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(54) **Driving end of tool**

Antriebsseite eines Werkzeugs

Extrémité de commande d'outil

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Description

Background of the Invention

1. Field of the Invention

[0001] The present invention relates to a driving end of a tool and, in particular, to a driving end of a tool that a user can operably move through a small angle to drive an object engaged therewith, and which has a simple structure and is able to withstand high torque transmission.

2. Description of the Related Art

[0002] TW Patent No. 459593 shows a structurally improved wrench. The wrench includes a driving end including a chamber. A gear wheel is disposed in the chamber. A receiving slot is disposed adjacent the chamber. A pivot shaft is disposed in the receiving slot and includes a gear pivotally engaged therewith. The gear is engaged with the gear wheel. A shaft with a plurality of teeth is engaged with the gear and the gear wheel. The gear wheel is engagable with an object to be driven. A control mechanism is disposed in the receiving slot. The control mechanism has various settings for controlling operational directions of the gear wheel. The control mechanism includes a pawl to engage with the gear wheel.

[0003] It is still desirable to improve the mechanism set forth in order to provide a wrench that is able to withstand high torque transmission.

[0004] The present invention is, therefore, intended to obviate or at least alleviate the problems encountered in the prior art.

[0005] US 2 603 976 A discloses a driving end of a tool comprising: a body including a chamber, with the chamber defining first and second sectional areas; a first engaging member rotatably disposed in the first sectional area and including two different ends defining a first engaging section and a second engaging section respectively, with the first engaging section extending circumferentially on an outer periphery of the first engaging member and including a plurality of teeth, with the second engaging section engaging with an object to be driven by the driving end of the tool; a second engaging member rotatably disposed in the second sectional area and including two different ends defining first and second engaging ends respectively, with the first engaging section engaged with the first engaging end, with the first engaging end extending circumferentially on an outer periphery of a first end of the second engaging member and including a plurality of teeth, with the second engaging end extending circumferentially on an outer periphery of a second end of the second engaging member and including a plurality of teeth; at least one pawl slidably disposed in the second sectional area and defining a first engaging portion, with the second engaging end selectively engaged with the first engaging portion; and a switch pivotally engaged with the body and abutted against the at least one pawl.

[0006] Some further driving ends of a tool are known from US 3 828 629 A, from AT 368 055 B, from DE 103 33 124 A1, and from US 2009/007731 A1.

Summary of the Invention

[0007] According to the present invention, a driving end of a tool as defined in claim 1 is provided. The depended claims show some examples thereof.

[0008] It is an objective of the present invention to provide a driving end of a tool with a simple structure, but able to withstand high torque transmission.

[0009] It is another object of the present invention to provide a driving end of a tool that a user can operably move through a small angle to drive an object engaged therewith.

[0010] Other objects, advantages, and new features of the present invention will become apparent from the following detailed description of the invention when considered in conjunction with the accompanied drawings.

Brief Description of the Drawings

[0011]

Fig. 1 is a perspective view of a driving end of a tool in accordance with a first embodiment of the present invention.

Fig. 2 is an exploded perspective view of the driving end of the tool shown in Fig. 1.

Fig. 3 is another exploded perspective view of the driving end of the tool shown in Fig. 1, taken from a different angle than Fig. 2.

Fig. 4 is a cross-sectional view taken along line 4-4 of Fig. 1.

Fig. 5 is a cross-sectional view taken along line 5-5 of Fig. 1.

Fig. 6 is a cross-sectional view taken along line 6-6 of Fig. 1.

Fig. 7 is a cross-sectional view taken along line 7-7 of Fig. 1.

Fig. 8 is a continued cross-sectional view of Fig. 5 and shows the driving end of the tool in a clockwise operation.

Fig. 9 is a continued cross-sectional view of Fig. 5 and shows the driving end of the tool in a counterclockwise operation.

Fig. 10 is a continued view of Fig. 9 and shows the driving end of the tool in the counterclockwise operation.

Fig. 11 is a cross-sectional view showing the driving end of the tool in an operation mode different from that of Fig. 5.

Fig. 12 is a perspective view of a driving end of a tool in accordance with a second embodiment of the present invention.

Fig. 13 is an exploded perspective view of the driving end of the tool shown in Fig. 12.

Fig. 14 is another exploded perspective view of the driving end of the tool shown in Fig. 12, taken from a different angle than Fig. 13.

Fig. 15 is a cross-sectional view taken along line 15-15 of Fig. 12.

Fig. 16 is a perspective view of a driving end of a tool in accordance with a third embodiment of the present invention.

Fig. 17 is a cross-sectional view of the driving end of the tool shown in Fig. 16.

Detailed Description of the Invention

[0012] Figs. 1 through 11 show a driving end of a tool in accordance with a first embodiment of the present invention.

[0013] A body 10 has a first side 101 and a second side 102 opposite the first side 101. A chamber 11 is delimited between the first and second sides 101 and 102. The chamber 11 defines first and second sectional areas 111 and 112. The body 10 includes a bore 12 extending into and in communication with the second sectional area 112. The body 10 also includes at least one first orifices 13 and a second orifice 14 extending therethrough. In the embodiment, the body 10 includes two first orifices 13.

[0014] A first engaging member 20 is rotatably disposed in the first sectional area 111 and defines a first engaging section 21. The first engaging section 21 extends circumferentially on an outer periphery of the first engaging member 20. The first engaging section 21 includes a plurality of teeth. The first engaging member 20 also defines a second engaging section 22 for engaging with an object to be driven by the driving end of the tool. The second engaging section 23 includes a stem and a detent mechanism mounted on the stem. In a case that the second engaging section 23 is engaged with an object to be driven by the driving end of the tool, the stem joins the object to be driven and the detent mechanism securing it to the stem. Additionally, the first engaging member 20 includes an input end (not numbered) opposite the detent mechanism for controlling the detent mechanism. The input end is disposed through the second orifice 14 and exposed outside the chamber 11. Therefore, a user can easily operate the detent mechanism since the second engaging section 22.

[0015] A second engaging member 30 is rotatably disposed in the second sectional area 112 and defines first and second engaging ends 31 and 32. The first engaging section 21 is engaged with the first engaging end 31. The first engaging end 31 extends circumferentially on an outer periphery of a first end of the second engaging member 30. The first engaging end 31 includes a plurality of teeth. A pitch between two adjacent teeth of the first engaging section 21 and a pitch between two adjacent teeth of the first engaging end 31 are substantially the same. The second engaging end 32 extends circumferentially on an outer periphery of a second end of the second engaging member 30. The second engaging end 31 includes a plurality of teeth. A pitch between two adjacent teeth of the second engaging end 32 is relatively smaller than that of the first engaging end 31.

[0016] At least one pawl 40 is slidably disposed in the second sectional area 112 and defines a first engaging portion 41. The first engaging portion 41 extends arcuately. The first engaging portion 41 includes a plurality of teeth. The first engaging portion 41 is divided into a first sub engaging portion 411 and a second sub engaging portion 412 separate from the first sub engaging portion 411. The second engaging end 32 is selectively engaged with the first engaging portion 41. A pitch between two adjacent teeth of the first engaging portion 41 is substantially the same as that of the second engaging end 32.

[0017] The first engaging member 20, the second engaging member 30, and the at least one pawl 40 allow a user to operably move through a small angle to drive an object engaged therewith and the driving end to withstand high torque transmission.

[0018] A switch 50 has different positions, depending on different operation modes of the driving end of the tool. The driving end of the tool has two operation modes, and the switch 50 is rotatable about the axis to first and second positions selectively. The switch 50 is pivotally engaged with the body 10 about an axis and abutted against the at least one pawl 40. The switch 50 is engaged with the bore 12. The at least one pawl 40 includes a second engaging portion 42 opposite the first engaging portion 41 engaged with the switch 50. The second engaging portion 42 is in the form of a recess. The switch 50 includes an activating member 51 including a fixing end 511 and a handle end 512 extending from the fixing end 511. The fixing end 511 is engaged with the bore 12. The handle end 512 is exposed outside the bore 12. The fixing end 512 includes an outer periphery thereof including at least one first cavity 513. The at least one first cavity 513 and the second engaging portion 42 include a first biasing element 52 disposed theretween and engaged therewith. In the embodiment, the fixing end 512 includes two first cavities 513, and one of the first cavity 513 includes the first biasing element 52 engaged therewith biasing a first pusher 53 to engage with the second engaging portion 42. The first biasing element 52 and the first pusher 53 make the at least one pawl 40 engage with the second engaging end 32 effectively. Moreover, a detent has an end engaged with the fixing end 511 and another end engaged with the body 10. The detent facilitates the switch 50 to be releasably fixed in the first and second positions thereof. The body 10 includes two recesses 121 extending therein and into the bore 12, and the fixing end 511 includes the outer periphery thereof including a second cavity 514. The second cavity 514 includes the detent engaged therewith, and the detent is selectively engaged in one of the two recesses 121. The

detent includes a second biasing element 54 engaged with the second cavity and a second pusher 55 biased by the second biasing element 54 to engage with one of the recesses 121 selectively. In this embodiment, the two recesses 121 are related to two operation modes of the switch 50.

[0019] The chamber 11 includes an opening closed by a cover member 80. The cover member 80 is fixed to the body 10 by at least one stopper 70. The cover member 80 includes a first hole 81 with which the at least one stopper 70 is engaged, a second hole 82 with which a first end of the first engaging member 20 is engaged, and a third hole 83 an end of the second engaging member 30 is engaged. In the embodiment, the driving end of the tool includes two stoppers 70 engaging the cover member 80 with the body 10. The cover member 80 engaged with the body 10 includes two first holes 81 aligned with and corresponding to the two first orifices 13, respectively. The two stoppers 70 are disposed through the two firsts orifices 13 and engaged in the two first holes 81 to secure the cover member 80 to the body 10. The cover member 80 also includes a second hole 82 and a third hole 83 extending therethrough. The second engaging section 22 is disposed through the second hole 82 and disposed outside the chamber 11, and the second hole 82 is aligned with and corresponds to the second orifice 14. The third hole 83 pivotally receives an end of the second engaging member 30. Since the third hole 83 can retain the second engaging member 30, the second engaging member can be stably positioned in the chamber 11.

[0020] In a case that the switch 50 is operated to the first position and the driving end of the tool is in a first operation mode and is operated in a first direction, the first and second engaging members 20 and 30 are not rotated and the second engaging member 30 is engaged with the first sub engaging portion 411 of the at least one pawl 40, and an object engaged with the driving end of the tool is able to be driven in the first direction.

[0021] In a case that the switch 50 is operated to the first position and the driving end of the tool is in the first operation mode and is operated in a second direction, which is opposite to the first direction, the first and second engaging members 20 and 30 are being rotated and rotate in opposite directions relative to each other, and the second engaging member 30 is engaged with the second sub engaging portion 412 of the at least one pawl 40, and the driving end of the tool is in a freewheel rotation with respect to the object engaged therewith.

[0022] In a case that the switch 50 is operated to a second position and the driving end of the tool is in a second operation mode and is operated in the first direction, the first and second engaging members 20 and 30 are being rotated and rotate in opposite directions relative to each other, and the second engaging member 30 is engaged with the second sub engaging portion 412 of the at least one pawl 40, and the driving end of the tool is in a freewheel rotation with respect to the object engaged therewith.

[0023] In a case that the switch 50 is operated to the second position and the driving end of the tool is in the second operation mode and is operated in the second direction, the first and second engaging members 20 and 30 are not rotated and the second engaging member 30 is engaged with the first sub engaging portion 411 of the at least one pawl 40, and the object engaged with the driving end of the tool is able to be driven in the first direction.

[0024] Figs. 12 through 15 show a driving end of a tool in accordance with a second embodiment of the present invention, and same numbers are used to correlate similar components of the first embodiment, but bearing a letter a. The second embodiment is similar to the first embodiment except a body 10, two pawls 40a, a switch 50, and a biasing member engage the two pawls 40a. The two pawls 40a have shapes symmetrical to each other and are spaced and include the biasing member 60 disposed therebetween and engaged therewith. Each pawl 40a defines a first engaging portion 41a. The first engaging portion 41a extends arcuately. The first engaging portion 41a includes a plurality of teeth. The first engaging portion 41a of one pawl 40a is separate from the first engaging portion 41a of another pawl 40a. Each pawl 40a also defines a second engaging portion 42a engaged with the switch 50a. The second engaging portion 42a extends in the bore 12a. The switch 50a includes an activating member 51a including a fixing end 511a and a handle end 512a extending from the fixing end 511a. The fixing end 511a is engaged in the bore 12a and the handle end 512a is exposed outside the bore 12a. The fixing end 512a includes an outer periphery thereof including a first cavity 513a in which the two second engaging portions 42a are movably disposed and two second cavities 514a in which the two second engaging portions 42a are selectively engaged therewith respectively. One of the body 10a and switch 50a includes a recess 121a and the other of the body 10a and the switch 50a includes a protrusion 515a pivotally engaged in the recess 121a. One of the body 10a and switch 50a includes a protruding member 122a and the other of the body 10a and the switch 50a includes two receiving areas 516a selectively engaged with the protruding member 122a.

[0025] Figs. 16 and 17 show a driving end of a tool in accordance with a third embodiment of the present invention. The third embodiment is similar to the first embodiment, and same numbers are used to correlate similar components of the first embodiment, but bearing a letter b. The third embodiment is similar to the first embodiment except a switch 50b. The switch 50b includes an activating member 51b including a fixing end 511b and a handle end 512b extending from the fixing end 511b. The fixing end 511b is engaged with the bore 12 and the handle end 512b is exposed outside the bore 12. The fixing end 512b includes an outer periphery thereof including a first cavity 513b. The first cavity 513b and the second engaging portion 42 include a first biasing ele-

ment 52b disposed theretween and engaged therewith. A first pusher 53b is biased by the first biasing element 52 to engage with the second driving portion 42. The first biasing element 52b and the first pusher 53b make the at least one pawl 40 engage with the second engaging end 32 effectively. Moreover, a detent has an end engaged with the fixing end 511 and another end engaged with the body 10. The body 10 includes two recesses 121 extending therein and into the bore 12, and the fixing end 511b includes the outer periphery thereof including a second cavity 514b. The second cavity 514b includes the detent engaged therewith, and the detent is selectively engaged in one of the two recesses 121, depending on the operation modes of the switch 50. The detent includes a second biasing element 54b engaged with the second cavity 514b and a second pusher 55b biased by the second biasing element 54b to engage with one of the recesses 121 selectively.

[0026] In view of the foregoing, the driving end of the tool has a simple structure, but is able to withstand high torque transmission, and a user can operably move through a small angle to drive an object engaged therewith.

Claims

1. A driving end of a tool comprising:

a body (10, 10a) including a chamber (11, 11 a), with the chamber (11, 11 a) defining first and second sectional areas (111, 112, 111 a, 112a);
a first engaging member (20) rotatably disposed in the first sectional area (111, 111a) and including two different ends defining a first engaging section (21) and a second engaging section (22) respectively, with the first engaging section (21) extending circumferentially on an outer periphery of the first engaging member (20) and including a plurality of teeth, with the second engaging section (22) engaging with an object to be driven by the driving end of the tool;
a second engaging member (30) rotatably disposed in the second sectional area (112, 112a) and including two different ends defining first and second engaging ends (31, 32) respectively, with the first engaging section (21) engaged with the first engaging end (31), with the first engaging end (31) extending circumferentially on an outer periphery of a first end of the second engaging member (30) and including a plurality of teeth, with the second engaging end (32) extending circumferentially on an outer periphery of a second end of the second engaging member and including a plurality of teeth;
at least one pawl (40, 40a) slidably disposed in the second sectional area (112) and defining a first engaging portion (41, 41 a) including a plurality of teeth, with the second engaging end (32) selectively engaged with the first engaging portion (41, 41a); and
a switch (50, 50a) pivotally engaged with the body (10, 10a) and abutted against the at least one pawl (40, 40a); and
wherein a pitch between two adjacent teeth of the first engaging section (21) and a pitch between two adjacent teeth of the first engaging end (31) are substantially the same, wherein a pitch between two adjacent teeth of the second engaging end (32) is relatively smaller than that of the first engaging end (31), and wherein a pitch between two adjacent teeth of the first engaging portion (41) is substantially the same as that of the second engaging end (32).

2. The driving end of the tool as claimed in claim 1, wherein the body (10, 10a) includes a bore (12, 12a) extending into and in communication with the second sectional area (112, 112a).

3. The driving end of the tool as claimed in claim 2, wherein the switch (50, 50a, 50b) is engaged with the bore (12, 12a), wherein the at least one pawl (40, 40a) includes a second engaging portion (42, 42a) opposite the first engaging portion (41, 41 a) engaged with the switch (50, 50a, 50b), and wherein the second engaging portion (42, 42a) is in the form of a recess.

4. The driving end of the tool as claimed in claim 3, wherein the switch (50, 50a, 50b) includes an activating member (51, 51 a, 51 b) including a fixing end (511, 511 a, 511 b) and a handle end (512, 512a, 512b) extending from the fixing end (511, 511 a, 511 b), wherein the fixing end (511, 511 a, 511 b) is engaged with the bore (12, 12a) and the handle end (512, 512a, 512b) is exposed outside the bore (12, 12a), wherein the fixing end (512, 512a, 512b) includes an outer periphery thereof including at least one first cavity (513, 513a, 513b), and wherein the at least one first cavity (513, 513a, 513b) and the second engaging portion (42, 42a) include a first biasing element (52, 52b) disposed theretween and engaged therewith.

5. The driving end of the tool as claimed in claim 4, wherein the fixing end (512) includes two first cavities (513), and wherein one of the first cavity (513) includes the first biasing element (52) engaged therewith biasing a first pusher (53) to engage with the second engaging portion (42).

6. The driving end of the tool as claimed in claim 4 further comprising a first pusher (53, 53b) biased by the first biasing element (52, 52b) to engage with the second driving portion (42).

7. The driving end of the tool as claimed in any of claims 4 and 5, wherein the body (10) includes two recesses (121) extending therein and into the bore (12), wherein the fixing end (511) includes the outer periphery thereof including a second cavity (514), wherein the second cavity (514) includes a detent engaged therewith, and wherein the detent is selectively engaged in one of the two recesses (121).

8. The driving end of the tool as claimed in claim 7, wherein the detent includes a second biasing element (54) engaged with the second cavity (514) and a second pusher (55) biased by the second biasing element (54) to engage with one of the recesses (121) selectively.

9. The driving end of the tool as claimed in claim 2, wherein the at least one pawl (40a) includes two pawls, wherein the two pawls (40a) include a biasing member (60) disposed therebetween and engaged therewith.

10. The driving end of the tool as claimed in claim 9, wherein each pawl (40a) includes a second engaging portion (42a) engaged with the switch (50a), and wherein the second engaging portion (42a) extends in the bore (12a).

11. The driving end of the tool as claimed in claim 10, wherein the switch (50a) includes an activating member (51a) including a fixing end (511 a) and a handle end (512a) extending from the fixing end (511 a), wherein the fixing end (511 a) is engaged in the bore (12a) and the handle end (512a) is exposed outside the bore (12a), wherein the fixing end (512a) includes an outer periphery thereof including a first cavity (513a) in which the two second engaging portions (42a) are movably disposed and two second cavities (514a) in which the two second engaging portions (42a) are selectively engaged therewith respectively.

12. The driving end of the tool as claimed in claim 11, wherein one of the body (10a) and switch (50a) includes a recess (121 a) and the other of the body (10a) and the switch (50a) includes a protrusion (515a) pivotally engaged in the recess (121 a), and wherein one of the body (10a) and switch (50a) includes a protruding member (122a) and the other of the body (10a) and the switch (50a) includes two receiving areas (516a) selectively engaged with the protruding member (122a).

13. The driving end of the tool as claimed in claim 1, wherein the chamber (11, 11 a) includes an opening closed by a cover member (80), and wherein the cover member (80) is fixed to the body (10, 10a) by at least one stopper (70).

14. The driving end of the tool as claimed in claim 13, wherein the cover member (80) includes a first hole (81) with which the at least one stopper (70) is engaged, a second hole (82) with which a first end of the first engaging member (20) is engaged, and a third hole (83) an end of the second engaging member (30) is engaged.

Patentansprüche

1. Ein Antriebsende eines Werkzeugs, aufweisend:

einen Körper (10, 10a), der eine Kammer (11, 11a) aufweist, wobei die Kammer (11, 11a) einen ersten und einen zweiten Abschnittsbereich (111, 112, 111a, 112a) definiert;
ein erstes Eingriffsteil (20), welches drehbar in dem ersten Abschnittsbereich (111, 111a) angeordnet ist und zwei verschiedene Enden aufweist, die einen ersten Eingriffsabschnitt (21) und einen zweiten Eingriffsabschnitt (22) definieren, wobei sich der erste Eingriffsabschnitt (21) umfangsmäßig an einem äußeren Umfang des ersten Eingriffsteils (20) erstreckt und eine Mehrzahl von Zähnen aufweist, wobei der zweite Eingriffsabschnitt (22) mit einem von dem Antriebsende des Werkzeugs anzutreibenden Objekt in Eingriff ist;
ein zweites Eingriffsteil (30), welches drehbar in dem zweiten Abschnittsbereich (112, 112a) angeordnet ist und zwei verschiedene Enden aufweist, die ein erstes und ein zweites Eingriffsende (31, 32) definieren, wobei der erste Eingriffsabschnitt (21) mit dem ersten Eingriffsende (31) in Eingriff ist, wobei sich das erste Eingriffsende (31) umfangsmäßig an einem äußeren Umfang eines ersten Endes des zweiten Eingriffsteils (30) erstreckt und eine Mehrzahl von Zähnen aufweist, wobei sich das zweite Eingriffsende (32) umfangsmäßig an einem äußeren Umfang eines zweiten Endes des zweiten Eingriffselements erstreckt und eine Mehrzahl von Zähnen aufweist;
mindestens eine Klinke (40, 40a), welche verschiebbar in dem zweiten Abschnittsbereich (112) angeordnet ist und einen ersten Eingriffsbereich (41, 41a) definiert, der eine Mehrzahl von Zähnen aufweist, wobei das zweite Eingriffsende (32) selektiv mit dem ersten Eingriffsbereich (41, 41a) in Eingriff ist; und
einen Schalter (50, 50a), der schwenkbar mit dem Körper (10, 10a) in Eingriff ist und an die mindestens eine Klinke (40, 40a) angrenzt; und
wobei ein Abstand zwischen zwei benachbarten Zähnen des ersten Eingriffsabschnitts (21) und ein Abstand zwischen zwei benachbarten Zähnen des ersten Eingriffsendes (31) im Wesent-

lichen gleich ist, wobei ein Abstand zwischen zwei benachbarten Zähnen des zweiten Eingriffsendes (32) relativ kleiner ist als der des ersten Eingriffsendes (31), und wobei ein Abstand zwischen zwei benachbarten Zähnen des ersten Eingriffsbereichs (41) im Wesentlichen gleich dem des zweiten Eingriffsendes (32) ist.

2. Das Antriebsende des Werkzeugs gemäß Anspruch 1, wobei der Körper (10, 10a) eine Bohrung (12, 12a) aufweist, die sich in den zweiten Abschnittsbereich (112, 112a) hinein erstreckt und mit diesem in Kommunikation ist.

3. Das Antriebsende des Werkzeugs gemäß Anspruch 2, wobei der Schalter (50, 50a, 50b) mit der Bohrung (12, 12a) in Eingriff ist, wobei die mindestens eine Klinke (40, 40a) gegenüber dem ersten Eingriffsbereich (41, 41a) einen zweiten Eingriffsbereich (42, 42a) aufweist, der mit dem Schalter (50, 50a, 50b) in Eingriff ist, und wobei der zweite Eingriffsbereich (42, 42a) in der Form einer Ausnehmung ist.

4. Das Antriebsende des Werkzeugs gemäß Anspruch 3, wobei der Schalter (50, 50a, 50b) ein Aktivierungselement (51, 51a, 51b) aufweist, welches ein Fixierende (511, 511a, 511b) und ein Griffende (512, 512a, 512b), das sich von dem Fixierende (511, 511a, 511b) erstreckt, aufweist, wobei das Fixierende (511, 511a, 511b) mit der Bohrung (12, 12a) in Eingriff ist und das Griffende (512, 512a, 512b) außerhalb der Bohrung (12, 12a) freiliegt, wobei das Fixierende (512, 512a, 512b) einen äußeren Umfang davon aufweist, welcher mindestens einen ersten Hohlraum (513, 513a, 513b) aufweist, und wobei der mindestens eine Hohlraum (513, 513a, 513b) und der zweite Eingriffsbereich (42, 42a) ein erstes Vorspannelement (52, 52b) aufweisen, das zwischen ihnen angeordnet und mit ihnen in Eingriff ist.

5. Das Antriebsende des Werkzeugs gemäß Anspruch 4, wobei das Fixierende (512) zwei erste Hohlräume (513) aufweist, und wobei einer des ersten Hohlraums (513) das erste Vorspannelement (52) aufweist, das damit in Eingriff ist und einen ersten Drücker (53) vorspannt, um mit dem zweiten Eingriffsbereich (42) in Eingriff zu sein.

6. Das Antriebsende des Werkzeugs gemäß Anspruch 4, ferner aufweisend einen ersten Drücker (53, 53b), der durch das erste Vorspannelement (52, 52b) vorgespannt ist, um mit dem zweiten Antriebsbereich (42) in Eingriff zu sein.

7. Das Antriebsende des Werkzeugs gemäß einem der Ansprüche 4 und 5, wobei der Körper (10) zwei Ausnehmungen (121), die sich darin und in die Bohrung (12) hinein erstrecken, aufweist, wobei das Fixierende (511) den äußeren Umfang davon aufweist, der einen zweiten Hohlraum (514) aufweist, wobei der zweite Hohlraum (514) eine damit in Eingriff stehende Rastung aufweist, und wobei die Rastung selektiv in einer der zwei Ausnehmungen (121) im Eingriff ist.

8. Das Antriebsende des Werkzeugs gemäß Anspruch 7, wobei die Rastung ein zweites Vorspannelement (54) aufweist, das mit dem zweiten Hohlraum (514) in Eingriff ist, und einen zweiten Drücker (55), der von dem zweiten Vorspannelement (54) vorgespannt wird, um selektiv mit einer der Ausnehmungen (121) in Eingriff zu sein.

9. Das Antriebsende des Werkzeugs gemäß Anspruch 2, wobei die mindestens eine Klinke (40a) zwei Klinken aufweist, wobei die zwei Klinken (40a) ein Vorspannelement (60) aufweisen, das zwischen ihnen angeordnet und mit ihnen in Eingriff ist.

10. Das Antriebsende des Werkzeugs gemäß Anspruch 9, wobei jede Klinke (40a) einen zweiten Eingriffsbereich (42a) aufweist, der mit dem Schalter (50a) in Eingriff ist, und wobei sich der zweite Eingriffsbereich (42a) in der Bohrung (12a) erstreckt.

11. Das Antriebsende des Werkzeugs gemäß Anspruch 10, wobei der Schalter (50a) ein Aktivierungselement (51a) aufweist, welches ein Fixierende (511a) und ein Griffende (512a), welches sich von dem Fixierende (511a) erstreckt, aufweist, wobei das Fixierende (511a) in der Bohrung (12a) in Eingriff ist und das Griffende (512a) außerhalb der Bohrung (12a) freiliegt, wobei das Fixierende (512a) einen äußeren Umfang davon aufweist, der einen ersten Hohlraum (513a), in welchem die zweiten Eingriffsbereiche (42a) bewegbar angeordnet sind, und zwei zweite Hohlräume (514a) aufweist, in welchen die zwei zweiten Eingriffsbereiche (42a) jeweils selektiv damit in Eingriff sind.

12. Das Antriebsende des Werkzeugs gemäß Anspruch 11, wobei einer von dem Körper (10a) und dem Schalter (50a) eine Ausnehmung (121a) aufweist und der andere von dem Körper (10a) und dem Schalter (50a) eine Vorwölbung (515a) aufweist, die in der Ausnehmung (121a) schwenkbar in Eingriff ist, und wobei einer von dem Körper (10a) und dem Schalter (50a) ein vorstehendes Teils (122a) aufweist und der andere von dem Körper (10a) und dem Schalter (50a) zwei Aufnahmebereiche (516a) aufweist, die selektiv mit dem vorstehenden Teil (122a) in Eingriff sind.

13. Das Antriebsende des Werkzeugs gemäß Anspruch 1, wobei die Kammer (11, 11a) eine Öffnung aufweist, die von einem Abdeckteil (80) geschlossen ist, und wobei das Abdeckteil (80) durch mindestens

einen Stopper (70) an dem Körper (10, 10a) fixiert ist.

14. Das Antriebsende des Werkzeugs gemäß Anspruch 13, wobei das Abdeckteil (80) ein erstes Loch (81), mit welchem der mindestens eine Stopper (70) in Eingriff ist, ein zweites Loch (82), mit welchem ein erstes Ende des ersten Eingriffsteils (20) in Eingriff ist, und ein drittes Loch (83) aufweist, mit welchem ein Ende des zweiten Eingriffsteils (30) in Eingriff ist.

Revendications

1. Extrémité d'entraînement d'un outil comprenant :

un corps (10, 10a) qui comprend une chambre (11, 11 a), la chambre (11, 11 a) définissant des première et seconde zones sectionnelles (111, 112, 111 a, 112a) ;
un premier élément de mise en prise (20) disposé de manière rotative dans la première zone sectionnelle (111, 111a) et qui comprend deux extrémités différentes qui définissent une première section de mise en prise (21) et une seconde section de mise en prise (22) respectivement, la première section de mise en prise (21) s'étendant de manière circonférentielle sur une périphérie extérieure du premier élément de mise en prise (20) et comprenant une pluralité de dents, la seconde section de mise en prise (22) venant en prise avec un objet que doit entraîner l'extrémité d'entraînement de l'outil ;
un second élément de mise en prise (30) disposé de manière rotative dans la seconde zone sectionnelle (112, 112a) et qui comprend deux extrémités différentes qui définissent des première et seconde extrémités de mise en prise (31, 32) respectivement, la première section de mise en prise (21) venant en prise avec la première extrémité de mise en prise (31), la première extrémité de mise en prise (31) s'étendant de manière circonférentielle sur une périphérie extérieure d'une première extrémité du second élément de mise en prise (30) et comprenant une pluralité de dents, la seconde extrémité de mise en prise (32) s'étendant de manière circonférentielle sur une périphérie extérieure d'une seconde extrémité du second élément de mise en prise et comprenant une pluralité de dents ;
au moins un cliquet (40, 40a) disposé de manière coulissante dans la seconde zone sectionnelle (112) et qui définit une première partie de mise en prise (41, 41 a) qui comprend une pluralité de dents, la seconde extrémité de mise en prise (32) venant en prise de manière sélective avec la première partie de mise en prise (41, 41a) ; et
un commutateur (50, 50a) qui vient en prise de manière pivotante avec le corps (10, 10a) et en butée contre le ou les cliquets (40, 40a) ; et
dans laquelle le pas entre deux dents adjacentes de la première section de mise en prise (21) et le pas entre deux dents adjacentes de la première extrémité de mise en prise (31), sont sensiblement identiques, dans laquelle le pas entre deux dents adjacentes de la seconde extrémité de mise en prise (32) est relativement plus petit que celui de la première extrémité de mise en prise (31), et dans laquelle le pas entre deux dents adjacentes de la première partie de mise en prise (41) est sensiblement identique à celui de la seconde extrémité de mise en prise (32).

2. Extrémité d'entraînement de l'outil selon la revendication 1, dans laquelle le corps (10, 10a) comprend un alésage (12, 12a) qui s'étend dans la seconde zone sectionnelle (112, 112a) et qui est en communication avec celle-ci.

3. Extrémité d'entraînement de l'outil selon la revendication 2, dans laquelle le commutateur (50, 50a, 50b) vient en prise avec l'alésage (12, 12a), dans laquelle le ou les cliquets (40, 40a) comprennent une seconde partie de mise en prise (42, 42a) opposée à la première partie de mise en prise (41, 41 a), qui vient en prise avec le commutateur (50, 50a, 50b), et dans laquelle la seconde partie de mise en prise (42, 42a) se présente sous la forme d'un renfoncement.

4. Extrémité d'entraînement de l'outil selon la revendication 3, dans laquelle le commutateur (50, 50a, 50b) comprend un élément d'actionnement (51, 51 a, 51 b) qui comprend une extrémité fixation (511, 511a, 511b) et une extrémité poignée (512, 512a, 512b) qui s'étend à partir de l'extrémité fixation (511, 511a, 511b), dans laquelle l'extrémité fixation (511, 511a, 511b) vient en prise avec l'alésage (12, 12a), et l'extrémité poignée (512, 512a, 512b) est exposée en dehors de l'alésage (12, 12a), dans laquelle l'extrémité fixation (512, 512a, 512b) comprend une périphérie extérieure qui comprend au moins une première cavité (513, 513a, 513b), et dans laquelle la ou les premières cavités (513, 513a, 513b) et la seconde partie de mise en prise (42, 42a) comprennent un premier élément de sollicitation (52, 52b) disposé entre elles et qui vient en prise avec celles-ci.

5. Extrémité d'entraînement de l'outil selon la revendication 4, dans laquelle l'extrémité fixation (512) comprend deux premières cavités (513), et dans laquelle l'une des premières cavités (513) comprend le premier élément de sollicitation (52) qui vient en prise avec celle-ci en sollicitant un premier poussoir (53) de façon à venir en prise avec la seconde partie de mise en prise (42).

6. Extrémité d'entraînement de l'outil selon la revendication 4, comprenant en outre un premier poussoir (53, 53b) sollicité par le premier élément de sollicitation (52, 52b) de façon à venir en prise avec la seconde partie d'entraînement (42).

7. Extrémité d'entraînement de l'outil selon l'une quelconque des revendications 4 et 5, dans laquelle le corps (10) comprend deux renfoncements (121) qui s'étendent à l'intérieur et dans l'alésage (12), dans laquelle l'extrémité fixation (511) comprend la périphérie extérieure de celle-ci qui comprend une seconde cavité (514), dans laquelle la seconde cavité (514) comprend un encliquetage qui vient en prise avec celle-ci, et dans laquelle l'encliquetage vient en prise de manière sélective avec l'un des deux renfoncements (121).

8. Extrémité d'entraînement de l'outil selon la revendication 7, dans laquelle l'encliquetage comprend un second élément de sollicitation (54) qui vient en prise avec la seconde cavité (514), et un second poussoir (55) sollicité par le second élément de sollicitation (54) de façon à venir en prise avec l'un des renfoncements (121) de manière sélective.

9. Extrémité d'entraînement de l'outil selon la revendication 2, dans laquelle le ou les cliquets (40a) comprennent deux cliquets, dans laquelle les deux cliquets (40a) comprennent un élément de sollicitation (60) disposé entre eux et qui vient en prise avec ceux-ci.

10. Extrémité d'entraînement de l'outil selon la revendication 9, dans laquelle chaque cliquet (40a) comprend une seconde partie de mise en prise (42a) qui vient en prise avec le commutateur (50a), et dans laquelle la seconde partie de mise en prise (42a) s'étend dans l'alésage (12a).

11. Extrémité d'entraînement de l'outil selon la revendication 10, dans laquelle le commutateur (50a) comprend un élément d'actionnement (51 a) qui comprend une extrémité fixation (511 a) et une extrémité poignée (512a) qui s'étend à partir de l'extrémité fixation (511 a), dans laquelle l'extrémité fixation (511 a) vient en prise avec l'alésage (12a) et l'extrémité poignée (512a) est exposée en dehors de l'alésage (12a), dans laquelle l'extrémité fixation (512a) comprend une périphérie extérieure qui comprend une première cavité (513a) dans laquelle les deux secondes parties de mise en prise (42a) sont disposées de manière mobile, et les deux secondes cavités (514a) dans lesquelles les deux secondes parties de mise en prise (42a) viennent en prise avec celles-ci de manière sélective, respectivement.

12. Extrémité d'entraînement de l'outil selon la revendication 11, dans laquelle l'un du corps (10a) et du commutateur (50a) comprend un renfoncement (121 a), et l'autre du corps (10a) et du commutateur (50a) comprend une saillie (515a) qui vient en prise de manière de manière pivotante dans le renfoncement (121 a), et dans laquelle l'un du corps (10a) et du commutateur (50a) comprend un élément qui fait saillie (122a) et l'autre du corps (10a) et du commutateur (50a) comprend deux zones de réception (516a) qui viennent en prise de manière sélective avec l'élément qui fait saillie (122a).

13. Extrémité d'entraînement de l'outil selon la revendication 1, dans laquelle la chambre (11, 11 a) comprend une ouverture fermée par un élément formant couvercle (80), et dans laquelle l'élément formant couvercle (80) est fixé sur le corps (10, 10a) par un dispositif d'arrêt (70) au moins.

14. Extrémité d'entraînement de l'outil selon la revendication 13, dans laquelle l'élément formant couvercle (80) comprend un premier trou (81) avec lequel viennent en prise le ou les dispositifs d'arrêt (70), un deuxième trou (82) avec lequel vient en prise une première extrémité du premier élément de mise en prise (20), et un troisième trou (83) avec lequel vient en prise une extrémité du second élément de mise en prise (30).

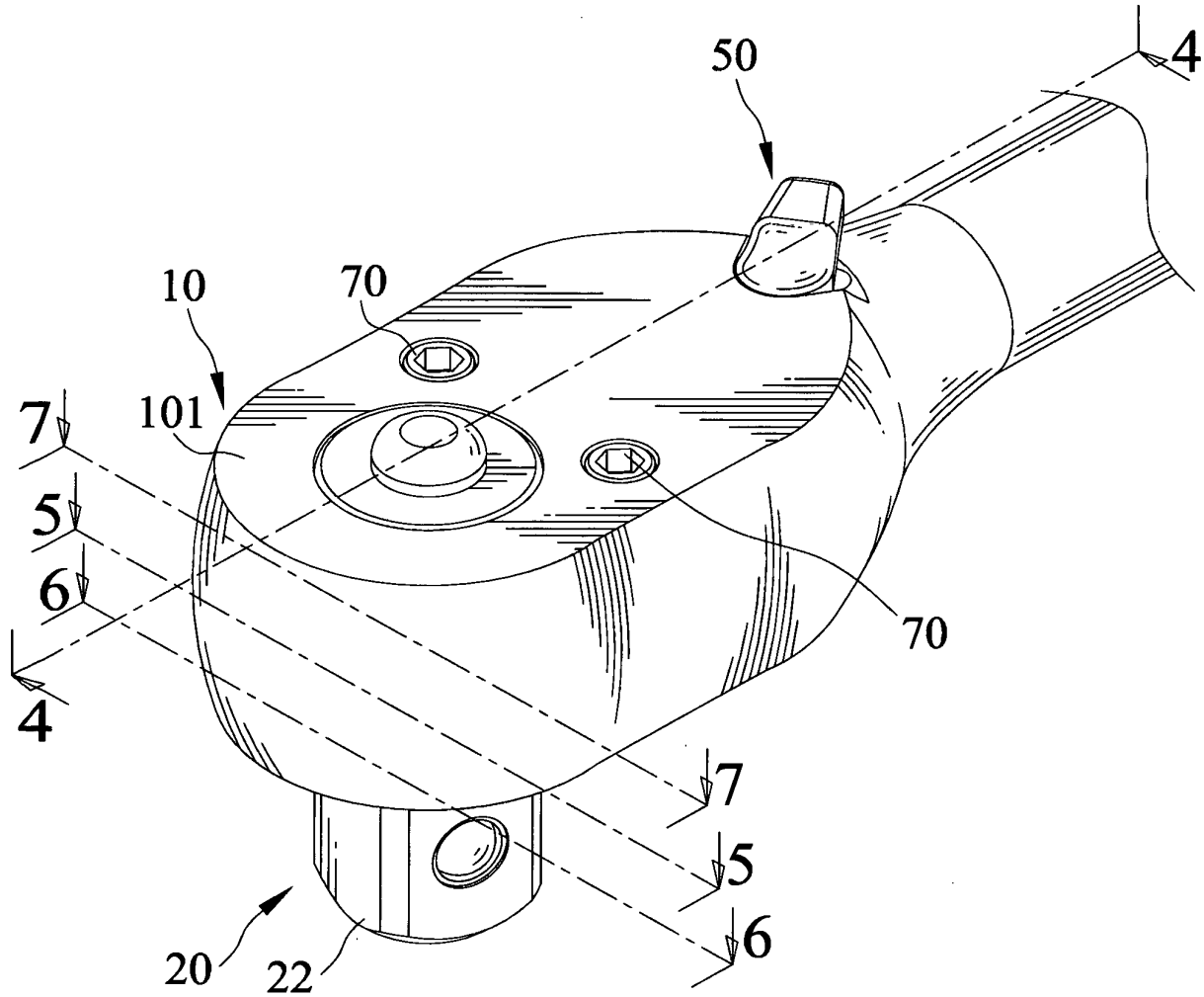

FIG. 1

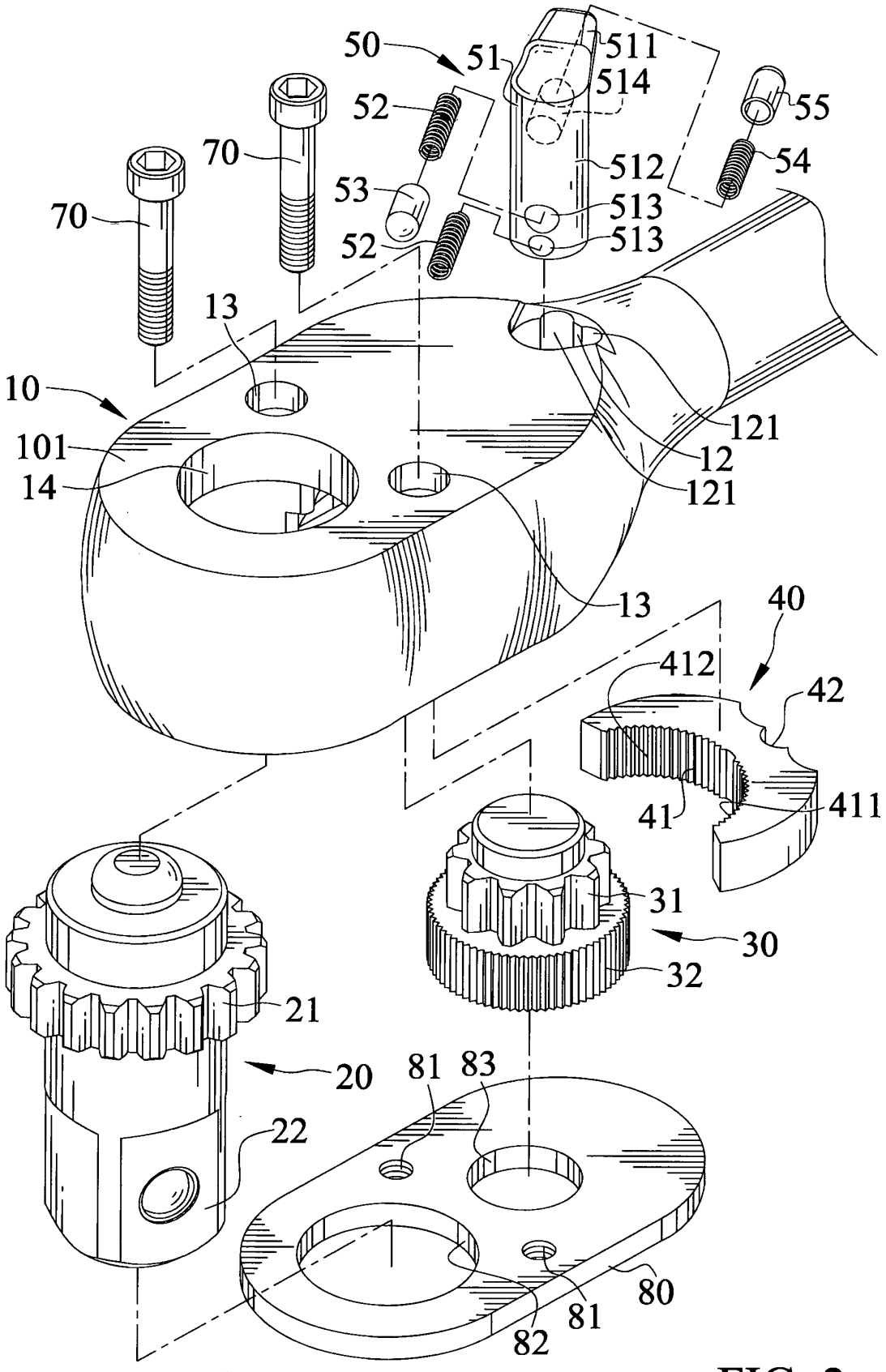
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FIG. 2

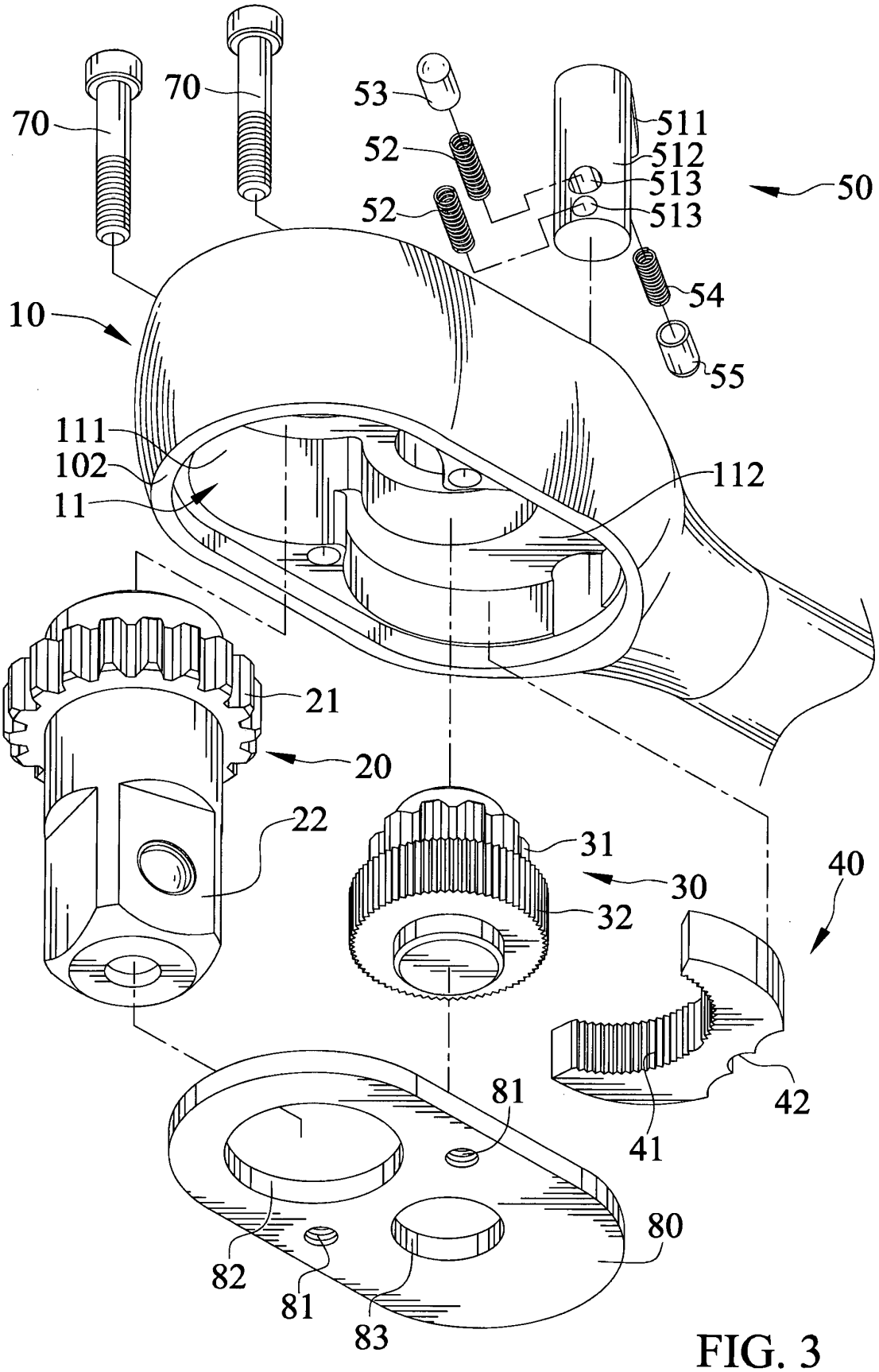
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FIG. 3

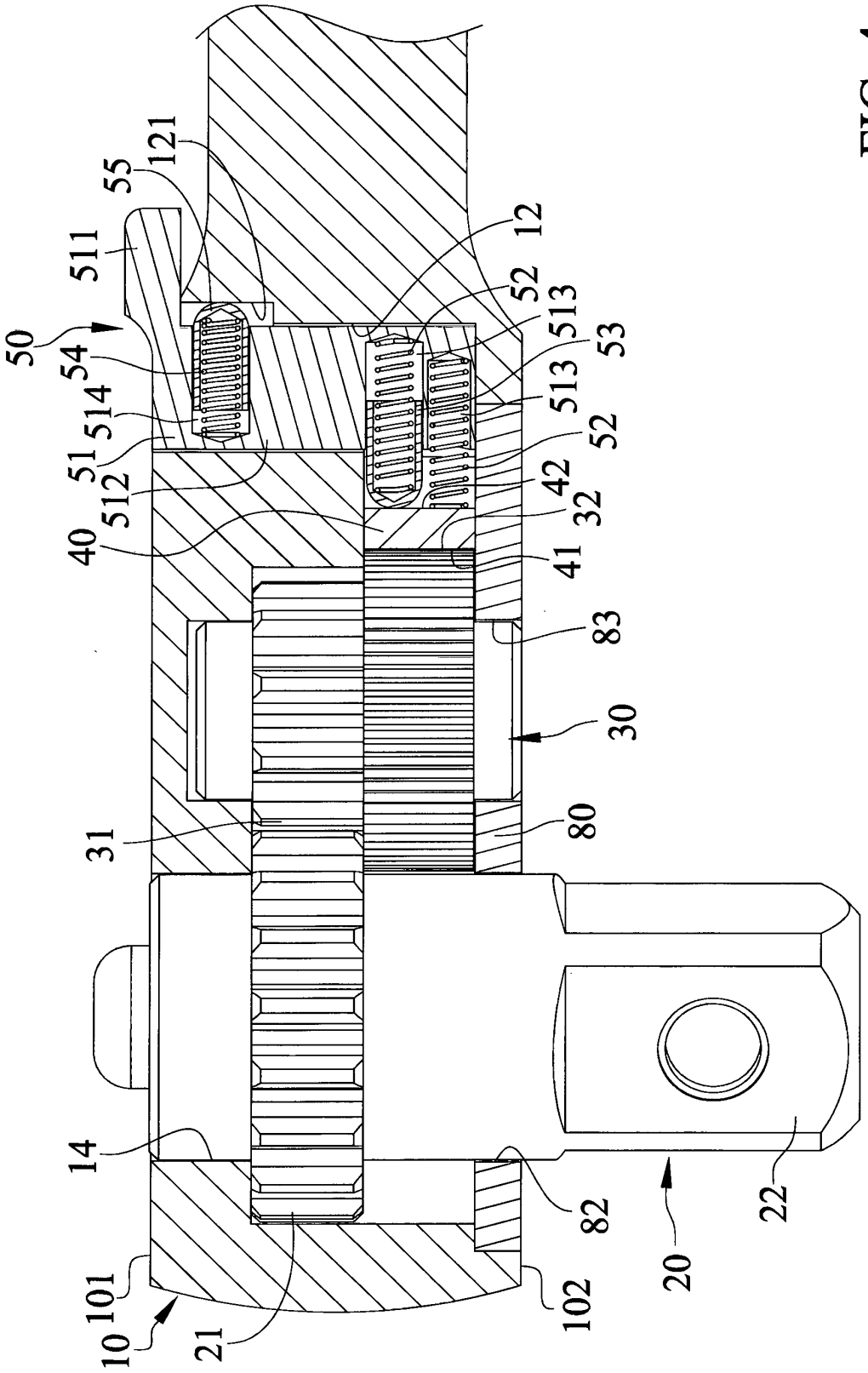
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FIG. 4

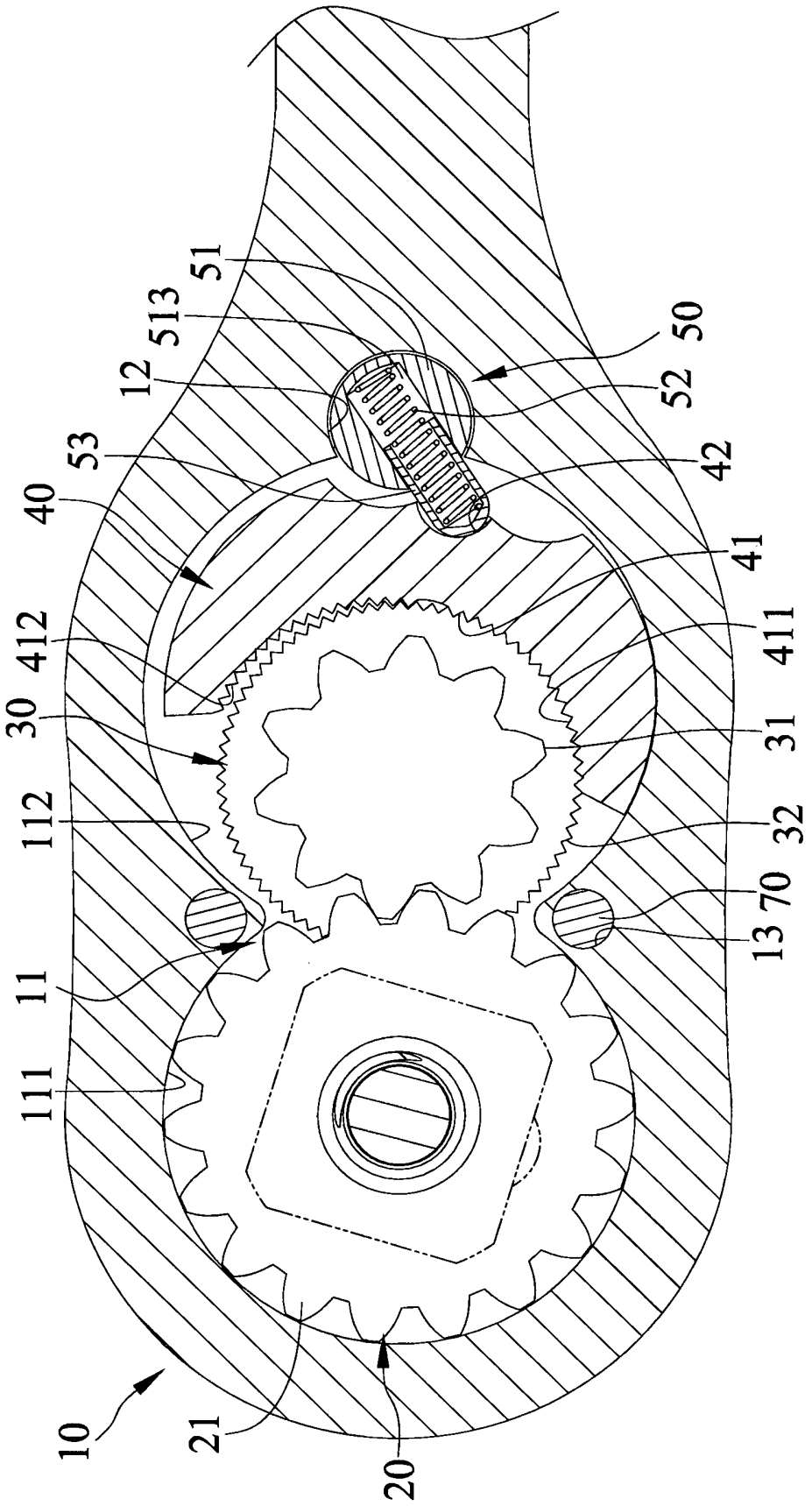

FIG. 5

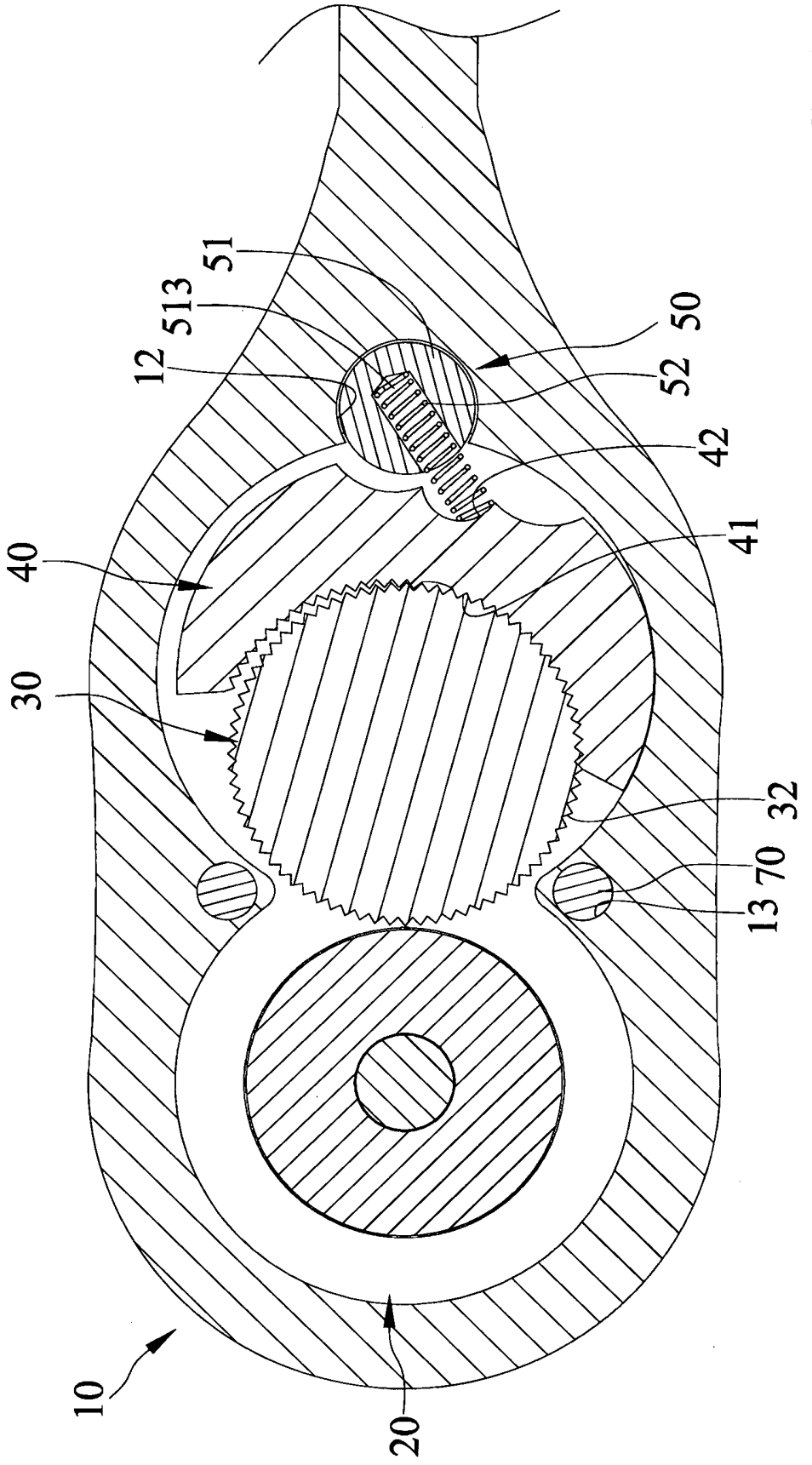

FIG. 6

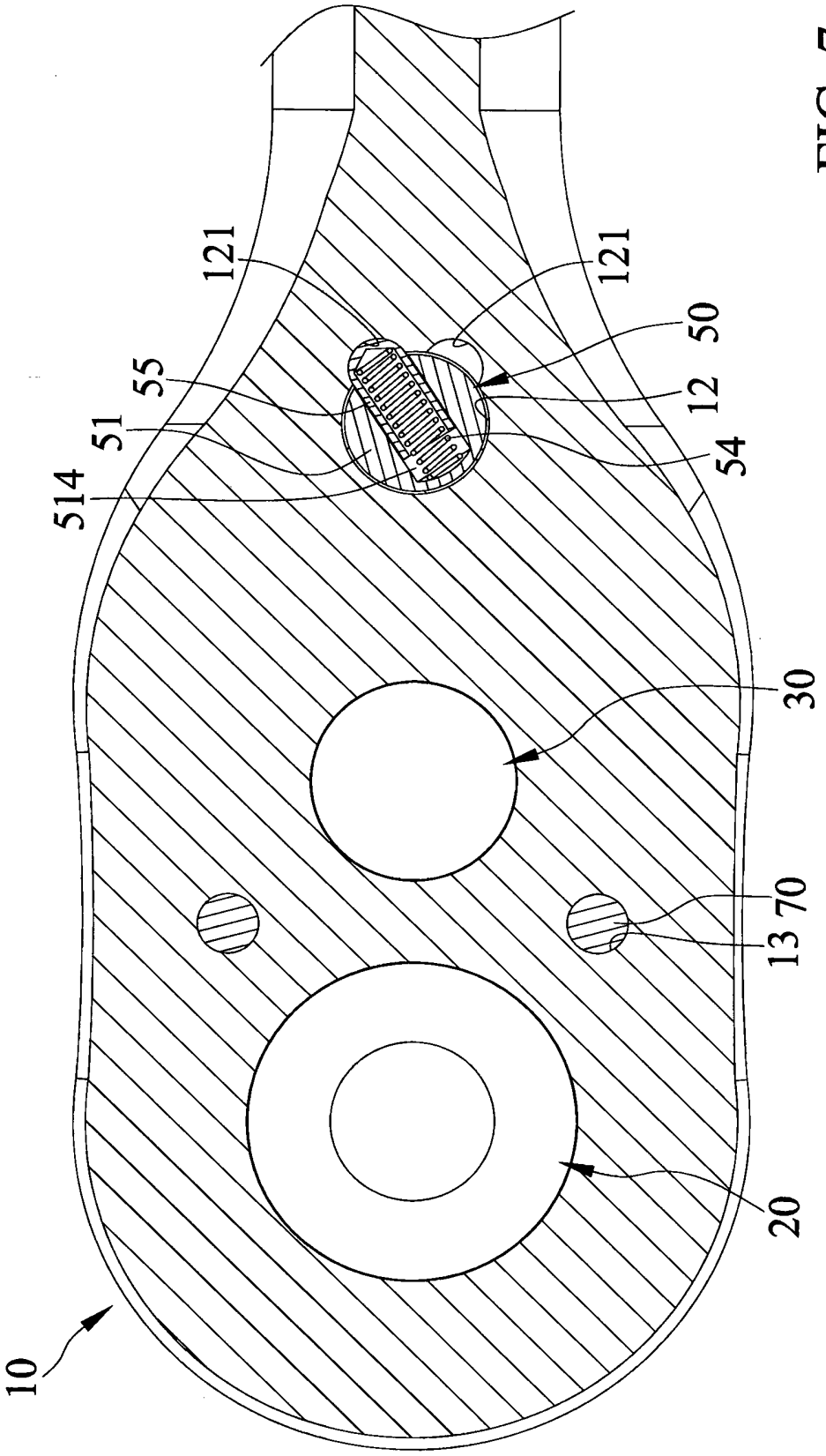

FIG. 7

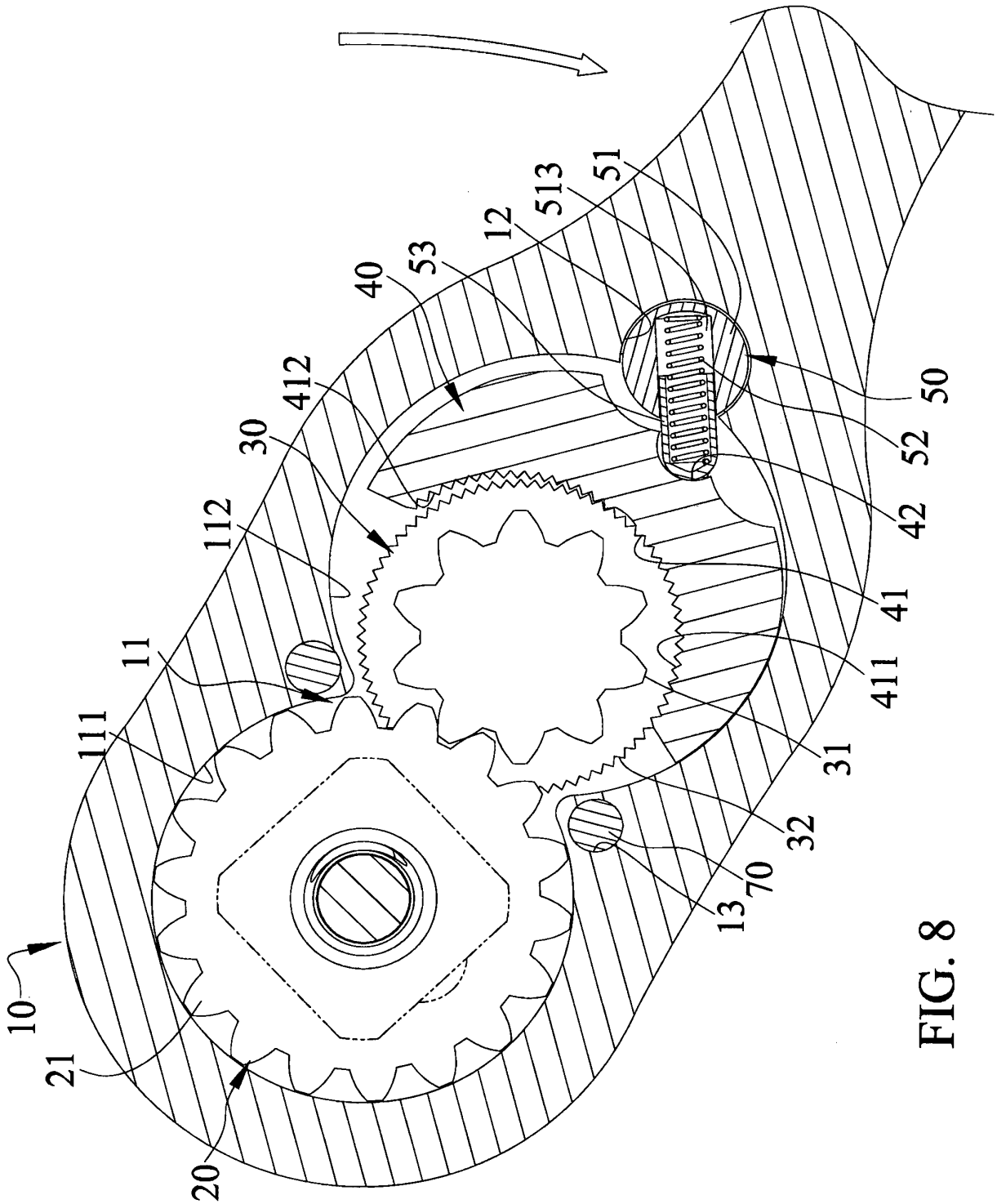

FIG. 8

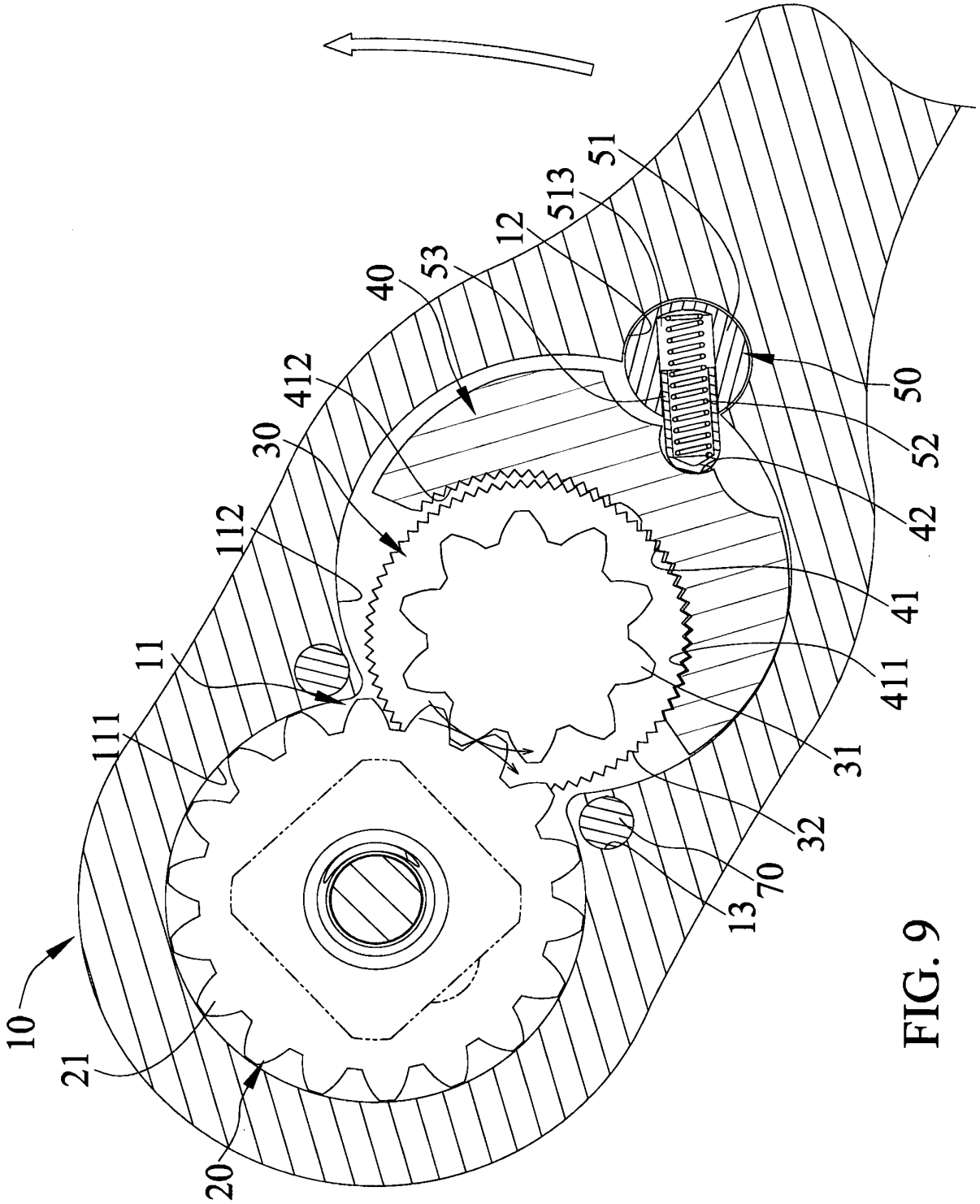

FIG. 9

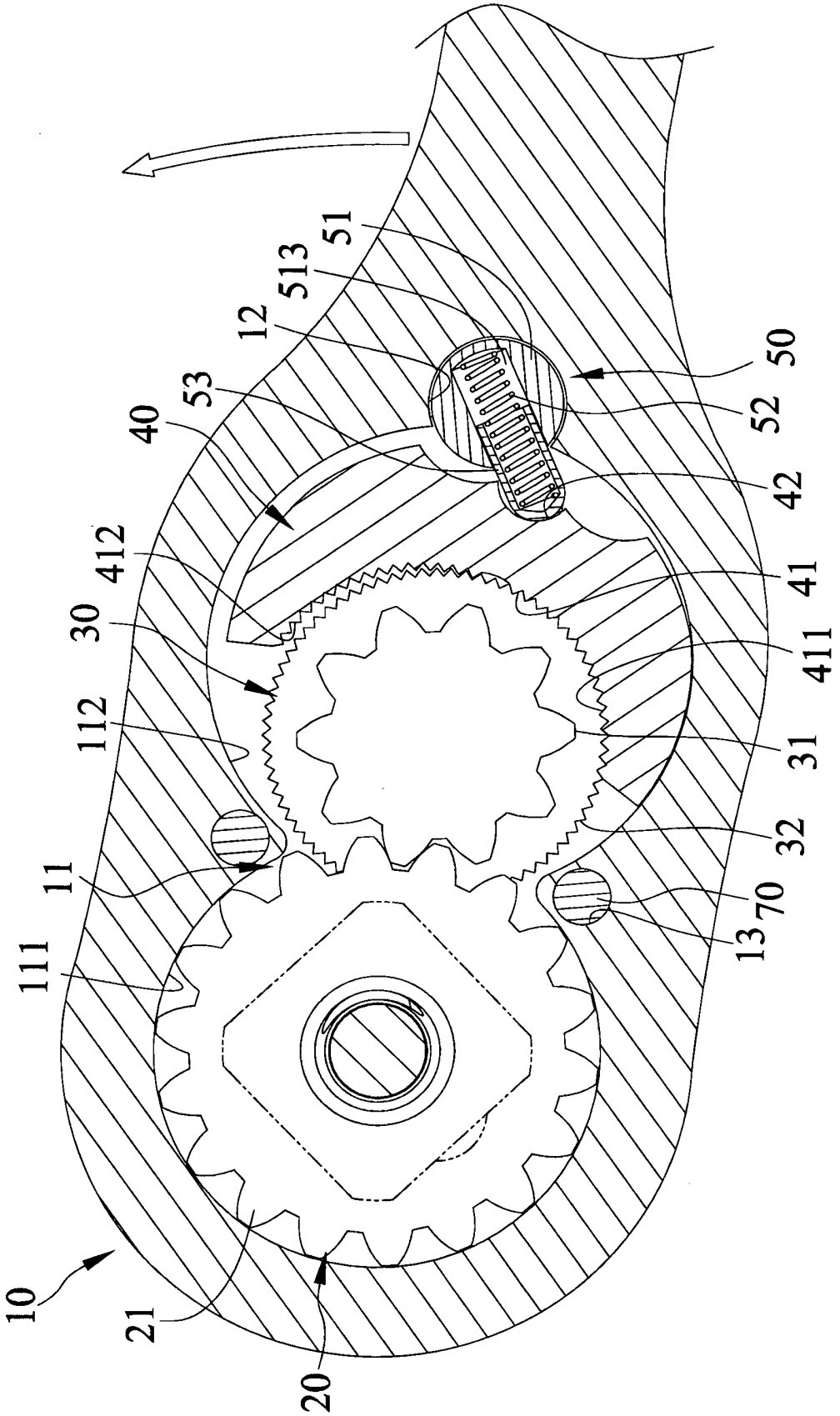

FIG. 10

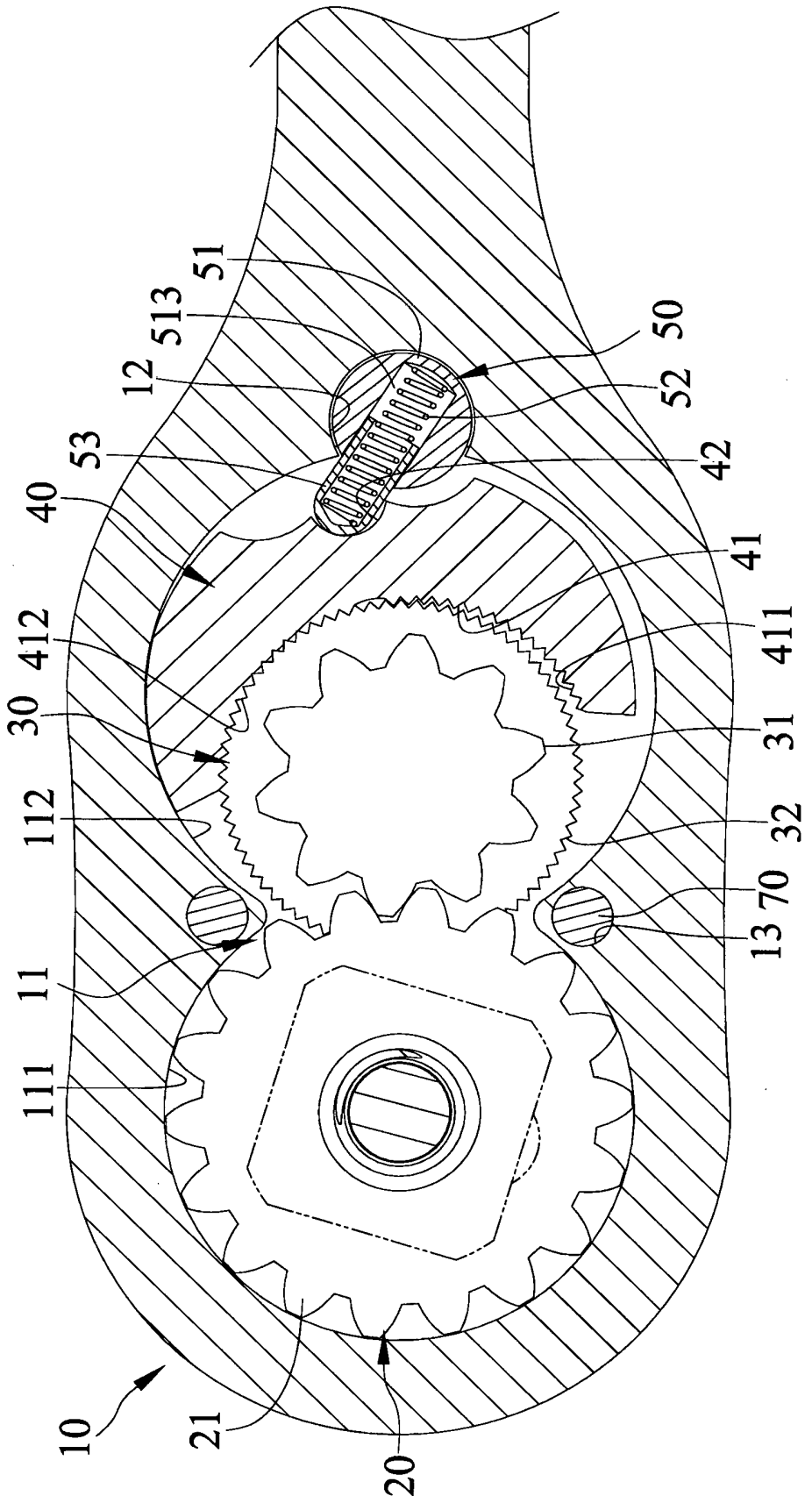

FIG. 11

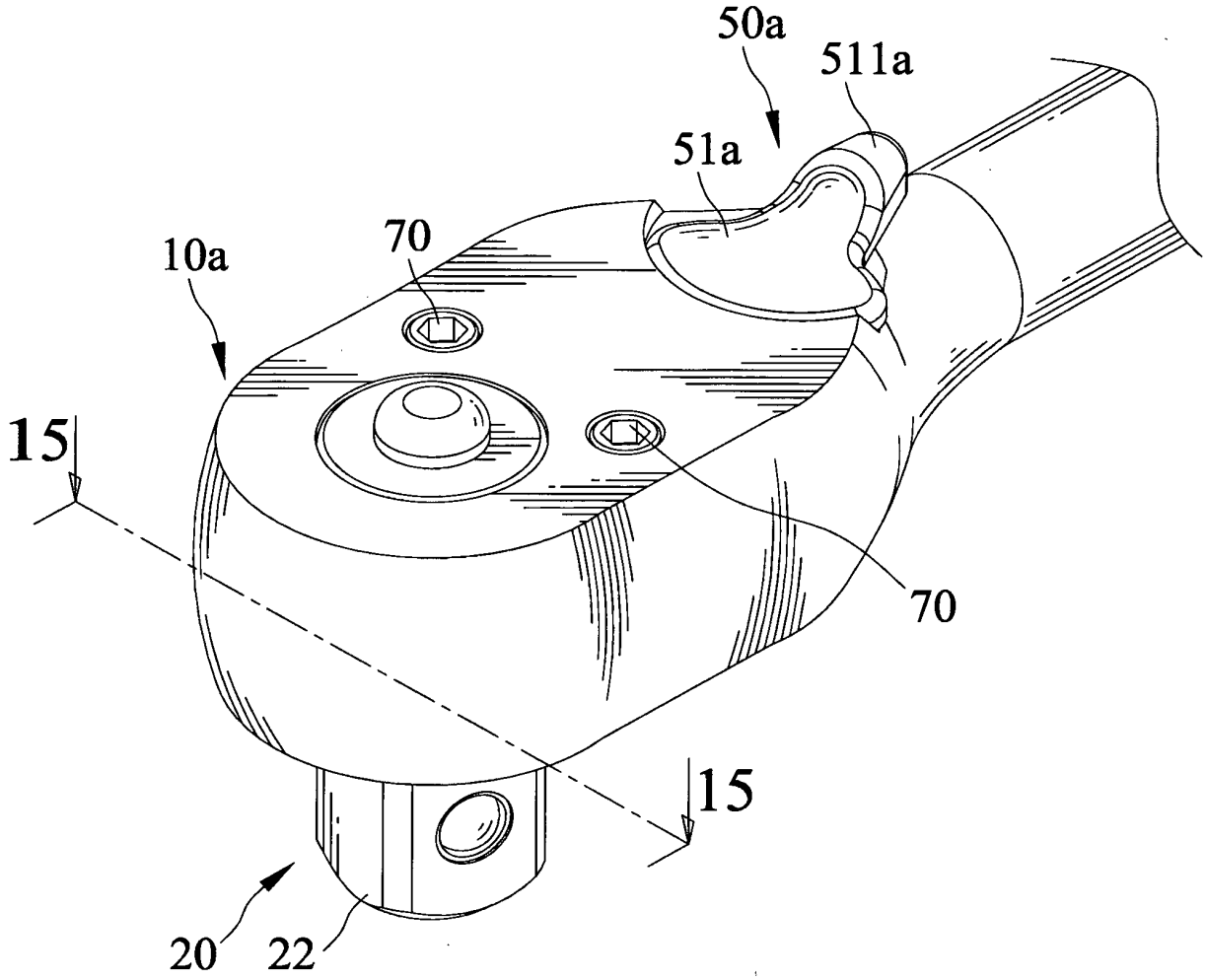

FIG. 12

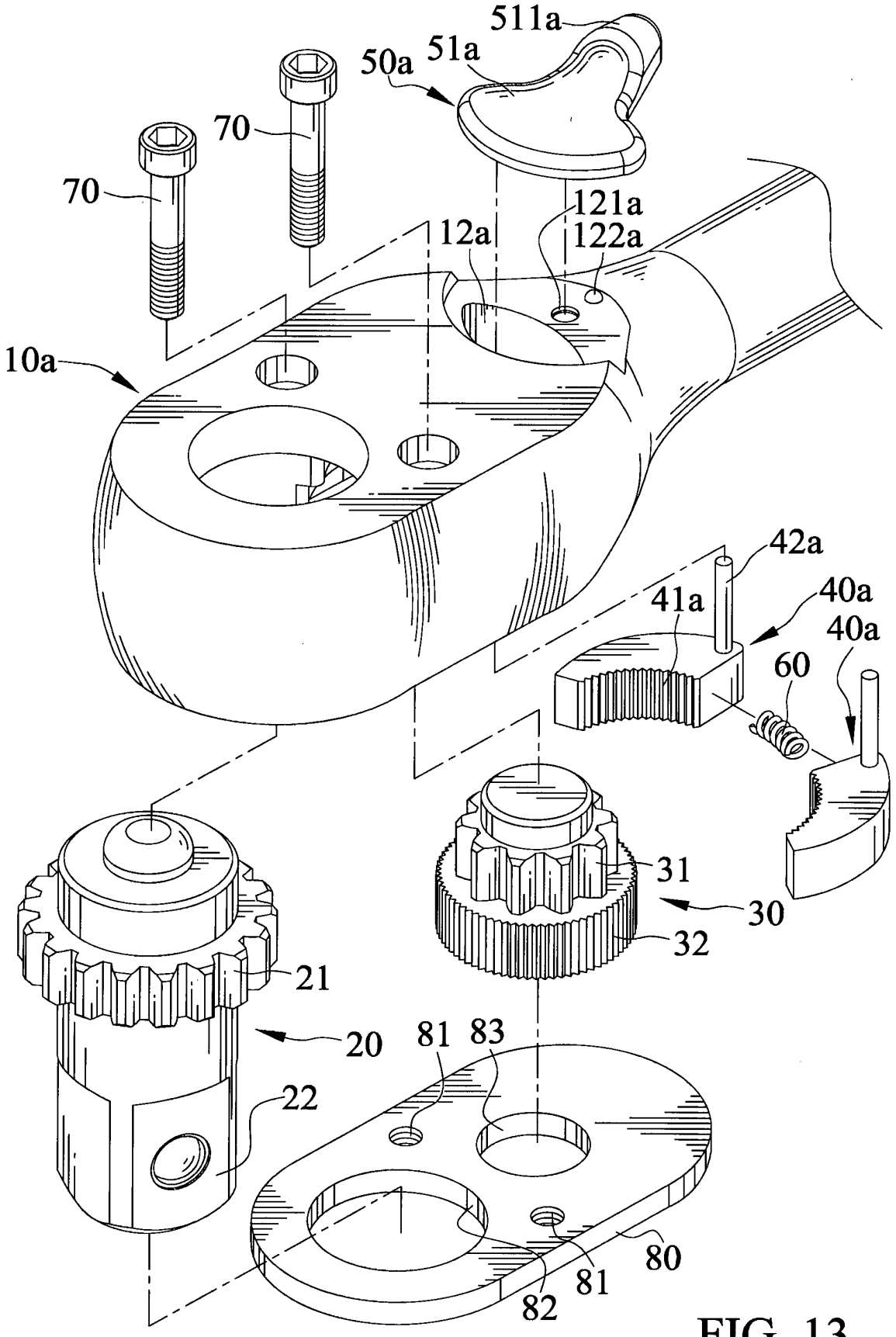
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FIG. 13

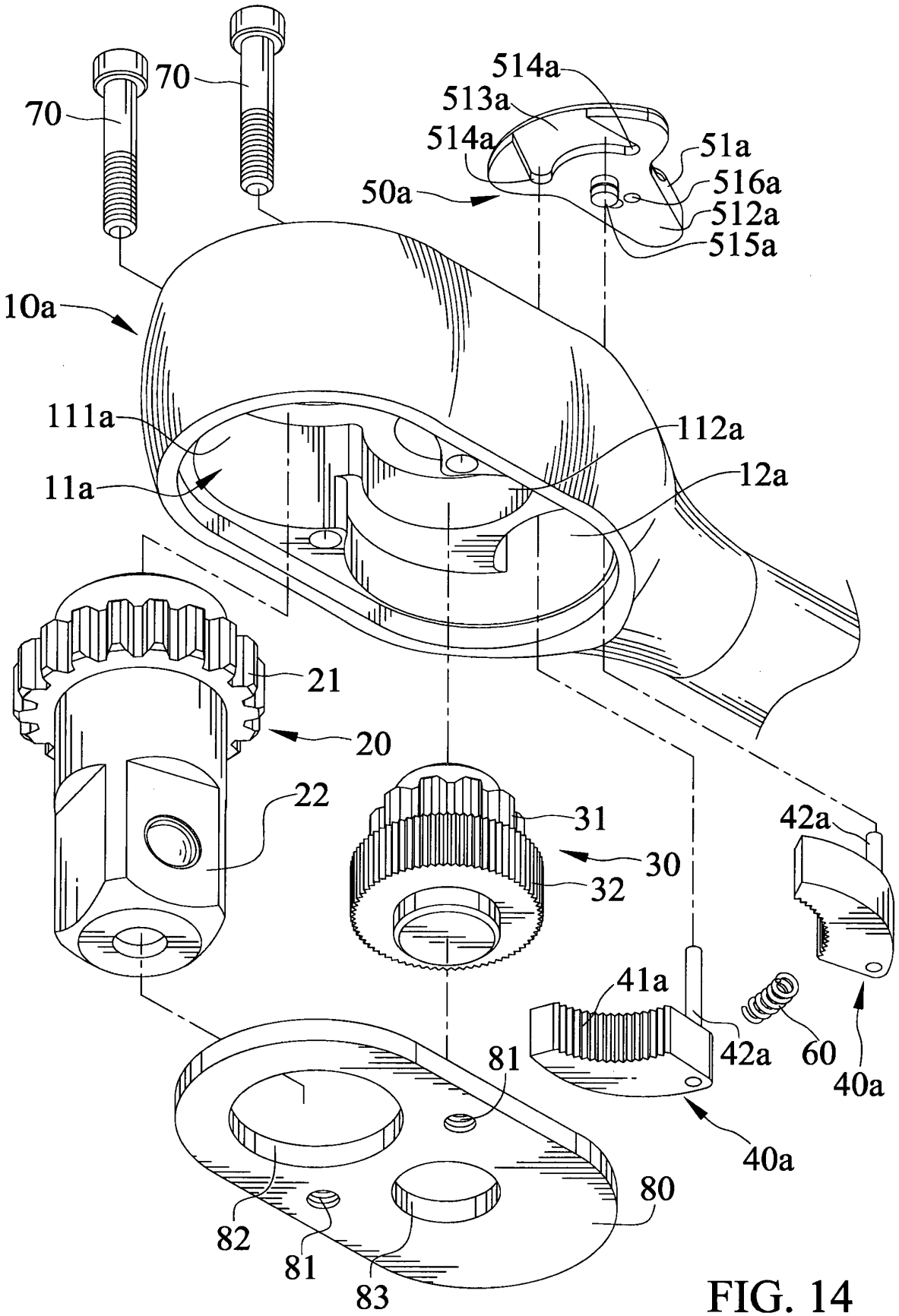
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FIG. 14

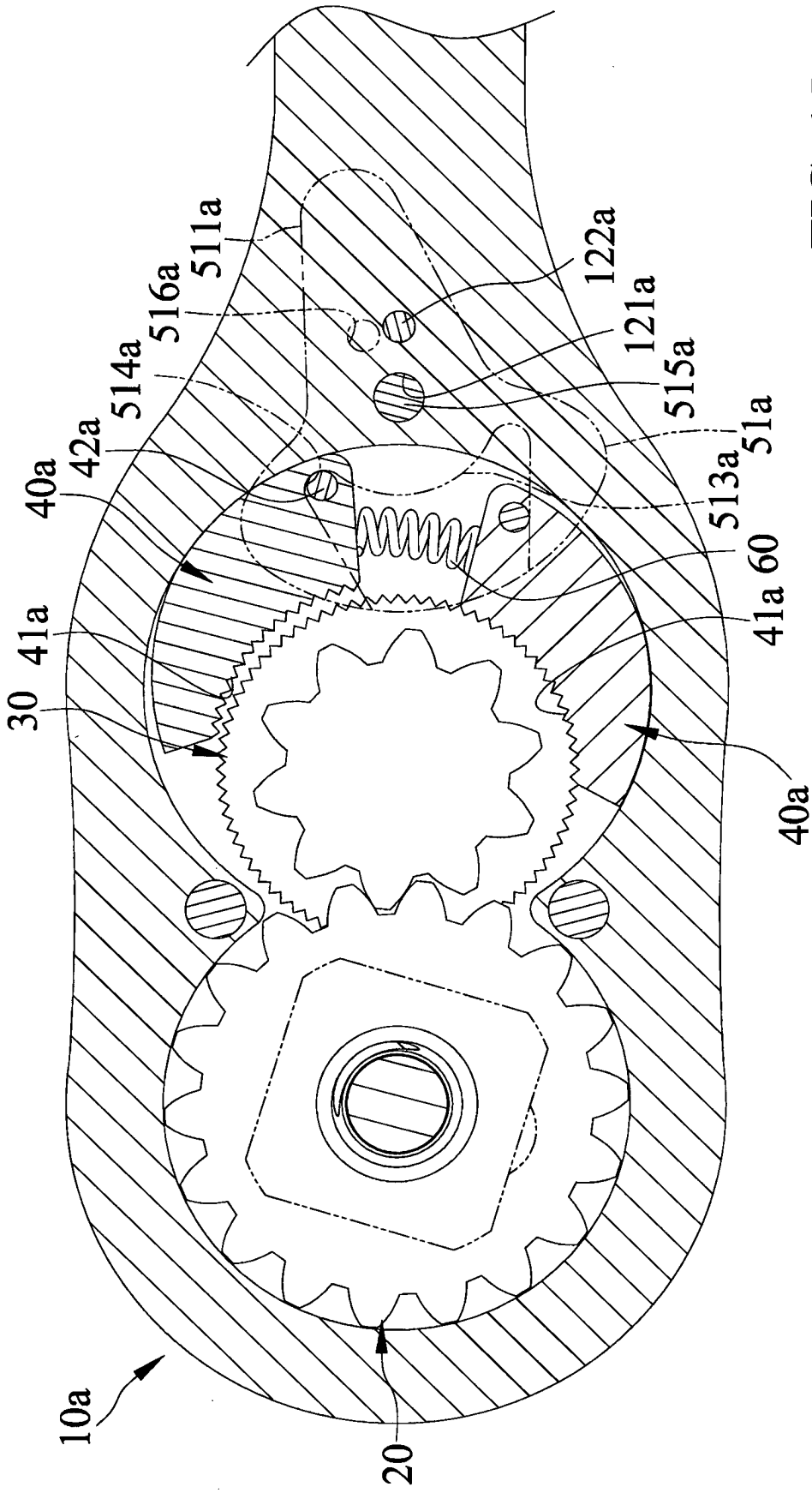
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FIG. 15

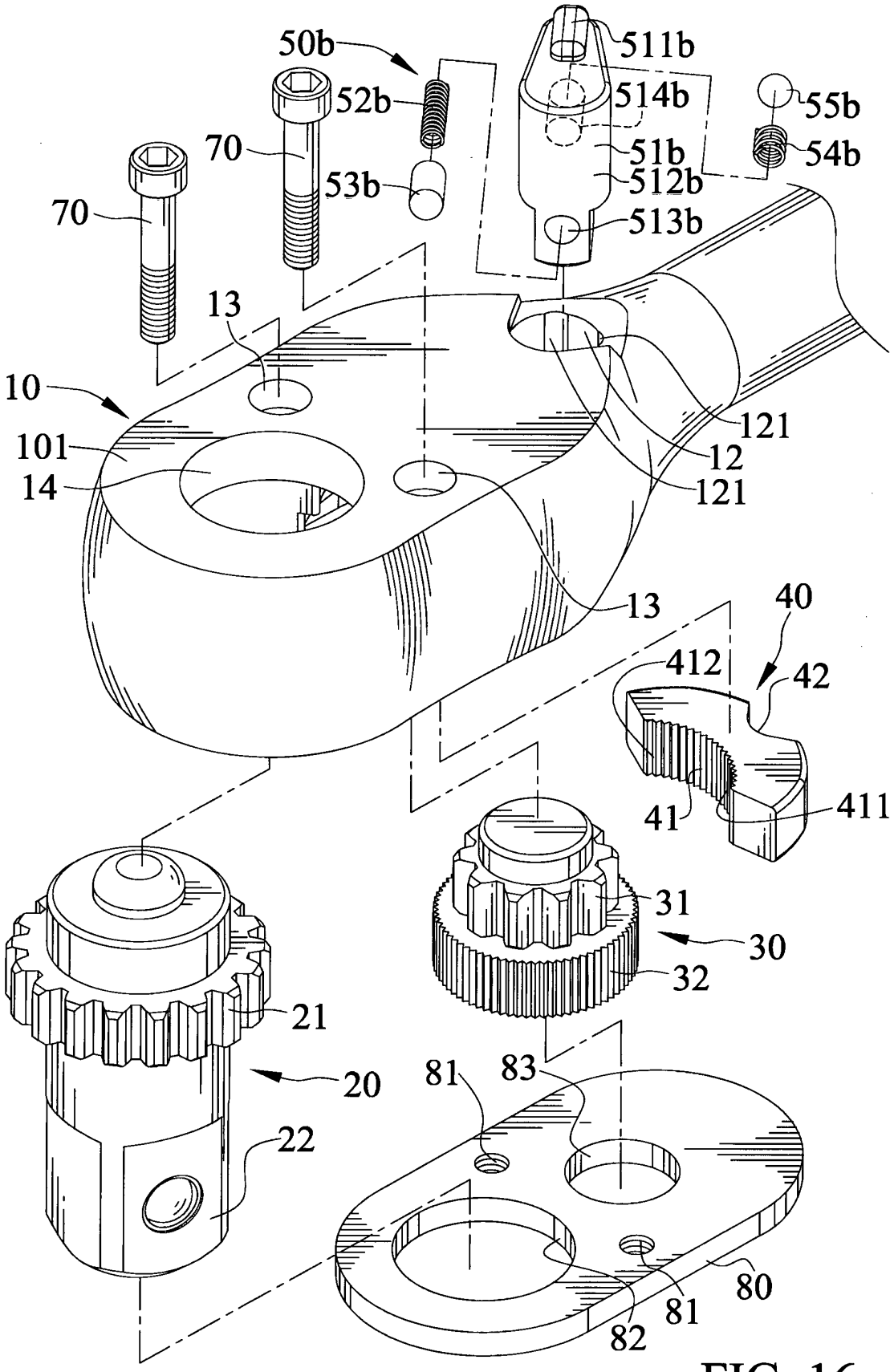
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FIG. 16

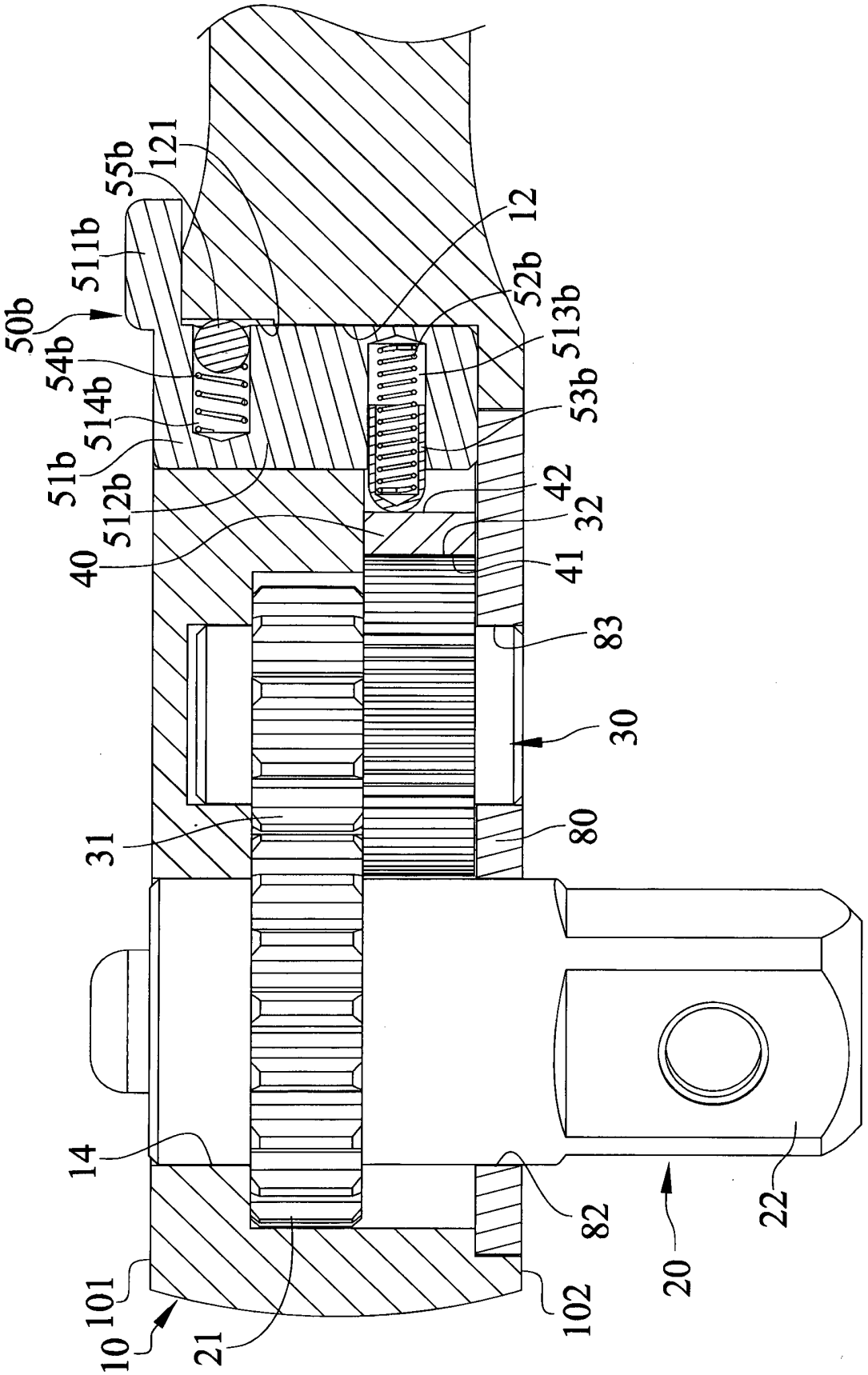
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FIG. 17

REFERENCES CITED IN THE DESCRIPTION

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