June 15, 1965 A. L. STOWELL 3,189,069

TOOL HANDLE WITH RESILIENT GRIPPING MEANS

Filed Dec. 6, 1963

FIG. 1

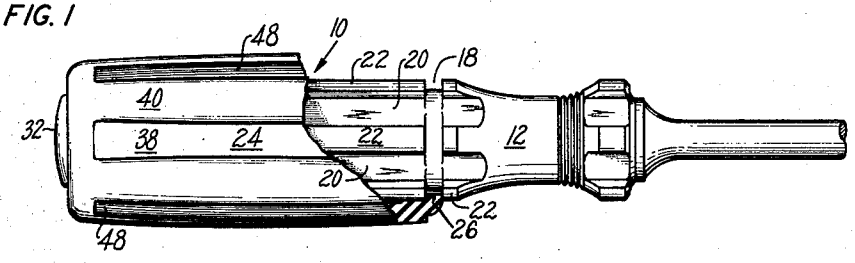
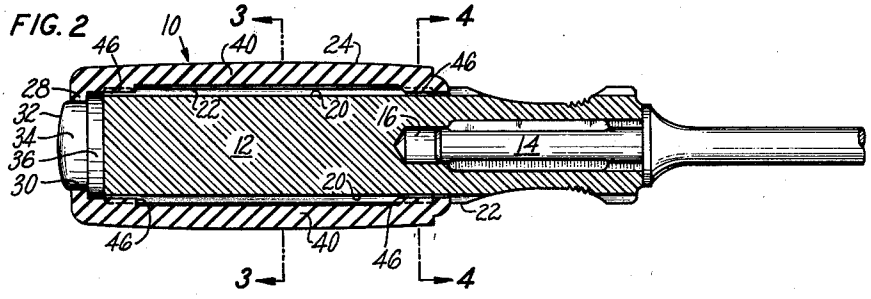


FIG. 2



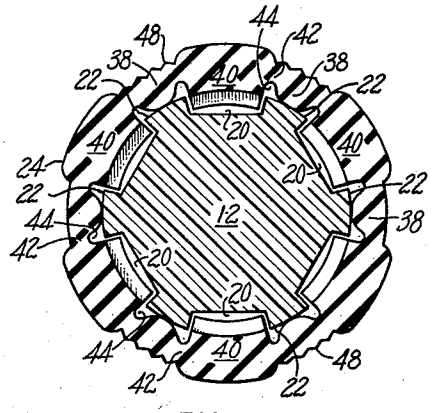


FIG. 3

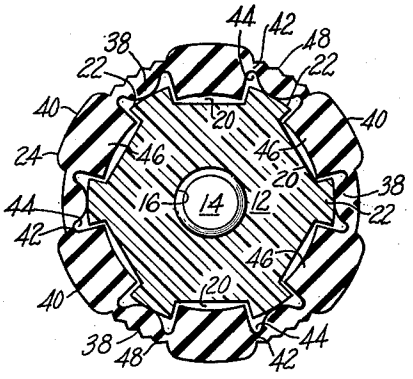


FIG. 4

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United States Patent Office 3,189,069 Patented June 15, 1965

3,189,069

TOOL HANDLE WITH RESILIENT GRIPPING MEANS

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Filed Dec. 6, 1963, Ser. No. 328,711
9 Claims. (Cl. 145—61)

The present invention relates to tool handles and the like and particuluarly to a new and improved tool handle having a resilient grip and has its principal application on hand tools normally used to impart a rotational force or torque.

It is an object of the present invention to provide an improved tool handle possessing a soft cushion grip having a hardness and toughness to withstand the abuse and transmit the maximum torque encountered in use.

Another object of the invention is to provide a novel and improved handle grip for tools normally subjected in use to a torque force, which grip includes an arrangement for automatically producing a positive driving connection between the grip and the handle as the need for such arises and particularly as resistance to the applied torque force increases.

A further object of the present invention is to provide a tool handle which can be easily, economically and efficiently manufactured and assembled and which provides a highly desirable cushioning effect while enhancing the quality of operation of the tool.

Other objects will be in part obvious and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereafter set forth, and the scope of the application of which will be indicated in the appended claims.

In the drawing:

FIG. 1 is a plan view of the tool handle of the present invention with a portion of the grip broken away and partly in section;

FIG. 2 is a longitudinal sectional view of the tool handle of FIG. 1;

FIG. 3 is an enlarged cross-sectional view taken substantially along the line 3—3 of FIG. 2; and

FIG. 4 is an enlarged cross-sectional view taken substantially along the line 4—4 of FIG. 2.

Referring now to the drawing, it is seen that the invention is applied to a hand tool such as a screwdriver or the like. The tool handle, generally designated by the numeral 10, comprises an elongated handle body 12 of generally circular cross section. At one end of body 12 there is provided a longitudinal axial bore 16 adapted to frictionally receive and secure in a conventional manner a shank 14 of a tool such as a screwdriver. Spaced slightly inwardly from the shank end of handle body 12 is an external circumferential groove 18 and a plurality of peripherally spaced longitudinally extending grooves 20 which span tool body 12 from the end thereof opposite the shank end up to and beyond groove 18 so as to intersect therewith. Between grooves 20 are provided a plurality of raised longitudinal ribs 22 as defined by the contiguous longitudinal grooves 20.

Referring now to FIGS. 1 and 2, it is seen that handle body 12 is provided with a fluted grip 24 of generally cylindrical configuration covering a substantial portion of body 12 and extending beyond the end thereof opposite the shank end. The grip 24 possesses inwardly extending annular terminal shoulder portions 26 and 28, with shoulder portion 26 being disposed within external circumferential groove 18, as best shown in FIG. 1, thereby locking grip 24 onto body 12 and preventing relative

longitudinal movement thereof. Terminal shoulder portion 28, as shown in FIG. 2, extends inwardly a greater radial distance than shoulder portion 26 and defines an annular axial opening 30 of lesser diameter than the diameter of handle body 12.

Disposed within opening 30 is a tough impact resistant plastic butt plug 32 similar in design to the plug disclosed in United States Patent No. 2,960,133 issued November 15, 1960, to W. A. Shepard and assigned to the assignee of the present invention. Plug 32 has a generally cylindrical central body portion 34 and an annular flange 36 at one end thereof, the central portion 34 generally conforming in diameter to the opening 30 of grip 24. The terminal shoulder portion 28 of grip 24 cooperates with the annular flange 36 of plug 32 so as to maintain removable plug 32 in a relatively fixed abutting relationship to the end of handle body 12 opposite the shank end. In assembled relationship plug 32 extends slightly beyond the end of grip 24 (as shown in FIGS. 1 and 2) and thus provides a tough work surface which can withstand impact shock without fracture. Additionally, plug 32 provides a replaceable element for transmitting hammer blows over the entire end area of the handle body 12 while at the same time protecting handle body 12 against damage.

According to the present invention, fluted grip 24 which covers body 12 generally comprises longitudinally extending seating segments 38 circumferentially alternating with tongue segments 40. Seating segments 38 have their inner surfaces slideably contacting the outermost surfaces of longitudinal ribs 22 while tongue segments 40 are located in a "floating" or spaced radial relationship above the longitudinally extending grooves 20 since, as best shown in FIG. 3, the internal surfaces of both seating segments 38 and tongue segments 40 are spaced generally at a uniform radial distance from the longitudinal axis of the handle body 12. Tongue segments 40 possess a greater radial thickness than their adjacent seating segments 38 thus giving an external fluted appearance to the grip 24. The external surface of seating segments 38 may be provided with serrations 48 or may be otherwise roughened to improve the external grasping quality of the handle. Between members 38 and 40 and integrally joined thereto are resilient sections 42 which exhibit greater flexibility and deformability. This greater elasticity of sections 42 is effected by providing on the inner surface of grip 24 generally triangular longitudinally extending channels 44 resulting in the reduced cross section within that area of the grip. Deformable sections 42 permit the inward yielding of tongue members 40 into complementary grooves 20 upon the application of compressive force thus providing increased surface contact for transfer of the torque forces from the grip to the handle body.

As best shown in FIGS. 2 and 4, grip 24 may be provided with locating lugs 46 depending from tongue members 40 and being positioned adjacent and internally of terminal shoulder portions 26, 28. Lugs 46 are disposed within longitudinal grooves 20 and, although relatively short with respect to the length of grip 24, are of sufficient length to align the longitudinal resilient sections 42 with the edges of the ribs 22 of handle body 12 and the tongue members 40 with the grooves 20 of the handle body. As shown in FIG. 4, the arcuate inner surfaces of locating lugs 46 are dimensioned to provide a clearance with the bottoms of grooves 20 to facilitate drainage of any liquid which might enter grooves during use. Similarly, as shown in FIG. 1, the diameter of annular terminal shoulder portion 26 is spaced from the bottom of groove 18 also to facilitate drainage of liquids.

The material used for the grip 24 may be substantially softer and more resilient than the material used in either

the body 12 or the butt cap 32. Grips made from rubber-like material such as nitrile rubber have been used with success although other materials of sufficient strength and durability may also be employed.

The tool handle of the present invention may be assembled by initially placing the plastic butt plug 32 over the end of the handle which is held in vertical position. The sleevelike grip 24 is then placed over the plug 32 and the handle body with the terminal shoulder portion 26 directed downwardly. With the seating segments 38 visually aligned to overlie ribs 22 of the handle body 12, the grip is pushed over the handle body until shoulder 26 snaps into circumferential groove 18. As a result, lugs 46 are positioned within longitudinal grooves 20 so as to align tongue segments 40 above grooves 20 and facilitate their cooperative engagement when grip 24 is squeezed during use.

As will be apparent from the above description, the present invention provides an improved tool handle having a resilient grip member which provides a soft cushioning feeling to the hand of the user while at the same time efficiently and securely transmitting the torque force to the handle. The external surface of the grip is fluted so that the user may obtain a firm nonslipping hold thereon and to cause the inner portions of the tongue segments 40 to enter grooves 20 due to the natural gripping of the tool. In operation, the tool handle of the present invention provides secure nonslipping contact between the grip and the handle body due to the cooperative action of the groove and tongue segments of the body and grip, respectively. This cooperation is increased in a natural manner as resistance to the rotation builds up since it is the natural tendency of the user to grasp the tool with greater force when increased resistance to rotation is encountered. The present invention utilizes this natural tendency by providing a cushioning grip member posessing longitudinal tongue portions which resiliently yield and, in so doing, provide increased interlocking between the grip and handle elements. Further, this inwardly yielding permits the tool to conform more readily to the hand of the user resulting in a more comfortable and efficient operation of the tool.

As will be apparent to persons skilled in the art, various modifications and adaptations of the structure above described will become readily apparent without departure from the spirit and scope of the invention, the scope of which is defined in the appended claims.

I claim:

1. A tool comprising in combination a generally cylindrical handle body having a circumferential groove adjacent a first end thereof and a plurality of perhipherally spaced grooves extending parallel to the longitudinal axis of said body, and a fluted grip covering a substantial portion of said body and extending beyond the end of said body opposite said first end, said grip having at least one terminal shoulder portion disposed within said circumferential groove and comprises longitudinally extending alternating tongue and seating members, and both of said members having their internal surfaces spaced at a uniform radial distance from the longitudinal axis of said body so as to locate said tongue members in spaced radial relationship above said peripheral grooves, said tongue and seating members being integrally joined by an area of deformability and said tongue members having greater radial cross section than said seating members thereby forming a fluted outer surface on said grip and permitting said tongue members to move inwardly into said grooves upon the application of compressive force to the outer surfaces thereof.

2. A tool handle comprising in combination a generally cylindrical handle body having a circumferential groove adjacent a first end thereof and a plurality of peripherally spaced grooves extending parallel to the longitudinal axis of said body thereby defining raised longitudinal ribs, and a resilient fluted grip covering a substantial portion

of said body and extending beyond the end of said body opposite said first end, said grip having annular shoulder portions on the ends thereof and comprises longitudinally extending alternating tongue and seating members, one of said shoulder portions being disposed within said circumferential groove, said seating members having their internal surface contacting the outermost surface of said longitudinal ribs, both of said members having their internal surfaces spaced at a uniform radial distance from the longitudinal axis of said body so as to locate said tongue members in spaced radial relationship above said peripheral grooves, said tongue and seating members being integrally joined by an area of deformability of reduced cross section with respect to said seating members and said tongue members having greater radial cross section than said seating members thereby forming a fluted outer surface on said grip and permitting said tongue members to move inwardly into said grooves upon the application of compressive force to the outer surfaces thereof.

3. The tool handle as claimed in claim 2 wherein said grip further contains locating lugs depending from said tongue member and being positioned adjacent said first shoulder portion and inwardly thereof.

4. A tool handle comprising in combination a generally cylindrical handle body having an external circumferential groove spaced from one end thereof; a fluted grip covering a substantial portion of said body and having at least one inwardly extending shoulder portion disposed in said circumferential groove; and a hard plug removably disposed within said grip and abutting the end of said body opposite said one end, said plug having a central portion extending slightly beyond the end of said grip and a radial flange portion adapted to cooperate with said grip for maintaining said plug in abutting relationship with said body, said body additionally having a plurality of peripherally spaced grooves extending parallel to the longitudinal axis of said body thereby defining raised longitudinal ribs, said grip comprising longitudinally extending alternating tongue and seating members, the internal surface of said seating members contacting the outermost surface of said longitudinal ribs, both of said members having their internal surfaces spaced at a uniform radial distance from the longitudinal axis of said body so as to locate said tongue members in spaced radial relationship above said peripheral grooves, said tongue and seating members being integrally joined by an area of deformability of reduced cross section with respect to said seating members and said tongue members having greater radial cross section than said seating members thereby forming a fluted outer surface on said grip and permitting said tongue members to move inwardly into said grooves upon the application of compressive force to the outer surfaces thereof.

5. A tool handle comprising in combination a generally cylindrical handle body having an external circumferential groove spaced from one end thereof; a resilient fluted grip covering a substantial portion of said body and having first and second inwardly extending shoulder portions, said first shoulder portion being disposed in said circumferential groove and said second shoulder portion defining an axial opening; and a plug removably disposed within said axial opening and abutting the end of said body opposite said one end, said plug having a central portion corresponding to the dimensions of said axial opening and extending slightly beyond the end of said grip and a radial flange portion adapted to cooperate with said second shoulder portion for maintaining said plug in abutting relationship with said body, said body additionally having a plurality of peripherally spaced grooves extending parallel to the longitudinal axis of said body thereby defining raised longitudinal ribs, said grip comprising longitudinally extending alternating tongue and seating members, the internal surface of said seating members contacting the outermost surface of said longitudinal ribs, both of

said members having their internal surfaces spaced at a uniform radial distance from the longitudinal axis of said body so as to locate said tongue members in spaced radial relationship above said peripheral grooves, said tongue and seating members being integrally joined by an area of deformability of reduced cross section with respect to said seating members and said tongue members having greater radial cross section than said seating members thereby forming a fluted outer surface on said grip and permitting said tongue members to move inwardly into said grooves upon the application of compressive force to the outer surfaces thereof.

6. A tool handle comprising in combination a generally cylindrical handle body having a longitudinally disposed axial bore at one end thereof for receiving the shank of a tool and an external circumferential groove spaced from said one end; a resilient fluted grip covering a substantial portion of said body and extending beyond the end of said body opposite said one end, said grip having first and second inwardly extending terminal shoulder portions, said first shoulder portion being disposed in said circumferential groove and said second shoulder portion defining an annular axial opening of lesser diameter than the diameter of said handle body; and a tough plastic plug removably disposed within said axial opening and abutting the end of said body opposite said one end, said plug having a central portion corresponding to the dimensions of said axial opening and extending slightly beyond the end of said grip and a radial flange portion adapted to cooperate with said second shoulder portion for maintaining said plug in abutting relationship with said body, said body additionally having a plurality of peripherally spaced grooves extending parallel to the longitudinal axis of said body thereby defining raised longitudinal ribs, said grip comprising longitudinally extending alternating tongue and seating members, the internal surface of said seating members contacting the outermost surface of said longitudinal ribs, both of said members having their internal surfaces spaced at a uniform radial distance from the longitudinal axis of said body so as to locate said tongue members in spaced radial relationship above said peripheral grooves, said tongue and seating members being integrally joined by an area of deformability of reduced cross section with respect to said seating members and said tongue members having greater radial cross section than said seating members thereby forming a fluted outer surface on said grip and permitting said tongue members to move inwardly into said grooves upon the application of compressive force to the outer surfaces thereof.

7. The tool handle as claimed in claim 6 wherein said grip further contains locating lugs depending from said tongue member and being positioned adjacent said first shoulder portion and inwardly thereof.

8. A tool handle comprising in combination a handle body having a plurality of alternating peripheral grooves and ribs extending along the length of said body, and a grip overlying a substantial portion of said body and having floating torque-imparting means located in outwardly spaced radial relationship relative to said peripheral grooves when said grip is in a relaxed condition, said floating means having a greater external diameter than the remainder of said grip, said grip further having segments contacting the outermost surface of said ribs when said grip is in a relaxed condition, said segments including areas of deformability overlying said ribs to facilitate the inward movement of said floating torque-imparting means into said grooves upon the application of compressive force to the outer surfaces thereof.

9. A tool handle comprising in combination a generally cylindrical handle body having a plurallity of peripherally spaced grooves extending along the longitudinal axis of said body; a fluted grip covering a substantial portion of said body and comprising longitudinally extending alternating tongue and seating members, said seating members having their internal surfaces contacting the outermost surface of said ribs, said tongue members being located in outwardly spaced radial relationship relative to said peripheral groove when said grip is in a relaxed condition, said tongue members having both a greater radial cross-section and an outer surface disposed at a greater radial distance from the axis of said body than said seating members thereby forming a fluted outer surface on said grip, said tongue and seating members being integrally joined by areas of deformability permitting the inward movement of said tongue members into said grooves upon the application of compressive force to the outer surfaces thereof.

References Cited by the Examiner

UNITED STATES PATENTS

811,390	1/06	Foreman.	
2,871,899	2/59	Coyle et al.	145—61
3,072,955	1/63	Mitchell	16—116 X

FOREIGN PATENTS

933,451	1/48	France.

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