

⑬



Europäisches Patentamt
European Patent Office
Office européen des brevets

⑪ Publication number:

**0 128 039
B1**

⑫

EUROPEAN PATENT SPECIFICATION

④⑤ Date of publication of patent specification: **14.09.88**

⑤① Int. Cl.⁴: **B 25 G 3/30**

②① Application number: **84303741.7**

②② Date of filing: **04.06.84**

⑤④ **Portable tools and handles therefor.**

③⑧ Priority: **07.06.83 GB 8315540**

④③ Date of publication of application:
12.12.84 Bulletin 84/50

④⑤ Publication of the grant of the patent:
14.09.88 Bulletin 88/37

⑧④ Designated Contracting States:
DE FR GB

⑤⑧ References cited:
**DE-A-2 804 223
DE-C- 112 472
DE-C- 424 324
FR-A-1 050 654
GB-A- 13 369
GB-A-2 071 809
US-A-1 403 902**

⑦③ Proprietor: **KANGO LIMITED**
Hanger Lane
London W5 1DS (GB)

⑦② Inventor: **Ford, Leslie Walter**
34 Derwent Avenue
Hatch End Middlesex (GB)

⑦④ Representative: **Brooke-Smith, Fred et al**
STEVENS, HEWLETT & PERKINS 5 Quality Court
Chancery Lane
London WC2A 1HZ (GB)

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European patent convention).

Courier Press, Leamington Spa, England.

EP 0 128 039 B1

Description

This invention relates to portable tools. Portable tools, especially portable power tools, may be provided with an auxiliary handle, for example for steadying the tool, and these auxiliary handles, which are generally screwed into position on the tool, are prone to coming loose.

According to this invention there is provided a portable tool having on the external casing thereof a socket which is internally screw-threaded or which holds a nut captive therein, and a handle comprising a grip portion, a screw-threaded spindle projecting from the grip portion and engageable in the nut or screw-thread in the socket, characterised in that a locking member is engaged on the spindle so as to be non-rotatable relative to the spindle but spring-loaded so as to be movable axially relatively to the spindle from an end position in a direction towards the grip portion, said locking member being spring-loaded into said end position, the locking member and the part of the casing member about the socket being provided one with one or more axially-facing ratchet ramp faces extending about the axis of the screw-thread and the other with one or more surfaces which co-operate with the ratchet ramp face or faces to permit the locking member and spindle to be screwed into the socket or nut, the ramp face or faces riding over said surface or surfaces and deflecting the locking member axially against the spring-loading but to prevent unscrewing movement of the spindle.

In one embodiment of the invention the locking member comprises a disc-like element with teeth along its circumference the leading portions of the axial end of the teeth nearest the socket being chamfered to form said ramp faces, and the said co-operating surfaces are formed on the internal cylindrical surface of a hollow boss on the casing and are in the form of teeth of complementary circumferential profile to those on said disc-like element.

One embodiment of the invention will now be described with reference to the accompanying drawings in which:

Figure 1 is a view in elevation, and partly in section, of the handle and co-operating part of the casing of a portable tool according to the invention,

Figure 2 is a view similar to Figure 1 showing the handle in position on the tool casing,

Figure 3 is a perspective view corresponding to Figure 1 of the handle and co-operating part of the casing, and

Figure 4 is an end view of the handle in the direction of the arrow X in Figure 3.

Referring to Figures 1 and 3 of the drawings a portable power tool has in its external casing 10 a socket 11 in which a nut 12 is held captive. A handle 13 for attachment to the casing comprises a grip portion 14 from one end of which projects a screwthreaded spindle 15 fixed to the grip portion. The grip portion is formed with an annular recess 16 in its end adjoining the spindle. The

recess accommodates an annular stem 17 with which is formed integrally a handle flange 18, and the recess is of sufficient axial length to permit a degree of axial movement of the flange 18 and stem 17 relative to the grip portion. A toothed locking element 20 is fixed to the flange and is in axial abutment with an enlarged portion 22 of the spindle. This portion of the spindle has two flats 23 on its periphery which are accommodated in a recess in the locking element 20 and which serve to prevent rotation of the flange 18 and element 20 relative to the spindle. A compression spring within the recess 16 loads the flange and element into their end position of abutment with the enlarged portion 22.

The surface of the casing about the socket is formed with a hollow boss 25 the internal cylindrical surface of which is formed, over half of its periphery, with teeth 26 complementary in circumferential profile to the teeth 27 formed on the external surface of the element. However the leading edges of the axial ends of the teeth of the element are chamfered to form ratchet ramp faces 28.

To secure the handle in position, the spindle 15 is screwed into the nut 12. When the ramp faces 28 of the teeth 27 contact the edges of the teeth 26 in the boss, the flange and element are forced outward away from the casing in ratchet position, the spring alternately permitting the flange 18 and element 20 to move outwardly away from the shoulder and pushing the element back against the shoulder on the spindle portion 22. The enlarged portion 22 of the spindle is arranged to come into tight abutment with the casing before the ramp faces of the element are fully accommodated within the toothed portion of the boss, and the unchamfered edges of the teeth on the element 20 then prevent unscrewing of the gripping element 14 and spindle 15. To unscrew the handle the element is first disengaged from the teeth in the boss 26 by moving the flange 18 against the force of spring 24; the handle can then be unscrewed.

The handle is thus held secure against accidental loosening by vibration or manual force applied to the handle during operation of the tool, but can readily be removed when desired.

Claims

1. A portable tool having on the external casing thereof a socket (11) which is internally screw-threaded or which holds a nut (12) captive therein, and a handle (13) comprising a grip portion (14), a screw-threaded spindle (15) projecting from the grip portion and engageable in the nut or screw-thread in the socket, characterised in that a locking member (20) is engaged on the spindle (15) so as to be non-rotatable relative to the spindle but spring-loaded so as to be movable axially relatively to the spindle from an end position in a direction towards the grip portion (14), said locking member being spring-loaded into said end position, the locking member (20)

and the part of the casing member (10) about the socket being provided one with one or more axially-facing ratchet ramp faces (28) extending about the axis of the screw-thread and the other with one or more surfaces (26) which co-operate with the ratchet ramp face or faces to permit the locking member (20) and spindle (15) to be screwed into the socket or nut (12), the ramp face or faces (28) riding over said surface or surfaces (26) and deflecting the locking member axially against the spring-loading but to prevent unscrewing movement of the spindle.

2. A portable tool as claimed in claim 1 characterised in that the locking member (20) comprises a disc-like element with teeth (27) along its circumference the leading portions of the axial end of the teeth nearest the socket being chamfered to form said ramp faces (28) and the said co-operating surfaces (26) are formed on the internal cylindrical surface of a hollow boss (25) on the casing (10) and are in the form of teeth of complementary circumferential profile to those on said disc-like element.

3. A portable tool as claimed in claim 1 or claim 2 characterised in that the handle (14) is formed with a recess (16) in its end adjoining the spindle, said recess accommodating a stem (17) formed integrally with the locking member and being of sufficient axial length to permit a degree of axial movement of the locking member relative to the handle, and a compression spring (24) being disposed within said recess to bias said locking member into said end position.

4. A portable tool as claimed in claim 3 characterised in that the recess (16) and the stem (17) are both annular.

5. A portable tool as claimed in any one of claims 1 to 4, characterised in that a radial flange (18) projects outward beyond and is fixed to the locking member (20) at the axial side thereof remote from the spindle (15), for which flange is engageable to press the locking member against the bias of the spring-loading.

Patentansprüche

1. Tragbares Werkzeug, auf dessen äußerem Gehäuse eine Fassung (11) vorgesehen ist, die eine Innenschraubung hat oder eine darin unverlierbare gehaltene Mutter (17) besitzt, und das einen Handgriff (13) mit einem Griffteil (14) aufweist, wobei vom Griffteil eine Schraubspindel (15) herausragt und in die Mutter oder das Gewinde der Fassung in Eingriff bringbar ist dadurch gekennzeichnet, daß, ein Sperrglied (20) mit der Spindel (15) in Eingriff steht und relativ zur Spindel nicht drehbar ist, jedoch federbelastet ist, um axial relativ zur Spindel von einer Endlage in eine Richtung gegen den Griffteil (14) bewegt zu werden, wobei das Sperrglied in diese Endlage federbelastet ist, das Sperrglied (20) und der Teil des Gehäuses (10) an der Fassung mit einer oder mehreren axial gerichteten Klinkenschragflächen (28), die sich um die Achse des Gewindes erstrecken, am einen und mit einer oder mehreren

Flächen (26), die mit der oder den Klinkenschragfläche(n) zusammenwirkt, um das Sperrglied (20) und die Spindel (15) in die Fassung oder Mutter (12) einschrauben zu können, am anderen versehen sind, wobei die Schragfläche oder flächen (28) über diese Fläche de Flächen (26) hinweglaufen und das Sperrglied axial gegen die Federbelastung ablenken, jedoch eine Entschraubungsbe-
wegung der Spindel verhindern.

2. Tragbares Werkzeug nach Anspruch 1, dadurch gekennzeichnet, daß das Sperrglied (20) ein scheibenförmiges Element mit Zähnen (27) am Umfang aufweist, wobei die vorderen Abschnitte des axialen Endes der Zähne nächst der Fassung abgeschrägt sind, um die Schragflächen (28) zu bilden, und die zusammenwirkenden Flächen (26) an der inneren zylindrischen Fläche einer hohlen Nabe (25) am Gehäuse (10) ausgebildet sind und die Form von Zähnen mit komplementärem Umfangersprofil zu jenen des scheibenförmigen Elementes haben.

3. Tragbares Werkzeug nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß der Handgriff (14) an seinem Ende nahe der Spindel mit einer Ausnehmung (16) versehen ist, wobei die Ausnehmung einen Ansatz (17), der mit dem Sperrglied einstückig ist und ausreichende axiale Länge hat, um eine axiale Bewegung des Sperrgliedes relativ zum Handgriff zu gestatten, aufnimmt, und wobei eine Druckfeder (24) in der Ausnehmung angeordnet ist, um das Sperrglied in die Endlage zu drücken.

4. Tragbares Werkzeug nach Anspruch 3, dadurch gekennzeichnet, daß sowohl die Ausnehmung (16) als auch der Ansatz (17) ringförmig sind.

5. Tragbares Werkzeug nach einem der Ansprüche 1 bis 4, dadurch gekennzeichnet, daß ein radialer Flansch (18) nach außen vorsteht und an der axialen Seite abgewandt von der Spindel (15) mit dem Sperrglied (20) verbunden ist, wozu der Flansch in Eingriff bringbar ist, um das Sperrglied gegen die Kraft der Federbelastung zu drücken.

Revendications

1. Outil portatif comportant, sur son boîtier extérieur, un manchon (11) fileté intérieurement ou qui retient un écrou (12) captif, et une poignée (13) munie d'une partie de préhension (14), d'un axe fileté (15) qui fait saillie sur la partie de préhension et est apte à s'accoupler avec l'écrou ou le filetage du manchon, caractérisé en ce qu'un organe de blocage (20) est retenu sur l'axe (15) de manière à être non rotatif par rapport à celui-ci, mais chargé par ressort pour pouvoir se déplacer axialement par rapport à l'axe depuis une position terminale, dans une direction orientée vers la partie de préhension (14), ledit organe de blocage étant chargé par ressort dans ladite position terminale, l'organe de blocage (20) et la partie de l'élément formant boîtier (10) située autour du manchon étant pourvus, l'un d'une ou plusieurs faces formant rampes d'encliquetage orientées axialement (28) qui s'étendent autour de l'axe du

filetage, et l'autre d'une ou plusieurs surfaces (26) qui coopèrent avec la ou les face(s) formant rampe(s) d'encliquetage pour que l'organe de blocage (20) et l'axe (15) puissent être vissés dans le manchon ou l'écrou (12), la ou les face(s) formant rampe(s) d'encliquetage (28) s'appuyant sur ladite ou lesdites surface(s) (26) et écartant l'organe de blocage axialement à l'encontre de l'action de ressort, uniquement pour empêcher un mouvement de dévissage de l'axe.

2. outil portatif, tel que défini dans la revendication 1, caractérisé en ce que l'organe de blocage (20) consiste en un élément semblable à un disque pourvu de dents (27) le long de sa circonférence, les parties d'attaque de l'extrémité axiale des dents la plus proche du manchon étant biseautées pour définir lesdites faces formant rampes (28), tandis que lesdites surfaces coopérantes (26) sont définies sur la surface cylindrique interne d'un bossage creux (25) prévu sur le boîtier (10) et se présentent sous la forme de dents ayant un profil circonférentiel complémentaire de celui des dents qui existent sur ledit élément semblable à un disque.

3. Outil portatif, tel que défini dans la revendication 1 ou 2, caractérisé en ce que la poignée (14) comporte, ménagée dans son extrémité attenante à l'axe, une cavité (16) qui loge une tige (17) formée solidairement avec l'organe de blocage et ayant une longueur axiale suffisante pour permettre un certain degré de déplacement axial de l'organe de blocage par rapport à la poignée, un ressort de compression (24) étant disposé à l'intérieur de ladite cavité pour solliciter ledit organe de blocage dans ladite position terminale.

4. Outil portatif, tel que défini dans la revendication 3, caractérisé en ce que la cavité (16) et la tige (17) sont toutes deux annulaires.

5. Outil portatif, tel que défini dans l'une quelconque des revendications 1 à 4, caractérisé en ce qu'une collerette radiale (18) fait saillie vers l'extérieur au-delà de l'organe de blocage (20) et est fixée à celui-ci au niveau du côté axial de ce dernier opposé à l'axe (15), laquelle collerette est apte à intervenir pour presser l'organe de blocage à l'encontre de la sollicitation exercée par l'action du ressort.

5

10

15

20

25

30

35

40

45

50

55

60

65

4

FIG. 1

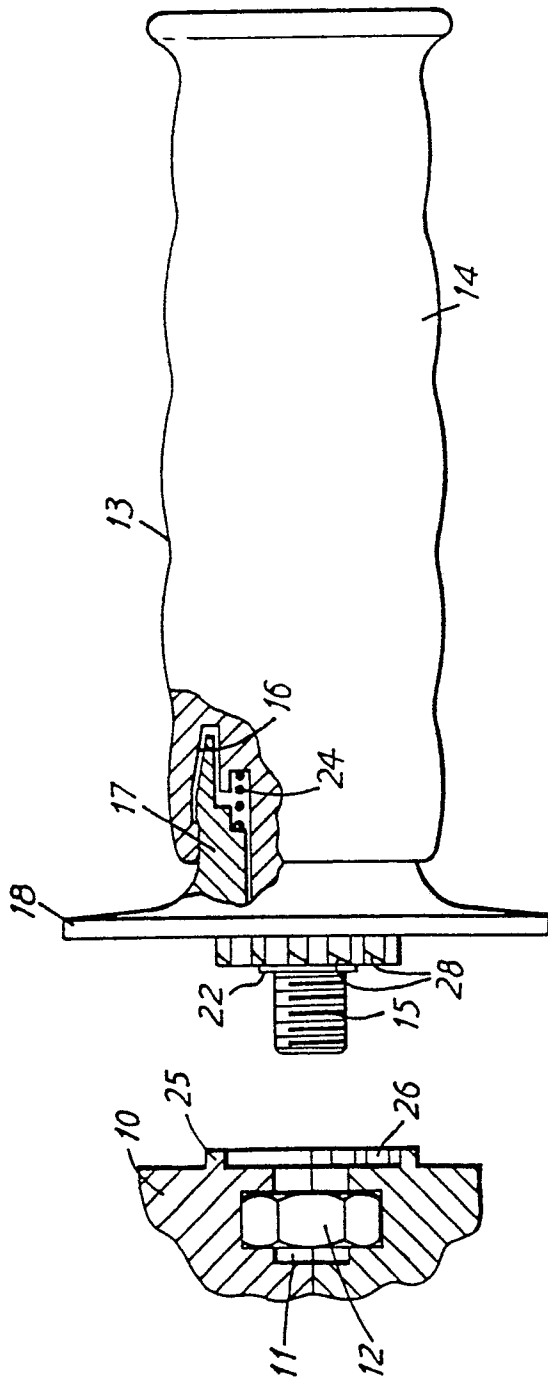


FIG. 2

