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(54) **C-TYPE TUBING CUTTER**

C-TYP-ROHRSCHNEIDER

DISPOSITIF DE DÉCOUPE DE TUBE DE TYPE C

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Description

FIELD

[0001] The present subject matter relates to C-type tubing cutters according to the preamble of claim 1. Such a cutter is known from GB2489706A.

BACKGROUND

[0002] A wide variety of handheld C-type tubing cutters are known in the art. Many cutters are fixed size cutters limited to use with only one size tubing or pipe. However, several multi-size tubing cutters have been proposed.

[0003] Certain known multi-size C-type tubing cutters utilize radially positionable rollers which are positioned depending upon the diameter of the tubing to be cut. Although satisfactory in many regards, accommodating different tubing sizes by adjustment of such rollers is time consuming and can be tedious. Accordingly, a need exists for a cutter that can accommodate a range of tubing sizes and which can be quickly and easily configured to change between specific sizes within that range.

SUMMARY

[0004] The difficulties and drawbacks associated with previous approaches are addressed in the present subject matter as follows.

[0005] In one aspect, the present subject matter provides a tubing cutter comprising a housing defining a work region for receiving a workpiece to be cut. The tubing cutter also comprises a radially positionable roller carriage having at least one roller accessible along the work region of the housing. The tubing cutter additionally comprises a cutting wheel supported within the housing and accessible along the work region of the housing. And, the tubing cutter comprises a size indexing assembly for selectively positioning the roller carriage relative to the cutting wheel in one of a plurality of predetermined positions corresponding to sizes of workpieces.

[0006] In another aspect of the invention, the present subject matter provides a tubing cutter comprising a housing defining a first outer face, a second outer face oppositely directed from the first face, a work region for receiving a workpiece to be cut and a trigger slot. The trigger slot is accessible along at least one of the first and second outer faces. The tubing cutter also comprises a trigger moveable along the trigger slot. The cutter also comprises at least one selectively and radially positionable roller accessible in the work region. The cutter additionally comprises a cutting wheel rotatably supported by the housing and accessible in the work region. The roller can be affixed in a desired radial position by engagement with the trigger.

[0007] In still another aspect, the present subject matter provides a tubing cutter comprising a housing having an outer face and defining a work region for receiving a workpiece to be cut. The housing also defines a first arcuate slot and a second arcuate slot, both first and second arcuate slots accessible along the outer face of the housing. The cutter also comprises a moveable trigger positionable within the first arcuate slot, and a rotatable cutting wheel moveable along the second arcuate slot.

[0008] In yet another aspect, the present subject matter provides a C-type tubing cutter comprising a housing that defines a cutting wheel slot and a work region for receiving a workpiece to be cut. The cutter also comprises a spring biased cutting wheel positionable within the cutting wheel slot. The cutting wheel is biased toward one end of the slot. The cutter also comprises a radially positionable roller carriage having at least one roller. And, the cutter also comprises a size indexing assembly for selectively positioning the roller carriage relative to the cutting wheel in one of a plurality of predetermined positions corresponding to sizes of workpieces.

[0009] As will be realized, the subject matter described herein is capable of other and different embodiments and its several details are capable of modifications in various respects, all without departing from the claimed subject matter. Accordingly, the drawings and description are to be regarded as illustrative and not restrictive.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010]

Figure 1 is a perspective view of an embodiment of a cutter in accordance with the present subject matter.

Figure 2 is an exploded assembly view of the cutter of Figure 1.

Figure 3 is a schematic side view of the cutter of Figure 1 having a housing portion removed, illustrating a roller carriage and portions of a locking assembly.

Figure 4 is another schematic side view of the cutter of Figure 1 with its housing portion attached and cutting a workpiece.

Figure 5 is another schematic side view of the cutter of Figure 1 without the noted housing portion.

Figure 6 is a partial view of the cutter of Figure 1 without the noted housing portion showing the locking assembly and roller carriage.

Figure 7 is another partial view of the cutter of Figure 1 showing the locking assembly and roller carriage in a different position.

Figure 8 is another schematic side view of the cutter of Figure 1 cutting a workpiece having a smaller diameter than the workpiece depicted in Figure 4.

Figures 9-11 are partial views of another embodiment of a cutter in accordance with the present subject matter, showing various positions of the roller carriage and the locking assembly with a housing portion removed.

Figure 12 is a perspective view illustrating engage-

ment between the cutter of Figure 1 and a screwdriver.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0011] The present subject matter provides C-type tubing cutters that can be used to cut a range of different size tubings, pipes, or other workpieces. Although the terms "tube" or "tubing" are generally used herein, it will be understood that the present subject matter cutters can be used to cut or sever a variety of other types of workpieces. In many embodiments, the cutters utilize a size indexing assembly that selectively accommodates one of several discrete sizes of tubing. The size indexing assembly can be quickly and easily adjusted so that the cutter can receive and cut different size tubing.

[0012] According to the invention, the tubing cutters feature a roller carriage that is selectively positionable. Generally, the roller carriage is radially positionable. The roller carriage can be selectively locked in one of a plurality of discrete predetermined positions by a moveable trigger. In the cutter of the invention the trigger is slideable along an arcuate slot provided in the housing and biased toward a locking position. When the trigger is disposed in the locked position, the trigger engages the roller carriage and locks the carriage in a particular radial position.

[0013] The cutters can be adjusted or configured to accommodate a different size tube by moving the trigger to an unlocked position, thereby disengaging the trigger from the roller carriage. The roller carriage is then radially positionable. The carriage can be biased radially inward or outward by a spring or other biasing member for example. The carriage is moved to a desired radial position, and then locked in that position by moving the trigger from the unlocked position to the locked position.

[0014] In certain embodiments, the cutters also feature a recessed slot or receiving region along an outer circumferential wall that is shaped and sized to receive a screwdriver or other member. Upon insertion of an end of the screwdriver for example, a user can apply increased torque to the cutter by applying a rotational moment force to the screwdriver.

[0015] According to the invention, the blade of the cutter is also positionable along an arcuate slot and biased inward by a flat spring or other biasing member upon which the blade and/or its axle are mounted. These and other aspects of the cutters of the present subject matter are described in association with the referenced figures as follows.

[0016] Figure 1 is a perspective view of an embodiment of a C-type tubing cutter 10 in accordance with the present subject matter. Figure 2 is an exploded assembly view of the cutter 10. The tubing cutter 10 comprises two or more separable and interengaging first and second housing portions 20 and 40, respectively. The housing portions are configured such that upon engagement and contact with each other, the housing portions form a generally cylindrically shaped housing defining a first outer face 22 provided by the first housing portion 20, and a second outer face 42 provided by the second housing portion 40. The second face 42 is oppositely directed relative to the first face 22. In many embodiments, the faces 22 and 42 are oriented parallel to each other. The housing also includes a circumferential wall 30 extending between the first and second faces 22, 42. Portions of the wall 30 may be integrally formed with the housing portions 20 and/or 40. The housing may also include one or more ridges 12 and/or depressions 14 extending between the faces 22 and 42 and disposed on or formed within the circumferential wall 30 or region of the housing to promote gripping of the cutter 10. Although a two component cylindrical housing has been generally described, it will be appreciated that the present subject matter includes a variety of other shapes and/or configurations for the housing of the tubing cutter.

[0017] The cutter 10, and more particularly the housing portions 20 and 40, define a work region 15 which is sized and shaped to receive a tube, pipe, conduit or other workpiece to be cut. Typically, the work region extends between the faces 22 and 42 and is cylindrical in shape or substantially so. The work region 15 is also radially accessible by an access port 18. The access port 18 is also sized and shaped to enable a tube, pipe, conduit, or other workpiece to be positioned within the work region 15 of the cutter 10 without having to access an end of the tube, pipe, conduit, or other workpiece.

[0018] The cutter 10 also comprises at least one roller 60 and in many embodiments, a pair of cylindrical rollers 60 and 62. The roller(s) such as rollers 60, 62, is rotatably supported by a roller carriage 65, and specifically by associated axles 61 and 63, respectively. In the cutter version shown in Figures 1 and 2, the first roller 60 includes an axle 61 and the second roller 62 includes an axle 63. The rollers 60 and 62 are at least partially accessible and exposed within the work region 15 of the cutter 10. It will be understood that that present subject matter is not limited to this particular assembly, and instead includes a range of variant assemblies and components for rotatably engaging one or more rollers in the housing of the cutter. The roller carriage 65 is radially positionable within a passage 25, 45 defined in the housing portions 20, 40 respectively.

[0019] The cutter 10 also includes one or more fasteners such as fasteners 50, 52, for securing the housing portions 20 and 40 together. The fasteners 50, 52 are disposed in corresponding apertures in one or both of the housing portions such as for example, apertures 51 and 53 respectively, defined in the first housing portion 20. In many embodiments, the fasteners 50, 52 are in the form of threaded fasteners. Corresponding threaded receiving regions can be provided in the other housing portion such as the second housing portion 40. Thus, the housing portions are secured together by the first fastener 50 extending through the aperture 51 defined in the first housing portion 20 and being threadedly engaged in the corresponding receiving region (not shown) provided

in the second housing portion 40; and the second fastener 52 extending through the aperture 53 defined in the first housing portion 20 and being threadedly engaged in a corresponding receiving region (not shown) provided in the second housing portion 40. It will be understood that the present subject matter cutters are not limited to this particular assembly and instead includes other arrangements, techniques, and/or components for securing the housing portions together.

[0020] The cutter 10 also includes a cutting wheel 70 and an axle pin 80. The cutting wheel 70 defines an outer circumferential cutting edge 72 and a central bore 74 for receiving the axle 80. The axle pin 80 defines a shaft 82 extending between an enlarged head end 84 and a distal end 86. In certain versions, the enlarged head 84 is rectangular shaped. The bore 74 and/or the shaft 82 are sized so that upon insertion of the axle pin 80 into the bore 74 of the wheel 70, the wheel 70 can rotate about the axle pin 80, to thereby form a wheel and axle assembly. As described in greater detail herein, the cutting wheel 70 is generally received within and disposed between the housing portions 20, 40. The cutting wheel 70 is at least partially accessible and exposed within the work region 15 of the cutter 10. The axle pin 80 is slidably disposed within a cutting wheel slot 90 defined in one or both of the first and second housing portions 20, 40. These and other aspects are described in greater detail herein. In certain embodiments, the cutter 10 also comprises springs 92 and 98 that bias the wheel 70 to a particular position and a leaf spring 126 which pushes on a hub of cutter wheel 70 thus biasing the cutter wheel toward opening 15. The springs 92 and 98 are each typically in the form of a leaf spring that is positioned within a hollow interior region of the cutter 10 such as in the cutting wheel slot 90 for example, that contacts the axle pin 80 and urges the axle pin 80 and cutting wheel 70 radially inward. Due to the orientation of the slot 90, the axle pin 80 and cutting wheel 70 are urged toward one end 91 of the slot 90. Upon insertion of a workpiece within the work or cutting region of the tool, the cutting wheel 70 is displaced within the slot 90 toward the other slot end 93 against the biasing action of the springs 92 and 98. As cutting is performed, the wheel 70 is biased and moved toward the end 91 of the slot 90. As will be understood, the slot 90 is oriented within the housing such that the slot end 91 is closer to a center of the cutting region than the slot end 93. Although a leaf spring is used in many versions, the present subject matter includes the use of other biasing members instead of, or in addition to, leaf springs 92 and 98.

[0021] In particular versions of the cutters, a size indexing assembly is provided which enables convenient and quick adjustment of the cutting size and/or configuration of the cutter. Thus, use of the size indexing assembly enables a cutter to be easily switched between one of a plurality of configurations for cutting tubing of different sizes. For example, a cutter can be provided with a two-size indexing assembly that enables a user to quickly change the cutter to cut a larger or smaller tube. Adjustment of the size indexing assembly does not require tedious radial positioning of roller(s) or of a cutting wheel. Instead, a user merely unlocks the roller carriage using a slidable trigger, moves the roller carriage to a new desired position, and then locks the carriage in that position by returning the trigger to its locked position. Size adjustment is typically performed prior to placement of a workpiece within the work or cutting region of the tool. However, the present subject matter includes tool versions and/or methods in which size adjustment occurs during and/or after placement of a workpiece within the work or cutting region.

[0022] Referring to Figures 3 and 4, the cutter 10 is shown in Figure 3 without the housing portion 20 and in Figure 4 with the housing portion 20 assembled to the housing portion 40. A workpiece 1 is disposed in the work region 15 of the cutter 10 and in contact with the rollers 60, 62 of the roller carriage 65 and the cutting wheel 70.

[0023] According to the invention, the size indexing assembly designated as 100 in the referenced figures includes a trigger slot 110 defined in the housing and which is accessible along an exterior of the housing. The size indexing assembly 100 also includes a moveable trigger 120 (also shown in Figure 2) selectively positionable along the trigger slot 110 and a compression spring 125 which biases moveable trigger 120 toward roller carriage 65. And, the size indexing assembly 100 further includes a plurality of engagement regions such as 130 and 132 provided on or otherwise within the roller carriage 65 and configured for selective engagement with the trigger 120. Each engagement region such as 130 and 132 corresponds to a predetermined radial position of the roller carriage 65. For example referring to Figure 3, a first radial position of the roller carriage 65 occurs upon engagement between the trigger 120 and the engagement region 130; and a second radial position of the roller carriage 65 occurs upon engagement between the trigger 120 and the engagement region 132. Upon configuring the cutter 10 such that the roller carriage 65 is disposed in the noted first radial position, the cutter 10 can accommodate and cut a workpiece having a larger size than if the cutter is configured such that the roller carriage 65 is disposed in the noted second radial position. Figure 3 depicts the trigger 120 in a locked position where the trigger is held in this position due to the reaction force from compression spring 125. Figure 4 depicts the trigger in an unlocked position which causes compression of compression spring 125.

[0024] Referring to Figures 2 and 3, additional details of the trigger 120 and its relationship with the trigger slot 110 are as follows. The trigger 120 can be provided with one or more prongs 122 that define distal ends 123. The prongs 122 are sized and shaped to be slidably disposed in the cutter housing. In certain embodiments, a capture region 46 is provided in one or both housing portions 20, 40 such that upon positioning the trigger 120 to a locked position, the ends 123 of the trigger prongs 122 are re-

ceived within the capture region 46 to thereby further secure the roller carriage 65 within the passage 25, 45 defined in the housing.

[0025] Figures 5-7 illustrate the cutter 10 having its housing portion 20 removed to further illustrate operation and positioning of components of the cutter. As noted, the size indexing assembly 100 enables the cutter 10 to be quickly and conveniently configured to accommodate one of several predetermined workpiece sizes. For example, if the cutter is in a configuration such as shown in Figure 3 for cutting a relatively large size workpiece 1, the cutter can be reconfigured to accommodate and cut a smaller size workpiece 2 as shown in Figures 5-7. The trigger 120 is moved along the trigger slot 110 from a slot end 114 to or towards a slot end 112 to thereby disengage the trigger 120 from the first engagement region 130 of the roller carriage 65. Upon disengagement, the roller carriage 65 is then positioned radially inward such as in the direction of arrow A in Figures 6 and 7 until the second engagement region 132 is aligned with the trigger slot 110 as shown in Figure 7. At the configuration depicted in Figure 7, the roller carriage 65 can be locked in that position by moving the trigger 120 from slot end 112 to or towards the slot end 114 to thereby engage the trigger 120 with the second engagement region 132 of the roller carriage 65.

[0026] Figure 8 illustrates the fully assembled cutter 10 and the workpiece 2 when the cutter is in the configuration described and shown in Figure 7.

[0027] Figures 9-11 illustrate another embodiment of a cutter 210 having a size indexing assembly 300 that provides for cutting three different workpiece sizes. This is a nonlimiting example of a three-size indexing assembly. The cutter 210 comprises a radially positionable roller carriage 265 that includes engagement regions 230, 231, and 232. The cutter 210 and size indexing assembly 300 include a trigger slot 310 defined in the housing and which is accessible along an exterior of the housing. The cutter 210 and size indexing assembly 300 also include a moveable trigger 320 selectively positionable along the trigger slot 310. The cutter 210 and size indexing assembly 300 additionally include the noted engagement regions 230, 231, and 232 disposed on or otherwise within the roller carriage 265 and configured for selective engagement with the trigger 320. Each engagement region such as 230, 231, and 232 corresponds to a predetermined radial position of the roller carriage 265. As will be understood, the roller carriage can be positioned to a desired radial position according to the size of the workpiece to be cut by movement of the roller carriage 265 in the direction of arrow B for example shown in Figure 10.

[0028] Figure 12 illustrates another aspect that can be incorporated in the present subject matter cutters. For example, the previously described cutter 10 can be provided with one or more recessed region(s) 32 defined along the circumferential wall 30 of the cutter. The recessed region(s) 32 is adapted, i.e., sized and shaped, to receive an end 5 of a screwdriver 7 or other member. A user can apply increased torque to the cutter 10 by applying a rotational moment force to the screwdriver 7 denoted as arrow C in Figure 12.

[0029] According to the invention, the slots defined in the housing such as for example the cutting wheel slot 90 and/or the trigger slot 110, 310, are arcuate in shape. That is, the cutting wheel slot and/or the trigger slot extends along an arc or curve between its ends. However, it will be appreciated that the present subject matter includes the use of non-arcuate slots such as linear straight slots or stepped slots. In many embodiments, the cutting wheel slot 90 and/or the trigger slot 110, 310 extends between and is accessible along the first and second faces of the housing, i.e., 22 and 42. However, the present subject matter includes cutters in which the slot(s) is accessible on only one face.

[0030] The tubing cutters of the present subject matter are constructed of conventional materials known and/or used in the field of tools. The housing components can be formed from suitable polymeric materials and the cutting wheel is typically steel or other metal(s). The tubing cutters and their associated work regions and access ports are appropriately sized to accommodate tubing having an outer diameter within a range of from about 0.125 inch (3.175 mm) to about 1.5 inch (38.1 mm). Typical sizes for tubing include 0.5 inch (12.7 mm) and 0.75 inch (19.05 mm). However, the present subject matter includes sizing and configuring the cutters to accommodate tubes, pipes, conduits, or other workpieces smaller or larger than the noted representative range.

[0031] Many of the embodiments of the cutters enable a user to cut different size tubings or other workpieces by simply unlocking the trigger, and place the cutter onto a tube that may be the same size or of a different size than that of a previous tube cut by the cutter. Unlocking the trigger thereby disengages the roller carriage and allows the roller carriage to be radially positionable. For cutters having roller carriages biased radially inward, a user can simultaneously urge the roller carriage outward when positioning the cutter on a larger diameter tube. When positioning the cutter on to a smaller diameter tube, the roller carriage is biased radially inward to a new radial position corresponding to the smaller diameter tube.

[0032] Although the various embodiments of cutters have been described in association with two-size and three-size indexing assemblies, it will be understood that the present subject matter includes cutters with indexing assemblies that accommodate a plurality of different discrete workpiece sizes such as for example from 2 to 10 sizes, particularly 2-6 sizes, and in many embodiments 2-4 different sizes.

[0033] Although the present subject matter cutters have been primarily described in association with C-type cutters, it will be understood that the present subject matter is not limited to C-type cutters. Instead, the present subject matter may be embodied in a variety of different types of cutters and tools.

Claims

1. A tubing cutter (10; 210) comprising:

a housing defining a work region (15) for receiving a workpiece (1; 2) to be cut;
a radially positionable roller carriage (65; 265) having at least one roller (60, 62) accessible along the work region (15) of the housing;
a cutting wheel (70) supported within the housing and accessible along the work region (15) of the housing;
a size indexing assembly (100; 300) for selectively positioning the roller carriage (65; 265) relative to the cutting wheel (70) in one of a plurality of positions corresponding to sizes of workpieces (1; 2);
wherein the size indexing assembly (100; 300) includes:

(i) the housing also defining a trigger slot (110; 310) accessible along an exterior of the housing,
(ii) a moveable trigger (120; 320),
(iii) a plurality of engagement regions (130, 132; 230, 231, 232) on the roller carriage (65; 265) and configured for selective engagement with the trigger (120; 320),

wherein the housing also defines an arcuate slot (90), the tubing cutter (10; 210) further comprising:
an axle (80) moveable along the arcuate slot (90), wherein the axle (80) rotatably supports the cutting wheel (70), and further comprising:
a biasing member (92, 98, 126) urging the axle (80) toward an end of the arcuate slot (90), **characterized in that**:

the positions corresponding to sizes of workpieces are predetermined positions;
the moveable trigger is selectively positionable along the trigger slot;
each engagement region of the plurality of engagement regions on the roller carriage, corresponds to a predetermined radial position of the roller carriage;
the arcurate slot is accessible along an exterior of the housing.

2. The tubing cutter (10; 210) of claim 2 wherein the trigger slot (110; 310) is arcuate.

3. The tubing cutter (10; 210) of claim 1 or 2 wherein the trigger (120; 320) is positionable between a locked position and an unlocked position, and preferably wherein upon positioning the trigger (120; 320) to the locked position, the trigger (120; 320) engages at least one of the engagement regions (130, 132; 230, 231, 232) of the roller carriage (65; 265) and thereby secures the roller carriage (65; 265) to a fixed position relative to the housing, and/or preferably wherein the size indexing assembly (100; 300) further includes a biasing member (125) urging the trigger (120; 320) toward the locked position.

4. The tubing cutter (10; 210) of claim 1,
wherein the housing defines a first outer face (22) and a second outer face (42) oppositely directed from the first face (22), wherein the trigger slot (110; 310) is accessible along at least one of the first (22) and second outer faces (42);
wherein the roller (60, 62) can be affixed in a desired radial position by engagement with the trigger (120; 320).

5. The tubing cutter (10; 210) of claim 4 wherein the trigger (120; 320) is positionable between a locked position and an unlocked position, and wherein upon positioning the trigger (120; 320) to the locked position, the trigger (120; 320) engages the roller carriage (65; 265) and thereby secures the at least one roller (60, 62) rotatably supported thereon to a fixed position relative to the housing, preferably further comprising a biasing member (125) urging the trigger (120; 320) to the locked position.

6. The tubing cutter (10; 210) of claim 1,
wherein the housing has an outer face and defines a first arcuate slot (110; 310) and a second arcuate slot (90), both first (110; 310) and second arcuate slots (90) accessible along the outer face of the housing;
wherein the moveable trigger (120; 320) is positionable within the first arcuate slot (110; 310);
wherein the cutting wheel (70) is moveable along the second arcuate slot (90).

7. The tubing cutter (10; 210) of claim 6
wherein the roller carriage (65; 265) engages with the trigger (120; 320) to thereby affix the roller carriage (65; 265) to a particular radial position relative to the housing.

8. The tubing cutter (10; 210) of claim 7, wherein the trigger (120; 320) is positionable within the first arcuate slot (110; 310) between a locked position at which the trigger (120; 320) engages the roller carriage (65; 265), and an unlocked position, the tubing cutter (10; 210) further comprising:
a biasing member (125) urging the trigger (120; 320) toward the locked position, and/or wherein the roller carriage (65; 265) includes a plurality of engagement regions (130, 132; 230, 231, 232) on the roller carriage (65; 265) and configured for selective engagement with the trigger (120; 320), each engagement

region (130, 132; 230, 231, 232) corresponding to a predetermined radial position of the roller carriage (65; 265).

9. The tubing cutter (10; 210) of claim 1 or 2, wherein the tubing cutter is a C-type tubing cutter (10; 210), wherein the housing defines a cutting wheel slot (90); wherein the cutting wheel (70) is a spring biased cutting wheel (70) positionable within the cutting wheel slot (90), the cutting wheel (70) biased toward one end of the slot (90).

10. The tubing cutter (10; 210) of claim 9, wherein the trigger (120; 320) is positionable between a locked position and an unlocked position, and preferably wherein upon positioning the trigger (120; 320) to the locked position, the trigger (120; 320) engages at least one of the engagement regions (130, 132; 230, 231, 232) of the roller carriage (65; 265) and thereby secures the roller carriage (65; 265) to a fixed position relative to the housing, and/or preferably wherein the size indexing assembly (100; 300) further includes a biasing member (125) urging the trigger (120; 320) toward the locked position.

Patentansprüche

1. Ein Rohrschneider (10; 210), umfassend:

ein Gehäuse, das einen Arbeitsbereich (15) zur Aufnahme eines zu schneidenden Werkstücks (1; 2) definiert;
einen radial positionierbaren Rollenschlitten (65; 265) aufweisend mindestens eine Rolle (60, 62), die entlang des Arbeitsbereichs (15) des Gehäuses zugänglich ist;
eine Schneidscheibe (70), die innerhalb des Gehäuses gestützt wird und entlang des Arbeitsbereichs (15) des Gehäuses zugänglich ist;
eine Größenindexierungsanordnung (100; 300) zum selektiven Positionieren des Rollenschlittens (65; 265) relativ zu der Schneidscheibe (70) in einer von einer Vielzahl von Positionen, die den Größen der Werkstücke (1; 2) entsprechen;
wobei die Größenindexierungsanordnung (100; 300) Folgendes beinhaltet:

(i) das Gehäuse auch einen Auslöserschlitz (110; 310) definiert, der entlang einer Außenseite des Gehäuses zugänglich ist,
(ii) einen beweglichen Auslöser (120; 320),
(iii) eine Vielzahl von Eingriffsbereichen (130, 132; 230, 231, 232) auf dem Rollenschlitten (65; 265) und welche eingerichtet zum selektiven Eingriff mit dem Auslöser (120; 320);
wobei das Gehäuse auch einen bogenförmigen Schlitz (90) definiert, wobei der Rohrschneider (10; 210) ferner umfasst:
eine Achse (80), die entlang des bogenförmigen Schlitzes (90) beweglich ist, wobei die Achse (80) die Schneidscheibe (70) drehbar trägt und ferner umfasst:
ein Vorspannelement (92, 98, 126), das die Achse (80) zu einem Ende des bogenförmigen Schlitzes (90) drängt, **dadurch gekennzeichnet, dass**:

die den Größen der Werkstücke entsprechenden Positionen vorbestimmte Positionen sind;
der bewegliche Auslöser selektiv entlang des Auslöserschlitzes positionierbar ist;
jeder Eingriffsbereich der Vielzahl von Eingriffsbereichen auf dem Rollenschlitten einer vorbestimmten radialen Position des Rollenschlittens entspricht;
der bogenförmige Schlitz entlang einer Außenseite des Gehäuses zugänglich ist.

2. Der Rohrschneider (10; 210) nach Anspruch 2, wobei der Auslöserschlitz (110; 310) bogenförmig ist.

3. Der Rohrschneider (10; 210) nach Anspruch 1 oder 2, wobei der Auslöser (120; 320) zwischen einer verriegelten Position und einer entriegelten Position positionierbar ist, und vorzugsweise, wobei beim Positionieren des Auslösers (120; 320) in die verriegelte Position der Auslöser (120; 320) in mindestens einen der Eingriffsbereiche (130, 132; 230, 231, 232) des Rollenschlittens (65; 265) eingreift und dadurch den Rollenschlitten (65; 265) in einer festen Position relativ zum Gehäuse sichert, und/oder vorzugsweise, wobei die Größenindexierungsanordnung (100; 300) weiterhin ein Vorspannelement (125) beinhaltet, das den Auslöser (120; 320) in Richtung der verriegelten Position drängt.

4. Der Rohrschneider (10; 210) nach Anspruch 1,

wobei das Gehäuse eine erste Außenfläche (22) und eine zweite Außenfläche (42) definiert, die entgegengesetzt zur ersten Fläche (22) ausgerichtet sind, wobei der Auslöserschlitz (110; 310) entlang mindestens einer der ersten (22) und zweiten Außenflächen (42) zugänglich ist;
wobei die Rolle (60, 62) in einer gewünschten radialen Position durch Eingriff mit dem Auslöser (120; 320) befestigt werden kann.

5. Der Rohrschneider (10; 210) nach Anspruch 4, wobei der Auslöser (120; 320) zwischen einer verrie-

gelten Position und einer entriegelten Position positionierbar ist, und wobei beim Positionieren des Auslösers (120; 320) in die verriegelte Position der Auslöser (120; 320) in den Rollenschlitten (65; 265) eingreift und dadurch die mindestens eine Rolle (60, 62), die drehbar darauf gelagert ist, in einer festen Position relativ zum Gehäuse sichert, vorzugsweise ferner umfassend ein Vorspannelement (125), das den Auslöser (120; 320) in die verriegelte Position drängt.

6. Der Rohrschneider (10; 210) nach Anspruch 1,

wobei das Gehäuse eine Außenfläche aufweist und einen ersten bogenförmigen Schlitz (110; 310) und einen zweiten bogenförmigen Schlitz (90) definiert, wobei sowohl erste (110; 310) als auch zweite bogenförmige Schlitze (90) entlang der Außenfläche des Gehäuses zugänglich sind;
wobei der bewegliche Auslöser (120; 320) innerhalb des ersten bogenförmigen Schlitzes (110; 310) positionierbar ist;
wobei die Schneidscheibe (70) entlang des zweiten bogenförmigen Schlitzes (90) beweglich ist.

7. Der Rohrschneider (10; 210) nach Anspruch 6, wobei der Rollenschlitten (65; 265) mit dem Auslöser (120; 320) in Eingriff steht, um dadurch den Rollenschlitten (65; 265) in einer bestimmten radialen Position relativ zum Gehäuse zu befestigen.

8. Der Rohrschneider (10; 210) nach Anspruch 7, wobei der Auslöser (120; 320) innerhalb des ersten bogenförmigen Schlitzes (110; 310) zwischen einer verriegelten Position, in der der Auslöser (120; 320) mit dem Rollenschlitten (65; 265) eingreift, und einer entriegelten Position positionierbar ist, wobei der Rohrschneider (10; 210) ferner umfasst:
ein Vorspannelement (125), das den Auslöser (120; 320) in Richtung der verriegelten Position drängt, und/oder wobei der Rollenschlitten (65; 265) eine Vielzahl von Eingriffsbereichen (130, 132; 230, 231, 232) auf dem Rollenschlitten (65; 265) beinhaltet und zum selektiven Eingriff mit dem Auslöser (120; 320) konfiguriert ist, wobei jeder Eingriffsbereich (130, 132; 230, 231, 232) einer vorbestimmten radialen Position des Rollenschlittens (65; 265) entspricht.

9. Der Rohrschneider (10; 210) nach Anspruch 1 oder 2, wobei der Rohrschneider ein C-Typ Rohrschneider (10; 210) ist,

wobei das Gehäuse einen Schneidscheibenschlitz (90) definiert;
wobei die Schneidscheibe (70) eine federvorgespannte Schneidscheibe (70) ist, die innerhalb des Schneidscheibenschlitzes (90) positionierbar ist, wobei die Schneidscheibe (70) zu einem Ende des Schlitzes (90) vorgespannt ist.

10. Der Rohrschneider (10; 210) nach Anspruch 9, wobei der Auslöser (120; 320) zwischen einer verriegelten Position und einer entriegelten Position positionierbar ist, und vorzugsweise, wobei beim Positionieren des Auslösers (120; 320) in die verriegelte Position der Auslöser (120; 320) in mindestens einen der Eingriffsbereiche (130, 132; 230, 231, 232) des Rollenschlittens (65; 265) eingreift und dadurch den Rollenschlitten (65; 265) in einer festen Position relativ zum Gehäuse sichert, und/oder vorzugsweise, wobei die Größenindexierungsanordnung (100; 300) weiterhin ein Vorspannelement (125) beinhaltet, das den Auslöser (120; 320) in Richtung der verriegelten Position drängt.

Revendications

1. Un coupe-tube (10 ; 210) comprenant :

un carter définissant une zone de travail (15) pour recevoir une pièce (1 ; 2) à couper ;
un chariot porte-galets positionnable radialement (65 ; 265) ayant au moins un galet (60, 62) accessible le long de la zone de travail (15) du carter ;
une molette de coupe (70) supportée à l'intérieur du carter et accessible le long de la zone de travail (15) du carter ;
un ensemble d'indexage de taille (100 ; 300) pour positionner le chariot porte-galets (65 ; 265) par rapport à la molette de coupe (70) dans l'une d'une pluralité de positions correspondant aux tailles des pièces (1 ; 2) ;
dans lequel l'ensemble d'indexage de taille (100 ; 300) comprend :

(i) le carter qui définit aussi une gorge de poussoir (110 ; 310) accessible le long de l'extérieur du carter,
(ii) un poussoir mobile (120 ; 320),
(iii) une pluralité de zones de coopération (130, 132 ; 230, 231, 232) sur le chariot porte-galets (65, 265) et configurées pour une coopération sélective avec le poussoir (120 ; 320),

dans lequel le carter définit aussi une gorge arquée (90), le coupe-tube (10 ; 210) comprenant en outre :
un axe (80) mobile le long de la gorge arquée (90), l'axe (80) supportant à rotation la molette de coupe (70), et comprenant en outre :
un élément de sollicitation (92, 98, 126) pous-

sant l'axe (80) vers une extrémité de la gorge arquée (90), **caractérisé en ce que** :

les positions correspondant à des tailles de pièces sont des positions prédéterminées ;
le poussoir mobile est positionnable sélectivement le long de la gorge de poussoir ;
chaque zone de coopération de la pluralité de zones de coopération sur le chariot porte-galets correspond à une position radiale prédéterminée du chariot porte-galets ;
la gorge arquée est accessible le long de l'extérieur du carter.

2. Le coupe-tube (10 ; 210) selon la revendication 2, dans lequel la gorge de poussoir (110, 310) est arquée.

3. Le coupe-tube (10 ; 210) selon la revendication 1 ou 2,
dans lequel le poussoir (120 ; 320) est positionnable entre une position verrouillée et une position non verrouillée, et de préférence dans lequel, lors du positionnement du poussoir (120 ; 320) dans la position verrouillée, le poussoir (120 ; 320) coopère avec au moins une des zones de coopération (130, 132 ; 230, 231, 232) du chariot porte-galets (65, 265) et immobilise ainsi le chariot porte-galets (65 ; 265) dans une position fixe par rapport au carter, et/ou de préférence dans lequel l'ensemble d'indexage de taille (100 ; 300) comprend en outre un élément de sollicitation (125) poussant le poussoir (120 ; 320) vers la position verrouillée.

4. Le coupe-tube (10 ; 210) selon la revendication 1,
dans lequel le carter définit une première face extérieure (22) et une seconde face extérieure (42) orientée à l'opposé de la première face (22), dans lequel la gorge de poussoir (110 ; 310) est accessible le long d'au moins une des première (22) et seconde faces extérieures (42) ;
dans lequel le galet (60, 62) peut être bloqué dans une position radiale désirée par coopération avec le poussoir (120 ; 320).

5. Le coupe-tube (10 ; 210) selon la revendication 4, dans lequel le poussoir (120 ; 320) est positionnable entre une position verrouillée et une position non verrouillée, et dans lequel, lors du positionnement du poussoir (120 ; 320) dans la position verrouillée, le poussoir (120 ; 320) coopère avec le chariot porte-galets (65 ; 265) et immobilise ainsi le au moins galet (60, 62) supporté à rotation dessus dans une position fixe par rapport au carter, de préférence comprenant en outre un élément de sollicitation (125) poussant le poussoir (120 ; 320) vers la position verrouillée.

6. Le coupe-tube (10 ; 210) selon la revendication 1,
dans lequel le carter possède une face extérieure et définit une première gorge arquée (110 ; 310) et une seconde gorge arquée (90), les deux première (110 ; 310) et seconde gorges arquées (90) étant accessibles le long de la face extérieure du carter ;
dans lequel le poussoir mobile (120 ; 320) est positionnable à l'intérieur de la première gorge arquée (110 ; 310) ; dans lequel la molette de coupe (70) est mobile le long de la seconde gorge arquée (90).

7. Le coupe-tube (10 ; 210) selon la revendication 6,
dans lequel le chariot porte-galets (65 ; 265) coopère avec le poussoir (120 ; 320) pour bloquer ainsi le chariot porte-galets (65 ; 265) dans une position radiale particulière par rapport au carter.

8. Le coupe-tube (10 ; 210) selon la revendication 7,
dans lequel le poussoir (120 ; 320) est positionnable à l'intérieur de la première gorge arquée (110 ; 310) entre une position verrouillée, dans laquelle le poussoir (120 ; 320) coopère avec le chariot porte-galets (65 ; 265), et une position non verrouillée, le coupe-tube (10 ; 210) comprenant en outre :
un élément de sollicitation (125) poussant le poussoir (120 ; 320) vers la position verrouillée, et/ou
dans lequel le chariot porte-galets (65 ; 265) comprend une pluralité de zones de coopération (130, 132 ; 230, 231, 232) sur le chariot porte-galets (65 ; 265) et configurées pour une coopération sélective avec le poussoir (120 ; 320), chaque zone de coopération (130, 132 ; 230, 231, 232) correspondant à une position radiale prédéterminée du chariot porte-galets (65 ; 265).

9. Le coupe-tube (10 ; 210) selon la revendication 1 ou 2, dans lequel le coupe-tube est un coupe-tube de type C (10 ; 210),
dans lequel le carter définit une gorge de molette de coupe (90) ;
dans lequel la molette de coupe (70) est une molette de coupe à sollicitation élastique (70) positionnable à l'intérieur de la gorge de molette de coupe (90), la molette de coupe (70) étant sollicitée vers une des extrémités de la gorge (90).

10. Le coupe-tube (10 ; 210) selon la revendication 9, dans lequel le poussoir (120 ; 320) est positionnable entre une position verrouillée et une position non verrouillée, et de préférence dans lequel, lors du positionnement du poussoir (120 ; 320) dans la position verrouillée, le poussoir (120 ; 320) coopère avec au moins une des zones de coopération (130, 132 ; 230, 231, 232) du chariot porte-galets (65 ; 265) et immobilise ainsi le chariot porte-galets (65 ; 265) dans une position fixe par rapport au carter, et/ou de préférence dans lequel l'ensemble d'indexage de taille (100 ; 300) comprend en outre un élément de sollicitation (125) poussant le poussoir (120 ; 320) vers la position verrouillée.

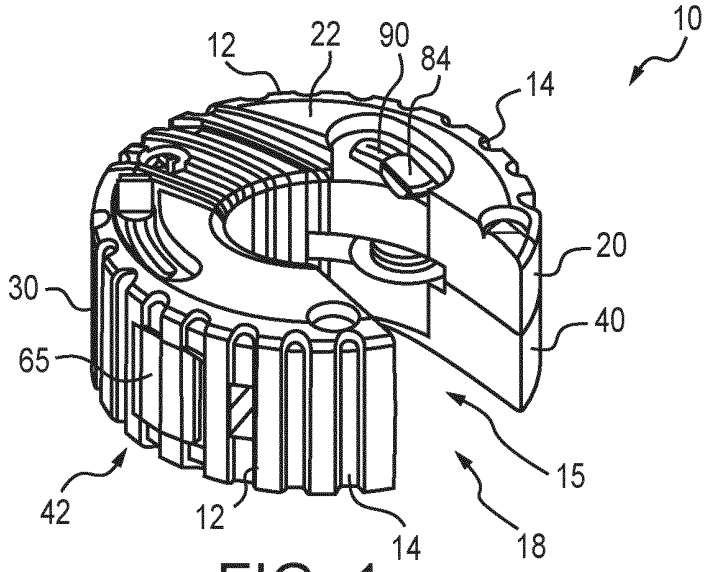

10
12
22
90
84
14
20
30
40
65
15
42
12
14
18

FIG. 1

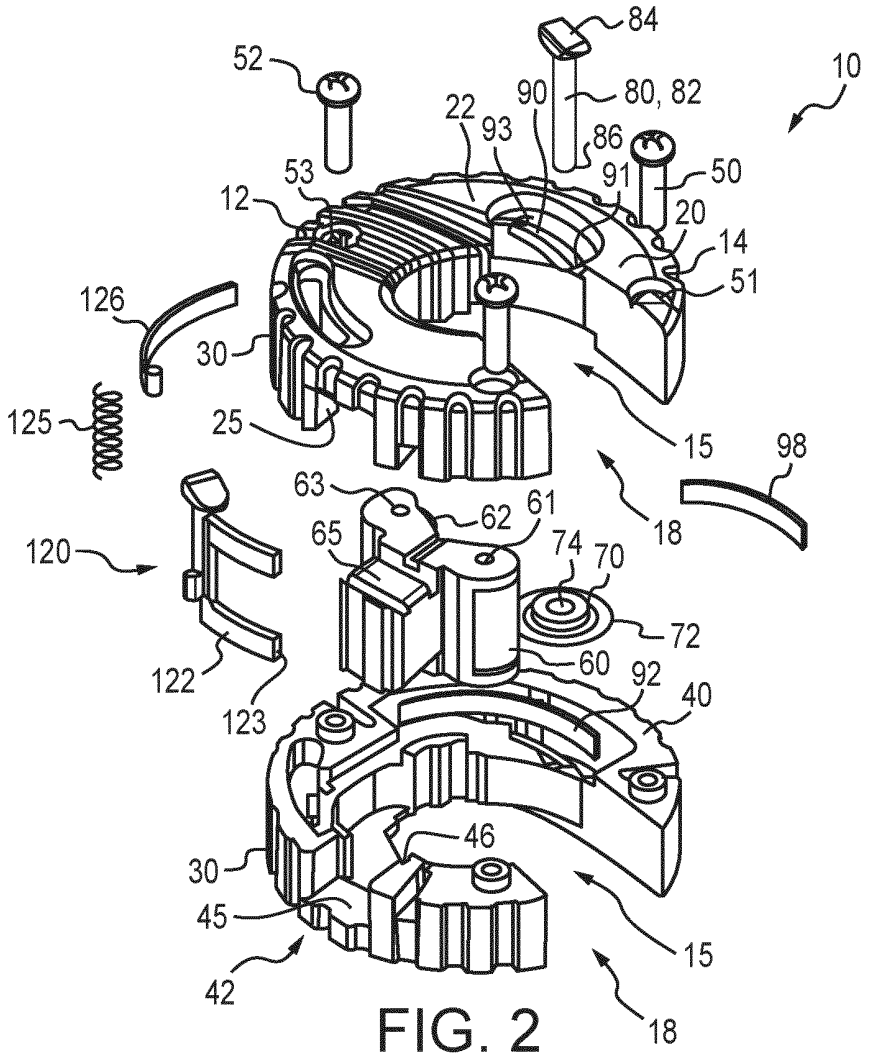

84
52
10
90
80, 82
22
93
86
53
91
50
12
20
14
51
126
30
125
25
15
98
63
62
61
18
65
74
70
120
72
60
92
40
122
123
46
30
45
15
42
18

FIG. 2

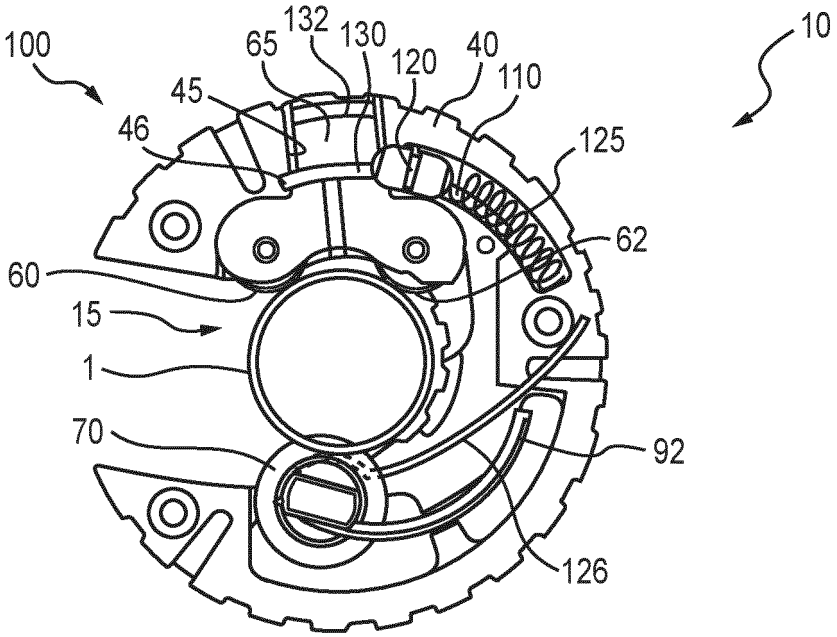
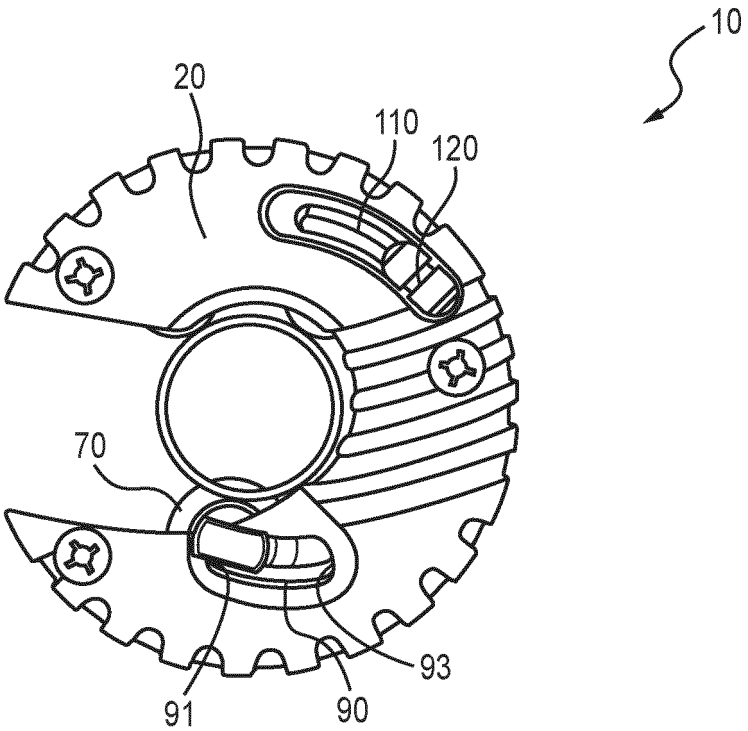

100
10
65
132
130
120
40
110
45
46
125
62
60
15
1
70
92
126

FIG. 3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20
110
120
70
93
91
90

FIG. 4

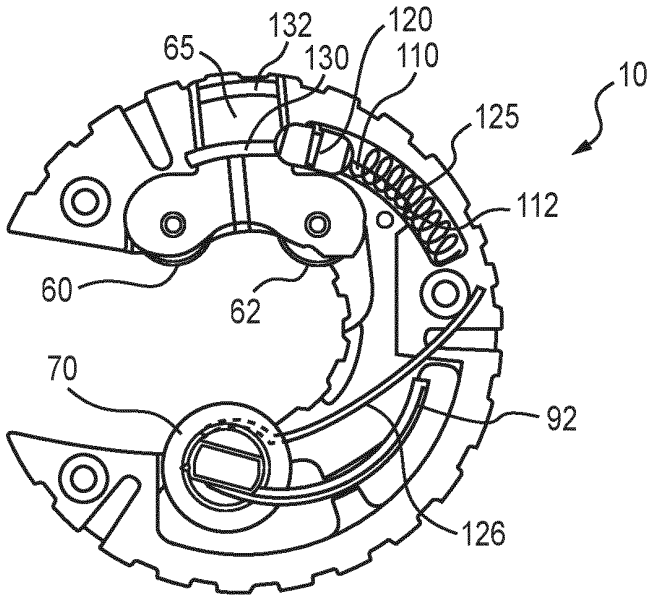

FIG. 5

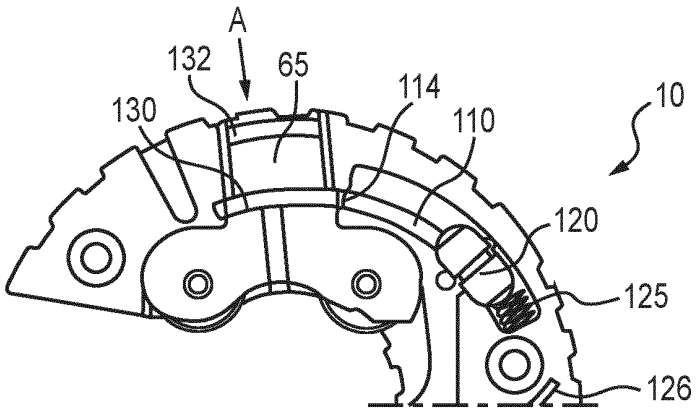

FIG. 6

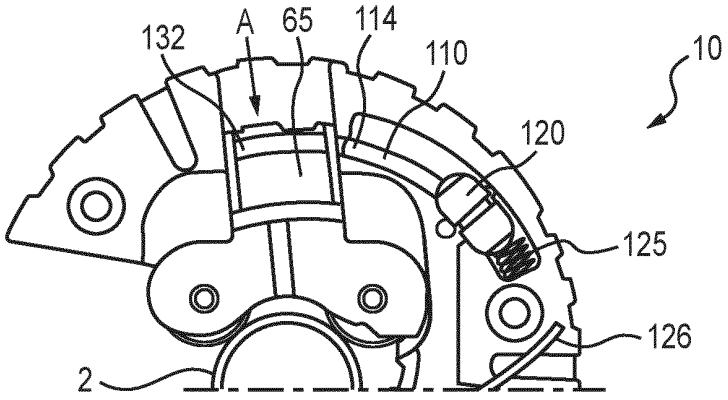

FIG. 7

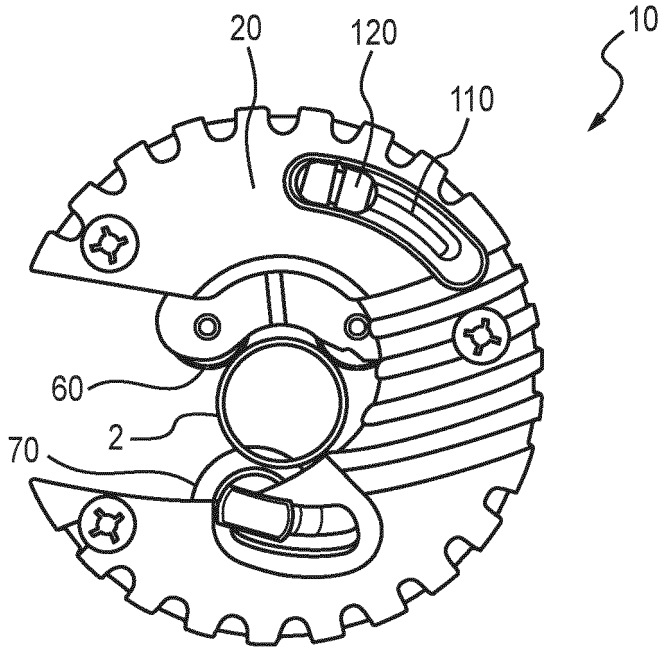

FIG. 8

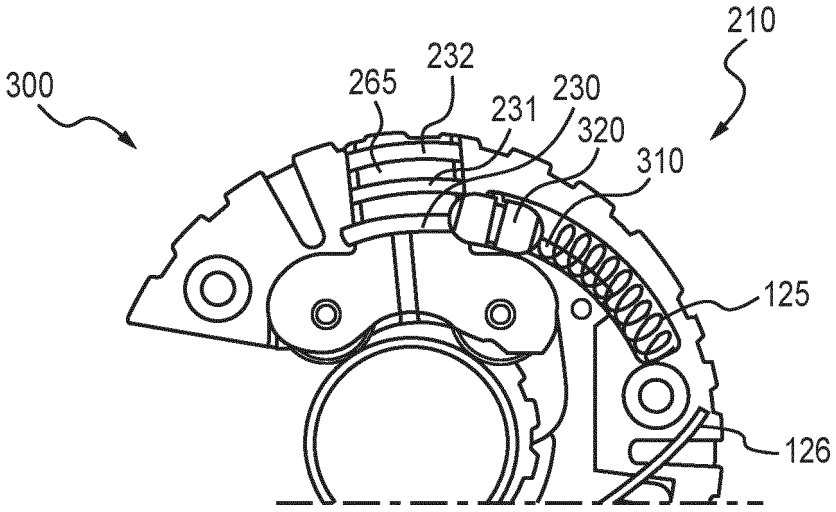

FIG. 9

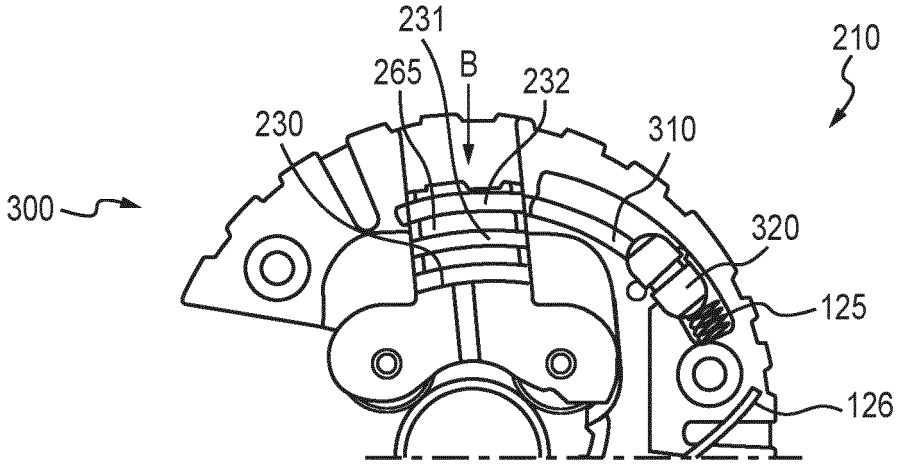
231
265
B
232
210
230
310
300
320
125
126

FIG. 10

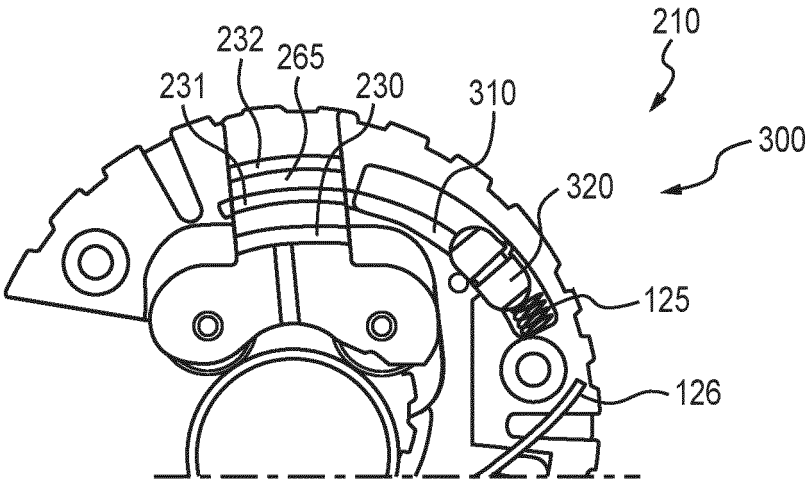
210
232
265
231
230
310
300
320
125
126

FIG. 11

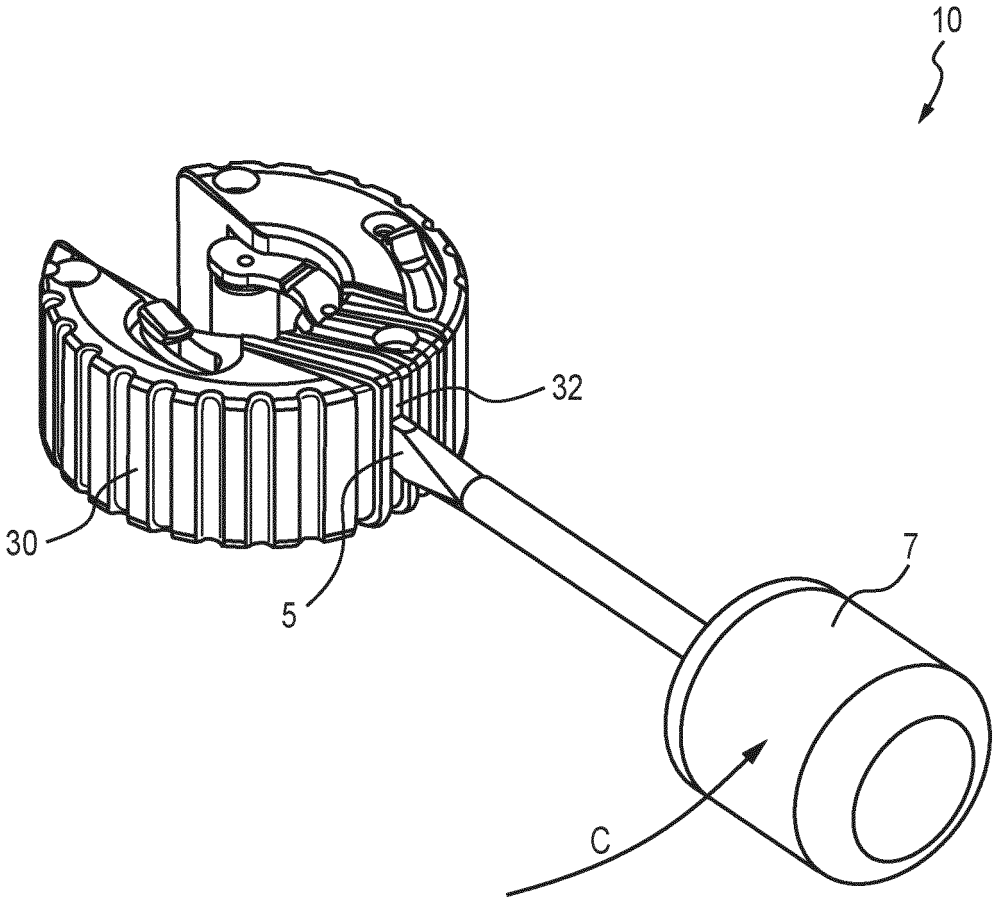

FIG. 12

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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