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2,641,291

RATCHET CLUTCH HANDLE

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Fig. 1.

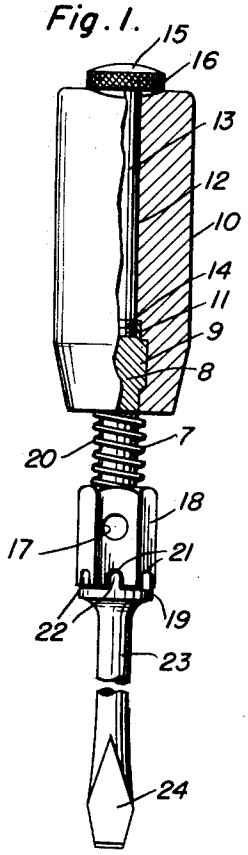


Fig. 3.

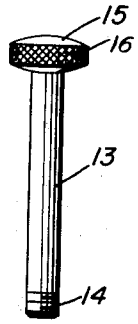


Fig. 2.

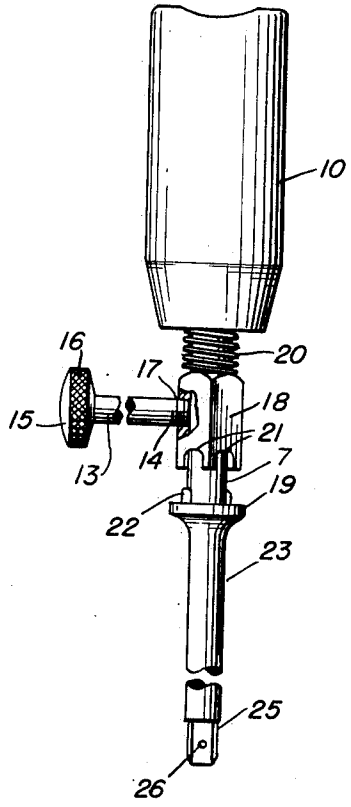


Fig. 4.

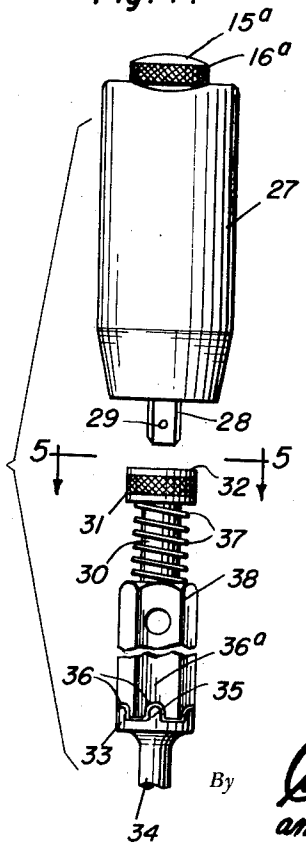
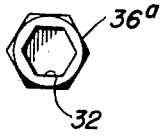


Fig. 5.



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RATCHET CLUTCH HANDLE

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2 Claims. (Cl. 145—76)

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The present invention relates to multiple purpose and combination tools and implements and has reference in particular to structural means characterized by a shank whose outer or forward end is constructed for coaction with the work, a hand grip for handling and imparting rotation to the shank, and clutch means, of a ratcheting type, for rotating and driving the shank.

More explicitly, one phase of the invention has to do with a hand grip to which the shank may be either permanently or detachably connected, said hand-grip being provided with a conveniently situated socket and said socket being adapted to accommodate an insertable and removable element which is usable as a shank turning lever.

Another object of the invention appertains to a shank with or without a hand-grip, the outer end of the shank being formed with work engaging means, the intermediate portion of the shank having clutch lugs and accommodating a slidable sleeve, said sleeve being adapted to be turned either by a separate wrench or a lever and being constructed to coact with the clutch lugs in order to obtain the desired intermittent clutching, driving and return ratcheting steps.

Other and more specific objects and advantages of the invention will become more readily apparent from the following description and the accompanying illustrative drawing.

In the drawing, wherein like numerals are employed to designate like parts throughout the views:

Figure 1 is a view partly in section and partly in elevation showing one embodiment of the improved tool means constructed in accordance with principles of the instant invention;

Figure 2 is an elevational view, partly in section, with the lever fragmentarily shown and positioned for shank turning and driving use;

Figure 3 is an elevational view of the detachable lever element;

Figure 4 is a view, in elevation, showing the hand-grip with a short shank constructed to accommodate an extension shank or equivalent part for turning the latter, the figure including, in separated fashion, the shank to be turned; and,

Figure 5 is a top plan view of the shank means seen in Figure 4.

Referring now to the drawing and to Figures 1 to 3 inclusive it will be seen that the shank is denoted by the numeral 7 and, in Figure 1, has one end portion, 8, provided with radial fins, pins or the like 9 and securely anchored in an adjacent end portion of a hand-grip 10. The portion 8 is provided with an internally screw threaded socket 11 which registers with a bore 12 passing through the hand-grip and providing a socket for the insertable and detachable element 13. This is a rigid part and is screw threaded as at 14 where it is threaded into the socket 11. The outer end is formed with a knob which is convex as at 15 and whose marginal portion is milled or knurled as at 16 to provide a suitable finger grip. When not in use, the element in question, which we shall call a detachable lever, is mounted in an out-of-the-way position in the hand-grip 10. When it is brought into use it is screwed into a socket 17 provided in one side and adjacent one end of a turnable and slidable sleeve 18 carried by the shank. This sleeve is of hexagonal cross sectional form so that it has the function of a tool nut, that is to say a wrench (not shown) may be engaged therewith for turning the same. Or, if a wrench is not used the detachable lever 13 may be brought into play and applied to take a position at right angles to the sleeve as seen in Figure 2. The sleeve is normally forced down against a flanged shoulder 19 on the shank by a coiled spring 20 which surrounds the shank between the hand-grip and the sleeve. The lower end of the sleeve is scalloped or notched as at 21 to provide clutch members engageable with clutch lugs 22 provided on an adjacent coacting surface of the shoulder 19. That portion of the shank beyond the lug equipped shoulder constitutes what may be described as an extension 23 and this may terminate either in a screw driver bit 24 as shown in Figure 1 or may be of reduced polygonal or equivalent cross-section, as at 25, and provided with ball clutch elements 26 to accommodate an attachable and detachable socket for turning bolt heads, nuts and the like (socket not shown).

It is obvious that using the device as a screw driver as seen in Figure 1 the ordinary mode of operation is to grasp the hand-grip, to insert the bit 24 into the kerf of the screw (not shown) and to turn as is customarily done. Where the screw is stuck and can not be turned either out or in, then additional leverage afforded by the mechanical expediency herein shown is available. That is to say, the clutch notches 21 on the sleeve 18 may be engaged with the clutch lugs 22 on the shoulder 19 and a wrench (not shown) may be engaged with the sleeve, using the same as a driving nut. This will then serve to impart rotation to the shank for loosening stubborn

screws. If a wrench is not handy and it is desired to use the lever, this may be done. That is to say, the small readily available lever **13** may be detached from the hand-grip in Figure 1 and attached to the sleeve **18** as shown in Figure 2. Then it may be ratcheted back and forth to apply a combined ratcheting and driving action to the shank. It is understood that "shank" covers a linearly straight and rigid part which may constitute either a screw driver shank or tool shank for actuating extra socket wrenches, etc.

In Figure 4 a modification is shown wherein a hand-grip **27** is provided with a short stub-shank **28** with retention balls **29**. Here the detachable lever is shown but it is not illustrated except for the head portion **15***a* and knurled surface portion **16***a*.

In this arrangement the main shank portion seen below in Figure 4 is denoted by the numeral **30**, is provided with a socketed head **31** with a knurled surface **32**, said shank having an outstanding shoulder **33**, an extension portion **34**, the shoulder having clutch lugs **35** engaging in the clutch notches **36***a* in the adjacent coacting end of the polygonal sleeve **36**. The sleeve is pressed down on the shank and against the shoulder by a coiled spring **37** as already explained. The sleeve is usable as a nut to accommodate a wrench or it may be provided in one side with a socket **38** to accommodate the attachable and detachable lever.

It will be seen that the invention serves to provide a tool with a handle and lever and simple ratchet and shank so constructed that any suitable tool shank having a tool socket may be used in connection therewith, provision being made in said tool to afford the user lever means and a degree of leverage insuring ease of operation and effective results. In addition the tool affords the user improved means for use as a tap wrench in that when a socket adaptor and tap is secured on the tool shank, steady and true guidance of tap is insured, revolving same in either direction. What is more, the device may be used as a practical hand tool for grinding valves in automobile motors, the same supplying motion in either direction with the lever and ratchet mechanism is available without removing the tool from driving contact with the valve seat.

Manifestly the structure is such that it may be interpreted primarily as a new type of screw driver; or the importance of the structure may be emphasized as a combined tool shank with lever and ratchet-like driving means therefor. What is more, a further version may be a screw driver, combined tool shank with lever and ratchet drive, and hand-grip in proper relation to coacting parts. I desire these various interpretations to be kept in mind as the reader will appreciate.

The construction embodied in the device herein shown and described serves to provide a satisfactory and adequate tool which may be revolved in one direction or another without complete rotation of the hand-grip or lever, in close quarters where, lack of space, would prevent convenient use of an ordinary screw driver or straight tool shank. Furthermore, due to the provision of the lever on the hand-grip the screw driver of Figure 1 will enable the user to seat the screw tightly and to remove stubborn screws with comparative ease, an accomplishment not usually attainable with the regularly employed screw driver. Novelty is also predicated upon the detachable lever and its temporary placement and retention in the hand-grip. Finally the idea of having the lever in the hand-grip, removing it and attaching it to the sleeve and again restoring it to the hand-grip, plus the fact that the sleeve may be grasped with a wrench and turned independently of the lever makes for a novel adaptation of parts.

A careful consideration of the foregoing description in conjunction with the invention as illustrated in the drawing will enable the reader to obtain a clear understanding and impression of the alleged features of merit and novelty sufficient to clarify the construction of the invention as hereinafter claimed.

Minor changes in shape, size, materials and rearrangement of parts may be resorted to in actual practice so long as no departure is made from the invention as claimed.

Having described the invention, what is claimed as new is:

1. A hand tool of the class shown and described comprising a hand-grip provided with an axial bore opening through opposite ends of the hand-grip, an elongated shank having an end portion telescoping into one end of the bore in said hand-grip, enlarged in cross-section and embedded in said hand-grip and provided with an internally screw-threaded socket in alignment with said bore, an intermediate portion of said shank, at a point spaced from said hand-grip, having an outstanding discal flange provided with fixed circumferentially spaced lugs, a sleeve slidably and rotatably mounted on said shank between the flange and hand-grip, said sleeve being polygonal in cross-section and providing external flat faces forming tool grips, one end of said sleeve being provided with notches and said notches being releasably engageable with said lugs, a coiled spring surrounding the shank and bearing at one end against the shoulder provided by the hand-grip and at its opposite end against the adjacent end of said sleeve, said sleeve being provided with in one side a screw-threaded opening right angles to said shank and constituting another socket, a rod member fitted telescopically and removably in the bore in said hand-grip and having a screw-threaded portion screwed into the first named socket, the outer end of the rod member having a head and said head bearing against the adjacent end of the hand-grip and closing the corresponding end of said bore, the socket in said sleeve corresponding in diameter to the socket in said bore in order that both of said sockets may be selectively employed to accommodate the screw-threaded end of said rod member.

2. A hand tool of the class described comprising a hand-grip provided with an axial bore opening through opposite ends of the hand-grip, an elongated shank having an end portion telescoping into one end of said bore, embedded in said hand-grip, closing said end of the bore and having an internally screw-threaded socket, spring-pressed clutch means mounted on said shank, and a readily attachable and detachable handle associable with said clutch means to assist in turning the latter and shank, said handle embodying a rod member of a length slightly greater than the length of the bore in said hand-grip, said rod member fitting telescopically and removably into said bore and having a screw-threaded end portion screwed into the socket at the first-named end of said bore, the outer end of said rod member projecting beyond the cor-

responding end of said bore and having a head and said head bearing against the adjacent end of said hand-grip and closing the corresponding end of the bore.

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