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(54) **Woodworking machine**

(57) A woodworking machine comprises a base (10) including a placement member (11) for placing a workpiece thereon, a first clamping member (12) for clamping the workpiece which is placed on the placement member (11) in a vertical manner, a second clamping member (13) for clamping the workpiece which is placed on the placement member (11) in a horizontal manner and at least one of transverse first slider bar (14); a working platform (20), which is provided below the placement member (11), including an up/down lifting plate (21), a first base member (22) and a second base member (23),

with the up/down lifting plate (21) provided between the first and second base member (22, 23), with the first and second base member (22, 23) respectively slideably moving with respect to the base (10), with the up/down lifting plate (21) able to lift upward/downward with respect to the base (10); and a driven means (30) slideably mounted on the first slider bar (14) in a transverse direction and installed to the working platform (20); wherein the driven means (30) is able to drive the working platform (20) to move transversely or longitudinally with respect to the base (10).

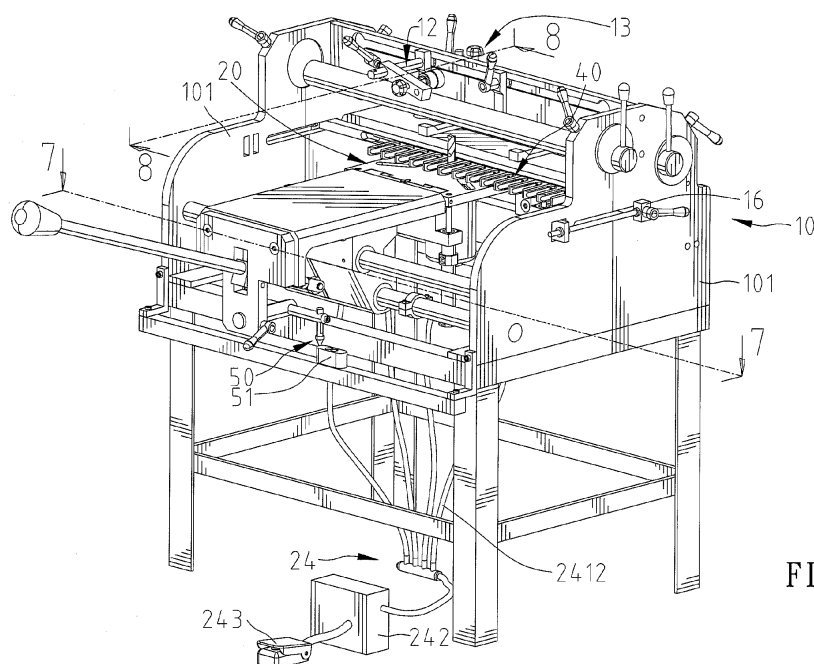


FIG. 1

Description

Background of the Invention

1. Field of the Invention

[0001] The present invention relates to a woodworking machine for producing mortises, tenons, and dovetail joints.

2. Description of the Related Art

[0002] To produce mortise/tenon on a work piece via a convention machine tool, the work piece has to be processed on a machine tool for producing tenons first and then be processed on another machine tool for producing mortises. Further, it needs yet another machine for producing dovetail joints.

[0003] Therefore, it could be possible to produce tenons, mortises and dovetail joints on the work piece by one machine tool. And it would waste placement space for placing two machine tools, increases maintenance costs and processing complex.

Summary of the Invention

[0004] In the present invention, the up/down lifting plate of the working platform which can move upward/downward with respect to the base and the guiding means allows the woodworking machine to cut workpieces to form tenons/mortises and dovetail joints thereon. The up/down lifting plate can be moved upward/downward with respect to the base via the pneumatic cylinder units. The guiding blocks are slideably disposed along the receiving portion of the main body of the guiding means for forming various sizes and shapes of tenons/mortises with different spacing therebetween on workpieces. Each two of the guiding blocks can face each other via the first abutted surfaces thereof and the second abutted surfaces thereof selectively for forming various sizes and shapes of tenons/mortises with different spacing on workpieces.

[0005] Other advantages and features of the present invention will become apparent from the following descriptions referring to the drawings.

Brief Description of the Drawings

[0006] The present invention will be described via detailed illustration of the preferred embodiment referring to the drawings.

Fig. 1 is a perspective view of a woodworking machine according to the first embodiment of the present invention.

Fig. 2 is another perspective view of the woodworking machine shown in Fig. 1.

Fig. 3 is an exploded perspective view of the wood-

working machine shown in Fig. 1.

Fig. 4 is a partial, enlarged exploded perspective view of the woodworking machine shown in Fig. 3.

Fig. 5 is a partial, exploded perspective view of the woodworking machine shown in Fig. 3.

Fig. 6 is another partial, exploded perspective view of the woodworking machine shown in Fig. 3.

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

Fig. 8 is a cross-sectional view taken along 8-8 in Fig. 1.

Fig. 9 is a perspective view of the woodworking machine shown in Fig. 1, illustrating a workpiece is clamped onto the woodworking machine horizontally.

Fig. 10 is a side view of the woodworking machine shown in Fig. 9.

Fig. 11 is another side view of the woodworking machine shown in Fig. 9.

Fig. 12 is a perspective view of the woodworking machine shown in Fig. 1, illustrating a workpiece is clamped onto the woodworking machine vertically.

Fig. 13 is a side view of the woodworking machine shown in Fig. 12.

Fig. 14 is another side view of the woodworking machine shown in Fig. 12.

Fig. 15 is a perspective view of the guiding means of the woodworking machine shown in Fig. 1.

Fig. 16 is an exploded perspective view of the guiding means shown in Fig. 15.

Fig. 17 is a cross-sectional view taken along 17-17 in Fig. 15.

Fig. 18 is a cross-sectional view taken along 18-18 in Fig. 15.

Fig. 19 is a partial, enlarged view taken from Fig. 18.

Fig. 20 is another partial, enlarged view similar to Fig. 19.

Fig. 21 is another cross-sectional view similar to Fig. 18.

Fig. 22 is another cross-sectional view similar to Fig. 21.

Fig. 23 is a perspective view of a guiding means of a woodworking machine according to the second embodiment of the present invention.

Fig. 24 is an exploded perspective view of the guiding means shown in Fig. 23.

Detailed Description of the Preferred Embodiment

[0007] With reference to Figures 1 through 4, they show a woodworking machine in accordance with a first embodiment of the present invention. The woodworking machine includes a base 10, a working platform 20, a driven means 30 and a guiding means 40.

[0008] Two side plates 101 are respectively provided at two sides of the top of the base 10. A placement member 11, a first clamping member 12, a second clamping member 13, two first slider bars 14 and a second slider

bar 15 are installed on the top of the base 10 between the two side plates 101. A workpiece is placed on the placement member 11 in a horizontal manner or a vertical manner and respectively clamped by the first and second clamping members 12 and 13. The two first slider bars 14 are transversely installed at the front of the base 10 opposite to the placement member 11 between the two side plates 101. The second slider bar 15 is transversely installed at the rear of the base 10, and the placement member 11 is sandwiched between the first and second slider bars 14, 15.

[0009] The first clamping member 12 is adapted to clamp the workpiece which is placed on the placement member 11 in the vertical manner and includes a first support plate 121 vertically disposed on the base 10, a first clamping block 122, a second clamping block 123, a third clamping block 124 and a guiding bar 125. The workpiece abuts against the side of the first support plate 121 which includes a slide groove 1211 formed axially thereon and two enlarged holes 1212 formed on two ends of the slide groove 1211. The first and second clamping blocks 122, 123 are inserted into the slide groove 1211 from the two enlarged holes 1212 to clamp two sides of the workpiece.

[0010] The first clamping block 122 is selectively fixed to a desired position of the slide groove 1211 via a first limited element 1221 and a fastening element 1222. The first limited element 1221 and the first clamping block 122 are respectively abutted against two sides of the first support plate 121. The first limited element 1221 is inserted through the slide groove 1211 and the first clamping block 122 and then engaged with the fastening element 1222. The third clamping block 124 is disposed on the second clamping block 123 and the second clamping block 123 is selectively fixed to a desired position of the slide groove 1211 via a second limited element 1231, a linkage shaft 127 and a linkage block 128. The third clamping block 124 is adapted for pressing another side of the workpiece opposite to the first support plate 121. The second limited element 1231 is inserted through the slide groove 1211 to the second clamping block 123 and engaged with an end of the linkage shaft 127 for tightly fixing the second clamping block 123 to the first support plate 121. Another end of the linkage shaft 127 is inserted through an end of the linkage block 128 transversely and directions of the linkage shaft and block 127 and 128 are approximately perpendicular to each other. A fastening element 1281 is longitudinally provided at the end of the linkage block 128 adjacent to the linkage shaft 127 for tightly fixing the linkage shaft 127 to the linkage block 128. The third clamping block 124 is engaged with another end of the linkage block 128 via an adjusting element 1241 transversely for abutting against the workpiece and the linkage block 128 is sandwiched between the adjusting element 1241 and the third clamping block 124. The guiding bar 125 is adapted to bias the workpiece so that the first clamping member 12 clamps the workpiece, which is placed on the placement member 11 in the ver-

tical manner, to secure the base 10 in a four point contact manner for a stable clamping of the workpiece.

[0011] The second clamping member 13 is adapted to clamp a workpiece which is placed on the placement member 11 in the horizontal manner and includes a second support plate 131, a first clamping block 132, a second clamping block 133, a third clamping block 134 and a guiding bar 135. The structure of the second clamping member 13 is the same as the first clamping member 12 substantially, however, the second support plate 131 is horizontally disposed on the base 10 and the workpiece is abutted against the second support plate 131. It is intended not to give unnecessary details herein.

[0012] Referring to Figs. 5 through 9 simultaneously, the working platform 20, which is provided at the base 10 below the placement member 11 and between the two side plates 101, is able to slide with respect to the base 10 transversely and longitudinally. The working platform 20 includes an up/down lifting plate 21, a first base member 22, a second base member 23 and a pneumatic cylinder unit 24. The up/down lifting plate 21 is below the placement member 11 and between the first and second base members 22 and 23. A bit 211 is installed at the center of the up/down lifting plate 21 for cutting workpieces. The up/down lifting plate 21 has two sides respectively facing the first and second base members 22 and 23. Two spaced connected portions 213 and a limited block 214 are provided at one of the two sides of the up/down lifting plate 21 and the limited block 214 is between the two connected portions 213. Each limited block 214 has two opposite lateral inclined sides (not numbered) which are inclined from an outer surface of each limited block 214 to an inner surface so that a cross-section of each limited block 214 is preferably dovetail-shaped. A notch 2141 is formed on the connection of each limited block 214 and the up/down lifting plate 21.

[0013] The first base member 22 includes two coupled portions 221 which are provided at two lateral sides thereof respectively and adjacent to the bottom thereof correspond to and disposed on the two connected portions 213. An aperture 2211 is formed through each coupled portion 221 vertically for coupling each coupled portion 221 to the related connected portion 213. The first base member 22 has a first side and a second side (not numbered). The first side of the first base member 22 forms a receptacle 222 vertically and toward the bit 211 and one of the limited blocks 214 which is toward the first base member 22 is slideably disposed in the receptacle 222. A width of the limited block 214 is smaller than that of the receptacle 222; hence two embedded elements 2221 are respectively fixed to the receptacle 222 between two sides of the limited block 214 and two sides of the receptacle 222. And a lateral side of each embedded element 2221 corresponds to the related side of the limited block 214 and preferably inclined so that the receptacle 222 which is combined with the two embedded elements 2221 is in form of a dovetail groove for limiting a sliding direction of the working platform 20 with respect

to the base 10 longitudinally.

[0014] A block 2222, which is provided at the top of the receptacle 222, is adapted to block the up/down lifting plate 21 and engaged with the related notch 2141. A guiding rod unit 220 is installed to the second side of the first base member 22 for guiding the first base member 22 to slide transversely and longitudinally. The guiding rod unit 220 includes two slider rods 223 parallel to and spaced from each other, two slider blocks 224 and a blocked plate 225. One end of the slider rods 223 is inserted through the related one of the slider blocks 224 and then coupled to the second side of the first base member 22 and another end of the slider rods 223 is engaged with an end of the blocked plate 225. The second slider bar 15 is inserted through the slider blocks 224 and a direction of the second slider bar 15 is perpendicular to that of the slider rods 223.

[0015] The second base member 23 is installed to another side of the up/down lifting plate 21 opposite to the first base member 22 and includes two coupled portions 231 which are provided at two lateral sides thereof respectively and adjacent to the bottom thereof correspond to and disposed on the two connected portions 213. An aperture 2311 is formed through each coupled portion 231 vertically for coupling each coupled portion 231 to the related connected portion 213. The second base member 23 has a first side and a second side (not numbered). The second side of the second base member 23 forms a receptacle 232 vertically and toward the bit 211 and one of the limited blocks 214 which is toward the second base member 23 is slideably disposed in the receptacle 232. A width of the limited block 214 is smaller than that of the receptacle 232; hence two embedded elements 2321 are respectively fixed to the receptacle 232 between two sides of the limited block 214 and two sides of the receptacle 232. And a lateral side of each embedded element 2321 corresponds to the related side of the limited block 214 and preferably inclined so that the receptacle 232 which is combined with the two embedded elements 2321 is in form of a dovetail groove for limiting a sliding direction of the working platform 20 with respect to the base 10 longitudinally.

[0016] A block 2322, which is provided at the top of the receptacle 232, is adapted to block the up/down lifting plate 21 and engaged with the related notch 2141. Three coupled holes 233 are formed on the first side of the second base member 23 and inserted through the second base member 23 to the second side of the second base member 23.

[0017] The pneumatic cylinder units 24 includes numbers of cylinders 241 respectively provided at the coupled portions 221 and 231 of the first and second base members 22 and 23, a pneumatic supply 242 and a control element 243. Each cylinder 241 includes a telescopic rod 2411 inserted through the aperture 2211, 2311 of the related one of the coupled portions 221 and 231 and the related one of the connected portions 213. A hose 2412

is connected to the cylinder 241, and numbers of hoses 2412 are all coupled to the pneumatic supply 242 for controlling the up/down lifting plate 21 via the telescopic rods 2411. The control element 243 is adapted to be stepped by users for air supply.

[0018] The driven means 30 is coupled to the first side of the second base member 23 and drives the working platform 20 to slide transversely and longitudinally with respect to the base 10. The driven means 30 includes a sliding base 31, a fixed plate 32 and an operable handle means 33. The sliding base 31 has two transverse through-holes 311 inserted by the first slider bars 14 respectively, three longitudinal through-holes 312 inserted by two first guiding rods 34 and a second guiding rod 35 respectively and an inclined surface 313 provided a side thereof opposite to the placement member 11. The second guiding rod 35 is disposed between the first guiding rods 34. An end of the second guiding rod 35 is inserted to the related one longitudinal through-hole 312 and another end of the second guiding rod 35 is inserted through an elastic element 351 and engaged with the related coupled hole 233. An end of the first guiding rod 34 is inserted through the related one longitudinal through-hole 312 and engaged with the fixed plate 32 and another end of the first guiding rod 34 is engaged with the related one coupled hole 233.

[0019] The fixed plate 32 is preferably T-shaped and provided at the front of the base 10 opposite to the placement member 11. The ends of the two guiding rods 34 coupled to the ends of the top of the fixed plate 32. A slot 321 pierces through the center of the fixed plate 32.

[0020] A copying means 50 which is installed below the fixed plate 32 and includes a mold 51 is adapted for controlling the bit 211 to cut the workpiece to form a desired shape. The mold 51 is used for forming tenons and mortises.

[0021] The operable handle means 33 includes a sleeve 331 mounted thereon and pivotally coupled to the slot 321 of the fixed plate 32 so that the operable handle means 33 is able to rotate with respect to the fixed plate 32. The operable handle means 33 further includes a handle 332 and a roller 333 respectively provided at two ends thereof. The handle 332 is held by users to operate the operable handle means 33 and the roller 333 is abutted against and rotates along the inclined surface 313 of the sliding base 31 so that the fixed plate 32 drives the working platform 20 to slide longitudinally with respect to the base 10.

[0022] The working platform 20 is able to lift upward/downward with respect to the base 10 via the up/down lifting plate 21 to cut the workpieces, and the up/down lifting plate 21 is restricted by the blocks 2222 and 2322.

[0023] Referring to Figs. 9 through 11, it shows to form mortises on the workpiece. The workpiece is placed on the placement member 11 in the horizontal manner and the mold 51 is in form of mortise with desired shapes. The bit 211 of the working platform 20 is driven to correspond to the workpiece by operating the driven means

30; by stepping on the control element 243 of the pneumatic cylinder units 24 to control the up/down lifting plate 21 to lift upward/downward for cutting the workpiece according to the shape of the mold 51.

[0024] Referring to Figs. 12 and 13, it shows to form tenons on the workpiece. The workpiece is placed on the placement member 11 in the vertical manner and the mold 51 is in form of tenons with desired shapes. The bit 211 of the working platform 20 is driven to correspond to the workpiece by operating the driven means 30; by stepping on the control element 243 of the pneumatic cylinder units 24 to control the up/down lifting plate 21 to lift upward/downward for cutting the workpiece according to the shape of the mold 51.

[0025] Referring to Fig. 14, one workpiece is clamped by the first clamping member 12 in four-point contact manner and the first and second clamping blocks 122 and 123 are able to rotate with respect to the first support plate 121 so that the first and second clamping blocks 122 and 123 can clamp the workpiece which is inclined with respect to the base 10 and the third clamping block 124 is abutted against the workpiece for securing the workpiece to the base 10. And then, the woodworking machine can cut mortises/tenons with beveled sides.

[0026] Referring Figs. 1 and 15, the guiding means 40 is installed on the base 10 horizontally. A workpiece can be placed on the guiding means 40 and cut to form tenons/mortises thereon via the bit 211 which is driven by the driven means 30. Two regulating members 16 are provided adjacent to two ends of the guiding means 40. The user can adjust the regulating members 16 for slightly regulate the horizontal position of the guiding means 40.

[0027] Referring to Figs. 16 through 18, the guiding means 40 includes a main body 41 and several guiding blocks 42. Each guiding block 42 is slideably disposed on and selectively fixed to the main body 41.

[0028] The main body 41 has two ends respectively coupled to the base 10 and a side forming with a receiving portion 411. An enlarged hole 412 is formed at the end of the receiving portion 411 and communicates with the receiving portion 411.

[0029] Referring to Figs. 17 and 18 simultaneously, the receiving portion 411 has a first section 4111 communicating with the outer surface of the main body 41 and a second section 4112 away from the outer surface of the main body 41 but communicating with the first section 4111. A width of the first section 4111 is smaller than that of the second section 4112 and a connection of the first and second sections 4111 and 4112 forms with two blocked surfaces 413 which are respectively adjacent to two sides of the inner surface of the receiving portion 411.

[0030] Each guiding block 42 is inserted into the receiving portion 411 from the enlarged hole 412 which has a width being equal to that of the second section 4112. A guiding surface 4121 is formed between the receiving portion 411 and the enlarged hole 412 and preferably arcuate.

[0031] Two connected holes 413 are respectively formed at two distal ends of the main body 41 and opposite to each other. The two regulating members 16 which are installed to the two side plates 101 of the base 10 are coupled to the connected holes 413.

[0032] Each guiding block 42 has a first portion 4201 and a second portion 4202. The first portion 4201 is slideably disposed in the first section 4111 of the receiving portion 411 so that the related guiding block 42 is able to slide along the receiving portion 411.

[0033] An abutted side 421 is formed between the first and second portions 4201 and 4202 and abuts against the outer periphery of the side of the main body 41. A hole 422 pierces through the first portion 4201 and has a blocked surface 4221 formed on the outer periphery of an end of the first portion 4201.

[0034] Each guiding block 42 has a first side 4203 and a second side 4204 which are respectively toward the two ends of the main body 41. Each two of guiding blocks 42 are joined together and the first sides 4203 of the joined guiding blocks face each other. In the other case, the second sides 4204 of the joined guiding blocks face to each other. A flat first abutted surface 423 is defined on the first side 4203 and a second abutted surface 424 and a guiding portion 425 are defined on the second side 4204. The second abutted surface 424 is adjacent to the first portion 4201. The guiding portion 425 is adjacent to the second portion 4202 and has a first arcuate surface 4251, a flat surface 4252 and a second arcuate surface 4253. The flat surface 4252 continuously connects the first and second arcuate surfaces 4251 and 4253. The first arcuate surfaces 4251 of the two joined guiding blocks 42 form a U-shaped groove. The second arcuate surfaces 4253 of the two joined guiding blocks 42 form a continuously arcuate surface.

[0035] A concave portion 426 is formed on the second side 4204 longitudinally and an adjusting element 427 inserted through the concave portion 426 to the hole 422 and engaged with a threaded hole 4281 of a limited element 428 which is provided between the first portion 4201 of each guiding block 42 and the second section 4112 of the main body 41 and blocked by the blocked surface 4113. The limited element 428 is selectively abutted against the blocked surface 4113 for fixing in the receiving portion 411 by rotating the adjusting element 427 with respect to the limited element 428. The adjusting element 427 has a head 4271 blocked by the blocked surface 4221 and an outer threaded portion 4272 inserted through the hole 422 and engaged with the threaded hole 4281 of a limited element 428.

[0036] An engaged hole 4273 is formed at the head 4271 of the adjusting element 427 and in this case, the engaged hole 4273 is in form of a hexagonal hole. Users can operate a hand tool to insert to the engaged hole 4273 for rotating the adjusting element 427 to adjust a distance between the limited element 428 and the receiving portion 411 so that the related guiding block 42 is selectively fixed to the receiving portion 411 of the main

body 41 or not.

[0037] Referring to Figs. 19 and 20, a position of the guiding block 42 in the receiving portion 411 can be adjusted via loosening the limited element 428 from the receiving portion 411. Furthermore, while the limited element 428 is loosened from the receiving portion 411, the guiding block 42 is able to be detached from the main body 41.

[0038] Referring to Fig. 21, it shows that the guiding means 40 is in a first position. Each two of the guiding blocks 42 are joined together and the second abutted surfaces 424 face each other. There is a tenon groove X defined between the flat surfaces 4252 of each two guiding blocks 42 and able to be adjusted as required.

[0039] Referring to Fig. 22, it shows that the guiding means 40 is in a second position. Each two of the guiding blocks 42 are joined together and the first abutted surfaces 423 face each other. A distance between each two sets of the joined guiding blocks 42 can be adjusted as required and as shown in the drawings, like spacing Y1, spacing Y2 and spacing Y3.

[0040] Referring to Figs. 23 and 24, they show a woodworking machine in accordance with a second embodiment of the present invention similar to the first embodiment but except the guiding portion 425a of the guiding block 42a replaces the guiding portion 425 of the guiding block 42 which will be discussed as following.

[0041] The guiding portion 425a is similar to the guiding portion 425 but the arcuate surface 4251a replaces the first arcuate surface 4251 and the guiding included surface 4254a replaces the flat and second arcuate surfaces 4252 and 4253. The arcuate surfaces 4251a of the two joined guiding blocks 42a form a U-shaped groove. The included surface 4254a is inclined toward the first side 4203a from the second side 4204a. It can allow the woodworking machine to cut the workpiece to form various shapes of tenons/mortises thereon.

[0042] Summarizing the above-mentioned, the advantages of the present invention are:

1. In the present invention, the up/down lifting plate of the working platform which can move upward/downward with respect to the base and the guiding means allows the woodworking machine to cut workpieces to form tenons/mortises and dovetail joints thereon.
2. In the present invention, the up/down lifting plate can be moved upward/downward with respect to the base via the pneumatic cylinder units.
3. In the present invention, the guiding blocks are slideably disposed along the receiving portion of the main body of the guiding means for forming various sizes and shapes of tenons/mortises with different spacing therebetween on workpieces.
4. In the present invention, each two of the guiding blocks can face each other via the first abutted surfaces thereof of the second abutted surfaces thereof selectively for forming various sizes and shapes of

tenons/mortises with different spacing therebetween on workpieces.

[0043] While several embodiments of the invention have been shown and described, it will be apparent to those skilled in the art that modifications may be made therein without departing from the scope and spirit of the present invention.

Claims

1. A woodworking machine comprising:

a base (10) including a placement member (11) for placing a workpiece thereon, a first clamping member (12) for clamping the workpiece which is placed on the placement member (11) in a vertical manner, a second clamping member (13) for clamping the workpiece which is placed on the placement member (11) in a horizontal manner and at least one of transverse first slider bar (14);
a working platform (20), which is provided below the placement member (11), including an up/down lifting plate (21), a first base member (22) and a second base member (23), with the up/down lifting plate (21) provided between the first and second base member (22, 23), with the first and second base member (22, 23) respectively slideably moving with respect to the base (10), with the up/down lifting plate (21) able to lift upward/downward with respect to the base (10) for cutting the workpiece;
and
a driven means (30) slideably mounted on the first slider bar (14) in a transverse direction and installed to the working platform (20);
wherein the driven means (30) is able to drive the working platform (20) to move transversely or longitudinally with respect to the base (10).

2. A woodworking machine comprising:

a base (10) including a placement member (11) for placing a workpiece thereon and at least one of transverse first slider bar (14);
a working platform (20) provided below the placement member (11);
a driven means (30) slideably mounted on the first slider bar (14) in a transverse direction and installed to the working platform (20); wherein the driven means (30) is able to drive the working platform (20) to move transversely or longitudinally with respect to the base (10); and
a guiding means (40, 40a) including a main body (41, 41a) installed onto the base (10) horizontally and several guiding blocks (42; 42a);

- wherein the main body (41; 41a) has a receiving portion (411; 411a) longitudinally formed on a side thereof and each guiding block (42; 42a) has a first portion (4201) slideably disposed in the receiving portion (411; 411 a) and a second portion (4202; 4202a) for cutting the workpiece to form tenons/mortises; wherein the guiding blocks is selectively fixed to a desired position in the receiving portion (411; 411 a) and each two of the guiding blocks are joined together.
3. The woodworking machine as claimed in claims 1 or 2 further comprising a pneumatic cylinder units (24) adapted for controlling the up/down lifting plate (21) to move upward/downward with respect to the base (10) and including several cylinders (241) installed to the first and second base members (22, 23);
 4. The woodworking machine as claimed in claim 3 wherein each cylinder (241) has a telescopic rod (2411) to press the up/down lifting plate (21); wherein the up/down lifting plate (21) has two spaced connected portions (213) provided at one of the two sides of the up/down lifting plate (21) and coupled portions (221, 231) provided at two lateral sides of the first and second base members (22, 23) respectively and disposed on the related two connected portions (213); wherein each telescopic rod (2411) is inserted through the related coupled portion (221, 231) and the connected portion (213).
 5. The woodworking machine as claimed in claim 4 further comprising a limited block (214) provided between the two connected portions (213), with each limited block (214) having two opposite lateral inclined sides which are inclined from an outer surface thereof to an inner surface thereof so that a cross-section of each limited block (214) is dovetail-shaped; wherein a notch (2141) is formed on a connection of each limited block (214) and the up/down lifting plate (21).
 6. The woodworking machine as claimed in claims 1 or 2 further comprising a guiding rod unit (220) installed to a side of the first base member (22) opposite to the second base member (23) for guiding the first base member (22) to slide transversely and longitudinally.
 7. The woodworking machine as claimed in claims 1 or 2 further comprising a copying means (50) including a mold (51); wherein the up/down lifting plate (21) has a bit (211) for cutting the workpiece, with the mold (51) adapted for controlling the bit (211) to cut the workpiece to form a desired shape.
 8. The woodworking machine as claimed in claims 1 or 2 wherein the driven means (30) includes a sliding base (31), a fixed plate (32) and an operable handle means (33); wherein the sliding base (31) has at least one transverse through-hole (311) inserted by the at least one first slider bar (14) respectively; wherein the fixed plate (32) is provided at the front of the base (10) and has a slot (321) piercing through the center of the fixed plate (32); wherein the operable handle means (33) includes a sleeve (331) mounted thereon and pivotally coupled to the slot (321) of the fixed plate (32) so that the operable handle means (33) is able to rotate with respect to the fixed plate (32).
 9. The woodworking machine as claimed in claim 8 further comprising three longitudinal through-holes (312) inserted by two first guiding rods (34) and a second guiding rod (35) respectively and an inclined surface (313) provided a side of the sliding base (31) opposite to the placement member (11); wherein the second guiding rod (35) is disposed between the first guiding rods (34); wherein an end of the second guiding rod (35) is inserted to the related one longitudinal through-hole (312) and another end of the second guiding rod (35) is engaged with the second base member (23); wherein an end of each first guiding rod (34) is inserted through the related one longitudinal through-hole (312) and engaged with the fixed plate (32) and another end of each first guiding rod (34) is engaged with the second base member (23).
 10. The woodworking machine as claimed in claim 1 wherein the first clamping member (12) includes a first support plate (121) vertically disposed on the base (10), a first clamping block (122), a second clamping block (123), a third clamping block (124) and a guiding bar (125), with the workpiece abutted against a side of the first support plate (121); wherein the first clamping block (122) is selectively fixed to a desired position in the first support plate (121); wherein the third clamping block (124) is disposed on the second clamping block (123) and the second clamping block (123) is selectively fixed to a desired position of the slide groove (1211), with the third clamping block (124) adapted for pressing another side of the workpiece opposite to the first support plate (121), with the guiding bar 125 adapted to bias the workpiece; wherein the first clamping member (12) clamp the workpiece to secure the base (10) in a four point contact manner for a stable clamping of the workpiece.
 11. The woodworking machine as claimed in claim 2 wherein the receiving portion (411; 411 a) has a first section (4111; 411 a) communicating with the outer surface of the main body (41; 41 a) and a second section (4112; 4112a) away from the outer surface of the main body (41; 41 a) but communicating with the first section (4111; 4111a), with a width of the first section (4111; 4111 a) being smaller than that

of the second section (4112; 4112a) and a connection of the first and second sections (4111 and 4112; 4111 a and 4112a) forming with two blocked surfaces (413; 413a) which are respectively adjacent to two sides of the inner surface of the receiving portion (411; 411 a); wherein each guiding block (42; 42a) is inserted into the receiving portion (411; 411a) and has a hole (422; 422a), which pierces through the first portion (4201; 4201a) and has a blocked surface (4221; 4221a) formed on the outer periphery of an end of the first portion (4201; 4201 a); wherein an adjusting element (427; 427a) is inserted to the hole (422; 422a) and engaged with a limited element (428; 428a) which is provided between the first portion (4201; 4201a) of each guiding block (42; 42a) and the second section (4112; 4112a) of the main body (41; 41a); wherein the limited element (428; 428a) is selectively fixed to the receiving portion (411; 411a) by rotating the adjusting element (427; 427a) with respect to the limited element (428; 428a); wherein users can operate a hand tool to rotate the adjusting element (427; 427a) to adjust a distance between the limited element (428; 428a) and the receiving portion (411; 411 a) so that the related guiding block (42; 42a) is selectively fixed to the receiving portion (411; 411 a) of the main body (41; 41 a) or not.

12. The woodworking machine as claimed in claim 11 wherein each guiding block (42) has a first side (4203) and a second side (4204) which are respectively toward the two ends of the main body (41), with each two of guiding blocks (42) are joined together; wherein a first abutted surface (423) is defined on the first side (4203) and a second abutted surface (424) and a guiding portion (425) are defined on the second side (4204) and has a first arcuate surface (4251), a flat surface (4252) and a second arcuate surface (4253), with the flat surface (4252) continuously connecting the first and second arcuate surfaces (4251 and 4253).
13. The woodworking machine as claimed in claim 12 wherein the first arcuate surfaces (4251) of the two joined guiding blocks (42) form a groove; wherein the second arcuate surfaces (4253) of the two joined guiding blocks (42) form a continuous surface.
14. The woodworking machine as claimed in claim 11 wherein each guiding block (42a) has a first side (4203a) and a second side (4204a) which are respectively toward the two ends of the main body (41a), with any two of the guiding blocks (42a) are joined together; wherein a first abutted surface (423a) is defined on the first side (4203a) and a second abutted surface (424a) and a guiding portion (425a) are defined on the second side (4204a) and has a arcuate surface (4251a) and a

guiding included surface (4254a).

15. The woodworking machine as claimed in claim 14 wherein the arcuate surfaces (4251a) of the two joined guiding blocks (42) form a groove; wherein the guiding included surfaces (4254a) of the two joined guiding blocks (42) form a continuous surface.

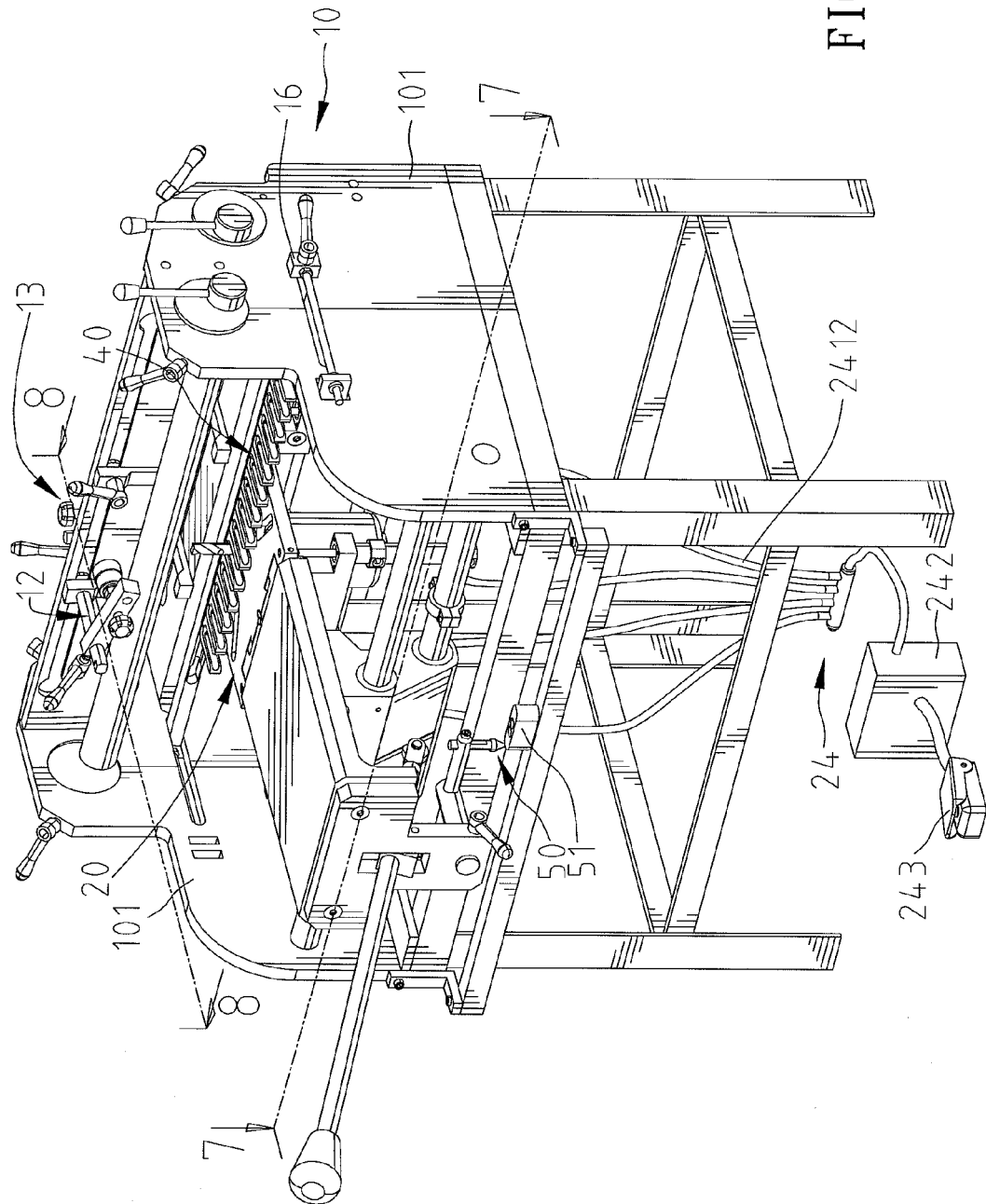


FIG. 1

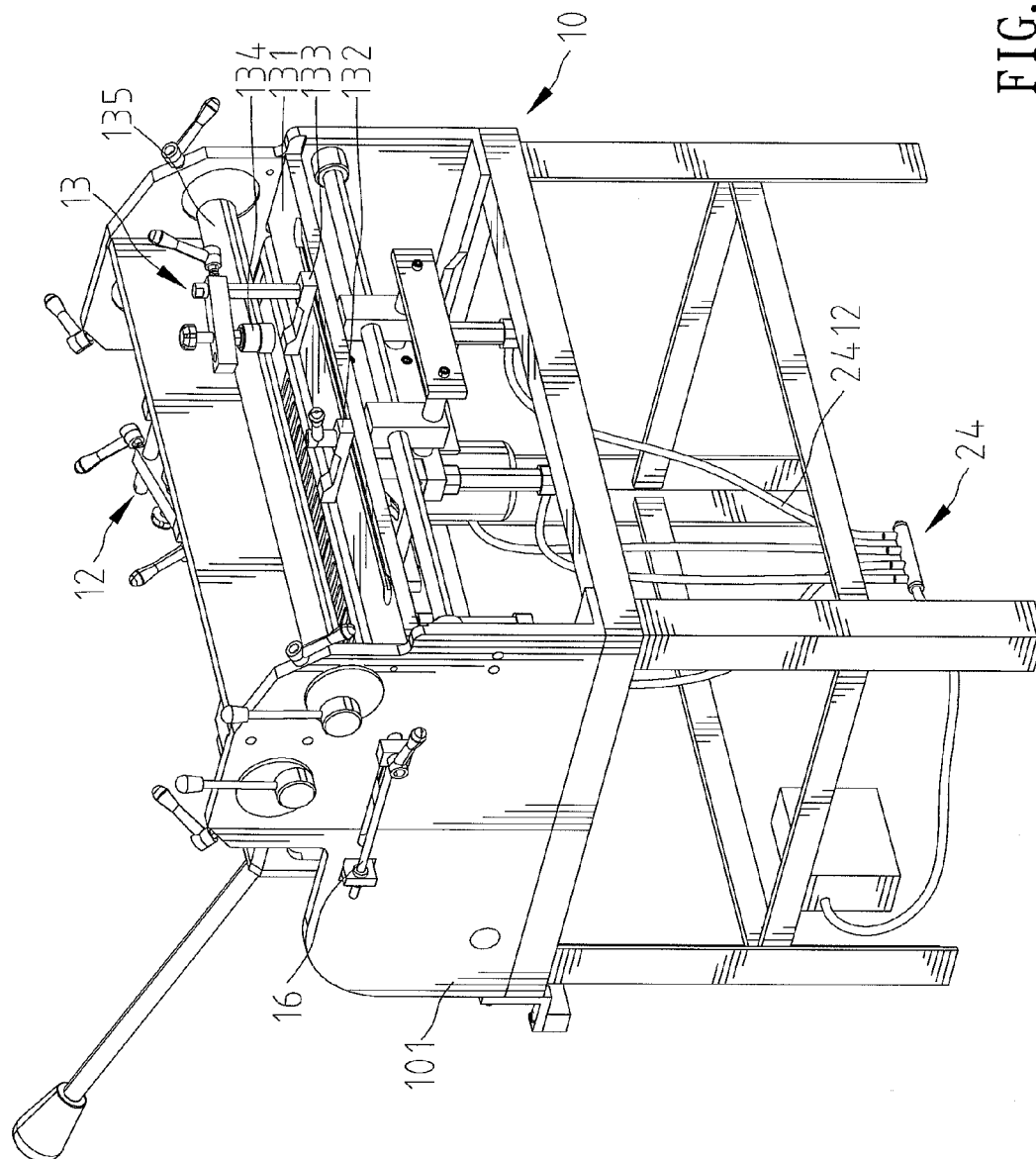


FIG. 2

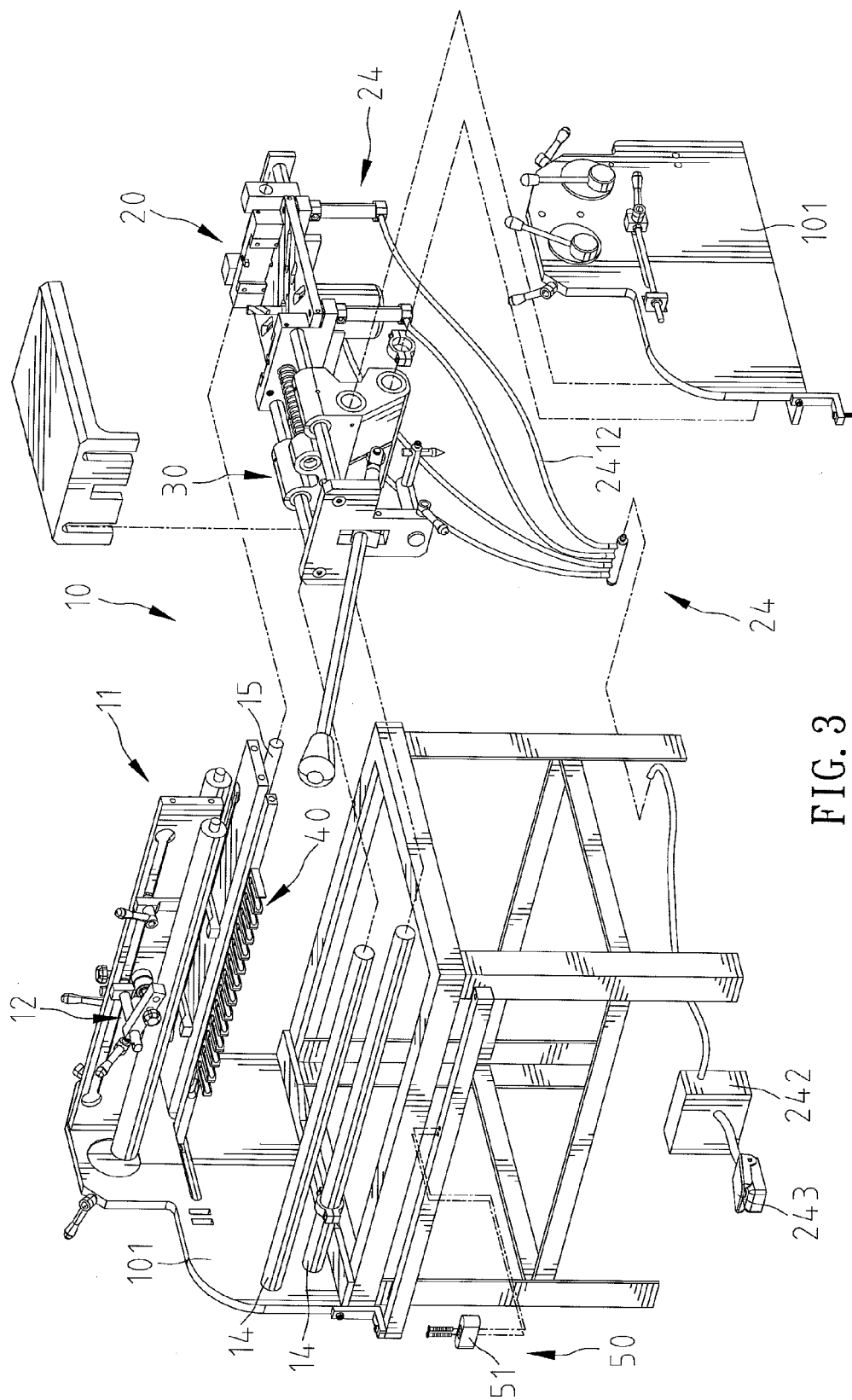


FIG. 3

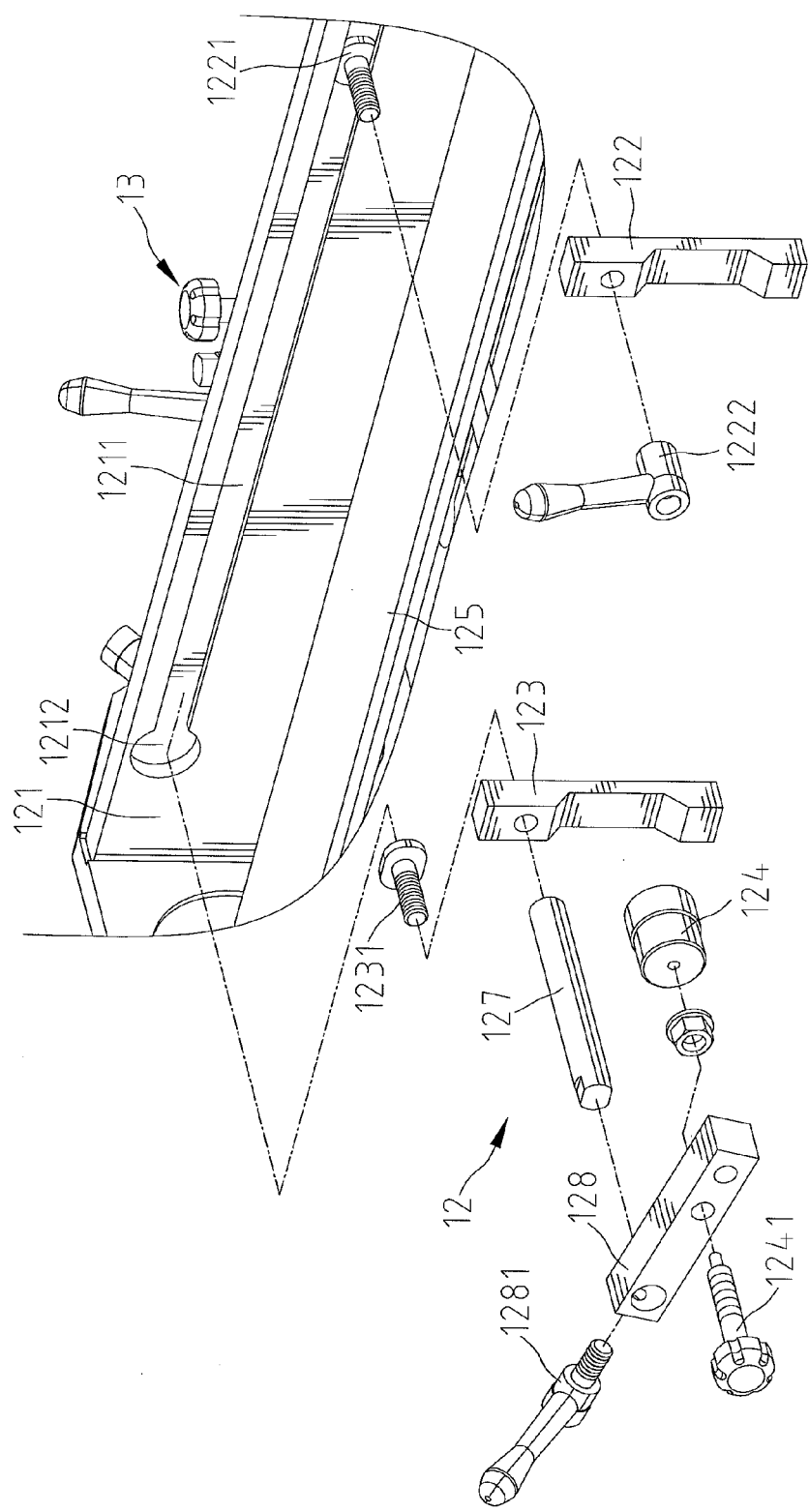


FIG. 4

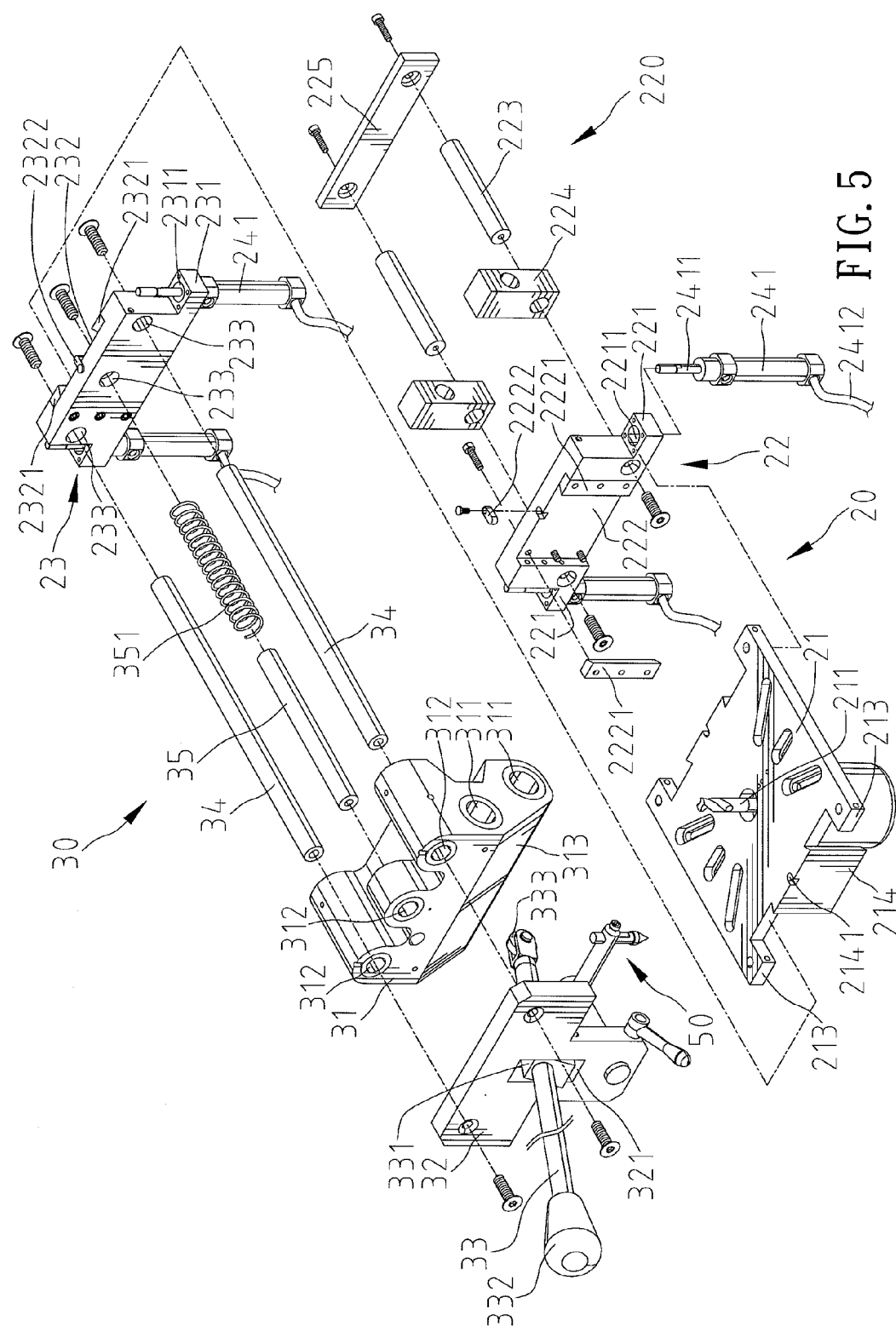


FIG. 5

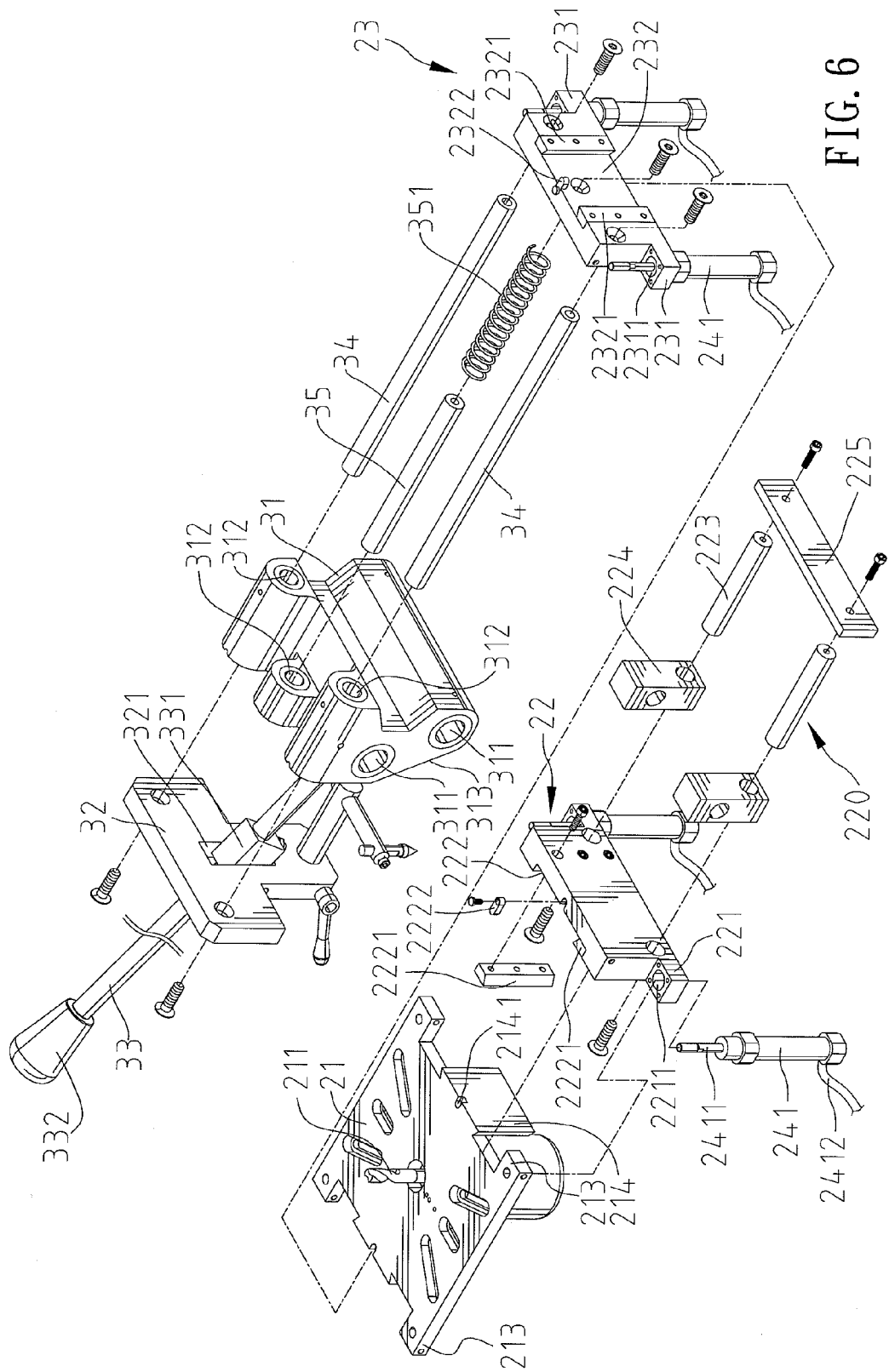
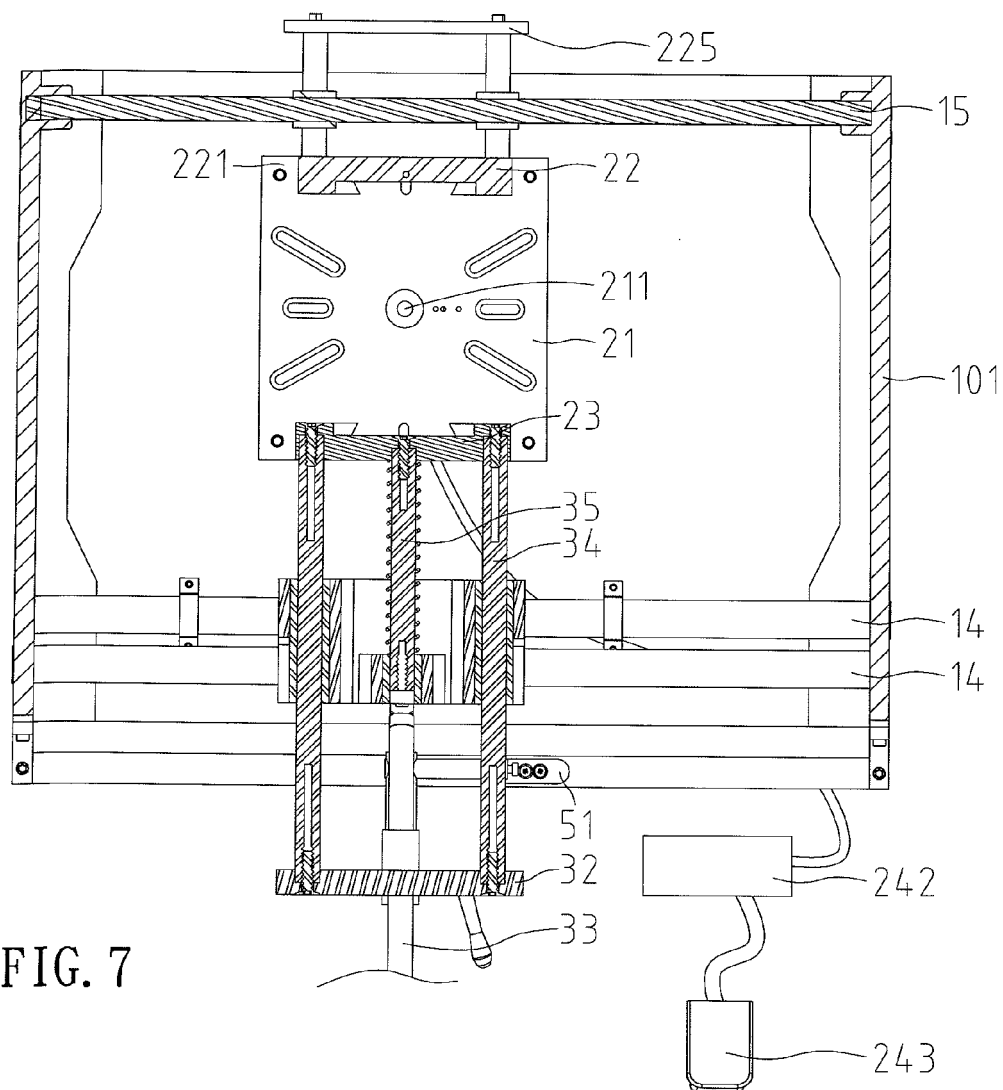
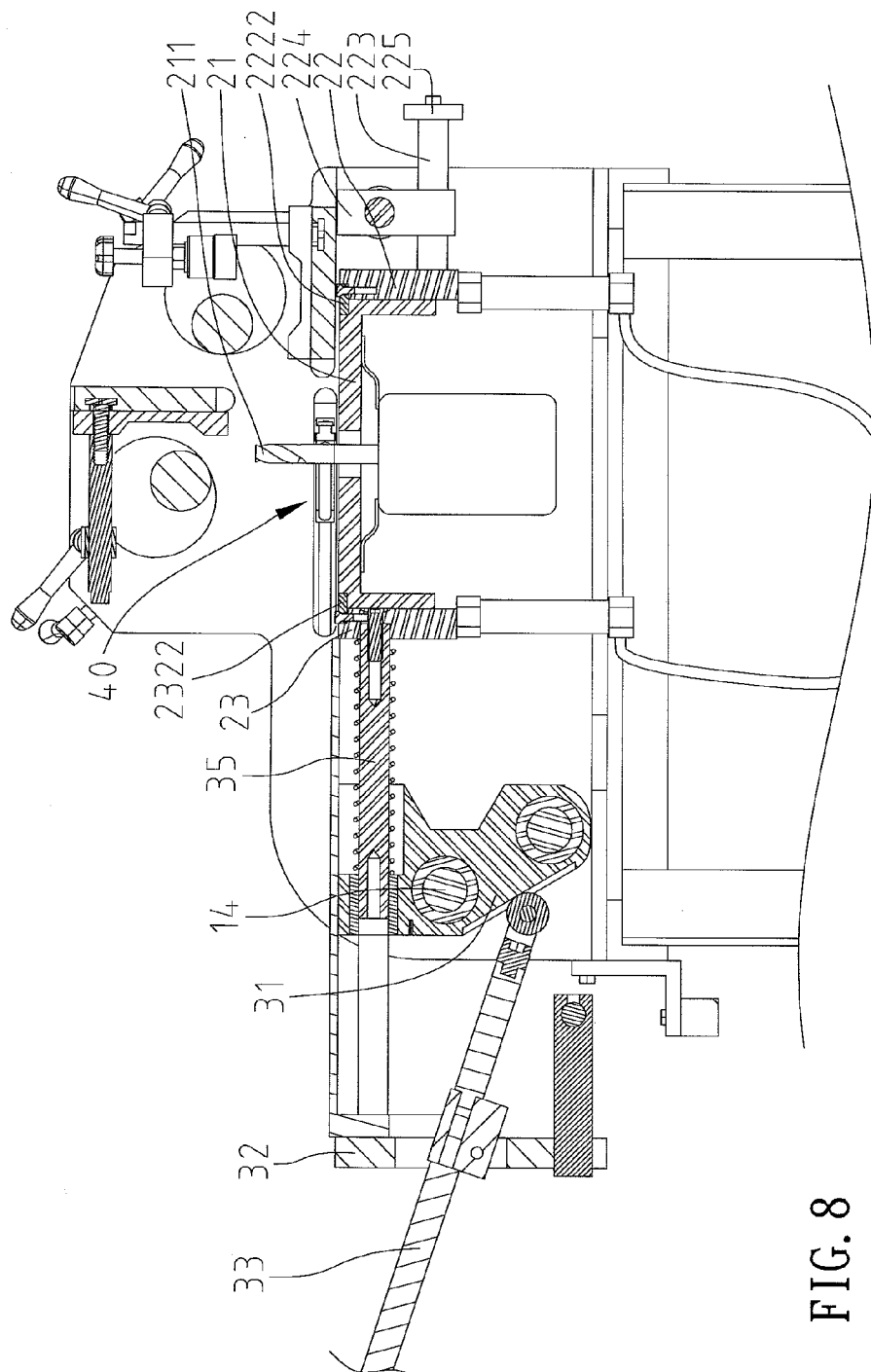


FIG. 6





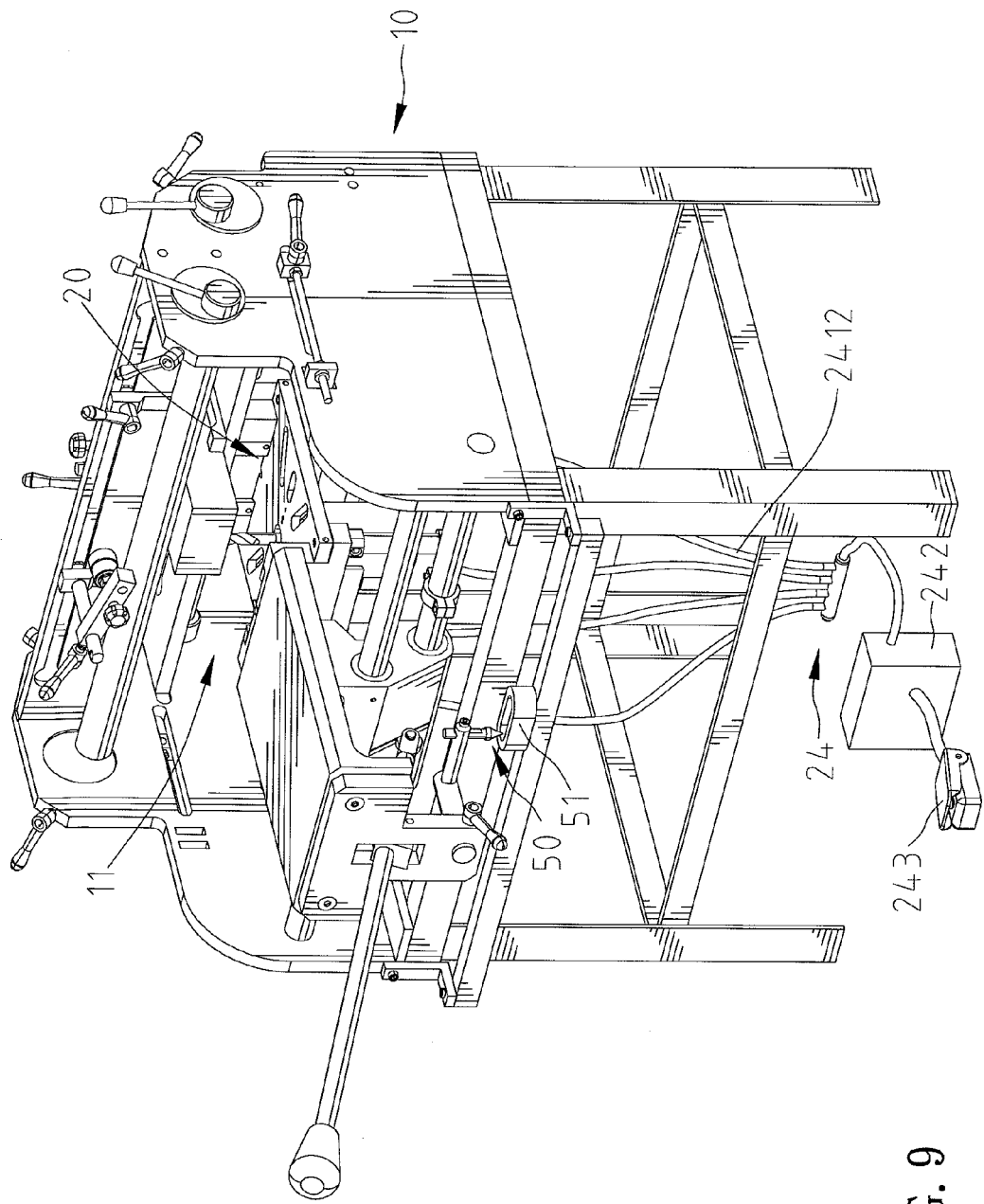


FIG. 9

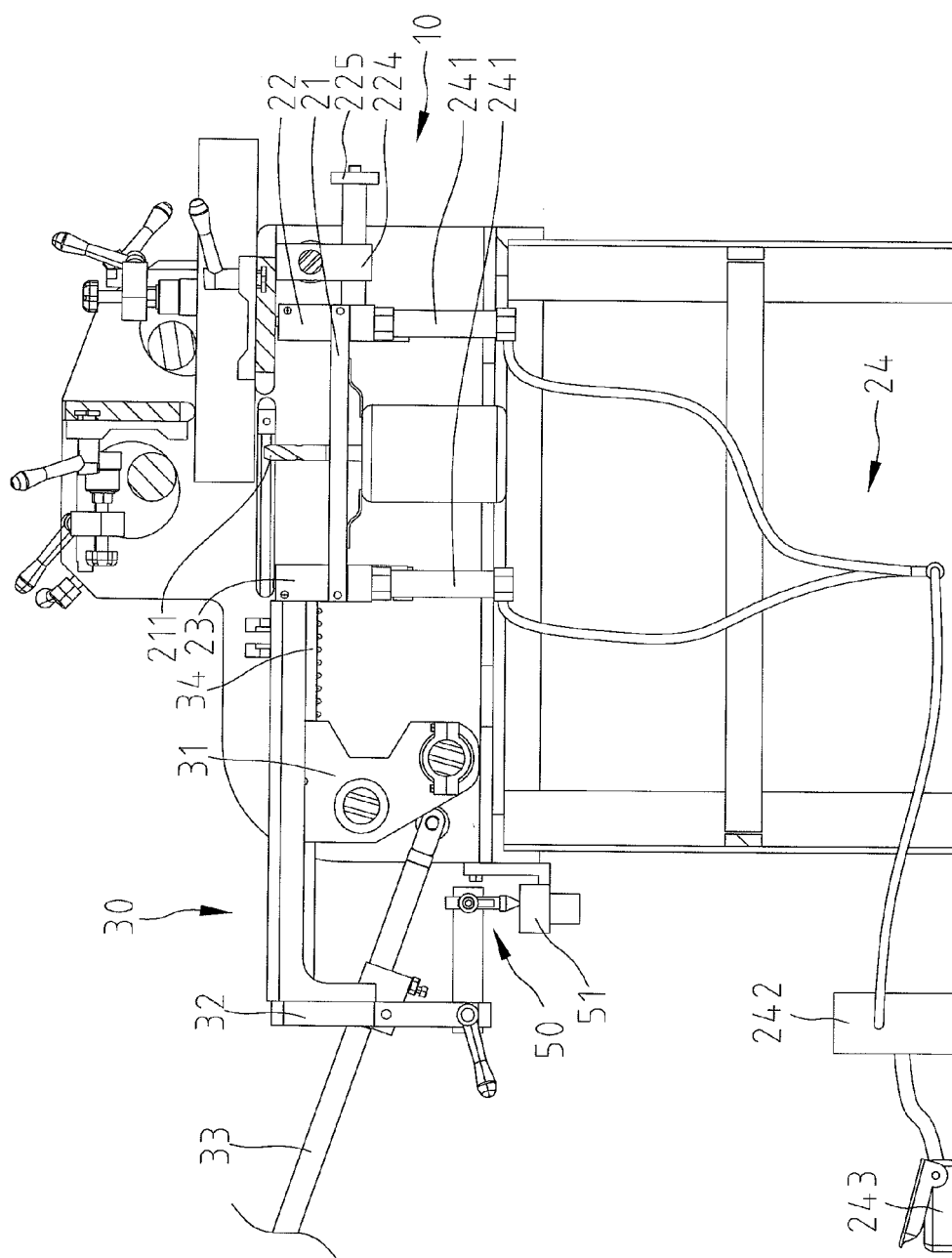


FIG. 10

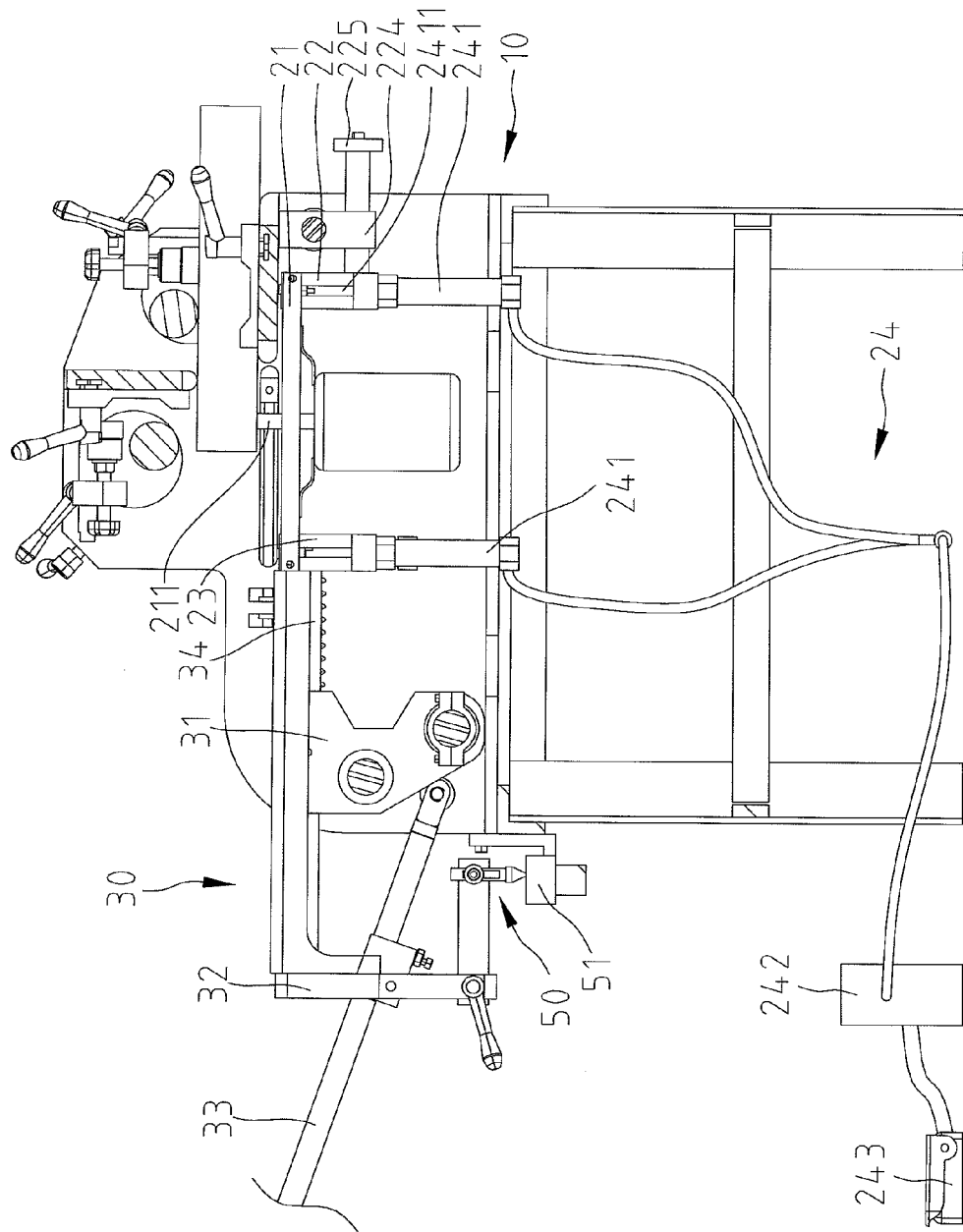


FIG. 11 243

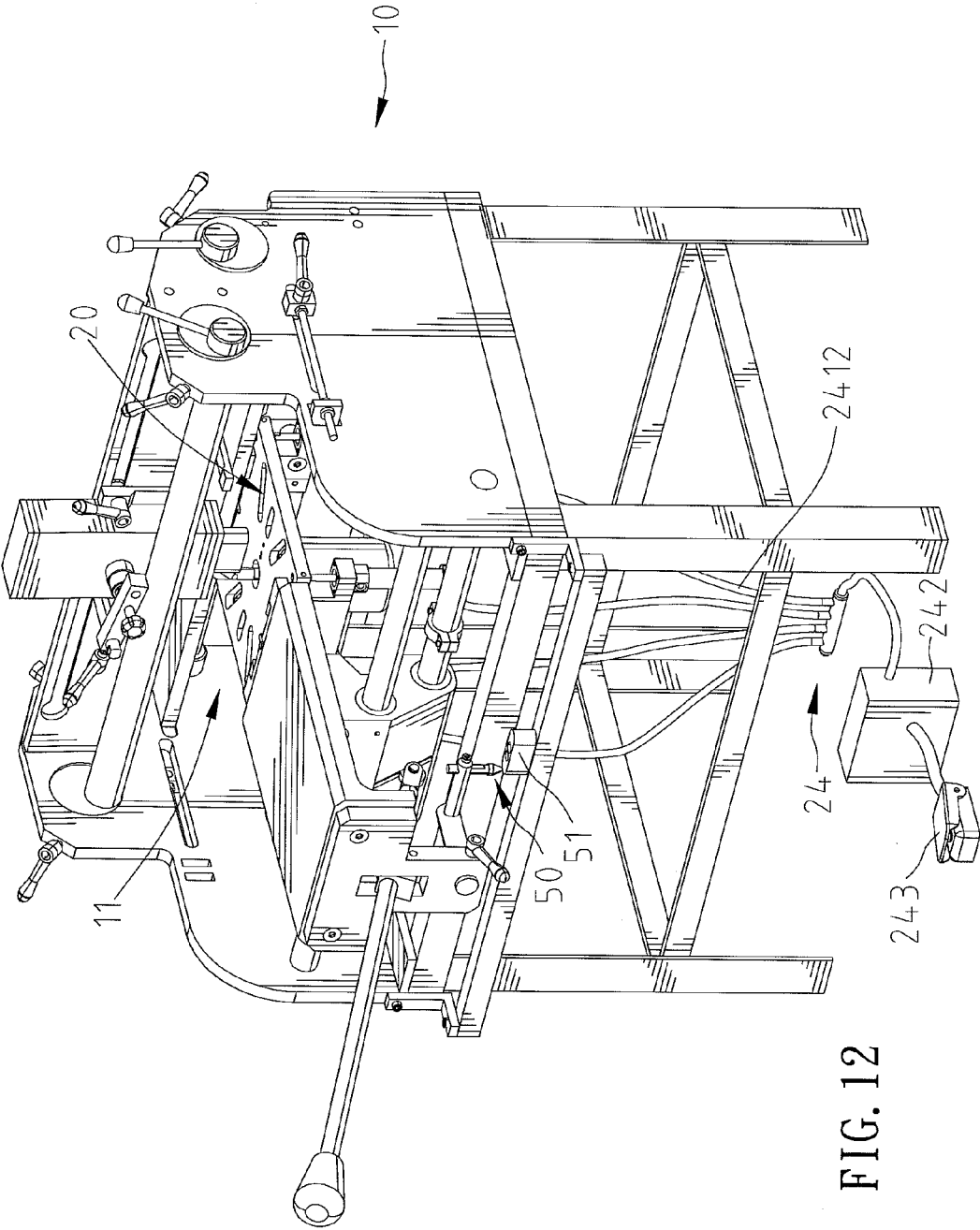


FIG. 12

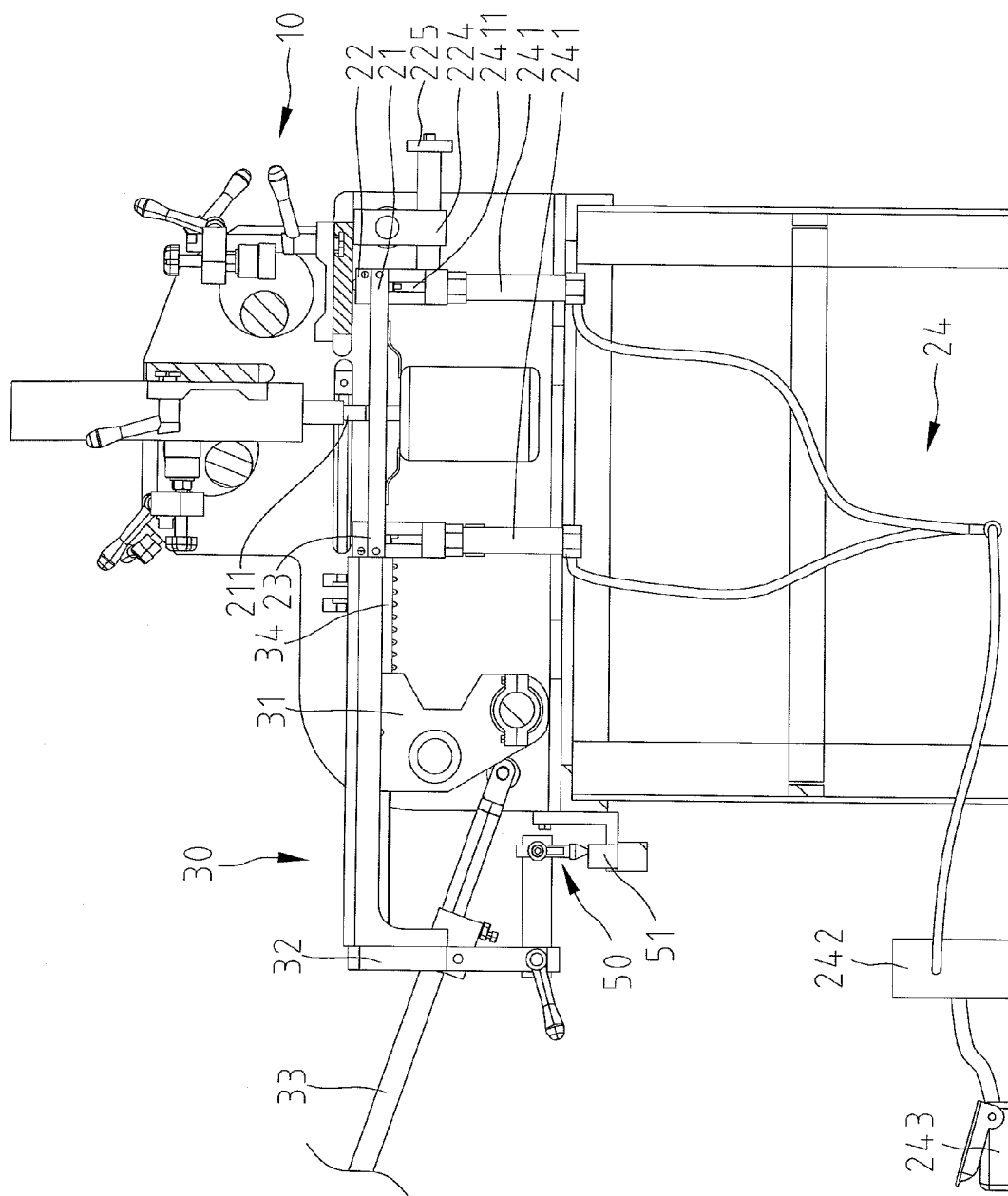


FIG. 13

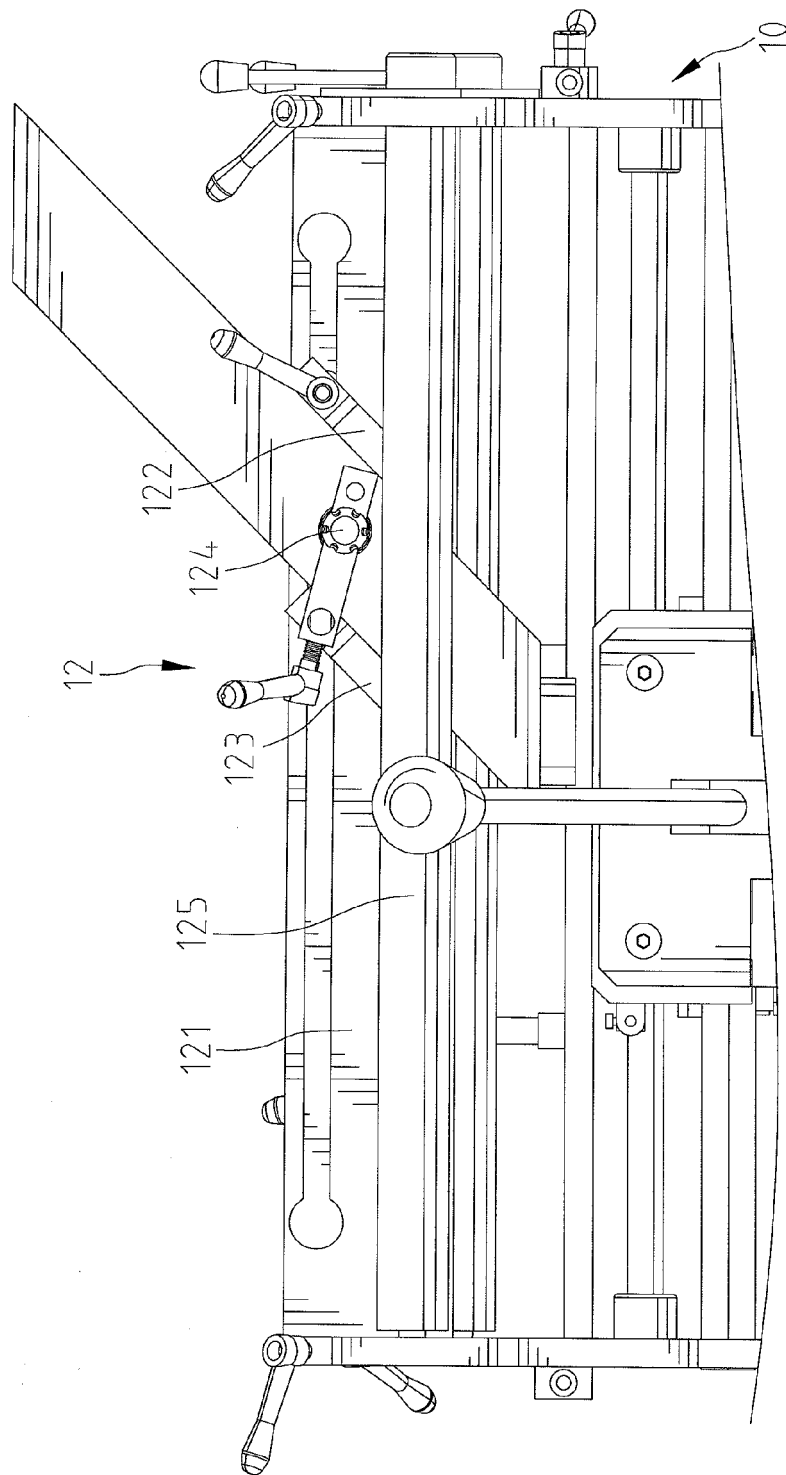


FIG. 14

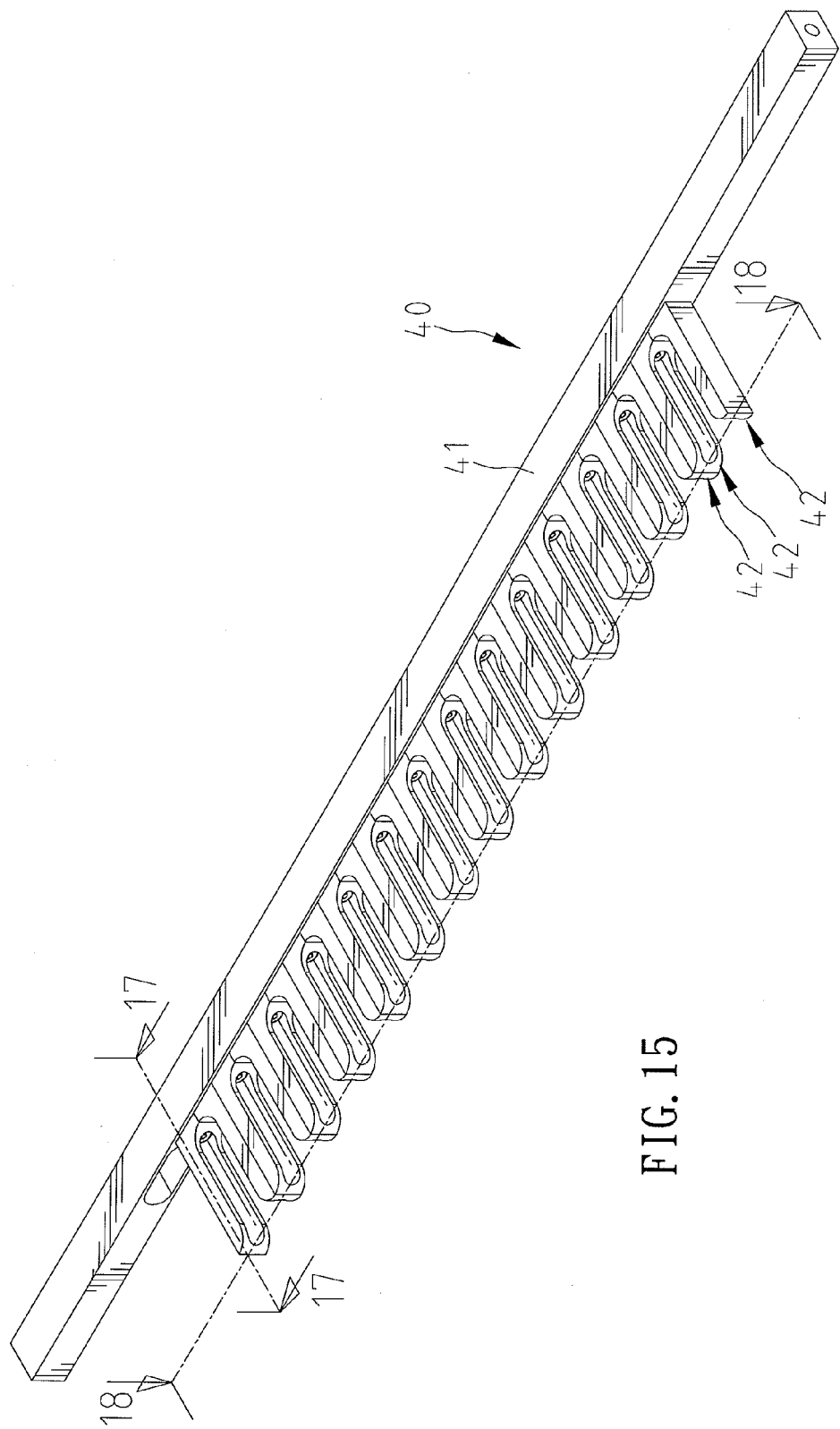
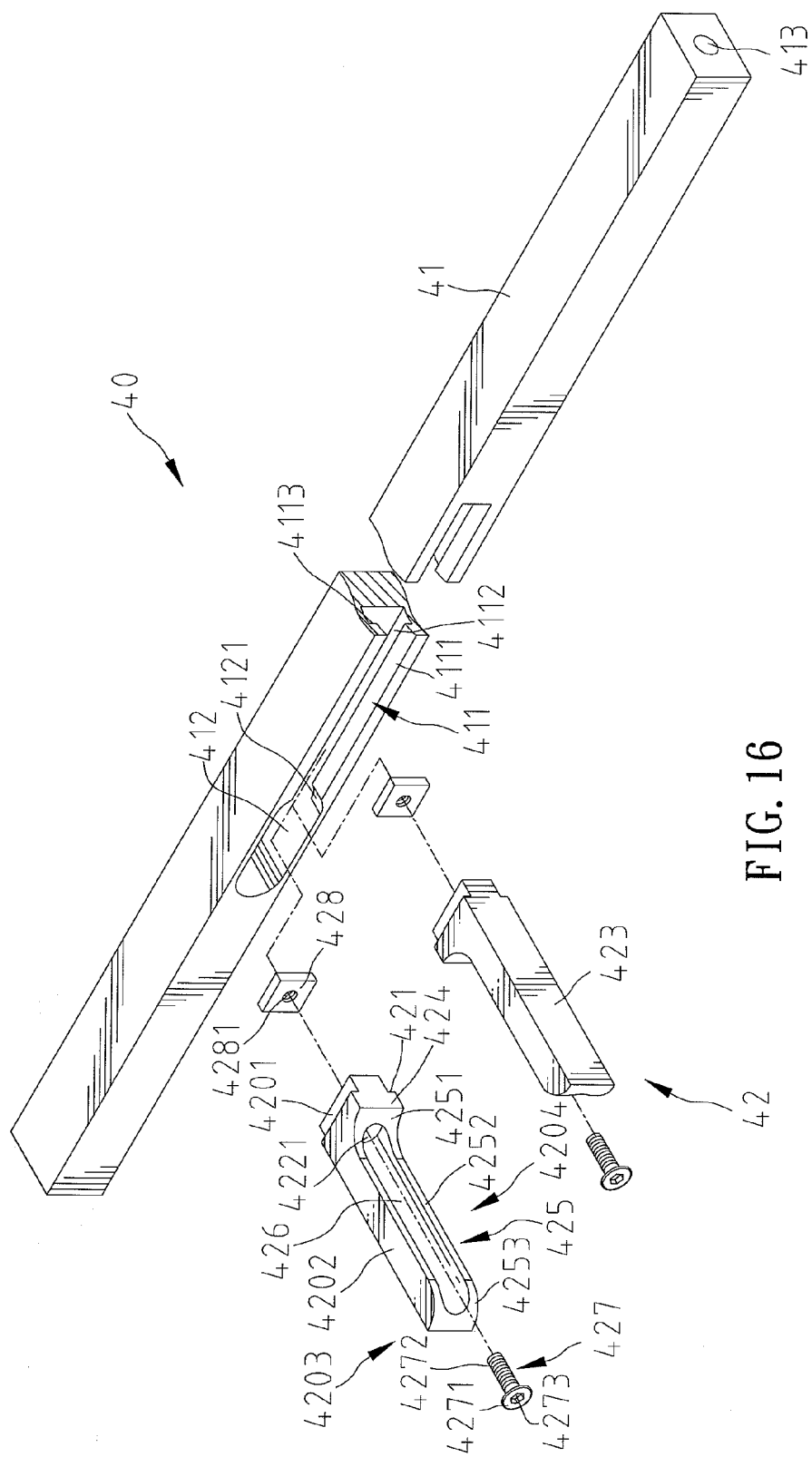


FIG. 15



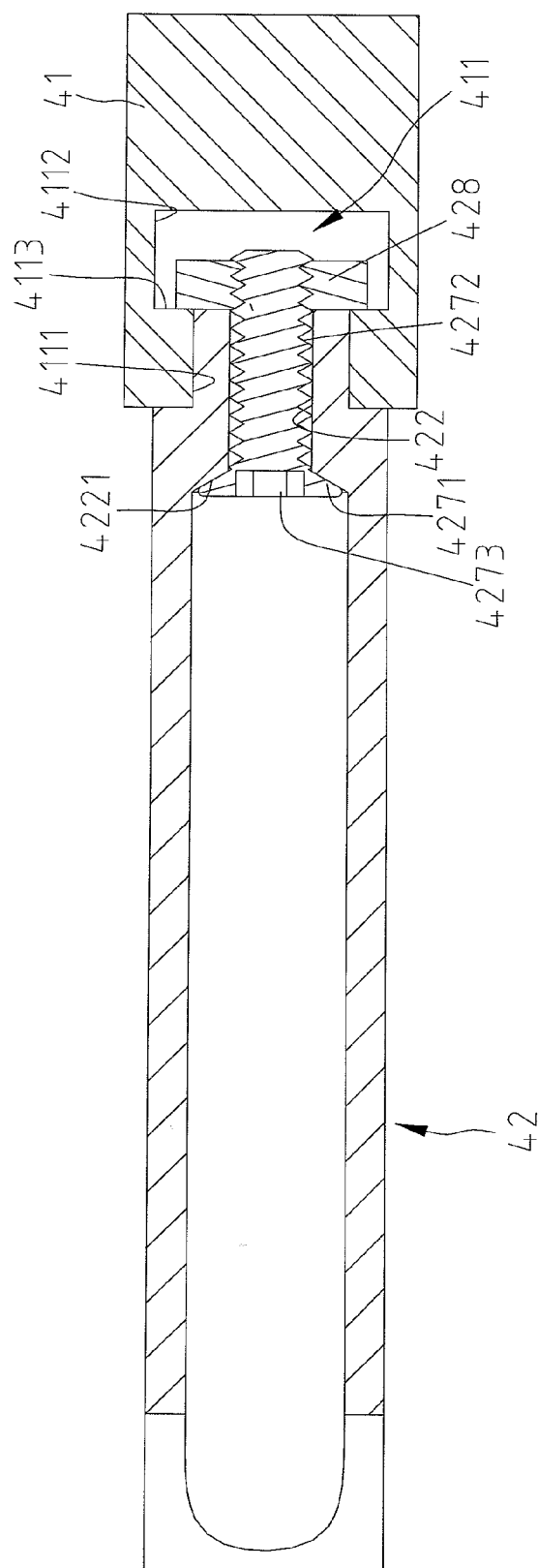


FIG. 17

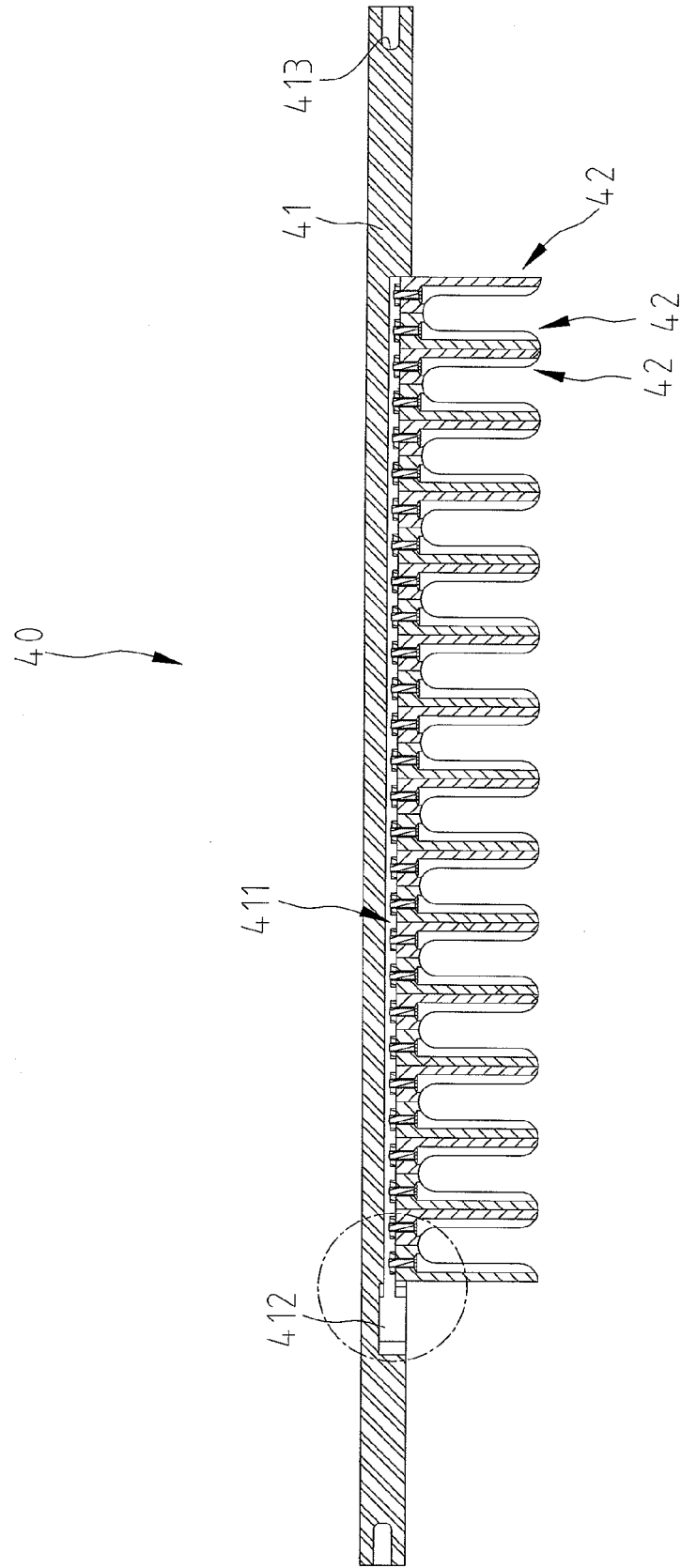


FIG. 18

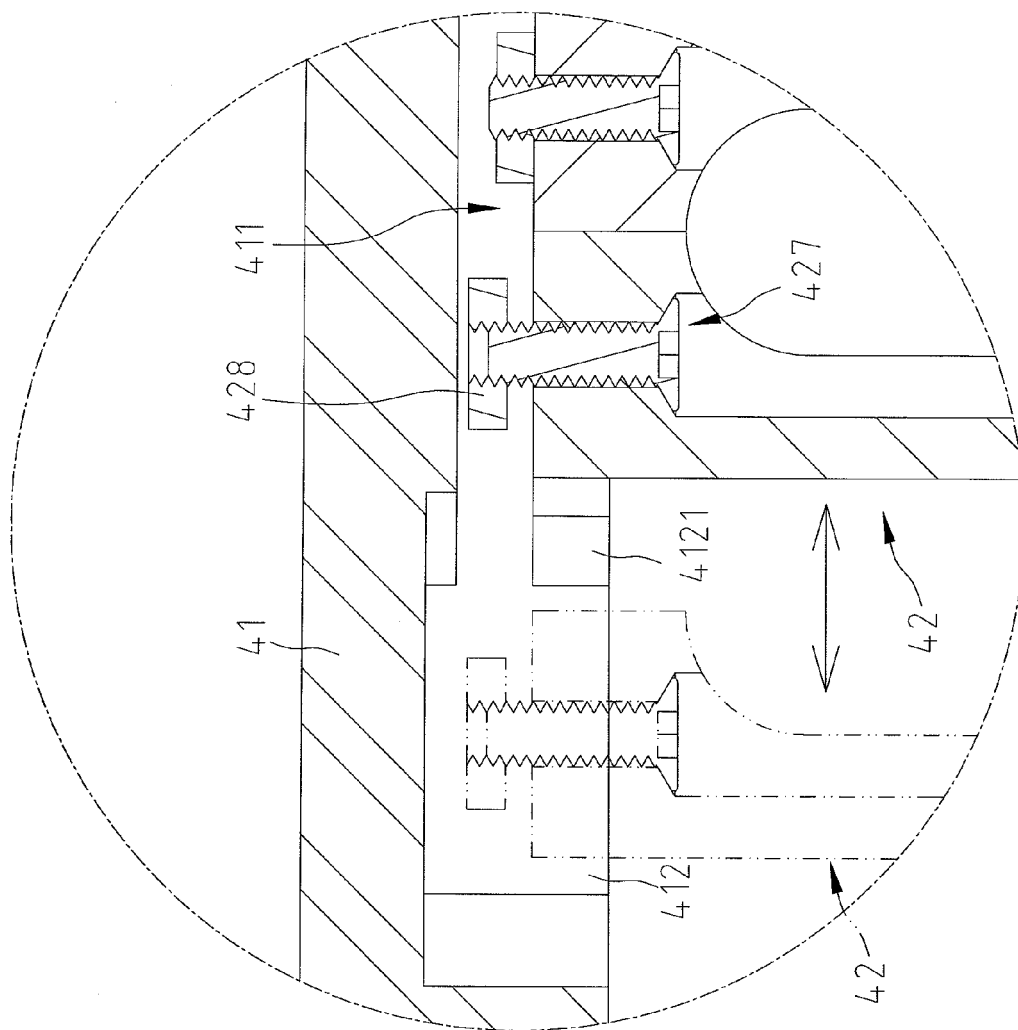


FIG. 19

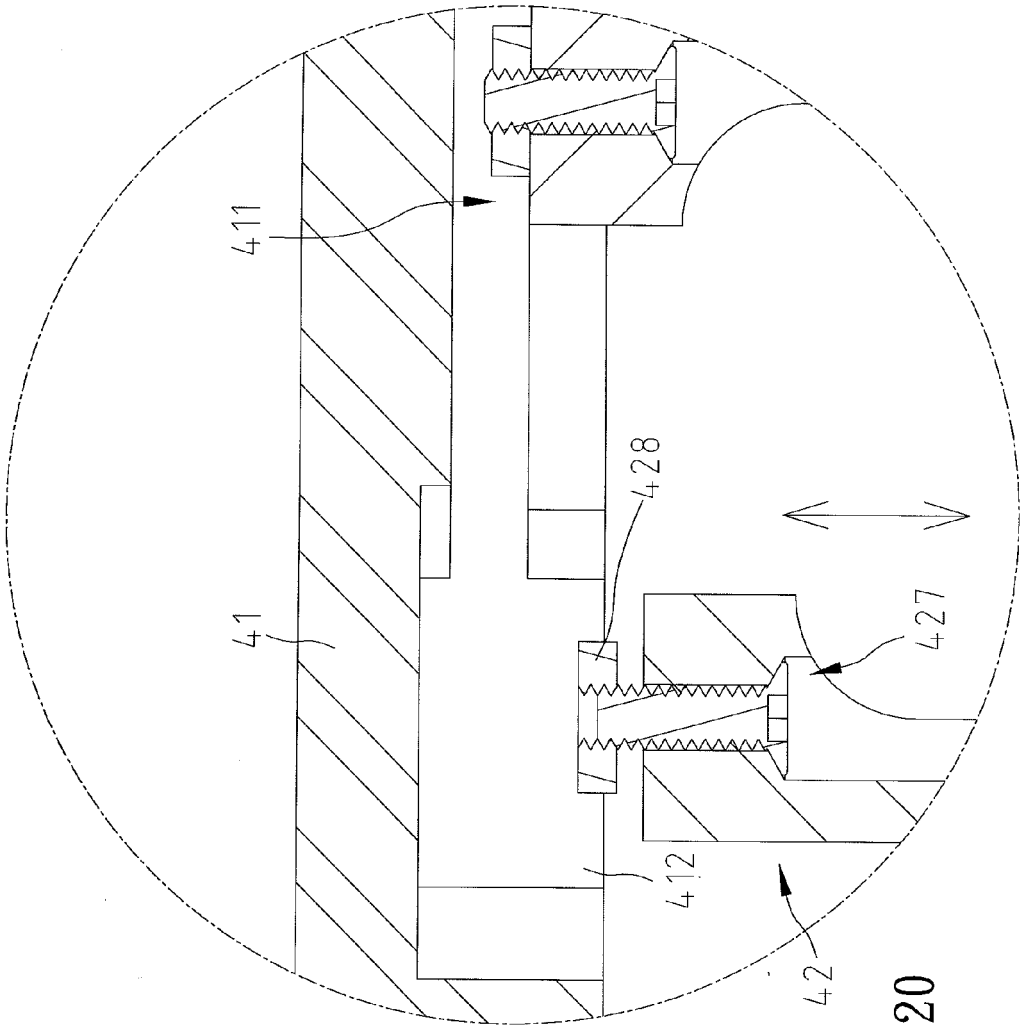


FIG. 20

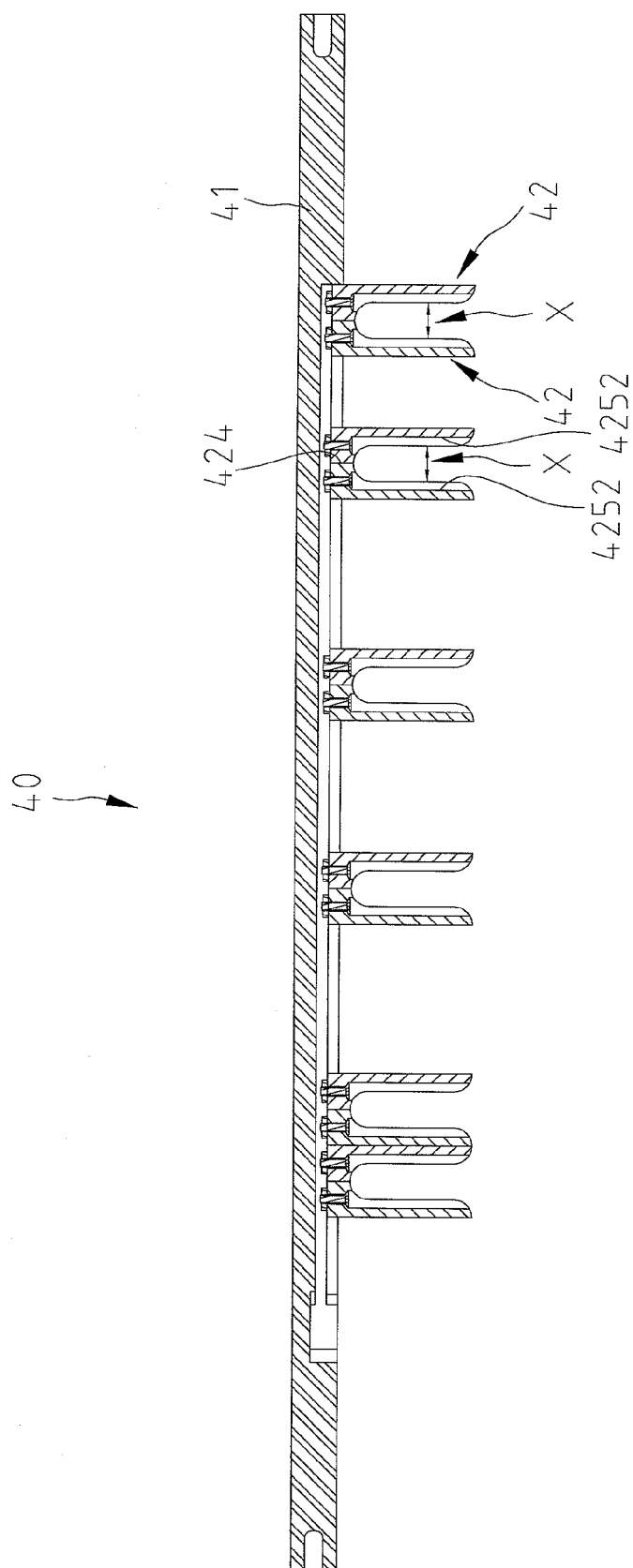


FIG. 21

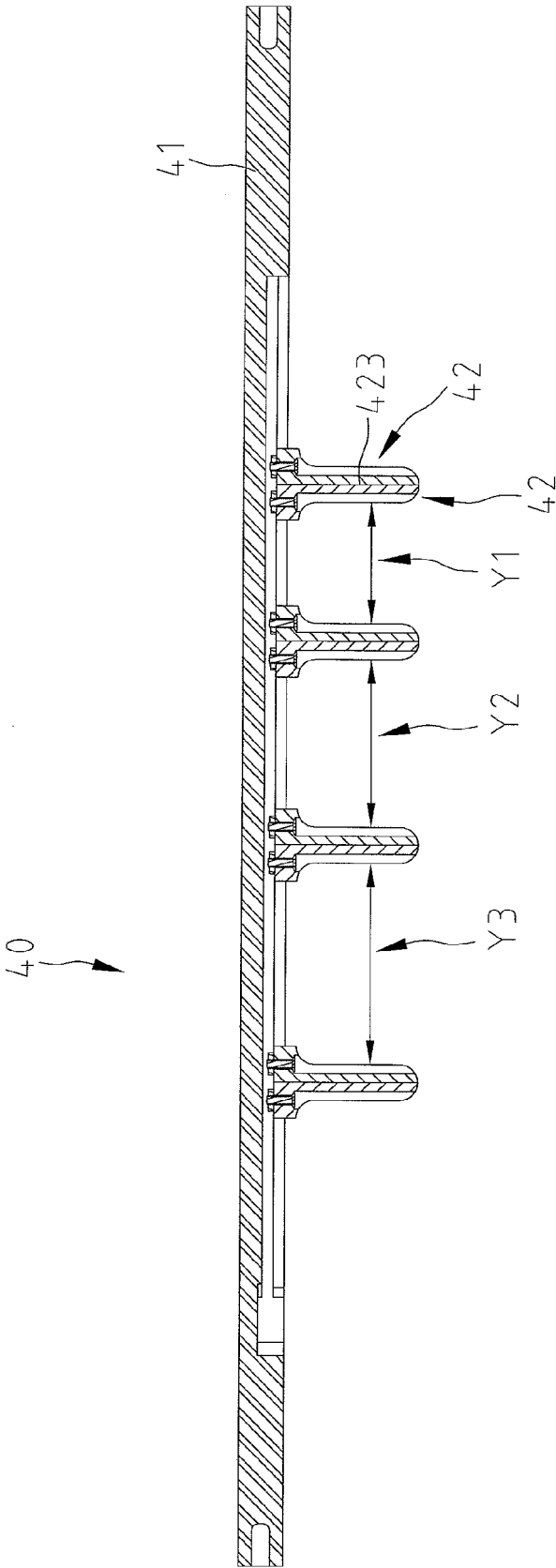


FIG. 22

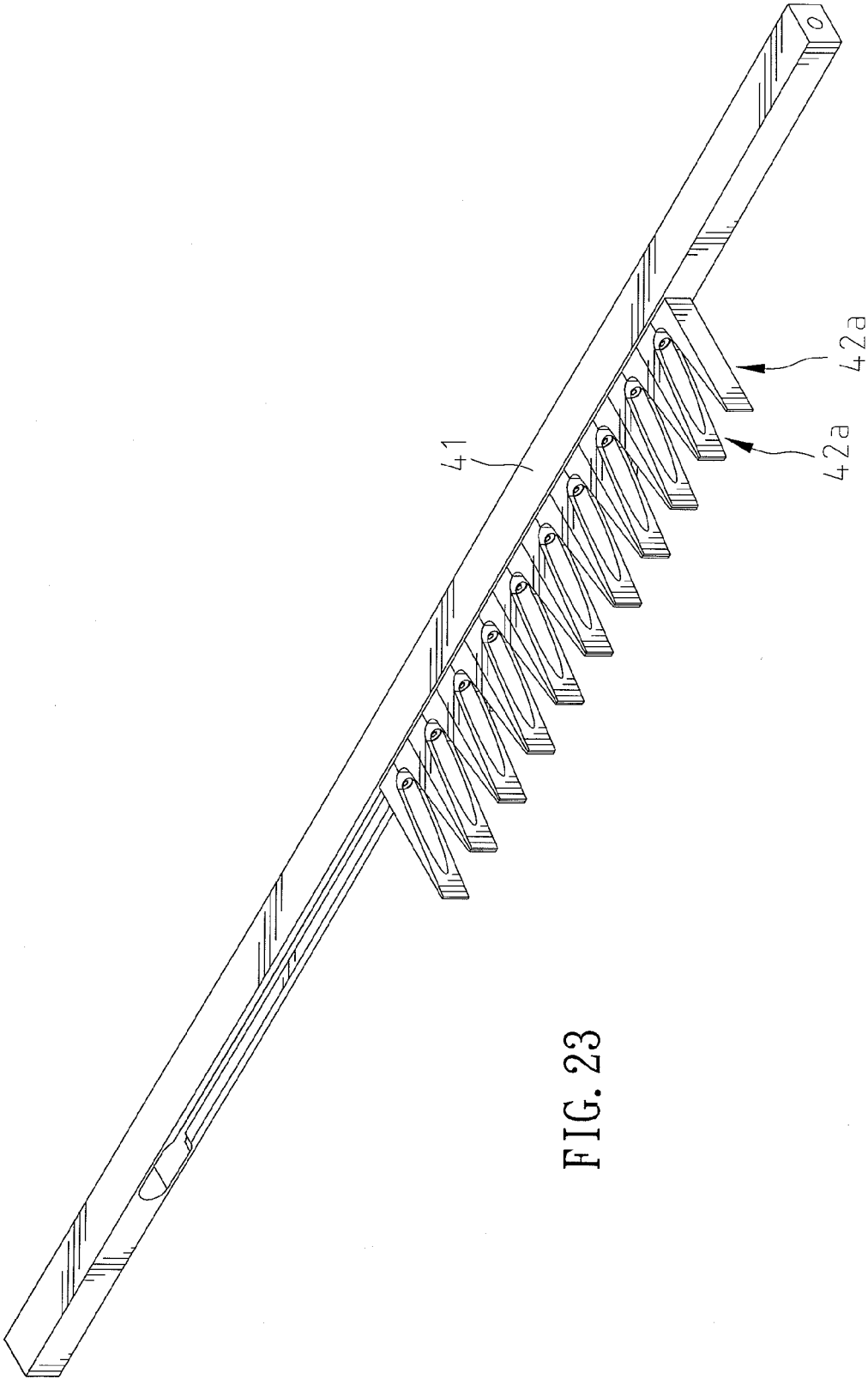


FIG. 23

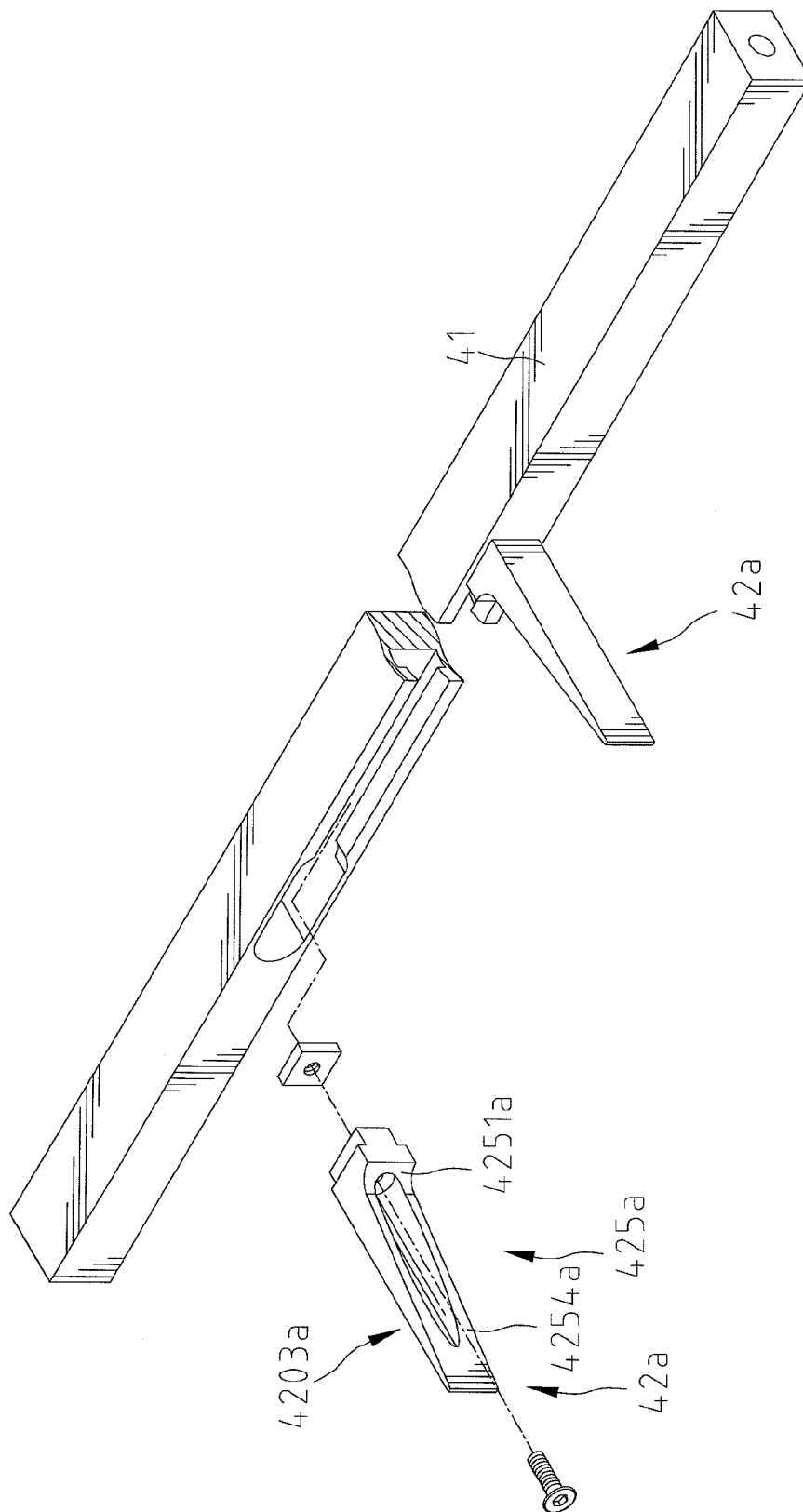


FIG. 24



EUROPEAN SEARCH REPORT

Application Number
EP 10 15 0515

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 5 305 812 A (FERENCSEK ROBERT P [US]) 26 April 1994 (1994-04-26)	1	INV. B27F1/12 B27F1/08
Y	* column 2, line 8 - line 10 * * column 8, line 1 - line 21 * * figure 6 *	3-5	
Y	----- GB 300 757 A (WATTS PATENTS CO LTD; NATHANIEL BLOOMFIELD; JAMES HENRY MOONEY) 22 November 1928 (1928-11-22) * the whole document *	3-5	
A	----- US 2009/288736 A1 (YANG JACK [TW]) 26 November 2009 (2009-11-26)	1	
A	----- GB 2 461 062 A (YANG JACK [TW]) 23 December 2009 (2009-12-23)	1	
A	----- US 2005/047886 A1 (LIU HSU HSIU-KWEI [TW] ET AL) 3 March 2005 (2005-03-03)	1	
A	----- US 3 272 244 A (JOSEPH NEMEC) 13 September 1966 (1966-09-13)	1	TECHNICAL FIELDS SEARCHED (IPC)
E	----- US 2010/006180 A1 (YANG JACK [TW]) 14 January 2010 (2010-01-14) * the whole document *	1,3-5	B27F
----- The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 16 June 2010	Examiner Huggins, Jonathan
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

 1
EPO FORM 1503 03/02 (P04C01)



Application Number

EP 10 15 0515

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1, 3-5

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).



**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

EP 10 15 0515

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1, 3-5

A woodworking machine including an up/down lifting plate and means for lifting said plate.

2. claim: 6

A woodworking machine including an up/down lifting plate and a guiding rod unit.

3. claim: 7

A woodworking machine including an up/down lifting plate and a copying means.

4. claims: 8, 9

A woodworking machine including an up/down lifting plate and driven means including a sliding base, a fixed plate and an operable handle means.

5. claim: 10

A woodworking machine including an up/down lifting plate and details of a first clamping member for vertical clamping of a workpiece.

6. claims: 2, 8, 9, 11-15

A woodworking machine comprising a guiding means.

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 10 15 0515

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

16-06-2010

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US 5305812	A	26-04-1994	NONE		
GB 300757	A	22-11-1928	NONE		
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US 3272244	A	13-09-1966	NONE		
US 2010006180	A1	14-01-2010	NONE		