United States Patent

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[33] **Germany**
[31] **P 16 28 088.9**

[54] **HANDLE FOR SCREWDRIVERS OR THE LIKE**
7 Claims, 5 Drawing Figs.

[52] **U.S. Cl.** **145/61**
[51] **Int. Cl.** **B25g 1/10**
[50] **Field of Search** 145/61, 50, 61-12; D-8/82, 83, 107; 16/110.5

[56] **References Cited**

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ABSTRACT: A tool handle, particularly a screwdriver handle having a ring zone of largest diameter approximately in a center zone of the handle, the handle being reduced on both sides of the ring zone constituting reduced sections including grooves angularly symmetrically arranged about the longitudinal axis of the handle, the grooves running concavely in the longitudinal direction of the handle.

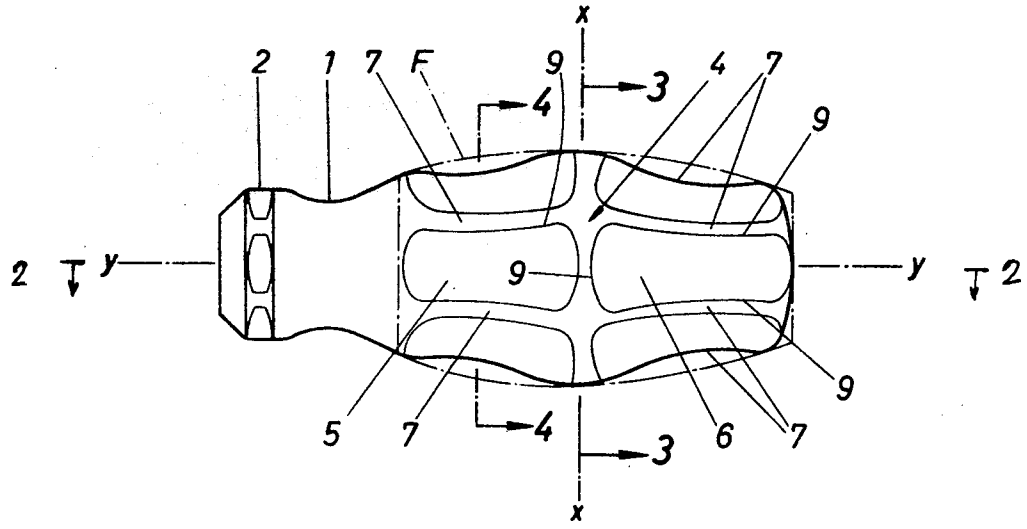

FIG. 1

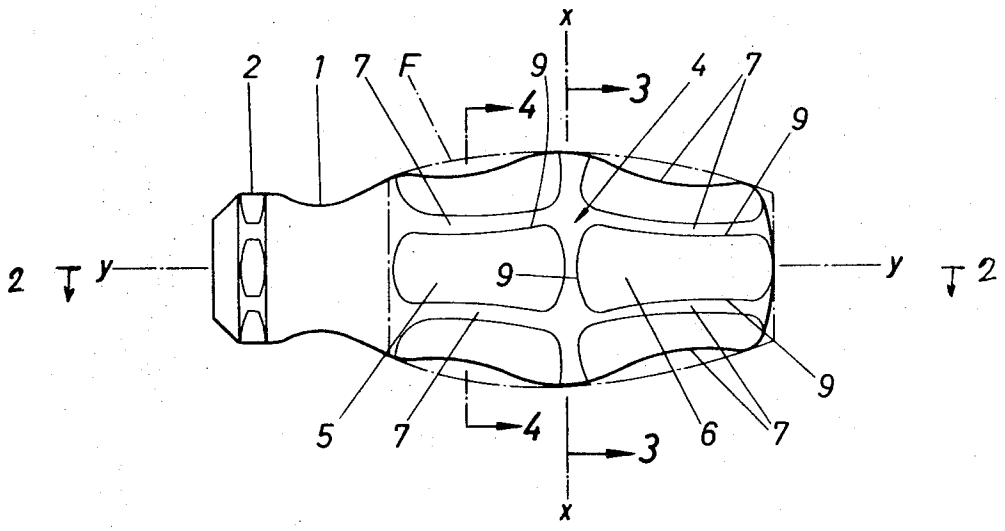

FIG. 2

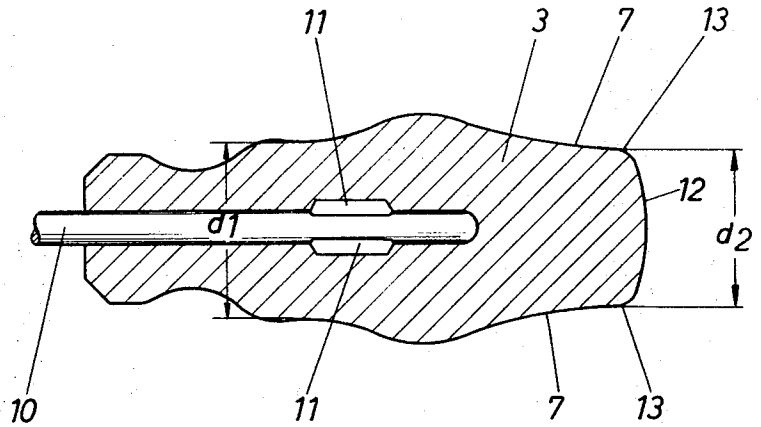

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FIG. 3

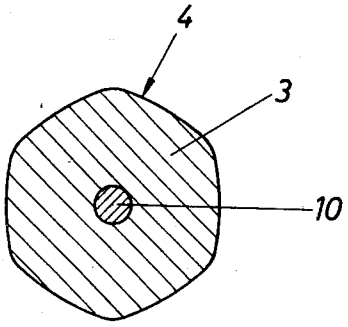


FIG. 4

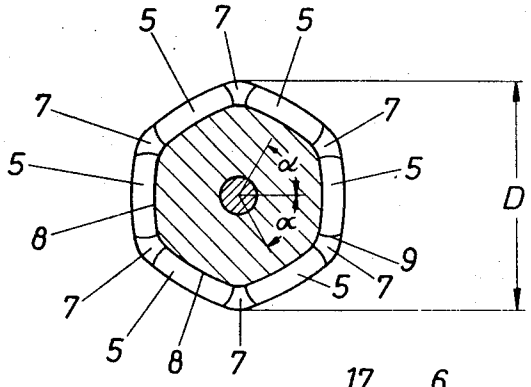
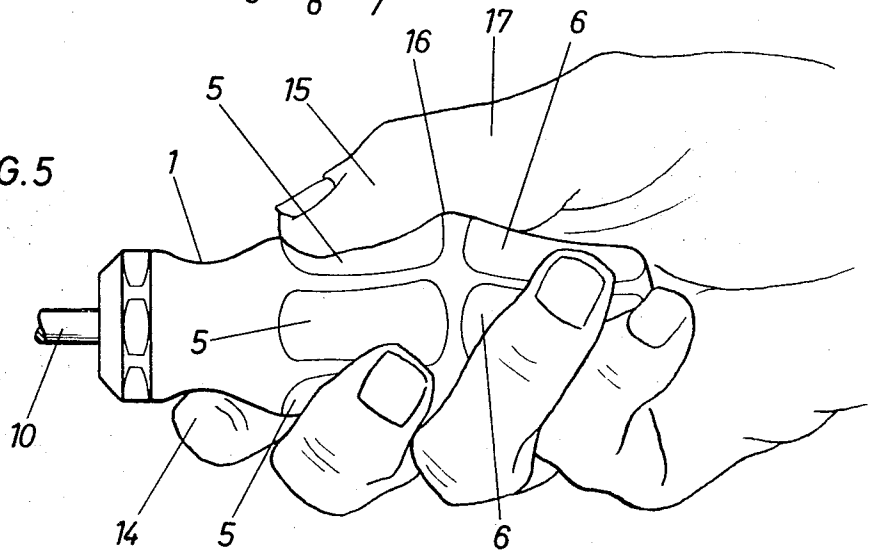


FIG. 5



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HANDLE FOR SCREWDRIVERS OR THE LIKE

The present invention relates to a handle for screwdrivers, or the like, in general, and to such handle having an annular groove within the range of the end of the handle from which the blade extends, and which is followed by a handle body having a widening portion of a larger diameter and a following narrower portion of a smaller diameter.

The conventional known handles for screwdrivers are generally round, hexagonal or square in their profile, with parallel arranged shank flanks. Handles are also known which are in the shape of drops. The frequent drawback of the known handles for screwdrivers is that the gripping of the handle interferes appreciably with the use of a tool equipped with it. It is to be considered that, in connection with different screws and materials, into which they have to be inserted, in addition, a certain pressure in the axial direction of the tool must be exerted, whereby a tight gripping must be released. Deep grooves, as they are applied already for the increase of the gripping ability leads, however, rather to pain-causing pressure on the finger joints upon applying the torque thereon.

It is, therefore, one object of the present invention to avoid the drawbacks of the known structures and to form a screwdriver handle such that it better considers the anatomic configuration of a hand and, in such manner that during each turning movement, the handle is locked by its shape in the hollow of the hand.

It is another object of the present invention to provide a handle for screwdrivers or the like, wherein the handle body disposed adjacent the annular groove as a variation from an imaginary barrel base form is designed such, that grooves extend on opposite sides of an annular zone disposed in the cross section plane of the largest barrel diameter in the longitudinal direction of the handle, which grooves are disposed concavely in the longitudinal direction of the handle and are disposed in angular symmetrical arrangement about the longitudinal axis, whereby always grooves, arranged adjacent each other in a rounded head edge and disposed likewise concavely in the longitudinal direction of the handle, lapped relative to each other.

It is of advantage thereby if, in accordance with the present invention, the grooves have a straight lined base in the crosswise direction of the handle.

A favorable feature of the present invention resides also in the fact that the hollow grooves are disposed in a hexagonal shape relative to each other.

Finally, in accordance with the present invention, it is also favorable if the marginal edges of the hollow grooves are rounded.

By this arrangement, a screwdriver handle is created which is designed in accordance with the anatomic formation of a hand. The output limit of a tool equipped with such a handle, as has been determined in numerous comparative tests, is much higher than the conventional designs.

The handle body, formed as a variation to a barrel base form, brings about in conjunction with the particular form and position of the hollow grooves the desired optimum adjustment to the hollow of the hand. First of all, it is hereby considered that, by the alignment of the gripping axis to the lower arm axis, the fingers cannot form any longer the normal fist closure about the handle. This reduces the participation of the individual finger members on the engaging face. The present invention takes account of these facts by considering in its special form the contours of the inner face of the closed fist in the screwdriver holding. All fingers of the hand and the hand root itself participate, each finger member finds a hollow groove, on the preferably flat ground of which it supports itself along a larger face. Blister formations are avoided and likewise the occurrence of pressure points. Favorable in this direction is that the marginal edges of the hollow grooves are rounded. In particular, the grooves, as well as the ring zone of the handle body having the largest diameter, prevent a sliding off of the tool in the longitudinal axis by pressure applied correspondingly axially. The multiedged, preferably six-edge cross section form corresponds in a favorable manner to the folding configuration of the fingers and of the thumb (angular position of the finger joints). Furthermore, a rolling off of the tool from the engagement is avoided to a great extent. The angular symmetrical arrangement of the grooves permits the performance of sufficiently small rotary steps, which is favorable in the end phases of the rotation of screws and which permits the application of a high torque, whereby undesirable movement of the hand body portion between the fingers, as well as in axial direction of the handle but also in rotary direction thereof, is avoided.

With these and other objects in view, which will become apparent in the following detailed description, disclosing the present invention by example only, the present invention will be clearly understood in connection with the accompanying drawings, in which:

FIG. 1 is an elevation of a handle for screwdrivers or the like designed in accordance with the present invention;

FIG. 2 is an axial section of the handle along the lines 2–2 of FIG. 1;

FIG. 3 is a section along the lines 3–3 of FIG. 1;

FIG. 4 is a section along the lines 4–4 of FIG. 1; and

FIG. 5 is an elevation showing partly a handle for a screwdriver disposed in the hollow of a hand.

Referring now to the drawings, the handle is formed at its end adjacent which a blade **10** extends (FIG. 5) with an annular groove **1**. On the left side of the latter, a collar **2** is disposed which terminates in conical direction. The handle body **3** continuing on the right side of the annular hollow groove **1** is formed deviating from a barrel base form F (see point-dashed line F in FIG. 1). The handle body is designed such, that thereby grooves **5** and **6** extend on both sides of a ring zone **4** arranged in the plane X–X of the largest diameter D of the barrel base form F.

The grooves **5** and **6** extend in the longitudinal direction of the handle body **3**. They run in the longitudinal direction concavely and particularly such, that they are reduced from the ring zone **4** of the largest barrel diameter D to smallest or end barrel diameters *d*1 and *d*2.

The hollow grooves **5** and **6**, are arranged adjacent in longitudinal direction next to each other substantially abutting each other with formation of marginal edges **7** arranged likewise correspondingly concave.

The grooves **5** and **6** are, furthermore, disposed in angular symmetrical arrangement peripherally about the longitudinal axis of the hollow body **3**. They have a straight base **8** (FIG. 4) oriented in the crosswise direction of the handle body **3**. The angular distance α amounts to 60°. It has been found that a hexagonal shape jointly with the chosen particular handle form deviating from a barrel base form corresponds advantageously with the anatomic configuration of the hand.

The marginal edges **9** of the hollow grooves **5** and **6** are rounded in crosswise direction, as well as in the longitudinal direction of the handle body **3**. The roundings extend only so far, that merely the sharp edges produced by the hollow groove are broken and in addition the multiface basic form and thereby the obtained gripping ability is not lost.

The handle body **3** receives in conventional manner the screwdriver blade **10**. The latter is shown partly only in FIG. 2. Wings **11** are attached to the screwdriver blade **10**, whereby a greater torque can be transmitted without the danger of loosening the blade **10** in the handle body **3**.

The end of the handle body **3** opposite from the side of the blade **10** is formed rounded or ball-like. The marginal zone of the rounded bulge **12** lead by means of roundings **13** of a small radius into the rest of the holder.

The grooves **5** rise slightly first of all in the blade side range of the holder body. Upon insertion of the end member **14** of the forefinger of a person's hand (FIG. 5) into the annular hollow groove **1**, the thumb finds as opposite member, that means its end member **15**, a favorable supporting position in the hollow groove **5**. The joint fold **16** comes to lie, thereby, between

the center member 17 and the end member 15 lie exactly on the cam position of the ring zone 4 of the largest diameter D of the handle body 3. If supported such, the thumb obtains its largest engaging face. The ball of the thumb and the hand root can thus intimately surround the handle body. The remaining fingers gripping around the handle body find equally favorable mounting positions in the hollow grooves 5 and 6, whereby by formation of the handle body in variation of a barrel base form, full account has been given to the different lengths of the individual finger members and the position of the fingers. The hollow grooves as well as their particular geometrical arrangement provide optimum engagement faces for the fingers and prevent thereby the danger of a sliding of the hand from the handle body.

I claim:

1. A tool handle, particularly a screwdriver handle, comprising

a handle including a ring zone of largest diameter approximately in a center zone of said handle,

said handle being reduced on both sides of said ring zone constituting reduced sections,

said reduced sections include grooves lying in angle-symmetrical arrangement about the longitudinal axis of said handle, and

said grooves run concavely in the longitudinal direction of said handle.

2. The tool handle, as set forth in claim 1, wherein

said grooves have a flat base in crosswise direction of said handle.

3. The tool handle, as set forth in claim 1, wherein

said grooves are arranged in hexagonal form to each other.

4. The tool handle, as set forth in claim 1, wherein

said handle is symmetrical about its longitudinal axis, and

longitudinal ridges each of which is convex in cross section and concave in section in a plane through said longitudinal axis and which separate said grooves.

5. The tool handle, as set forth in claim 4, wherein

said grooves each have in cross section a straight line base and concave sides extending from said base to said adjacent of said longitudinal ridges.

6. The tool handle, as set forth in claim 1, wherein

the edges of said grooves are rounded.

7. The tool handle, as set forth in claim 1, wherein

one end of said handle is adapted to receive a blade,

said one end is formed with a collar, and between said collar and one of said reduced sections, an annular groove circumferentially extends having a narrowest diameter of said handle.