

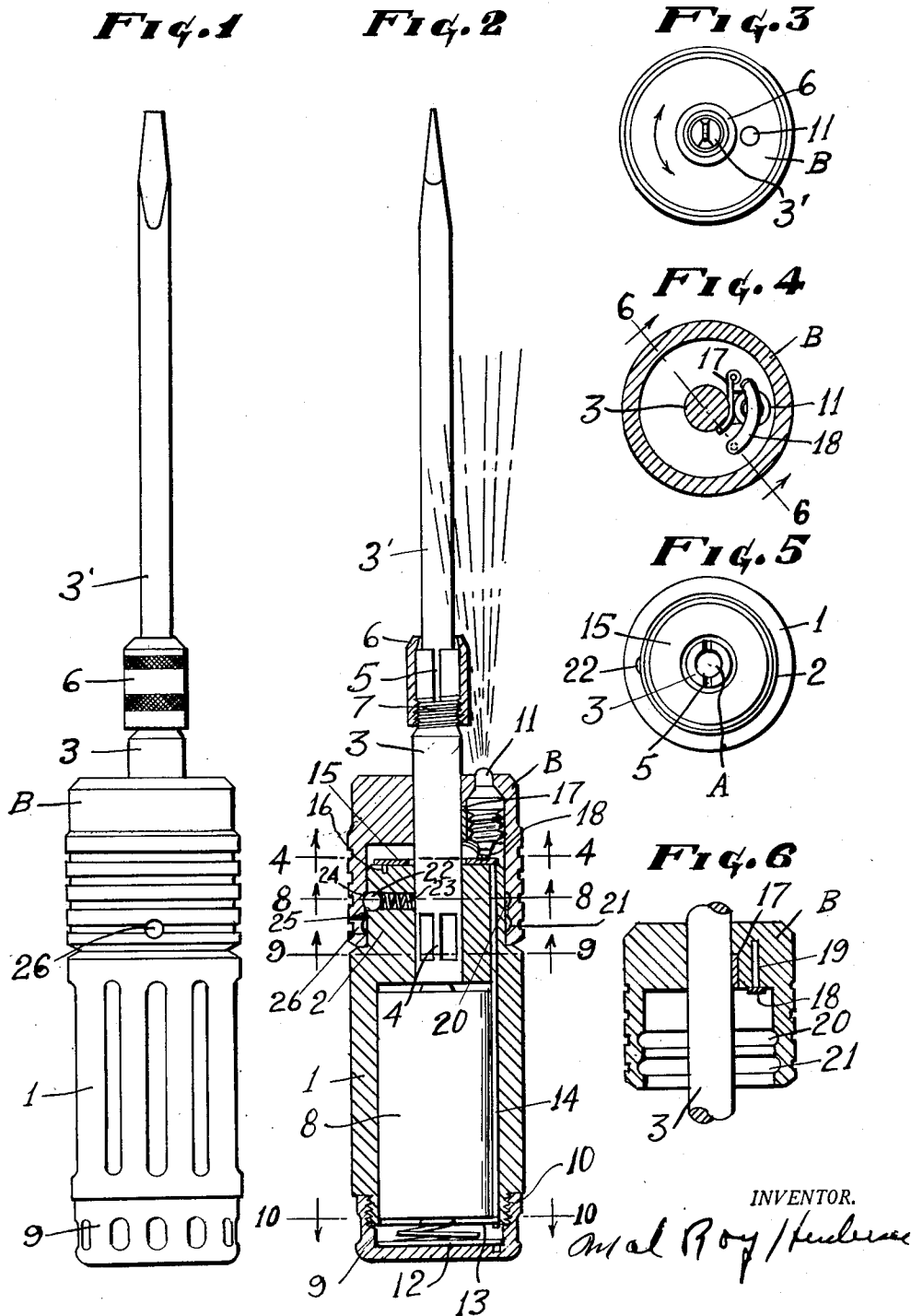
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M. R. HENDERSON  
ILLUMINATED SCREW DRIVER

2,673,284

Filed Dec. 4, 1950

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**Fig. 7**

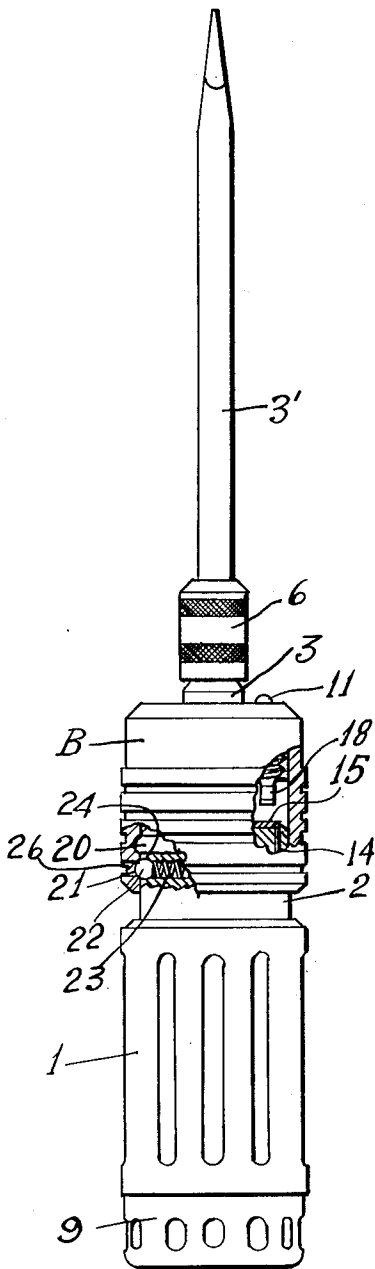


**Fig. 8**

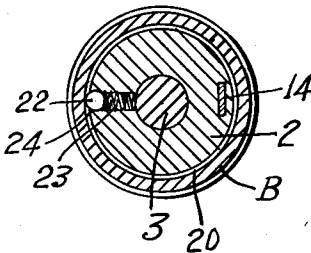


**Fig. 9**

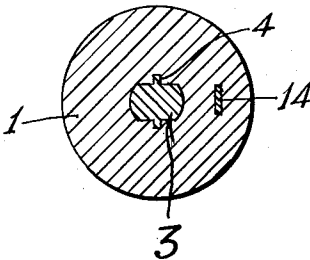
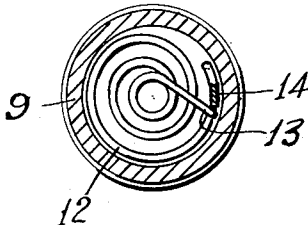


**Fig. 10**



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## UNITED STATES PATENT OFFICE

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## ILLUMINATED SCREW DRIVER

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3 Claims. (Cl. 240—6.46)

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This invention herein disclosed relates to an illuminated screw driver involving certain new and useful improvements over my former Letters Patent Number 2,442,893, issued June 8, 1948, it being understood that the principal purpose of this invention is to provide light during the use of said driver in darkened conditions.

Another object of this invention is to provide a handle that contains a battery for a bulb, and a bulb carrying head rotatably mounted on one end of the handle to direct light rays upon and adjacent the driver's shank at any selected position of the bulb about the axis of the shank.

A still further object of this invention is to provide an uninterrupted revolving light through the medium of the rotatable head that may be retained stationarily when gripped by one hand of an operator, while the handle is gripped by the other hand and turned to operate the shank of said driver, in which case, the shank may be turned without serious slipping or wobbling action upon a cylindrical fastening element such as a screw, or the like.

A still further object of this invention is to provide electric contact engagement for the bulb that permits a continuous light during rotation of the revolvable head, or if desired during rotation of the shank while the head is stationarily retained.

A still further object of this invention is to provide a pair of grooves in the annular wall portion of the revolvable head to selectively engage a spring tensioned ball that is carried by the handle, one groove being for the purpose of retaining the bulb in electrical contact with an annular ring to close the circuit for the bulb, the other groove when engaged by the ball being for the purpose of breaking electrical power supply for the bulb by the movement of the bulb from the annular ring.

A still further object of this invention is to provide a disconnecting means for the application of various lengths and types of driving shanks to accommodate for their respective screws or bolt heads.

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 side elevation of the screw driver.

Fig. 2 is a longitudinal sectional view through the screw driver and being turned ninety degrees on its longitudinal axis from that shown in Fig. 1.

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Fig. 3 is a shank end view of the screw driver.

Fig. 4 is a sectional view taken on line 4—4 in Fig. 2 looking in the direction of the arrows.

Fig. 5 is an end view of the driver similar to Fig. 3 but having the shank and revolvable head removed for convenience of illustration.

Fig. 6 is a sectional view of the revolvable head with a portion of the screw driver shaft extending therethrough.

Fig. 7 is a side elevation of the screw driver corresponding to the position of Fig. 2, but having the bulb circuit broken, and parts being removed for convenience of illustration.

Fig. 8 is a sectional view taken on line 8—8 in Fig. 2.

Fig. 9 is a sectional view taken on line 9—9 in Fig. 2.

Fig. 10 is a sectional view taken on line 10—10 in Fig. 2.

The invention herein disclosed consists of a handle 1 made of insulating material, said handle having a solid end 2, in which extends one end of a cylindrical shaft 3 as operating means for a driver shank 3', or the like. The shaft 3 is secured rigidly in the handle by suitable lugs 4, while the other end of said shaft 3 is bored inwardly as at A a spaced distance and split as at 5 to receive an end portion of the shank 3', said shank being retained by an internally threaded sleeve 6 engaging over the split portion of the shaft 3 to threadedly engage the threads 7 of said shaft 3 as shown in Fig. 2. By the provision of the disconnecting means for the shanks above described, various types of shanks may be applied not restricting the same to a screw driving medium.

The other end of the handle is open and is bored inwardly a spaced distance sufficiently to receive a battery 8 therein as shown in Fig. 2, it being understood that the last said end of the handle is closed by a removable cap 9 having threaded engagement with the handle as at 10.

It will be seen that the inner end of the battery contacts the shaft 3 as one side of an electrical supply for a bulb 11, later described, while the outer or other end of the battery is engaged by a helical spring 12 that is rigidly retained in the cap 9. Said spring 12 has an outwardly extending portion 13 to electrically connect the battery to one end of a metallic strip 14 that lies alongside the battery and extends through and outwardly from the solid end of the handle as shown in Fig. 2. Said strip 14 where it extends outwardly as above stated, is integrally joined to an annular ring 15 that is positioned on the solid end of the handle and further retained by a pin

16 that engages inwardly in the handle and is rigidly secured to the annular ring. The said annular ring surrounds the shaft 3, but is spaced therefrom, in which case, the shaft 3 is one side of an electrical circuit while the annular ring is the other.

The method of carrying the bulb 11 and providing electric power therefor will now be described. A cylindrical head B substantially equaling the diameter of the handle is provided to revolve about the shaft 3 and the solid end of the handle. The head is bored inwardly a spaced distance as shown in Fig. 2 to provide an annular wall for receiving the solid end of the handle, and the closed end portion of the head B is axially bored, permitting the shaft 3 to extend there-through and turn therein. In close proximity to said shaft is the bulb 11 carried in the head to make electric contact with said shaft through the medium of a leaf spring contact element 17, said element being carried by the head between said bulb and shaft 3 thus permitting the shaft to rotate in the head. The metallic ring 15 is engaged by an arcuate spring contact 18, which is rigidly held to the head through the medium of a pin 19 as shown in Fig. 6, said spring contact 18 closing an electrical circuit by its engagement with the annular ring and an element of the bulb as shown in Fig. 2.

To energize the bulb, it will be seen that the head is moved inwardly toward the handle to make and retain a circuit for the bulb, while the head is moved outwardly as shown in Fig. 7 to break the circuit to the bulb. To selectively position the head, as above described, is through the medium of a pair of annular grooves 20 and 21 spaced apart and being inwardly of the wall of the head. Engaging in the grooves, selectively, is a ball 22 that is urged therein by a coil spring 23, said ball 22 and spring 23 being positioned in a radial aperture 24 provided in the solid end of the handle. The ridge 25 between the grooves is for the purpose of restricting free movement of the ball from one groove to the other, but being capable of being moved by an operator exerting a predetermined pressure on the head for selectively positioning the head with respect to making and breaking current to the bulb. By the engagement of the ball in groove 20 provides a current for the bulb, and by engagement of the ball in groove 21 breaks current to the bulb, furthermore regardless of making or breaking of the current, the head may be revolved on the handle, or the handle and shaft may be turned while the head is retained stationarily. To remove the head from the handle, the same may be accomplished by inserting an element through an aperture 26 in the head to move the ball inwardly sufficient to permit the head to be removed from the solid end of the handle.

In operation, the handle and head may be turned simultaneously, in which case, the bulb is revolved about the shank; however, if desired, the head may be gripped by one hand and retained against turning, while the handle and its shank is rotated by the other hand. The latter method

of operation above stated, is preferably desirable to eliminate slipping or wobbling action of the shank in its operation upon a screw head or the like.

While the invention as above described and disclosed in the drawings is the preferred construction, it will be understood that various changes in structure and exact function may be made as lie within the scope of the appended claims.

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

1. In an illuminated screw driver of the class described, a handle having two ends, one end of which has a shaft extending outwardly therefrom, a head having an annular wall positioned on said end of the handle, said head adapted to revolve complete revolutions about the said end of the handle, said head having an axial aperture through which the said shaft extends and another aperture in which is secured a light bulb, an annular ring secured on the said end of the handle, surrounding the shaft and spaced therefrom, a spring contact carried by the head to retain the light bulb in the head and to electrically connect one side of the bulb to the annular ring for making continuous contact while the handle is being turned in the head.

2. In an illuminated screw driver comprising a cylindrical handle having two ends, a cylindrical head being bored inwardly forming a space and providing an annular wall, said annular wall being revolvably mounted on one end of the handle, a light bulb carried in the head, a spring to retain the bulb in the head, an annular ring secured on the said end of the handle and being engaged by the spring for making an electrical connection between ring and bulb continuously while the head is revolving on the handle.

3. In an illuminated screw driver, said driver having an elongated handle and a revolvable head on one end of the handle, said end of the handle and inner portion of the head being spaced apart, an annular ring secured on said end of the handle and being in the said space between the handle and head, a light bulb with two contacts carried by the inner portion of the head, a spring electrically connecting one contact of the bulb to the said annular ring, there being means to connect the annular ring to one contact of a battery and means to connect the other contact of the bulb with the other contact of the battery to make an electrical circuit for illumination of the light bulb.

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