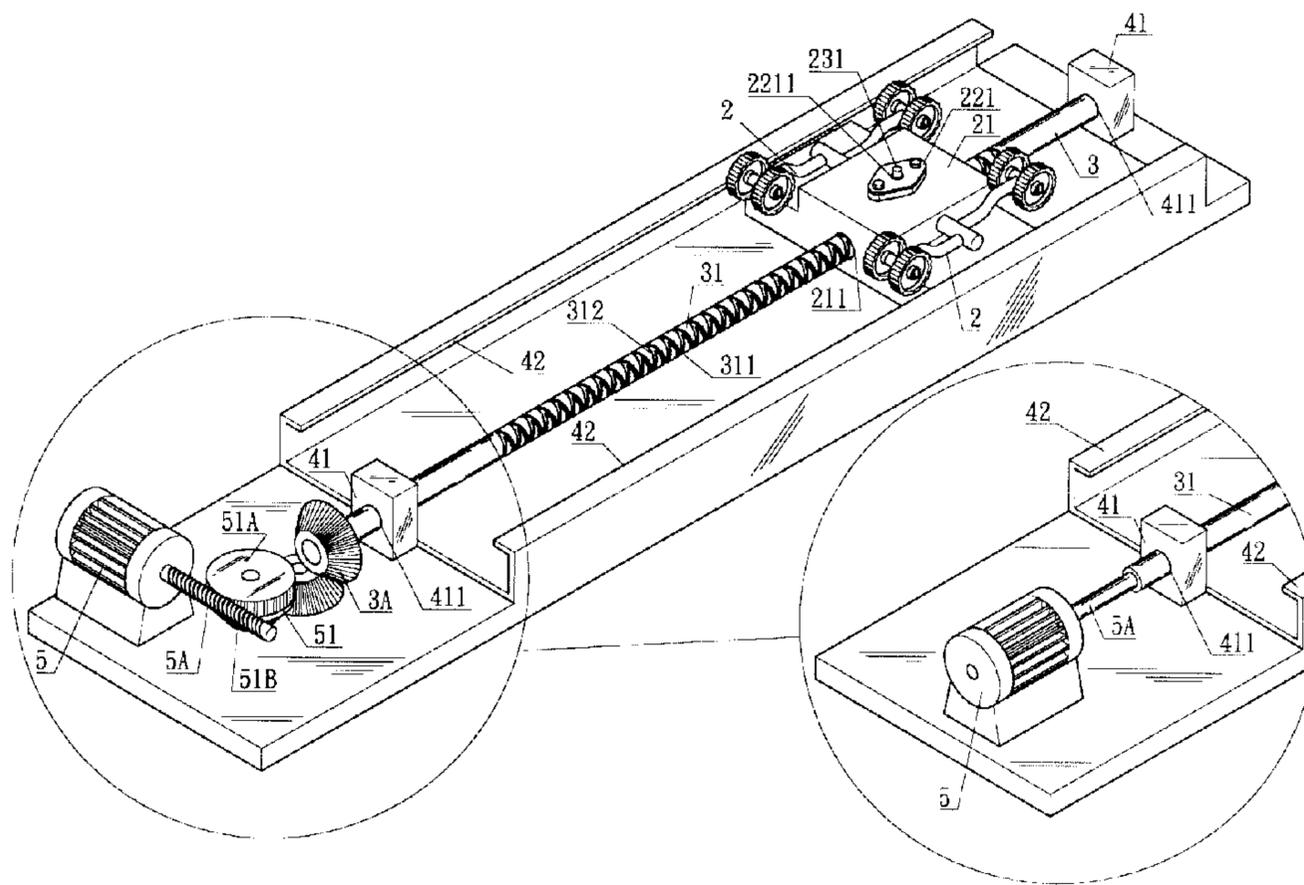




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(54) Titre : ROULEAU MASSEUR A ENTRAINEMENT RECIPROQUE CONTINU
(54) Title: ROLLING MASSAGE DEVICE CONTINUOUS MOTION RECIPROCAL DRIVE STRUCTURE



(57) Abrégé/Abstract:

A rolling massage device continuous motion reciprocal drive structure comprised of a long drive shaft, the two ends of which are pivotably installed in a base plate that is also inserted through the center section of a sleeve hole at the lower extent of a bottom mount, and a massage device sleeved over the center section of the drive shaft. The center section of the drive shaft consists of a clockwise spiral slide tracking groove and a counter-clockwise spiral slide tracking groove in a crisscross arrangement and, furthermore, completes a two-ended cycling crossed bi-directional screw rod. The upper extent of the center section area of the bottom mount sleeve hole provides for the implantation and sleeving in of a cylindrical active link block having a double hyphen-profiled guide plate extending from its lower end that is inserted into the slide tracking grooves. As such, while the drive shaft is being rotationally driven in a set direction, since the guide plate in the groove is forced to follow in the direction defined by the interior section of the track path, the bottom mount equipped with massage components at its top surface is carried into continuous motion in an axial direction and, furthermore, achieves continuously driven reciprocal travel following the crisscross configuration of the clockwise slide tracking groove and the counter-clockwise slide tracking groove on the crossed bi-directional screw rod, which is among the innovative features of the present invention.

ABSTRACT

A rolling massage device continuous motion reciprocal drive structure comprised of a long drive shaft, the two ends of which are pivotably installed in a base plate that is also inserted through the center section of a sleeve hole at the lower extent of a bottom mount, and a massage device sleeved over the center section of the drive shaft. The center section of the drive shaft consists of a clockwise spiral slide tracking groove and a counter-clockwise spiral slide tracking groove in a crisscross arrangement and, furthermore, completes a two-ended cycling crossed bi-directional screw rod. The upper extent of the center section area of the bottom mount sleeve hole provides for the implantation and sleeving in of a cylindrical active link block having a double hyphen- profiled guide plate extending from its lower end that is inserted into the slide tracking grooves. As such, while the drive shaft is being rotationally driven in a set direction, since the guide plate in the groove is forced to follow in the direction defined by the interior section of the track path, the bottom mount equipped with massage components at its top surface is carried into continuous motion in an axial direction and, furthermore, achieves continuously driven reciprocal travel following the crisscross configuration of the clockwise slide tracking groove and the counter-clockwise slide tracking groove on the crossed bi-directional screw rod, which is among the innovative features of the present invention.

Rolling Massage Device Continuous Motion Reciprocal Drive Structure

BACKGROUND OF THE INVENTION

1) FIELD OF THE INVENTION

The invention herein relates to a rolling massage device continuous motion reciprocal drive structure for massagers or massage devices installed at the rear section of massage-use chairs or the interior section of the pillows that is capable of impelling continuous motion as well as reciprocal motion oriented along a single axis; the said structure is comprised of a shaft block disposed at each of the upper and lower ends of a base plate that provides for the pivoting installation of the two ends of a long drive shaft into seat holes and also insertion through the center section of a sleeve hole at the lower extent of a bottom mount, and a massage device sleeved over the center section of the drive shaft, wherein the innovative features are: the upper extent of the center section area of the bottom mount sleeve hole provides for the implantation and sleeving in of a cylindrical active link block having a double hyphen-profiled guide plate extending from its lower end that is inserted into slide tracking grooves; as such, while the drive shaft is being rotationally driven in a set direction, since the guide plate therein is forced to follow in the direction defined by the interior section of the track path, the bottom mount equipped with massage components at its top surface is carried into

continuous motion in an axial direction and, furthermore, achieves continuously driven reciprocal travel following the crisscrossed configuration of a clockwise slide tracking groove and a counter-clockwise slide tracking groove on a crossed bi-directional screw rod, and at the end of travel following each axially oriented movement forward or backward, automatically alternates direction to achieve continuously driven reciprocal travel and, furthermore, without requiring the utilization of a positive and negative electrical polarity switching device, thereby avoiding the large current surge instantaneously produced in the motor when the positive and negative polarity determining rotational direction is reversed, a practical function that effectively prolongs the usable service life of the motor.

2) DESCRIPTION OF THE PRIOR ART

Since conventional massage devices installed on chairs or the interior sections of pillows utilized to provide users kneading or pressing back section massages must be capable of massaging the entire surface area of the back, they must be reciprocal travel drive designs disposed vertically relative to the back. The reciprocating carrier device of such conventional massage drive structures consists of a pair of a different rotational direction or a single different rotational direction rod, belt, chain, or other related means as well as a motor-based forward and backward rotational direction massage structure or a massager capable of straight

reciprocal motion.

However, since the said kind of paired and separately driven different rotational direction carrier device involves the necessity of a complicated drive structure that respectively impels a pair of shafts into rotation, this results in increased production cost and installation space; as such, there are manufacturing and utilization complications that do not comply with practicality.

The other kind of individually driven single rotational direction carrier device has the rotational direction of its shaft impelled by a direct current or an alternating current motor in which each of the two extremities of the reciprocating drive shaft must be equipped with an actuation control device capable of a producing upon every contact a positive and negative polarity reversal that controls electrical current to enable the reversal of motor rotational direction, thereby providing for the switching of the drive shaft into a state of clockwise rotation or counter-clockwise rotation and carrying the said massage device forward to the end of travel and then reversing it backward or backward to the end of travel and then reversing it forward. As such, although such a structural approach has a production cost and space occupancy that is advantageously lower than the said kind, each time the positive and negative polarity is switched during operation, it is impossible to avoid the generation of instantaneous starting electrical current inputs that subject the motor to the continual impact of high and low fluctuating

current, resulting in brief random screeching sounds indicative of high torque loads that shorten its usable service life. In situations of frequent utilization and since the said back section of the massage device is in continuous reciprocal motion, such phenomenon causes the motors of such devices to malfunction or burn out and then require repair or replacement, results in even more inconvenience, economic unfeasibility, and impracticality.

SUMMARY OF THE INVENTION

The primary objective of the invention herein is that since it only requires the placement and utilization of a single long drive shaft situated between two shaft blocks on a base plate and the center section of the drive shaft consists of a clockwise spiral slide tracking groove and a counter-clockwise spiral slide tracking groove in a crisscrossed arrangement and, furthermore, completes a two-ended cycling crossed bi-directional screw rod, this enables the upper extent of the center section area of a bottom mount sleeve hole to provide for the implantation and sleeving in of a cylindrical active link block having a hyphen-profiled guide plate extending from its lower end that is inserted into the slide tracking grooves; as such, while the drive shaft is being rotationally driven in a set direction, slide track grooves of the said crossed bi-directional screw rod causes the guide plate to be in them and since it is forced to follow in the direction defined by the interior section

of the track path, the bottom mount equipped with massage components at its top surface is carried into continuous motion in an axial direction and, furthermore, following the slide track clockwise and counter-clockwise, bi-directional, and spiralled crisscrossed cycling arrangement, automatically alternating the rotational direction at the end of travel of each axial direction forward movement or backward movement to achieve continuously driven reciprocal travel, utilizing only a single drive motor and drive shaft configuration that is structurally simple and economically unique, which is among the innovative features of the invention herein.

Another objective of the invention herein is that due the single drive shaft and set rotational drive operation, the continuous drive of massage base reciprocal travel can be achieved without requiring at the two extremities of the drive shaft for reciprocating action the installation of an actuation control device utilized to control positive and negative polarity reversal and thereby control the electrical current reversing of the rotational drive of motor; as such, in addition to a simplified device and circuitry, since there is no positive and negative polarity alternation situation, this prevents large electrical current generated by instantaneous starting electrical current from impacting the motor to protect motor utilization and prolong the usable service life of the motor, thereby offering advantageous practicality, which is among the innovative features of the invention

herein.

Yet another objective of the invention herein is that there is an engager between the motor and the drive shaft for the purpose of controlling single direction drive rotation, this provides for the user selecting a reverse polarity input of electric current, wherein the motor can be driven in the reverse direction such that the drive shaft forms a separation-driven relationship set shaft-stopped state, causing the massage device to remain stationary at an original position for the fixed-point massage operation mode; as such, this increases the operations variability of the device herein and, furthermore, also provides the advantages of simple structure and operation, which is among the innovative features of the invention herein.

The structure, unique features, functions, and practical objectives of the invention herein are further elaborated in the brief description of the drawings below followed by the detailed description of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is an exploded drawing of the invention herein.

Figure 2 is an isometric drawing of the invention herein.

Figure 3 is a cross-sectional drawing of the invention herein.

Figure 3-A is a magnified view of the crossed bi-directional spiralled shaft

in FIG. 3.

Figure 4-A is an orthographic drawing that illustrates the massage device reverse movement depicted in FIG. 3-A (in a state of forward movement).

Figure 4-B is a second orthographic drawing that illustrates the massage device reverse movement depicted in FIG. 3-A (in a state of rotation).

Figure 4-C is a third orthographic drawing that illustrates the massage device reverse movement depicted in FIG. 3-A (in a state of backward movement).

DETAILED DESCRIPTION OF THE INVENTION

Referring to FIG. 1, FIG. 2, FIG. 3, and FIG. 3-A, the invention herein addresses a drive structure installed at the rear section of massage-use chairs or in the interior section of pillows that is utilized to provide the user back section massage applications by enabling the continuous motion as well as reciprocal motion along a single axial direction of any massager or massage device 2 (the structural form of the said massage device 2 is unlimited and, furthermore, is not an innovative objective of the invention herein); the said drive structure is comprised of a shaft block 41 disposed at each of the upper and lower ends of a base plate 4 that provides for the pivoting installation of the two ends of a long drive shaft 3 into seat holes 411 and also inserted through the center section of a sleeve hole 211 at the lower extent of a bottom mount 21, and a massage device 2

sleeved over the center section of the drive shaft 3, wherein the innovative features are:

The center section of the said drive shaft 3 situated between the two shaft blocks 41 consists of a clockwise spiral slide tracking groove 311 and a counter-clockwise spiral slide tracking groove 312 in a crisscrossed arrangement and, furthermore, completes a two-ended cycling crossed bi-directional screw rod 31; and formed downwards from the upper extent of the center section area of the said bottom mount 4 sleeve hole 411 is a tubular recess 22 that provides for the implantation and sleeving in of a cylindrical active link block 23; furthermore, a cotter hole 2211 in the center section of a mounting lock cover 221 at its top section provides for the insertion of a shaft set pin 231 at the top end of the active link block 23 enabling the holding of the active link block 23 within the interior section of the said tubular recess 22 and, furthermore, extending from the lower end of the said active link block 23 is a double hyphen- profiled guide plate 232 that is inserted downwards into any clockwise slide tracking groove 311 or counter-clockwise slide tracking groove 312.

Referring to FIG. 3-A, FIG. 4-A, FIG. 4-B, and FIG. 4-C, in the said structure, while the drive shaft 3 is directly rotated or indirectly rotated in a set rotationally driven direction by the motor 5 at the rear extent (the two enmeshed bevel gears in the drawings illustrate an indirectly driven arrangement), the said

crossed bi-directional screw rod 31 is driven into continuous rotation in a set direction. As such, since the said guide plate 232 inserted in the clockwise slide tracking groove 311 or counter-clockwise slide tracking groove 312 is forced to follow in the direction defined by the interior section of the track path, the bottom mount 21 of the massage device 2 equipped with other components at its top surface is carried continuously forward (as shown in FIG. 4-A) or continuously backward (as shown in FIG. 4-C) in an axial direction; furthermore, since the two lateral end sections of the crossed bi-directional screw rod 31 clockwise slide tracking groove 311 and counter-clockwise slide tracking groove 312 are in a cyclical and crisscrossed configuration, therefore, at the end of travel following each axially oriented movement forward or backward, the guide plate 232 is directed into the interior section of the groove oriented towards the opposite direction (transferred from the clockwise slide tracking groove 311 to the counter-clockwise slide tracking groove 312; or, transferred from the counter-clockwise slide tracking groove 312 to the clockwise slide tracking groove 311, as shown in FIG. 4-B), and after automatically alternating its direction of axial movement, continues in the direction or the opposite direction along the interior section of its track path carrying the bottom mount 21 of the massage device 2 equipped with other components at its top surface continuously forward or continuously backward (as shown in the continuous travel of FIG. 1-A, FIG. 1-B, and FIG. 1-C; or, the

continuous travel of FIG. 1-C to FIG. 1-B and FIG. 1-A).

The said structure is capable of a single drive shaft 3 elementary arrangement having a single driven rotational direction and simplified operation that does not require electric current supply directional switching or other component prerequisites such that its drive shaft 3 carries the massage device 2 in an axial direction across the back of the user and along entire sections in a reciprocal travel massage action driven continuously and repeatedly, with the massage device 2 effectively carried in an automatic operation.

Additionally, when the user wishes to apply a fixed-point massage at a selected area involving the stopping of operation during the reciprocal travel of the massage device 2 (referring to FIG. 1, FIG. 2), the transmissive relationship of the enmeshed gears between the motor 5 and the drive shaft 3 is suspended, a controlling "single direction" drive application is additionally installed and, furthermore, the upper and lower two sections of the respective drive teeth sections each enmeshed to the front end motor shaft 5A of the motor 5 are transferred via the driven teeth 3A engager 51 (a single direction clutch in which the counter-clockwise direction is disengaged during clockwise driven rotation or the clockwise direction is disengaged during counter-clockwise driven rotation; since this structure is conventionally utilized at the front end of motor shafts, it will not be addressed in the description of the invention herein and is only presented to

briefly illustrate of the invention herein, with no further elaboration of its structure) at the front end of the drive shaft 3.

As such, before the user selects a reverse polarity input of electric current, the motor 5 rotates in a single direction such that the drive shaft 3 operates as previously described, carrying the massage device 2 across the back of the user in whole section reciprocal travel to perform a massage (as indicated by the invisible line at the engager upper section 51A engaged with the lower section engager 51B which constitutes a state of transmissive engagement.).

After the user selects a reverse polarity input of electric current (for example, by adding a "fixed-point" selection button on the operating panel and connecting a reverse polarity electric current operating circuit), the motor 5 can drive in the reverse direction such that the drive shaft 3 forms a drive-separation relationship (as shown by engager upper section 51A indicated by the solid line in , which is not enmeshed with the lower section engager 51B and forms a separation that precludes a transmissive state) of a set shaft stopped state; furthermore, since the massage device 2 remains stationary because it is not yet being carried and moved, it is stopped at the said original position for the fixed-point massage operation; as such, this increases the operations variability of the device herein and, furthermore, also has the advantages of simple structure and operation, which is among the innovative features of the invention herein.

In addition, there can be movement stabilization to effectively assist the massage device 2 during the travel of reciprocal movement by installing fixed axle roller wheels 24 at the sides and lower extent of the bottom mount 21 that are sleeved into travelling position within a matched recessed position-limiting slide channel 42 (as indicated in FIG. 1, FIG. 2, and FIG. 3) disposed in the top surface of the base plate 4; this functions as a restrictive retaining structure that enables the reciprocal motion of the massage device 2 to be effectively stabilized against drifting or swaying towards the left and right sides.

CLAIMS

1. A rolling massage device continuous motion reciprocal drive structure comprised of a shaft block disposed at each of the upper and lower end of a base plate that provides for the pivoting installation of the two ends of a long drive shaft into seat holes that is also inserted through the center section of a sleeve hole at the lower extent of a bottom mount, and a massage device sleeved over the center section of the said drive shaft, wherein the innovative features are:

The center section of the said drive shaft situated between the two said shaft blocks consists of a clockwise spiral slide tracking groove and a counter-clockwise spiral slide tracking groove in a crisscrossed arrangement and, furthermore, completes a two-ended cycling crossed bi-directional screw rod; and formed downwards from the upper extent of the center section area of the said bottom mount sleeve hole is a tubular recess that provides for the implantation and sleeving in of a cylindrical active link block; furthermore, a cotter hole in the center section of a mounting lock cover at its top section provides for the insertion of a shaft set pin at the top end of the said active link block enabling the holding of the said active link block within the interior section of the said tubular recess and, furthermore, extending from the lower end of the said active link block is a double hyphen-profiled guide plate that is inserted downwards into any said clockwise slide tracking groove or said counter-clockwise slide tracking groove.

The said structure provides for the driving of the said crossed bi-directional

screw rod into continuous rotation in a set direction as the said drive shaft is directly rotated or indirectly rotated in a set rotationally driven direction by the a motor at the rear extent, and since the said guide plate inserted in the said clockwise slide tracking groove or the said counter-clockwise slide tracking groove is forced to follow in the direction defined by the interior section of the track path, the said bottom mount equipped at its top surface in the interior section of a chair or pillow that is utilized to provide the user back section massage applications by any massager or said massage device is carried continuously forward or continuously backward in an axial direction; furthermore, since the two lateral end sections of the said crossed bi-directional screw rod clockwise slide tracking groove and counter-clockwise slide tracking groove are in a cyclical and crisscross configuration, therefore, at the end of travel following each axially oriented movement forward or backward, the said guide plate is directed by the interior section of the groove oriented towards the opposite direction and after automatically alternating its direction of axial movement, continues in the direction or the opposite direction along the interior section of its track path carrying the said bottom mount of the said massage device equipped with other components at its top surface continuously forward or continuously backward and as such, forms the driven reciprocal motion of the said massage device that has excellent continuous and automatic operation.

2. As mentioned in Claim 1 of the rolling massage device continuous motion reciprocal drive structure of the invention herein, the transmissive relationship of the enmeshed gears between the said motor and the said drive shaft can be suspended, a control single-direction drive application is additionally installed and, furthermore, the upper and lower two sections of the respective drive teeth sections each engaging the front end motor shaft of the said motor are transferred via the driven teeth engager at the front end of the said drive shaft; this allows the user to select a reverse polarity input of electric current and when the said motor drives in the reverse direction, the said drive shaft forms a drive-separation set shaft stopped state, the said massage device similarly remains stationary and is stopped at the original position for fixed-point massage operation, which is among the innovative features of the invention herein.

3. As mentioned in Claim 1 of the rolling massage device continuous motion reciprocal drive structure of the invention herein, fixed axle roller wheels are installed at the sides and lower extent of the said bottom mount of the said massage device and situated within a matched recessed position-limiting slide channel disposed in the top surface of the said base plate; this functions as a restrictive retaining structure that enables the reciprocal motion of the said massage

device to be effectively stabilized against drifting or swaying towards the left and right sides.

Exhibit B. Motion
System (14)
1. The motion system
2. The motion system
3. The motion system
4. The motion system

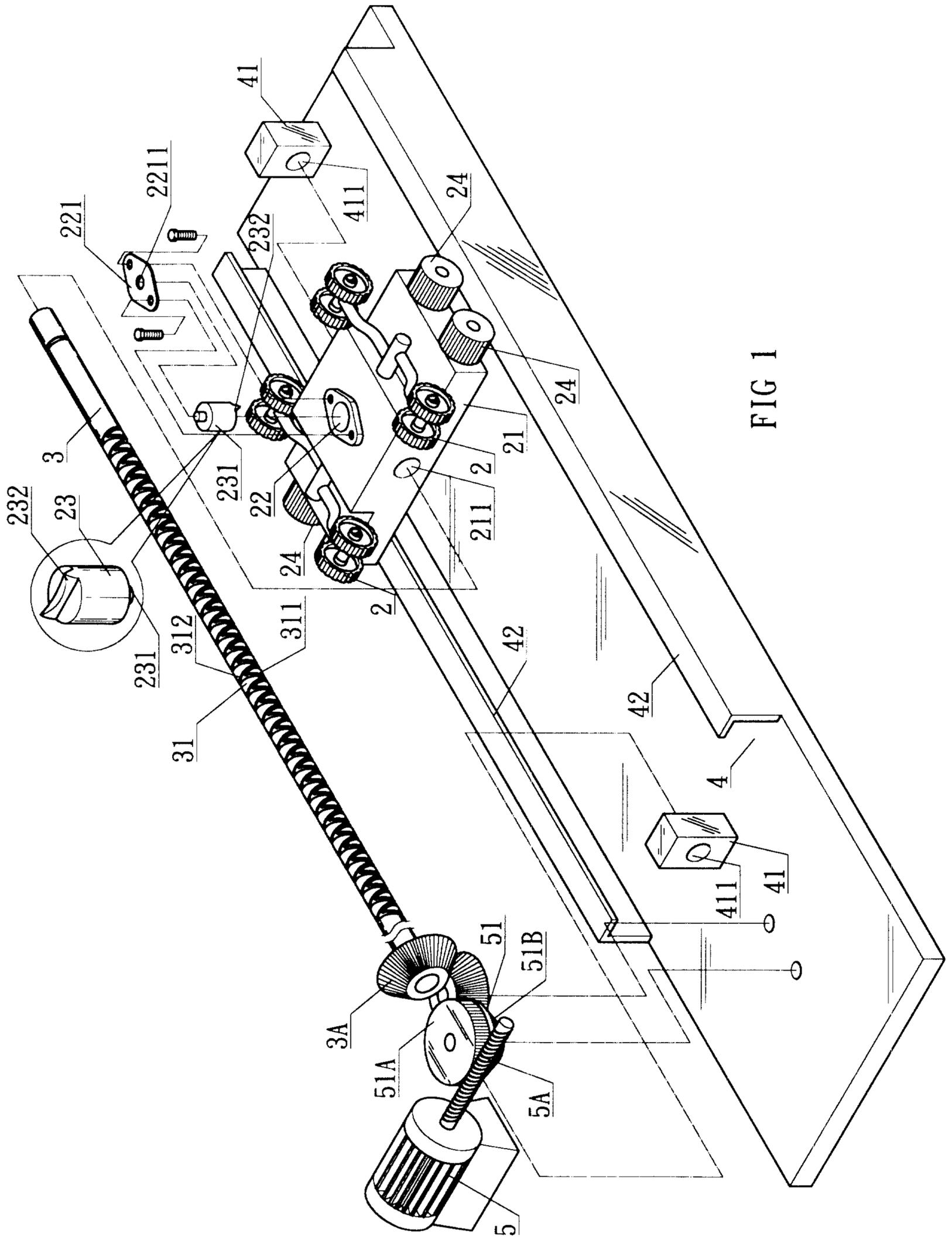


FIG 1

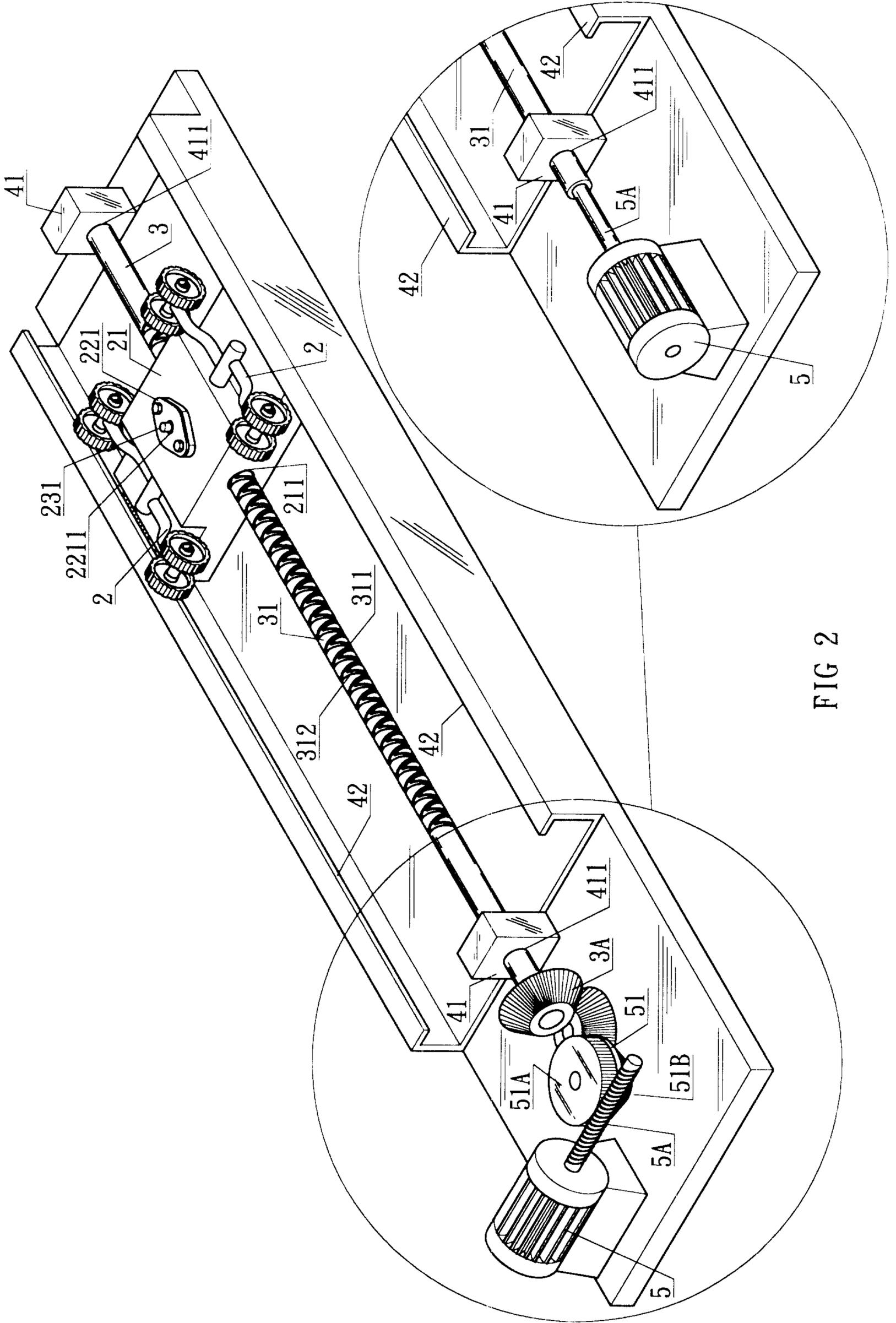


FIG 2

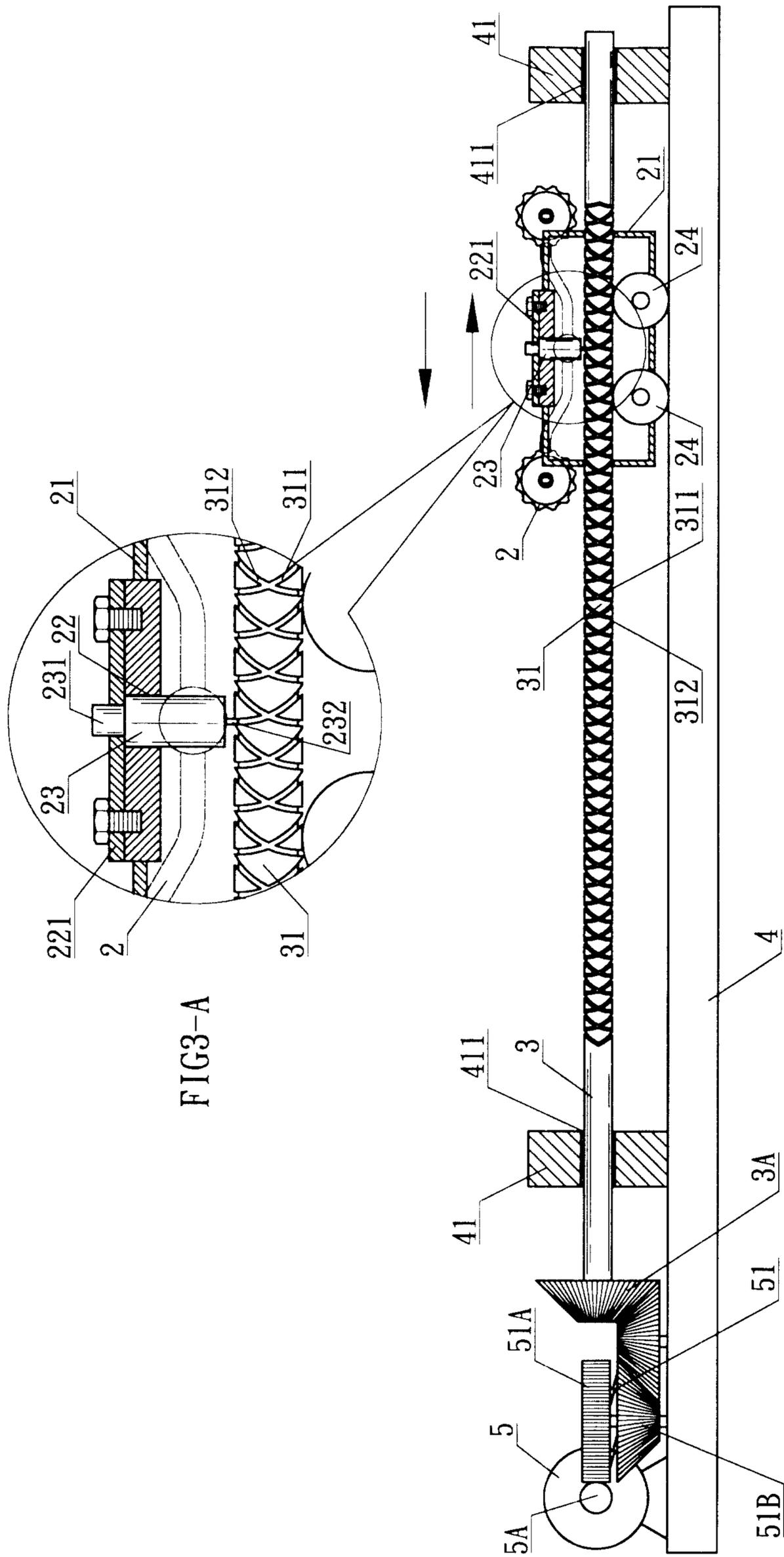


FIG3-A

FIG3

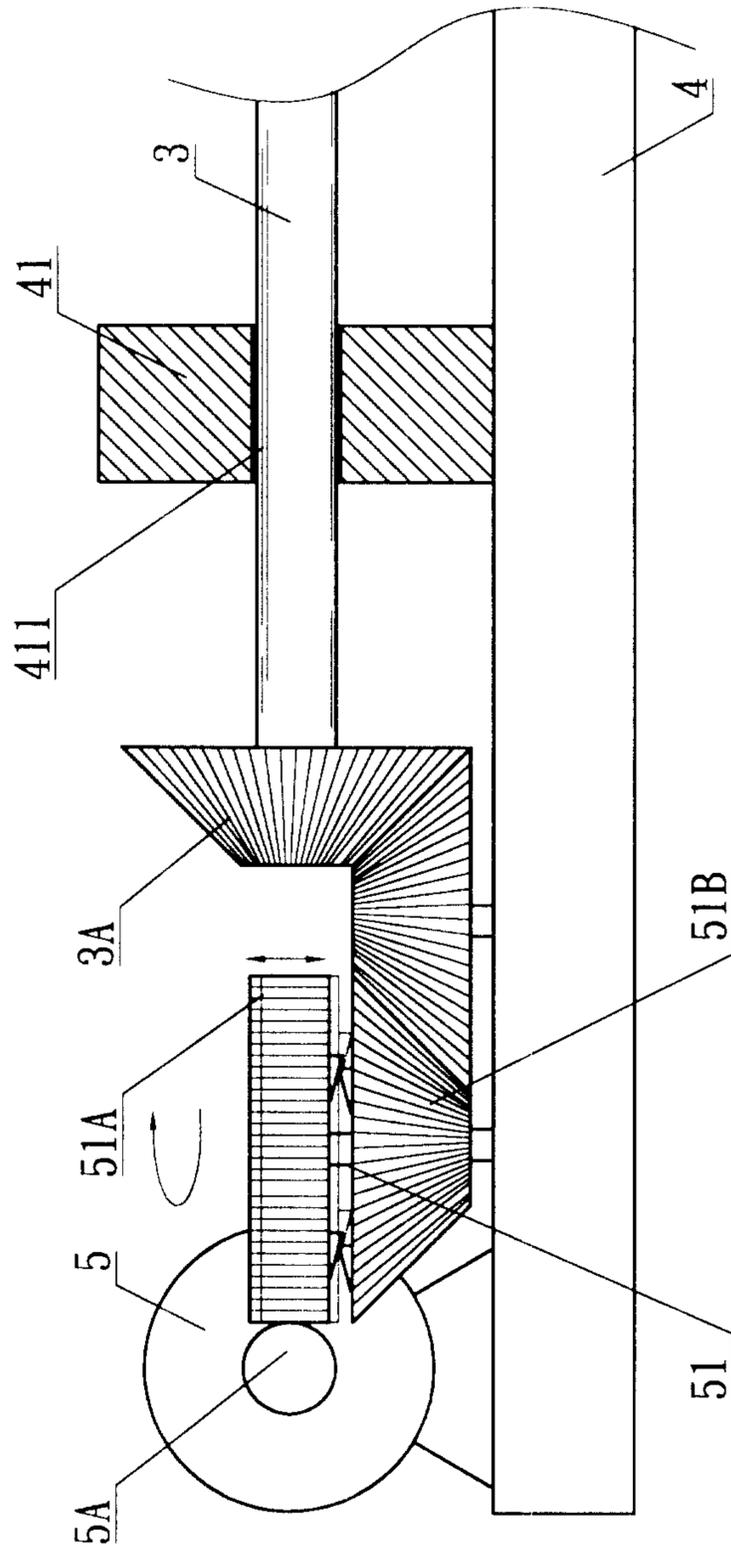


FIG 4

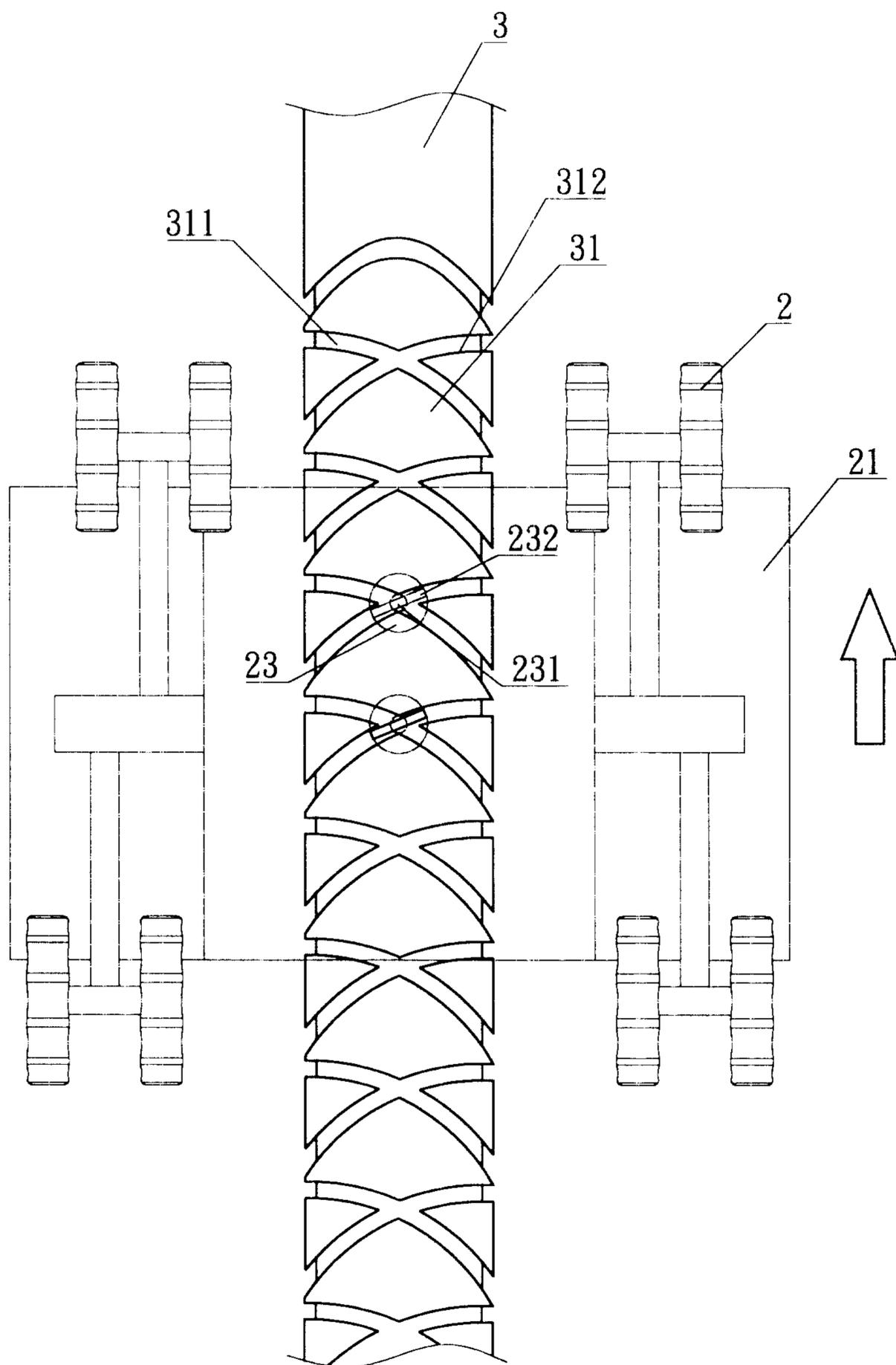


FIG4-A

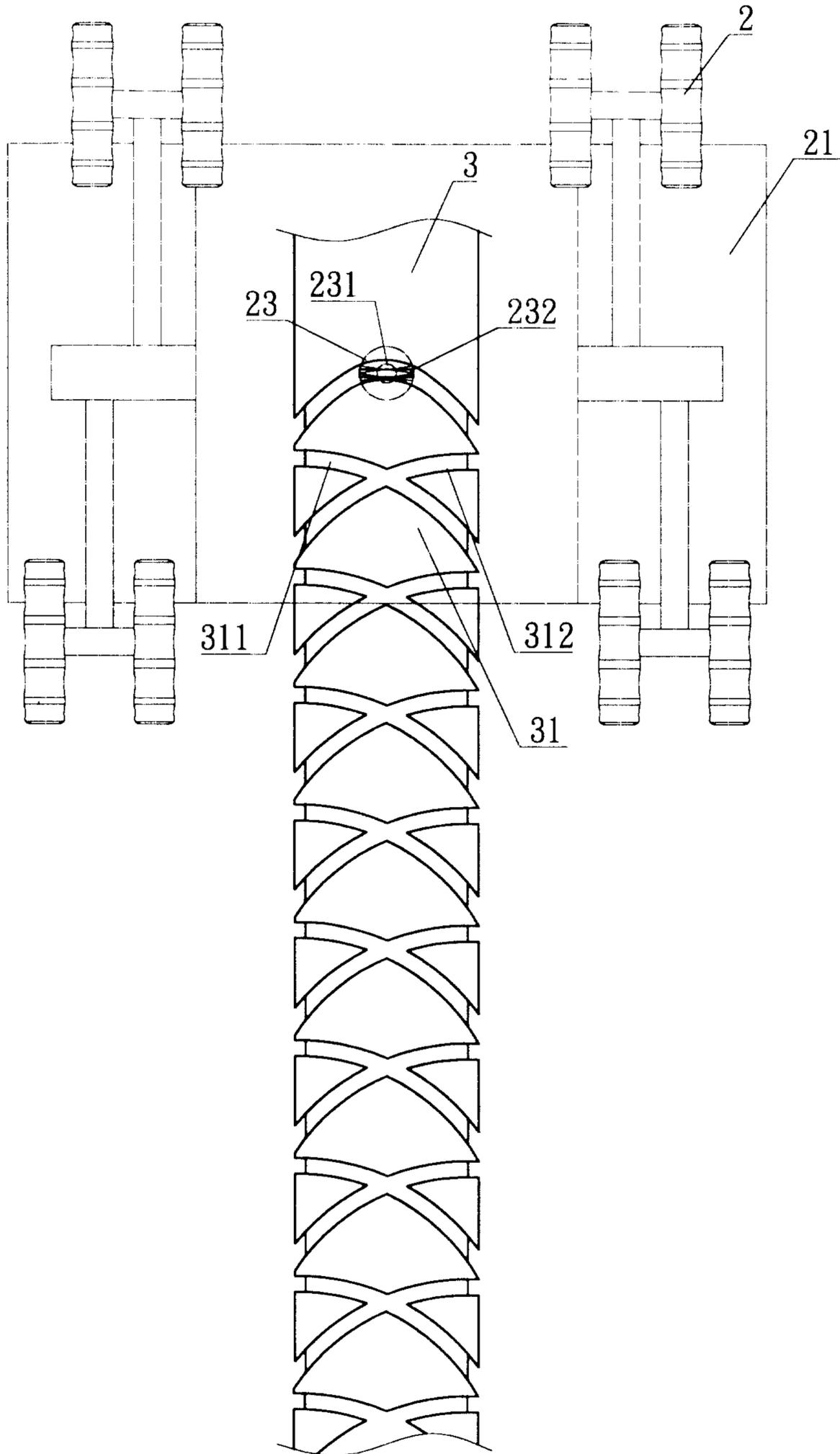


FIG4-B

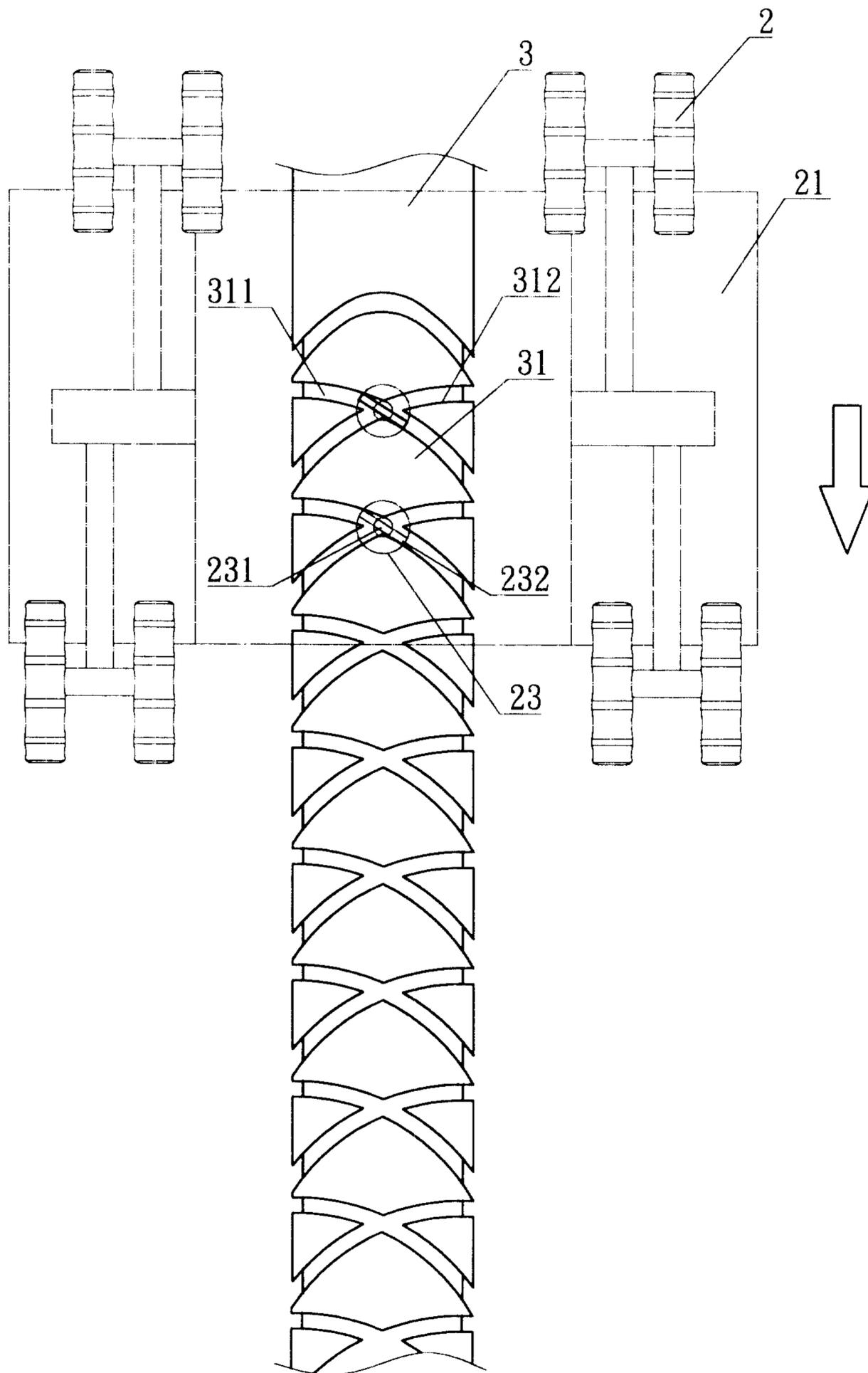


FIG4-C

