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(54) **POWERED DEVICE HAVING AN ON-OFF MECHANISM**

ANGETRIEBENE VORRICHTUNG MIT EINEM EIN-AUS-MECHANISMUS

DISPOSITIF ÉLECTRIQUE DOTÉ D'UN MÉCANISME MARCHE-ARRÊT

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Description

PRIOR ART

[0001] The present invention relates to ON-OFF switches for powered devices, and especially for hand-held electrical devices such as power tools. More particularly, it relates to manual ON-OFF triggers that can be used to activate and/or lock such ON-OFF switches. Depending on the device, the accidental engagement of an ON-OFF trigger may present safety risks. At the same time, it may be desirable that the trigger be retainable in an ON position so that persistent effort is not needed to engage the trigger when utilizing the device. This may present even greater safety risks in the case of power tools which might be dropped or otherwise separated from the user while they are activated. Even if no safety risks are present, the locking of a trigger may be undesirable since, if unintentional, it might cause batteries to discharge unnecessarily or power from an electrical outlet to be wasted.

[0002] U.S. Patent No. 5,638,945 discloses a power switch for an electric hedge trimmer that has a spring which normally biases the trigger from an unlocked ON state into an OFF state. A separate latching member is provided so the user can choose to maintain the trigger in a locked ON state. To engage the latching member, a separate movement is necessary. Therefore two distinct movements are required before the trigger can be locked into the ON state and this minimizes the risk of accidentally locking the tool into the ON state. It would be useful to have an ON-OFF mechanism with similar safety measures but which requires no additional latching parts.

[0003] Another device is known from DE 2 450 577 A1.

ADVANTAGES OF THE INVENTION

[0004] A powered device is described which is, in one embodiment, a hand-held angle grinder. The powered device has an ON-OFF mechanism comprising a housing having a mounting surface, a trigger associated with said mounting surface and having an OFF position, an ON-UNLOCKED position, and an ON-LOCKED position, means for biasing the trigger into the OFF position from the ON-UNLOCKED position. The trigger includes a first pressing surface for manual movement of the trigger from the OFF position against said biasing means to the ON-UNLOCKED position, and a second pressing surface for manual movement of the trigger from the ON-UNLOCKED position to the ON-LOCKED position.

[0005] So that a user cannot accidentally engage both pressing surfaces without intentionally moving his finger or thumb, the first pressing surface and the second pressing surface are generally adjacent to each other and form a reflex angle. The obtuse angle used in a prior art design makes it possible that the user can engage both surfaces without readjusting the position of the thumb on the trigger button. Since the reflex angle requires readjustment,

the powered device is safer and less likely to be accidentally locked into an ON state.

[0006] It is useful to provide guide features in order to position the trigger on the housing. To provide a track for sliding along the mounting surface, two raised guide shoulders extending from the mounting surface can define a path for movement of the trigger provided that it is positioned between these two shoulders.

[0007] Not only must the user reposition his hand in order to achieve the ON-LOCKED state, but additionally the user must make two distinct and qualitatively different movements. This also makes it less likely that the trigger will be inadvertently engaged. In a described embodiment of the invention, the trigger must first slide along the mounting surface, i.e., an axial movement along the length of the motor housing, in order to move from the OFF position into the ON-UNLOCKED position. Then the trigger needs to be generally rotated relative to the mounting surface. This changes the trigger from the ON-UNLOCKED position into the ON-LOCKED position.

[0008] So that the trigger can be conveniently locked without any distinct latching members, the mounting surface is provided with a cavity for cooperating with a protrusion that is an integral part of the trigger for locking the trigger into the ON-LOCKED position. The same biasing means that is used to bias the switch into the OFF position provides the biasing force to retain this protrusion in the cavity.

[0009] It is advantageous to provide other features that contribute to the locking mechanism. For example, the housing may be provided with two shelves extending from the mounting surface. In the OFF position they can serve as guide surfaces for the sliding of the locking protrusion that extends from the trigger when the trigger is moved into the ON-UNLOCKED position. In addition, they can provide a surface onto which the underside of the trigger can cooperate for locking the trigger in the ON-LOCKED position.

[0010] The trigger can be conveniently mounted to the motor housing by providing a second cavity in the mounting surface and by providing a second protrusion on the trigger for passing through the cavity and retaining the trigger. Though other manners of retaining the trigger are possible, an inexpensive way is to have one or more protrusions that are flexible so that they can flex into an insertion position and then resiliently return to their original shape to retain the trigger.

[0011] To facilitate rotational movement of the trigger relative to the mounting surface, it is provided with a third protrusion that can act as a pivot point. It is advantageous if this protrusion has a smooth curved surface so that it can also slide easily along the mounting surface. The positioned lengthwise at a position closer to a center of the second pressing surface than to an interface between the first pressing surface and the second pressing surface. Doing so means there is less leverage for rotating the trigger when pressing the second pressing surface. As such it is less likely to be accidentally rotated than if

the third protrusion were placed directly at the interface between the two pressing surfaces or if it were closer to a comparable midpoint of the first pressing surface.

[0012] The relative proportions are such that pressing in a direction normal to the first pressing surface when the trigger is in the ON-UNLOCKED position will not rotate or slide the trigger. This makes it less likely that for undesirable movements which may inadvertently turn on the device.

[0013] Although safety is a critical concern, it is also important that the trigger can be retained in the ON-LOCKED position. Therefore it is advantageous that once the user has positioned his thumb or fingers such that he can engage the second pressing surface, additional pressure on the second pressing surface will not cause the trigger to slide or rotate. Therefore, once the contemplated action of turning on the tool is completed, the user must also make a conscious decision in order to turn off the tool.

[0014] It is convenient if the first pressing surface, which is also used for initiating the movement of the switch into the ON-UNLOCKED position can at the same time provide a pressing surface for additional actions, such as for manually moving the trigger from the ON-LOCKED position to the ON-UNLOCKED position. This aspect is advantageously combined with the fact that the biasing force will semi-automatically complete the action of returning the trigger from the ON-UNLOCKED position to the OFF position. Therefore advantageously only a single action is needed to turn the tool off.

[0015] The inventive embodiments herein described can be used for a variety of different powered devices. Although also suitable for stationary devices, they are particularly useful for hand-held devices, and especially for hand-held power tools, such as grinders, saws, rotary tools, etc., since improper handling of these devices may often present safety risks. Certain embodiments are particularly well suited for incorporation into an angle grinder, since safety is a great concern for such devices and a thumb trigger is a customary means used for activating the device.

DRAWINGS

[0016]

- Figure 1 is a perspective view of an angle grinder according to the present invention.
- Figure 2 is a side view of a prior art trigger for a powered device. Also illustrated is an angle that approximates the shape of the prior art trigger surface.
- Figure 3 is a side view of a trigger for a powered device. Also illustrated is an angle that approximates the shape of the trigger surface.
- Figure 4 is a perspective view of a trigger for a powered device.
- Figure 5 is a front view of a trigger for a powered

device.

- Figure 6 is a partial side view of a housing of a powered device with the trigger removed.
- Figure 7 is a partial section view of a powered device with its trigger in the OFF position.
- Figure 8 is a partial section view of a powered device with its trigger in the ON-UNLOCKED position.
- Figure 9 is a partial section view of a powered device with its trigger in the ON-LOCKED position.
- Figure 10 is a schematic view of the coupling between a trigger and a switch.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0017] A powered device, in this case an angle grinder 10, is shown in Fig. 1. In this particular device and also in many devices of this type, a motor housing 12 also provides a first operational handle for the user. A second operational handle 14 may also be provided so that a user can accurately guide the working tool 16 driven by the device. A portion of the motor housing 12 is configured with a gently curved but generally flat mounting surface 18 for mounting an ON-OFF trigger button 20 that is coupled with a switch 22 that is used to switch the tool between an ON and an OFF state (see Figs. 6 and 10). As mentioned, the motor housing 12 can also act as an operational handle by providing a palm gripping surface 24. The gripping of this surface with the user's palm conveniently positions the hand so that his thumb can manipulate ON-OFF trigger button 20.

[0018] Although an angle grinder 10 is illustrated for the purpose of describing the structure of certain embodiments of the invention, the invention is not limited in utility to power tools, or to hand-held devices, or even to electrical devices. Any sort of machinery - irrespective of size - having a source of power and an ON-OFF switch may benefit from the invention. A variety of hand-held items not generally considered to be power tools, such as a hair dryers or the like, may also benefit. Pneumatic devices could benefit, in so far as the flow of their source of power (pressurized gas) can be switched on or off to enable the device.

[0019] The trigger button 20 herein described is separate from and coupled with a distinct switch 22 since this arrangement is often used for economic or design reasons, but it is contemplated that such a trigger may alternatively be an intrinsic part of a switch.

[0020] To better describe embodiments of the invention, a prior art ON-OFF trigger button 20' shown in Fig. 1 will first be described. To facilitate comparison with embodiments of the invention described thereafter, each feature of prior art trigger button 20' will be identified with a prime symbol (i.e., "'"). Certain aspects of the angle grinder 10, motor housing 12 and mounting surface 18 will be described in the context of prior art trigger button 20', but it should be appreciated that an identical mounting surface 18 can be utilized with both prior art trigger

button 20' and trigger button 20.

[0021] On its top side, trigger button 20' is provided with a first pressing surface 26' and a second pressing surface 28' (see Fig. 2). A paired set of symmetrical or asymmetrical flexible retaining arms 30' is present on the underside of trigger button 20'. These flex so that during assembly they can pass through a cavity 32 in the mounting surface 18 of the motor housing 12 but later resiliently return to their original shape so that paired latching protrusions 34' will retain trigger button 20'. Also on the underside of trigger button 20' is a locking protrusion 36' that cooperates with a second cavity 38 in the mounting surface 18 to retain trigger button 20' in the locked position that will be described below. The underside also provides paired laterally located pivot protrusions 40' which also contribute to this locking mechanism.

[0022] Trigger button 20 shares these all of these features, including first pressing surface 26, second pressing surface 28, flexible retaining arms 30, latching protrusions 34, locking protrusion 36, and pivot protrusions 40 (see Figs. 3, 4 and 5). However, while certain features are shared - and in fact the two trigger buttons 20, 20' can cooperate with the same mounting surface 18 - the arrangement of the features and the way they cooperate is quite different.

[0023] For example in comparing the side views in Figs. 2 and 3, it is apparent that the orientation of first pressing surfaces 26, 26' and second pressing surfaces 28, 28' with respect to each other is quite different. Though in neither case are the pressing surfaces perfectly flat, they are generally planar so that one can consider the general angle formed between the two surfaces. In prior art trigger button 20', the angle 42' is obtuse, that is, between 90 and 180 degrees, and as illustrated is generally about 150 degrees. In the case of trigger button 20, the angle 42 is generally a reflex angle, that is, greater than 180 degrees, and as illustrated is generally about 205 degrees.

[0024] Although there may or may not be a specific interface between the two pressing surfaces, the surfaces in each case are adjacent each other, so that there are nevertheless general interfaces 44, 44' between the two pressing surfaces somewhere near the vertex of the angles 42, 42' defined above. The pivot protrusions 40' in the case of prior art trigger button 20' are approximately underneath this interface 44', but the pivot protrusions 40 in trigger button 20 are further away from the interface 44 and are positioned closer to the lengthwise center 46 of second pressing surface 28.

[0025] As is also the case in for prior art trigger button 20', retaining arms 30 pass through a cavity 32 in the mounting surface 18 for retaining trigger button 20, but these retaining arms 30 furthermore pass through a switch arm 48 present within motor housing 12 so that these parts are coupled. The top face 50 of each of the paired latching protrusions 34 is angled to accommodate rotation of trigger button 20 since it must nevertheless pass through the switch arm 48. Switch arm 48 cooper-

ates directly with switch 22 and is biased by a compression spring 52 in a direction of arrow 54 so that in the rest position, trigger button 20 is biased into a first "OFF" position as shown in Fig. 7. The arrangement of these features is shown schematically in Fig. 10. Compression spring 52 is positioned between a housing portion 56 and switch arm 48. An extension 58 of switch arm 28 mechanically activates switch 22.

[0026] Trigger button 20 is positioned between two raised shoulders 60 extending from mounting surface 18. Raised shoulders 60 and mounting surface 18 form a track in which trigger button 20 can slide from the OFF position to the other positions. By preferably manipulating first pressing surface 26, a user can slide trigger button 20 against the biasing force of spring 52 so that trigger button 20 takes on the position shown in Fig. 8. In doing so, locking protrusion 36 passes between two guide shelves 62 which are on either side of locking protrusion 36 and the pivot protrusions 40 slide along mounting surface 18. This is the "ON-UNLOCKED" position, since switch arm 48 in this position will enable switch 22.

[0027] Although in this position locking protrusion 36 is no longer between guide shelves 62 and is position above cavity 38, further pressure on first pressing surface 26 can not and does not move trigger button 20 into the "ON-LOCKED" position in Fig. 9. This can only be accomplished though pressure on second pressing surface 28 once the button is in the ON-UNLOCKED position. Trigger button 20 is retained in this position due to the force of spring 52 which pulls the locking protrusion 36 against a wall 64 of second cavity 38. In addition, the trigger has a partially hollow underside so that an inner wall 66 of the trigger 20 found on this underside is pulled by the force of spring 52 into contact with guide shelves 62. Therefore spring 52 acts as biasing means not only for establishing the OFF position but also for retaining the trigger in the ON-LOCKED position.

[0028] This splitting of the movement of trigger button 20 into two phases is realized due to the particular shape of trigger button 20. In similar circumstances, prior art trigger button 20' works differently. Normally the second pressing surface 28' is engaged for moving from the OFF position to the ON-UNLOCKED position. However, continued pressure on the second pressing surface 28' will also move trigger button 20' further all the way into the ON-LOCKED position.

[0029] The movement into the ON-LOCKED position does not involve further axial movement of trigger button 20 but instead involves a rotation of trigger button 20 around pivot points created by the pivot protrusions 40 pressing against mounting surface 18. The pivot protrusions 40 have a curved under surface 68 to enable this pivoting while at the same time permit pivot protrusions 40 to slide smoothly along mounting surface 18 when trigger button 20 is moved from the OFF position to the ON-UNLOCKED position.

[0030] To release trigger button 20 from the ON-LOCKED position, the user presses with a force normal

to first pressing surface 26. This rotates trigger button 20 in the opposite direction with respect to pivot protrusions 40, thereby freeing the locking protrusion 36 from cavity 38 so that the biasing force of spring 52 will "automatically" return trigger button 20 into the OFF position. Prior art button 20' has a similar release mechanism, in so far as pressure on first pressing surface 26' achieves the same effect.

[0031] To facilitate manual manipulation of trigger button 20, ribs 70 are provided on the first pressing surface 26. To better fit the shape of a user's thumb, a concave depression 72 is provided on the second pressing surface 28, and as best seen in Fig. 4, the first pressing surface 26 also has a bit of a concave curved shape.

Claims

1. A powered device having an ON-OFF mechanism comprising:

a housing (12) having a mounting surface (18); a trigger (20) associated with said mounting surface (18) and having an OFF position, an ON-UNLOCKED position, and an ON-LOCKED position, wherein said trigger (20) is coupled with a switch (22) that is used to switch the device between an ON and an OFF state; means for biasing the trigger (52) into the OFF position from the ON-UNLOCKED position; said trigger (20) comprising a first pressing surface (26) for manual movement of the trigger (20) from the OFF position against said biasing means (52) to the ON-UNLOCKED position, and a second pressing surface (28) for manual movement of the trigger (20) from the ON-UNLOCKED position to the ON-LOCKED position, wherein this can only be accomplished through pressure on second pressing surface (28) once the trigger (20) is in the ON-UNLOCKED position; wherein the first pressing surface (26) and the second pressing surface (28) are generally adjacent to each other and form a reflex angle (42).

2. A powered device according to claim 1, **characterized in that** the housing (12) has two shoulders (60) which extend from the mounting surface (18) and the trigger (20) is positioned between the two shoulders (60).
3. A powered device according to any one of the preceding claims, **characterized in that** the trigger (20) slides along the mounting surface (18) when the trigger (20) is moved from the OFF position to the ON-UNLOCKED position.
4. A powered device according to any one of the pre-

ceding claims, **characterized in that** the trigger (20) generally rotates relative to said mounting surface (18) when the trigger (20) is moved from the ON-UNLOCKED position to the ON-LOCKED position.

5. A powered device according to any one of the preceding claims, **characterized in that** said mounting surface (18) has a first cavity (38) for cooperating with a first protrusion (36) on the trigger (20) for locking the trigger (20) into the ON-LOCKED position.
6. A powered device according to claim 5, **characterized in that** the housing (12) has two shelves (62) extending from the mounting surface (18) which are on either side of the first protrusion (36) when the trigger (20) is in the OFF position and which cooperate with the underside (66) of the trigger (20) for locking the trigger in the ON-LOCKED position.
7. A powered device according to any one of the preceding claims, **characterized in that** said mounting surface (18) has a second cavity (32) for cooperating with a second protrusion (30) on the trigger (20) for retaining the trigger (20) onto the housing (12).
8. A powered device according to any one of the preceding claims, **characterized in that** the trigger (20) further comprises a third protrusion (40) that acts as a pivot point when the trigger (20) rotates relative to said mounting surface (18).
9. A powered device according to claim 8, **characterized in that** the third protrusion (40) is positioned lengthwise at a position closer to a center (46) of the second pressing surface (28) than to an interface (44) between the first pressing surface (26) and the second pressing surface (28).
10. A powered device according to any one of the preceding claims, **characterized in that** when the trigger (20) is in the ON-UNLOCKED position, pressure normal to the first pressing surface (26) does not rotate or slide the trigger (20).
11. A powered device according to any one of the preceding claims, **characterized in that** when the trigger (20) is in the OFF position, pressure on the second pressing surface (28) does not rotate or slide the trigger (20).
12. A powered device according to any one of the preceding claims, **characterized in that** when the trigger (20) is in the ON-LOCKED position, pressure on the second pressing surface (28) does not rotate or slide the trigger (20).
13. A powered device according to any one of the preceding claims, **characterized in that** pressure nor-

mal to the first pressing surface (26) can be used for manually moving the trigger (20) from the ON-LOCKED position to the ON-UNLOCKED position.

14. A powered device according to any one of the preceding claims, **characterized in that** the powered device is an angle grinder (10).

Patentansprüche

1. Angetriebene Vorrichtung mit einem EIN-AUS-Mechanismus, umfassend:

ein Gehäuse (12) mit einer Befestigungsfläche (18);

einen Auslöser (20), der mit der Befestigungsfläche (18) verbunden ist und mit einer AUS-Position, einer EIN-ENTRIEGELTEN Position und einer EIN-VERRIEGELTEN Position, wobei der Auslöser (20) mit einem Schalter (22) gekoppelt ist, der verwendet wird, um die Vorrichtung zwischen einem EIN- und AUS-Zustand zu schalten;

Mittel zum Vorspannen des Auslösers (52) in der AUS-Position von der EIN-ENTRIEGELTEN Position; wobei der Auslöser (20) eine erste Druckoberfläche (26) zur manuellen Bewegung des Auslösers (20) von der AUS-Position entgegen der Vorspannmittel (52) zur EIN-ENTRIEGELTEN Position und eine zweite Druckoberfläche (28) zur manuellen Bewegung des Auslösers (20) von der EIN-ENTRIEGELTEN Position zu der EIN-VERRIEGELTEN Position umfasst, wobei dies nur durch Druck auf die zweite Druckoberfläche (28) erreicht werden kann, sobald sich der Auslöser (20) in der EIN-ENTRIEGELTEN Position befindet;

wobei die erste Druckoberfläche (26) und die zweite Druckoberfläche (28) im Allgemeinen benachbart zueinander sind und einen überstumpfen Winkel (42) bilden.

2. Angetriebene Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** das Gehäuse (12) zwei Schultern (60) aufweist, die sich von der Befestigungsfläche (18) erstrecken, und dass der Auslöser (20) zwischen den zwei Schultern (60) angeordnet ist.

3. Angetriebene Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Auslöser (20) entlang der Befestigungsfläche (18) gleitet, wenn der Auslöser (20) von der AUS-Position zu der EIN-ENTRIEGELTEN Position bewegt wird.

4. Angetriebene Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass**

der Auslöser (20) im Allgemeinen in Bezug auf die Befestigungsfläche (18) dreht, wenn der Auslöser (20) von der EIN-ENTRIEGELTEN-Position zu der EIN-VERRIEGELTEN Position bewegt wird.

5. Angetriebene Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Befestigungsfläche (18) einen ersten Hohlraum (38) zum Zusammenwirken mit einem ersten Vorsprung (36) auf dem Auslöser (20) zum Verriegeln des Auslösers (20) in der ON-VERRIEGELTEN Position aufweist.

6. Angetriebene Vorrichtung nach Anspruch 5, **dadurch gekennzeichnet, dass** das Gehäuse (12) zwei Platten (62) aufweist, die sich von der Befestigungsfläche (18) erstrecken, die auf jeder Seite des ersten Vorsprungs (36) angeordnet sind, wenn der Auslöser (20) in der AUS-Position ist, und die mit der Unterseite (66) des Auslösers (20) zum Verriegeln des Auslösers in der EIN-VERRIEGELTEN Position zusammenwirken.

7. Angetriebene Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Befestigungsfläche (18) einen zweiten Hohlraum (32) zum Zusammenwirken mit einem zweiten Vorsprung (30) auf dem Auslöser (20) zum Halten des Auslösers (20) am Gehäuse (12) aufweist.

8. Angetriebene Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Auslöser (20) ferner einen dritten Vorsprung (40) umfasst, der als Drehpunkt dient, wenn der Auslöser (20) in Bezug auf die Befestigungsfläche (18) dreht.

9. Angetriebene Vorrichtung nach Anspruch 8, **dadurch gekennzeichnet, dass** der dritte Vorsprung (40) längs an einer Position angeordnet ist, die einer Mitte (46) der zweiten Druckoberfläche (28) näher ist als eine Schnittstelle (44) zwischen der ersten Druckoberfläche (26) und der zweiten Druckoberfläche (28).

10. Angetriebene Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass**, wenn der Auslöser (20) in der EIN-ENTRIEGELTEN Position ist, der Druck, der normal zu der ersten Druckoberfläche (26) angelegt wird, den Auslöser (20) nicht dreht oder gleiten lässt.

11. Angetriebene Vorrichtung nach einem der vorherge-

henden Ansprüche, **dadurch gekennzeichnet, dass**, wenn der Auslöser (20) in der AUS-Position ist, der Druck auf die zweite Druckoberfläche (28) den Auslöser (20) nicht dreht oder gleiten lässt.

12. Angetriebene Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass**, wenn der Auslöser (20) in der EIN-VERRIEGELTEN Position ist, der Druck auf die zweite Druckoberfläche (28) den Auslöser (20) nicht dreht oder gleiten lässt.
13. Angetriebene Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** Druck, der normal an die erste Druckoberfläche (26) angelegt wird, zum manuellen Bewegen des Auslösers (20) von der EIN-VERRIEGELTEN Position zu der EIN-UNVERRIEGELTEN Position verwendet werden kann.
14. Angetriebene Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die angetriebene Vorrichtung ein Winkelschleifer (10) ist.

Revendications

1. Dispositif électrique comprenant un mécanisme MARCHE-ARRÊT, comprenant :
- un boîtier (12) ayant une surface de montage (18) ;
- une gâchette (20) associée à ladite surface de montage (18) et présentant une position ARRÊT, une position MARCHE-DÉVERROUILLÉE, et une position MARCHE-VERROUILLÉE, ladite gâchette (20) étant accouplée à un interrupteur (22) qui est utilisé pour commuter le dispositif entre un état MARCHE et un état ARRÊT ;
- un moyen (52) pour solliciter la gâchette dans la position ARRÊT à partir de la position MARCHE-DÉVERROUILLÉE ; ladite gâchette (20) comprenant une première surface de pression (26) pour le déplacement manuel de la gâchette (20) de la position ARRÊT à l'encontre dudit moyen de sollicitation (52) à la position MARCHE-DÉVERROUILLÉE et une deuxième surface de pression (28) pour le déplacement manuel de la gâchette (20) de la position MARCHE-DÉVERROUILLÉE à la position MARCHE-VERROUILLÉE, ceci pouvant être effectué uniquement par pression sur la deuxième surface de pression (28) une fois que la gâchette (20) est dans la position MARCHE-DÉVERROUILLÉE ;
- la première surface de pression (26) et la

deuxième surface de pression (28) étant généralement adjacentes l'une à l'autre et formant un angle rentrant (42).

2. Dispositif électrique selon la revendication 1, **caractérisé en ce que** le boîtier (12) présente deux épaulements (60) qui s'étendent depuis la surface de montage (18) et la gâchette (20) est positionnée entre les deux épaulements (60).
3. Dispositif électrique selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la gâchette (20) glisse le long de la surface de montage (18) lorsque la gâchette (20) est déplacée de la position ARRÊT à la position MARCHE-DÉVERROUILLÉE.
4. Dispositif électrique selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la gâchette (20) tourne généralement par rapport à ladite surface de montage (18) lorsque la gâchette (20) est déplacée de la position MARCHE-DÉVERROUILLÉE à la position MARCHE-VERROUILLÉE.
5. Dispositif électrique selon l'une quelconque des revendications précédentes, **caractérisé en ce que** ladite surface de montage (18) présente une première cavité (38) destinée à coopérer avec une première saillie (36) sur la gâchette (20) de manière à verrouiller la gâchette (20) dans la position MARCHE-VERROUILLÉE.
6. Dispositif électrique selon la revendication 5, **caractérisé en ce que** le boîtier (12) présente deux tablettes (62) s'étendant depuis la surface de montage (18), lesquelles sont de part et d'autre de la première saillie (36) lorsque la gâchette (20) est dans la position ARRÊT et coopèrent avec le côté inférieur (66) de la gâchette (20) de manière à verrouiller la gâchette dans la position MARCHE-VERROUILLÉE.
7. Dispositif électrique selon l'une quelconque des revendications précédentes, **caractérisé en ce que** ladite surface de montage (18) présente une deuxième cavité (32) pour coopérer avec une deuxième saillie (30) sur la gâchette (20) de manière à retenir la gâchette (20) sur le boîtier (12).
8. Dispositif électrique selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la gâchette (20) comprend en outre une troisième saillie (40) qui sert de pivot lorsque la gâchette (20) tourne par rapport à ladite surface de montage (18).
9. Dispositif électrique selon la revendication 8, **caractérisé en ce que** la troisième saillie (40) est positionnée en longueur dans une position plus proche d'un centre (46) de la deuxième surface de pression

(28) que d'une interface (44) entre la première surface de pression (26) et la deuxième surface de pression (28).

10. Dispositif électrique selon l'une quelconque des revendications précédentes, **caractérisé en ce que**, lorsque la gâchette (20) est dans la position MARCHE-DÉVERROUILLÉE, une pression perpendiculairement à la première surface de pression (26) ne fasse pas tourner ou glisser la gâchette (20). 5
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11. Dispositif électrique selon l'une quelconque des revendications précédentes, **caractérisé en ce que**, lorsque la gâchette (20) est dans la position ARRÊT, une pression sur la deuxième surface de pression (28) ne fasse pas tourner ou glisser la gâchette (20). 15
12. Dispositif électrique selon l'une quelconque des revendications précédentes, **caractérisé en ce que**, lorsque la gâchette (20) est dans la position MARCHE-VERROUILLÉE, une pression sur la deuxième surface de pression (28) ne fasse pas tourner ou glisser la gâchette (20). 20
13. Dispositif électrique selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**une pression perpendiculairement à la première surface de pression (26) peut être utilisée pour déplacer manuellement la gâchette (20) de la position MARCHE-VERROUILLÉE à la position MARCHE-DÉVERROUILLÉE. 25
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14. Dispositif électrique selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le dispositif électrique est une meuleuse d'angle (10). 35

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Fig. 1

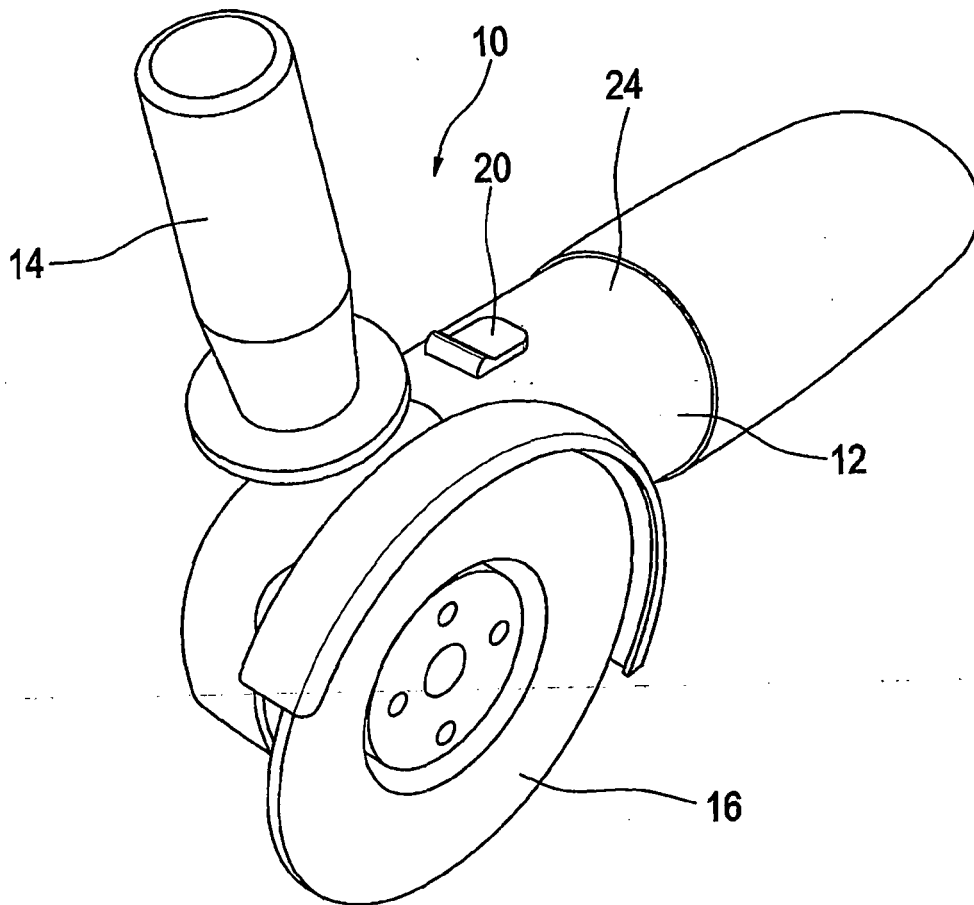


Fig. 2

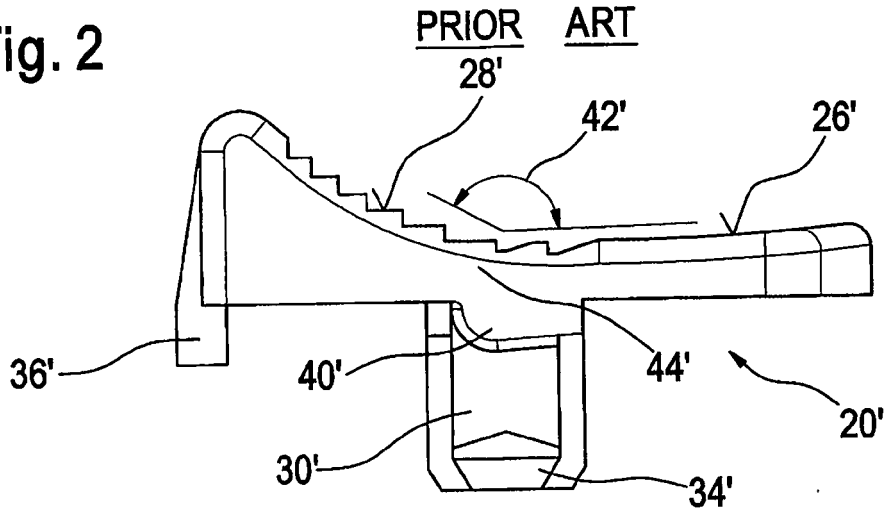


Fig. 3

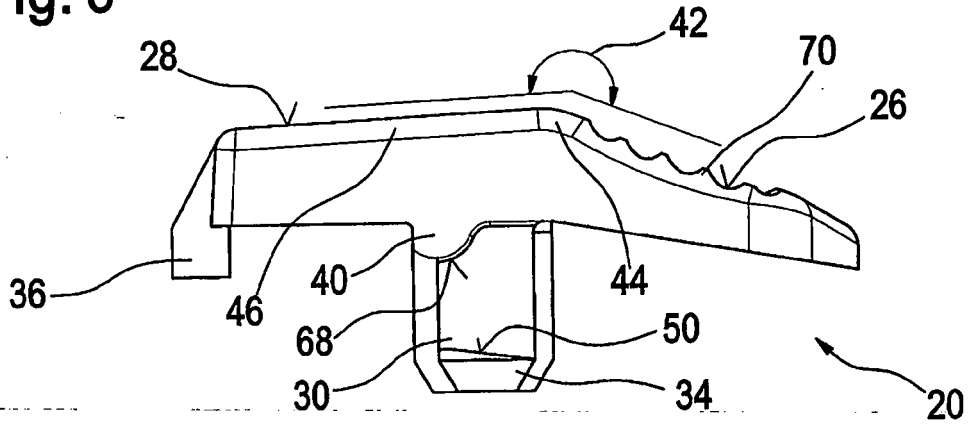


Fig. 4

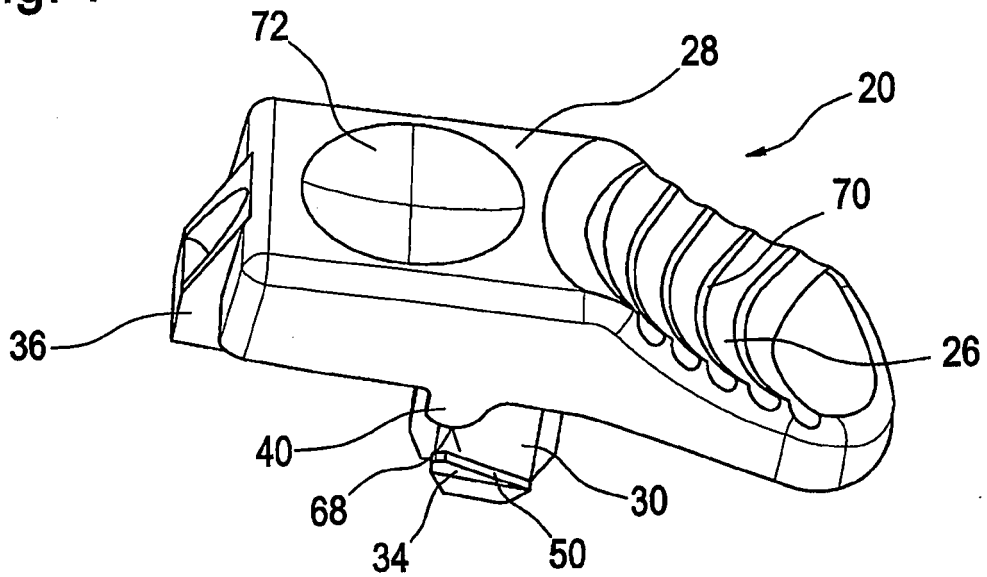


Fig. 5

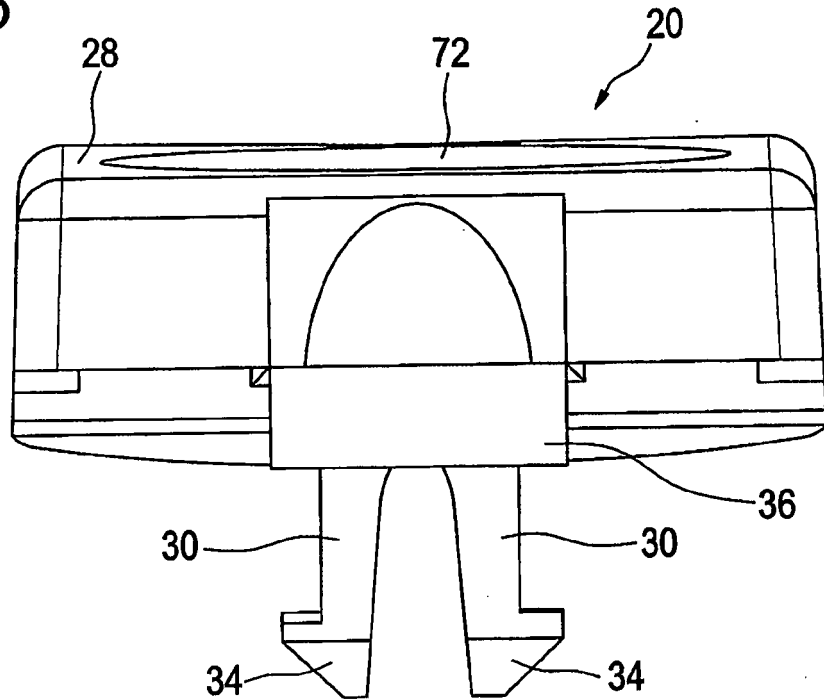


Fig. 6

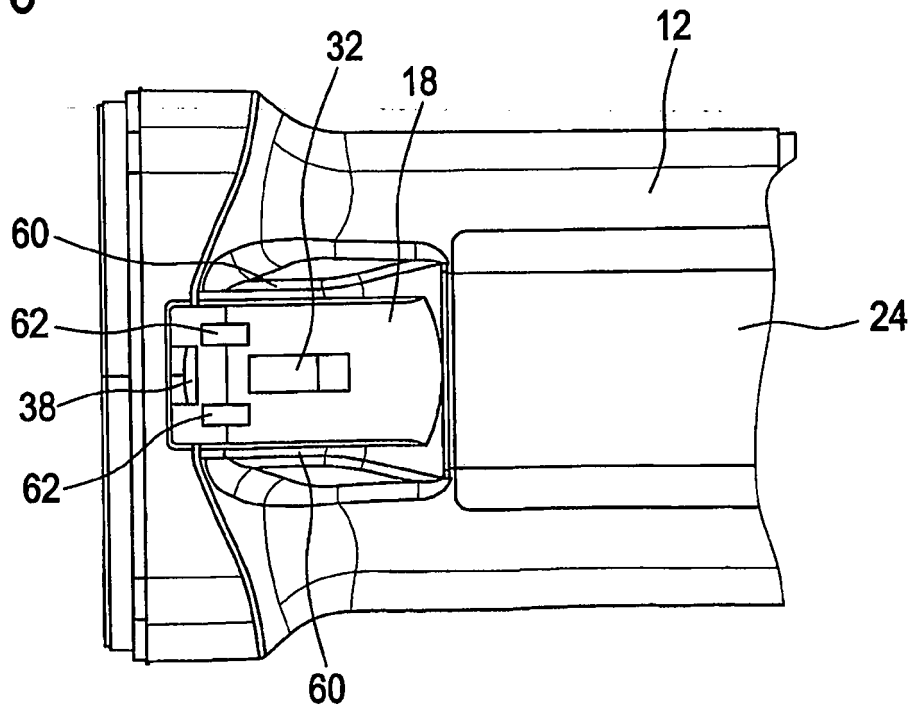


Fig. 7

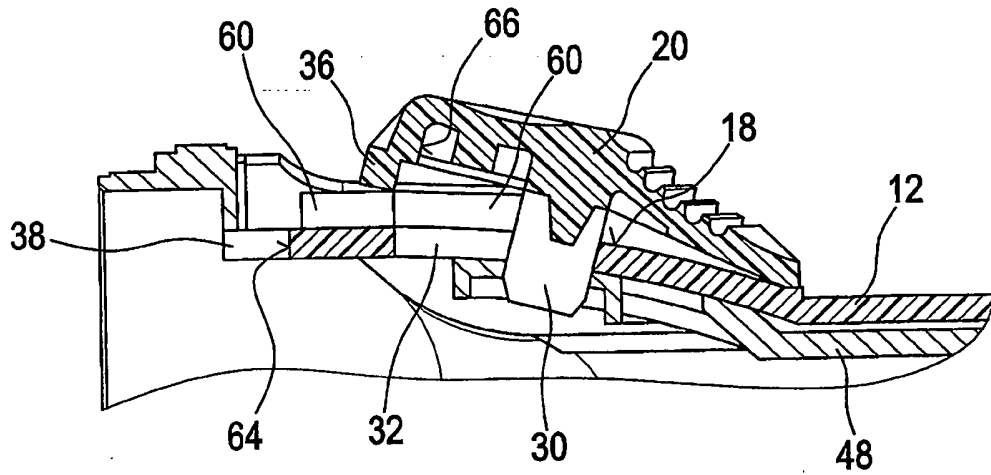


Fig. 8

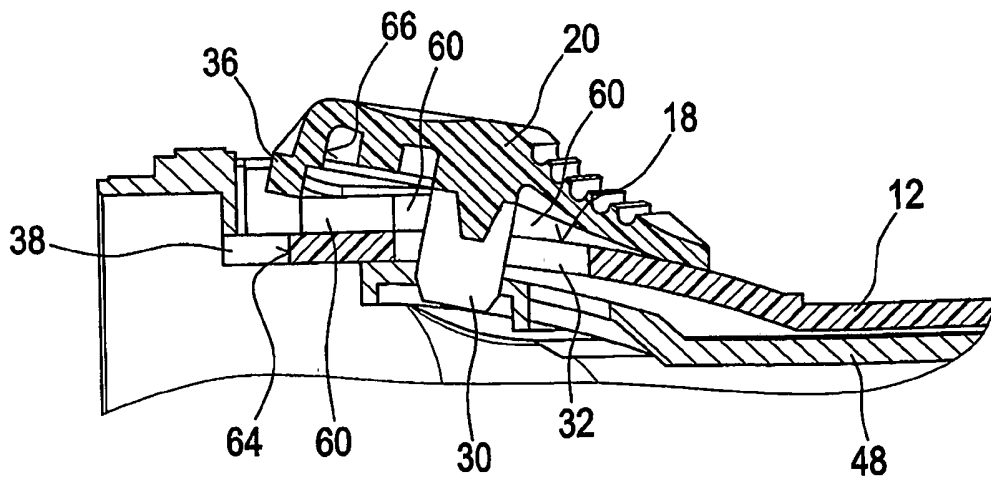


Fig. 9

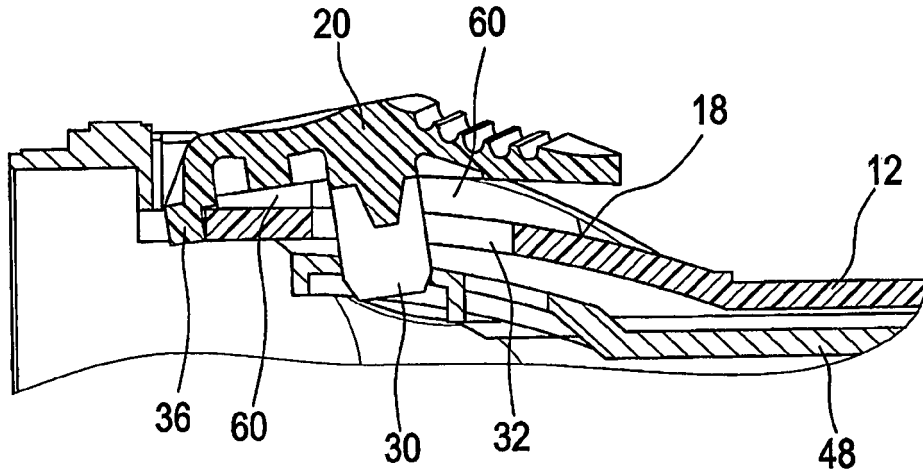
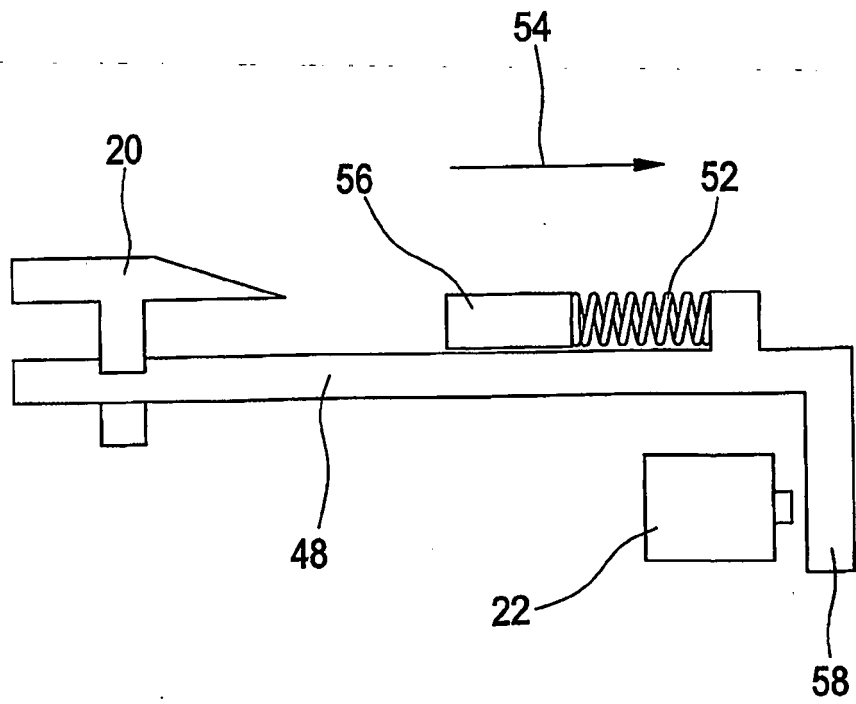


Fig. 10



REFERENCES CITED IN THE DESCRIPTION

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