(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 355 963 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
17.10.2012 Bulletin 2012/42

(21) Application number: **09796446.4**

(22) Date of filing: **02.12.2009**

(51) Int Cl.:
B27F 1/02 *(2006.01)* ***B27F 1/04*** *(2006.01)*

(86) International application number:
PCT/IB2009/007647

(87) International publication number:
WO 2010/067163 (17.06.2010 Gazette 2010/24)

(54) **A COMBINED CUTTING MACHINE WITH SAFETY DEVICE**

KOMBINATION AUS SCHNEIDMASCHINE UND SICHERHEITSVORRICHTUNG

MACHINE DE COUPE COMBINÉE MUNIE D'UN DISPOSITIF DE SÉCURITÉ

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR

(30) Priority: **09.12.2008 IT MO20080319**

(43) Date of publication of application:
17.08.2011 Bulletin 2011/33

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Printed by Jouve, 75001 PARIS (FR)

Description

[0001] The present invention relates to a combined cutting machine for cutting pieces in the form of section members, bars and the like, according to the preamble of claim 1.

[0002] Such a combined cutting machine is known from WO 2008034237 A1.

[0003] Known in the art are cutting machines and in particular combined cutting machines, i.e. machines having two different working planes, an upper and a lower one respectively, for cutting section members, bars, narrow wooden boards for skirting boards and other articles of manufacture, which are provided with means for rotation-translation of the work head relative to the working plane.

[0004] These types of machines are generally used in *si tu,* in the building yards for example, for cutting the above mentioned articles of manufacture.

[0005] These machines contemplate the presence of a work head that is movable relative to the lower working plane and manually drivable by means of gripping members; the work head is provided with a cutting member, generally consisting of a powered rotating blade, for carrying out cutting and/or squaring and/or facing operations on the workpieces resting on the lower working plane.

[0006] The upper region of the work head is substantially planar to define the upper working plane which is provided with a slit from which the upper portion of the cutting member protrudes for cutting the pieces placed on the upper working plane itself and integrally fastened thereto by abutment elements and threaded fastening means.

[0007] Both the working plane and the auxiliary working plane are provided with respective reference abutments and the blade is provided with protection means adapted to prevent accidents to the operator.

[0008] In particular, the work head is rotatably associated with the lower work plane according to at least one rotation axis substantially parallel to the plane defined by the lower work plane.

[0009] Known combined machines can work following a first operating mode; for cutting the workpieces the operator can swing the work head relative to the base for moving the blade close to/away from the support plane.

[0010] In a second operating mode, the work head is locked in contact with the base so that the auxiliary work plane is disposed substantially horizontal and the workpieces can be cut by the blade portion emerging from the slit, in this configuration the machine behaving like a table saw.

[0011] For changing from the second to the first operating mode and vice-versa the work head is required to be unlocked by a proper release button.

[0012] The machines of known type also comprise a control switch for setting the blade in rotation, said switch being in particular operable in a first and a second work configuration.

[0013] The first work configuration, referred to as "in the presence of an operator" or "of switching-off by release", is of such a nature that it can be used when the machine is employed as a cutting machine because the blade is driven in rotation only when the switch push-button is pressed by the operator and, on the contrary, stops when the operator releases said button.

[0014] In this manner the operator will be able to drive the work head with one hand for cutting, while with the other hand will bring the piece close to the cutting region.

[0015] When, on the contrary, the machine acts as a table saw, the switch is in the second work configuration, the so-called "on-off" configuration, in which it is necessary to actively press the push button for operating both switching-on and switching-off of rotation of the blade.

[0016] In this work configuration the operator will be able to drive the workpiece on the upper plane using both hands. Known machines further comprise a switching element to change the switch from the first to the second work configurations and vice-versa.

[0017] This switching element can be mechanically connected to the auxiliary work plane and maneuvering of same is required for automatic switching of the switch from one work configuration to the other, when passage from the close to the remote configurations occurs.

[0018] In a second embodiment, the switching element is mechanically connected to the work head and is automatically drivable for switching from the second to the first work configurations when the work head is inclined to the base.

[0019] In alternative embodiments, protection of the upper blade portion is carried out by translation of the upper plane so that the blade does not emerge from the slit formed in the upper plane itself.

[0020] Positioning of the work plane so as to cover the blade electrically enables the switching element for operation of the switch in the mode "with the presence of an operation" and therefore enables the machine to be used as a cutting machine.

[0021] However, these machines of known type are not free from drawbacks among which it is to be mentioned the fact that switching between the first and second configurations of the switch generally takes place under unsafe conditions for the operator; in fact, when the machine is used as a cutting machine, the upper blade portion emerging from the auxiliary work plane can remain uncovered with the switch working in its on-off function.

[0022] In addition, the switching element is easily subject to jamming due to the use conditions of the machine and therefore inefficiency of the machine may occur.

[0023] In the machines in which enabling to the switch given by translation of the upper plane is provided, there is the drawback that the translation operations are complicated and the translation jacks of the upper plane can easily break. In addition, the operator for driving the upper plane in translation must position his/her hands on the machine sides, leaving the gripping/control position that is generally located at the front; this operation not only

represents a risk for the operator's hands that are obliged to operate in a "blind" area of the machine, but also involves slowing-down in the cutting operations.

[0024] It is a main task of the present invention to eliminate the above mentioned drawbacks of the known art by conceiving a combined cutting machine enabling the cutting operations to be carried out both in the mode of a cutting machine and in the mode of a table saw in a fully safe manner for the operator.

[0025] In addition, the machine must allow easy and simple switching between the two modes and in particular between the respective work configurations of the switch, as well as a quick accomplishment of said operations.

[0026] Another aim of the invention is to guarantee that the cutting machine in accordance with the invention is in compliance with the most severe safety regulations for the operator concerned with the combined cutting machines, while at the same time being of easy use and ergonomic.

[0027] Within the scope of this technical task, another aim of the invention is to exhibit a simple structure, of relatively easy practical accomplishment, sure use and efficient operation, and also of relatively reduced cost. W02008/034237 discloses a mitre saw which can be converted into a table saw.

[0028] The technical task mentioned and the aims specified are all achieved by the present combined cutting machine, according to claim 1.

[0029] Further features and advantages of the present invention will become more apparent from the detailed description of a preferred but not exclusive embodiment of a combined cutting machine, shown by way of non-limiting example in the accompanying drawings, in which:

- Fig. 1 is a side view of a cutting machine, in accordance with the invention;
- Fig. 2 is a detail of Fig. 1;
- Fig. 3 is a side view of an alternative embodiment of a cutting machine, according to the invention;
- Fig. 4 is a detail of Fig. 3.

[0030] Referring particularly to the drawings, generally denoted at 1 is a combined cutting machine comprising a base 2 defining at least one working plane 3 for supporting at least one workpiece.

[0031] The working plane 3 can be of the type rotating around a substantially vertical axis for example, and can have fastening means for temporarily fastening the workpiece, of the vice type or the like for example, not shown in detail as it is of known type, as well as abutment means 4 for positioning of the workpiece in a working region defined by the working plane itself.

[0032] The machine 1 further comprises at least one work head 5, equipped with a circular rotating blade 6 at least partly protruding from the head 5. The head is associated, rotatably for example, with base 2 and is movable relative to the latter at least between a configuration in which it is close to the working plane 3 and a configuration in which it is remote therefrom.

[0033] Blade 6 is associated with control means, a conventional electric motor for example, as known to a person of ordinary skill in the art.

[0034] In particular, by protruding portion it is intended the lower and/or upper arc of blade 6 emerging from head 5 and comprising the lower and/or upper active portion for cutting the piece.

[0035] The work head is rotatably connected to base 2 for rotation relative to at least one axis substantially parallel to the working plane 3 according to a rotation R1 shown in the figure for moving the work head 5 and the working table close to/away from each other.

[0036] In particular, the rotation axis of head 5 and the rotation axis of blade 6 are parallel to each other.

[0037] The machine 1 comprises locking means for temporarily locking the head 5 at least in the close configuration in which the machine can be used as a table saw, and at least in the remote configuration in which head 5 is locked for housing the piece to be cut on the working plane 3, the machine 1 being usable as a cutting machine.

[0038] In addition, the machine 1 comprises at least one auxiliary working plane 7 for supporting a further workpiece, which is mounted to said head 5 and disposed thereabove. Protruding from the auxiliary working plane 7 is at least one upper portion of blade 6.

[0039] The auxiliary working plane 7 is associated in an adjustable manner with the upper portion of the work head and is provided with a through slit, from which the upper portion of blade 6 emerges for carrying out cutting of a further workpiece.

[0040] In particular, the auxiliary working plane 7 is of the adjustable type, as known to those skilled in the art, since adjustable is the distance between the auxiliary working plane 7 and the hinging axis of blade 6 on head 5, so as to enable adjustment of the cut depth imparted to the further workpiece by the upper portion of blade 6 protruding from the auxiliary working plane.

[0041] The machine 1 further comprises at least one guard or protection element for at least the upper portion of blade 6.

[0042] The protection element for at least the upper portion of blade 6 comprises at least one protective casing 8 to be removably and/or rotatably associated with the upper working plane and adapted to be fitted on the upper portion of blade 6 under non-use conditions of the latter.

[0043] In particular, casing 8 can consist of a blade cover known to a person skilled in the art or, in an equivalent manner, can be a cut-guiding square provided with a slit made in the square surface resting on the auxiliary working plane 7 and adapted to be fitted on the upper portion of blade 6.

[0044] The machine 1 further comprises at least one switch element 9 for driving the blade 6 in rotation, provided with control means 10 operable by an operator, which switch element is operable between at least a first

passive switching-off configuration (in which it is open if released by the operator) and a second active switching-off configuration (in which it is open if activated by the operator).

[0045] The passive switching-off configuration is also referred to as "in the presence of an operator" or "of switching-off by release", because in this configuration blade 6 is driven in rotation only if the operator keeps the control means 10 of the switch element 9 pressed, while rotation of the blade is stopped upon release of the control means by the operator; the active switching-off configuration, also referred to as "on-off", allows rotation of blade 6 upon a first pressure exerted by the operator on the control means 10 and keeps it in rotation until said control means receive a second command by the operator.

[0046] In particular, the locking means cooperate with the switch element 9 for switching the latter from the passive switching-off configuration to the active switching-off configuration when the work head 5 is locked at least in the close configuration.

[0047] In addition, the machine 1 particularly comprises stop means 11 for stopping the locking means, which cooperate with the protection element for locking the work head 5 in the remote configuration when the protection element is removed. Advantageously, the stop means 11 comprise at least one hook element able to engage at least one seat 12 formed in said locking means when said protection element 8 is removed with said work head 5 in the remote configuration.

[0048] The hook element comprises at least one first-class lever 13, a first end 13a of lever 13 being suitable for fitting in seat 12 for retaining the locking means and therefore maintaining the work head 5 locked in the remote configuration.

[0049] The machine 1 advantageously comprises at least one tooth 14 associated with the protection element and in particular the protective casing 8, which is adapted to contact the second end 13b of lever 13 that, relative to the rotation fulcrum 13c of the lever itself, is opposite to the first end 13a for rotation of the lever against the action of resilient means, not shown in the figure, and removal of the first end from seat 12.

[0050] Tooth 14 can be of the latch type being slidably and rotatably associated with casing 8; equivalent embodiments of tooth 14 in which it is integrally associated with casing 8 for example, are not however to be excluded.

[0051] Tooth 14 is insertable by sliding into at least one through-hole 15 formed in the auxiliary working plane 7, the lever 13 and the locking means being in fact located in a gripping region I defined below the auxiliary working plane itself.

[0052] In this case, for instance, tooth 14 is associated with casing 8 which is of the blade-guard type, known to a person skilled in the art, and is rotatably and/or removably in engagement with the upper working plane, for example.

[0053] As an alternative, tooth 14 does not interfere with the auxiliary working plane 7 being is substantially disposed in side by side relationship therewith, the lever 13 and the locking means being at all events located in a gripping region I defined below the auxiliary working plane itself. In this case tooth 14 is associated with casing 8 which in turn is of the blade-guide type, known in the art, which is removably and/or slidably associated with the upper working plane, for example.

[0054] In a first embodiment shown in Figs. 1 and 2, the locking means comprise at least a first locking element comprising at least one bar 16 slidably mounted on the work head 5 and an end of which, distal from the gripping region I, is able to be inserted into at least one housing 17 connected to base 2.

[0055] In the preferred embodiment, the machine 1 comprises two housings 17 angularly separated from each other and formed in the region of the rotation pin 18 integrally associated with base 2 for rotation of the head 5 relative to base 2, for insertion of bar 16 when the head 5 is locked in the close configuration and in the remote configuration, respectively. During the rotation movement of head 5 between the remote configuration and close configuration, bar 16 runs on the rotation pin 18 following the profile thereof.

[0056] Bar 16 is actuable from the gripping region I for locking of head 5 in the close configuration.

[0057] In the first embodiment the locking means comprise spring means 19 interposed between bar 16 and head 5 and able to insert the bar itself into the housings 17 when the head 5 is positioned in the close and remote configurations for automatic locking of same.

[0058] Movement of bar 16 is suitable for switching the switch element 9 from the passive switching-off configuration to the active switching-off configuration and vice-versa.

[0059] In this first embodiment seat 12 is formed in the first locking element.

[0060] Advantageously seat 12 is made in a front portion of bar 16 placed in the gripping region I.

[0061] In a second alternative embodiment of the machine 1, shown in Figs. 3 and 4, the locking means comprise at least a second locking element 20 different from the first locking element, for locking the head in the remote configuration.

[0062] In the rotation movement of head 5 between the remote and close configurations, bar 16 runs on the rotation pin 18 following the profile thereof.

[0063] Since the first locking element is only suitable for locking of head 5 in the close configuration, therefore the locking means comprise only one housing 17 for insertion of bar 16 exclusively when head 5 is located in the close configuration.

[0064] In this second embodiment the seat 12 is formed in the second locking element 20.

[0065] The second locking element 20 is in the form of a release push-button for example, of the type known to a person skilled in the art, which is connected to a series of lever elements, not shown as of known type, for lock-

ing/unlocking of head 5 in the remote configuration.

[0066] Advantageously, the switch element 9 is of the sliding-contact type (the so-called slide type); the mobile contact of the switch is integrally associated with bar 16 and translation of the bar for insertion and withdrawal into and from housing 17, and therefore locking of head 5 in the close and/or remote configuration, is suitable for switching of the switch element 9 from the passive switching-off configuration to the active switching-off configuration respectively, and vice-versa.

[0067] Furthermore, head 5 can be provided with a protection element also for the lower protruding portion of the blade, which may for example consist of one or more plates 21 the ends of which are folded back in a U-shaped configuration and are fitted on the lower portion of the blade 6, being rotatably associated with head 5 under non-use condition of the latter, in parallel and/or coaxial relationship with the blade itself, as known to those skilled in the art.

[0068] In particular, protective plates 21 of the telescopic type for the protruding portion of blade 6 are known which are able to gradually uncover/cover the blade during the cutting operations on the workpiece.

[0069] For example, head 5 can be rotatably associated with base 2 relative to two distinct rotation axes respectively, a first axis orthogonal to the lying plane of blade 6 for moving the work head close to/away from the working plane 3 according to a rotation R1, and a second axis parallel to the same lying plane for inclination of head 5, and therefore of the blade relative to the working plane 3, which rotation is identified as R2.

[0070] The working plane 3 further comprises a groove for housing of blade 6, which groove is formed in the working plane and such arranged that its longitudinal axis is substantially parallel to the lying plane of blade 6.

[0071] Operation of the present invention is as follows.

[0072] Using the machine 1 in the cutting mode, the operator lifts head 5 up to the remote configuration where it is locked by the locking means.

[0073] In the first embodiment in particular, the bar 16 is inserted in housing 17 due to the thrust exerted by the spring means 19 for carrying out locking in the remote configuration.

[0074] If the protective casing 8 is not present or is raised, the upper portion of blade 6 being thus uncovered, tooth 14 releases its engagement on the hook element and therefore on the second end 13b of lever 13, so that the first end 13a is inserted in seat 12 stopping translation of bar 16 by its end distal from the gripping region I inserted in housing 17. Therefore lever 13 does not allow the head 5 to be unlocked for use of the machine as a cutting machine.

[0075] In the second embodiment in particular, the second locking element 20 locks head 5 in the remote configuration.

[0076] If the protective casing 8 is not present or is raised, thus uncovering the upper portion of blade 6, tooth 14 releases its engagement on the hook element which is inserted in seat 12 stopping translation of the second locking element or release push-button, and therefore does not allow the head 5 to be unlocked for use of the machine as a cutting machine.

[0077] In the close configuration, the bar 16 is inserted either by the spring means 19 or manually by the operator into the corresponding housing 17 locking head 5 for use of the machine 1 as a table saw.

[0078] Therefore, the protection on the upper portion of blade 6 can be removed for carrying out cutting on the auxiliary working plane 7.

[0079] In addition, translation of bar 16 causes passage of the switch element from the passive switching-off configuration to the active switching-off configuration for use of the machine as a table saw.

[0080] In particular, in the first embodiment, until the protective casing 8 is not inserted again for covering blade 6, the hook element and therefore the lever 13 engages the seat 12 stopping translation of bar 16 that does not enable the machine 1 to be used as a cutting machine.

[0081] Practically it has been ascertained that the described invention reaches the intended purposes and in particular it is herein pointed out that by associating the switching element with the protection of the blade portion protruding from the auxiliary working plane, a cutting machine is obtained whose operation is fully safe for the operator and also of easy use.

Claims

1. Combined cutting machine (1) comprising

- a base (2) defining at least one working plane (3) for supporting at least one workpiece,
- at least one work head (5) provided with a circular rotating blade (6) protruding, at least in part, from said work head (5), said work head (5) being connected to said base (2) and displaceable relative thereto at least between a configuration in which it is close to said working plane (3) and a configuration in which it is remote therefrom,
- locking means (16) capable of temporarily locking said work head (5) is at least in the close configuration; - at least one auxiliary working plane (7) for supporting a further workpiece, mounted on said work head (5) and arranged thereabove, from which at least an upper portion of said blade (6) emerges,
- and at least one switch element (9) for setting said blade (6) in rotation, **characterised in that** the switch element can be operated either in a first passive switching-off configuration, in which it is open if released by the operator, or a second active switching-off configuration, in which it is open if activated by the operator;

wherein locking means (16) is capable of temporarily locking said work head (5) is at least in the close configuration and in the remote configuration;- said locking means (16) cooperate with said switch element (9) so as to switch said element from the passive switching-off configuration to the active switching-off configuration when the work head (5) is locked, and in the close configuration.

2. Machine (1) according to claim 1, **characterized in that** there is further provided at least one protection element (8) for protecting at least said upper portion of the blade and stop means (11) for stopping said locking means (16), which stop means cooperate with said protection element (8) so as to lock the work head (5) in said remote configuration when said protection element (8) is removed.

3. Machine (1) according to claim 2, **characterized in that** said stop means (11) comprise at least one hook element able to engage with at least one seat (12) formed in said locking means when said protection element (8) is removed with said work head (5) in the remote configuration.

4. Machine (1) according to claim 3, **characterized in that** said hook element comprises at least one first-class lever (13), a first end (13a) of said lever (13) being able to be inserted into said seat (12) so as to hold said locking means in place and keep said work head (5) in the remote configuration.

5. Machine (1) according to claim 4, **characterized in that** it comprises at least one tooth (14) connected to said protection element (8) and able to contact the second end (13b) of said lever (13) opposite said first end (13a) thereof relative to the fulcrum (13c) of rotation of said lever so as to rotate the lever against resilient means and remove said first end (13a) from said seat (12).

6. Machine (1) according to claim 5, **characterized in that** said tooth (14) can be slidingly inserted into at least one through-hole (15) formed in said auxiliary working plane (7), said lever (13) and said locking means being arranged in a gripping region (I) defined below said auxiliary working plane (7).

7. Machine (1) according to one of claims 3 to 6, **characterized in that** said locking means comprise at least a first locking element comprising at least one bar (16) slidingly mounted on said work head (5) and able to be inserted into at least one housing (17) connected to said base (2) and actuable from said gripping region (I) so as to lock said work head (5) in said close configuration, the movement of said bar (16) being suitable for switching of said switch element (9) from said passive switching-off configuration to said active switching-off configuration and vice-versa, said seat (12) being formed in said first locking element.

8. Machine (1) according to one or more of claims 3 to 7, **characterized in that** said locking means comprise at least a second locking element (20) for locking the work head (5) in said remote configuration, said first locking element being able to lock said work head (5) in said close configuration, said seat (12) being formed in said second locking element (20).

9. Machine (1) according to either of claims 7 or 8, **characterized in that** said switch element (9) is of the sliding-contact type, the mobile contact of said switch element (9) being integrally associated with said bar (16) and the translatory movement of said bar (16), for insertion and withdrawal of the bar into and from said housing (17), being able to switch said switch element (9) from said passive switching-off configuration to said active switching-off configuration respectively and vice-versa.

Patentansprüche

1. Kombinierte Schneidemaschine (1), Folgendes umfassend:

einen Sockel (2), der mindestens eine Arbeitsfläche (3) zum Tragen mindestens eines Werkstückes definiert,
mindestens einen Arbeitskopf (5), der mit einer kreisrunden, sich drehenden Klinge (6) ausgestattet ist, die zumindest teilweise aus dem Arbeitskopf (5) hervorsteht, wobei der Arbeitskopf (5) mit dem Sockel (2) verbunden ist und im Verhältnis dazu mindestens zwischen einer Anordnung, in der er sich nahe der Arbeitsfläche (3) befindet, und einer Anordnung, in der er davon fern ist, verstellbar ist,
Arretiermittel (16), die in der Lage sind, den Arbeitskopf (5) zumindest in der angenäherten Anordnung zeitweise zu arretieren,
mindestens eine Nebenarbeitsfläche (7) zum Tragen eines weiteren Werkstückes, die an den Arbeitskopf (5) montiert und darüber angeordnet ist und aus der mindestens ein oberer Abschnitt der Klinge (6) herausragt,
und mindestens ein Schaltelement (9), um die Klinge (6) in Drehung zu versetzen, **dadurch gekennzeichnet, dass** das Schaltelement entweder in einer ersten passiven Ausschaltanordnung betrieben werden kann, in der es offen ist, wenn es vom Bediener losgelassen wird, oder in einer zweiten aktiven Ausschaltanordnung, in der es offen ist, wenn es durch den Bediener

betätigt wird,
wobei die Arretiermittel (16) in der Lage sind, den Arbeitskopf (5) zeitweise mindestens in der angenäherten Anordnung oder in der fernen Anordnung zu arretieren, wobei die Arretiermittel (16) mit dem Schaltelement (9) derart zusammenwirken, dass das Element von der passiven Ausschaltanordnung in die aktive Ausschaltanordnung geschaltet wird, wenn der Arbeitskopf (5) arretiert wird und in der angenäherten Anordnung ist.

2. Maschine (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** ferner mindestens ein Schutzelement (8) bereitgestellt ist, um mindestens den oberen Abschnitt der Klinge zu schützen, und Stoppmittel (11) zum Stoppen der Arretiermittel (16), wobei die Stoppmittel mit dem Schutzelement (8) zusammenwirken, so dass der Arbeitskopf (5) in der fernen Anordnung arretiert ist, wenn das Schutzelement (8) entfernt wurde.

3. Maschine (1) nach Anspruch 2, **dadurch gekennzeichnet, dass** die Stoppmittel (11) mindestens ein Hakenelement umfassen, das in mindestens einen Sitz (12) eingreifen kann, der in den Arretiermitteln gebildet ist, wenn das Schutzelement (8) entfernt wurde, während sich der Arbeitskopf (5) in der fernen Anordnung befindet.

4. Maschine (1) nach Anspruch 3, **dadurch gekennzeichnet, dass** das Hakenelement mindestens einen erstklassigen Hebel (13) umfasst, wobei ein erstes Ende (13a) des Hebels (13) in den Sitz (12) eingeführt werden kann, so dass die Arretiermittel am Platz und der Arbeitskopf (5) in ferner Anordnung gehalten werden.

5. Maschine (1) nach Anspruch 4, **dadurch gekennzeichnet, dass** sie mindestens einen Zahn (14) umfasst, der mit dem Schutzelement (8) verbunden und geeignet ist, mit dem zweiten Ende (13b) des Hebels (13), das in Bezug auf den Drehpunkt (13c) des Hebels gegenüber dem ersten Ende (13a) desselben liegt, in Kontakt zu treten, so dass sich der Hebel entgegen elastischen Mitteln dreht und das erste Ende (13a) vom Sitz (12) entfernt.

6. Maschine (1) nach Anspruch 5, **dadurch gekennzeichnet, dass** der Zahn (14) gleitend in mindestens eine Durchgangsöffnung (15) eingeführt werden kann, die in der Nebenarbeitsfläche (7) gebildet ist, wobei der Hebel (13) und die Arretiermittel in einem Greifbereich (I) angeordnet sind, der unter der Nebenarbeitsfläche (7) definiert ist.

7. Maschine (1) nach einem der Ansprüche 3 bis 6, **dadurch gekennzeichnet, dass** die Arretiermittel mindestens ein erstes Arretierelement umfassen, das mindestens einen Stab (16) umfasst, der gleitfähig an den Arbeitskopf (5) montiert ist und in mindestens ein Gehäuse (17) eingeführt werden kann, das mit dem Sockel (2) verbunden ist, und vom Greifbereich (I) betätigt werden kann, so dass der Arbeitskopf (5) in der angenäherten Anordnung arretiert wird, wobei die Bewegung des Stabes (16) geeignet ist, das Schaltelement (9) von der passiven Ausschaltanordnung in die aktive Ausschaltanordnung und umgekehrt zu schalten, wobei der Sitz (12) im ersten Arretierelement gebildet ist.

8. Maschine (1) nach einem der Ansprüche 3 bis 7, **dadurch gekennzeichnet, dass** die Arretiermittel mindestens ein zweites Arretierelement (20) umfassen, um den Arbeitskopf (5) in der fernen Anordnung zu arretieren, wobei das erste Arretierelement den Arbeitskopf (5) in der angenäherten Anordnung arretieren kann, wobei der Sitz (12) im zweiten Arretierelement (20) gebildet ist.

9. Maschine (1) nach einem der Ansprüche 7 oder 8, **dadurch gekennzeichnet, dass** das Schaltelement (9) von der Art eines Gleitkontaktes ist, wobei der bewegliche Kontakt des Schaltelements (9) mit dem Stab (16) einstückig gebildet ist und die Translationsbewegung des Stabes (16), zum Einführen und Ausziehen des Stabes in beziehungsweise aus dem Gehäuse (17), das Schaltelement (9) von der passiven Ausschaltanordnung in die aktive Ausschaltanordnung und umgekehrt schalten kann.

Revendications

1. Machine de coupe combinée (1), comprenant :

- une base (2) définissant au moins un plan de travail (3) pour supporter au moins une pièce,
- au moins une tête de travail (5) pourvue d'une lame rotative circulaire (6) faisant saillie, au moins en partie, de ladite tête de travail (5), ladite tête de travail (5) étant raccordée à ladite base (2) et pouvant se déplacer par rapport à celle-ci au moins entre une configuration dans laquelle elle est proche dudit plan de travail (3) et une configuration dans laquelle elle en est éloignée,
- des moyens de verrouillage (16) qui sont à même de verrouiller momentanément ladite tête de travail (5) au moins dans la configuration proche,
- au moins un plan de travail auxiliaire (7) pour supporter une autre pièce, monté sur ladite tête de travail (5) et aménagé au-dessus de celle-ci, d'où au moins une partie supérieure de ladite lame (6) émerge, et
- au moins un élément de commutation (9) pour mettre ladite lame (6) en rotation, **caractérisée**

en ce que l'élément de commutation peut être actionné soit dans une première configuration de déconnexion passive, dans laquelle il est ouvert s'il est libéré par l'opérateur, soit dans une seconde configuration de déconnexion active, dans laquelle il est ouvert s'il est activé par l'opérateur,
- dans laquelle les moyens de verrouillage (16) sont à même de verrouiller momentanément ladite tête de travail (5) au moins dans la configuration proche et dans la configuration éloignée,
- lesdits moyens de verrouillage (16) coopèrent avec ledit élément de commutation (9) de manière à commuter ledit élément de la configuration de déconnexion passive à la configuration de déconnexion active lorsque la tête de travail (5) est verrouillée et dans la configuration proche.

2. Machine (1) selon la revendication 1, **caractérisée en ce qu'**il est prévu en outre au moins un élément de protection (8) pour protéger au moins ladite partie supérieure de la lame et des moyens d'arrêt (11) pour arrêter lesdits moyens de verrouillage (16), lesquels moyens d'arrêt coopèrent avec ledit élément de protection (8) de manière à verrouiller la tête de travail (5) dans ladite configuration éloignée lorsque ledit élément de protection (8) est retiré.

3. Machine (1) selon la revendication 2, **caractérisé en ce que** lesdits moyens d'arrêt (11) comprennent au moins un élément d'accrochage qui est à même de s'engager sur au moins un siège (12) formé dans lesdits moyens de verrouillage lorsque ledit élément de protection (8) est retiré de ladite tête de travail (5) dans la configuration éloignée.

4. Machine (1) selon la revendication 3, **caractérisée en ce que** ledit élément d'accrochage comprend au moins un levier de première classe (13), une première extrémité (13a) dudit levier (13) étant à même d'être inséré dans ledit siège (12) de manière à maintenir lesdits moyens de verrouillage en place et à conserver ladite tête de travail (5) dans la configuration éloignée.

5. Machine (1) selon la revendication 4, **caractérisée en ce qu'**elle comprend au moins une dent (14) raccordée audit élément de protection (8) et qui est à même de venir en contact avec la seconde extrémité (13b) dudit levier (13) opposée à ladite première extrémité (13a) de celui-ci par rapport au pivot (13c) de rotation dudit levier de manière à faire tourner le levier à l'encontre de moyens élastiques et de retirer ladite première extrémité (13a) dudit siège (12).

6. Machine (1) selon la revendication 5, **caractérisée en ce que** ladite dent (14) peut être insérée par coulissement dans au moins un trou traversant (15) formé dans ledit plan de travail auxiliaire (7), ledit levier (13) et lesdits moyens de verrouillage étant aménagés dans une région de préhension (I) définie en dessous dudit plan de travail auxiliaire (7).

7. Machine (1) selon l'une quelconque des revendications 3 à 6, **caractérisée en ce que** lesdits moyens de verrouillage comprennent au moins un premier élément de verrouillage comprenant au moins une barre (16) montée à coulissement sur ladite tête de travail (5) et qui est à même d'être insérée dans au moins un logement (17) raccordé à ladite base (2) et qui peut être commandée à partir de ladite région de préhension (I) de manière à verrouiller ladite tête de travail (5) dans ladite configuration proche, le mouvement de ladite barre (16) convenant à une commutation dudit élément de commutation (9) de ladite configuration de déconnexion passive à ladite configuration de déconnexion active et vice versa, ledit siège (12) étant formé dans ledit premier élément de verrouillage.

8. Machine (1) selon l'une quelconque ou plusieurs des revendications 3 à 7, **caractérisée en ce que** lesdits moyens de verrouillage comprennent au moins un second élément de verrouillage (20) pour verrouiller la tête de travail (5) dans ladite configuration éloignée, ledit premier élément de verrouillage étant à même de verrouiller ladite tête de travail (5) dans ladite configuration proche, ledit siège (12) étant formé dans ledit second élément de verrouillage (20).

9. Machine (1) selon l'une quelconque des revendications 7 ou 8, **caractérisée en ce que** ledit élément de commutation (9) est du type à contact coulissant, le contact mobile dudit élément de commutation (9) étant associé d'une pièce avec ladite barre (16) et le mouvement de translation de ladite barre (16), pour l'insertion et le retrait de la barre dans ledit logement (17) et hors de celui-ci, étant à même de commuter ledit élément de commutation (9) de ladite configuration de déconnexion passive à ladite configuration de déconnexion active, respectivement, et vice versa.

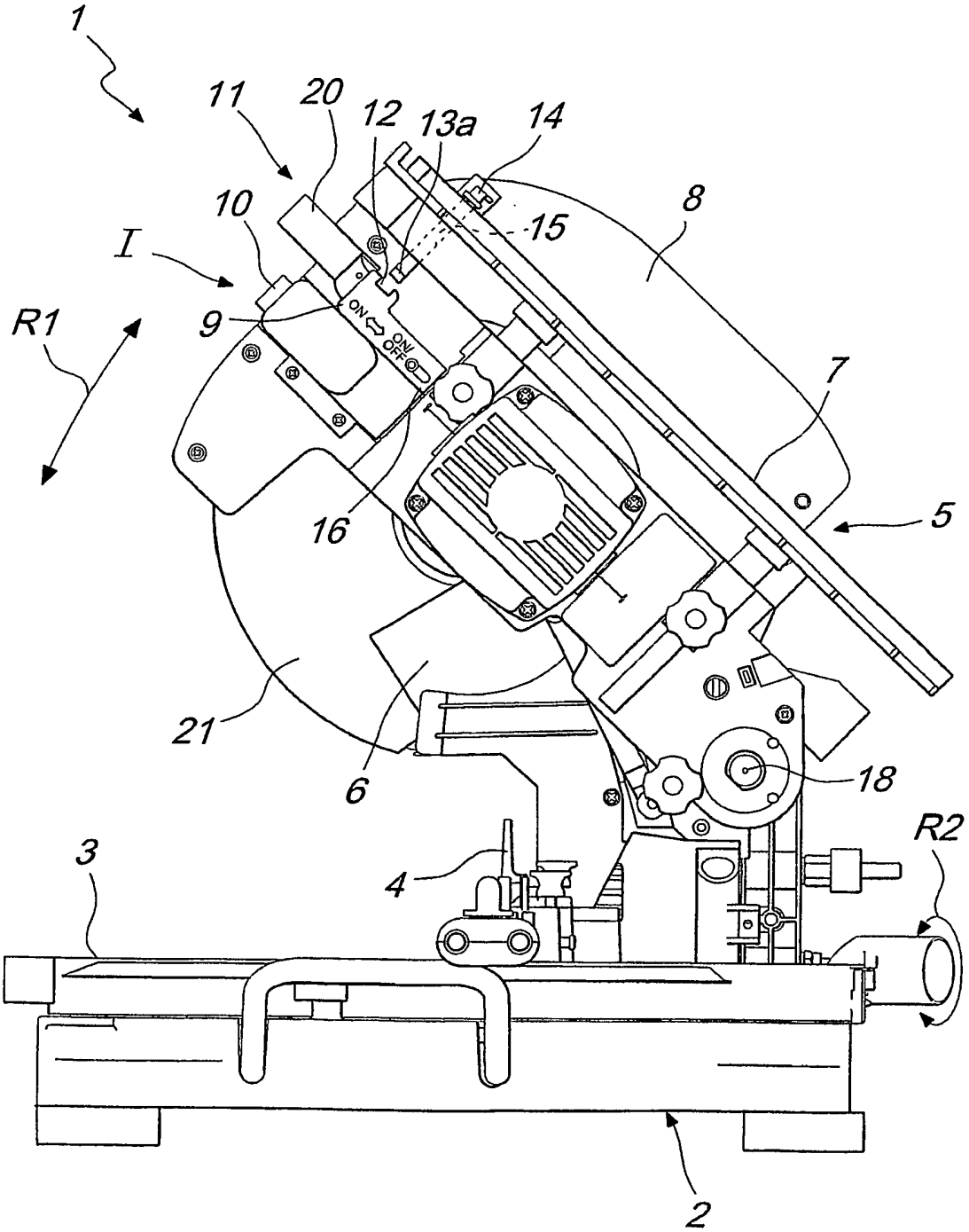

Fig. 1

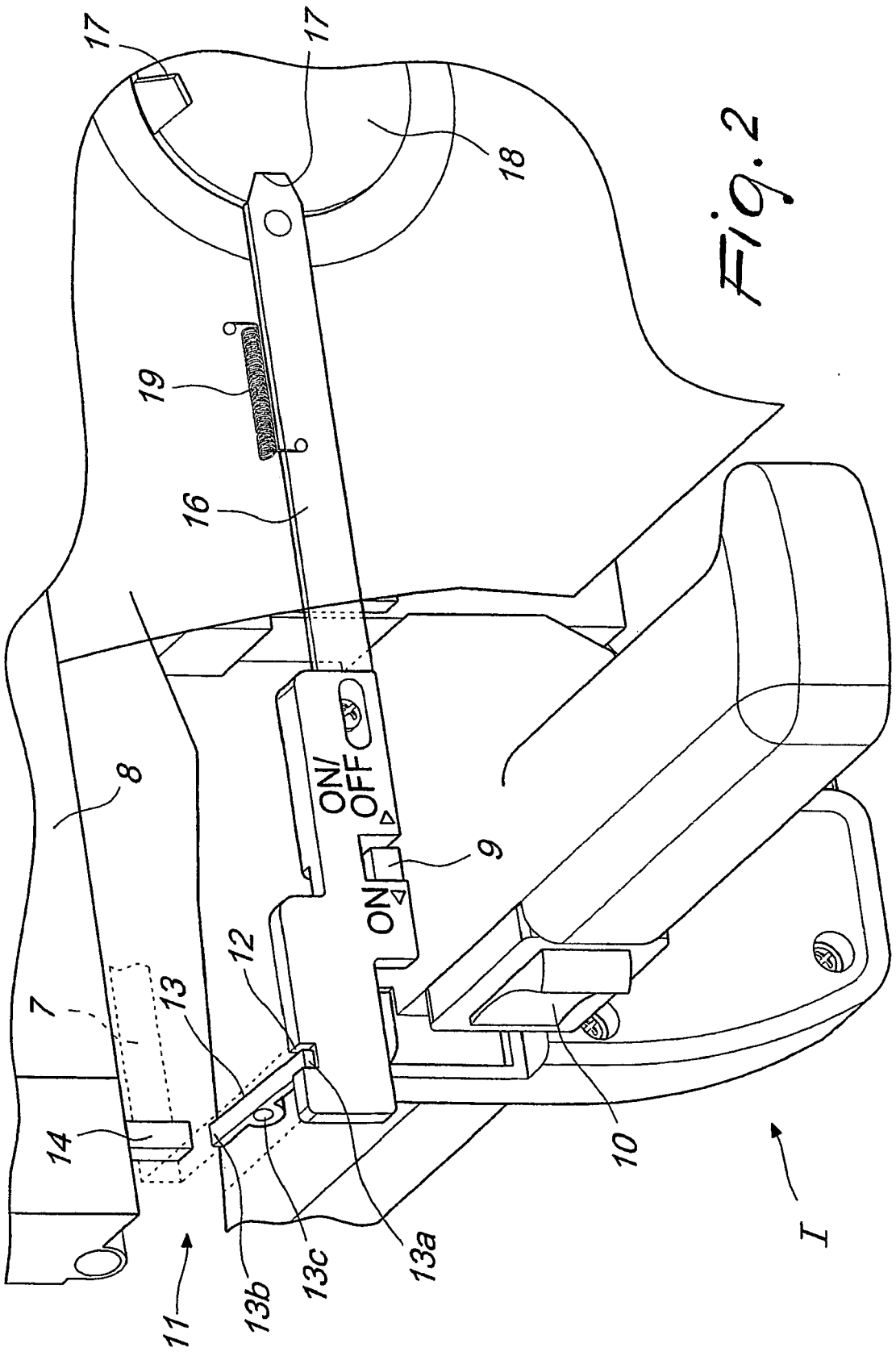

Fig. 2

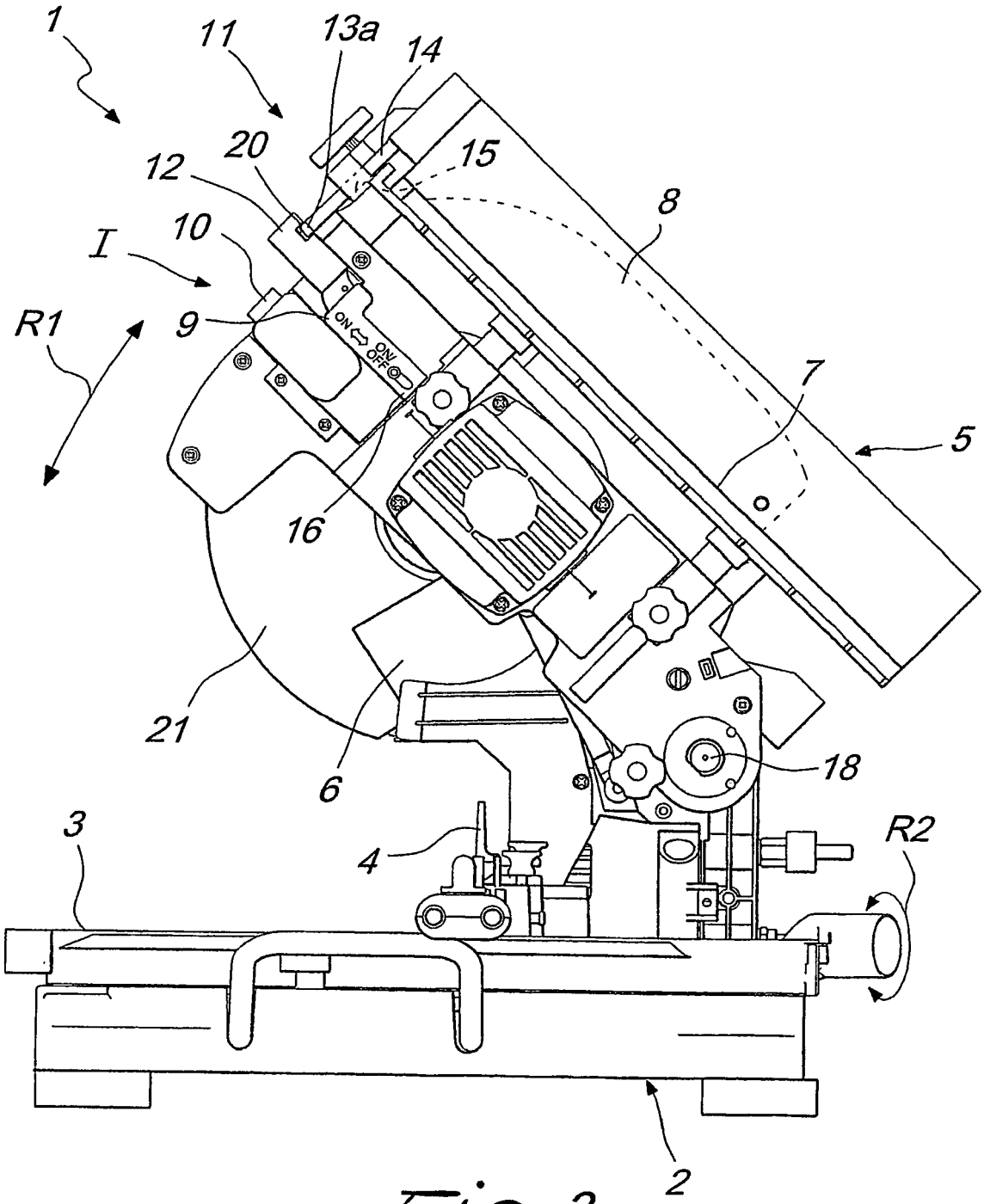

Fig. 3

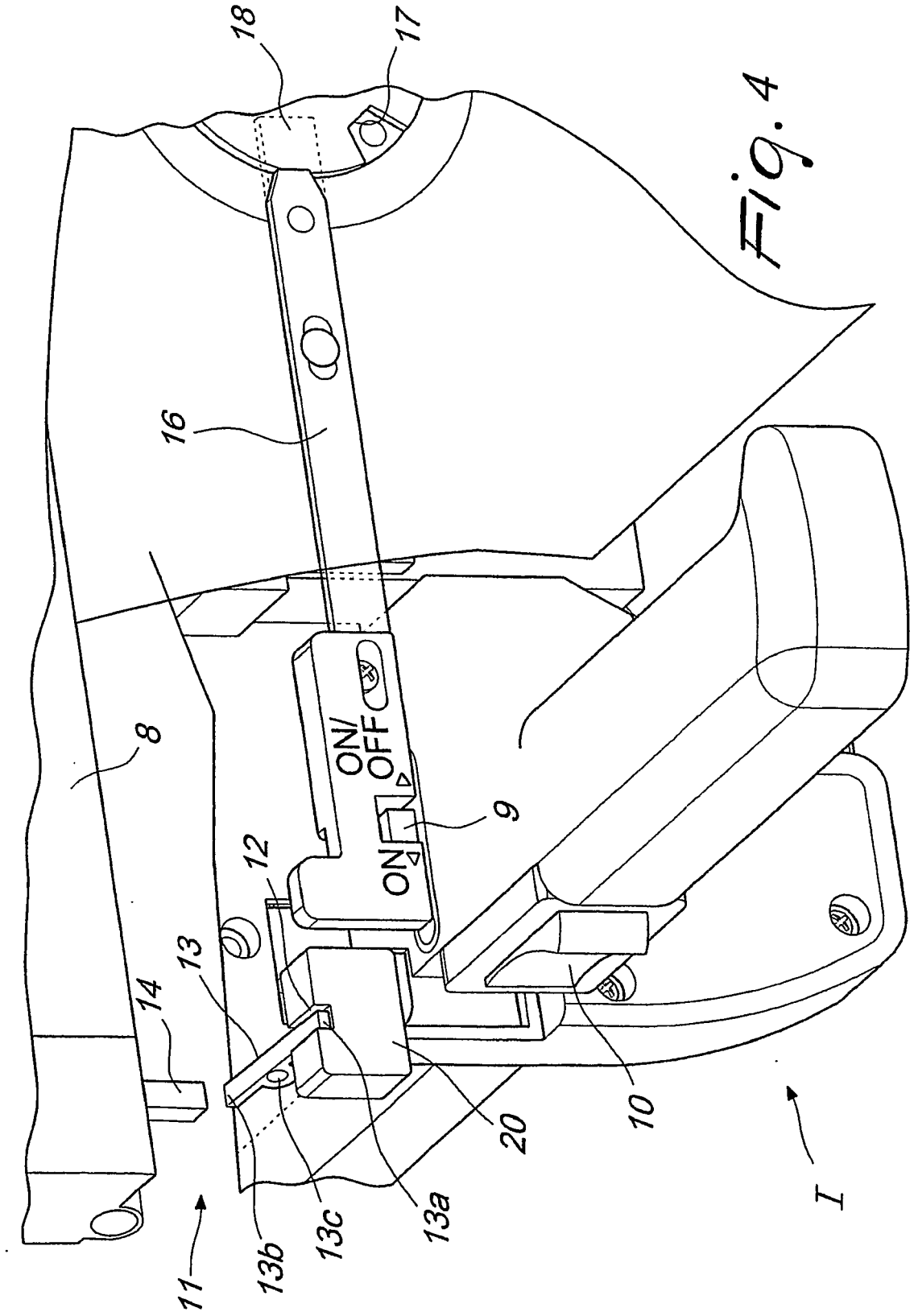

Fig. 4

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO 2008034237 A1 **[0002]**
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