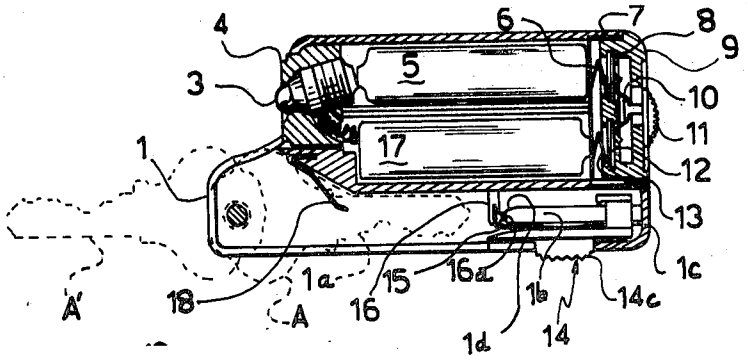
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Primary Examiner—Samuel S. Matthews
Assistant Examiner—Alan Mathews

[57] **ABSTRACT**

A key holder with a flashlight incorporated therein, in which the light bulb is directed towards the free ends of the keys in order to permit selection of the desired key and to illuminate the key hole when in the dark. The keys and the dry cell batteries are so disposed within the key holder that a substantially uniform mass distribution is obtained. The key holder incorporates a key ejection and a key blocking mechanism facilitating the exit and entrance of the free ends of the keys from and into the holder. The flashlight proper has its light bulb inclined with respect to the long axis of the flashlight casing and is characterized by the fact that the switch is incorporated within the cover for the batteries in order to minimize the battery casing size and to facilitate a battery or light bulb replacing. The key holder may be used in all circumstances as a pocket flashlight. The device can be made only as a flashlight without the key holder part.

4 Claims, 21 Drawing Figures



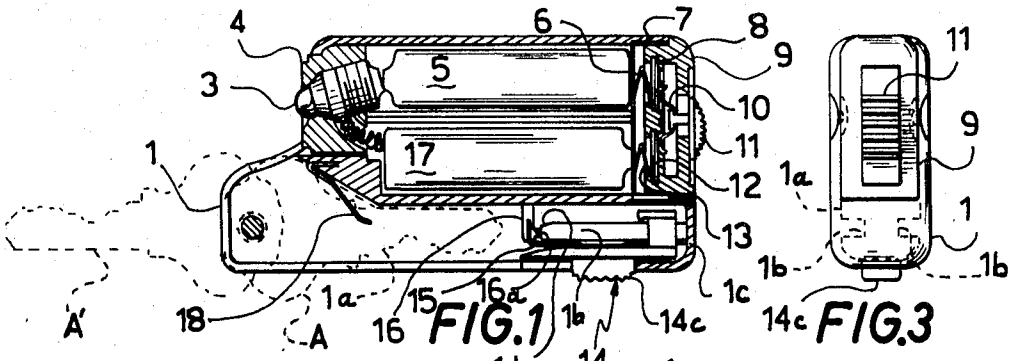


FIG.1

FIG.3

FIG.2

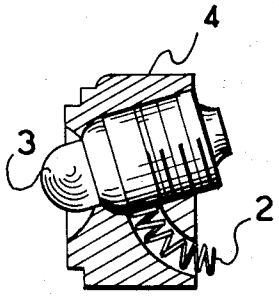


FIG.4

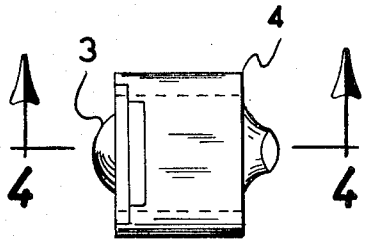


FIG.5

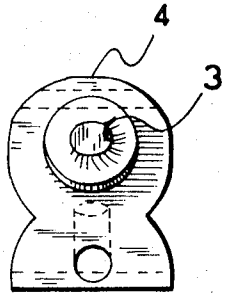


FIG.6

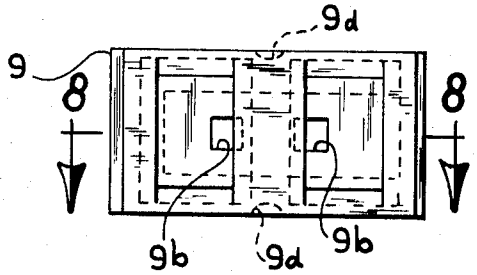


FIG.7

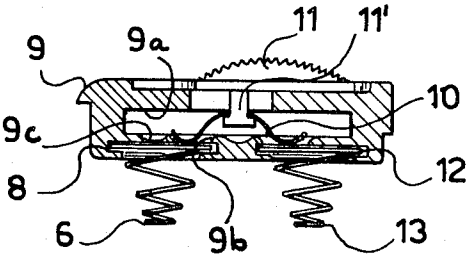


FIG.8

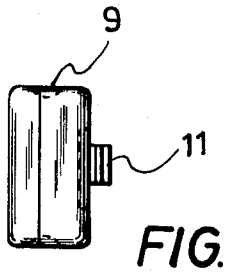


FIG.9

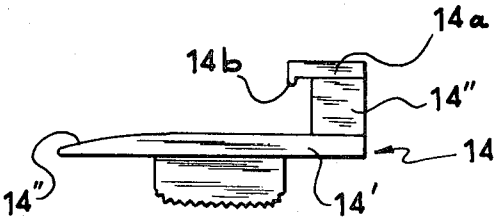


FIG.10

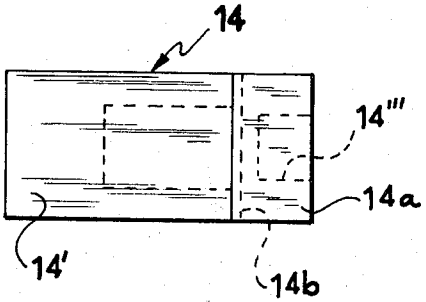


FIG.11

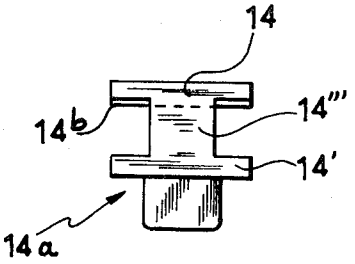
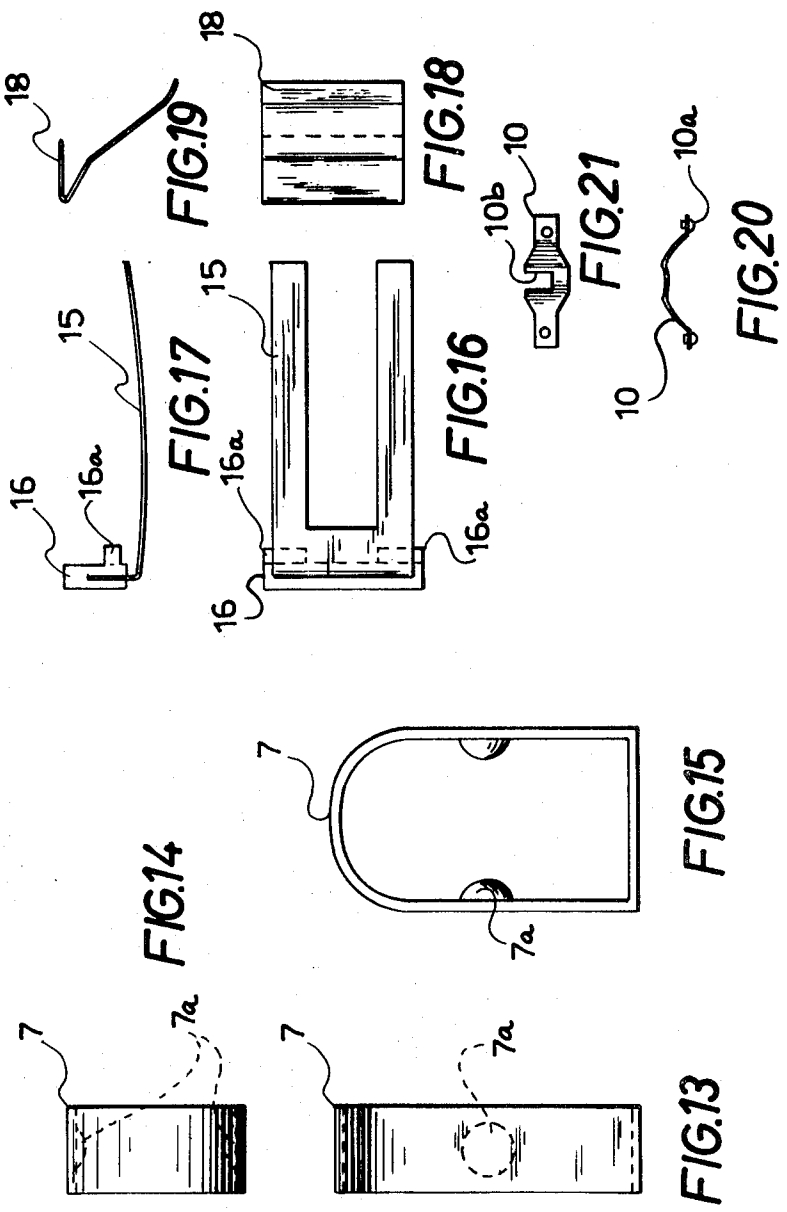


FIG.12


18
FIG.19
18
FIG.18
10
10b
FIG.21
10a
10
FIG.20
15
16
16a
FIG.17
15
16a
16
16a
FIG.16
7
7a
FIG.15
7
7a
FIG.14
7
7a
FIG.13

KEY HOLDER WITH FLASHLIGHT

The present invention relates to a key holder combined with a flashlight and has for its main object the provision of a key holder in which the flashlight light bulb is arranged to illuminate the keys and also the keyhole to enable proper selection of the desired key and its insertion into the keyhole.

Conventional key holders either consist of a small chain provided with a decorative plate or a ring or of various types of casings for storing the keys. The casing type key holder is safer against key loss but it is difficult to move the keys out of or into the casing. Moreover, because the weight of the keys constitutes the major portion of the overall weight of the key holder, the latter, when the keys are out, is not properly counterbalanced, whereby manipulation of the key holder is made more difficult and possibilities of the key holder falling down are increased. In the dark, one can always use a separate pocket flashlight to facilitate key selection and to illuminate the key hole. However, a separate flashlight takes extra room within the wearer's pocket, can be forgotten and must be held in one hand while both hands are often necessary to select the proper key for insertion into the key hole.

Some known casing type key holders have a pocket flashlight incorporated therein. Although they eliminate the above-mentioned disadvantage of having to carry a separate flashlight, the light bulb is so disposed that the luminous beam cannot be directed towards the free end of the keys and, therefore, is of very little practical help in facilitating key selection and insertion of the selected key into the key hole.

The general object of the invention is to provide a key holder with a pocket flashlight incorporated therein and which obviates the above-mentioned disadvantages.

Further objects of the invention are to provide a key holder of the character described, in which the casing is of a size comparable to conventional key holders and in which the light bulb is so disposed and inclined in order to properly illuminate the free ends of the keys. An ejection mechanism ejects, whenever desired, the keys from the holder, and the keys are replaced within the holder by simple finger pressure and are retained within the holder by a locking mechanism. These two mechanisms considerably simplify key handling and help to prevent excessive play of the keys within the casing. The weight of the keys is counterbalanced by the weight of the dry cell batteries in order to obtain good equilibrium of the key holder, thereby facilitating its handling and preventing accidental falling of the key holder from the user's hands.

The device can be used as a pocket flashlight in all circumstances. Also, the device can be built without the key holder part as a pocket flashlight, said pocket flashlight being characterized by the fact that the manual switch therefor is incorporated into the cover of the casing housing the batteries.

The foregoing and other objects of the invention will become more apparent during the following disclosure and by referring to the drawings, in which:

FIG. 1 is a longitudinal section of the key holder;

FIG. 2 is a top plan view;

FIG. 3 is an elevation of the back end of the key holder;

FIG. 4 is a longitudinal section, on an enlarged scale, of the light bulb support;

FIG. 5 and 6 are top plan view and end elevation respectively of the light bulb support and also showing the light bulb;

FIG. 7 is a plan view of the inside face of the cover for the battery casing;

FIG. 8 is a longitudinal section along line 8—8 of FIG. 7 but additionally showing the battery contacting springs;

FIG. 9 is a side elevation of the cover of FIG. 7;

FIG. 10 is a side elevation of the slider of the locking mechanism;

FIG. 11 is a top plan view of the slider of FIG. 10;

FIG. 12 is an end view of the slider of FIG. 10;

FIG. 13 is a side elevation of a lining for retaining the battery casing cover in position;

FIG. 14 is a top plan view of the same;

FIG. 15 is a front elevation of the lining of FIG. 13;

FIG. 16 is a top plan view of the spring for the locking slider illustrated in FIG. 10;

FIG. 17 is a side elevation of the arrangement of FIG. 16;

FIG. 18 is a bottom view of the key ejector spring;

FIG.. 19 is a side elevation of the key ejector spring;

FIG. 20 is a side elevation of the switch spring; and

FIG. 21 is a top plan view of the switch spring.

In the drawings, like reference characters indicate like elements throughout.

It should also be noted that in the drawings, FIGS. 1, 2, and 3 are drawn to a full size scale while the remaining figures are drawn to twice the full size scale to more clearly show details of construction.

The key holder comprises a casing 1, preferably made of slightly flexible material, such as a synthetic resin, and of generally rectangular shape defining a compartment for housing side by side a pair of dry cell batteries 5 and 17, the front end of the casing being closed at the front by a support 4 for a light bulb 3 and at the back by a cover 9 for closing the battery compartment and also incorporating a manual switch 10 for the flashlight part. The side walls of casing 1 are extended downwardly and forwardly, as indicated at 1*a*, to define a key receiving and holding compartment, said compartment also housing a key ejector spring 18 and a key locking mechanism including a slider 14.

The casing slide wall extensions 1*a* define an elongated slot at the bottom and front end of the casing for free pivotal movement of the keys, generally indicated at A, out of and into the casing key receiving compartment.

A plurality of keys A, for instance up to about six keys, are disposed side by side within the key receiving compartment and are pivoted about a transverse pin 19 extending across the side wall extensions 1a of the casing at the front portion thereof, the pin passing through the usual holes of the keys A. The pin 19 is made of a bolt screwed within a headed tube. Support 4 can be removed by pushing it to the rear opening of the compartment after the cover 9 and batteries 5 and 17 have been removed. Thus, it is easy to change the light bulb 3. Support 4 is preferably white to increase light reflection. The batteries 5 and 17 are of the type having a nominal voltage of 1.5 volts each and are series connected, as indicated in FIG. 1. They can be easily replaced by removing cover 9.

Contact springs 6 and 13 are conical coil springs of the compression type and are in respective electrical contacts with metallic contact plates 8 and 12. The springs 6 and 13 and also the contact plates or washers 8 and 12 are retained in separate grooves of the cover 9, as shown in FIG. 8. Contact springs 6 and 13 could be replaced by spring blades which would be respective extensions of the metallic plates 8 and 12, in order to accomplish the same functions. Contactor blade 10 is a spring blade having a central curve and two terminal reverse curves, of smaller radii than the central curve, and provided with separate or integral contact studs 10*a* (See FIGS. 20 and 21). The central portion of the blade has a lateral slot 10*b* to receive a headed stud 11' of the slider button 11 of the switch.

The slider button 11 is longitudinally slidable within a longitudinal groove made at the outer face of cover 9 and stud 11' extends freely through a passage communicating with a central cavity 9*a* of the cover, wherein the contactor spring 10 is located. Said cavity 9*a* communicates with the two contact plate receiving compartments by two square openings 9*b* uncovering partial adjacent portions of the contact plates 8 and 12. In the circuit closing position of the switch, contactor spring 10 engages said plate portions through openings 9*b*. When the slider button 11 is pushed to the left from the position shown in FIG. 8, the curved ends of contactor spring 10 slide over the electric insulating portion of the cover and resiliently engage recesses 9*c* to resiliently maintain the switch in circuit opening position. The slider button 11 is retained in its groove by the contactor spring 10. The two ends of the contactor spring 10 can be simply curved, as shown in FIG. 8, or provided with integral hemispherical bosses obtained by a stamping procedure or formed by the heads of two small rivets, as shown in FIGS. 20 and 21.

It is important to note that the contact springs 6 and 13, the contact plates 8 and 12, the contactor spring 10 and the slider button 11 are all assembled with the cover 9, as shown in FIG. 8, whereby all of these parts remain attached to the cover when the same is removed for replacing the batteries 5 and 17 or the light bulb 3. The switch cuts contact between adjacent ends of the two side-by-side disposed batteries arranged in reverse relationship.

Cover 9 is preferably made of two parts in the manner shown in FIG. 8 and these two parts are cemented together after the various elements of the switch have been assembled in a first part. Cover 9 is also provided with lateral cavities 9*d* (See FIG. 7) for snap engagement with tenons or bosses when inserted within casing 1. Also, additional lateral cavities are made in the casing and in the cover 9 to facilitate removal of the cover, as shown in FIG. 3.

A thin lining 7, shown in FIGS. 13 to 15, is provided with internally protruding bosses 7*a* engageable with the lateral cavities 9*d* of cover 9 to retain the same in position. Lining 7 is inserted within a groove made at the rear open end of the casing battery compartment and adhered thereto. The lining 7 is necessary when casing 1 is made of one molded piece. It is eliminated when casing 1 is made of two parts cemented together.

Most of the parts of the device in accordance with the invention are preferably made of a synthetic resin slightly flexible, made by injection molding, whereas the metallic parts used as electric conductors are made by stamping or other conventional methods.

A flashlight battery can also be made in accordance with the invention. Referring to FIG. 1, all the parts retaining and storing the keys are removed and one obtains a flashlight casing incorporating the switch within the cover closing the battery compartment.

What I claim is:

1. A combined key holder and flashlight comprising an elongated casing having top, bottom and side walls for holding dry cell batteries and having a front and a back opening, means to support a light bulb in said front opening, a cover for closing said back opening, said side walls extending downwardly from said bottom wall and forwardly from a light bulb in said support means, to define side wall front portions laterally and forwardly offset from a light bulb carried by said support means, said side wall extensions defining a compartment for receiving a plurality of keys disposed side by side, said side wall extensions defining a continuous opening at their periphery, transverse pivot pin means extending between and carried by said front portions of side wall extensions, whereby keys can be pivotally mounted on said pivot means for pivoting movement between an inactive position stored in said compartment with their tip portion pointing rearwardly of said casing and an active position with their tip portion pointing forwardly of said casing, so constructed and arranged that the light beam emitted by a light bulb carried by said support means will illuminate the tip portion of a key in active position and the keyhole area of a lock adjacent which the said key tip portion is disposed, said light bulb support means including a sleeve-like member to receive a light bulb having its axis inclined with respect to the long axis of said casing forwardly and downwardly with respect to said casing, and further including a locking means carried by said casing and releasably engageable with the tip portion of keys pivotally mounted on said pivot means, to hold said keys in inactive position stored in said compartment, said locking means including a slider member carried by and located between said side wall extensions and having a forwardly extending bottom plate of sufficient length to underlie the tip portions of keys of different lengths all pivotally mounted on said pivoted pin means, and an operator button carried by the underside of said bottom plate and protruding from said continuous opening, said slider member movable between an advanced key retaining position and a retracted key releasing position.

2. A combined key holder and flashlight as claimed in claim 1, wherein said side wall extensions are provided with inwardly protruding guide rails at the back portion thereof, which are mounted parallel to the longitudinal axis of said casing, said slider member having a top plate overlying said rail members, said bottom plate having its longitudinal marginal portions underlying said rail members, and leaf spring means carried by the forward end of said guide rail members and extending rearwardly between the underside of the respective guide rails and respective marginal portions of said bottom plate to urge said bottom plate downwardly away from said guide rails.

3. A combined key holder and flashlight as claimed in claim 2, wherein said top plate has a downwardly protruding rib at its front end, the top of said guide rails being tapered at their forward end to receive said rib and releasably hold said slider in advanced key retaining position.

4. A combined key holder and flashlight comprising an elongated casing having top, bottom and side walls for holding dry cell batteries and having a front and a back opening, means to support a light bulb in said front opening, a cover for closing said back opening, said side walls extending downwardly from said bottom wall and forwardly from a light bulb held in said support means, to define side wall front portions laterally and forwardly offset from a light bulb carried by said support means, said side wall extensions defining a compartment for receiving a plurality of keys disposed side by side, said side wall extensions defining a continuous opening at their periphery, transverse pivot pin means extending between and carried by said front portions of side wall extensions, whereby keys can be pivotally mounted on said pivot means for pivoting movement between an inactive position stored in said compartment with their tip portion pointing rearwardly of said casing and an active position with their tip portion pointing forwardly of said casing, so constructed and arranged that the light beam emitted by a light bulb carried by said support means will illuminate the tip portion of a key in active position and the keyhole area of a lock adjacent which the said key tip portion is disposed, said casing being of a size to hold at least two dry cell batteries side by side and in reverse position with the negative pole of one battery and the positive pole of the other battery exposed at said rear opening of said casing, said cover carrying a manual switch means to make and break contact between said negative and positive poles of said respective batteries, and said cover carrying two compression coil springs protruding from its inner face and adapted to make contact with the negative and positive poles of the respective batteries respectively, separate contact plates electrically connected to the respective coil springs and carried by said cover and a slidable contact making an electrical connection between said two contact plates in the "on" position of the switch and out of contact with said respective contact plates in the "off" position of the switch.

* * * * *