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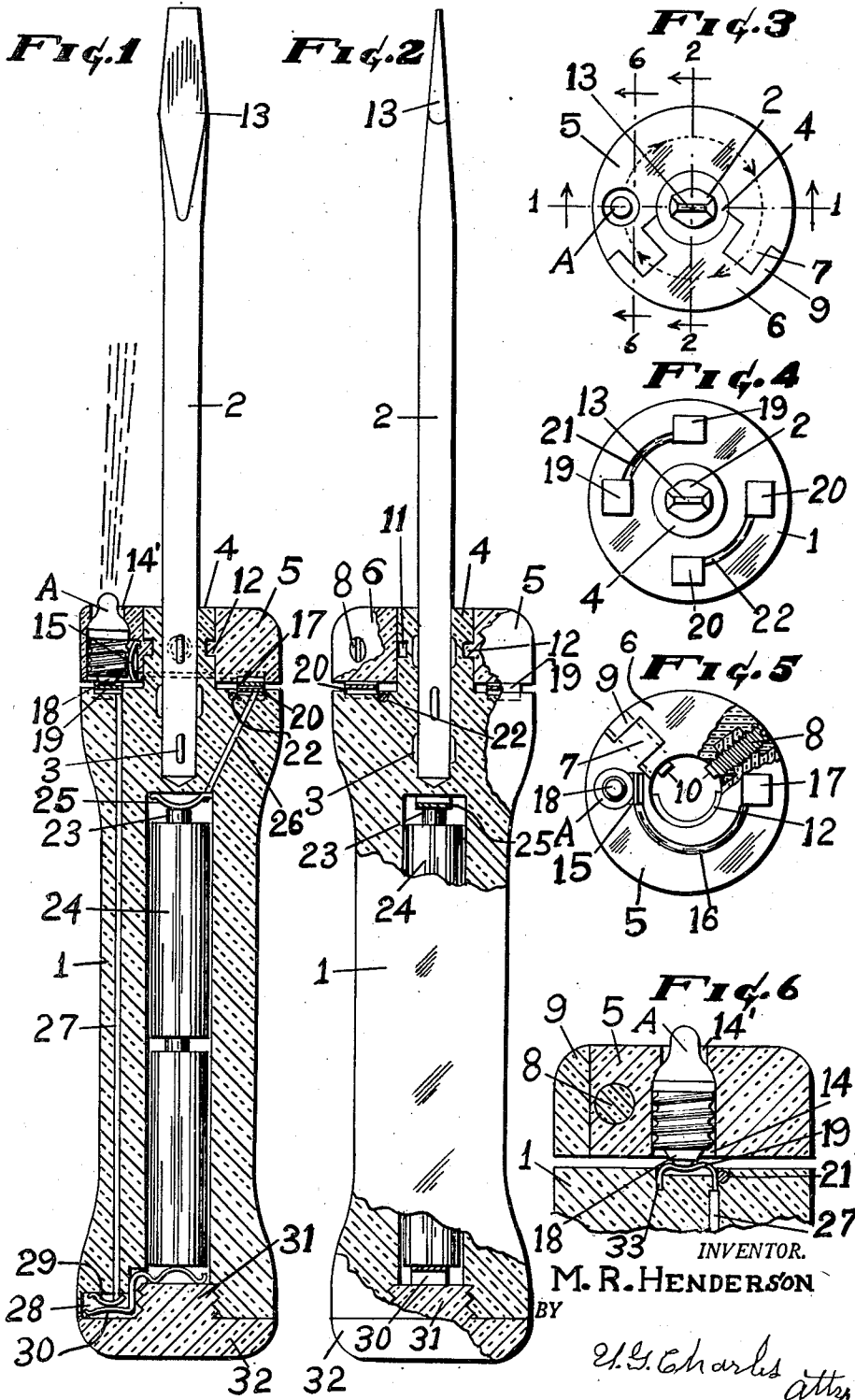
M. R. HENDERSON

2,442,893

ILLUMINATED SCREW DRIVER

Filed Dec. 7, 1946

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Fig. 7

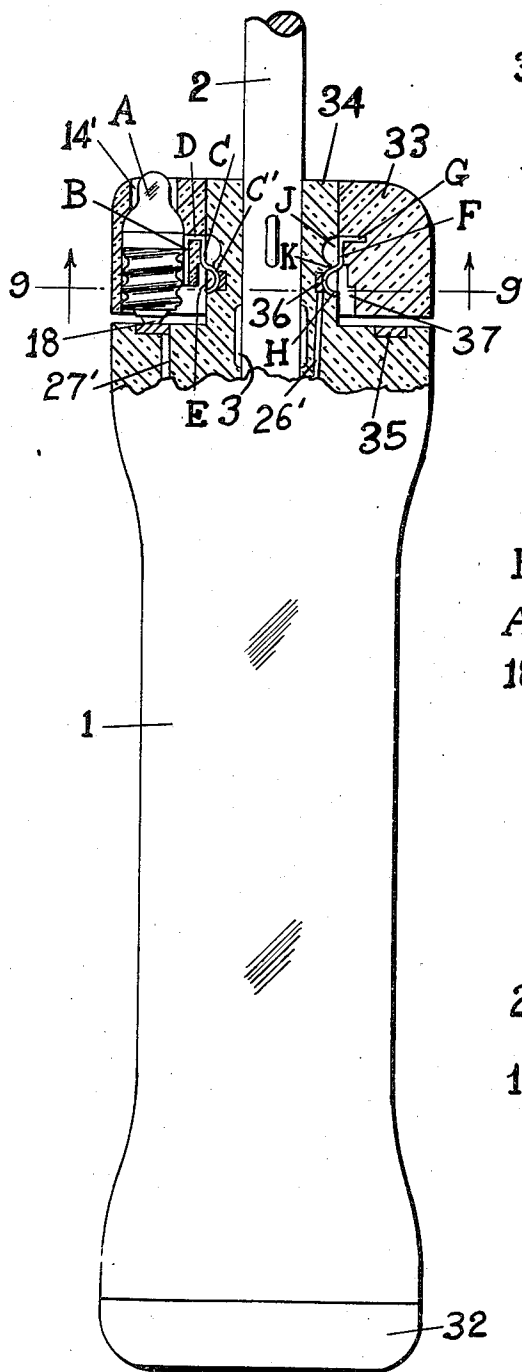


Fig. 8

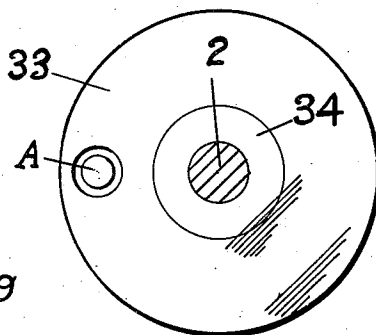


Fig. 9

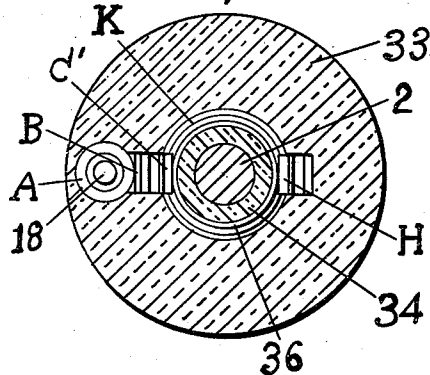
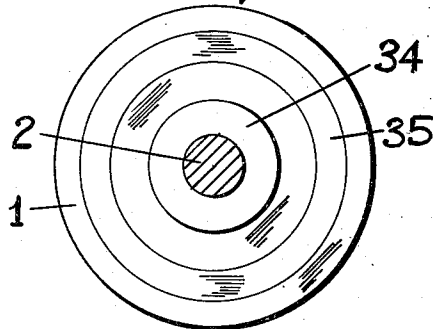


Fig. 10



INVENTOR.
M. R. HENDERSON
BY

W. B. Charles
att'y.

UNITED STATES PATENT OFFICE

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ILLUMINATED SCREW DRIVER

Mal Roy Henderson, Wichita, Kans.

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1 Claim. (Cl. 240—6.46)

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This invention herein disclosed relates to an illuminated screw driver, and has for its principal object the provision of illuminating means carried by a screw driver for producing light directly on the work operated upon, thus eliminating the process of fishing for such work in the dark, or obscured places, and such driver as equipped being adaptable for use on automobiles, radios, electrical apparatus, or the like, and more specifically on screws which are located in congested places wherein little light is present.

Another object of this invention is to provide a light for a screw driver that may be set at various places about the axis of the shank of a screw driver by rotation thereof, whereby should a sector portion of the shank diametrically opposite the light produce shading on work, the light may be rotated a predetermined arc about the shank to direct light on the aforementioned shaded portion.

A still further object of this invention is to provide a light that when adjusted to a selected position about the shank, an electric current will be automatically closed to operate the light.

A still further object of this invention is to construct the handle and light bulb carrying head from insulation material as well as insulate the driver's shank from the handle, whereby an electric current coming in contact with the shank will not burn out the bulb or produce an electric shock to an operator of the tool.

A still further object of this invention is to provide a handle that is easily taken apart for the replacement of a light bulb and batteries to actuate the light, and furthermore to produce a handle and a light for a screw driver that is inexpensive to construct and efficient in its performance.

These and other objects will hereinafter be more fully explained, reference being had to the accompanying drawings forming a part of this specification, wherein like characters will apply to like parts in the different views.

Referring to the drawings:

Fig. 1 is a longitudinal sectional view through the handle of the screw driver, taken on line 1—1 in Fig. 3, the driver's shank, light bulb and batteries being in elevation.

Fig. 2 is a fragmentary sectional view taken on line 2—2 in Fig. 3, while Fig. 3 is an inner end view of the tool.

Fig. 4 is a similar view to that of Fig. 3, but having the light bulb carrying head removed therefrom.

Fig. 5 is an inner side view of the light bulb

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carrying head, parts removed for convenience of illustration.

Fig. 6 is a fragmentary portion of the handle and light bulb carrying head, taken on line 6—6 in Fig. 3.

Fig. 7 is an enlarged modified view of the head and electric contacts for the bulb, parts removed for convenience of illustration.

Fig. 8 is a plan view of the inner end of the handle; Fig. 9 a sectional view taken on line 9—9 in Fig. 7; and Fig. 10 being a plan view of the inner end of the handle with head removed.

The invention herein disclosed relates to an illuminated screw driver, and more specifically to the handle and illuminated means carried by the handle for producing light during operation of the driver in darkened places.

The handle consists of an elongated body portion 1 functioning as actuating means for a screw driver shank 2, or the like, that is rigidly secured in the inner end of the handle by extending concentrically into the handle a predetermined distance and retained against rotation therein by any suitable means such as by lugs 3.

It will be seen that the inner end of the handle has a cylindrical hub 4 integrally joined thereto and through which the shank extends and into the handle. Rotatably mounted on the hub 4 is an annular head, the diameter of which corresponds with the diameter of the inner end of the handle. Said head is composed of two members 5 and 6 being secured together by tongues 7 engaging in grooves formed in said member 6, and having insulation screws 8 extending through the ears 9 and tongues 7. Said screws 8 have cylindrical extensions 10 reduced in diameter from that of the screws to engage in an annular groove 11 formed in the hub to retain said head against removal therefrom in coaction with a semi-circular flange 12 integrally formed on member 5 and engaging in said groove 11. To separate the head from the hub, the screws 8 are removed, permitting member 6 to be withdrawn longitudinally therefrom, at which time, member 5 may be laterally moved to disengage the flange from the groove.

Carried in the head which is capable of being rotated about the shank of the driver is a light bulb A, directing its light rays on and adjacent the blade portion 13 of the shank so that the blade portion may be readily inserted in a nick of a screw without fishing for such in case of darkness or partially so. To secure the light bulb in the head, said head has a bore 14 to receive the base portion of the bulb, and a reduced bore 14'

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through which extends the light producing end of the bulb, the reduced portion being means to retain the bulb from outward movement, said bulb capable of being carried about the axis of the shank will direct light rays upon a selected edge or side of the shank's blade 13 and adjacent thereto.

The light bulb as arranged in the drawing will be energized when set at four positions equally divided circumferentially about the axis of the driver's shank. In operation of the screw driver, the light may be turned to either side of the blade or to either edge thereof to provide sufficient light on the blade as well as the work or screw engaged by the blade, in other words, light may be produced at the desired side or edge of the blade by merely rotating the head, or by rotating the handle within the head. However, should it be desired to observe the work clearly all about the blade, said blade may be held stationarily and the head rotated to position the bulb adjacent the shaded side of the work and shank as it will be understood that the side of the shank's blade opposite that of the bulb is shaded due to the obstruction of said blade.

To energize the bulb, it will be seen in Figs. 1 and 5, that a recess is formed in the inner wall of the bore 14 of the head for receiving an arcuate spring contact 15 as one side of an electrical circuit for energizing the bulb, said contact 15 being connected by a rigid wire 16 to another contact 17 which is diametrically opposite the shank from contact 15 and being carried by the inner side of the head as shown in Fig. 5, said wire being forced into a groove to retain said contacts 15 and 17 from displacement. The other side of the circuit is through the medium of the light bulb electrode 18 engaging on a selected contact of one of a pair of contacts 19 and 20, said pair of contacts being the minus and plus sides of the circuit respectively. Contacts 19 are connected by a wire 21, while contacts 20 are connected by a wire 22, said wires being forced in an arcuate groove formed in the inner end of the head to retain said contacts from displacement. Contacts 20 connect to the plus post 23 of one of a pair of batteries 24 through the medium of an arcuate spring member 25 and a wire 26 conducting current from the spring member 25 to the contact 20, and also functioning as means to retain the spring member 25 at the inner terminal end of a bore formed in the handle and extending inward from the outer end thereof for carrying the said batteries, said bore terminating a short distance from the inner end of the shank of the driver. Contact members 19 are grounded to the batteries by a wire 27 having its inner end connected to one contact member 19, and from thence running through the handle longitudinally and terminating in a recess 28 formed in the outer end of the handle, and being secured to a spring contact 29. Said spring contact 29 engages with another resilient spring conductor 30, said conductor being bent suitably to engage said contact 29 and with the bottom of a battery as shown in Fig. 1, and being held to engagement by a cap having a threaded portion 31 and a flanged portion 32, the flanged portion corresponding with the diameter of the handle, while the threaded portion threadedly engages in the bore of the handle at its outer end.

To energize the bulb, the head is rotated to engage the bulb's electrode 18 with either one of the pair of contacts 19 and 20, while the contact 17 connects with a contact of a pair that

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is diametrically opposite the contact engaged by the electrode of the bulb to make an electric circuit.

Fig. 6 illustrates the method of mounting contact member 19, which is similar as contacts 17 and 20, said contacts having right angle bent portions 33 extending from the same side of the contacts to engage in recesses formed in the handle and head, respectively, said contacts being capable of flexing sufficient to permit connection with the electrode by a sliding contact engagement. To avoid easy separation of the electrode with its respective contact, the said contact is arced inwardly between the right angle bent portions to function as a seat for the electrode, but capable of being moved therefrom by gripping the head with the fingers and turning the same.

It will be understood that the handle, cap and revolving head is made from plastic material of an insulation nature whereby should the shank come in contact with an electric current accidentally said current will not be conducted to the handle or bulb and will thus avoid injury to the bulb and operator of the tool.

Figs. 7, 8, 9, and 10 are enlarged views illustrating a modification, in which case, the light bulb carrying head 33 is composed of one continuous ring-like structure and adapted to rotate about the hub 34. Electric wire 27' has its inner end secured to a washer-like contact 35 which is carried rigidly in the handle portion 1, said electrode of the light bulb engaging on the annular and washer-like contact 35 to close the circuit for one side thereof. The other side of the circuit is made through the medium of a spring contact member having a downwardly extending leg B to engage the bulb and a springing leg C connected to the leg B by a crotch D. Leg C has an arcuate portion C' to seat in a groove E formed in the hub and in contact with an annular ring 36 which is rigidly secured in said groove E. Said ring 36 has secured thereto a wire 26' to close the other side of the circuit when the arcuate portion of leg C is positioned in groove E, in which case, the head may be rotated making a continuous circuit in its movement. To assist in retaining the head in position on the hub, there is provided a spring member having a leg F and a right angle bend G extending into the inner wall of the head's bore to retain said spring member, and an arcuate portion H to engage in the groove E. To break the circuit provided for the bulb, the head is gripped and moved outwardly or away from the handle to displace electric contact leg C from groove E and into a similar groove J, in which movement the arcuate portions of the legs C and F will spring sufficient to extend into depressions 37 formed in the head to pass over ridge K positioned between said grooves. When it is desired to light the bulb, the head is forced inwardly closing the circuit, and in operation of the tool, the light bulb may be held stationary to direct its light rays upon a desired spot, while the handle is rotated to perform its function.

I am aware that illuminated screw drivers have been made by others and which I do not claim broadly, but I do claim the arrangement of a light that may be rotated about the shank of a screw driver, whereby the light may be adjusted to produce light rays directly upon a desired place which otherwise may be shaded by the shank obstruction, and other modifications may be made as lie within the scope of the appended claim.

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

In an illuminated tool of the class described comprising an elongated handle and a shank extending into one end of the handle and being rigidly secured thereto, said end of the handle having a cylindrical hub extending therefrom and through which the shank extends, an annular head rotatably mounted on the hub by tongue and groove construction, a light bulb carried in the head with its light producing end directed toward the shank of the tool, two pairs of electric contacts carried by the first said end of the handle and being equally divided circumferentially about the axis of the shank, batteries carried within the handle, an electric conductor running through the handle for connecting one pair of contacts with one side of the batteries, an electric conductor to connect the other pair of electric contacts with the other side of the batteries, an electric contact carried by the inner side of the head, said bulb and last said electric contact being positioned diametrically opposite

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the shank and adapted to contact the two pairs of electric contacts, respectively, and to energize the bulb at four locations about the shank's axis, and an electric conductor to connect the bulb and last said electric contact, said bulb being de-energized by rotating the head wherein the bulb and the oppositely disposed contact will clear the said two pairs of electric contacts.

MAL ROY HENDERSON.

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