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(54) **Flip over saw**

Eine zwischen einer Übertisch- und einer Untertischlage verschwenkbare Säge

Scie pivotable entre une position dessus la table et une position dessous la table

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(56) References cited:

**EP-A- 0 234 215**

**US-A- 3 570 564**

**US-A- 4 531 441**

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**Description****BACKGROUND OF THE INVENTION**

## Field of the Invention

**[0001]** The present invention relates to a flip over saw according to the preamble of claim 1 including a main body having a saw blade driven to rotate and a table at which the main body is held movable up and down, and a base at which the table and the main body are held rotatable 180 degrees. The flip over saw can be used as a miter saw when the main body is positioned over the table, and can be used as a table saw when the main body is positioned under the table protruding the saw blade over the table.

## Description of the Related Art

**[0002]** A conventional flip over saw has a rectangular mounting base on which a table is horizontally supported rotatable 180 degrees around a center portion of the table and capable of being secured even if either one or the other surface of the table faces upwardly. Moreover, on one side of the table a main body is pivotally mounted movable up and down, and the main body has a saw blade which rotates driven by a motor. With this configuration, the flip over saw can be used as a miter saw when the table is at the first rotating position that the main body is positioned over the table, in which the main body is lowered to cut a workpiece disposed on the table. On the other hand, the flip over saw can be used as a table saw when the table is at the second rotating position that the main body is positioned under the table by rotating the table with a condition that the saw blade is secured at the bottom dead center to penetrate the table downwardly. In a table saw mode, the workpiece on the table can be slid with respect to the saw blade and cutting is conducted.

**[0003]** As a locking mechanism which secures the table at each rotating position, the following structure is described in the German Patent No. DE4019222. In this patent, engaging pins are provided on lateral edges of a table, while engaging members to be engaged with the engaging pins at each reverse position of the table are provided at the front and the rear of a base and urged in the direction of engaging with the engaging pins. Then, the engaging members are connected with each other by means of a connecting bar. With this configuration, in a miter saw mode an engaging member holds an engaging pin to regulate rotation of a table, and in a table saw mode the engaging member releases the engaging pin to reverse the table and then another engaging member holds the engaging pin to regulate further rotation of the table.

**[0004]** However, the above-described locking mechanism requires a pair of locking members as well as a connecting bar to interlock the same. As a result, number

of components increases, which leads to high expense.

**[0005]** US 3,570,564 discloses a convertible circular bench saw and mitering saw which has a locking mechanism for securing the work plate to a frame in the different positions of the saw. The locking mechanism comprises a locking bolt which is provided in the frame and engages into a corresponding bore in a bracket on the work plate. In the second position the bolt is locked into a bore in another bracket on the work plate.

**[0006]** EP 0 234 215 A1, which forms the preamble of claim 1, discloses a locking mechanism for a table and miter saw. The locking mechanism comprises a locking member which is pivotally supported to pivot around a horizontal axis. The locking member comprises two relatively movable locking member elements, each having a groove for locking the table. The table is locked in one of the locking member elements in the first position and in the other one in the second position. The locking member is elastically biased into the locking position.

**[0007]** The object of the present invention is to provide a flip over saw which enables locking and lock release of the table with a simple structure.

**SUMMARY OF THE INVENTION**

**[0008]** In order to achieve the above object, a flip over saw comprising the features of claim 1 is provided. Preferred embodiments of the invention are disclosed by the dependent claims.

**[0009]** in order to improve operability of the locking member and reliability of locking, the locking position in which the first engaging portion of the locking member engages with the table can be the same as that in which the second engaging portion of the locking member engages with the table. Moreover, a biasing means may be provided to urge the locking member to the locking position.

**[0010]** In order to improve operability of the locking member, inclined guide portions can be provided with the first engaging portion and/or the second engaging portion. The inclined guide portions retract the locking member to the lock release position in abutment with the table moving to each rotating position, thereby permitting the table to be reversed to each rotating position.

**[0011]** According to the invention, locking and lock release of the table at each rotating position can be conducted by one locking member. Consequently, the structure of locking of the table rotation can be simplified, which reduces additional cost.

**[0012]** According to the invention, lock release of the table from either of the two rotating positions can be conducted through the same operation, so that the operability is excellent. Moreover, the preferred biasing means ensures return to the locking position from the lock release position, which enables to keep the table in a locking state and thus operability is improved.

**[0013]** According to a preferred embodiment of the present invention, the locking member is automatically

retracted when the table is reversed to each of the rotating positions. Therefore, the locking member requires no operation to prevent interference with the table, whereby operability is further improved.

## BRIEF DESCRIPTION OF THE DRAWINGS

### [0014]

Fig. 1 is an overall view of a flip over saw (in the miter saw mode).

Fig. 2 is a plain view of a flip over saw.

Fig. 3 is an explanation view of a flip over saw (in the miter saw mode).

Fig. 4 is an explanation view of a flip over saw (in the table saw mode).

Fig. 5 is an explanation view of a lock lever provided with a base (the upper figure is a plain view and the lower figure is a lateral view).

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0015] Hereinafter, embodiments of the present invention will be explained with reference to the drawings.

[0016] Fig. 1 is an overall view showing an example of a flip over saw and Fig. 2 is a plain view thereof. A flip over saw 1 has a base 2 which is a mounting in rectangular shape in a plain view and a table 3 placed on the base 2, and a saw blade unit 4 mounted on the table 3. The table 3 is held rotatable 180 degrees around the rotating shafts 5, 5 extending in the lateral direction (in Figs. 1 and 2, the right is forward). Moreover, the table 3 can be secured in a horizontal state by means of a lock lever 6 provided with the base 2 as a locking member even if either one or the other surface of the table 3 faces upwardly as described later. The table 3 also has a circular turntable 7 which is horizontally turnable, and a guide fence 8 parallel to the rotating shaft 5 so as to transverse on the turntable 7.

[0017] The saw blade unit 4 has a support arm 9 standing at the rear part of the turntable 7 and a main body 11 held to be movable up and down by a support shaft 10 at the upper end of the support arm 9. At the left side of a blade cover 12 which is a housing of the main body 11, a motor 13 and a handle 14 are provided. In the blade cover 12, a circular saw blade 15 driven to rotate by the motor 13 is provided. The main body 11 is urged toward the top dead center as shown in Fig. 1 by a torsion spring (not shown) provided on the support shaft 10. As shown in Fig. 3, the main body 11 is lowered to the bottom dead center where it penetrates a slit (not shown) provided at the center of the turntable 7 when a handle 14 is held down. Then a workpiece on the turntable 7 can be cut by the rotating saw blade 15. In this way, the flip over saw can be used as a miter saw. The reference number 16 denotes a safety cover which is at the position of covering the saw blade 15 when the main body 11 is at the

top dead center and rotated to expose the saw blade 15 in accordance with lowering of the main body 11.

[0018] The support arm 9 can be tilted with the main body 11 in the right direction on the turntable 7. Fixing the tilted support arm 9 and the main body 11 by a lever 17 at an arbitrary tilting position provides the saw blade 15 with an angle in the perpendicular direction. With the tilt of the main body 11, bevel cutting can be conducted with respect to the workpiece on the turntable 7. Moreover, the turntable 7 can turn in a horizontal direction with the main body 11 when a handle 14 is held down. In accordance with the selected angle of the horizontal turn of the turntable 7, orthogonal cutting and miter cutting can be conducted. In the orthogonal cutting, the saw blade 15 is perpendicular to the guide fence 8. On the other hand, in the miter cutting the saw blade 15 is horizontally slanted from the perpendicular position.

[0019] The main body 11 can be secured at the bottom dead center by means of a locking mechanism 18 provided between the support arm 9 and the main body 11. As shown in Fig. 4, by reversing the table 3 with this secured condition of the main body 11, a table saw mode can be obtained wherein only the saw blade 15 protrudes above the table 3 on which a workpiece is slid for cutting.

[0020] In the miter saw mode, the rotating shafts 5, 5 of the table 3 are positioned on the table 3, so that there is a difference in height of the table 3 between at the first rotating position as shown in Figs. 1-3 (the miter saw mode) and at the second rotating position as shown in Fig. 4 (the table saw mode). (The table 3 in the table saw mode is higher.)

[0021] Moreover, in order to allow the table 3 to rotate, an opening 19 is provided at the center of the base 2 in the longitudinal direction. In the inner lateral edges of this opening 19, a pair of first stopper rubbers 20, 20 which support the lower surface of the table 3 at the first rotating position are provided on the front side of the opening 19. On the other hand, a pair of second stopper rubbers 21, 21 are provided on the rear side of the opening 19. The second stopper rubbers 21, 21 are positioned on the table 3 at the first rotating position, and support the lower surface of the table 3 at the second rotating position. With this configuration, the table 3 can be reversed only in the direction in which the front part of the table is flipped up (the direction of an arrow in Fig. 3) in converting from the miter saw mode to the table saw mode. On the other hand, the table 3 can be reversed only in the direction in which the rear part of the table is flipped up (the direction of an arrow of Fig. 4) in converting from the table saw mode to the miter saw mode. It should be noted that the rotating shafts 5, 5 are not positioned at the center of the table 3 in the longitudinal direction, but instead at a slightly rearward position in the first rotating position, so that the table 3 does not interfere with the first stopper rubbers 20, 20 upon conversion from the miter saw mode to the table saw mode.

[0022] As shown in Fig. 5, the lock lever 6 is a plate-like body disposed in the longitudinal direction so as to

be fit into between the base 2 and the table 3 at the left side of the rear part of the opening 19. The lock lever 6 is provided with the base 2 pivotable around a stepped pin 22. The position of the stepped pin 22 is at a corner portion of the lock lever 6, which is the front bottom end thereof. Moreover, the lock lever 6 has a slit 23 which is formed as an arc centered at the stepped pin 22 and which is penetrated by a stepped pin 24 threadedly mounted to the base 2. Because of this, the lock lever 6 is allowed to rotate only in the range that the stepped pin 24 can relatively move within the slit 23. Further, the lock lever 6 is urged by a torsion spring 25 which is used as a biasing means. One end of the torsion spring 25 is engaged with the base 2 and the other end thereof is engaged with the lock lever 6, whereby in a normal state the lock lever 6 is at the upper locking position where the stepped pin 24 is positioned at the bottom end of the slit 23 (as shown in a solid line of Fig. 5). The reference number 26 denotes an operating lever bent orthogonally toward the outer side of the base 2 at the upper end of the lock lever 6. At the rear side of the operating lever 26, there is provided a hook portion 27 whose upper end is bent upward and the top surface of the upper end is an inclined guide portion 31, linearly inclining downward while moving toward the front.

**[0023]** In the table 3, on the lateral side where the lock lever 6 is provided, stopper screws 28, 29 are threadedly provided in the front and the rear to interfere with the lock lever 6 in accordance with rotation of the table 3. However, the turning radius (moving locus) of the stopper screw 28 is different from that of the stopper screw 29 because of the above-described location of the rotating shaft 5 of the table 3. That is, as shown in Figs. 2, 3 and 5, at the first rotating position of the table 3 the stopper screw 29 engages with an engaging corner 30 as a first engaging portion provided at the upper front end of the lock lever 6 from above. On the other hand, as shown in Figs. 4 and 5, at the second rotating position of the table 3 the stopper screw 28 engages with the hook portion 27 as a second engaging portion of the lock lever 6. Then, when the operating lever 26 is pressed against the biasing force of the torsion spring 25 (counterclockwise rotation in Fig. 5) at each rotating position, the lock lever 6 moves to a lock release position where interference with the stopper screws 28, 29 is released (shown in a two-dot chain line of Fig. 5). At the front side end of the engaging corner 30, provided is an inclined guide portion 32 linearly inclining backward while moving down when the lock lever 6 is at a locking position.

**[0024]** In the flip over saw 1 configured as described above, in the miter saw mode where the table 3 is positioned at the first rotating position as shown in Figs. 1-3, the front lower surface of the table 3 is supported by the first stopper rubbers 20, 20 and the rear part of the table 3 is supported by the stopper screw 29 engaging with the engaging corner 30 of the lock lever 6. Consequently, the table 3 is prevented from rotating and retains the horizontal state. Then the handle 14 is held to lower the main

body 11 in which the blade saw 15 is rotating, so that a workpiece disposed on the turntable 7 can be cut, specifically, the bevel cutting by tilting the main body 11 and the miter cutting by horizontally turning the turntable 7 are achieved.

**[0025]** On the other hand, upon conversion into the table saw mode, the main body 11 is lowered to the bottom dead center to be secured by the locking mechanism 18. Then the operating lever 26 of the lock lever 6 is pressed to move the lock lever 6 to the lock release position. Then, as shown in a two-dot chain line of Figs. 3 and 5, the engaging corner 30 is retracted to the back position of the stopper screw 29 from the lower position thereof, allowing the stopper screw 29 to be lowered. As a result, the table 3 can be turned 180 degrees by flipping up the front part of the table 3 to the second rotating position. Here, when the lock lever 6 is released, the lock lever 6 again returns to the locking position.

**[0026]** Just before reverse completion, the stopper screw 28 of the table 3 abuts the inclined guide portion 31 of the hook portion 27 from above the lock lever 6. Here, when the rear part of the table 3 is further pressed downward, being guided by the inclined guide portion 31, the lock lever 6 is pressed downward by the stopper screw 28 to allow the table 3 to be rotated until the table 3 abuts the second stopper rubbers 21, 21 at the rear. At this time, the inclined guide portion 31 is separated from the stopper screw 28, and thus the lock lever 6 is released from the pressure of the stopper screw 28 to be rotated to the locking position urged by the torsion spring 25. With this operation, the hook portion 27 is engaged with the stopper screw 28. Consequently, the table 3 is prevented from rotating by the lock lever 6 and retains the horizontal state, whereby conversion into the table saw mode is completed.

**[0027]** Further, upon returning to the miter saw mode from the table saw mode, the operating lever 26 is pressed to rotate the lock lever 6. With this operation, the hook portion 27 is released from the stopper screw 28, so that the table 3 is turned 180 degrees by flipping up the rear part thereof. Just before reverse completion, the stopper screw 29 abuts the inclined guide portion 32 of the engaging corner 30 of the lock lever 6 from below. Here, when the front part of the table 3 is further pressed downward, being guided by the inclined guide portion 32, the stopper screw 29 once moves the lock lever 6 in the counterclockwise direction in Fig. 5 in a manner that pushes aside the lock lever 6, resulting that the stopper screw 29 moves above the engaging corner 30. This operation allows the table 3 to rotate until it abuts the first stopper rubbers 20, 20. Consequently, return to the miter saw mode is completed with the rotating position in Fig. 3.

**[0028]** As described above, according to the flip over saw 1 in the above embodiment, the base 2 includes one lock lever 6, which has an engaging corner 30 to engage with the table 3 at the first rotating position and a hook portion 27 to engage with the table 3 at the second rotating position. In addition, the lock lever 6 is movable

between the locking position and the lock release position where it engages either the engaging corner 30 or the hook portion 27 respectively in accordance with each rotating position of the table 3. As a result, locking and lock release of the table 3 at each rotating position can be conducted by operating only one lock lever 6. Consequently, the structure of locking of the table rotation can be simplified, which reduces additional cost.

**[0029]** In particular, the lock lever 6 is positioned at the same locking position to engage with the table 3 even when either the engaging corner 30 or the hook portion 27 is engaged. In addition, a biasing means is provided to urge the lock lever 6 to the locking position. Because of this, lock release of the table 3 from either of the rotating positions can be conducted through the same operation, that is, pressing the operating lever 26 downward, whereby the operability is excellent. Moreover, the biasing means ensures the return to the locking position from the lock release position, which enables to keep the table 3 in a locking state and thus operability is improved.

**[0030]** Moreover, the engaging corner 30 and the hook portion 27 have inclined guide portions 31, 32 which retract the lock lever 6 to the lock release position in abutment with the table 3 moving to each rotating position, thereby permitting the table 3 to be reversed. Consequently, automatic setback of the lock lever 6 at each rotating position can be achieved. Therefore, the lock lever 6 requires no operation to avoid interference with the table 3, whereby operability is further improved.

**[0031]** The structure for engagement between a locking member and a table is not limited to the above embodiment, and may be modified within the scope of the claims. As one example, a hook shape may be applied to both the first engaging portion and the second engaging portion of the locking member. Another example is that the table may be provided with a ring member, a hook or a hole instead of a stopper screw. Moreover, the structure of an inclined guide portion is not limited to be a linear inclination as described above, and a bulging or curved inclination may be applied. Further, either the first engaging portion or second engaging portion may have inclination, or both of them may be omitted.

**[0032]** Still further, as a biasing means a coil spring or a plate spring may be used, or alternatively, the locking position and the lock release position can be changed manually without a biasing means.

**[0033]** In addition, the locking structure may be disposed before or behind the table to engage with or disengage from the table, not limited to the above-described structure where the locking member is engaged with or disengaged from the lateral side of the table, being disposed on the corresponding side of the base.

**[0034]** Further, in the above embodiment, the lock lever 6 is moved to the same locking position when the table 3 is engaged with either the engaging corner 30 as the first engaging portion or the hook portion 27 as the second engaging portion. However, it is conceivable that each engaging portion is moved in the different directions

for engagement or disengagement in accordance with its position or shape.

**[0035]** In addition, the structure of the flip over saw itself is not limited to the above embodiment. That is, the following structures can be applied to the present invention, which are, the height of the table is constant at the first or second rotating position, the main body can be tilted to right and left, or bevel cutting is excluded.

## Claims

1. A flip over saw comprising:

a base (2);  
 a horizontal table (3) supported on the base (2) rotatable 180 degrees;  
 a main body (11) supported by a support arm (9) provided on one side of the table (3) and having a saw blade (15) driven to rotate, and a locking mechanism (18) provided between the main body (11) and the support arm (9), being able to lock the main body (11) at the bottom dead center in which the saw blade (15) penetrates the table (3),  
 wherein the flip over saw can be used as a miter saw in which the saw blade (15) cuts a workpiece on the table (3) by lowering the main body (11) when the table (3) is at the first rotating position where the main body (11) is positioned above the table(3),  
 wherein the flip over saw can be used as a table saw in which a workpiece is slid with respect to the saw blade (15) protruding upwardly while penetrating the table (3) when the table (3) is at the second rotating position where the main body (11) locked at the bottom dead center by the locking mechanism (18) is positioned below the table (3), and wherein the base (2) is provided with a locking member (6) having a first engaging portion (30) to be engaged with the table (3) at the first rotating position and a second engaging portion (27) to be engaged with the table (3) at the second rotating position and the locking member (6) is movable between a locking position where the corresponding engaging portion (27 or 30) engages with the table (3) and a lock release position where the engagement is released in accordance with each rotating position of the table (3),

### characterized in that

the locking member (6) is a plate-like body disposed at the rear in an opening (19) of the base (2) so as to be rotatable with respect to the base (2) between the locking position and the lock release position around a center of rotation (22), and that the locking member (6) has the first engaging portion (30) on

- the front side of the center of rotation, and the second engaging portion (27) on the rear side of the center of rotation (22).
2. A flip over saw according to Claim 1, **characterized in that** the locking position in which the first engaging portion (30) of the locking member (6) engages with the table (3) is the same as that in which the second engaging portion (27) of the locking member (6) engages with the table (3), and that a biasing means (25) is provided to urge the locking member (6) to the locking position. 5
  3. A flip over saw according to Claim 1 or 2, **characterized in that** the first engaging portion (30) has an inclined guide portion (32) which temporarily retracts the locking member (6) to the lock release position in abutment with the table (3) moving to the first rotating position, thereby permitting the table (3) to be reversed to the first rotating position. 10 15
  4. A flip over saw according to one of Claims 1 to 3, **characterized in that** the second engaging portion (27) has an inclined guide portion (31) which temporarily retracts the locking member (6) to the lock release position in abutment with the table (3) moving to the second rotating position, thereby permitting the table (3) to be reversed to the second rotating position. 20 25
  5. A flip over saw according to any one of the preceding claims, **characterized in that** the first engaging portion is an engaging corner (30) to abut a stopper (29) protruding at the rear of the lateral side of the table (3) with respect to a cutting direction when the table (3) is at the first rotating position. 30
  6. A flip over saw according to any one of the preceding claims, **characterized in that** the second engaging portion is a hook portion (27) to be fit by a stopper (28) protruding at the rear of the lateral side of the table (3) with respect to a cutting direction when the table (3) is at the second rotating position. 35 40
  7. A flip over saw according to one of Claims 1 to 6, **characterized in that** the locking member (6) has an operating lever (26) to rotate the locking member (6) from the locking position to the lock release position. 45
  8. A flip over saw according to any one of the preceding claims, **characterized in that** an arc slit (23) is formed on a circle which is concentric with respect to the center of rotation of the locking member (6), the arc slit (23) being penetrated by a screw member (24) threadedly mounted to the base (2), whereby the locking member (6) is allowed to rotate in the range that the screw member (24) can relatively 50
- move within the slit (23).
9. A flip over saw according to one of Claims 2 to 7, **characterized in that** the biasing means is a torsion spring (25). 5
  10. A flip over saw according to one of Claims 1 to 9, **characterized in that** the center of rotation (5) of the table (3) is positioned rearward with respect to a cutting direction when the table (3) is at the first rotating position, wherein at the first rotating position the table (3) is supported by a first stopper (20) protruding into the lateral inner surfaces at the front of an opening (19) of the base (2), and wherein at the second rotating position the table (3) is supported by a second stopper (21) protruding into the lateral inner surfaces at the rear of the opening (19) of the base (2). 10 15
  11. A flip over saw according to Claim 10, **characterized in that** the table (3) is reversed in the direction in which the front part of the table (3) with respect to a cutting direction is flipped up in reversing from the first rotating position to the second rotating position. 20 25
  12. A flip over saw according to Claim 10 or 11, **characterized in that** the center of rotation (5) of the table (3) is positioned on the table (3) at the first rotating position, so that the table (3) at the second rotating position is higher than that at the first rotating position. 30
  13. A flip over saw according to one of Claims 1 to 12, **characterized in that** a biasing means which urges the main body (11) to the top dead center is provided. 35
  14. A flip over saw according to one of Claims 1 to 13, **characterized in that** the table (3) has a turntable (7) which can turn horizontally and on which the main body (11) is provided, whereby miter cutting is conducted in accordance with the selected angle of the horizontal turn of the turntable (7) when the flip over saw is used as a miter saw. 40
  15. A flip over saw according to one of Claims 1 to 14, **characterized in that** the main body (11) can be tilted to right and left sides and fixed at an arbitrary tilting position by a lever (17), whereby bevel cutting is conducted in accordance with the selected angle perpendicular to the saw blade (15) when the flip over saw is used as a miter saw. 45 50
  16. A flip over saw according to one of Claims 1 to 15, **characterized in that** the main body (11) is held movable up and down by a support shaft (10) provided with a support arm (9) standing on the table (3). 55
  17. A flip over saw according to one of Claims 14 to 16,

**characterized in that** on the table (3) a guide fence (8) parallel to the rotating shaft (5) of the table (3) is provided so as to transverse on the turntable (7).

18. A flip over saw according to one of Claims 1 to 17, **characterized in that** the motor (13) is positioned on a lateral side of the main body (11) with respect to a cutting direction and that a handle (14) by which the main body (11) is moved up and down is provided on the side where the motor (13) is provided.

### Patentansprüche

1. Schwenkbare Tischsäge, enthaltend:

eine Basis (2);

einen horizontalen Tisch (3), der um 180 Grad drehbar auf der Basis (2) gehalten wird;

einen Hauptkörper (11) der durch einen Stützarm (9) gehalten wird, der auf einer Seite des Tisches (3) vorgesehen ist, und der ein Sägeblatt (15) aufweist, das zur Drehung angetrieben wird, und

einen Sperrmechanismus (18), der zwischen dem Hauptkörper (11) und dem Stützarm (9) vorgesehen ist, und der in der Lage ist, den Hauptkörper (11) am unteren Totpunkt zu sperren, an dem das Sägeblatt (15) den Tisch (3) durchdringt,

wobei die schwenkbare Tischsäge als eine Gehrungssäge verwendet werden kann, bei der das Sägeblatt (15) ein Werkstück auf dem Tisch (3) schneidet, indem der Hauptkörper (11) abgesenkt wird, wenn sich der Tisch (3) in der ersten Drehposition befindet, in der sich der Hauptkörper (11) über dem Tisch (3) befindet,

wobei die schwenkbare Tischsäge als eine Tischsäge verwendet werden kann, bei der ein Werkstück bezüglich zum nach oben hervorragenden Sägeblatt (15) bewegt wird, wobei das Sägeblatt den Tisch (3) durchdringt, wenn sich der Tisch (3) in der zweiten Drehposition befindet, in der der Hauptkörper (11), der durch den Sperrmechanismus (18) am unteren Totpunkt gesperrt ist, sich unter dem Tisch (3) befindet, und wobei die Basis (2) mit einem Sperrelement (6) versehen ist, das einen ersten Eingriffsbereich (30) zum Eingreifen mit dem Tisch (3) in der ersten Drehposition und einen zweiten Eingriffsbereich (27) zum Eingreifen mit dem Tisch (3) in der zweiten Drehposition aufweist, und das Sperrelement (6) zwischen einer Sperrposition, in der der entsprechende Eingriffsbereich (27 oder 30) mit dem Tisch (3) eingreift und einer Sperrfreigabeposition, in der der Eingriff in Übereinstimmung mit jeder Drehposition des Tisches (3) freigegeben wird, bewegt werden

kann,

**dadurch gekennzeichnet, dass**

das Sperrelement (6) ein plattenartiger Körper ist, der auf der Rückseite in einer Öffnung (19) der Basis (2) angeordnet ist, so dass er bezüglich zur Basis (2) zwischen der Sperrposition und der Sperrfreigabeposition um eine Drehachse (22) drehbar ist, und dass das Sperrelement (6) den ersten Eingriffsbereich (30) auf der vorderen Seite der Drehachse aufweist, und den zweiten Eingriffsbereich (27) auf der hinteren Seite der Drehachse (22) aufweist.

2. Schwenkbare Tischsäge nach Anspruch 1, **dadurch gekennzeichnet, dass** die Sperrposition, in der der erste Eingriffsbereich (30) des Sperrelements (6) mit dem Tisch (3) eingreift, die gleiche ist wie die, in der der zweite Eingriffsbereich (27) des Sperrelements (6) mit dem Tisch (3) eingreift, und dass ein Vorbelastungsmittel (25) vorgesehen ist, um das Sperrelement (6) in die Sperrposition zu drängen.

3. Schwenkbare Tischsäge nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** der erste Eingriffsbereich (30) einen schrägen Führungsbereich (32) aufweist, der das Sperrelement (6) vorübergehend in die Sperrfreigabeposition zurückzieht, in Anlage mit dem Tisch (3), der sich in die erste Drehposition bewegt, wodurch der Tisch (3) in die erste Drehposition zurückbewegt werden kann.

4. Schwenkbare Tischsäge nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** der zweite Eingriffsbereich (27) einen schrägen Führungsbereich (31) aufweist, der vorübergehend das Sperrelement (6) in die Sperrfreigabeposition in Anlage an den Tisch (3) zurückzieht, der sich in die zweite Drehposition bewegt, wodurch der Tisch (3) zur zweiten Drehposition herumgedreht werden kann.

5. Schwenkbare Tischsäge nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der erste Eingriffsbereich eine Eingriffsecke (30) ist, zur Anlage mit einem Stopper (29), der auf der Rückseite der lateralen Seite des Tisches (3) im Bezug auf eine Schneidrichtung hervorsteht, wenn sich der Tisch (3) in der ersten Drehposition befindet.

6. Schwenkbare Tischsäge nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der zweite Eingriffsbereich ein Hakenbereich (27) ist, zum Befestigen durch einen Stopper (28), der im Bezug auf eine Schneidrichtung an der Rückseite der lateralen Seite des Tisches (3) hervorsteht, wenn sich der Tisch (3) in der zweiten Drehposition befindet.

7. Schwenkbare Tischsäge nach einem der Ansprüche

- 1 bis 6, **dadurch gekennzeichnet, dass** das Sperrelement (6) einen Betätigungshebel (26) zum Drehen des Sperrelements (6) von der Sperrposition zur Sperrfreigabeposition aufweist.
8. Schwenkbare Tischsäge nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** ein Bogenschlitz (23) auf einem Kreis ausgeformt ist, der im Bezug auf die Drehachse des Sperrelements (6) konzentrisch ist, wobei der Bogenschlitz (23) von einem Schraubenelement (24) durchdrungen wird, das an der Basis (2) festgeschraubt ist, wobei sich das Sperrelement (6) in dem Bereich drehen kann, in dem sich das Schraubenelement (24) relativ im Schlitz (23) bewegen kann.
9. Schwenkbare Tischsäge nach einem der Ansprüche 2 bis 7, **dadurch gekennzeichnet, dass** das Vorbelastungsmittel eine Torsionsfeder (25) ist.
10. Schwenkbare Tischsäge nach einem der Ansprüche 1 bis 9, **dadurch gekennzeichnet, dass** sich die Drehachse (5) des Tisches (3) im Bezug auf eine Schneiderichtung hinten befindet, wenn sich der Tisch (3) in der ersten Drehposition befindet, wobei der Tisch (3) in der ersten Drehposition durch einen ersten Stopper (20) gehalten wird, der in die lateral inneren Flächen an der Vorderseite einer Öffnung (19) der Basis (2) hervorsteht, und wobei an der zweiten Drehposition der Tisch (3) von einem zweiten Stopper (21) gestützt wird, der in die lateral inneren Flächen an der Rückseite der Öffnung (19) der Basis (2) hervorsteht.
11. Schwenkbare Tischsäge nach Anspruch 10, **dadurch gekennzeichnet, dass** der Tisch (3) in der Richtung herumgedreht wird, in der der vordere Teil des Tisches (3) im Bezug auf eine Schneiderichtung beim Herumdrehen von der ersten Drehposition zur zweiten Drehposition nach oben geklappt wird.
12. Schwenkbare Tischsäge nach Anspruch 10 oder 11, **dadurch gekennzeichnet, dass** die Drehachse (5) des Tisches (3) in der ersten Drehposition auf dem Tisch (3) positioniert ist, so dass der Tisch (3) in der zweiten Drehposition höher ist als in der ersten Drehposition.
13. Schwenkbare Tischsäge nach einem der Ansprüche 1 bis 12, **dadurch gekennzeichnet, dass** ein Vorbelastungsmittel vorgesehen ist, das den Hauptkörper (11) zum oberen Totpunkt drängt.
14. Schwenkbare Tischsäge nach einem der Ansprüche 1 bis 13, **dadurch gekennzeichnet, dass** der Tisch (3) einen Drehtisch (7) aufweist, der horizontal drehen kann, und auf dem der Hauptkörper (11) vorgesehen ist, wodurch in Übereinstimmung mit dem gewählten Winkel der horizontalen Drehung des Drehtisches (7) Gehrungsschneiden durchgeführt wird, wenn die schwenkbare Tischsäge als Gehrungssäge verwendet wird.
15. Schwenkbare Tischsäge nach einem der Ansprüche 1 bis 14, **dadurch gekennzeichnet, dass** der Hauptkörper (11) nach rechts und nach links geneigt werden kann und an einer beliebigen Neigungspose durch einen Hebel (17) fixiert werden kann, wodurch in Übereinstimmung mit dem ausgewählten Winkel senkrecht zum Sägeblatt (15) Gehrungsschneiden durchgeführt wird, wenn die schwenkbare Tischsäge als Gehrungssäge verwendet wird.
16. Schwenkbare Tischsäge nach einem der Ansprüche 1 bis 15, **dadurch gekennzeichnet, dass** der Hauptkörper (11) nach oben und unten bewegbar gehalten wird durch einen Stützschaft (10), der mit einem Stützarm (9) versehen ist, der auf dem Tisch (3) steht.
17. Schwenkbare Tischsäge nach einem der Ansprüche 14 bis 16, **dadurch gekennzeichnet, dass** auf dem Tisch ein Führungsgitter (8) parallel zum drehenden Schaft des Tisches (3) so vorgesehen ist, dass es schräg auf dem Drehtisch (7) verläuft.
18. Schwenkbare Tischsäge nach einem der Ansprüche 1 bis 17, **dadurch gekennzeichnet, dass** der Motor (13) im Bezug auf eine Schneiderichtung auf einer lateralen Seite des Hauptkörpers (11) positioniert ist und dass ein Handgriff (14), durch den der Hauptkörper (11) nach oben und unten bewegt wird, auf der Seite vorgesehen ist, auf der sich der Motor (13) befindet.

## Revendications

### 1. Scie basculable, comportant :

- une base (2) ;
- une table horizontale (3) supportée sur la base (2), pouvant tourner sur 180 degrés ;
- un corps principal (11) supporté par un bras de support (9) agencé sur un premier côté de la table (3), et ayant une lame de scie (15) entraînée en rotation par un moteur (13), et
- un mécanisme de verrouillage (18) agencé entre le corps principal (11) et le bras de support (9), étant capable de verrouiller le corps principal (11) au niveau du point mort bas dans lequel la lame de scie (15) pénètre dans la table (3), dans laquelle la scie basculable peut être utilisée en tant que scie à onglet dans laquelle la lame de scie (15) découpe une pièce à usiner sur la table (3) en abaissant le corps principal

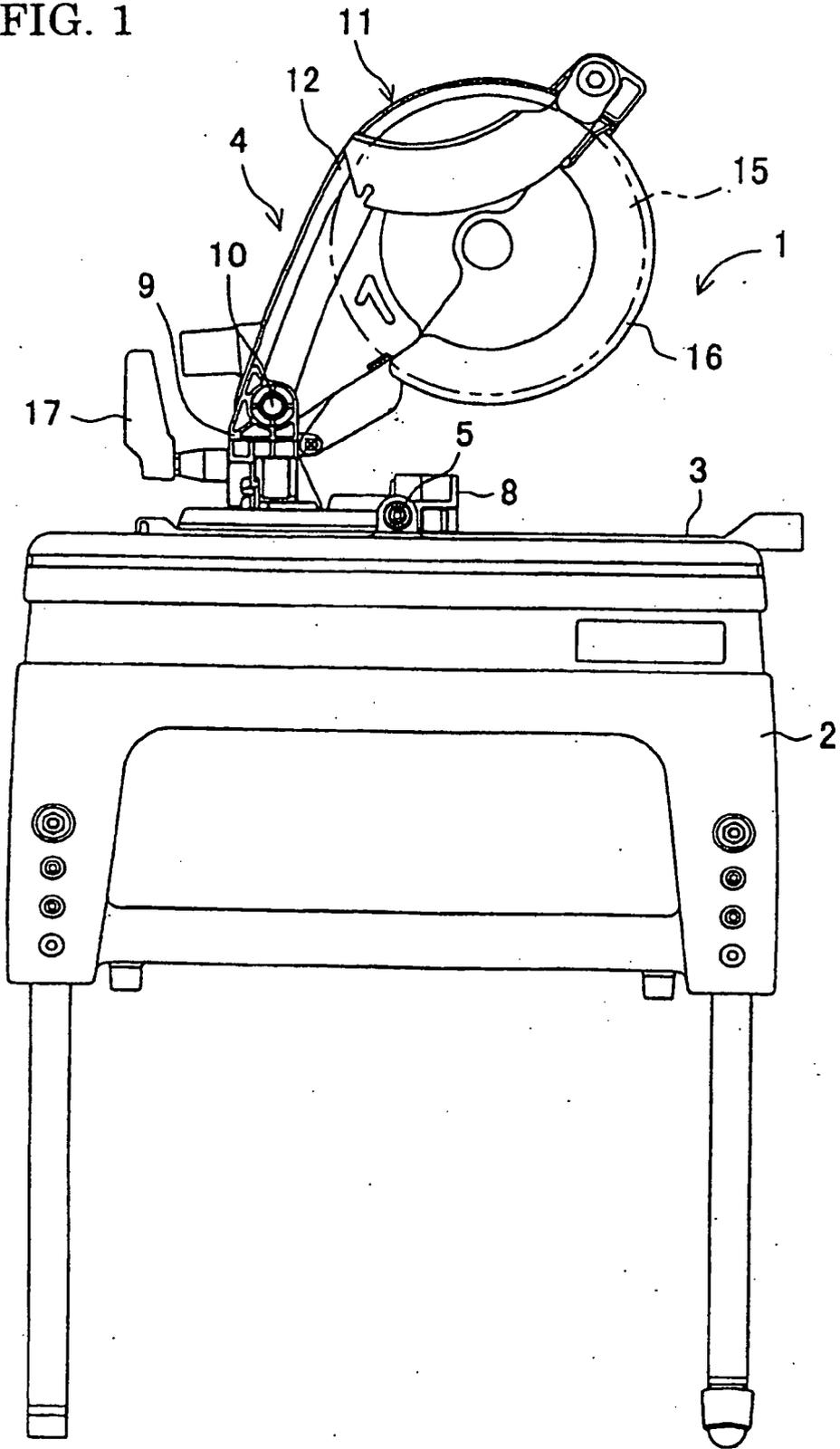
- (11) lorsque la table (3) est dans la première position de rotation dans laquelle le corps principal (11) est positionné au-dessus de la table (3), dans laquelle la scie basculable peut être utilisée comme une scie circulaire à table dans laquelle une pièce à usiner est coulissée par rapport à la lame de scie (15) faisant saillie vers le haut tout en pénétrant la table (3) lorsque la table (3) est dans la seconde position de rotation dans le corps principal (11) verrouillé au niveau du point mort bas par le mécanisme de verrouillage (18) est positionné sous la table (3), et dans laquelle la base (2) est munie d'un élément de verrouillage (6) ayant une première partie de mise en prise (30) destinée à être mise en prise avec la table (3) dans la première position de rotation, et une seconde partie de mise en prise (27) destinée à être mise en prise avec la table (3) dans la seconde position de rotation, et l'élément de verrouillage (6) est mobile entre une position de verrouillage dans laquelle la partie de mise en prise correspondante (27 ou 30) vient en prise avec la table (3), et une position de libération de verrouillage dans laquelle la mise en prise est libérée par rapport à chaque position de rotation de la table (3),
- caractérisée en ce que** l'élément de verrouillage (6) est un corps similaire à une plaque disposé à l'arrière dans une ouverture (19) de la base (2) afin d'être rotatif par rapport à la base (2) entre la position de verrouillage et la position de libération de verrouillage autour d'un centre de rotation (22), et **en ce que** l'élément de verrouillage (6) a la première partie de mise en prise (30) sur le côté avant du centre de rotation, et la seconde partie de mise en prise (27) sur le côté arrière du centre de rotation (22).
2. Scie pivotable selon la revendication 1, **caractérisée en ce que** la position de verrouillage dans laquelle la première partie de mise en prise (30) de l'élément de verrouillage (6) vient en prise avec la table (3) est la même que celle dans laquelle la seconde partie de mise en prise (27) de l'élément de verrouillage (6) vient en prise avec la table (3), et **en ce que** des moyens de rappel (25) sont fournis pour pousser l'élément de verrouillage (6) vers la position de verrouillage.
  3. Scie pivotable selon la revendication 1 ou 2, **caractérisée en ce que** la première partie de mise en prise (30) a une partie de guidage inclinée (32) qui rétracte temporairement l'élément de verrouillage (6) vers la position de libération de verrouillage en butée avec la table (3) se déplaçant vers la première position de rotation, en permettant ainsi à la table (3) d'être inversée vers la première position de rotation.
  4. Scie pivotable selon l'une quelconque des revendications 1 à 3, **caractérisée en ce que** la seconde partie de mise en prise (27) a une partie de guidage inclinée (31) qui rétracte temporairement l'élément de verrouillage (6) vers la position de libération de verrouillage en butée avec la table (3), se déplaçant vers la seconde position de rotation, permettant ainsi à la table (3) d'être inversée vers la seconde position de rotation.
  5. Scie basculable selon l'une quelconque des revendications précédentes, **caractérisée en ce que** la première partie de mise en prise est un coin de mise en prise (30) destiné à venir en butée contre un butoir (29) faisant saillie à l'arrière du côté latéral de la table (3) par rapport à une direction de découpe lorsque la table (3) est dans la première position de rotation.
  6. Scie basculable selon l'une quelconque des revendications précédentes, **caractérisée en ce que** la seconde partie de mise en prise est une partie formant crochet (27) devant être raccordée par un butoir (28) faisant saillie à l'arrière du côté latéral de la table (3) par rapport à une direction de découpe lorsque la table (3) est dans la seconde position de rotation.
  7. Scie basculable selon l'une quelconque des revendications 1 à 6, **caractérisée en ce que** l'élément de verrouillage (6) a un levier de fonctionnement (26) permettant de tourner l'élément de verrouillage (6) à partir de la position de verrouillage vers la position de libération de verrouillage.
  8. Scie basculable selon l'une quelconque des revendications précédentes, **caractérisée en ce que** une fente en forme d'arc (23) est formée sur un cercle qui est concentrique par rapport au centre de rotation de l'élément de verrouillage (6), la fente en forme d'arc (23) étant pénétrée par un élément formant vis (24) monté de manière vissée sur la base (2), de sorte que l'élément de verrouillage (6) peut tourner dans la plage dans laquelle l'élément formant vis (24) peut se déplacer de manière relative à l'intérieur de la fente (23).
  9. Scie basculable selon l'une quelconque des revendications 2 à 7, **caractérisée en ce que** les moyens de rappel sont un ressort de torsion (25).
  10. Scie basculable selon l'une quelconque des revendications 1 à 9, **caractérisée en ce que** le centre de rotation (5) de la table (3) est positionné vers l'arrière par rapport à une direction de découpe lorsque la table (3) est dans la première position de rotation, dans laquelle, dans la première position de rotation,

la table (3) est supportée par un premier butoir (20) faisant saillie dans les surfaces intérieures latérales à l'avant d'une ouverture (19) de la base (2), et dans laquelle, dans la seconde position de rotation, la table (3) est supportée par un second butoir (21) faisant saillie dans les surfaces latérales intérieures à l'arrière de l'ouverture (19) de la base (2).

11. Scie basculable selon la revendication 10, **caractérisée en ce que** la table (3) est inversée dans la direction dans laquelle la partie avant de la table (3), par rapport à une direction de découpe, est basculée vers le haut en s'inversant à partir de la première position de rotation vers la seconde position de rotation. 5 10 15
12. Scie basculable selon la revendication 10 ou 11, **caractérisée en ce que** le centre de rotation (5) de la table (3) est positionné sur la table (3) dans la première position de rotation, de telle sorte que la table (3), dans la seconde position de rotation, est plus haute que dans la première position de rotation. 20
13. Scie basculable selon l'une quelconque des revendications 1 à 12, **caractérisée en ce que** des moyens de rappel poussant le corps principal (11) vers le point mort haut sont fournis. 25
14. Scie basculable selon l'une quelconque des revendications 1 à 13, **caractérisée en ce que** la table (3) dispose d'une platine (7) qui peut tourner horizontalement et sur laquelle le corps principal (11) est agencé, dans laquelle la coupe en onglet est réalisée conformément à l'angle sélectionné du tour horizontal de la platine (7) lorsque la scie basculable est utilisée en tant que scie à onglet. 30 35
15. Scie basculable selon l'une quelconque des revendications 1 à 14, **caractérisée en ce que** le corps principal (11) peut être incliné vers les côtés droit et gauche, et fixé dans une position de basculement arbitraire par un levier (17), de sorte qu'une coupe en biseau est réalisée conformément à l'angle sélectionné, perpendiculairement à la lame de scie (15), lorsque la scie basculable est utilisée en tant que scie à onglet. 40 45
16. Scie basculable selon l'une quelconque des revendications 1 à 15, **caractérisée en ce que** le corps principal (11) est maintenu mobile vers le haut et vers le bas par un arbre de support (10) muni d'un bras de support (9) debout sur la table (3). 50
17. Scie basculable selon l'une quelconque des revendications 14 à 16, **caractérisée en ce que** sur la table (3), une barrière de guidage (8) parallèle à l'arbre rotatif (5) de la table (3) est agencée, de manière à être transversale sur la platine (7). 55

18. Scie basculable selon l'une quelconque des revendications 1 à 17, **caractérisée en ce que** le moteur (13) est positionné sur un côté latéral du corps principal (11) par rapport à une direction de découpe, et **en ce qu'**une poignée (14), par l'intermédiaire de laquelle le corps principal (11) est déplacé vers le haut et vers le bas, est agencée sur le côté où le moteur (13) est agencé.

FIG. 1



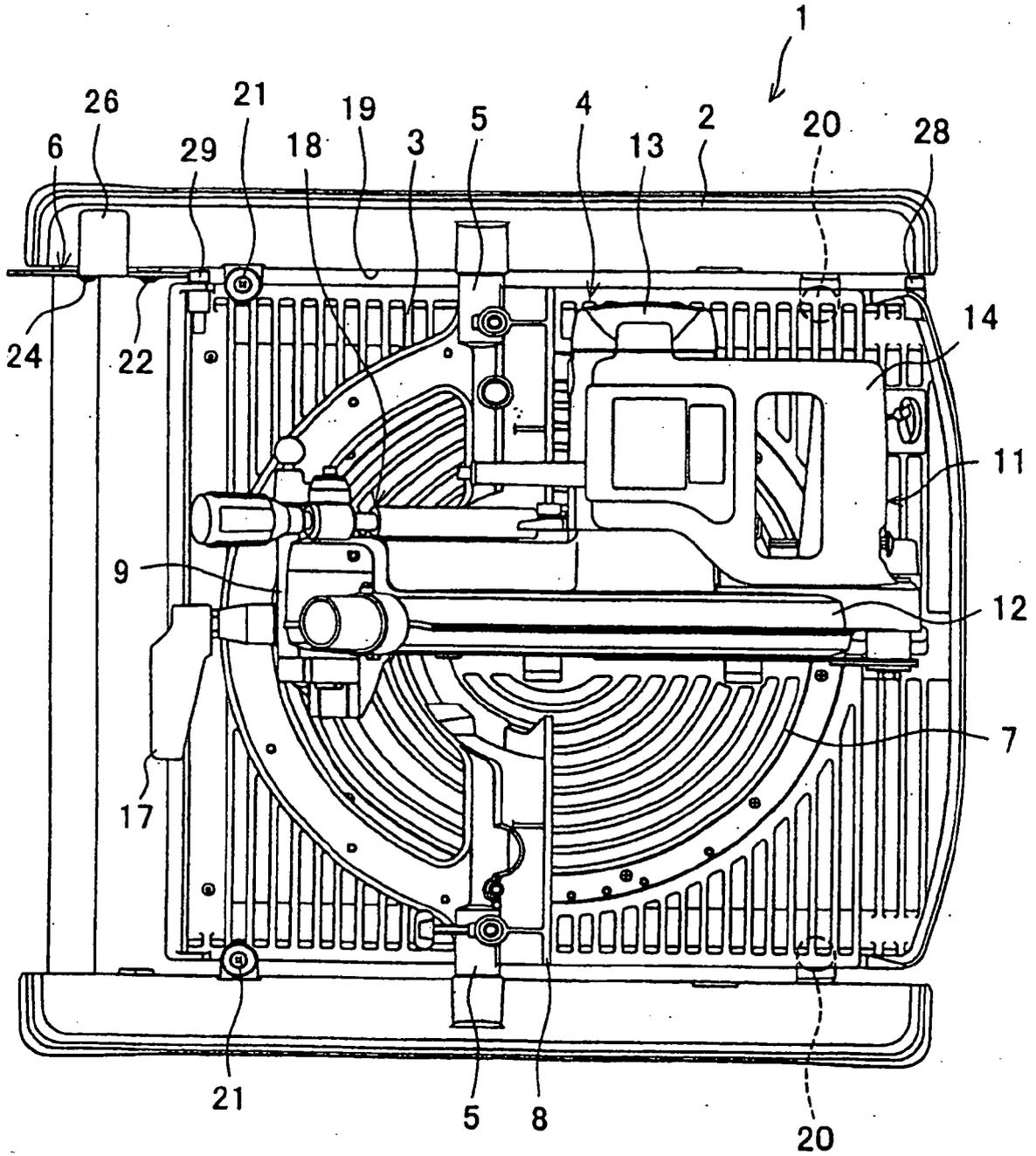
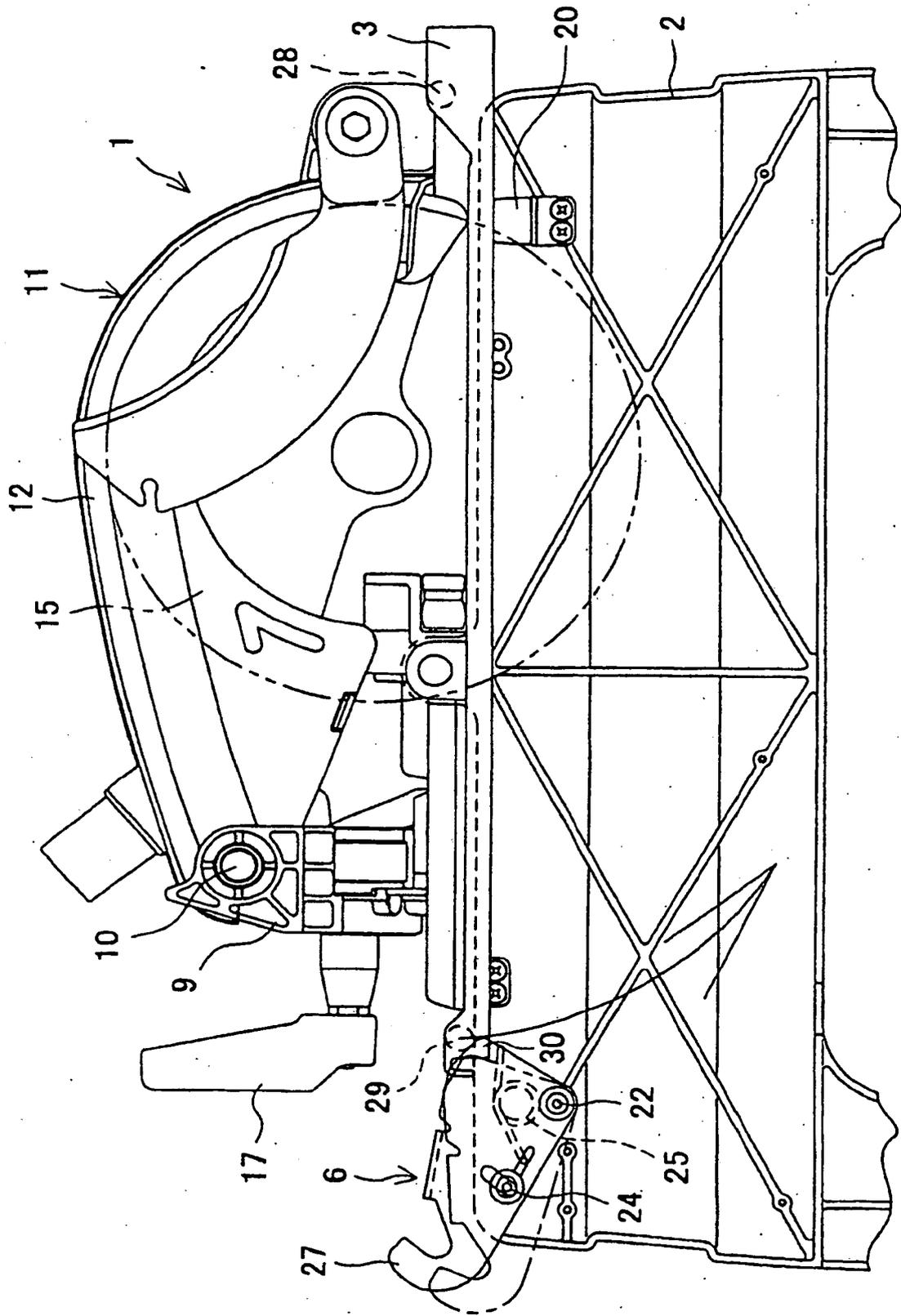


FIG. 2



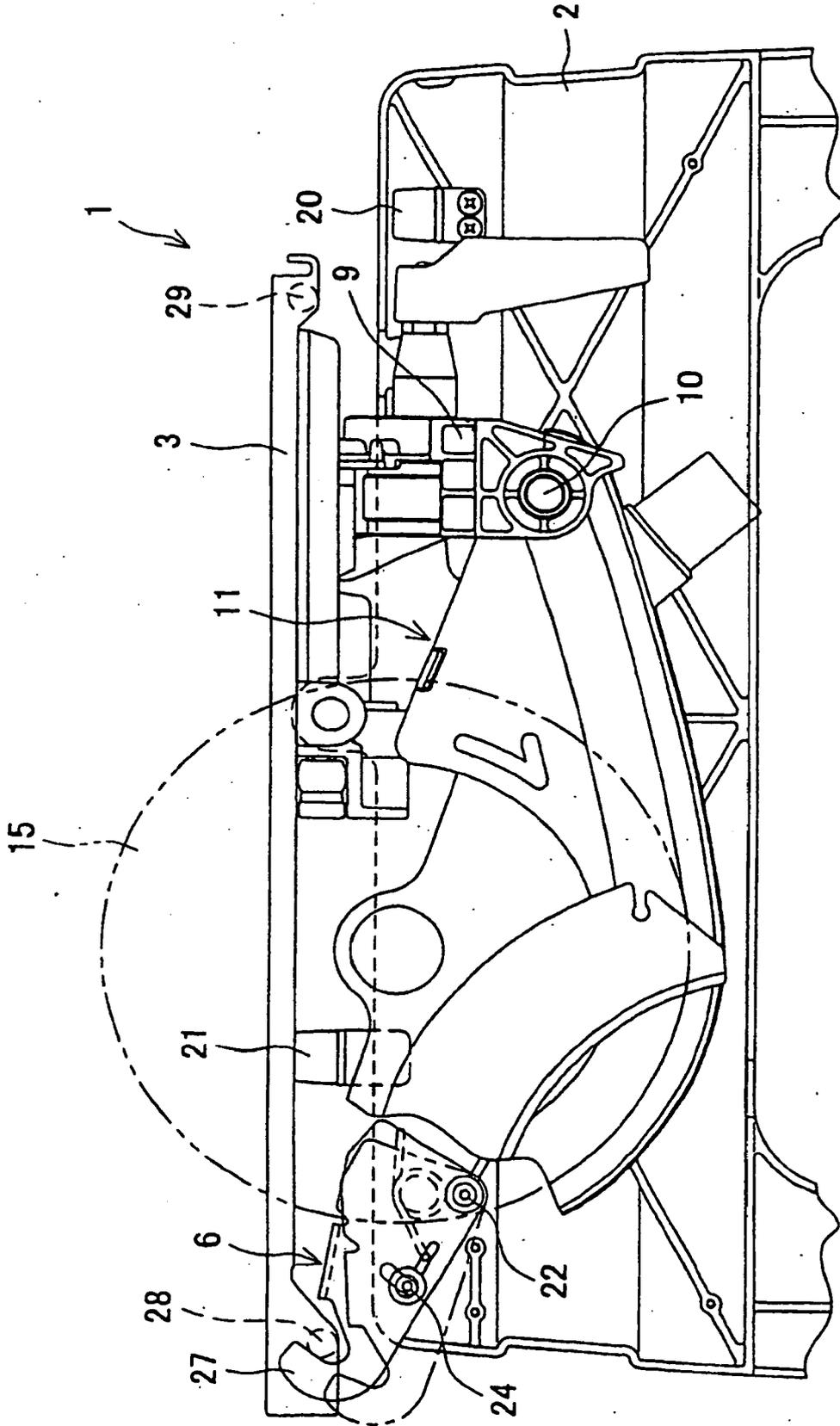


FIG. 4



**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

- DE 4019222 [0003]
- US 3570564 A [0005]
- EP 0234215 A1 [0006]