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SWIVEL TOP RATCHET DRIVER

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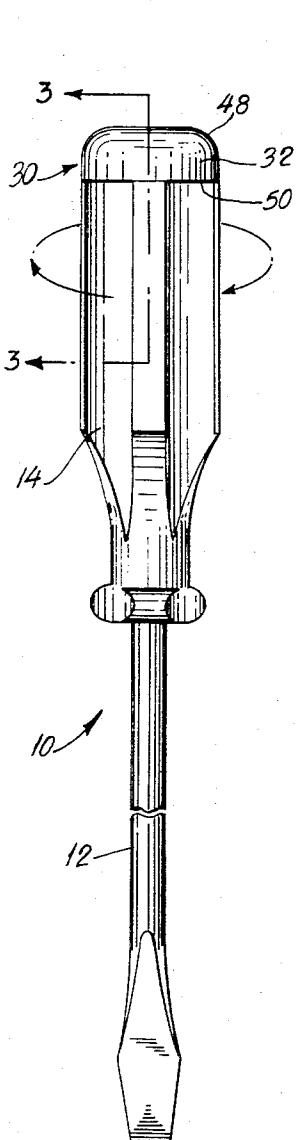


Fig. 1

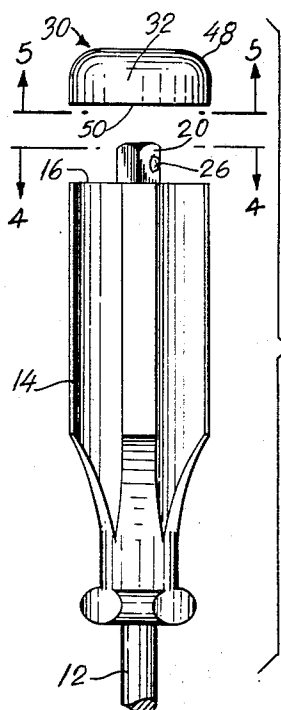


Fig. 2

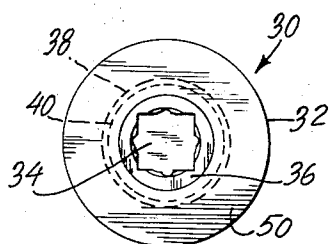


Fig. 5

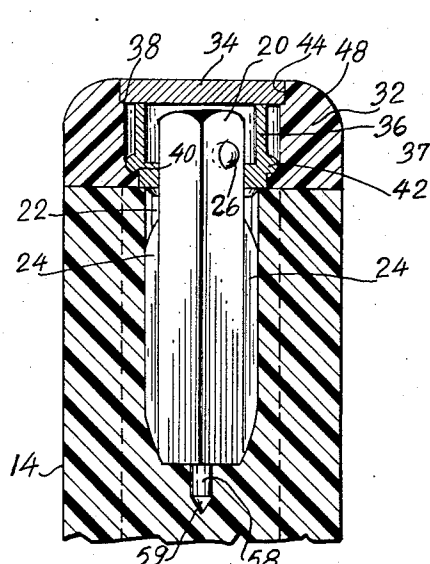


Fig. 3

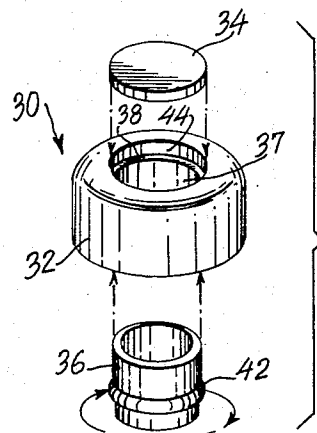


Fig. 6

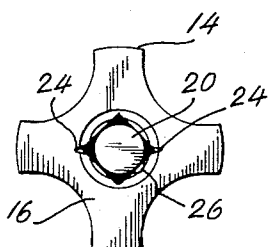


Fig. 4

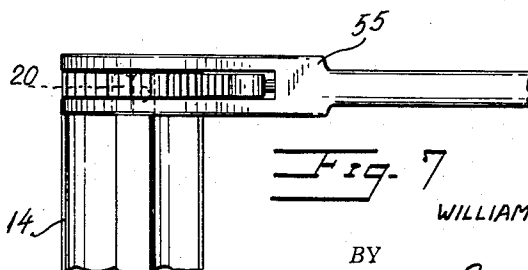


Fig. 7

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3,343,577
SWIVEL TOP RATCHET DRIVER
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The present invention relates to a novel swivel top and ratchet assembly for screwdrivers and the like.

The present invention utilizes ratchet wrenches which are adapted to receive and to intermittently axially rotate posts having non-circular cross-sections, which posts are secured to any driving tool member such as a screwdriver, socket wrench, spinner wrench or the like.

Accordingly, the present invention provides a novel construction for tool drivers which permits an effective ratchet effect to be obtained.

The present invention provides a novel construction for drivers by which very greatly increased leverage is obtained for rotating the driver about its longitudinal axis.

The present invention further provides a novel construction for drivers which makes use of standard ratchet wrenches and sockets and which permits the use of standard socket accessories such as universal joint sockets, extension bars and the like.

The present invention still further provides a novel driver construction having a freely-rotating removable cap which acts as a resting place for the palm of the hand whereby continuous pressure may be applied to the driver along its longitudinal axis toward the tool end thereof while the driver is being rotated about the same axis.

Briefly, and not by way of limitation, the present invention comprises a square post securely inserted into the handle of an otherwise standard driver, such as a screwdriver, coaxial with the driver shank and extending out of the handle. The square post is of standard dimension to receive standard sockets, socket wrenches or ratchet wrenches. A removable cap is provided which snaps over the extended portion of the square post and which is freely rotatable thereon.

In the drawing:

FIGURE 1 is a front view of the swivel top ratchet driver made in accordance with the teachings hereof, a screwdriver being shown by way of illustration.

FIGURE 2 is an exploded partial front view of the upper portion of the swivel top ratchet driver made in accordance with the teachings hereof showing the swivel cap removed from the handle thereof.

FIGURE 3 is a cross-sectional view as taken across line 3—3 of FIGURE 1.

FIGURE 4 is a top view of the driver with the swivel top removed as viewed across line 4—4 of FIGURE 2.

FIGURE 5 is a bottom view of the swivel top as viewed across line 5—5 of FIGURE 2.

FIGURE 6 is an exploded perspective view of the swivel top showing the component parts thereof.

FIGURE 7 is a partial front view of the top of the driver handle showing a ratchet wrench attached thereto and showing in phantom the square post.

Referring to the drawing, a screwdriver 10 has a shank 12 and a handle 14. Handle 14 may be a molded plastic fluted design of common use having a flat top 16.

A post 20 is embedded in a hole 22 in handle 14 colinearly with shank 12, a portion of post 20 extending upward out of top 16 of handle 14. Post 20 is generally a right parallelepiped having a square cross-section. To accommodate standard tools, as will be discussed hereinbelow, preferred cross-sectional dimensions for post 20 are 1/4 inch square; post 20 extending above top 16 a

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minimum of 1/4 inch. Post 20 is shown to have two opposed extension fins 24 which extend laterally into handle 14 to prevent rotation of post 20 with respect to handle 14 and shank 12 under applied torsional forces. Hole 22 is shown to be circular in cross-section and counter-bored. It should be understood, however, that post 20 may be molded into handle 14 in which case hole 22 would conform to the shape of post 20. It may then not be necessary to employ fins 24. Post 20 further has a spring-urged ball 26 which serves to removably secure tools to said post 20.

A swivel top 30 has a molded palm-cap 32, a disc cover 34 and a cylindrical socket 36. Molded cap 32 has a substantially cylindrical center hole 37 located coaxially with the longitudinal axis of screwdriver 10 when top 30 is mounted thereon as will be described. Cylindrical center hole 37 has two abrupt changes in diameter forming an upper annular seat 38 of greater diameter and a lower annular seat 40 of lesser diameter. Socket 36 has an outer annular ring 42 adapted to engage lower annular seat 40. Disc cover 34 is adapted to engage upper annular seat 38 and to tightly press-fit against the wall 44 of the upper portion of cylindrical center hole 37. In assembling swivel top 30, socket 36 is placed in cylindrical center hole 37 from the top thereof and is dropped down past wall 44 and upper annular seat 38 until it engages lower annular seat 40. Disc cover 34 is pressed into said center hole 37 until it engages upper annular seat 38. Socket 36 is thereby prevented from axial displacement by lower annular seat 40 on the one hand and disc cover 34 on the other hand, against both of which socket 36 bears. Socket 36 is free, however, to rotate about the longitudinal axis of swivel top 30.

Socket 36 has a square recess adapted to receive post 20. Ball 26 removably secures socket 36, and therefore swivel top 30, to screwdriver 10 permitting top 30 to be "snapped" on and off screwdriver 10. When swivel top 30 is on screwdriver 10 it can rotate or swivel about the longitudinal axis thereof providing a comfortable rest for the palm of the hand which drives screwdriver 10. The palm of the hand can rest continuously and exert continuous longitudinal pressure upon swivel top 30 while screwdriver 10 is rotated about its longitudinal axis. Swivel cap 30 has a smoothly contoured upper surface 48 and a flat, circular bottom surface 50 which corresponds to the largest diameter of top 16.

When swivel cap 30 is removed from screwdriver 10, post 20 is exposed and can receive standard socket and wrench attachments, such as ratchet wrench 55, which can snap on and off post 20.

While the foregoing constitutes a preferred embodiment of the invention it is clear that modifications and other embodiments may be provided within the broad spirit of the invention and the broad scope of the claims. For example, a conversion kit may be provided to convert a standard screwdriver to a swivel top ratchet screwdriver, the kit to consist of swivel top 30 which includes disc cover 34, socket 36 and molded cap 32 and post 20. It would then be necessary only to drill a hole corresponding to hole 22 to accommodate post 20. To aid in positioning post 20 coaxially, post 20 may be provided with a centering pin 58 which would engage a pilot hole 59 drilled in the screwdriver handle for the purpose.

It should also be understood that screwdriver 10 is merely illustrative of the many drivers encompassed by this invention, such as, for example and not by way of limitation, drivers adapted to receive sockets and socket attachments, drivers having square, hex, Phillips and cross driving bits or ends, drivers having clutch jaws and drivers having chucks.

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What is claimed is:

1. A swivel top driver comprising:

a handle;

a tool shank secured to and projecting from one end of said handle;

a post permanently secured to the other end of said handle and having a portion of polygonal cross-section projecting from said other end;

a spring-urged ball carried by said projecting polygonal portion; and

a top removably and rotatably secured to said post by said spring urged ball whereby said top may be removed to expose said projecting polygonal portion of said post for engagement by a standard socket ratchet wrench.

2. A swivel top driver in accordance with claim 1, wherein said top is comprised of:
a cap; and

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a socket, said socket being rotatably secured within said cap and being adapted to receive said post.

3. A swivel top driver in accordance with claim 2, wherein said cap is provided with two inner annular seats circumferentially located within a central cylindrical hole in said cap.

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