

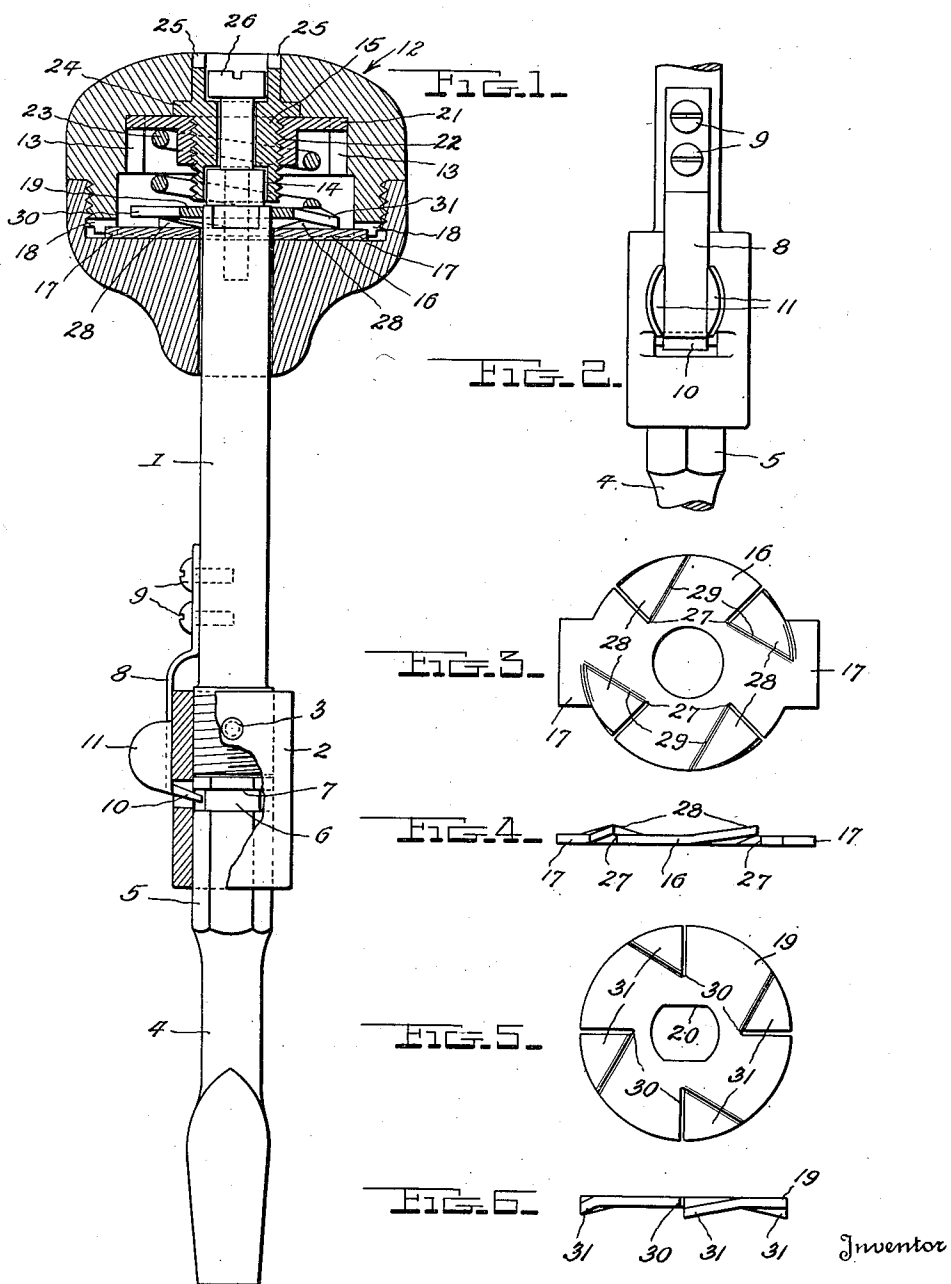
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SCREW DRIVER

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SCREW DRIVER

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1 Claim. (Cl. 145—50)

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The invention relates to new and useful improvements in a screw driver, and more particularly to the handle means for turning the shank carrying the bit which engages the screw.

An object of the invention is to provide a screw driver wherein the handle or knob for turning the same is connected to the shank by a yielding means which releases so that the handle or knob turns on the shank when the turning torque for setting a screw reaches a predetermined amount.

A further object of the invention is to provide a screw driver of the above type, wherein the means for releasing the knob from the shank is so constructed as to positively connect the knob to the shank when backing out or removing a screw.

In the drawing,

Figure 1 is a view partly in section and partly in side elevation showing a screw driver embodying the improvements.

Figure 2 is a side view of a portion of a screw driver as shown in Figure 1.

Figure 3 is a plan view of one of the ratchet plates.

Figure 4 is an edge view of the same.

Figure 5 is a plan view of the other ratchet plate, and Figure 6 is an edge view of the ratchet plate shown in Figure 5.

The improved screw driver includes a shank 1, to which is threadedly attached a chuck 2. Said chuck is held fixed on the shank by means of a set screw 3 of the usual type. The chuck has a recess for receiving the screw engaging bit or tool which is hexagonal in contour. The tool or bit 4 is provided with a portion 5 at its upper end which is hexagonal in shape and dimensioned so as to fit freely in the chuck. The flat sides of the bit and the flat walls of the recess contacting will insure that the bit is positively turned in either direction with the turning of the chuck. Said bit at its upper end has an annular groove 6 formed therein which provides a shoulder 7.

Attached to the shank of the screw driver is a retaining spring finger 8. Said finger is secured to the shank by suitable screws 9, 9. The finger is bent outwardly and extends down along the outer face of the chuck. Said finger is bent inwardly at the lower end thereof, as indicated at 10. This finger will spring underneath the shoulder 7 and serves as a means for retaining the bit in the chuck. There are finger pieces 11, 11 which may be grasped for the purpose of releasing this retaining means from the shoulder so that the bit can be withdrawn from the chuck.

Mounted on the upper end of the shank is a

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knob 12, preferably made of plastic material. The knob is in two sections having a threaded connection one with the other. Within the knob sections is a chamber 13. The shank extends through the lower section of the knob into this chamber. The upper end of the shank has a reduced portion 14 which fits within a socket in a sleeve 15 carried by the upper section of the knob.

Mounted in the chamber 13 and contacting with the inner face of the lower section of the knob is a ratchet plate 16. This ratchet plate 16 has projecting lugs 17, 17 which are disposed diametrically opposite each other and these lugs fit within recesses 18 provided in the upper knob section so that the ratchet plate 16 is held from turning relative to the knob, by these lugs.

Disposed on top of the ratchet plate 16 is a ratchet plate 19. This ratchet plate 19 has a central opening therethrough 20. The upper end portion of the shank 1 has flat sides and the opening 20 also has flat sides so that the opening through the ratchet plate is similar in cross section to the shaping of the end of the shank. This secures the ratchet plate 19 to the shank so that it turns with the shank or the shank turns with the plate.

Mounted in the chamber 13 is a nut 21 which has a threaded connection 22 with the sleeve 15. This nut serves as an abutment for a spiral spring 23 which bears against the ratchet plate 19 and presses the same against the ratchet plate 16. The sleeve 15 is formed with a flange 24 which seats in a recess in the upper knob section. Said sleeve has slots 25 formed therein to which a tool may be applied for turning the sleeve. The shank is secured to the knob by means of a bolt 26. This secures the shank to the sleeve 15 and the flange 24 is held seated in the knob recess by the spring 23 bearing against the nut which has a threaded connection with the sleeve. When it is desired to change the tension on the spring, the sleeve 15 is turned so as to move the nut away from the flange 24 and this will increase the tension on the spring. The ratchet plate 16 is provided with radial slits 27 and the sections 28 of the ratchet plate are bent upward along bend lines, one of which is indicated at 29. These upwardly bent portions, as clearly shown in Figure 4, are raised above the plane of the main section of the ratchet plate. The ratchet plate 19 is also provided with four slits 30 forming portions 31 which are bent downwardly out of the plane of the main portion of the ratchet plate. The downwardly projecting portions on the ratchet plate

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19 are opposed to the upwardly projecting portions 28 on the ratchet plate 16.

The screw driver is used in the usual manner for turning the screw. When turning the screw in, the knob will rotate the shank until the screw resists the turning of the shank to such an extent that the ratchet plates will slip one on the other and the knob will turn free of the shank. This insures that in the setting of the screw, it will not be turned to such an extent as to strip the formed threads from the engaged parts. When, however, it is desired to remove the screw, then the turning of the knob in the opposite direction will bring the portions which are bent out of the plane of the plates into abutted relation and the turning movements of the knob will be positively transmitted to the shank. This insures that a sufficient turning torque can be applied to the screw to release it from its set position.

It is obvious that many changes in the details of construction may be made without departing from the spirit of the invention set forth in the appended claim.

I claim:

A hand tool comprising a shank, a tool carried 25

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by the shank for rotation in both directions, a knob loosely journaled on the shank and having a central chamber receiving the inner end of the shank, means to hold said shank against axial displacement with respect to said knob, a plate fixedly held within the chamber, a series of struck-out raised portions on said plate directed upwardly and all having the same inclination and abrupt end faces, a second plate within the chamber above said first-named plate and slidably keyed to the shank, said second plate having a series of struck-out raised portions directed downwardly and all having abrupt end faces and inclinations oppositely directed with respect to those of the raised portions on the first named plate, an externally threaded sleeve journaled in the knob, a flanged nut in said chamber threadably engaging said sleeve, a compression spring between the flange of said nut and the second mentioned plate, and means on said threaded sleeve, accessible from the outside of the knob, to turn said sleeve, thereby axially displacing said flanged nut and regulating the tension of said compression spring.

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