DYNAMO OPERATED POCKET FLASHLIGHT

Filed April 16, 1965

Fig. 1

Fig. 4

Fig. 2

Fig. 3

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ABSTRACT OF THE DISCLOSURE

A stop means is mounted internally within a flashlight casing and limits motion of a dynamo actuator toward the casing, so that pinching of an operator's hand is made impossible. During storage, the stop means locks an external handle of the actuator in a hollow of the casing surface to prevent snagging with clothing material.

The present invention relates to a dynamo-operated pocket flashlight with an operating lever which may be moved to and fro manually and which actuates the dynamo rotor either directly or by way of an energy source, for example a spring mechanism.

Flashlights of this type are constructed as a rule in such a manner that the operating lever can be pressed in until the handle strikes against the housing or case so that the given impulse which must neither exceed nor fall below specific limits of speed for an easy manipulation may be utilized to the fullest possible extent. In this position the operating lever in the known pocket flashlights is generally also adapted to be locked so that it will not be protruding when the flashlight is laid aside or placed in a pocket. Such a stroke limitation of the lever raises the danger, however, that the skin of the palm or the fingers be caught and pinched in between the handle and the flashlight case, which may result in painful injuries because the lever will obviously not be pressed down cautiously but forcefully and with a certain momentum in order to bring the rotor of the dynamo to turn at the highest speed possible.

The primary object of the present invention is to obviate this drawback.

Another object of the invention is to provide as a characteristic feature thereof a stop member acting on the operating lever which may be disengaged at will and which prevents the operating lever from striking against the case during the operation of the flashlight.

Still another object of the present invention is to provide the stop member advantageously at the same time with means for locking the operating lever so that a separate locking mechanism therefor is not necessary.

Yet another object of the present invention is to simplify the operation of the pocket flashlight by employing the stop member as a slide continuously urged into the operating position thereof by means of a spring.

Other objects of the present invention and many of its attendant advantages will become obvious to those skilled in the art from the following description in conjunction with a preferred embodiment of the present invention illustrated in the drawings.

In the drawings where like reference numerals designate similar or equivalent parts:

FIGURE 1 is a longitudinal cross-sectional view through a dynamo pocket flashlight being directly actuated by means of an operating lever,

FIGURE 2 is a top plan view of an individual part thereof on an enlarged scale, and

FIGURE 3 is a sectional view thereof,

FIGURE 4 is a block diagram showing the electrical connections.

Accommodated in a conventional manner in the case 1 of the pocket flashlight at one end face thereof are the bulb 2 with the reflector 3 and a transparent cover plate 4. The bulb is fed or energized by a dynamo whose rotor 5 is rotatably positioned on a plate 6 being secured to the housing. A lever 7 serves for driving or actuating the rotor; this lever extends linearly in the case and is provided with a handle 8 at the end thereof projecting from the case and formed as a toothed rack 9 inside of the case. The toothed rack engages or meshes with a pinion 10 to which a gear 11 is secured which in turn, is in operative engagement with a further pinion 12. Secured to this latter pinion is a cam member 13 with two slidable or swinging pawls 14 (only one of which is shown in FIGURE 1) which engage in the starting phase in a saw-tooth-like internal toothed 15 of the dynamo rotor 5. As shown in FIGURE 4, the electrical output of the dynamo is conventionally connected to the light bulb 2.

In order to prevent the skin of the palm or of the fingers from being pinched in between the case 1 and the handle 8 during the actuation of the operating lever, a stop member 16 is disposed on the side of the case which is opposite the handle, which member limits the stroke of the toothed rack 9, so that a certain space will remain between the handle and the case, as is apparent from the illustration in FIGURE 1. In this particular embodiment, any closer approach of the handle to the casing would result in a possibility of pinching an operator's hand. Approach closer than this certain spacing is referred to for claim purposes as “pinching approach.” It is apparent that the exact size of the certain spacing depends on the particular geometrical conditions used for the casing and handle. In certain cases, the size of a man's fingers must be used, while in others, it is the distance at which pinching of skin occurs, in pain to the operator. The stop member is provided as a slide extending to both sides of the case, and is continuously pulled or urged into the operating position thereof by means of a spring 17. A grip member 18 serves for shifting the slide member. In order to allow for the locking of the operating lever inside the case when not in use, an opening 19 is provided in the stop slide member through which the toothed rack extends when the handle is fully depressed and may be locked. As is apparent from FIGURE 3, the stop slide member engages for that purpose into a recess 20 of the toothed rack. In the locked position thereof, the handle rests in a correspondingly formed recess 21 of the case so that it will not constitute a protruding hazard when the flashlight is laid aside or put into a pocket. Thus, the external surface of the handle then lies flush with the case surface. This is evident from FIGURE 1.

When starting the operation of the pocket flashlight the slide member is initially pressed downwardly (FIGURE 1) whereupon the operating lever is unlocked or released and driven outwardly by means of a spring (not shown). The spring 17 of the slide member pulls the latter again in an upward direction into the position of detent or stop. The flashlight is now ready for operation and the rotor of the dynamo may be driven or actuated by repeatedly pressing down the lever 7 by way of the toothed wheel gearing and the freewheeling pawl control mechanism.

For the purpose of laying aside the flashlight with the lever in the locked position, the stop slide member is first pushed downwardly against the action of the spring 17 and the lever 7 is pressed inward so that the toothed rack projects through the opening 19 and the slide member is in a position to engage into the recess 20 of the toothed rack. The lower locking edge of the opening en-
gages spring-biasedly when the stop slide member is released.

It should be understood that it is not intended to limit the invention to the above described forms and details, and that the invention includes such other forms and modifications as embraced by the scope of the appended claims.

What is claimed is:

1. A dynamo pocket flashlight, comprising: a casing means; a dynamo means mounted within said casing means; means mounted within said casing means to utilize the electrical output of said dynamo means to produce light radiating from said casing means; a movable means movable relative to said casing and located partly outside of said casing means to transmit external mechanical motion to said dynamo means for the driving thereof, said movable means including a slidable means slidably into and out of said casing; a stop means mounted within said casing means to limit the extent to which said slidable means is slidable into said casing means to prevent the pinching approach of said movable means to said casing means; said stop means acting on said slidable means within said casing means.

2. A dynamo pocket flashlight as claimed in claim 1, said slidable means being an operating lever movable reciprocatingly into said casing means to drive the dynamo means; said movable means further including a handle on the outer end of said lever for pressing the lever inwardly of said casing, said lever being biased outwardly; said stop means stopping the inner end of said lever before said handle strikes the outside of said casing means; said stop means having means for locking said lever in the pressed-in position; said stop member being normally spring-biased into the operative position; said handle lying smoothly flush with said casing in the locked position of said lever and said stop means.

3. A dynamo pocket flashlight as claimed in claim 2, said casing means having a recessed portion; said handle fitting into said recessed portion in the locked position of said lever and said stop means.

4. A dynamo pocket flashlight as claimed in claim 2, said stop means having a pushing means manually operable externally of the casing means; said stop means having a locking edge; said lever being pressable inwardly past said locking edge when said stop means is pushed out of said operative position by manual operation of said pushing means; said lever having a recess; said edge engaging spring-biasedly in said recess, when said lever has been pressed past said edge and said pushing means is manually released, to lock said lever in the pressed-in position.

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