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D154,644 7/1949 Skamser et al. 145/61 UX
 190,459 5/1877 Wilkinson 145/61
 2,479,508 8/1949 Perkins 145/61

FOREIGN PATENTS

1,052,369 1/1954 France 61-12/

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[54] SCREWDRIVER WITH HANDLE

8 Claims, 7 Drawing Figs.

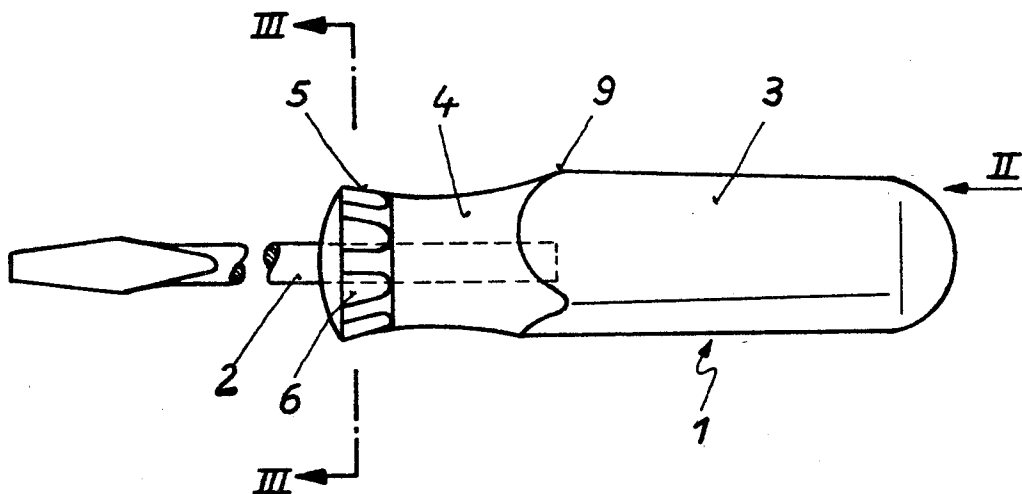
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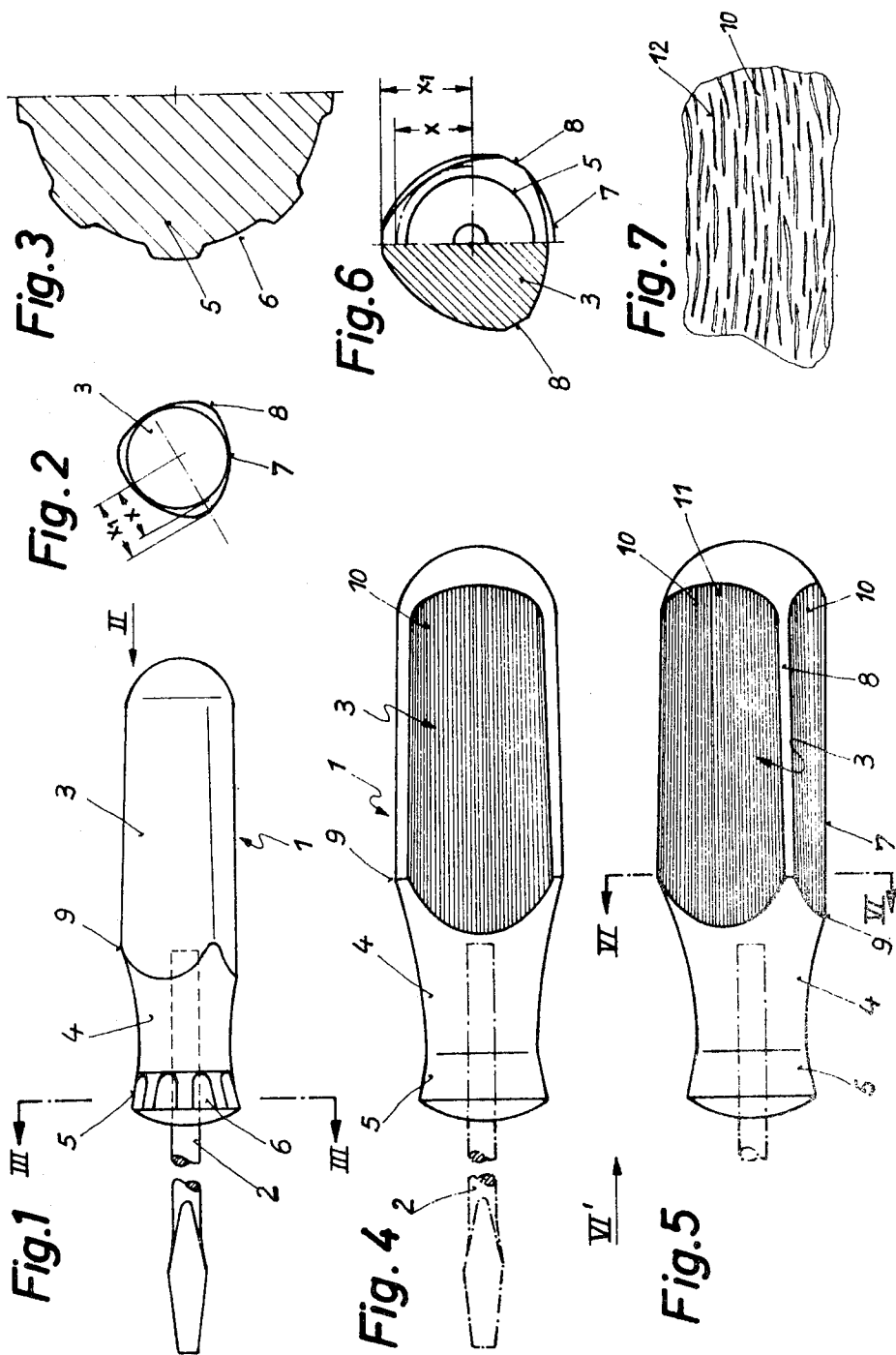
[56] References Cited

UNITED STATES PATENTS

D37,994 5/1906 Tower 145/61 UX
 D37,996 5/1906 Tower 145/61 UX

ABSTRACT: The disclosure is of a screwdriver having a handle for receiving and holding fast a tool shank, in which said handle comprises in combination a rear first portion which is of approximately triangular cross section throughout, a second portion adjoining said rear first portion in direction to said tool shank, said second portion being of round cross section for grasping with the fingers for the purpose of fine rotation when the ball of the hand is pressing on said rear first portion, and a gradual transition between said rear first portion and said second portion.





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SCREWDRIVER WITH HANDLE

INTRODUCTION AND BACKGROUND OF THE INVENTION

This invention relates to a screwdriver having a handle.

In order that great turning moments may be applied better, in known screwdrivers it is known to arrange a plurality of longitudinal flutings distributed around the handle in the region of the ball of the hand. This is intended to present a better gripping surface for the hand on the handle. Moreover screwdriver handles are known which are flattened off on mutually opposite sides. By way of example, this is the case in screwdrivers produced from a narrow steel strip, the handle of which is formed by bending of this strip over into U-shape. However, here it is disadvantageous that the peripheral surface of the handle does not proceed regularly in the various cross-sectional planes, so that the turning moment can be applied only very irregularly in turning.

The invention is based upon the problem of providing a screwdriver by means of the handle of which, with equal effort, it is possible to apply a greater turning moment than with the known formation with multiple flutings as first described above—with comparable core cross section of the handle—but at the same time in a more uniform manner than with the construction type as known which is described secondly above.

Brief Summary of the Invention

According to the invention the handle has a substantially regular triangular cross section throughout a rear first portion adapted to be gripped in the region of the ball of the hand. Thus substantially better abutment is obtained for the ball of the hand than in the case of the handles with multiple flutings, and a longer lever arm can be exploited at the apices or corners of the triangle.

FURTHER DESCRIPTION AND ADVANTAGES OF THE INVENTION

Due to the uniform distribution of the apices or corners of the triangle a uniform peripheral surface is obtained in the cross-sectional plane, so that the turning moment can be applied substantially more uniformly than with the known handles which are greatly flattened off on only two sides. According to a further feature of the invention the sides of the triangle of the cross section are more expediently domed slightly outwards. The angles or corners of the triangular cross section can be rounded off, but more expediently they are flattened off in order to improve the grip quality.

In further development the utility of the invention is increased due to the fact that in combination only the rear first portion of the handle for lying in the region of the ball of the hand, preferably over about the rear two thirds of its length, has the approximately triangular cross section and is adjoined forwards, with gradual transition, by a second portion having a round cross section for gripping with the fingers for the purpose of fine rotation. Thus with this screwdriver it is possible satisfactorily to apply not only very large turning moments but also small and minimal turning moments in a very finely sensitive, regular, and precise manner. In order to improve this finely sensitive handling still further, a further and foremost third portion adjoins the round second portion and these two portions have over their lengths mutually opposite, somewhat frustoconical courses or shapes, tapering towards one another. The foremost portion here can be relatively short and likewise may possess a round cross section. Thus an optimum of fine sensitivity and regularity is achieved in the application of a smaller turning moment.

In some important further developments of the invention areas consisting of a plurality of shallow grooves lying closely beside one another are formed on the sides of the triangle of the handle in the first portion to be gripped in the region of the

ball of the hand. These grooves advantageously extend substantially in the longitudinal direction of the handle and their depth is expediently of the order of about 0.2—1 mm., and they lie side by side with a spacing of the order of magnitude of about 0.2—2 mm. Thus in comparison with handles having relatively deep grooves all round, they are very small and flat. Due to these many small grooves, when the grasping hand is greasy or sweaty the grip quality of the handle is still further improved in comparison with conventional handles under the practical conditions of use, since grease and sweat are received in the grooves. The grooves can lie parallel with one another. In another type of embodiment they advantageously lie slightly obliquely of one another or with curvature. Moreover it has proved advantageous to arrange individual, mutually separate, groove sections one behind the other in the longitudinal direction. The individual grooves or groove sections expediently lie irregularly in relation to one another. This produces an especially good gripping quality.

BRIEF DESCRIPTION OF THE VIEWS IN THE DRAWING

The invention is defined in the claims hereinafter and how it may be performed and further details and advantages of the invention may be seen from the following description of types of embodiment which are represented diagrammatically in the accompanying drawing, wherein:

FIG. 1 to 3 show a first type of embodiment, in lateral elevation in FIG. 1, in end view in the direction of the arrow II in FIG. 1 in FIG. 2, and in FIG. 3 on an enlarged scale in a half cross section along the line III-III in FIG. 1 (without tool shank).

FIGS. 4 to 6 show a second type of embodiment, namely in FIGS. 4 and 5 in two lateral elevations and in FIG. 6 in the left part in cross section along the line VI-VI in FIG. 5 and in the right part in end view in the direction of the arrow VI' in FIG. 5, and

FIG. 7 shows a detail of a grooved area of a further type of embodiment, in enlarged representation.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawing, the screwdriver according to the invention as represented in FIGS. 1 to 3 consists of a handle 1 and an ordinary tool shank 2 received and held fast by the handle. The handle 1 possesses a rear first portion 3, adapted to be manually held lying in the region of the ball of the hand, of substantially triangular cross section which may be seen from FIG. 2, which is adjoined forwards, with gradual transition, by a second portion 4 of round cross section, which again is adjoined by a shorter foremost third portion 5 which is provided with a plurality of small longitudinal 6.

The sides 7 of the triangle of the cross section of the rear portion 3 are slightly outwardly domed and the angles or corners 8 are rounded off. These domings and roundings may be seen from FIG. 2. Over its length this rear portion 3 increases somewhat in diameter towards the transition 9 to the round section 4, as may be seen from FIG. 1.

The portions 4 and 5 have a conically tapering course towards one another, which renders possible better grasping by the fingers.

It can be seen from FIG. 2 that due to the substantially triangular cross section of the rear portion 3 the lever arm of the part held by the ball of the hand is increased from x by a substantial amount to x_1 , without the cross-sectional area of the core being larger than in round or other known kinds or shapes of handle. Due to this triangular cross section the handle also does not seem so bulky as a known handle having the radius x_1 , and there is also a saving of material in comparison with the latter.

The type of embodiment as represented in FIGS. 4 to 6 is of substantially the same construction as that according to FIGS. 1 to 3, so that mutually corresponding parts have been given the same reference numerals. In distinction from the last-men-

tioned embodiment, the short foremost third portion 5 likewise has a round cross section. Moreover, the angles or corners 8 of the triangular cross section of the rear portion 3 are flattened off, as shown by FIG. 6. The most important further improvement of the embodiment according to FIGS. 4 to 6 consists in that areas 10 consisting of a plurality of shallow grooves 11 lying closely side by side are formed on the triangle sides 7 of the portion 3 to be held in the region of the ball of the hand. These grooves 11 extend substantially in the longitudinal direction of the handle and have a depth of the order of magnitude of about 0.2—1 mm. and a mutual spacing of the order of magnitude of about 0.2—2 mm. In the example of embodiment according to FIGS. 4 to 6 the grooves lie parallel with one another.

In the detail of such an area 10, in a further type of embodiment, as represented in FIG. 7, separate groove sections 12 lying one behind the other in the longitudinal direction are present which lie slightly obliquely or with curvature in relation to one another in an irregular manner. This type of embodiment has proved best for practical use, since an especially good grip quality is achieved therewith.

The combination of the features according to the invention produces an extraordinarily advantageous handle for screwdrivers or the like, because it possesses the anatomically correct form, permits maximum force transmission from the handle to the tool shank, because the handle can be allowed to run in the hand in fatigue-free manner, without regripping, because the handle can also be rotated rapidly and the three-cornered form in combination with the fine grooves on the surface offers a firm hold even to a greasy hand and thus does not permit it to slip off, and because the handle has no grooves or flutings of the usual known size to engage the palm of the hand and thus the hand is far less liable to blistering.

It will of course be understood that in the illustrated handles the said first and second and third portions are formed integrally with one another and that the handles may be made in any suitable manner, for example as diecastings of metal or as mouldings of synthetic plastics materials. The handles may be solid or hollow and of separable parts, however, and may receive and hold the tool shanks in a permanently fixed or in-

terchangeable manner.

I claim:

1. A screwdriver comprising a handle for receiving and holding fast a tool shank, said handle having a first portion for gripping with the ball of the hand during use of the screwdriver for a tight screwing operation and a second portion adjoining said first portion in direction toward said tool shank to be grasped by the fingers during use of the screwdriver for light screwing operation, said first portion extending in axial direction over a major portion of the handle and having in direction transverse to the axial direction a substantially regularly triangular cross section which is substantially uniform over the whole length of said first portion, and the sides of the triangle of said substantially triangular cross section being slightly convexly curved, said second section being of substantially circular cross section.

2. A screwdriver as defined in claim 1, wherein said first section extends over substantially the rear two-thirds of the length of the handle.

3. A screwdriver as defined in claim 1, in which said substantially regularly triangular cross section of said first portion increases slightly along the length of said first portion forwardly in direction toward said tool shank.

4. A screwdriver as defined in claim 1 comprising in said first portion areas each provided with a plurality of shallow grooves extending substantially in the longitudinal direction of said handle and lying closely side by side with a spacing in the order of the magnitude of about 0.2—2 mm. and with depths in the order of the magnitude of about 0.2—1 mm.

5. A screwdriver as defined in claim 4, in which said grooves lie parallel with one another.

6. A screwdriver as defined in claim 4, in which said grooves lie slightly obliquely in relation to one another.

7. A screwdriver as defined in claim 6, in which said grooves are in the form of individually mutually separate groove sections lying one behind the other substantially in the longitudinal direction of said handle.

8. A screwdriver as defined in claim 6, in which said grooves lie irregularly in relation to one another.

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