US 20050035239A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2005/0035239 A1

Lee (43) Pub. Date: Feb. 17, 2005

(54) ANCHORING APPARATUS FOR THREAD WINDING AND SPIN COATING ON A ROD

(76) Inventor: **Tsung-Seng Lee**, Tainan City (TW)

Correspondence Address:
BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747 (US)

(21) Appl. No.: **10/639,629**

(22) Filed: **Aug. 13, 2003**

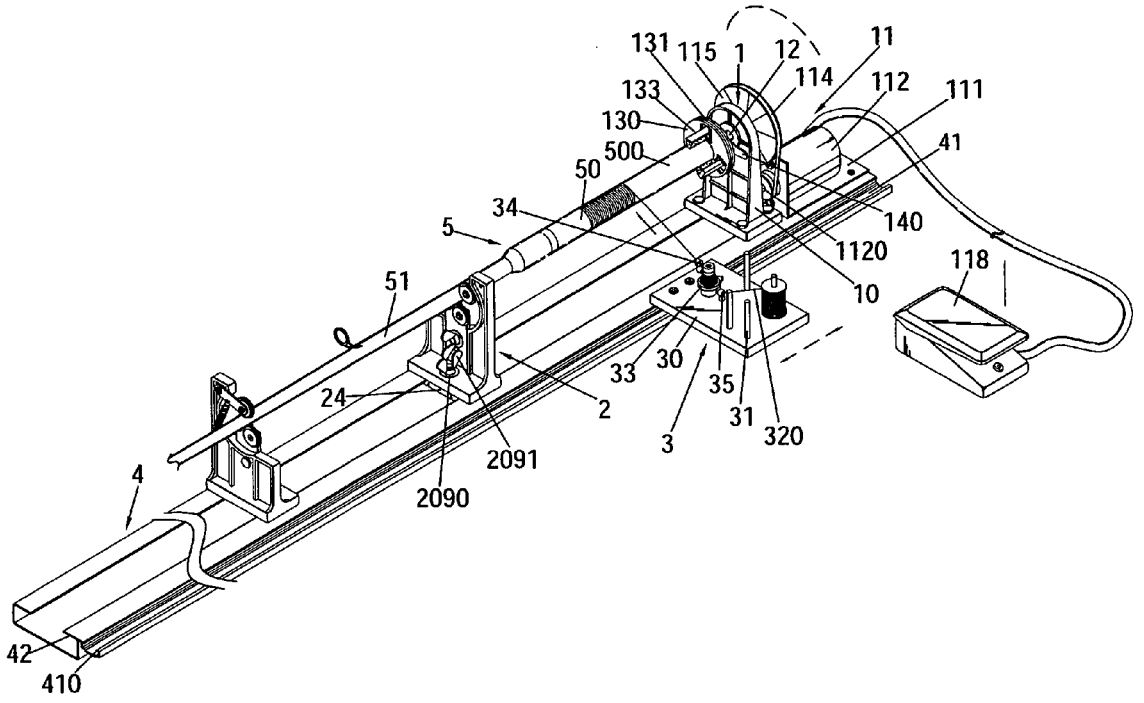
Publication Classification

(51) **Int. Cl.**[7] **B65H 81/06**

(52) **U.S. Cl.** **242/443**

(57) **ABSTRACT**

An anchoring apparatus for thread winding and spin coating on a rod located on one end of a rack includes an anchor dock, adjusting docks and a winding dock. The adjusting dock has a L-shaped member which includes adjusting rollers on the inner side and a movable roller on the one end to form an adjustment roller set. The rod may be rested on the adjustment roller set with the end of the hand grip end gripped by the anchor dock which can adjust the center position of the rod and has a speed adjusting device and a motor fastened to an outer side. Depending on the size of the diameter of stem of the rod, the movable block may be moved upwards or downwards to adjust the adjusting rollers and to couple with the movable roller to reach a desired anchor position for the rod. Thus the rod is positioned and anchored on three points. The winding dock may be moved to a desired location on the guiding rail outside the rack to facilitate operation.



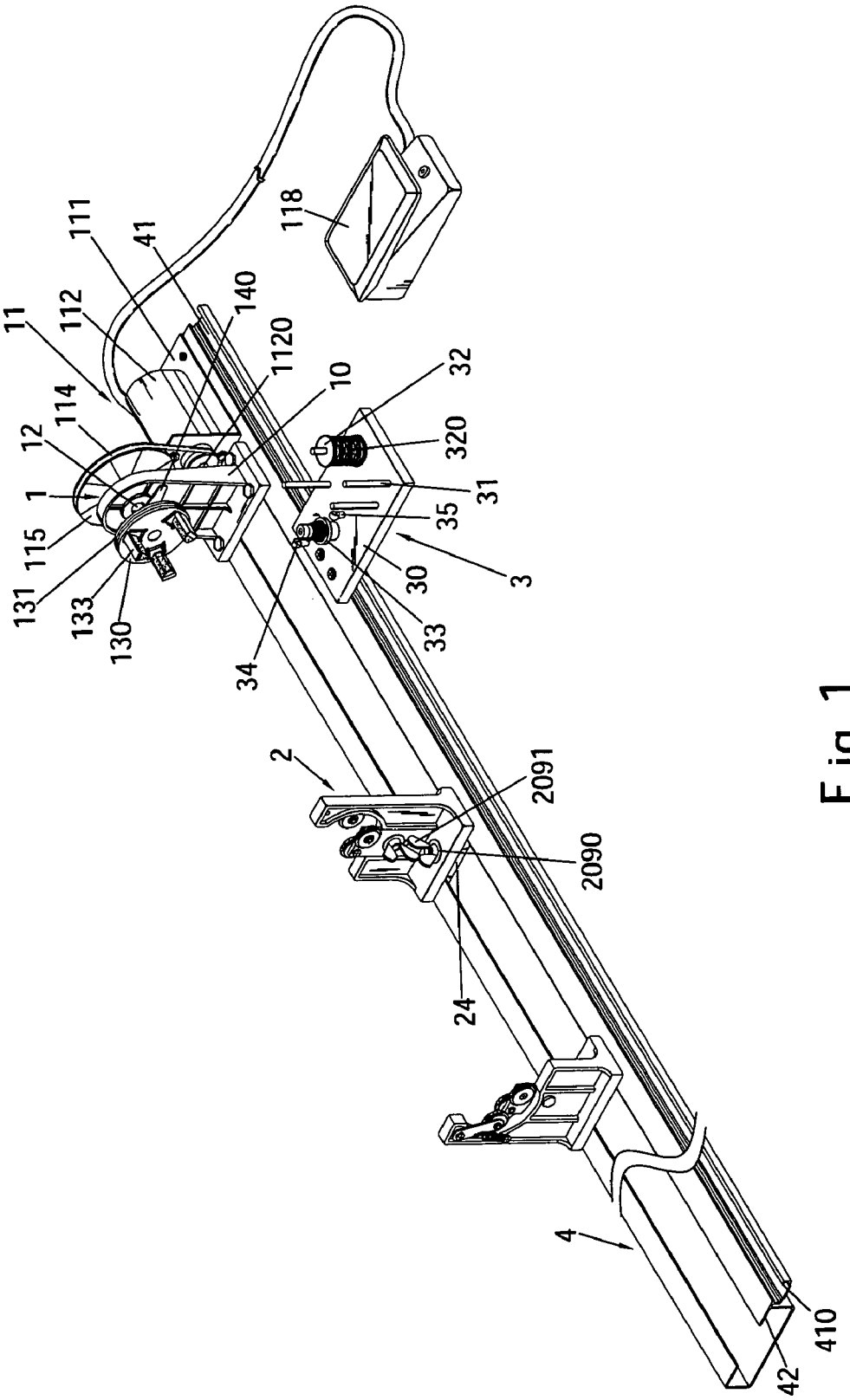

118
111
41
140
11
112
1120
10
32
114
320
12
31
1
35
115
30
3
131
133
130
34
33
2
2091
2090
24
4
410
42

Fig.1

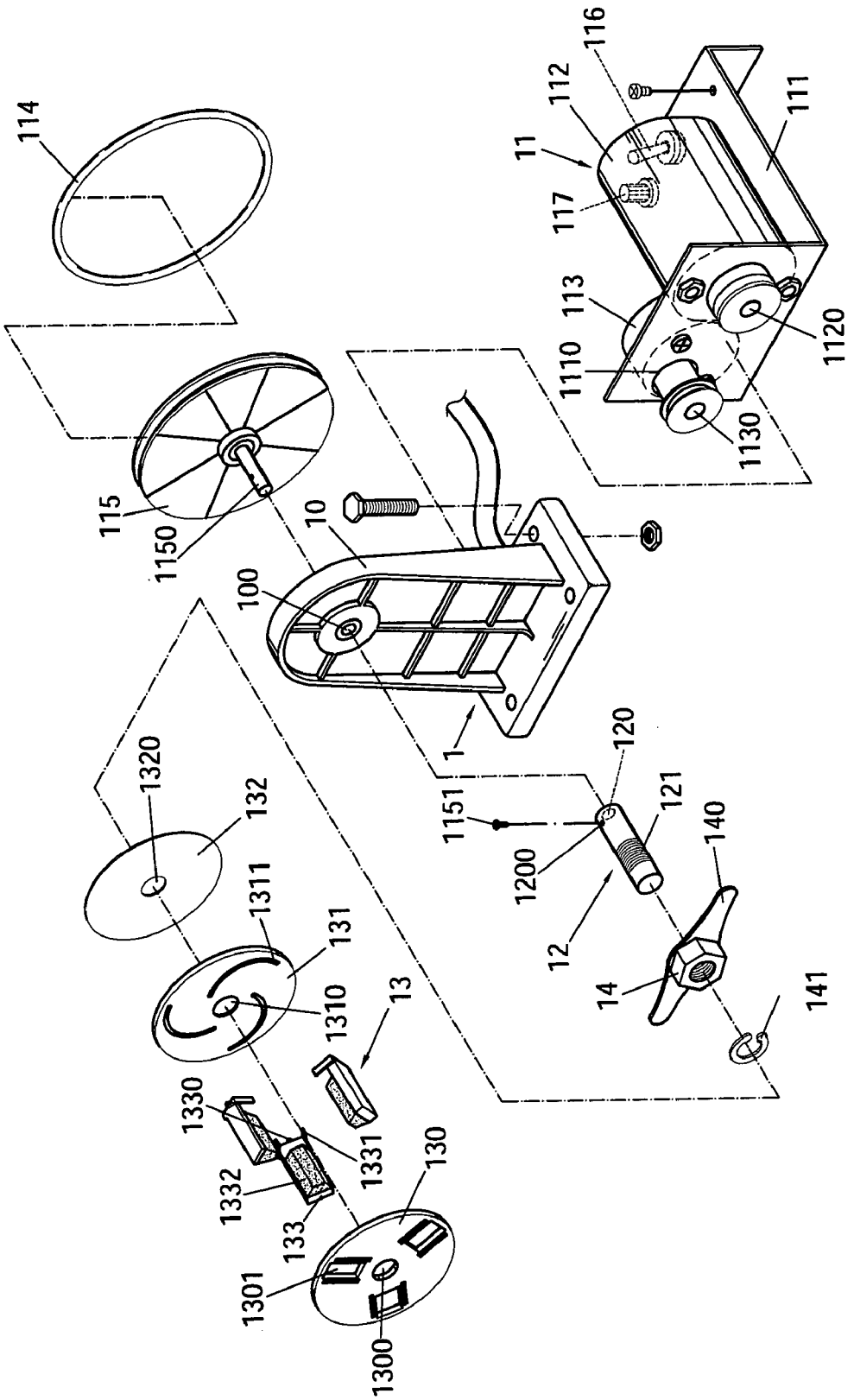

114
116
112
111
11
117
113
1120
1110
1130
115
1150
10
100
1
120
1151
121
1200
140
12
14
141
1320
132
1311
131
1310
13
1330
1331
1332
133
130
1301
1300

Fig.2

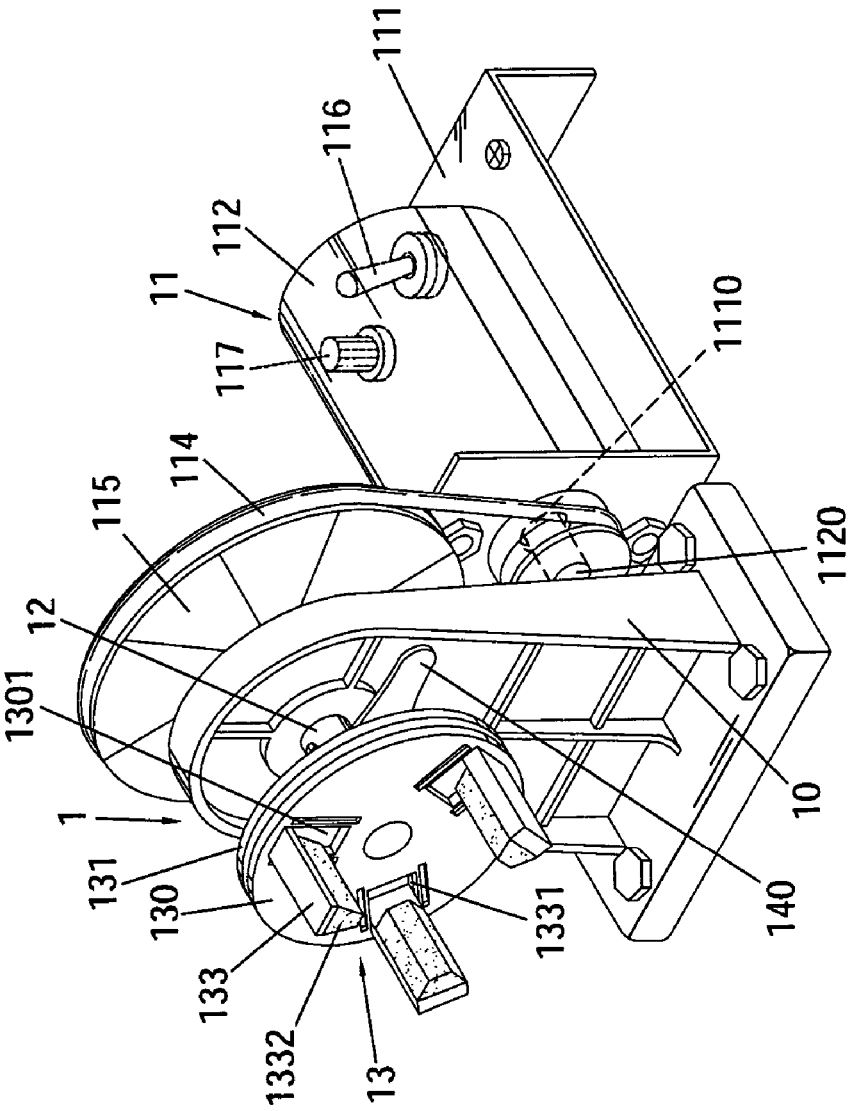

111
116
112
11
117
1110
114
115
1120
12
1301
10
1
131
130
140
1331
133
1332
13

Fig.3

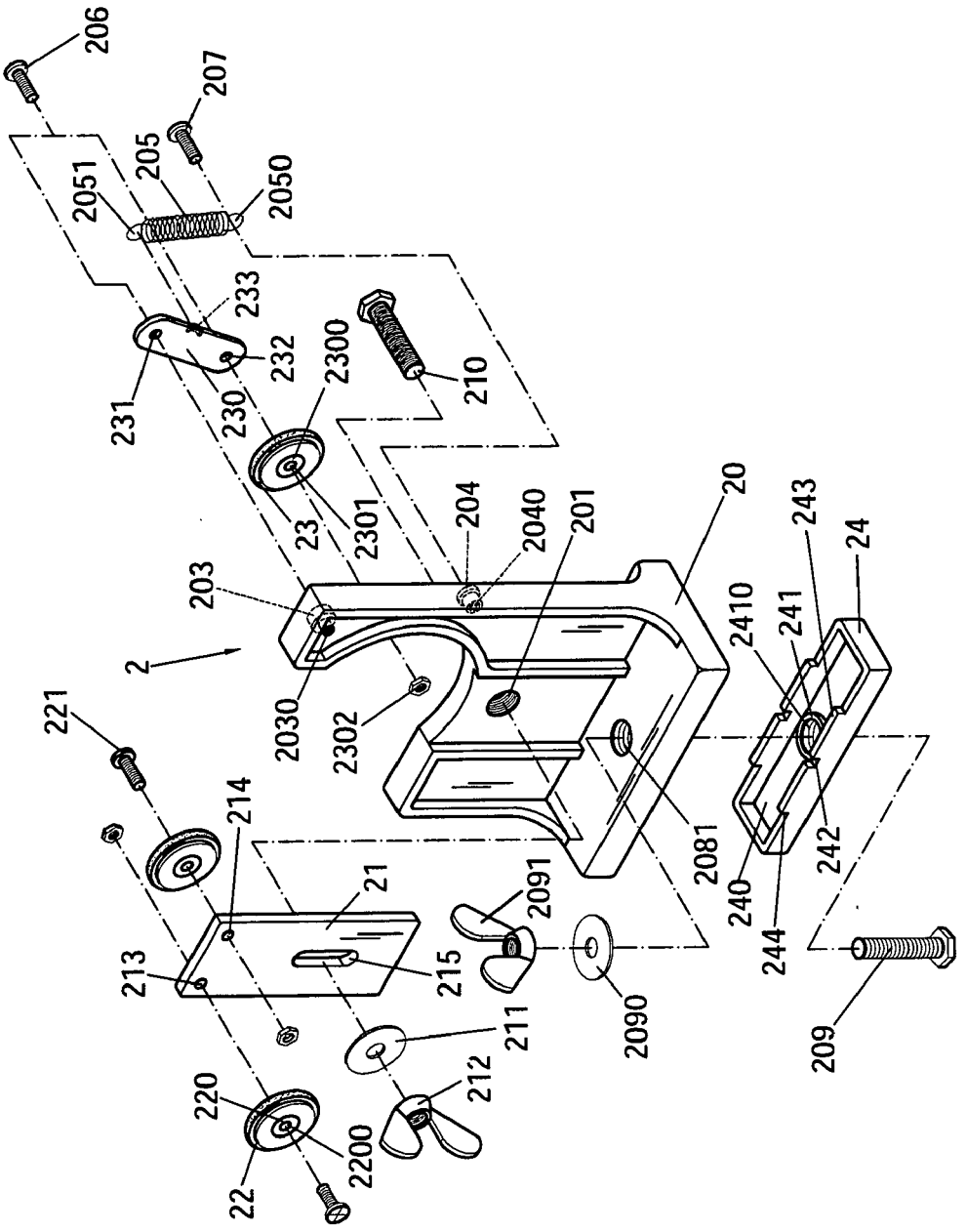

206
207
205
2051
2050
233
232
231
230
2300
210
23
2301
204
2040
201
20
203
2
2030
2302
2081
2410
241
243
24
242
240
244
221
214
21
213
215
2091
2090
211
212
220
2200
22
209

Fig.4

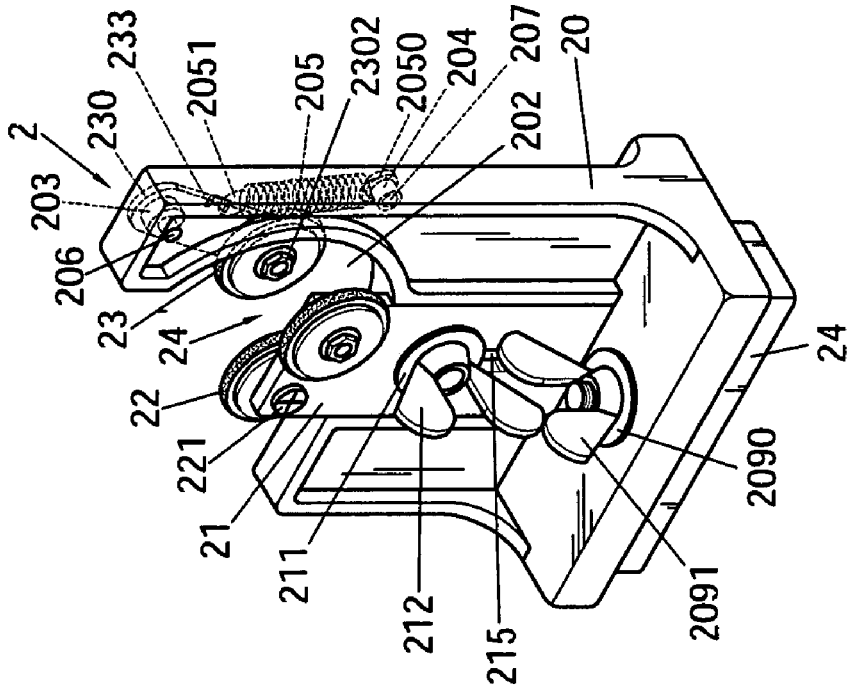

2
230
233
2051
205
2302
2050
204
207
20
202
203
206
23
24
22
221
21
211
212
215
2091
2090
24

Fig.5

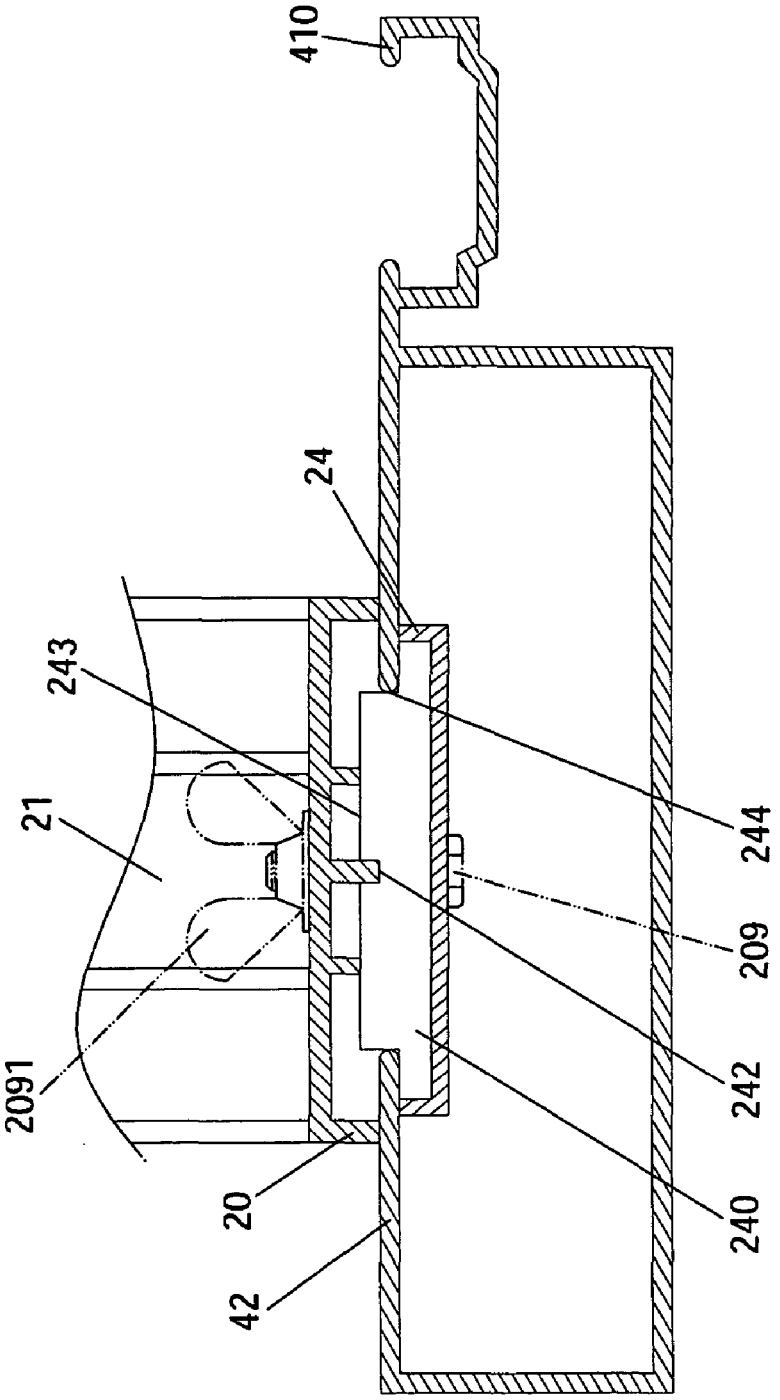


Fig.6

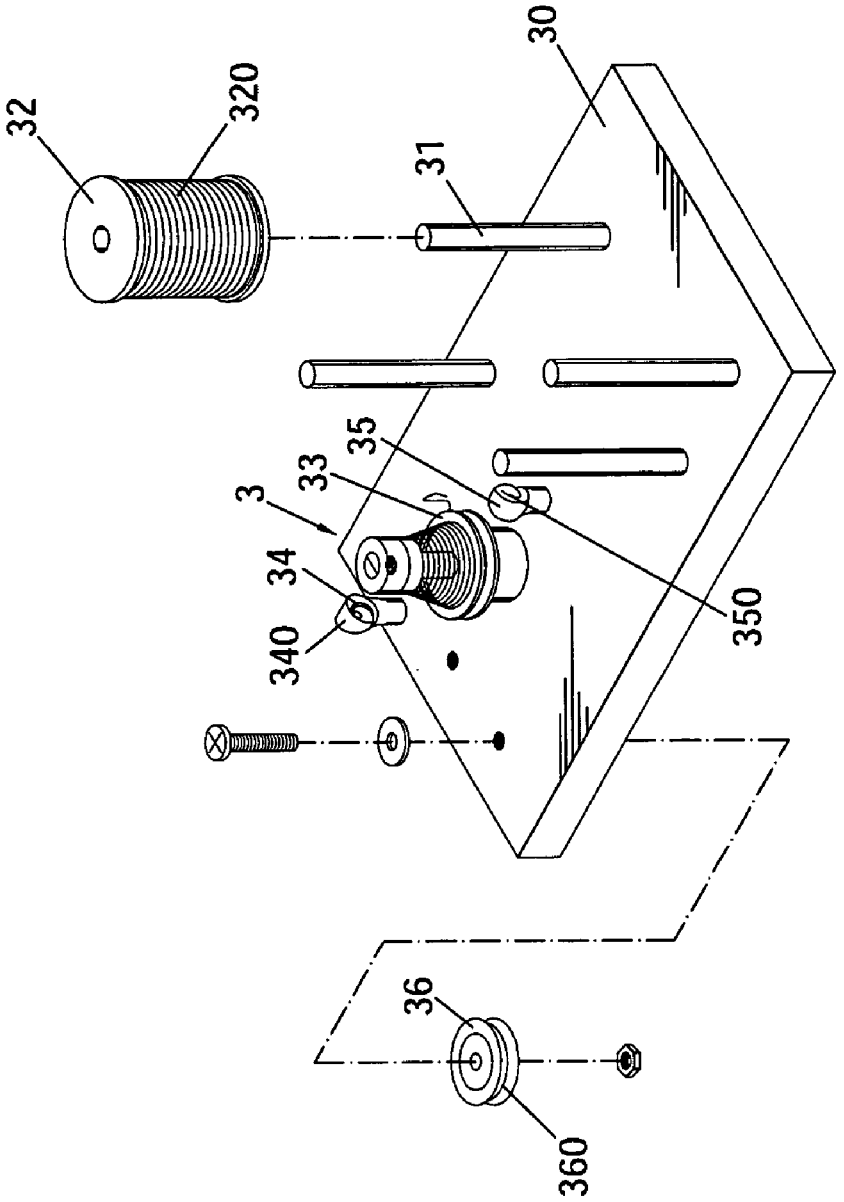


Fig. 7

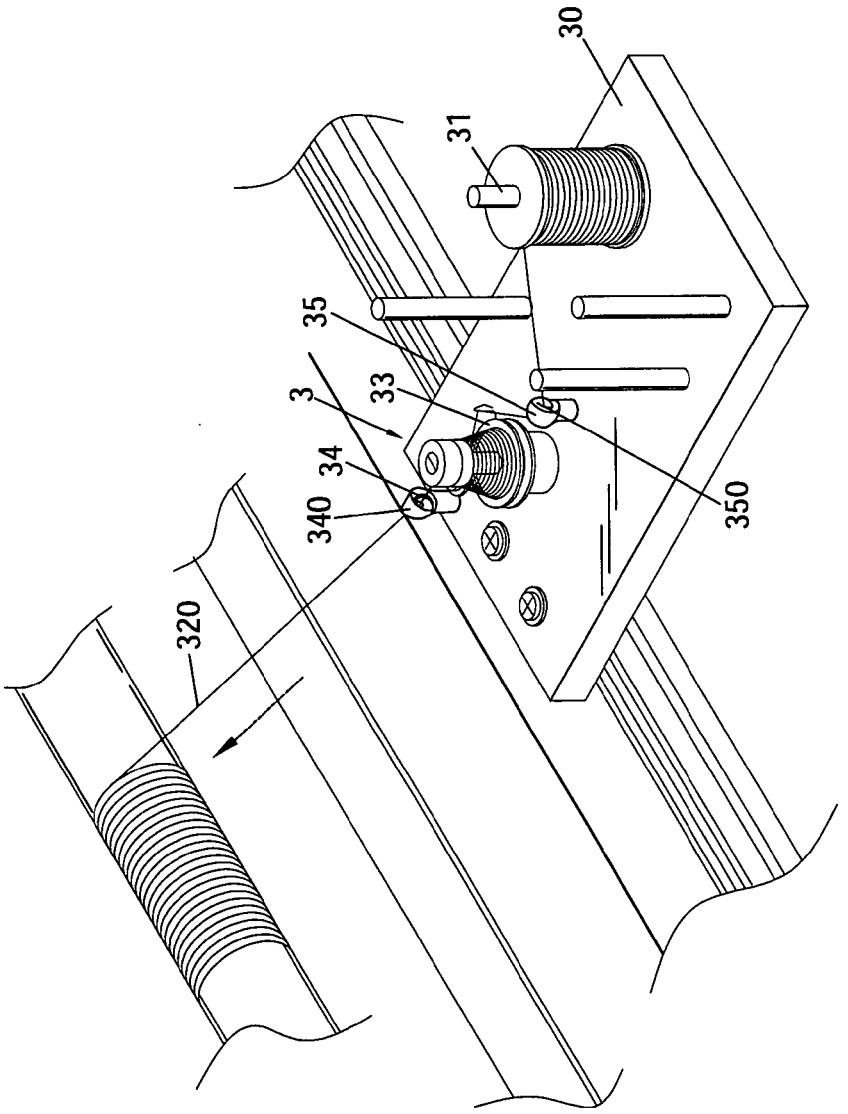


Fig.8

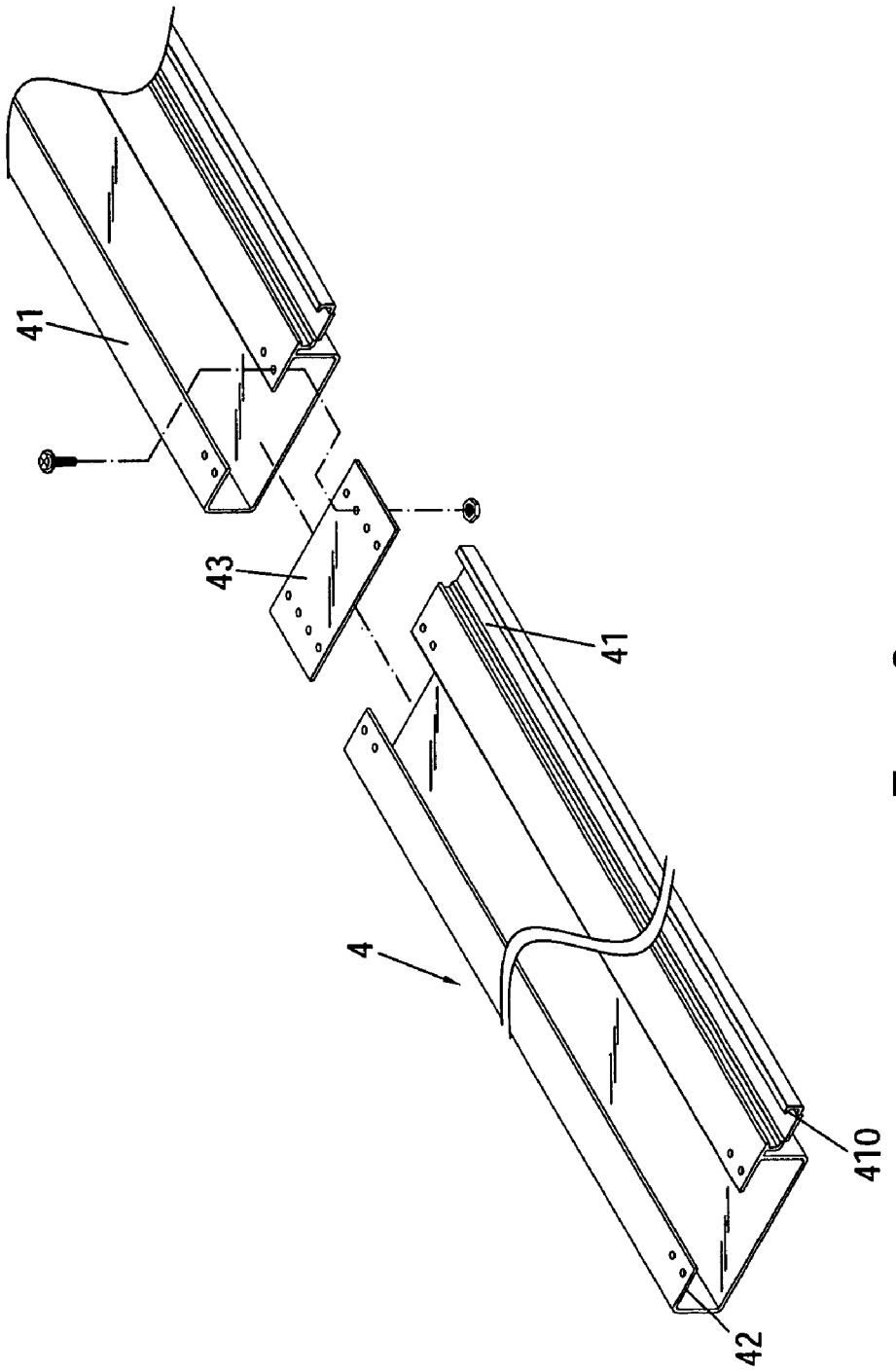


Fig.9

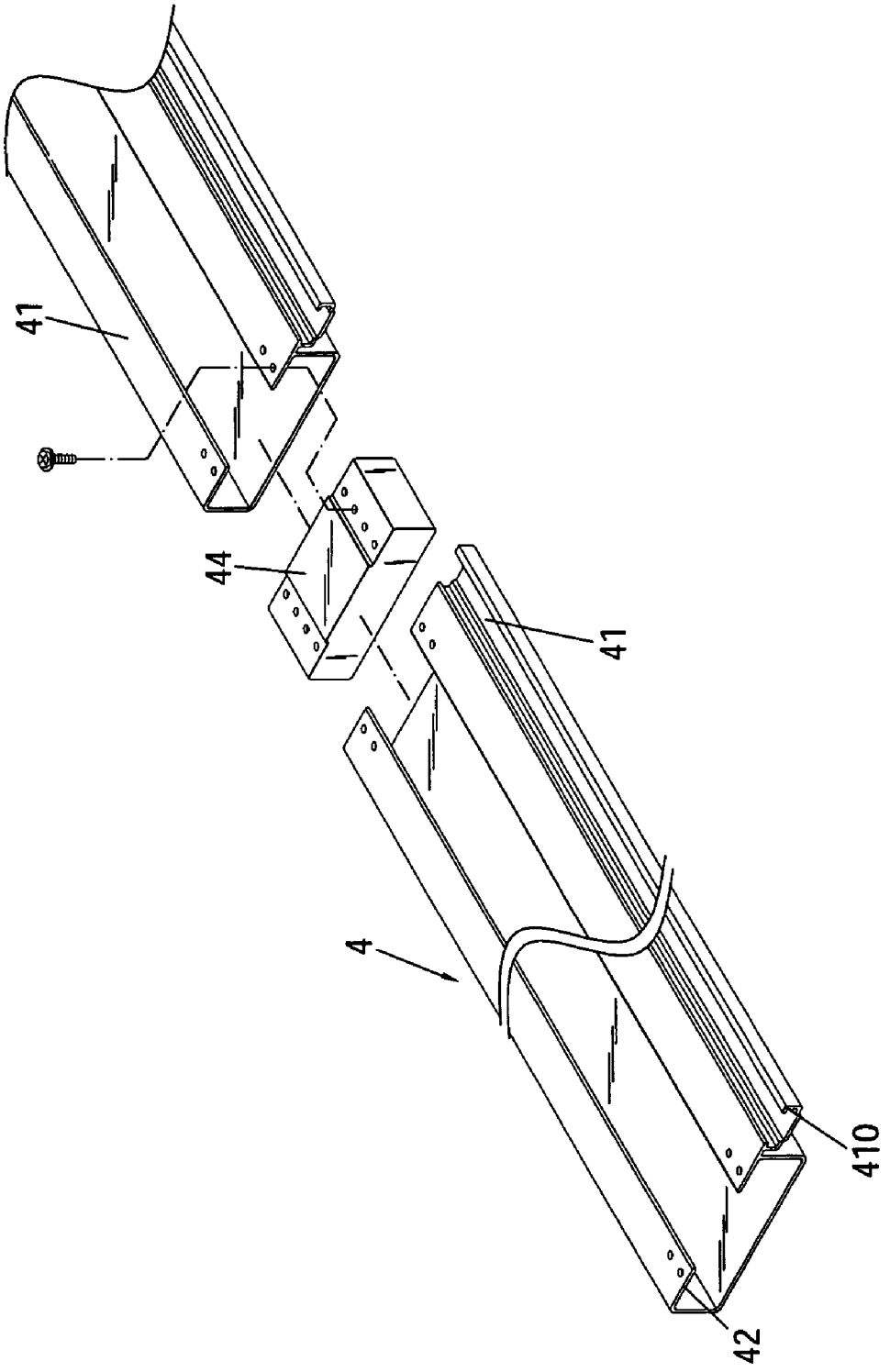


Fig.10

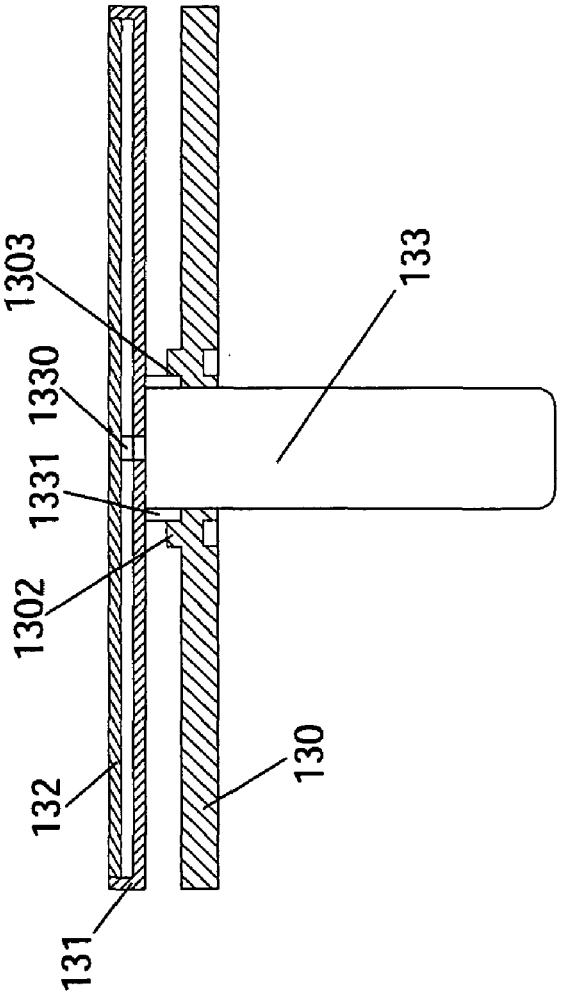


Fig.11

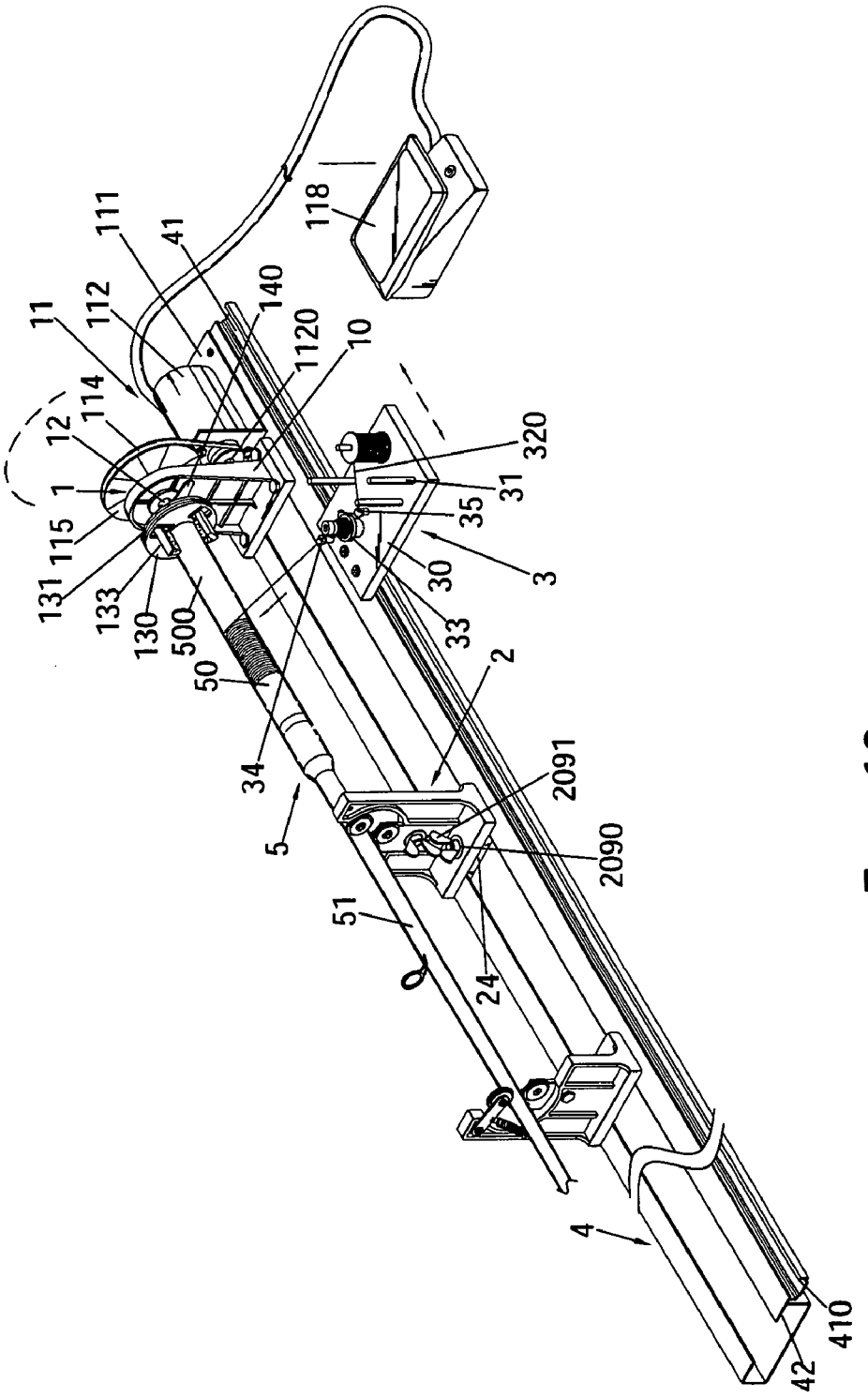

118
111
41
140
11
112
1120
10
114
12
320
1
31
35
115
131
133
130
500
50
30
3
33
2
34
2091
5
2090
51
24
4
410
42

Fig.12

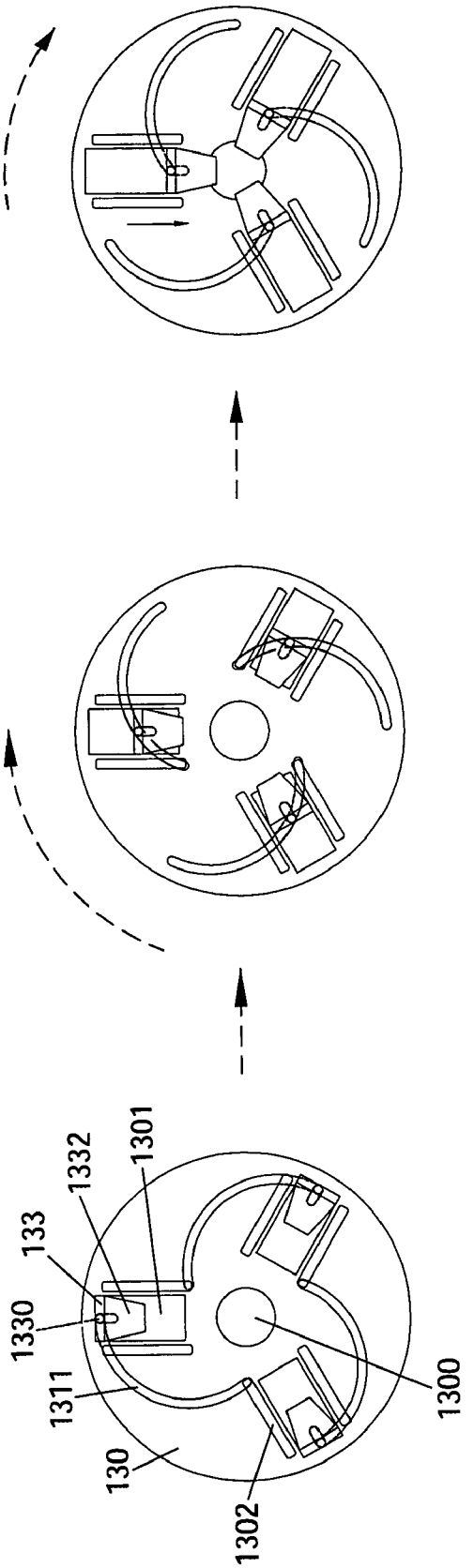


Fig. 13

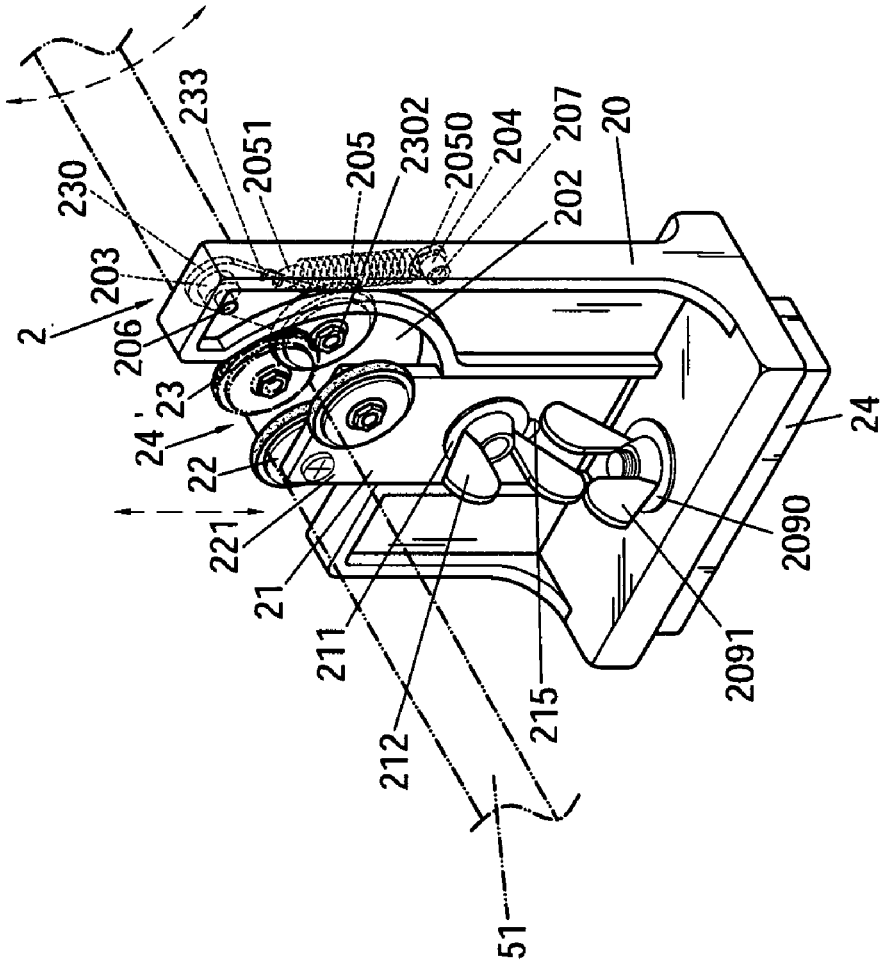

233
2051
205
2302
2050
204
207
20
230
202
203
2
206
23
24'
22
221
21
211
212
215
51
2090
2091
24

Fig.14

ANCHORING APPARATUS FOR THREAD WINDING AND SPIN COATING ON A ROD

FIELD OF THE INVENTION

[0001] The present invention relates to an anchoring apparatus for thread winding and spin coating on a rod that is easy to control rotation speed and operation of thread winding and glue coating.

BACKGROUND OF THE INVENTION

[0002] It is generally known that fabrication of rods for fishing rods, golf clubs, pendent rods, wooden rods and the like usually has to coat a layer of glue on the rod, then to wind around a leather cover. During operation, the rod is rotated while the glue coating is applied. Such an operation has many drawbacks, notably:

[0003] 1. The center line of the rod cannot be maintained on a straight line. It can only be positioned through visual inspection or placed proximately on a horizontal position. Precise horizontal calibration is difficult.

[0004] 2. The rod generally is rotated by hands with uneven forces. The rotating angle also is not even. Rotation effect is not desirable.

[0005] 3. Due to uneven forces of the hands, uniformity of glue coating is affected and coating operation cannot be carried out smoothly.

SUMMARY OF THE INVENTION

[0006] In view of the aforesaid disadvantages, the anchoring apparatus of the invention aims to provide the following benefits:

[0007] 1. Easier positioning. The invention includes a trough in the rack to allow a plurality of adjusting docks to be mounted thereon at desired locations and positioned in opposing manner. The rack further has a guiding trough on an outer side to allow a winding dock to slide and anchor thereon. The rod thus can be anchored securely for thread winding and glue coating.

[0008] 2. The holding spots are on the same straight line. The invention has adjusting rollers on the adjusting dock to allow the rod to rest thereon. The adjusting dock further has a movable block movable upwards and downwards to adjust the adjusting rollers, and a movable roller to latch the rod to form three-point positioning. In addition, an anchor dock is provided which has a coupling disk with three latch jaws mounted thereon. The three latch jaws face the same direction and may be moved synchronously by the coupling disk to clamp the hand grip section of the rod from outside to hold the rod on the same straight line.

[0009] 3. Easy operation and control. With the end of the hand grip section and the stem the rod anchored on the adjusting roller sets and anchor dock, and a speed adjusting device and a motor located on one side of the anchor dock, the rotation of the motor may drive the rod to rotate at the same speed to achieve uniform thread winding and glue coating on the rod.

[0010] 4. Improved rotation effect. With the rod (such as fishing rod, gold club, pendent rod, wooden rod and the like) positioned through the anchoring apparatus, the rod may be positioned in a straight and horizontal manner smoothly. With the aids of speed adjusting device and same rotation speed as the motor, the rod may rotate smoothly on the anchoring apparatus to achieve uniform thread winding and glue coating.

[0011] 5. Easy coupling and assembly. Two pieces of racks may be connected and coupled through a connection plate or a convex wedge member to process thread winding and glue coating for rods of different lengths.

[0012] The foregoing, as well as additional objects, features and advantages of the invention will be more readily apparent from the following detailed description, which proceeds with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] **FIG. 1** is a perspective view of the present invention.

[0014] **FIG. 2** is an exploded view of the anchor dock of the present invention.

[0015] **FIG. 3** is a perspective view of the anchor dock of the present invention.

[0016] **FIG. 4** is an exploded view of the adjusting dock of the present invention.

[0017] **FIG. 5** is a perspective view of the adjusting dock of the present invention.

[0018] **FIG. 6** is a schematic view of the adjusting member of the invention in a fine tuning condition.

[0019] **FIG. 7** is an exploded view of the winding dock of the present invention.

[0020] **FIG. 8** is a schematic view of the winding dock of the present invention in a thread winding condition.

[0021] **FIG. 9** is an exploded view of the present invention for coupling two racks.

[0022] **FIG. 10** is another exploded view of the present invention for coupling two racks.

[0023] **FIG. 11** is a schematic view of the latch jaws latched on an anchor disk according to the invention.

[0024] **FIG. 12** is a schematic view of the invention showing the chuck of the anchor dock clamping the hand grip end of the rod.

[0025] **FIG. 13** is a schematic view of the invention showing the adjusting rollers of the adjusting dock in adjusting conditions.

[0026] **FIG. 14** is a perspective view of the invention in use.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0027] Please refer to **FIG. 1**, the invention includes an anchor dock **1** positioned on one end **40** of a rack **4**. A plurality of adjusting docks **2** are mounted on desired positions on the rack **4** and are opposed to one another. The rack **4** has an outer side extended to form a guiding rail **41**. A winding dock **3** is located on a position where thread winding is required for a rod **5**.

[0028] Detailed structure of the invention is described as follows:

[0029] The anchor dock **1** (referring to **FIGS. 2 and 3**) includes a seat **10** which has an opening **100** in the center to allow a spindle **1150** of a transmission wheel **115** of a transmission mechanism **11** to pass through to engage with a cavity **120** formed on one end of an axle **12**. The axle **12** has other end forming a screw thread section **121** to couple with a chuck **13** and is fastened by a nut **14** which is extended on two sides to form a wrench **14**. The transmission mechanism **11** transmits power and drives the rod **5** clamped by the chuck **13** of the anchor dock **1** to rotate.

[0030] The seat **10** has an opening **100** in the center of the top section to receive the spindle **1150** of the transmission mechanism **11**, and a fastening end **101** fastened to the one end **40** of the rack **4**. The transmission mechanism **11** is fastened to the outer side of the seat **10**.

[0031] The transmission mechanism **11** is fastened to one end of the rack **4** through a board **111** and is located at a lower side of the left end of the board **111**. The board **111** has a hole **1110** located respectively on the left and the right side of a left and lower end thereof to allow a transmission shaft **1120** of a speed adjusting device **112** and a motor shaft **1130** of a motor **113** to pass through. Then a belt **114** is engaged with the transmission wheel **115** located on the right side of the anchor dock **1** to form a chain movement. In addition, the spindle **1150** of the transmission wheel **115** is engaged with the cavity **120** of the axle **12** of the seat **10** of the anchor dock **1** for transmission. The right end side of the board **111** has a switch bar **116** and a speed adjusting knob **117** to connect to circuits located in the interior of the rack **4** and link to a pedal control means **118** to control rotation speed by stepping the pedal control means.

[0032] The axle **12** has one end forming the cavity **120** which has a screw hole **1200** and another end forming the screw thread section **121**.

[0033] The chuck **13** has an anchor disk **130** at the front end. The anchor disk **130** has an opening **1300** in the center and three elongated notches **1301** on the periphery. The rear end of two sides of the notches **1301** is extended to form a guiding boss **1302**. The chuck **13** has a rear half section which includes a movable ring **131** to couple with a coupling disk **132**. The coupling disk **132** and the movable ring **131** have respectively an opening **1320** and **1310** to receive another end of the axle **12**. The periphery of the movable ring **131** has three arched slots **1311**. Latch jaws **133** are provided. Each of the latch jaws **133** has one end extended to form a strut **1330** and two sides extended to form fingers **1331**, and a pad **1332** wedged on an inner side.

[0034] The nut **14** has a rear end extending towards two sides to form the wrench **140**, and is fastened to the axle **12** by coupling a C-shaped clip **141** on the screw thread section **121** of the axle **12** in front of the nut.

[0035] Referring to **FIG. 3**, for assembly, the strut **1330** of the latch jaw **133** is wedged in the arched slot **1311** of the movable ring **131**, and another end of the latch jaw **133** is extended outside the corresponding notch **1301** of the anchor disk **130**; next another end of the axle **12** passes through the center openings **1300**, **1310** and **1320** of the anchor disk **130**, movable ring **131** and coupling disk **132**; the C-shaped clip **141** latches on another end of the axle **12** to anchor the chuck **13**; then the nut **14** is fastened to secure the positioning. The cavity **120** of the axle **12** is located outside the spindle **1150** of the transmission wheel **115** and is fastened tightly by a screw **1151**.

[0036] Refer to **FIGS. 4 and 5** for the structure of the adjusting dock **2**. It includes a L-shaped member **20** which has a trough **200** in the middle of one side for wedging a movable block **21**. The movable block **21** has two sides on a top section to engage with adjusting rollers **22** in a diagonal manner. One end of the L-shaped member **20** further has a movable roller **23** to form an adjustment roller set **24'** with the adjusting rollers **22**.

[0037] The trough **200** in the middle of the L-shaped member **20** has a screw hole **201**. After the movable block **21** is wedged in the trough, it is fastened by engaging a screw **210** into the screw hole **201**, and coupled by a washer **211** and a wing nut **212** to allow the movable block **21** to be adjusted and positioned in the trough **200** at a desired elevation on the L-shaped member **20**, and extended into a U-shaped notch **202**. The top section of the L-shaped member **20** has collars **203** and **204** located on a upper side and a lower side with a screw hole **2030** and **2040** formed therein to receive a screw **206** and **207** for engaging with an aperture **231** of a connection member **230** and one end **2050** of a spring **205**. Moreover, the L-shaped member **20** has a bottom end forming a recess **208** which has a cross ridge **2080** and an outer side forming a screw hole **2081** in the center to receive a screw **209** which couples with a washer **2090** and another wing nut **2091** to fasten an adjusting member **24**.

[0038] The movable block **21** has apertures **213** and **214** located on the left and right side on the top section to fasten to adjusting rollers **22** in a diagonal manner. It also has a slot **215** in the center of a lower half section to enable the movable block **21** to move up or down in the trough **200** for adjustment. Then the movable block is fastened by the screw **210**, washer **211** and wing nut **212**.

[0039] The adjusting roller **22** has a bearing **220** in the center. The bearing **220** has a round hole **2200** in the center to receive a screw **221** for fastening the adjusting roller to the top section of the movable block **21** in a diagonal manner.

[0040] The movable roller **23** has a bearing **2300** in the center. The bearing **2300** has a round hole **2301** in the center to receive the screw **206** that further engages with an aperture **232** on another end of the connection member **230**, and is fastened by a nut **2302**. The connection member **230** has a hook **233** formed on an outer side to latch on one end **2051** of the spring **205** so that the movable roller **23** may be moved for a fine-tune adjustment under the elastic force of the spring **205**.

[0041] The adjusting member **24** has a recess surface **240** on the upper side with a neck **241** in the center. The neck **241** has a screw hole **2410**. The adjusting member **24** further has a flange **243** extended upwards respectively on the front side and rear side with a notch **242** formed in the center such that the adjusting member **24** forms a guiding trough zone **244** on two sides.

[0042] Referring to **FIG. 5**, for assembly, the movable block **21** is wedged in the trough **200** of the L-shaped member **20** at a desired elevation, and is fastened by the screw **210** and washer **211** and wing nut **212**. The adjusting rollers **22** are fastened to the top section of the movable block **21** on an inner side and an outer side in a diagonal manner. The movable roller **23** is fastened to the lower end of the connection member **230** that is engaged with the top section of the L-shaped member **20**. Thus form the adjusting dock **2**. Then adjust the guiding trough zone **244** of the adjusting member **24** at the bottom of the adjusting dock **2** to wedge in flanging edge **42** on two sides of the rack **4** at a desired location, then fasten the wing nut **2091** so that the entire adjusting dock **2** is fastened to the rack **4** opposing each other (as shown in **FIG. 6**).

[0043] The winding dock **3** (referring to **FIG. 7**) is located on the surface of a board **30** that has an outer side with posts **31** mounted thereon to hold thread barrels **32**. The winding dock **3** has a guiding post **33** on the middle of an inner side and two threading posts **34** and **35** located diagonally on the left and right side. The threading posts **34** and **35** have respectively a threading hole **340** and **350** to allow a thread **320** to pass through. On the bottom of an inner side of the board **30**, there is a wheel **36** which has an annular groove **360** in the center to couple with a jutting rim **410** of the guiding rail **41** located on the outer side of the rack **4**, and may be moved to where thread winding for the rod **5** is required (referring to **FIG. 8**).

[0044] The rack **4** has a bottom plate bent on two sides to form the flanging edges **42**. One of the flanging edges **42** is extended to form a guiding rail **41** which has a jutting rim **410**. When there is need to couple two or more than two racks **4** and **4'**, a connection plate **43** or a convex wedge member **44** may be used to facilitate connection (as shown in **FIGS. 9 and 10**).

[0045] By means of the construction set forth above, with the board **111** of the transmission mechanism **11** fastened to one end **40** of the rack **4**, and the spindle **1150** of the transmission wheel **115** of the transmission mechanism **11** fastened to the axle **12** of the anchor dock **1**, and the guiding trough zone **244** of the adjusting member **24** at the bottom of the adjusting dock **2** movable in the flanging edge **42** of the rack **4**, the adjusting docks **2** may be positioned at desired locations and opposed each other according the length of the rod **5**. The winding dock **3** may be moved corresponding to the hand grip end **50** of the rod **5** where thread winding is required by sliding the wheel **36** at the bottom thereof in the guiding rail **41** outside the rack **4**. Then the end **500** of the hand grip end **50** of the rod **5** may be held by the anchor dock **1** with the stem portion **51** of the rod **5** located above the opposing adjustment roller set **24'**. Depended on the size of the diameter of the end **500** of the hand grip end **50** of the rod **5**, the nut **14** of the wrench **140** may be unfastened, and the movable ring **131** may be turned to move the strut **1330** at one end of the latch jaw **133** in the arched slot **1311**, while the fingers **1331** at two sides of the strut **1330** are moved and confined in a guiding trough **1303** formed between the two guiding bosses **1302** on the rear end of two sides of the notch **1301** (referring to **FIG. 11**), and are moved inwards or outwards in the notches **1301** of the anchor disk **130** to grip the end **500** of the hand grip end **50** of the rod **5** (referring to **FIG. 12**); the wrench **140** may be turned to enable the nut **14** to fasten the movable ring **131**, meanwhile the movable block **21** of the adjusting dock **2**, consequently the adjusting rollers **22**, may be adjusted upwards or downwards according to the position of the stem portion **51** of the rod **5**; then adjust the movable roller **23** which may produce a fine-tune angular adjustment because of the elastic force of the spring **205** engaged with the hook **233** on the outer side of the connection member **230** (referring to **FIG. 13**). Thus the rod **5** may be held and anchored on the anchor dock **1** at three points and also maintained on the same straight and horizontal line (as shown in **FIG. 14**). Then the switch bar **116** may be moved and the pedal control means **118** may be actuated to activate the transmission mechanism **11** to drive the rod **5** to rotate evenly at the rotation speed of the transmission mechanism so that threads may be wound and glue may be coated on the rod **5** in a uniform manner.

1. An anchoring apparatus for thread winding and spin coating on a rod, comprising:

a rack having a bottom plate bent on two sides to form flanging edges, one of the flanging edges being extended outwards to form a guiding rail which has a jutting rim;

an anchor dock located on one end of the rack having a seat which has an opening in the center to house an axle for fastening to a transmission wheel of a transmission mechanism, the axle having another end forming a screw thread section to couple with a chuck and a nut which integrates with a wrench, the nut being rotatable about and longitudinally movable along the axle upon the screw thread to secure and release the chuck;

adjusting docks mounted on the rack each having a L-shaped member which has a U-shaped notch on an upper section, and an adjusting member located on a lower section that has two flanges extending upwards from a front side and a rear side and a notch formed in the center of the flanges, the U-shaped notch having an adjustment roller set which includes a pair of adjusting rollers and a movable roller; and

a winding dock located on the guiding rail including a board which has a surface with posts mounting on an outer side thereof to hold thread barrels, a guiding post on the middle of an inner side of the surface and threading posts located diagonally on the left and the right side thereof, and a wheel on the bottom of an inner side of the board that has an annular groove in the center to couple with the jutting rim of the guiding rail located on the outer side of the rack, the threading posts having respectively a threading hole;

wherein the rod is held and anchored at three points by the anchor dock and is positioned horizontally on a same straight line to be rotated evenly by the transmission

mechanism at the rotation speed of the transmission mechanism for winding threads and coating glue in a uniform manner.

2. The anchoring apparatus of claim 1, wherein the chuck includes an anchor disk at a front end, and a rear half section which includes a movable ring engaging with a coupling disk, the anchor disk having an opening in the center and three elongated notches on the periphery to couple respectively with a latch jaw, each of the elongated notches having a rear end on two sides thereof extended to form a guiding boss, the coupling disk and the movable ring having respectively an opening to receive another end of the axle, the periphery of the movable ring having three arched slots, the latch jaw having one end extended to form a strut to engage with the arched slot and two sides extended to form fingers wedged in the guiding boss, and a pad located on an inner side thereof and extended outside the elongated notches.

3. The anchoring apparatus of claim 1, wherein the transmission mechanism is fastened to one side end of the rack through a board and includes a speed adjusting device and a motor that have respectively a transmission shaft and a motor shaft passing through a hole located respectively on the left side and the right side of a lower left end of the board, the transmission shaft and the motor shaft being coupled with the transmission wheel on the anchor dock through a belt.

4. The anchoring apparatus of claim 1, wherein the axle has one end forming a cavity to engage with the spindle of the transmission wheel, the cavity having a screw hole.

5. The anchoring apparatus of claim 1, wherein the L-shaped member has a movable block located in the center of one side thereof and extended to the U-shaped notch and being adjustable on elevation, the movable block having a top section which is coupled with the two adjusting rollers on the left side and the right side of the top section in a diagonal manner, each of the adjusting rollers being coupled with a bearing in the center.

6. The anchoring apparatus of claim 1, wherein the L-shaped member has a top section which has collars located on an upper side and a lower side for engaging with a connection member and a spring, the movable roller being coupled with a bearing in the center to receive a screw for fastening the movable roller to an aperture on another end of the connection member, the connection member having a hook on an outer side to engage with one end of the spring.

7. The anchoring apparatus of claim 1, wherein the rack includes two pieces or more than two pieces connecting by a connection plate or a convex wedge member.

8. The anchoring apparatus of claim 1, wherein the chuck includes an anchor disk and at least three latch jaws at a front end, and a rear half section including a movable ring engaging with a coupling disk, the latch jaws are movably connected to the anchor disk, the anchor disk has an opening in the center to receive the axle, the coupling disk and the movable ring each have an opening to receive the axle.

9. The anchoring apparatus of claim 8, wherein the anchor disk has three elongated notches on the periphery to couple with each latch jaw.

10. The anchoring apparatus of claim 9, wherein each of the elongated notches has a rear end on two sides thereof extended to form a guiding boss, each of the latch jaw having two sides extended to form fingers wedged in the guiding boss.

11. The anchoring apparatus of claim 9, wherein each of the latch jaws has a pad located on an inner side thereof and extended outside the elongated notches.

12. The anchoring apparatus of claim 8, wherein the periphery of the movable ring has three arched slots, each of the latch jaws has one end extended to form a strut to engage with the arched slot respectively.

13. The anchoring apparatus of claim 1, wherein the anchor dock further includes a C-shaped clip disposed between the nut and the chuck.

* * * * *