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(54) **Ratchet socket wrench**

Ratschenschlüssel

Clé à cliquet

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(73) Proprietor: **Stanley Chiro International Ltd.
Taichung City (TW)**

(72) Inventor: **Liu, Chun-Hsiung
Taichung City (TW)**

(74) Representative: **Lang, Christian
LangPatent Anwaltskanzlei
Ingolstädter Straße 5
80807 München (DE)**

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Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to a wrench, and more particularly to a ratchet wrench.

Description of the Prior Art

[0002] A conventional ratchet wrench has a mounting portion in a center of a ratchet. The mounting portion is provided for sockets to be assembled thereto, so a user can operate the wrench to drive the socket to screw tightly or disassemble a bolt or a nut.

[0003] Conventional ratchet wrenches are known, for example, from documents DE 297 21 275 U1, WO 01/45905 A1, TWM477352U and GB 2 325 428 A. Further ratchet wrenches are disclosed in TWM449061 and TWM426472 which are provided for clamping work pieces or sockets tightly through a clamping assembly. Furthermore, the clamping assembly mentioned above usually uses an elastic member and clamps the work pieces or sockets through deformation of the elastic member.

[0004] However, usually, an elasticity of the elastic member fatigues as the time and number of use increase, so the deformability of the elastic member decreases, and clamping effect becomes worse.

[0005] The present invention is, therefore, arisen to obviate or at least mitigate the above-mentioned disadvantages.

SUMMARY OF THE INVENTION

[0006] The main object of the present invention is to provide a ratchet wrench, which can be controlled by pressing and is provided for being assembled to and engaged with a tool to prevent the tool from falling off during the operating process. It is safe to operate the ratchet wrench during the operating process and is convenient to remove the ratchet wrench after operating. In addition, with designs of an annular face and an anti-dust wall, a mechanism can be protected from dust and kept clean.

[0007] A ratchet wrench may be provided according to claim 1.

[0008] The present invention will become more obvious from the following description when taken in connection with the accompanying drawings, which show, for purpose of illustrations only, the preferred embodiment(s).

BRIEF DESCRIPTION OF THE DRAWINGS

[0009]

Fig. 1 is a sketch of a first ratchet wrench structure; Fig. 2 is a breakdown drawing of the ratchet wrench

of Fig. 1;

Fig. 3 is a schematic drawing showing assembling of the ratchet wrench of Fig. 1;

Fig. 4 is the other schematic drawing showing assembling of the ratchet wrench of Fig. 1;

Fig. 5 is a drawing showing the ratchet wrench of Fig. 1 in use;

Fig. 6 is the other drawing showing the ratchet wrench of Fig. 1 in use; and

Fig. 7 is a sketch of the preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0010] Please refer to Figs. 1 to 4 for a first ratchet wrench structure, including a main body 10, a ratcheting head 20, a seal cap 30 and a latching mechanism 40.

[0011] The main body 10 includes a receiving slot 11 and a first anti-dust portion 12 annularly disposed around outside the receiving slot 11. A circumferential wall inside the receiving slot 11 is provided with a ratcheting portion 13 therearound. Specifically, the main body 10, the receiving slot 11, the first anti-dust portion 12 and the ratcheting portion 13 can be made of metal (for example, aluminum alloy, steel and others) and integrally formed through melting or forging. More specifically, the first anti-dust portion 12 includes a first annular face 121 and an anti-dust wall 122. The first annular face 121 extends from an outer circumferential face of the main body 10 toward the receiving slot 11, and the anti-dust wall protrudes from an inner annular edge of the first annular face. In an alternative design, the first annular face 121 can be a radial slanted face, for example, there can be an included angle between the first annular face 121 and a cross-section of the receiving slot 11.

[0012] The ratcheting head 20 is rotatably disposed in the receiving slot 11, and the ratcheting head 20 includes a mounting protrusion 21. In this design, the ratcheting head 20 is formed with a restricting tooth member 22 selectively meshable with the ratcheting portion 13. More specifically, the restricting tooth member 22 includes a restricting tooth portion 23 for being meshed with the ratcheting portion 13, and the restricting tooth portion 23 includes a plurality of protruding teeth. Preferably, the restricting tooth member 22 can be made of carbon steel so as to allow the restricting tooth member 22 to have high wear resistance and rigidity.

[0013] The restricting tooth member 22 can restrict the rotating direction of the ratcheting head 20, for example, the restricting tooth member 22 can make the restricting tooth member 22 controllably engaged with the ratcheting head 20 through a positioning mechanism. Furthermore, in this design, the positioning mechanism, for example, includes an elastic member 50 and a protruding column 51 disposed through the elastic member 50. The elastic member 50 is assembled to the restricting tooth member 22, and the protruding column 51 can connect

to the seal cap 30. Through rotating the seal cap 30 and the protruding column 51, the protruding column abuts against an end of the elastic member 50 and to drive the elastic member 50. The restricting tooth member 22 is positioned to a predetermined position to be meshed with the ratcheting portion 13 through co-moving with the elastic member 50. The restricting tooth member 20 is meshed with the ratcheting portion 13 to actuate the ratcheting head 20 so as to restrict the rotating direction of the ratcheting head 20.

[0014] The seal cap 30 is capped on the main body 10 and is located above the ratcheting head 20. The seal cap 30 has a second anti-dust portion 31 whose structure corresponds to a structure of the first anti-dust portion 12 and a sliding slot 32 disposed through the seal cap 30. The second anti-dust portion 31 includes an annular protrusion 311 facing the first annular face 121 and an annular recession 312 adjacent to an inner annular edge of the annular protrusion 311. The annular recession 312 and the anti-dust wall 122 are engaged with each other, and the annular protrusion 311 and the anti-dust wall 122 are radially disposed neighboring to each other. A blocking edge 33 is provided at an end of the sliding slot and extends radially inward. The annular protrusion 311 has a second annular face 313 whose shape corresponds to a shape of the first annular face 121; therefore, when the first anti-dust portion 12 and the second anti-dust portion 31 are assembled with each other, the first and second annular faces 121, 313 contact with each other so as to achieve anti-dust effect. Preferably, a gap between the first and second annular faces 121, 313 can be set to be, for example, 0.1 mm, and the coordination between the first and second annular faces 121, 313 can be improved through manufacturing after polishing process so as to allow the seal cap 30 and the main body 10 to operate smoothly (for example, to allow the seal cap 30 to rotate relative to the main body 10) and prevent foreign objects (such as dust) from entering the receiving slot 11 of the ratchet wrench. It is to be noted that the anti-dust wall 122 and the annular recession 312 which are mutually engaged can prevent particles or foreign matters from entering the ratchet wrench so as to elevate anti-dust effect. In addition, the ratchet wrench further includes a screw member 60 screwed between the seal cap 30 and the ratcheting head 20, and the seal cap 30 and the ratch-

[0015] The latching mechanism 40 includes a pushing assembly 41 and an abutting member 42. The pushing assembly 41 includes a pressing board 411, and a circumferential face of the pressing board 411 is protrudingly disposed a restricting member 416 therearound. The restricting member 416 abuts against and is stuck with the blocking edge 33 so as to restrict the pressing board 411 in the sliding slot 32. In this design, the pushing assembly 41 further includes a rod 412, a rolling bead 413 and an elastic abutting member 414 elastically abuts against between the rolling bead 413 and an inner wall

of the ratcheting head 20. A first end of the rod 412 is slidably inserted in the ratcheting head 20 and abuts against the rolling bead 413, and the rolling bead 413 is selectively abuts against the abutting member 42. The pressing board 411 is disposed at a second end of the rod 412. It is to be noted that the second end of the rod 412 is annularly formed with a restricting slot 415. The restricting slot 415 is recessed on the pressing board 411, and the restricting slot 415 is entirely encompassed by the pressing board 411 and the pressing board 411 is partly embedded in the restricting slot 415 so as to produce a preferable connecting strength between the pressing board 411 and the rod 412. In this design, the restricting member 416 is an engaging member, and the restricting member 416 overlaps a part of the blocking edge 33 of the sliding slot 32 along an axial direction. Specifically, the pressing board 411 is pressed to be assembled in the sliding slot 32. Preferably, a top end edge of the sliding slot 32 is annularly formed with a fillet 34 to make the pressing and mounting process easier. The screw member 60 further includes a through hole 61 for the rod 412 to dispose therethrough so as to allow the rod 412 to actuate via the through hole 61.

[0016] Please refer to Figs. 5 and 6. In actual use, the pushing assembly 41 is inserted in the ratcheting head 20 and movable to be in an abutting position P1 and a releasing position P2. The abutting member 42 is movably disposed in the ratcheting head 20 and selectively partly protrudes outside the mounting protrusion 21. Furthermore, the pushing assembly 41 is able to move from the abutting position P1 to the releasing position P2 through pressing the pressing board 411 from outside. When the pushing assembly 41 is in the abutting position P1, the pushing assembly 41 abuts against the abutting member 42 and partly protrudes outside the mounting protrusion 21. When the pushing assembly 41 is in the releasing position P2, the pushing assembly 41 is disengaged from the abutting member 42, and the abutting member 42 can retreat back into the mounting protrusion 21. For example, the abutting member 42 can be a steel bead, and a part of the steel bead can protrude outside or retreat back into the mounting protrusion 21. More specifically, an elastic force of the elastic abutting member 414 is transmitted to the pressing board 411 through the rolling bead 413 and the rod 412, and the restricting member 416 and the blocking edge 33 are engaged with each other to allow the pressing board 411 to stay in a third position P3 normally. When the pushing assembly 41 is in the abutting position P1, the pressing board 411 is in the third position P3, and the abutting member 42 partly protrudes outside the mounting protrusion 21 for being assembled to and engaged with a tool (for example, a socket) and preventing the tool from falling off. For example, the pressing board 411 can be pushed and pressed by a force and slides to a fourth position P4. When the pushing assembly 41 is in the releasing position P2, the pressing board 411 is in the fourth position P4, and the abutting member 42 retreats back into the

mounting protrusion 21; hence, the tool can be taken off from the mounting protrusion 21.

[0017] Please refer to Fig. 7 for the preferred embodiment of the ratchet wrench of the present invention. The ratchet wrench includes a main body. The main body includes a receiving slot and a first anti-dust portion 12a annularly arranged around outside the receiving slot, and the first anti-dust portion 12a includes a first annular face 121a and an anti-dust wall 122a. The first annular face 121a extends from the outer circumferential face of the main body toward the receiving slot, and the first annular face 121a can be a radial slanted face. The anti-dust wall 122a protrudes from an inner annular edge of the first annular face 121a. The ratchet wrench further includes a ratcheting head rotatably disposed in the receiving slot and has a second anti-dust portion 31a whose shape corresponds to a shape of the first anti-dust portion 12a and a mounting protrusion, wherein the second anti-dust portion 31a includes an annular protrusion 311a facing the first annular face 121a and an annular recession 312a adjacent to an inner annular edge of the annular protrusion 311a. The annular recession 312a and the anti-dust wall 122a are engaged with each other, and the annular protrusion 311a and the anti-dust wall 122a are radially disposed neighboring to each other. The annular protrusion 311a has a second annular face 313a whose shape corresponds to the shape of the first annular face 121a; therefore, when the first anti-dust portion 12a and the second anti-dust portion 31a are assembled with each other, the first and second annular faces 121a, 313a contact each other closely so as to achieve anti-dust effect. It is to be noted that the anti-dust wall 122a and the annular recession 312a which are mutually engaged can prevent particles or foreign matters from entering the ratchet wrench and elevate anti-dust effect. The ratchet wrench includes a seal cap capped on the main body and located above the ratcheting head. The ratchet wrench has a sliding slot disposed through the seal cap, and a blocking edge is provided at an end of the sliding slot and extends radially inward. The ratchet wrench further includes a restricting tooth member, a positioning mechanism and a latching mechanism as the same as the structure mentioned above.

[0018] Given the above, a ratchet wrench of the present invention is controlled by pressing and is provided for a tool to be assembled or engaged therewith. With the present invention, the tool can be prevented from falling off during the operating process and can be removed easily after operating. In addition, the design of an annular face and an anti-dust wall can produce anti-dust effect and keep a mechanism protected and clean.

Claims

1. A ratchet wrench, including:

a main body (10), including a receiving slot (11);

a ratcheting head (20) including a ratcheting body, rotatably disposed in the receiving slot (11), including a mounting protrusion (21); a seal cap (30), capped on the main body (10) and located above the ratcheting head (20), having a sliding slot (11) disposed through the seal cap (30),

a latching mechanism (40), including a pushing assembly (41) and an abutting member (42), wherein the pushing assembly (41) is inserted in the ratcheting head (20) and movable to be in an abutting position (P1) and a releasing position (P2), the pushing assembly (41) includes a pressing board (411), the abutting member (42) is movably disposed in the ratcheting head (20) and selectively protrudable outside the mounting protrusion (21), the pushing assembly (41) is able to move from the abutting position (P1) to the releasing position (P2) through pressing the pressing board (411) from outside, when the pushing assembly (41) is in the abutting position (P1), the pushing assembly (41) abuts against the abutting member (42) and partly protrudes outside the mounting protrusion (21), when the pushing assembly (41) is in the releasing position (P2), the pushing assembly (41) is disengaged from the abutting member (42), and the abutting member (42) is retreatable back into the mounting protrusion (21);

characterized in that

a blocking edge (33) is provided at an end of the sliding slot (32) and extending radially inward; a circumferential face of the pressing board (411) is protrudingly disposed a restricting member (416) therearound, wherein the restricting member (416) and the blocking edge (33) abut against and are stuck with each other to restrict the pressing board (411) in the sliding slot (32); the main body (10) includes a first anti-dust portion (12a) annularly arranged around outside the receiving slot (11), the first anti-dust portion (12a) including a first annular face (121a) and an anti-dust wall (122a), the first annular face (121a) extending from an outer circumferential face of the main body (10) toward the receiving slot (11), the anti-dust wall (122a) protruding from an inner annular edge of the first annular face (121a); and the ratcheting head (20) further includes a second anti-dust portion (31a) whose shape corresponds to a shape of the first anti-dust portion (12a), wherein the second anti-dust portion (31a) includes an annular protrusion (311a) facing the first annular face (121a) and an annular recession (312a) adjacent to an inner annular edge of the annular protrusion (311a), the annular recession (312a) being just adjacent to an outer wall of the ratcheting body, wherein one lateral wall of the annular recession (312a)

is formed by the outer wall of the ratcheting body, wherein the annular recession (312a) and the anti-dust wall (122a) are engaged with each other, and the annular protrusion (311a) and the anti-dust wall (122a) are radially disposed neighboring to each other.

2. The ratchet wrench of claim 1, wherein a circumferential wall inside the receiving slot (11) is provided with a ratcheting portion (13) arranged there around, the ratcheting head (20) is formed with a restricting tooth member (23) selectively meshable with the ratcheting portion (13), and a rotating direction of the ratcheting head (20) is restrictable by the restricting tooth member (23).
3. The ratchet wrench of claim 1, wherein the pushing assembly (41) further includes a rod (412), a rolling bead (413) and an elastic abutting member (414) elastically abuts against between the rolling bead (413) and an inner wall of the ratcheting head (20), a first end of the rod (412) is slidably inserted in the ratcheting head (20) and abuts against the rolling bead (413), the rolling bead (413) selectively abuts against the abutting member (42), and the pressing board (411) is disposed at a second end of the rod (412).
4. The ratchet wrench of claim 1, wherein the restricting member (416) is an engaging member, and the engaging member overlaps a part of the blocking edge (33) along an axial direction.
5. The ratchet wrench of claim 3, further including a screw member (60) screwed between the seal cap (30) and the ratcheting head (20), wherein the screw member (60) includes a through hole for the rod (412) to dispose therethrough, the second end of the rod (412) is annularly formed with a restricting slot (415), the restricting slot (415) is recessed on the pressing board (411), and the restricting slot (415) is entirely encompassed by the pressing board (411) and the pressing board (411) is partly embedded in the restricting slot (415).

Patentansprüche

1. Ratschenschlüssel, umfassend:

einen Hauptkörper (10), der eine Aufnahmeaussparung (11) beinhaltet,
einen Ratschenkopf (20), der einen drehbar in der Aufnahmeaussparung (11) angeordneten Ratschenkörper aufweist und einen Montagevorsprung (21) umfasst, eine Verschlusskappe (30), die auf den Hauptkörper (10) gedeckelt ist und sich oberhalb des Ratschenkopfs (20) be-

findet und eine Gleitaussparung (11) hat, die durch die Verschlusskappe (30) hindurch angeordnet ist,

einen Rastmechanismus (40), der eine Druckbaugruppe (41) und ein Anlageelement (42) beinhaltet, wobei die Druckbaugruppe (41) in den Ratschenkopf (20) eingesetzt ist und beweglich ist, um in einer Anlageposition (P1) oder einer Freigabeposition (P2) zu sein, wobei die Druckbaugruppe (41) eine Pressplatte (411) beinhaltet, wobei das Anlageelement (42) beweglich in dem Ratschenkopf (20) angeordnet ist und selektiv aus dem Montagevorsprung (21) hervorstehen kann, wobei die Druckbaugruppe (41) von der Anlageposition (P1) zu der Freigabeposition (P2) verschiebbar ist, wenn von außen gegen die Pressplatte (411) gedrückt wird, wobei, wenn die Druckbaugruppe (41) in der Anlageposition (P1) ist, die Druckbaugruppe (41) an dem Anlageelement (42) anliegt und teilweise aus dem Montagevorsprung (21) herausragt, wobei, wenn die Druckbaugruppe (41) in der Freigabeposition (P2) ist, die Druckbaugruppe (41) von dem Anlageelement (42) gelöst ist und das Anlageelement (42) in den Montagevorsprung (21) zurück einziehbar ist,

dadurch gekennzeichnet, dass

ein Sperrrand (33) an einem Ende der Gleitaussparung (32) vorgesehen ist und sich radial nach innen erstreckt,

um eine Umfangsfläche der Pressplatte (411) herum ein Begrenzungselement (416) vorstehend angeordnet ist, wobei das Begrenzungselement (416) und der Sperrrand (33) aneinander anliegen und festsitzen, um die Pressplatte (411) in der Gleitaussparung (32) zu begrenzen, der Hauptkörper (10) einen ersten Antistaubabschnitt (12a) beinhaltet, der ringförmig außen um die Aufnahmeaussparung (11) herum angeordnet ist, wobei der erste Antistaubabschnitt (12a) eine erste ringförmige Fläche (121a) und eine Antistaubwand (122a) beinhaltet, wobei sich die erste ringförmige Fläche (121a) von einer äußeren Umfangsfläche des Hauptkörpers (10) in Richtung der Aufnahmeaussparung (11) erstreckt, wobei die Antistaubwand (122a) von einem inneren ringförmigen Rand der ersten ringförmigen Fläche (121a) vorsteht, und der Ratschenkopf (20) ferner einen zweiten Antistaubabschnitt (31a) umfasst, dessen Form mit einer Form des ersten Antistaubabschnitts (12a) korrespondiert, wobei der zweite Antistaubabschnitt (31a) einen ringförmigen Vorsprung (311a), der der ersten ringförmigen Fläche (121a) zugewandt ist, und eine ringförmige Vertiefung (312a) beinhaltet, welche zu einem inneren ringförmigen Rand des ringförmigen Vorsprungs (311a) benachbart ist, wobei die ring-

- förmige Vertiefung (312a) genau neben einer äußeren Wand des Ratschenkörpers liegt, wobei eine Seitenwand der ringförmigen Vertiefung (312a) durch die äußere Wand des Ratschenkörpers gebildet ist, wobei die ringförmige Vertiefung (312a) und die Antistaubwand (122a) miteinander in Eingriff stehen, und wobei der ringförmige Vorsprung (311a) und die Antistaubwand (122a) radial zueinander benachbart angeordnet sind.
2. Ratschenschlüssel nach Anspruch 1, bei welchem eine Umfangswand im Inneren der Aufnahmeausparung (11) mit einem Ratschenabschnitt (13) versehen ist, der um diese herum angeordnet ist, wobei der Ratschenkopf (20) mit einem Beschränkungszahnelement (23) ausgebildet ist, welches selektiv mit dem Ratschenabschnitt (13) verzahnbar ist, wobei eine Drehrichtung des Ratschenkopfs (20) durch das Beschränkungszahnelement (23) begrenzt ist.
3. Ratschenschlüssel nach Anspruch 1, bei welchem die Druckbaugruppe (41) ferner einen Stab (412), eine Rollenkugel (413) und ein elastisches Anlageelement (414) beinhaltet, das elastisch anliegend zwischen der Rollenkugel (413) und einer inneren Wand des Ratschenkopfs (20) angeordnet ist, wobei ein erstes Ende des Stabs (412) verschiebbar in den Ratschenkopf (20) eingesetzt ist und an der Rollenkugel (413) anliegt, wobei die Rollenkugel (413) selektiv an dem Anlageelement (42) anliegt, und wobei die Pressplatte (411) an einem zweiten Ende des Stabs (412) angeordnet ist.
4. Ratschenschlüssel nach Anspruch 1, bei welchem das Begrenzungselement (416) ein Eingriffselement ist, wobei das Eingriffselement entlang einer Axialrichtung mit einem Teil des Sperrrands (33) überlappt.
5. Ratschenschlüssel nach Anspruch 3, welcher ferner ein Schraubelement (60) umfasst, das zwischen der Verschlusskappe (30) und dem Ratschenkopf (20) verschraubt ist, wobei das Schraubelement (60) ein Durchgangsloch für den Stab (412) aufweist, um diesen dadurch anzubringen, wobei das zweite Ende des Stabs (412) ringförmig mit einem Begrenzungsschlitz (415) ausgebildet ist, wobei der Begrenzungsschlitz (415) an der Pressplatte (411) zurückgesetzt ist, und wobei der Begrenzungsschlitz (415) vollständig durch die Pressplatte (411) umschlossen ist und die Pressplatte (411) teilweise in dem Begrenzungsschlitz (415) eingebettet ist.

Revendications

1. Clé à cliquet, incluant:

un corps principal (10), incluant une fente de réception (11);
 une tête à cliquet (20) incluant un corps à cliquet, disposée de manière rotative dans la fente de réception (11), incluant une saillie de montage (21);
 un capuchon d'obturation (30), coiffant le corps principal (10) et situé au-dessus de la tête à cliquet (20), présentant une fente de coulissement (11) disposée à travers le capuchon d'obturation (30),
 un mécanisme de verrouillage (40), incluant un ensemble de poussée (41) et un élément de butée (42), dans laquelle l'ensemble de poussée (41) est introduit dans la tête à cliquet (20) et peut se déplacer vers une position de butée (P1) et une position de libération (P2), l'ensemble de poussée (41) inclut un panneau de compression (411), l'élément de butée (42) est disposé de façon mobile dans la tête à cliquet (20) et peut faire saillie sélectivement à l'extérieur de la saillie de montage (21), l'ensemble de poussée (41) peut se déplacer de la position de butée (P1) jusqu'à la position de libération (P2) par une pression exercée sur le panneau de compression (411) depuis l'extérieur, lorsque l'ensemble de poussée (41) est dans la position de butée (P1), l'ensemble de poussée (41) bute contre l'élément de butée (42) et fait partiellement saillie à l'extérieur de la saillie de montage (21), lorsque l'ensemble de poussée (41) est dans la position de libération (P2), l'ensemble de poussée (41) est dégagé de l'élément de butée (42), et l'élément de butée (42) peut revenir dans la saillie de montage (21);
caractérisée en ce que
 un bord de blocage (33) est prévu à une extrémité de la fente de coulissement (32) et s'étend radialement vers l'intérieur;
 autour d'une face circonférentielle du panneau de compression (411) est disposé de manière saillante un élément de restriction (416), dans laquelle l'élément de restriction (416) et le bord de blocage (33) butent l'un contre l'autre et sont coincés l'un avec l'autre pour restreindre le panneau de compression (411) dans la fente de coulissement (32);
 le corps principal (10) inclut une première partie anti-poussière (12a) agencée de façon annulaire autour de la partie extérieure de la fente de réception (11), la première partie anti-poussière (12a) incluant une première face annulaire (121a) et une paroi anti-poussière (122a), la première face annulaire (121a) s'étendant à partir

d'une face circonférentielle externe du corps principal (10) vers la fente de réception (11), la paroi anti-poussière (122a) faisant saillie depuis un bord annulaire interne de la première face annulaire (121a); et

la tête à cliquet (20) inclut en outre une seconde partie anti-poussière (31a) dont la forme correspond à une forme de la première partie anti-poussière (12a), dans laquelle la seconde partie anti-poussière (31a) inclut une saillie annulaire (311a) faisant face à la première face annulaire (121a) et un retrait annulaire (312a) adjacent à un bord annulaire interne de la saillie annulaire (311a), le retrait annulaire (312a) étant tout juste adjacent à une paroi externe du corps à cliquet, dans laquelle une paroi latérale du retrait annulaire (312a) est formée par la paroi externe du corps à cliquet, dans laquelle le retrait annulaire (312a) et la paroi anti-poussière (122a) sont en prise l'un avec l'autre, et la saillie annulaire (311a) et la paroi anti-poussière (122a) sont disposées radialement au voisinage l'une de l'autre.

extrémité de la tige (412) est formée de façon annulaire avec une fente de restriction (415), la fente de restriction (415) est en retrait sur le panneau de compression (411), et la fente de restriction (415) est entièrement circonscrite par le panneau de compression (411) et le panneau de compression (411) est partiellement intégré dans la fente de restriction (415).

2. Clé à cliquet selon la revendication 1, dans laquelle une paroi circonférentielle à l'intérieur de la fente de réception (11) est pourvue d'une partie à cliquet (13) agencée autour de celle-ci, la tête à cliquet (20) est formée avec un élément à dent de restriction (23) pouvant s'engrener sélectivement avec la partie à cliquet (13), et une direction de rotation de la tête à cliquet (20) peut être restreinte par l'élément à dent de restriction (23).
3. Clé à cliquet selon la revendication 1, dans laquelle l'ensemble de poussée (41) inclut en outre une tige (412), une bille de roulement (413) et un élément de butée élastique (414) vient buter de manière élastique entre la bille de roulement (413) et une paroi interne de la tête à cliquet (20), une première extrémité de la tige (412) est insérée de manière coulissante dans la tête à cliquet (20) et bute contre la bille de roulement (413), la bille de roulement (413) bute sélectivement contre l'élément de butée (42), et le panneau de compression (411) est disposée à une seconde extrémité de la tige (412).
4. Clé à cliquet selon la revendication 1, dans laquelle l'élément de restriction (416) est un élément de mise en prise, et l'élément de mise en prise recouvre une partie du bord de blocage (33) dans une direction axiale.
5. Clé à cliquet selon la revendication 3, incluant en outre un élément vis (60) vissé entre le capuchon d'obturation (30) et la tête à cliquet (20), dans laquelle l'élément vis (60) inclut un trou traversant permettant à la tige (412) de passer par celui-ci, la seconde

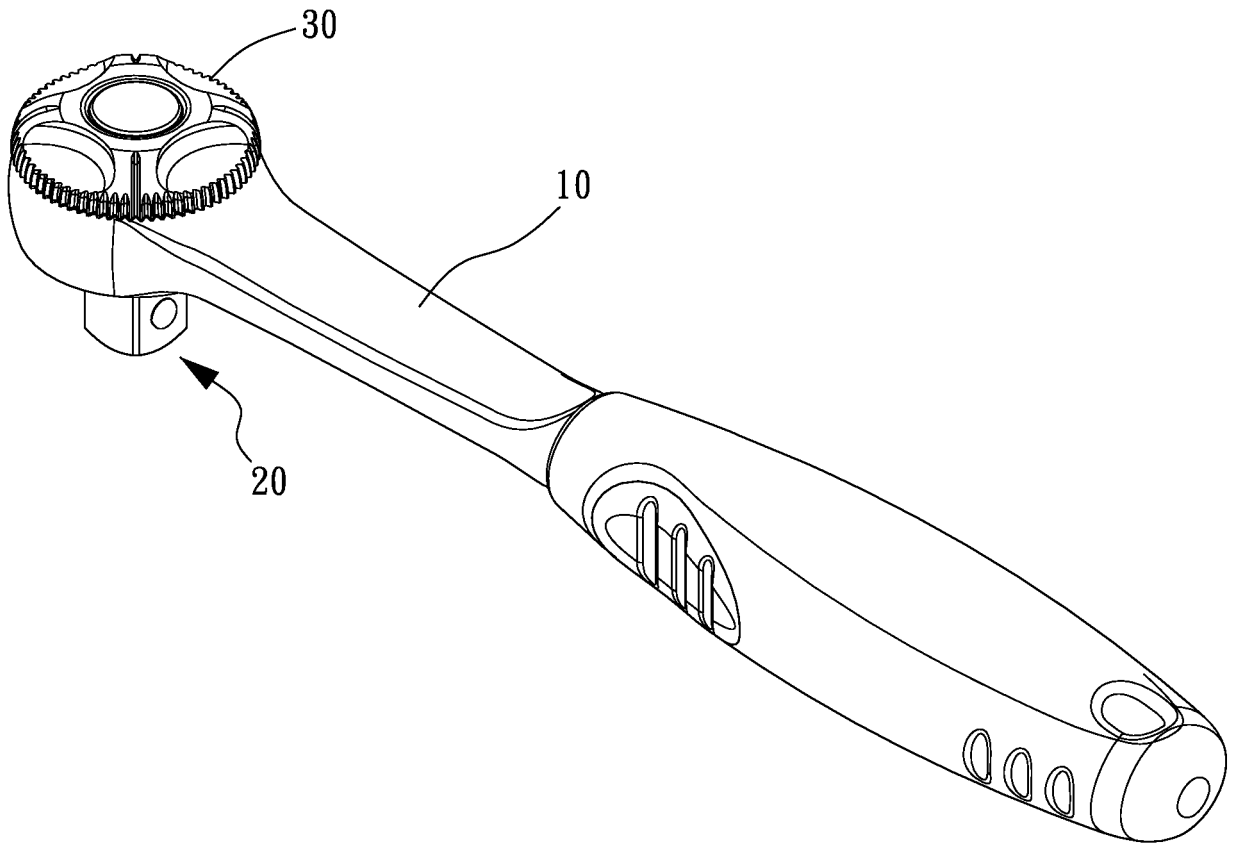


FIG. 1

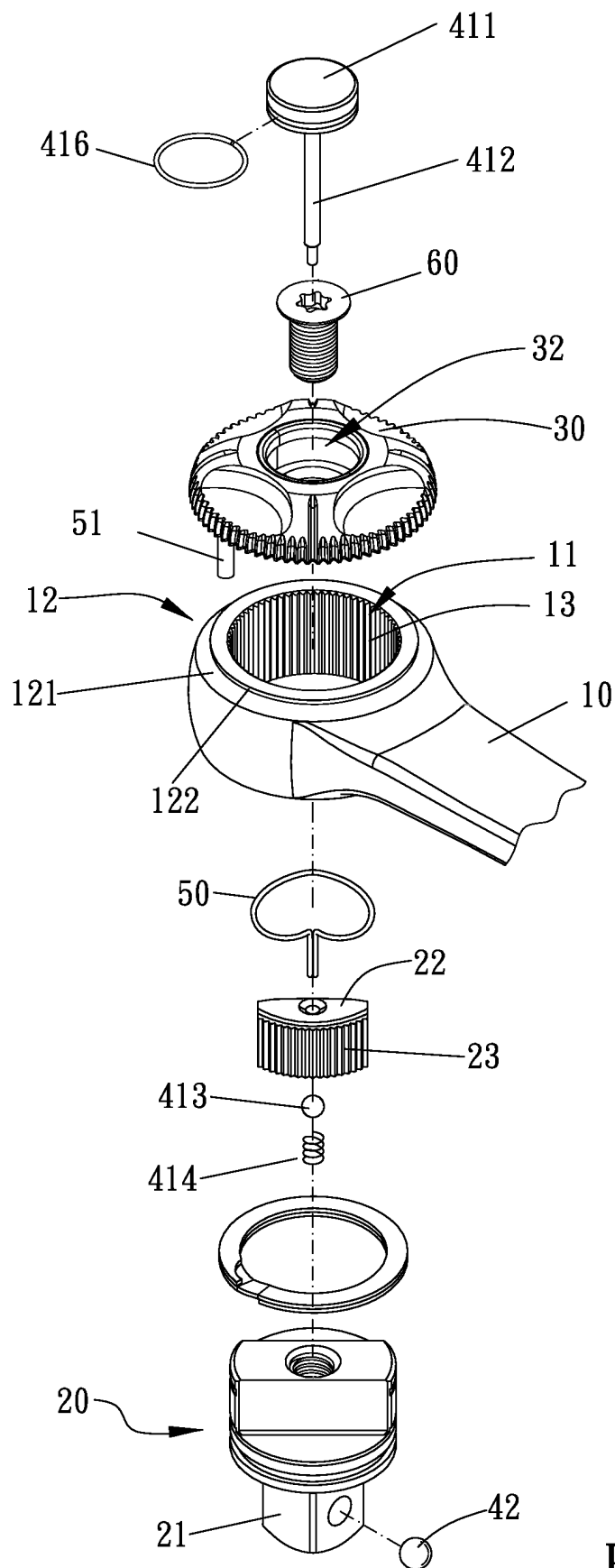
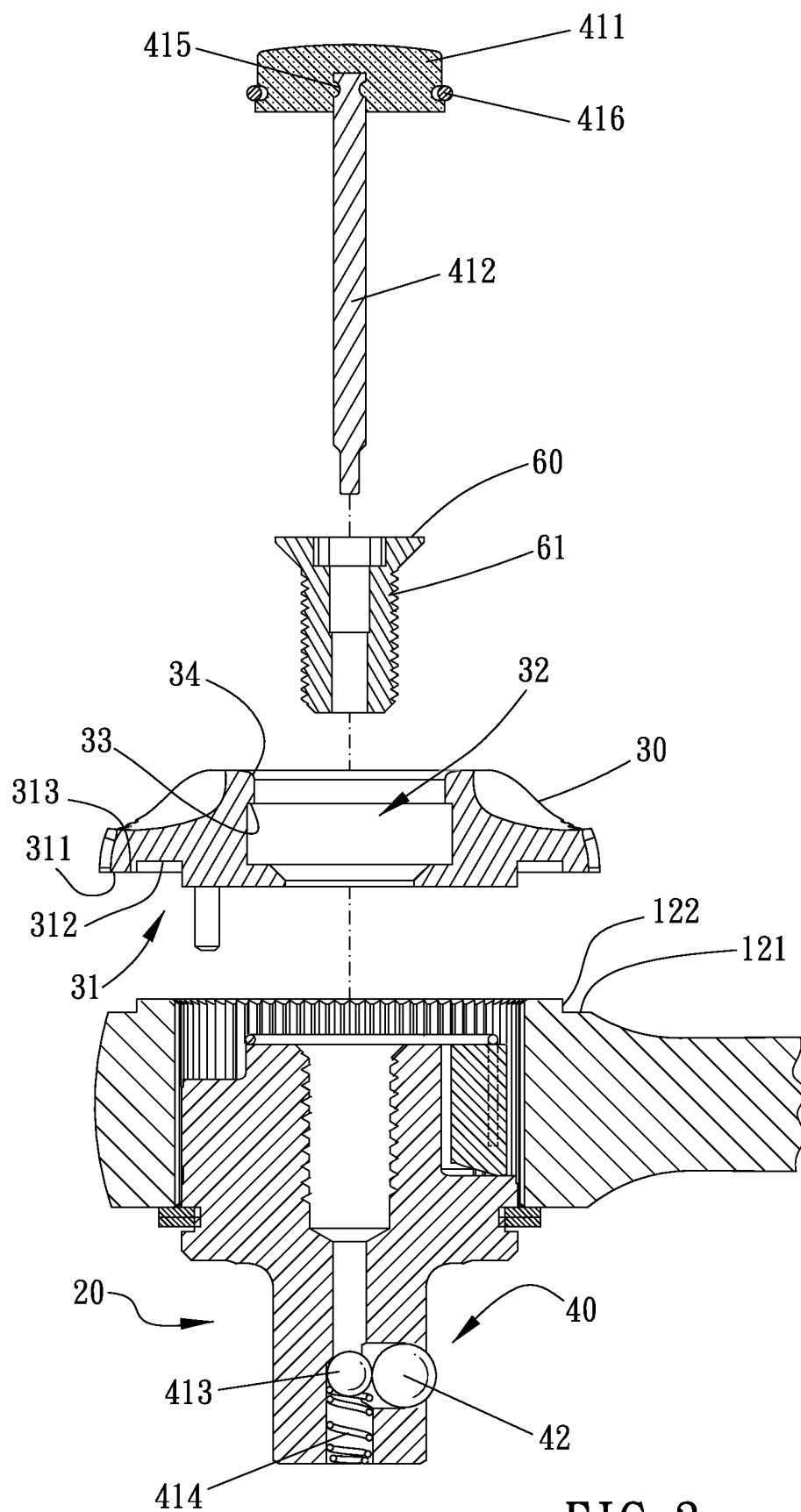


FIG. 2



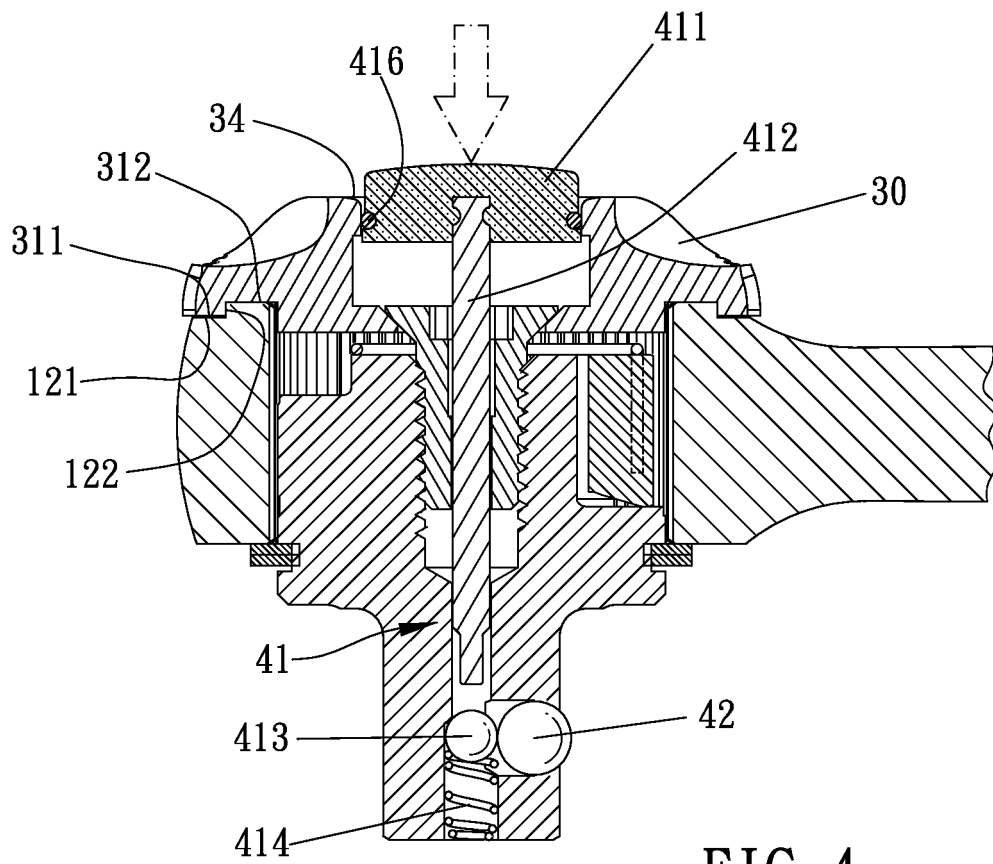


FIG. 4

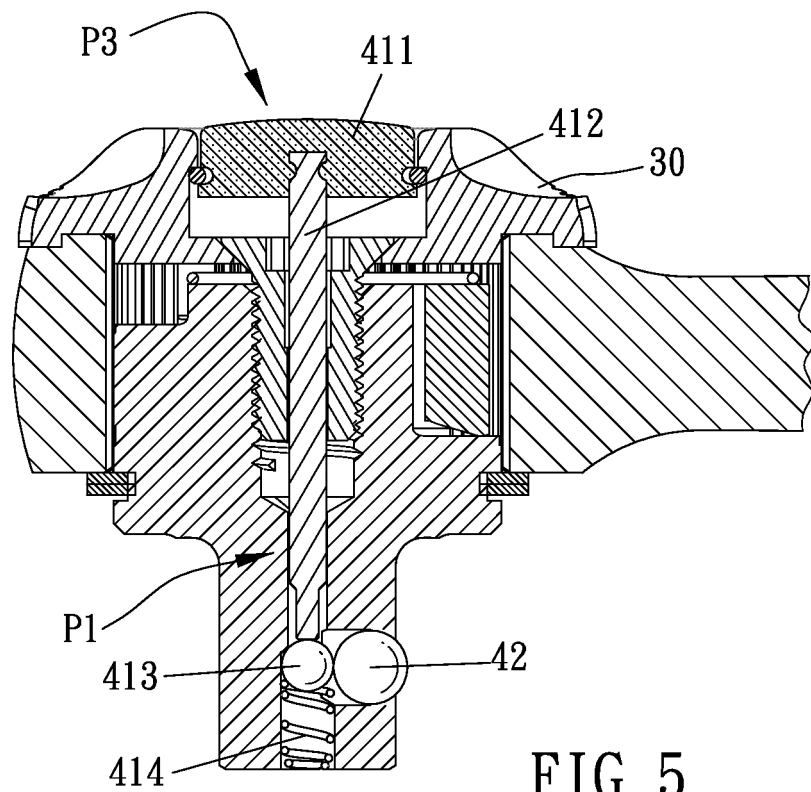


FIG. 5

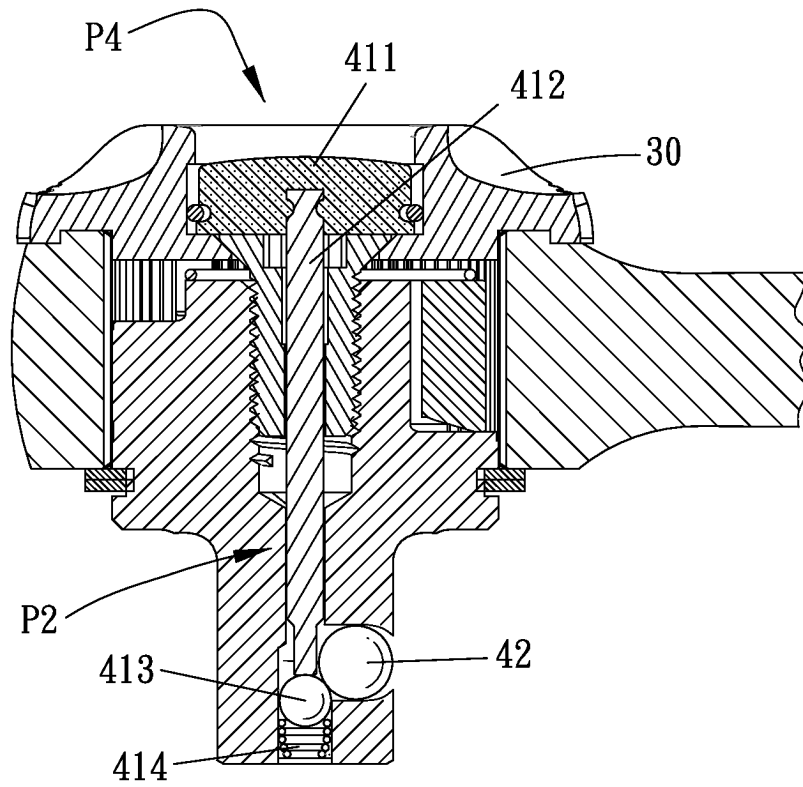


FIG. 6

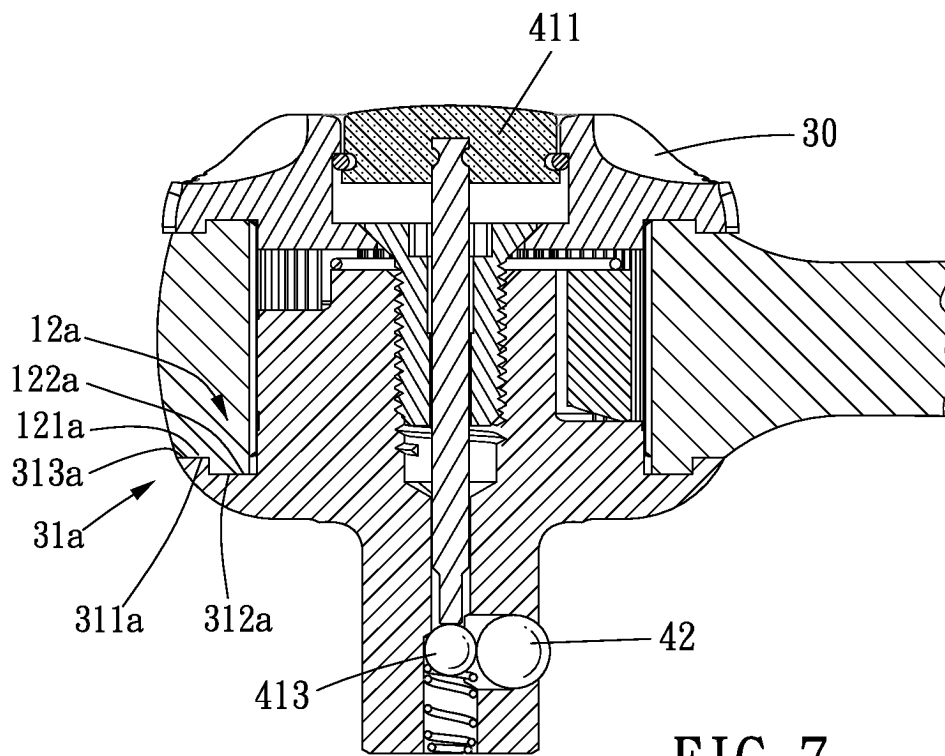


FIG. 7

REFERENCES CITED IN THE DESCRIPTION

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