May 2, 1933. M. HOROWITZ 1,906,268

FLASH LIGHT

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Fig. 1.

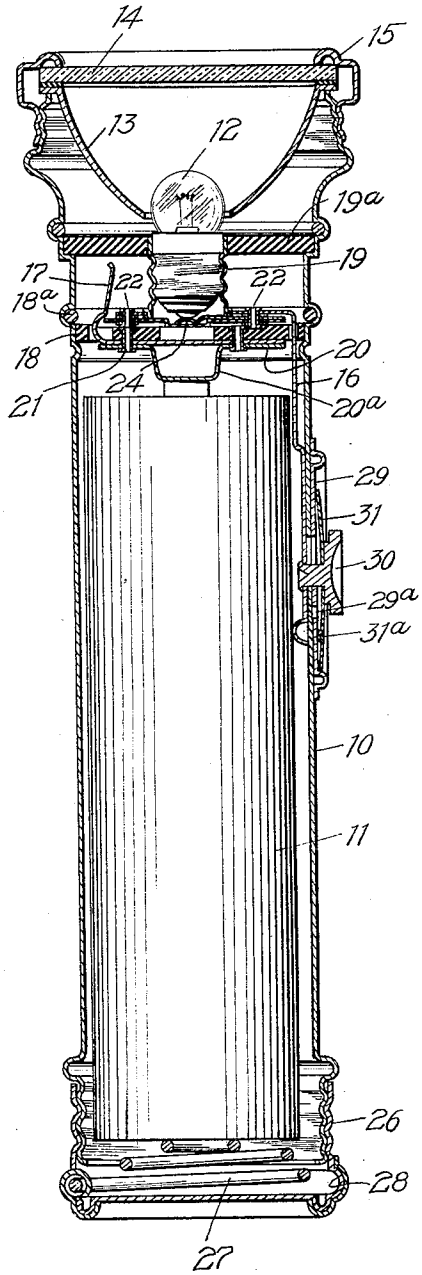


Fig. 2.

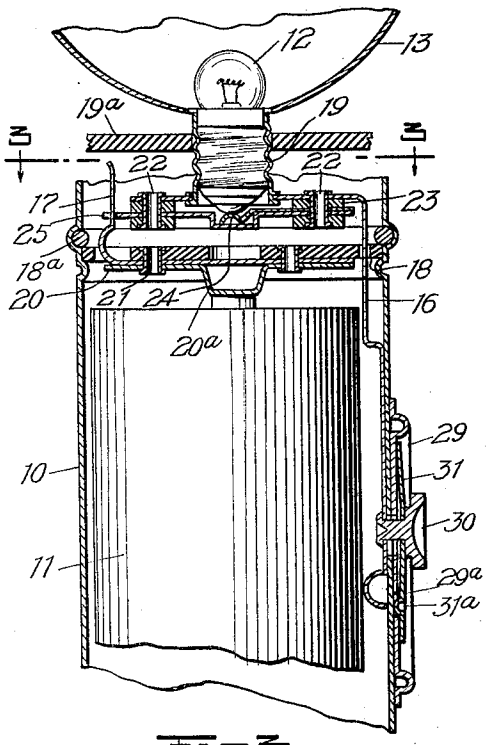
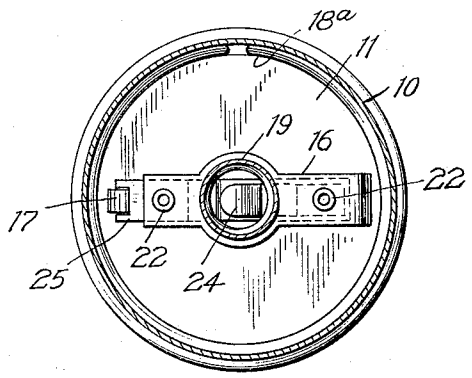


Fig. 3.



Inventor
Max Horowitz
By his Attorneys
Kenyon & Kenyon

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Fig. 4.

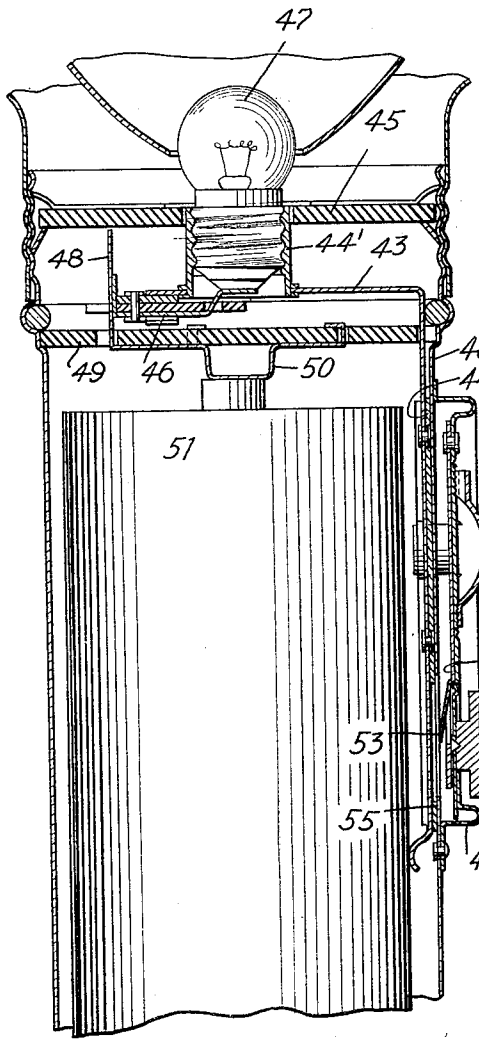
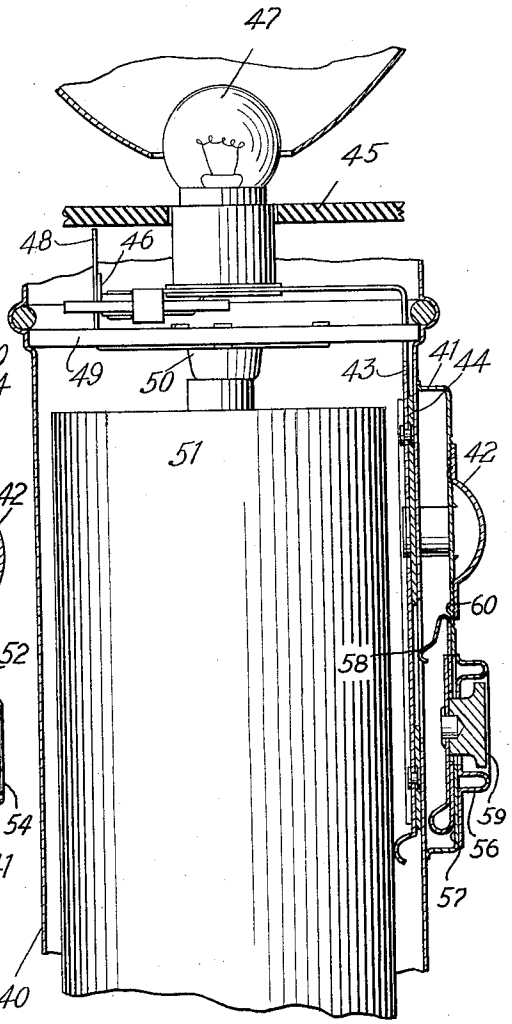


Fig. 5.



Inventor
Max Horowitz
By his Attorneys
Kenyon & Kenyon

Patented May 2, 1933 1,906,268

UNITED STATES PATENT OFFICE

MAX HOROWITZ, OF BROOKLYN, NEW YORK, ASSIGNOR TO BRIGHT STAR BATTERY COMPANY, OF HOBOKEN, NEW JERSEY, A CORPORATION OF NEW YORK

FLASHLIGHT

Application filed December 5, 1930. Serial No. 500,198.

This invention relates to portable electric lights of the type known as flashlights.

In devices of this character, it has been common to make provision for focusing the light by mounting the lens together with the lens ring and reflector upon a screw cap threaded on the front end of the casing. Focusing has been effected by turning this cap one way or the other to vary the position of the lens and reflector with respect to the bulb. This arrangement has necessitated the use of two hands to focus the light. Furthermore, in such flashlights additional means have been required for making and breaking the circuit connecting the battery and bulb.

An object of this invention is a new and improved flashlight in which adjustment of the focus requires the use of one hand only and may be effected while the flashlight is held in the same position as it is held for operating the switch which controls the flow of current to the bulb.

Other objects, novel features and advantages of this invention will be apparent from the following specification and accompanying drawings, wherein:

Fig. 1 is a longitudinal section through a flashlight embodying the invention, the lamp circuit being open.

Fig. 2 is an enlarged fragmentary section on the line 2—2 of Fig. 1, the circuit being closed.

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

Figs. 4 and 5 are views similar to Fig. 2 of modified forms of the invention.

Referring now more especially to Figs. 1 to 3 inclusive, the tubular casing which may be composed of metal fibre or other suitable material constitutes the main portion of the flashlight and is adapted to contain a battery 11. An electrical bulb 12 is supported in the aperture provided at the base of a reflector 13, which, together with the lens 14 is held in place by a ring 15 threaded on to the end of the casing 10.

A metal strip 16 is slidably supported on the inner wall of the casing 10 and a contact member 17 having a bowed portion is supported within the casing by an insulating disk 18 held in place by a snap ring 18a. A contact member 17b is insulatingly supported by the strip 16 and normally projects into the bowed portion of the contact member 17. A socket 19 is carried by and electrically connected to the slide 16 and receives the bulb 12. An annular insulating disk 19a surrounds the upper end of socket 19. A metal washer 20 having a downward extending projection 20a is supported by the washer 18, this washer being electrically connected to the contact member 17. The washer 20 is connected to the disk 18 by rivets 21, one of which also connects the contact member 17 with the washer 20. Rivets 22 join together insulating washers 23 between one pair of which is arranged one end of a contact member 24 extending across the bottom of the socket 19 and also a contact member 25 which normally extends into the lower portion of the contact member 17 and which is adapted to engage the member 17 when the slide 16 is actuated. These rivets also serve to support the washers and contact members from the slide 16.

The projecting portion 20a of the washer 20 engages the central or positive terminal of the battery 11. A cap 26 is threaded on to the end of the casing 10 and between the cap and the battery 11 is arranged a spring 27. The cap 26 is provided with a ring 28 hinged thereto which may be used to suspend the lamp.

A plate 29 is arranged on the exterior wall of the casing 10 and is riveted thereto. A button 30 has a shank extending through an aperture in the casing, the inner end of the shank also extending through the slide 16 and being headed over to connect the button to the slide. A leaf spring 31 is interposed between the button 30 and the plate 29 to provide friction to prevent unintentional movement of the button 30. An elongated recess 29a is provided in the plate 29 and a projection 31a is provided on the leaf spring 31 to snap into the recess in one position of the button 30.

The various parts normally assume the position shown in Fig. 1 in which position the contacts 17 and 25 are disengaged, thereby breaking the lamp circuit. When it is desired to use the flashlight, the button 30 is pushed upwardly, thereby moving the slide 16 upwardly and with it the bulb 12. This brings the contact 25 into engagemnt with the contact 17, thereby closing the lamp circuit. Such movement of the button locates the nib or projection 31ª on the spring 31 in the elongated recess of the plate 15 and impositively holds the slide 16 in circuit closing position.

It is possible, however, to move the button slightly without withdrawing the projection from the recess and this slight movement permits proper focusing of the bulb which may be required due to variation of its filament. With this arrangement, the flashlight may be lighted and focused merely by movement of the button 30 which may be effected by the use of one hand only.

In the modification disclosed in Figs. 4 and 5, the tubular casing 40 is provided with a housing 41 suitably connected to the casing. A slide 42 rests on the housing 41 and is connected to a metal strip 43 arranged within the casing and a strip of insulating material 44 is interposed between the metal strip 43 and the casing. The strip 43 is thus slidably mounted in the casing and may be reciprocated by means of the slide 42. A socket 44 is carried by and is electrically connected to the metal strip 43 and extends into the aperture of an insulating disk 45 which acts as a guide, this disk being held in position in any suitable manner. A contact member 46 is insulatingly carried by the strip 43 and has one end projecting into the socket 44 in position to be engaged by the center terminal of the bulb 47. The other end of the contact member 46 extends vertically and engages the vertical portion of a second contact member 48 which is supported by the insulating disk 49. The contact member 48 has an offset portion 50 which engages the central electrode of a dry cell 51.

In the modification shown in Fig. 4, a resilient contact member 52 is attached at one end to the housing 41 and its other end is free to move. A tongue 53 is struck out from the member 52 and when such member is flexed, this tongue engages the strip 43 and thus closes the circuit through the filament of the bulb 47. A button 54 extends through a slot in the housing 41 and is attached to a plate 55 which rests on the contact member 52, the plate 55 being wider than the slot. Depression of the button 54 moves the tongue 53 into engagement with the slide 43. The tongue 53 may be held in engagement with the slide 43 by moving the button forward to bring the front end of the plate 55 between the top of the housing and the contact member 52, thereby holding the latter in depressed position.

In the modification disclosed in Fig. 5 a carrier 56 rests on the housing 41 and is attached to one end of a metal strip 57 which is arranged within the housing. The connection between these members is such that they are slidably supported by the housing. The strip 57 is bent back on itself and is provided at its front end with a downwardly projecting tongue 58. A button 59 is attached to the under section of the strip 57 and passes through an aperture provided in the upper section. By depressing the button 59, the tongue 58 is moved into engagement with the strip 43 to close the lamp circuit. Forward movement of the carrier 56 brings the front end of the strip 57 into engagement with the projection 60, thereby depressing the tongue 58 into engagement with the strip 43 and maintaining it thus engaged.

By means of the slide 42, the bulb 47 may be adjusted relative to the reflector to properly focus the same. Serrations are provided on the slide 42 and housing for maintaining the slide 42 against accidental movement. With this arrangement, the lamp may be both properly focused and the lamp circuit controlled by use of the thumb of the hand in which the casing is held.

In the modification disclosed in Figs. 1 to 3 inclusive, the washer 19ª serves as a guide for the socket and maintains the same centrally of the casing. It also protects the socket and its attached parts from being twisted out of position when a bulb is being replaced and also acts as a protective covering to prevent tampering with the movable parts. In the modification disclosed in Figs. 4 and 5, the washer 45 serves the same purpose. If the casing is composed of fibre or other material, suitable means are provided for electrically connecting the strip 16 (Figs. 1 and 2) or the housing 41 (Figs. 4 and 5) to the battery.

In all the modifications, the bulb may readily and quickly be focused by the use only of one hand and while being held in the normal position.

It is of course apparent that various modifications may be made in the structure above described, without in any way departing from the spirit of the invention as defined in the appended claims.

I claim:

1. A portable electric lamp comprising a casing, a slide supported by said casing, a contact member insulatingly carried by said slide, a socket carried by said slide, said socket comprising a shell and terminal electrically connected to said slide and contact member, a reflector having an aperture in alinement with said socket, a second contact member normally out of engagement with said first contact member but engageable

thereby upon movement of said slide, and a stationary insulating member having an aperture through which said shell reciprocates.

2. In a portable electric lamp, a tubular casing, a slide mounted on the casing wall, a socket carried by said slide and being electrically connected thereto, a contact member insulatingly supported by caid casing, a second contact member carried by said slide for engagement with said first contact member, and a stationary annular insulating member arranged within said casing through which said socket reciprocates.

3. In a portable electric lamp, a tubular casing, a stationary annular insulating member within said casing, a metal slide mounted on the casing wall and insulated therefrom, a socket carried by said slide and being electrically connected thereto, said socket being reciprocable in the aperture of said annular insulating member, a contact member carried by said slide and being insulated therefrom, a stationary contact member insulatingly supported by said casing for engagement with said first contact member, means for reciprocating said slide, and switch means for electrically connecting said slide and casing.

4. In a portable electric lamp, a tubular casing, a pair of spaced insulating disks arranged transversely of said casing, a contact member carried by one of said disks and having a portion extending longitudinally of the casing, a metal strip slidably supported by said casing, a socket carried by said strip and electrically connected thereto, said second disk having an aperture into which said socket projects, a second contact member insulatingly carried by said strip for engagement with said first contact member, and means supported by said casing and its outer wall for reciprocating said strip.

5. In a portable electric lamp, a tubular casing, a slide mounted on said casing, a socket carried by said slide and having one terminal electrically connected thereto, an insulating disk mounted in said casing, a second insulating disk having an aperture into which said socket projects, co-acting contacts carried by said first disk and slide, and means for moving said slide.

6. In a portable electric lamp, a tubular casing, a slide mounted on said casing, a socket carried by said slide and having one terminal electrically connected thereto, an insulating disk mounted in said casing, a second insulating disk having an aperture into which said socket projects, co-acting contacts carried by said first disk and slide, and means for moving said slide, one of said contacts having a bowed portion whereby relative movement of the contacts opens and closes the energizing circuit.

7. In a portable electric lamp, a tubular casing, a slide mounted on said casing, a socket carried by said slide and having one terminal electrically connected thereto, an insulating disk mounted in said casing, a second insulating disk having an aperture into which said socket projects, co-acting contacts carried by said first disk and slide, means for moving said slide, and switch means for electrically connecting said slide and casing.

8. In a portable electric lamp, a tubular casing, a slide mounted on said casing and electrically connected thereto, a socket carried by said slide and having one terminal electrically connected thereto, an insulating disk mounted in said casing, co-acting contacts carried by said disk and slide, and means for moving said slide, one of said contacts having a bowed portion whereby relative movement of the contacts opens and closes the energizing circuit.

9. In a portable electric lamp, a tubular casing, a pair of spaced insulating disks mounted in said casing, one of said disks having an aperture, a contact carried by the other of said disks, a slide having a portion arranged between said disks, a socket mounted on said portion and being electrically connected thereto, said socket extending into into said aperture, a contact insulatingly carried by said portion and electrically connected to said socket, said contacts being engageable upon relative movement to close the energizing circuit, and means for moving said slide.

10. In a portable electric lamp, a tubular casing, a pair of spaced insulating disks mounted in said casing, a slide having a portion arranged between said disks, a socket mounted on said portion and being electrically connected thereto, a contact member insulatingly carried by said portion and being electrically connected to said socket, one of said disks having an aperture into which said socket projects, a contact member supported by said other disk for engagement with the first contact member, and means for reciprocating said strip.

11. In a portable electric lamp, a tubular casing, a pair of spaced isulating disks mounted in said casing, a slide having a portion arranged between said disks, a socket mounted on said portion and being electrically connected thereto, a contact member insulatingly carried by said portion and being electrically connected to said socket, one of said disks having an aperture into which said socket projects, a contact member supported by said other disk for engagement with the first contact member, and means for reciprocating said strip, one of said contacts having a bowed portion whereby relative movement of the contacts opens and closes the energizing circuit.

12. In a portable electric lamp, a tubular casing, a pair of spaced insulating disks mounted in said casing, a slide having a por-

tion arranged between said disks, a socket mounted on said portion and being electrically connected thereto, a contact member insulatingly carried by said portion and being electrically connected to said socket, one of said disks having an aperture into which said socket projects, a contact member supported by said other disk for engagement with the first contact member, means for reciprocating said strip, and switch means for electrically connecting said strip and casing.

In testimony whereof, I have signed my name to this specification.

MAX HOROWITZ.