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2,158,970

ILLUMINATED HAND TOOL

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Fig. 1

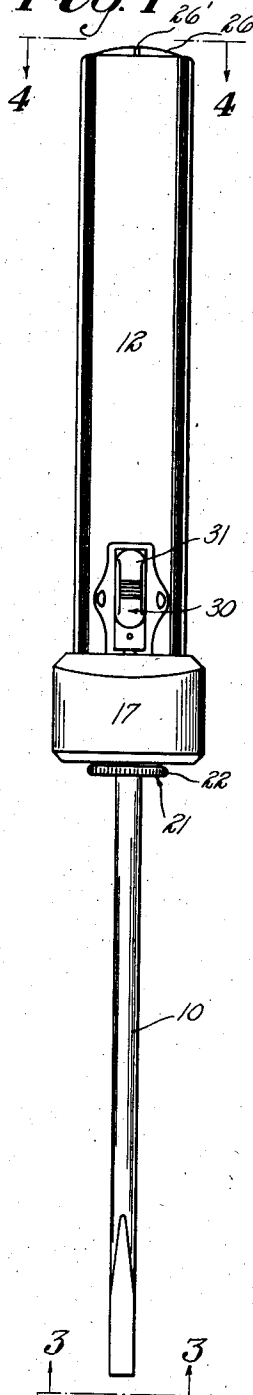


Fig. 2

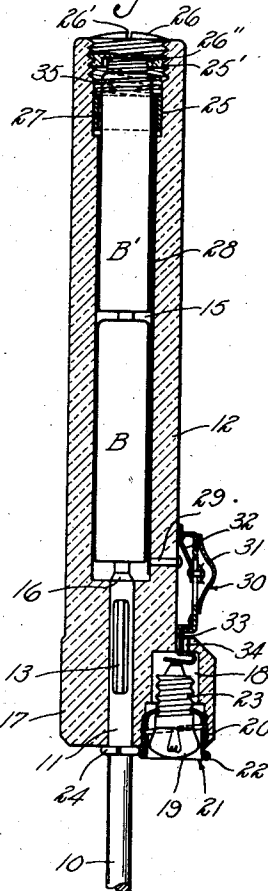


Fig. 3

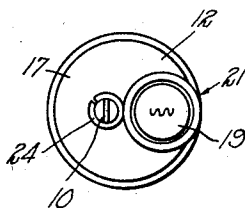


Fig. 4

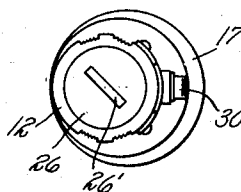
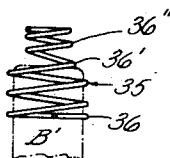


Fig. 5



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ILLUMINATED HAND TOOL

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4 Claims. (Cl. 240—6.46)

This invention relates to improvements in hand tools such as screw drivers and the like.

An aim of the present invention is to provide an illuminated hand tool having various features of novelty and advantage and wherein the operating end of the tool and the article engaged thereby are properly lighted by an illuminating device carried by the tool, thus permitting the operator to use the tool with either or both of his hands instead of attempting to hold a lamp with one hand and use the tool with the other.

A further aim of the invention is to provide an improved hand tool which is characterized by its simplicity in construction and its economy in manufacture, the tool having a relatively few number of parts which may be economically made and assembled.

A still further aim of the invention is to provide a tool of this character which may be safely used about electrical circuits and which will stand considerable abuse.

A further aim of the invention is to provide an improved tool having a handle and a blade extending from one end thereof, the handle being so constructed and arranged that increased leverage may be had when turning the tool.

Other objects and advantages will appear as the description proceeds.

My invention accordingly consists in the features of construction, combination of elements, and arrangement of parts which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the appended claims.

In the accompanying drawing, wherein I have shown for illustrative purposes one embodiment which the present invention may take:

Figure 1 is a side elevation of my invention in the form of an illuminated screw driver;

Fig. 2 is a fragmentary longitudinal section taken diametrically through Fig. 1;

Fig. 3 is a bottom plan view of my invention taken substantially along the lines 3—3 of Fig. 1;

Fig. 4 is a top plan view taken substantially along the lines 4—4 of Fig. 1; and

Fig. 5 illustrates the top battery connection.

Referring to the drawing in detail, I have provided a hand tool herein illustrated in the form of a screw driver having a blade 10 terminating in a lower operative screw-engaging portion and an upper shank portion 11 secured in a generally cylindrical handle 12 having an outer peripheral face provided with suitable longitudinally extending grooves and ribs. In the present instance, the handle is composed of a molded insu-

lating material, and the shank portion 11 within the handle has outwardly projecting fins or ribs 13 which aid in rigidly securing the handle and blade together in fixed operative relation. Handle 12 is provided with a longitudinal bore 15 into the lower end of which the shank 11 projects, providing a battery-engaging contact 16. Bore 15 is adapted to slidably receive an electric battery herein illustrated in the form of two standard flashlight cells B and B' in tandem abutting relation and in series connection so that the center or positive terminal of the forward cell B engages contact 16 and the center terminal of the rearward cell B' engages the outer shell or negative terminal of cell B.

In accordance with my invention, the handle, for at least a portion of its length, is generally cylindrical in cross section and eccentric with respect to the blade 10. In the present instance, the lower forward end of the handle has a portion 17 of increased diameter and, as will be seen from Fig. 3, the blade is disposed to one side of the axis of this cylindrical portion. Obviously, the enlarged eccentric portion 17 may be longer than that illustrated, and it may be of cylindrical or other suitable shape. With this arrangement, if considerable exertion is necessary to turn the screw with which the blade is engaged, the operator may grip this enlarged portion and, due to the eccentricity of the blade, exert a larger turning stress than if the blade projected centrally from the lower end of the handle. With the arrangement described, the operator may first grip the main portion of the handle to start the screw and then grip the enlarged eccentric portion while turning the screw home to exert a final and additional turning force.

In order to properly illuminate the operating end of the blade and the screw or other article to be engaged therewith, I mount, in a convenient and simple manner, in the forward enlarged end of the handle, a lamp so disposed that it is properly protected against injury and its full effectiveness may be obtained without interference with parts of the tool itself. To this end, the enlarged portion 17 is provided with a bore 18 disposed to one side of the blade where it is received by the handle, and a lamp 19 is removably positioned in this bore. The outer end of the bore is enlarged and threaded, as at 20, so as to receive an externally threaded reflector 21 having an annular knurled rim 22 on its forward or open end. The lamp has the usual threaded metal sleeve 23 adapted to be threaded into an opening

in the inner or upper end of the reflector. As usual, the lamp has a center contact projecting from its base and insulated from sleeve 23. It will be also appreciated that electric lamps having other standard types of bases and terminal connections may be employed to the same purpose without deviating from my invention. The reflector is, of course, in electrical connection with the sleeve 23, and, in order to establish a circuit between the reflector and the blade in a simple and effective and yet economical manner, there is provided a split ring 24 surrounding the blade and engaging against the lower end of the handle. When the reflector is screwed home, the rim thereof engages and makes electrical contact with the ring and holds the ring in place. Hence, the positive or center terminal of cell B electrically connects with the lamp through contact 16, shank 11, ring 24, and reflector 21, thus completing one side of the electrical circuit.

The rearward or outer end of the battery within bore 15 is simply and effectively held in position and electrically connected to lamp 19 in such manner that the battery may be easily removed from the bore and replaced. To accomplish this, outer end of bore 15 terminates in a counterbore 25 having a threaded portion 25' at its outer end adapted to removably receive a screw plug 26 preferably composed of insulating material and having a screw driver slot 26' or other suitable means whereby it may be easily and removably screwed into and out of engagement with threads 25'. The inner end of counterbore 25 projects forwardly of the rearward end of cell B', as shown in Fig. 2, and has a metallic ring 27 received therein. The inner diameter of this ring is of substantially the same diameter as bore 15 so that the cells B and B' may be easily and slidably inserted through this ring into bore 15 and the ring itself comprises a substantial continuation of the bore and surrounds cell B' intermediate of its end so that a relatively short portion of the outer end of the cell B' projects therethrough. Ring 27 is electrically connected by means of a metal strip 28 to a contact pin 29 projecting through the side wall of handle 12 at the forward end of bore 15 and arranged to be electrically connected to the center lamp terminal by a switch 30 mounted on the outside of the handle and preferably adjacent to handle portion 17. This electrical connection is accomplished by means of a slidable switch member 31 arranged to shift a movable contact 32 into and out of electrical engagement with pin 29. Contact 32 is electrically connected to the center lamp terminal by means of a metallic strip 33 resiliently engaging the center terminal of the lamp and, passing through a hole 34 in the rearward end of enlarged portion 17.

The rearward or outer end of cell B which projects a short distance through ring 27, as illustrated in Fig. 2, provides a negative terminal for the battery arranged to be electrically connected in a simple and convenient manner with the ring by means of a resilient metallic member which makes electrical contact with the ring and the rearward end of the battery and also serves to resiliently maintain the battery in position and prevent its rattling. To accomplish this, I have provided a somewhat tapering coiled spring, generally indicated at 35, having a plurality of convolutions 36 at its lower end adapted to be slidably received within counterbore 25 and surround the rearward projecting end of cell B' and enter into contact with the outer end of ring 27, as illus-

trated in Figs. 2 and 5. Intermediate of the spring ends, the convolutions reduce sharply in diameter, as at 36', to electrically contact the outer end or negative terminal of the battery. The upper end of the spring terminates in convolutions 36'' which are received within a recess 26'' of screw plug 26. The reduction of convolutions of 36' is from a diameter greater than to a diameter less than that of cell B' so that when the spring is compressively engaged between plug 26 and ring 27, convolutions 36' will resiliently engage the rearward end of the battery, forcing it into position within bore 15 and making positive electrical contact therewith, and the forward or lower end of the spring will make positive electrical contact with ring 27. Hence, it will be observed that spring 35 serves the dual function of resiliently securing the battery in position and making electrical connection between the battery and ring 27. At this time, current will be free to flow from the negative terminal of rearward end of the battery through the spring 35, ring 27, strip 28, and contact 29, and the switch 30 will control the opening and closing of the circuit to light the lamp 19. It will be appreciated that I have provided a simple but effective means for securing the battery in position, and when the battery becomes exhausted, it is simply necessary to unscrew plug 26, remove spring 35, and replace a new battery, after which the spring and plug 30 may again be inserted in position.

I claim as my invention:

1. A hand tool comprising a one piece handle having a longitudinal bore extending partially throughout its length, a metallic shank rigidly secured in the forward end of the handle and projecting forwardly therefrom, one end of the shank projecting into said bore to engage a battery contact, a battery removably mounted in the bore, the shank receiving end of the handle terminating in an enlarged portion eccentrically disposed to the shank, an electric lamp removably secured within said enlarged portion disposed to one side of the shank and arranged to direct a beam of light towards the point of tool application, and means including a switch for electrically connecting the battery, lamp and shank.

2. A hand tool comprising a handle of insulating material having a longitudinal bore adapted to removably receive a battery, a metallic shank rigidly received in the end of the handle adjacent the inner end of said bore, said shank longitudinally projecting from the end of the handle in alignment with the bore and having an inner end within the bore serving as a battery engaging contact, the handle terminating in an enlarged gripping portion at its shank engaging end, an electric lamp mounted in said enlarged portion at one side of the shank and arranged to direct a light beam to the point of tool application, means electrically connecting one lamp terminal to the shank, and means including a manually operable switch connecting the other terminal of the lamp to the battery.

3. A hand tool comprising an insulated handle having a longitudinal bore extending partially therethrough and arranged to removably receive a battery, means closing the outer end of the bore to secure the battery in position, said battery having a terminal at each end, a metal shank embedded in the end of the handle adjacent the inner end of the bore and coaxial therewith, an end of the shank projecting into said bore and engaging the battery terminal, an elec-

5 tric lamp removably received in the end of the handle adjacent to the shank, a ring on the shank, a reflector associated with said lamp and having a rim engaging said ring and holding it
10 in place on the shank to electrically connect the shank to one lamp terminal, and means including a spring compressed between the closure means and the other battery terminal electrically connecting the other terminal of the lamp to the battery to complete the circuit.

4. A screw driver comprising a one piece handle having a longitudinal bore extending from one end thereof and adapted to removably receive a battery, a metallic shank rigidly received

in the end of the handle adjacent the inner end of the bore, said shank longitudinally projecting from the end of the handle in alignment with the bore and having an inner end within the bore serving as a battery engaging contact, said
5 handle having a second longitudinal bore extending from the other end thereof, an electric lamp mounted in said second bore adjacent the shank and arranged to direct a light beam to the point of tool application, means electrically
10 connecting one lamp terminal to the shank, and means electrically connecting the other lamp terminal to the battery.

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