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(54) **DIFFERENTIAL FEEDING LASTING MACHINE**

(57) The present disclosure provides a differential feeding lasting machine which comprises: a body, a feeding mechanism, a presser foot mechanism, an adjusting mechanism and a control mechanism. The body has a swing arm, and the feeding mechanism has a feeding wheel. The presser foot mechanism has a presser foot wheel, and the adjusting mechanism has an adjustment driving source and an adjustment transmission assembly. The adjustment driving source rotate according to several rotation angles, which makes the adjustment transmission assembly move relative to the swing arm for adjusting the rotation amount of the feeding wheel, and the control mechanism can control the rotation speed of both the presser foot wheel and the feeding wheel. Accordingly, the adjusting mechanism can adjust the rotation speed of the feeding wheel relative to the presser foot wheel, and thus each stitch formed in the insole and the upper can keep a similar stitch length.

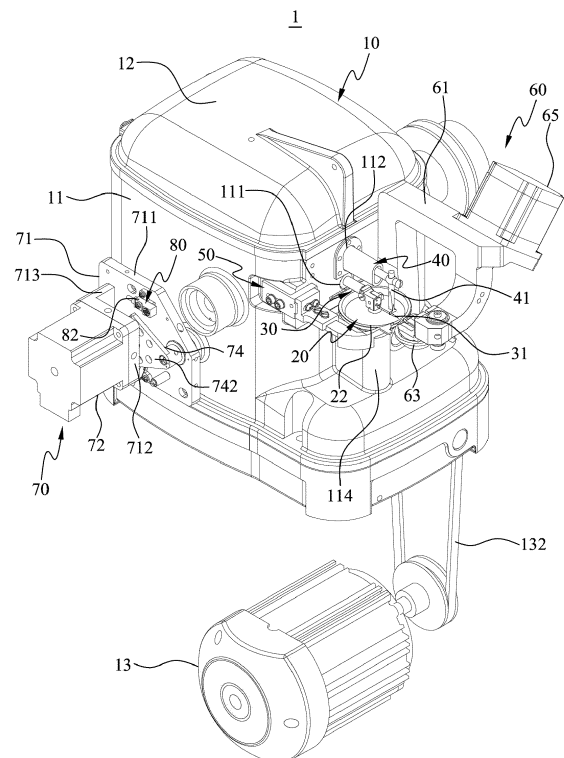


FIG. 1

Description

FIELD OF THE INVENTION

[0001] The present invention relates to a sewing machine for sewing an insole (midsole), an upper or leather, in particular to a lasting machine capable of changing the rotation speed of a feeding wheel according to settings during a sewing operation, which make each stitch formed on the sewn object not vary between long and short because of differential feeding, so that the stitches in different areas can relatively keep a similar stitch length.

BACKGROUND

[0002] At present, a main shaft of the existing lasting machine drives the needle bar and the hooked needle to perform the stitching operation, and the main shaft also drives the feeding wheel to perform intermittent rotation at the same time, which makes the feeding wheel performs the feeding action. The presser foot wheel is pivotally connected under the presser foot and is located on the outer peripheral side of the feed wheel, and the presser foot wheel of the existing lasting machine has no power to rotate by itself. Wherein, when the existing lasting machine is specifically applied, the feeding wheel and the presser foot wheel are together clamped the insole and the upper of the shoe; the operator holds the insole and the upper of the shoe with both hands simultaneously, and tightens the bending position between the insole and the upper of the shoe. At this time, the presser foot wheel follows the feed wheel to synchronously perform intermittent rotation to complete the stitching operation.

[0003] The existing lasting machine has been widely used; however in the process of stitching the insole with the upper by the existing lasting machine, since the presser foot wheel cannot rotate independently by itself, the operator must along the contour of the shoe insole, use both hands to control the bending of the upper to stitch the shoe insole to the upper, causing the operator's hands to be injured because of gripping the insole and upper for a long time. Besides, since the presser foot wheel cannot rotate by itself, the length of the stitch formed in each the insole and the upper of the shoe may vary between long and short because of the contour of the insole or the form of bending the upper by the operator.

[0004] However, in order to avoid the operator's hands injury and improve the situation that stitch length of the stitch varies between long and short, presently there is another way of adding a stepping motor to separately drive the presser foot wheel to rotate. However, when the difference in rotation speeds between the feed wheel and the presser foot wheel is too large, the rotation speed of the presser foot wheel is too low, or the larger the frictional resistance between the insole and the upper is, the more shortened stitch length of the stitch is, which

makes the stitches in the insole of the shoe unable to maintain a uniform stitch length.

SUMMARY

[0005] The main purpose of the present invention is to improve the structure of a lasting machine, such that the lasting machine can adjust the rotation speed of the feed wheel at any time to correct the stitch length during the process of stitching the insole to the upper, which makes each stitch formed in any area (straight area or curved area) of the stitched object have similar length. Thus, not only there is no need to worry about the unevenness in stitch length of the insole or the upper, but also the sewing efficiency of the lasting machine is improved.

[0006] To achieve above purpose, the present invention provides a differential feeding lasting machine. The differential feeding lasting machine comprises a body, a feeding mechanism, a presser foot mechanism, an adjusting mechanism and a control mechanism.

[0007] In the present embodiment, the body has a main shaft and a swing arm. The main shaft is capable of driving the swing arm to swing, wherein the feeding mechanism has a feeding shaft that can be driven by the swing arm and a feeding wheel located outside the body. The feeding shaft is capable of driving the feeding wheel to rotate, and the presser foot mechanism has a presser foot frame mounted on the outside of the body. The presser foot frame is arranged with a presser foot wheel on one side of the feeding wheel and a presser foot driving source capable of driving the presser foot wheel to rotate.

[0008] Besides, the adjusting mechanism has an adjustment driving source and an adjustment transmission assembly located between the adjustment driving source and the swing arm. The adjustment driving source can perform rotary motion according to the plurality of rotation angles, and the adjustment transmission assembly is driven by the adjustment driving source to move relative to the swing arm for changing the swing amplitude of the swing arm, and thus the swing arm of changed swing amplitude can adjust the rotation amount of the feeding wheel. The control mechanism is electrically connected to the presser foot driving source and the adjustment driving source, and the control mechanism is used to control the operating state of the presser foot driving source and the adjustment driving source for adjusting the rotation speed of the presser foot wheel and the rotation speed of the feeding wheel.

[0009] In the present embodiment, preferably, the adjusting mechanism is arranged with an adjustment gear set between the adjustment driving source and the adjustment transmission assembly. And the adjustment gear set can be used to change the magnitude of torque generated by the adjustment driving source. Wherein, the adjustment gear set has a driving gear assembled to the adjustment driving source and a driven gear engaging with the driving gear. The driven gear has a radius larger than the radius of the driving gear, and is assembled to

the adjustment transmission assembly. Besides, the adjusting mechanism has a connecting base, the connecting base has a first connecting plate assembled to the body and a second connecting plate spaced apart from the first connecting plate, an accommodating space is formed between the first connecting plate and the second connecting plate for accommodating the adjustment gear set, and the second connecting plate is connected to the adjustment driving source.

[0010] In addition, preferably, the adjustment transmission assembly has an adjustment shaft member close to the adjustment drive source and a bracket close to the swing arm. The bracket has an assembling space and a support pin offset disposed to adjustment shaft member. A swing member is simultaneously assembled to the support pin and the swing arm inside the assembling space.

[0011] Besides, preferably, the control mechanism has a first sensor, and the first sensor can generate an initial stop signal when the driven gear is at an initial position. The adjustment driving source can stop rotating according to the initial stop signal to ensure that the driven gear is at the initial position. Furthermore, the control mechanism further has a second sensor spaced apart from the first sensor, and the second sensor can generate an extreme stop signal when the driven gear is at an extreme position away from the initial position. And the adjustment driving source can stop rotating according to the extreme stop signal to ensure that the driven gear does not go beyond the extreme position.

[0012] The feature of the present invention is that in the process of stitching an insole to an upper by the differential feeding lasting machine, the adjustment driving source can rotate according to the plurality of rotational angles for changing the relative position between the adjustment transmission assembly and the swing arm, which makes the swing amplitude of the swing arm become larger or smaller, and thus the rotation speed of the feeding wheel can be higher or lower than the rotation speed of the presser foot wheel to correct the stitch length, and further each stitch formed in any area (straight area or curved area) of the insole and the upper can keep similar stitch length. By doing so, when the differential feeding lasting machine perform sewing work, not only there is no need to worry about the unevenness in stitch length of the insole or the upper, but also raising the sewing efficiency of seaming the insole with the upper.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013]

FIG. 1 is a schematic illustrating perspective view of the differential feeding lasting machine of the present invention;

FIG. 2 is a schematic illustrating control of the differential feeding lasting machine of the present invention;

FIG. 3 is a schematic illustrating exploded view of

the differential feeding lasting machine of the present invention;

FIG. 4 is a schematic illustrating perspective view of the feeding transmission assembly assembled to the main shaft;

FIG. 5 is a schematic illustrating exploded view of the feeding transmission assembly assembled to the main shaft;

FIG. 6A is a schematic illustrating the feeding transmission assembly;

FIG. 6B is a schematic illustrating sectional view of the feeding transmission assembly assembled to the main shaft;

FIG. 6C is a schematic illustrating adjustment of the principal stitch length adjusting unit;

FIG. 7 is a schematic illustrating exploded view of the presser foot mechanism;

FIG. 8 is a schematic illustrating exploded view of the adjusting mechanism;

FIG. 9 is a schematic illustrating side view of the adjusting mechanism;

FIG. 10A is a schematic illustrating the first sensor detecting the driven gear;

FIG. 10B is a schematic illustrating the stitched object together clamped by the feeding wheel and the presser foot wheel;

FIG. 10C is a schematic illustrating the second sensor detecting the driven gear; and

FIG. 10D is a schematic illustrating counterclockwise rotation of the driven gear.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0014] In order to further understand the structure, usage and features of the present invention more clearly and in detail, the present invention is described in detail below with references to the accompanying drawings and specific preferred embodiments:

Please refer to FIGS. 1 and 2. A differential feeding lasting machine 1 of the present invention is a stitching machine used for stitching a insole to a upper and comprises a body 10, a feeding mechanism 20, a needle bar mechanism 30, a hooked needle driving mechanism 40, a dam mechanism 50, a presser foot mechanism 60, an adjusting mechanism 70 and a control mechanism 80.

[0015] Please refer to FIGS. 3 and 4. The body 10 comprises a casing 11, an upper cover 12 and a main power source 13. The front of the casing 11 is provided with a needle bar hole 111, a hooked needle hole 112, a presser foot shaft hole 113 and a shaft base 114. The upper cover 12 is assembled to the upper end of the casing 11, wherein the main power source 13 can generate rotational power, and drives a main shaft 131 passing through the casing 11 via a transmission belt 132, and the main shaft 131 is assembled with a needle rod driving assembly (not shown in the figure) inside the casing 11 and assembled with a feeding transmission assembly 14 that is also lo-

cated inside the casing 11.

[0016] Please refer to FIGS. 4 and 5. In the present embodiment, the feeding transmission assembly 14 has a swing arm 141 and a connection link 142. One end of the swing arm 141 is assembled to the main shaft 131 via a principal stitch length adjusting unit 143 that allows the two elements to shift from each other, which makes the swing arm 141 eccentrically rotate about the center of the main shaft 131 through the principal stitch length adjusting unit 143; the other end of the swing arm 141 is coupled to the connection link 142 with a spherical bearing. Please refer to FIGS. 6A to 6C, the principal stitch length adjusting unit 143 has a moving member 143a connected to the swing arm 141 and a fixed member 143b fixed to the main shaft 131, and the moving member 143a is movably assembled to the fixed member 143b in the manner of slider-chute assembly, so that the moving member 143a can be adjusted to move relative to the fixed member 143b. In the present embodiment, the moving member 143a must move relatively to the fixed member 143b while the main shaft 131 stops rotating.

[0017] Again, please refer to FIGS. 3 and 4. The feeding mechanism 20 is connected to the feeding transmission assembly 14 located inside the body 10. In this embodiment, the feeding mechanism 20 has a feeding shaft 21, and the feeding shaft 21 is disposed on the shaft base 114 of the body 10. One end of the feeding shaft 21 is connected to a feeding wheel 22 located outside the body 10; the other end is connected to a one-way ratchet set 23. The one-way ratchet set 23 is coupled to the connection link 142 of the feeding transmission assembly 14 via a spherical bearing, whereby when the main shaft 131 rotates, the principal stitch length adjusting unit 143 drives the swing arm 141 to swing about a floating swing pin 144 as a pivot point, and the swinging amount of the lower end of the swing arm 141 can drive the feeding wheel 22 to intermittently rotate about the feeding shaft 21 via the connection link 142 and the one-way ratchet set 23. In the present embodiment, the swing pin 144 is simultaneously mounted to the swing arm 141 and the adjusting mechanism 70.

[0018] The needle bar mechanism 30 passes through the casing 11 of the body 10 through the needle bar hole 111 of the body 10, which makes the needle bar mechanism 30 assembled to the needle rod driving assembly of the body 10. The needle bar mechanism 30 has a needle 31 that protrudes from the body 10, wherein the hooked needle driving mechanism 40 has a hooked needle 41 exposed outside the body 10, and the hooked needle 41 passes into the casing 11 via the hooked needle bar hole 112 of the body 10, which makes the hooked needle driving mechanism 40 assembled to the needle rod driving assembly. Besides, the dam mechanism 50 is assembled to the casing 11 of the body 10 and located at outer periphery of the feeding wheel 22.

[0019] Please refer to FIGS. 3 and 7. The presser foot mechanism 60 has a presser foot frame 61 located outside the casing 11 of the body 10. The presser foot frame

61 has a form of substantially upside-down U-shape. Besides, one end of the presser foot frame 61 is arranged with a moving rod 62 and passes through the presser foot shaft hole 113 of the body 10 to be assembled to the body 10; the opposite end of the presser foot frame 61 is pivotally connected to a presser foot wheel 63 capable of rotating. The presser foot wheel 63 is connected to a presser foot driving assembly 64 assembled to the presser foot frame 61, and the presser foot driving assembly 64 is assembled to a presser foot driving source 65 connected to the presser foot frame 61. In the present embodiment, the presser foot driving source 65 is configured as a stepping motor and drives the presser foot wheel 63 to rotate through the presser foot driving assembly 64. Wherein, the presser foot driving source 65 is fixed to the presser foot frame 61, and the presser foot driving assembly 64 is arranged with a first gear shaft 641 and a second gear shaft 642. As shown in the figure, the first gear shaft 641 is connected to the presser foot driving source 65 and pivotally connected to the presser foot frame 61; similar to the first gear shaft 641, the second gear shaft 642 is also pivotally connected to the presser foot frame 61 and is connected to the first gear shaft 641 via a bevel gear set 643, wherein an end of the second gear shaft 642 engages with the presser foot wheel 63 through an intermediary gear 644.

[0020] Please refer to FIGS. 3 and 8. The adjusting mechanism 70 has a connecting base 71, an adjustment driving source 72, an adjustment transmission module 73 and an adjustment gear set 74. The connecting base 71 has a first connecting plate 711 fixed to the body 10 and a second connecting plate 712 parallel to the first connecting plate 711. The first connecting plate 711 extends toward an extension plate 713 formed at the end of the second connecting plate 712, and the second connecting plate 712 is spaced apart from the first connecting plate 711 through the extension plate 713, so that an accommodating space 714 is formed among the first connecting plate 711, the second connecting plate 712 and the extension plate 713.

[0021] As shown in the figure, the adjustment drive source 72 is configured as a stepping motor, and the adjustment driving source 72 can have rotary motion according to a plurality of set rotation angles, and is connected to the second connecting plate 712 of the connecting base 71. The spindle of the adjustment driving source 72 runs through the second connecting plates 712 to be located inside the accommodating space 714 of the connecting base 71. Wherein, the adjustment transmission module 73 is connected between the adjustment driving source 72 and the swing arm 141 as well as has an adjustment support 731 passing through the casing 11. One end of the adjustment support 731 is connected to the adjustment gear set 74, and the other end is connected to a swing member 732 inside the body 10.

[0022] In the present embodiment, a part of the adjustment supporter 731 is configured as an adjustment shaft member 731a close to the adjustment driving source 72,

and the remaining part of the adjustment supporter 731 is configured as a bracket 731b close to the swing arm 141. As shown in FIG. 8, the adjustment shaft member 731a both passes through the casing 11 of the body 10 and the first connecting plate 711 of the connecting base 71. The bracket 731b forms an assembling space 731c and has a support pin 731d offset disposed to the axis of the adjustment shaft member 731a.

[0023] However, right end and left end of the swing member 732 are divided into a first connecting portion 732a and a second connecting portion 732b. The first connecting portion 732a is assembled to the support pin 731d of the bracket 731b, and the second connecting portion 732b is assembled to the swing pin 144 of the feeding driving assembly 14, which makes the swing member 732 simultaneously assembled to the support pin 731d and the swing pin 144. Please refer to FIG. 9. The first connecting portion 732a is located inside the assembling space 731c of the bracket 731b, which makes the swing member 732 not move relative to the bracket 731b.

[0024] Please refer to FIGS. 8 and 9. The adjustment gear set 74 is used to increase the amount of torque that can be generated by the adjustment driving source 72, and is located inside the accommodating space 714 of the connecting base 71. Wherein the adjustment gear set 74 has a driving gear 741 configured as a spur gear and a driven gear 742 configured as a quadrant gear. The driving gear 741 is assembled to the spindle of the adjustment driving source 72 and engages with the driven gear 742, and thus the driven gear 742 is fixedly assembled to the adjustment shaft member 731a of the adjustment transmission module 73. Besides, the radius of the driven gear 742 is greater than the radius of the driving gear 741.

[0025] Again, please refer to FIGS. 2, 3 and 8. The control mechanism 80 can be used to control the rotation rate of the feed wheel 22 and the rotation rate of the presser foot wheel 63, which allows the rotation rate of the feeding wheel 22 to be faster or slower than the rotation rate of the presser foot wheel 63. Wherein, the control mechanism 80 has a first sensor 81, a second sensor 82, a main power source controller 83, a presser foot wheel controller 84, an adjustment controller 85, and a receiving module 86. The first sensor 81 and the second sensor 82 are arranged on two sides of the driven gear 742, and both are mounted on the first connecting plate 711 of the connecting base 71. In the present embodiment, the first and second sensors 81, 82 belong to a proximity switch and sense the driven gear 742 of the adjustment gear set 74 to generate signals.

[0026] As shown in FIG. 2, the main power source controller 83 of the control mechanism 80 is electrically connected to the main power source 13, and the presser foot wheel controller 84 of the control mechanism 80 is electrically connected to the presser foot driving source 65. The adjustment controller 85 of the control mechanism 80 is electrically connected to the adjustment driving

source 72 of the adjusting mechanism 70; wherein the main power source controller 83, the presser foot wheel controller 84 and the adjustment controller 85 are all electrically connected to the receiving module 86.

[0027] Please refer to FIGS. 2 and 10A. In specific application, the first sensor 81 of the control mechanism 80 does not sense the driven gear 742 of the adjustment gear set 74, at this moment, the adjustment controller 85 of the control mechanism 80 controls the adjustment driving source 72 of the adjusting mechanism 70 to operate, which makes the driven gear 742 rotates counterclockwise in the arrow direction of FIG. 10A. When the first sensor 81 detects the lower edge of the driven gear 742, the first sensor 81 generates an initial stop signal, and transmits the initial stop signal to the receiving module 86 of the control mechanism 80. Further, after receiving the initial stop signal, the adjustment controller 85 of the control mechanism 80 controls the adjustment driving source 72 of the adjusting mechanism 70 to stop running, which makes the driven gear 742 stay at an initial position A1. Wherein, when the driven gear 742 is at the initial position A1, the adjusting mechanism 70 determines the position of the support pin 731d, and also synchronously determines the tilting state of the swing member 732 (as shown in FIG. 6A).

[0028] Please refer to FIG. 10B. Subsequently, the main power source controller 83 of the control mechanism 80 and the presser foot wheel controller 84 of the control mechanism 80 respectively control the main power source 13 and the presser foot driving source 65 to operate, wherein the main power source 13 drives the main shaft 131 to rotate via the transmission belt 132. Accordingly, the rotating main shaft 131 drives the needle 31 of the needle bar mechanism 30 and the hooked needle 41 of the hooked needle driving mechanism 40 to perform the sewing work through the needle rod driving assembly (not shown in the figure). Besides, the rotating main shaft 131 simultaneously drives the feeding wheel 22 of the feeding mechanism 20 to intermittently rotate about feeding shaft 21 through the feed transmission assembly 14. At the same time, the presser foot driving source 65 drives the presser foot wheel 63 to rotate about the second gear shaft 642 via the presser foot driving assembly 64; however, the rotating feeding wheel 22 and the rotating presser foot wheel 63 can drive the two stitching objects S (such as the shoe insole or the upper) between the feeding wheel 22 and the presser foot wheel 63 to intermittently move, which makes the two stitched objects S are sewn together through the needle 31 and the hooked needle 41, and thus a plurality of stitches S1 are formed on the surface of the two stitched objects S. **[0029]** However, in the process of sewing the two stitched objects S together, if the area where the two stitched objects S are sewn to each other is a straight region, the driven gear 742 of the adjustment gear set 74 stays at the initial position A1, which makes rotation rate of the feeding wheel 22 is substantially the same as the rotation rate of the presser foot wheel 63, and thus

no differential feeding is generated between the two stitched objects S.

[0030] Besides, if the area where the two stitched objects S are sewn to each other is a curved region, the two stitched objects S will bend toward the presser foot wheel 63. At this time, the presser foot wheel controller 84 of the control mechanism 80 controls the presser foot driving source 65 to reduce rotation amount of the presser foot wheel 63, so that the rotation speed of the presser foot wheel 63 is smaller than the rotation speed of the feeding wheel 22, thereby causing differential feeding between the two stitched objects S. On the other hand, in the state where the rotation speed of the presser foot wheel 63 is smaller than the rotation speed of the feeding wheel 22, although each the stitch S1 formed in the curved region can maintain the same stitch length, the stitch length of the stitch S1 formed in the curved region will be smaller than the stitch length of the stitch formed in the straight region, since friction is generated when the two stitched objects S in the process of sewing work.

[0031] Please refer to FIG. 10C. However, in order to overcome the lack of inconsistency in the stitch length of the stitches in the straight region and the curved area, the adjustment controller 85 of the control mechanism 80 controls the adjustment driving source 72 of the adjusting mechanism 70 to rotate when the presser foot wheel controller 84 controls the presser foot drive source 65 to reduce rotation amount of the presser foot wheel 63. Accordingly, the adjustment driving source 72 drives the driven gear 742 of the adjustment gear set 74 to rotate clockwise in the arrow direction of FIG. 10C, thereby moving the driven gear 742 away from the initial position A1. At this time, the support pin 731d of the adjustment transmission assembly 73 shifts downward, and the swing member 732 of the adjustment transmission assembly 73 simultaneously rotates counterclockwise and away from the horizontal plane, and accordingly amount of reciprocating motion generated by the main shaft 131 to drive the connection link 142 through the swing arm 141 becomes larger; thus the rotation speed of the presser foot wheel 63 increases, which causes that the stitch length of the stitches S1 formed in the curved region will be corrected to be close to the stitch length of the stitches in the straight region.

[0032] Again please refer to FIG. 10C. When the adjustment driving source 742 of the adjusting mechanism 70 drives the driven gear 742 of the adjustment gear set 74 to rotate clockwise from the initial position A1 to an extreme position A2, the second sensor 82 of the control mechanism 80 detects the upper edge of the driven gear 742 to generate an extreme stop signal. The second sensor 82 then transmits the extreme stop signal to the receiving module 86 of the control mechanism 80, which makes the adjustment controller 85 of the control mechanism 80 control the adjustment driving source 72 of the adjusting mechanism 70 to stop operating, whereby the control mechanism 80 can prevent the adjustment driving source 72 from rotating the driven gear 742 beyond pre-

set range. In the present embodiment, when the driven gear 742 is at the extreme position A2, which makes rotation speed of the feeding wheel 22 reach the maximal value.

[0033] However, that the driven gear 742 of the adjustment gear set 74 rotates clockwise through adjustment driving source 72 to increase the range of the rotational speed of the presser foot wheel 63 is merely for convenient explanation. Also, as shown in FIG. 10D, the driven gear 742, through the adjustment driving source 72, rotates counterclockwise and away from the extreme position A2. At this time, the support pin 731d of the adjustment transmission assembly 73 shifts upward. Simultaneously, the swing member 732 of the adjustment transmission assembly 73 rotates clockwise to approach the horizontal plane, and accordingly the amount of reciprocating motion generated by the main shaft 131 to drive the connection link 142 via the swing arm 141 becomes smaller, thereby reducing the rotation speed of the presser foot wheel 63.

[0034] The above-instanced embodiments are used for conveniently describing the present invention, not further to limit it. For the person skilled in the art of the disclosure, without departing from the concept of the disclosure, simple modifications or changes can be made and should be included in the following claims and their equivalents of the present application.

Claims

1. A differential feeding lasting machine, comprising:

- a body, having a main shaft and a swing arm, wherein the main shaft is capable of driving the swing arm to swing;
- a feeding mechanism, having a feeding shaft that can be driven by the swing arm and a feeding wheel located outside the body, wherein the feeding shaft can drive the feeding wheel to rotate;
- a presser foot mechanism, having a presser foot frame mounted on the outside of the body, wherein the presser foot frame is arranged with a presser foot wheel on one side of the feeding wheel and a presser foot driving source capable of driving the presser foot wheel to rotate;
- an adjusting mechanism, having an adjustment driving source and an adjustment transmission assembly located between the adjustment driving source and the swing arm, wherein the adjustment driving source can perform rotary motion according to the plurality of rotation angles, and the adjustment transmission assembly is driven by the adjustment driving source to move relative to the swing arm for changing the swing amplitude of the swing arm, and thus the swing arm of changed swing amplitude can adjust the

rotation amount of the feeding wheel; and a control mechanism, electrically connected to the presser foot driving source and the adjustment driving source, wherein the control mechanism is used to control the operating state of the presser foot driving source and the adjustment driving source for adjusting the rotation speed of the presser foot wheel and the rotation speed of the feeding wheel.

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the adjustment drive source and a bracket close to the swing arm, and wherein the bracket has an assembling space and a support pin offset disposed to adjustment shaft member, and wherein a swing member is simultaneously assembled to the support pin and the swing arm inside the assembling space.

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2. The differential feeding lasting machine according to claim 1, wherein the adjusting mechanism is arranged with an adjustment gear set between the adjustment driving source and the adjustment transmission assembly, and wherein the adjustment gear set can be used to change the magnitude of torque generated by the adjustment driving source.

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3. The differential feeding lasting machine according to claim 2, wherein the adjustment gear set has a driving gear assembled to the adjustment driving source and a driven gear engaging with the driving gear, and wherein the driven gear has a radius larger than the radius of the driving gear, and is assembled to the adjustment transmission assembly.

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4. The differential feeding lasting machine according to claim 3, wherein the control mechanism has a first sensor, and the first sensor can generate an initial stop signal when the driven gear is at an initial position, and wherein the adjustment driving source can stop rotating according to the initial stop signal to ensure that the driven gear is at the initial position.

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5. The differential feeding lasting machine according to claim 4, wherein the control mechanism further has a second sensor spaced apart from the first sensor, and the second sensor can generate an extreme stop signal when the driven gear is at an extreme position away from the initial position, and wherein the adjustment driving source can stop rotating according to the extreme stop signal to ensure that the driven gear does not go beyond the extreme position.

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6. The differential feeding lasting machine according to claim 2, wherein the adjusting mechanism has a connecting base, and the connecting base has a first connecting plate assembled to the body and a second connecting plate spaced apart from the first connecting plate, and wherein an accommodating space for accommodating the adjustment gear set is formed between the first connecting plate and the second connecting plate, and the second connecting plate is connected to the adjustment driving source.

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7. The differential feeding lasting machine according to claim 1, wherein the adjustment transmission assembly has an adjustment shaft member close to

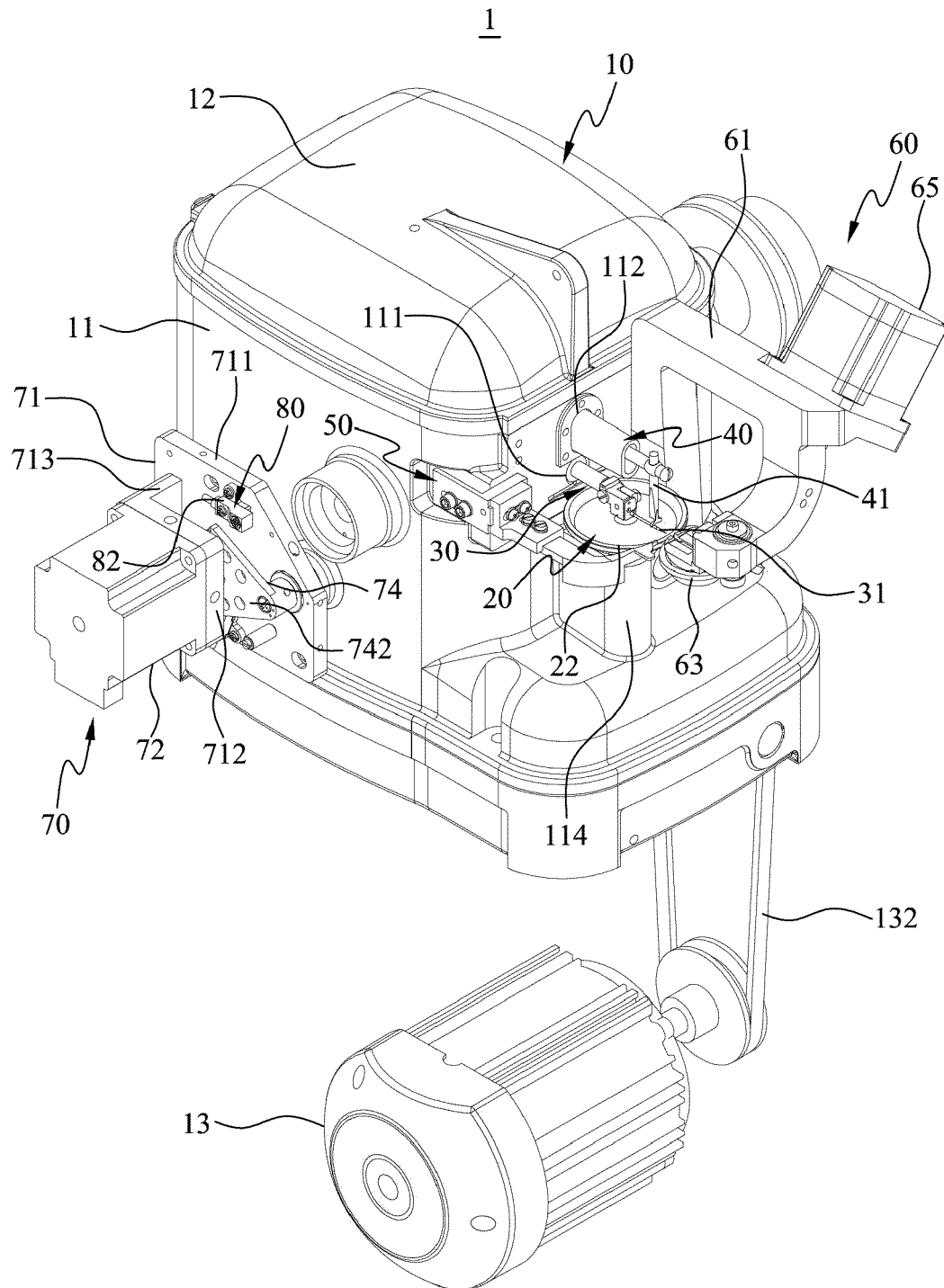


FIG. 1

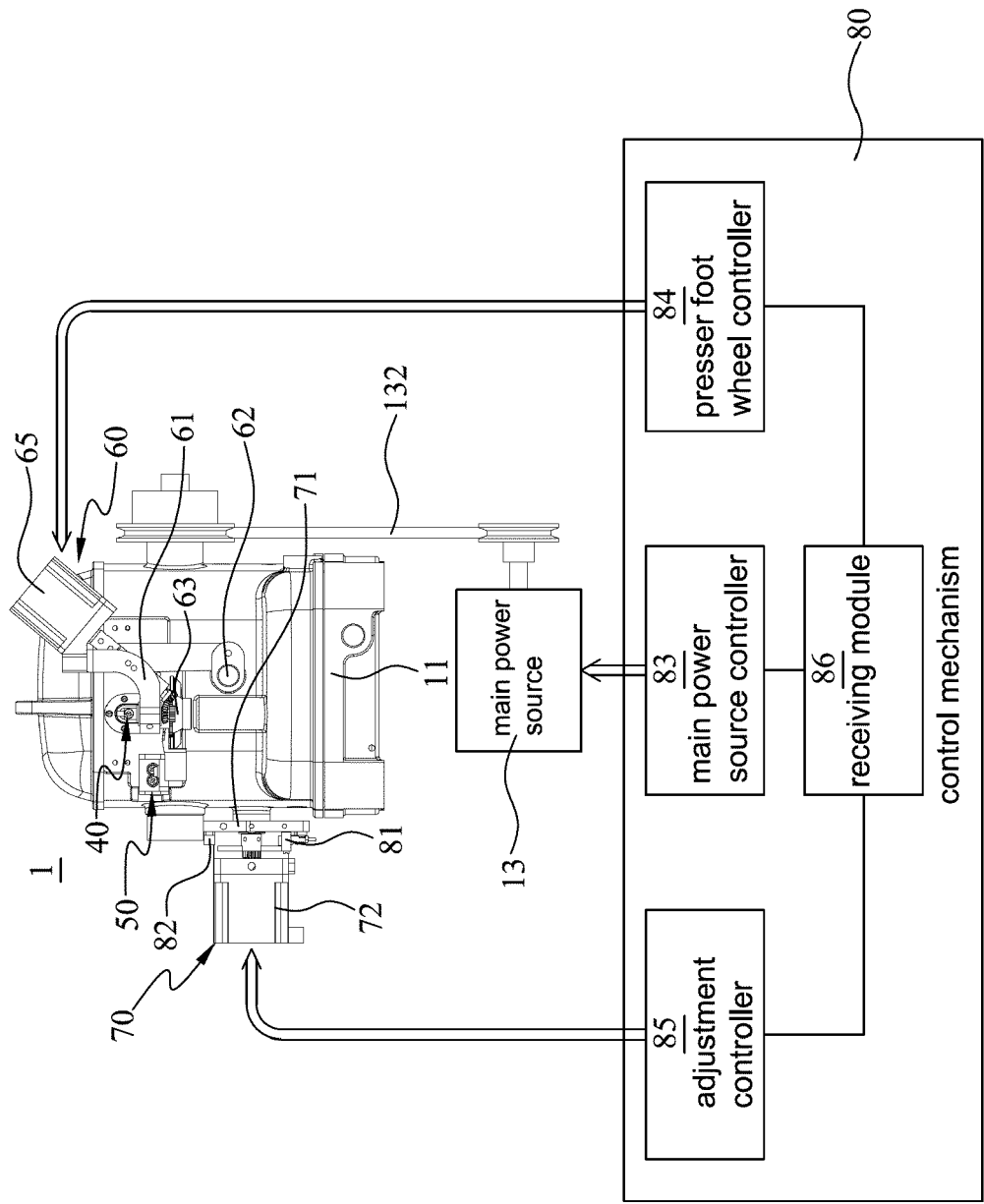


FIG. 2

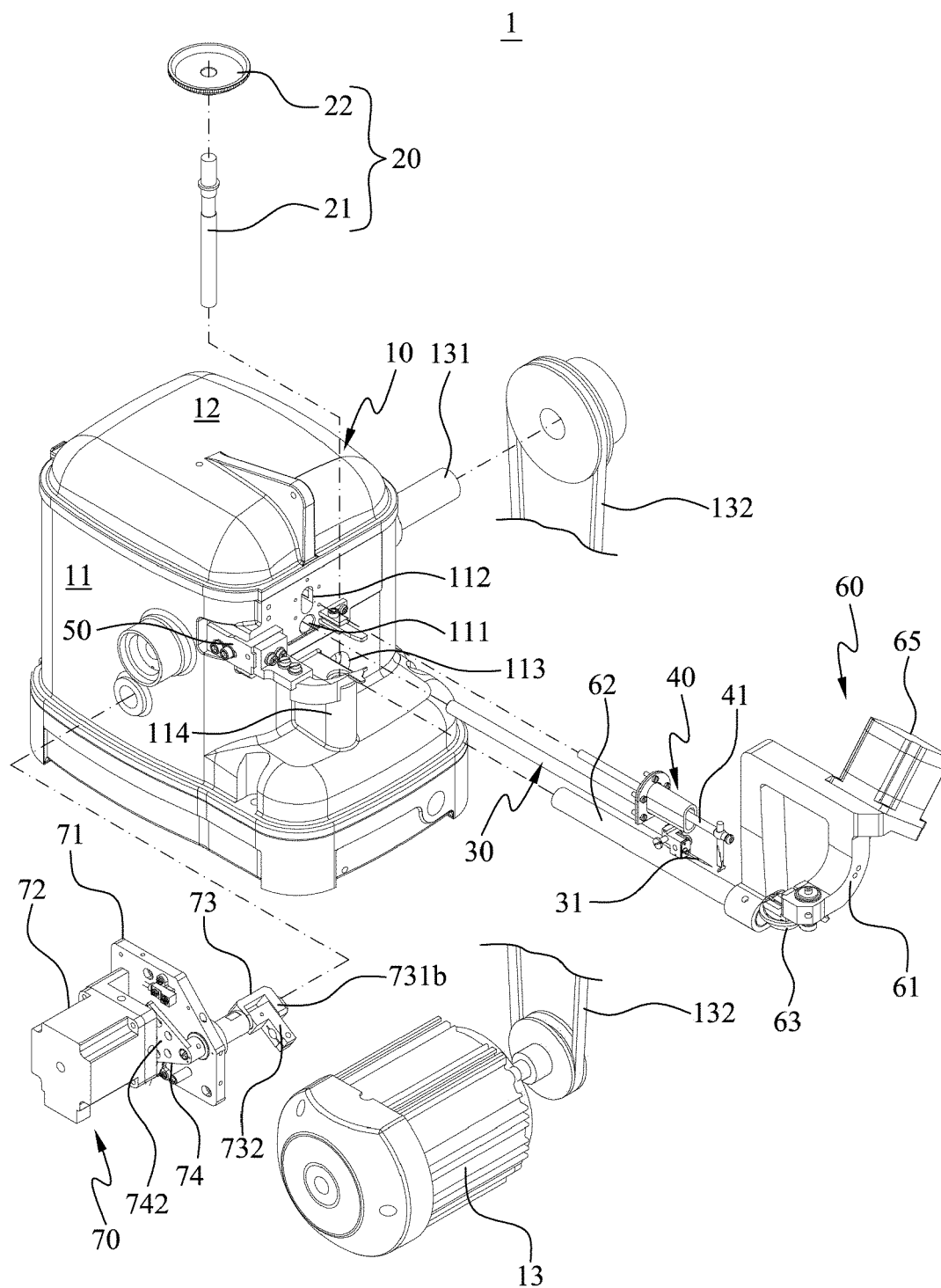


FIG. 3

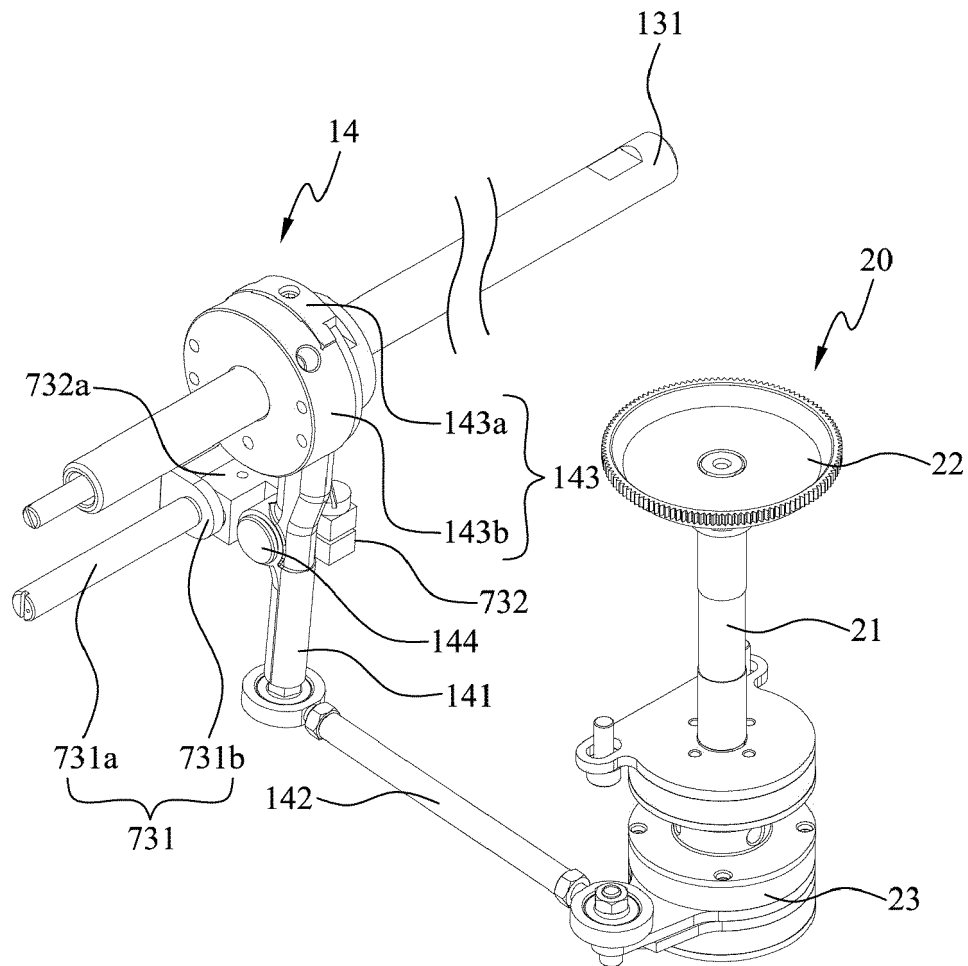


FIG. 4

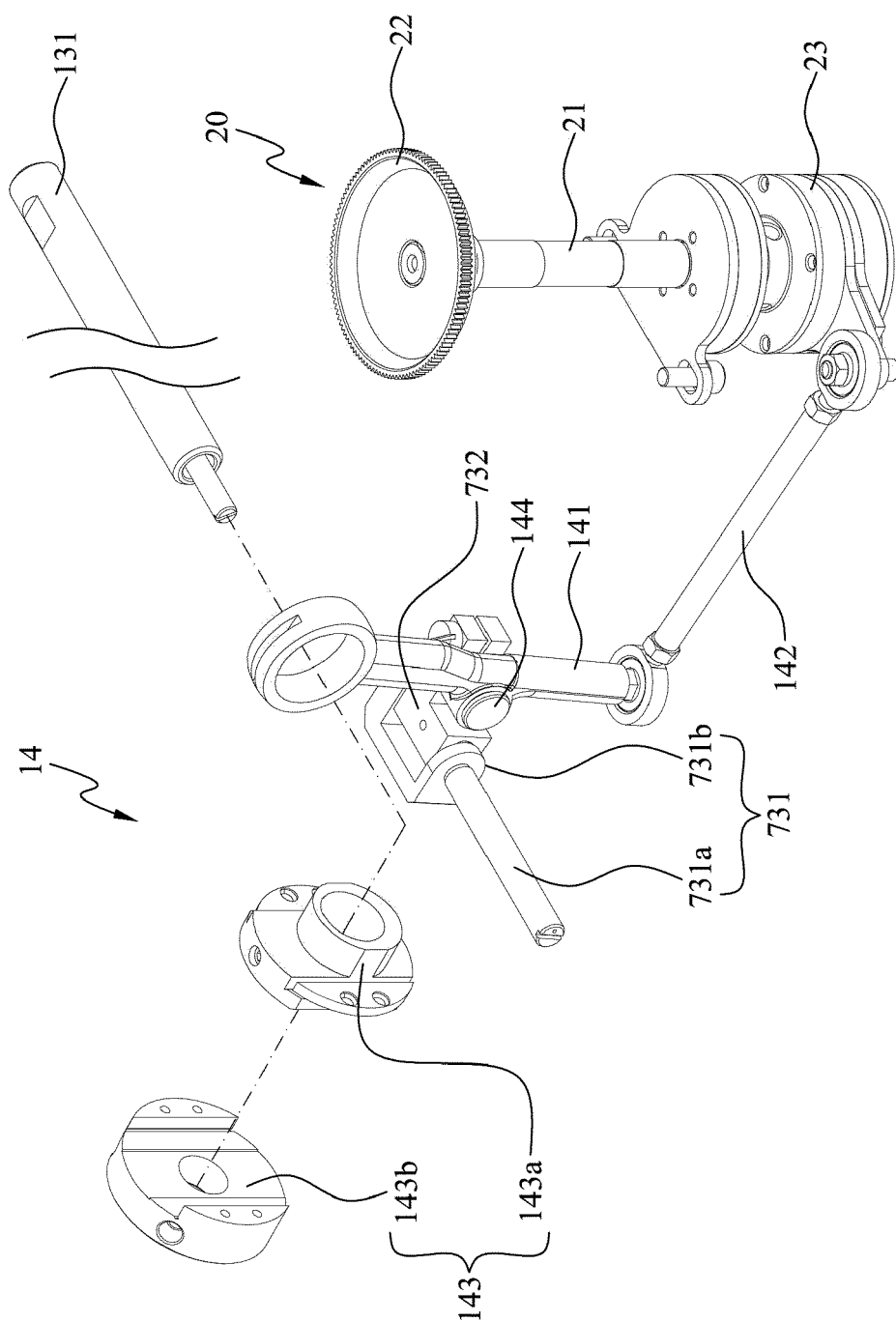


FIG. 5

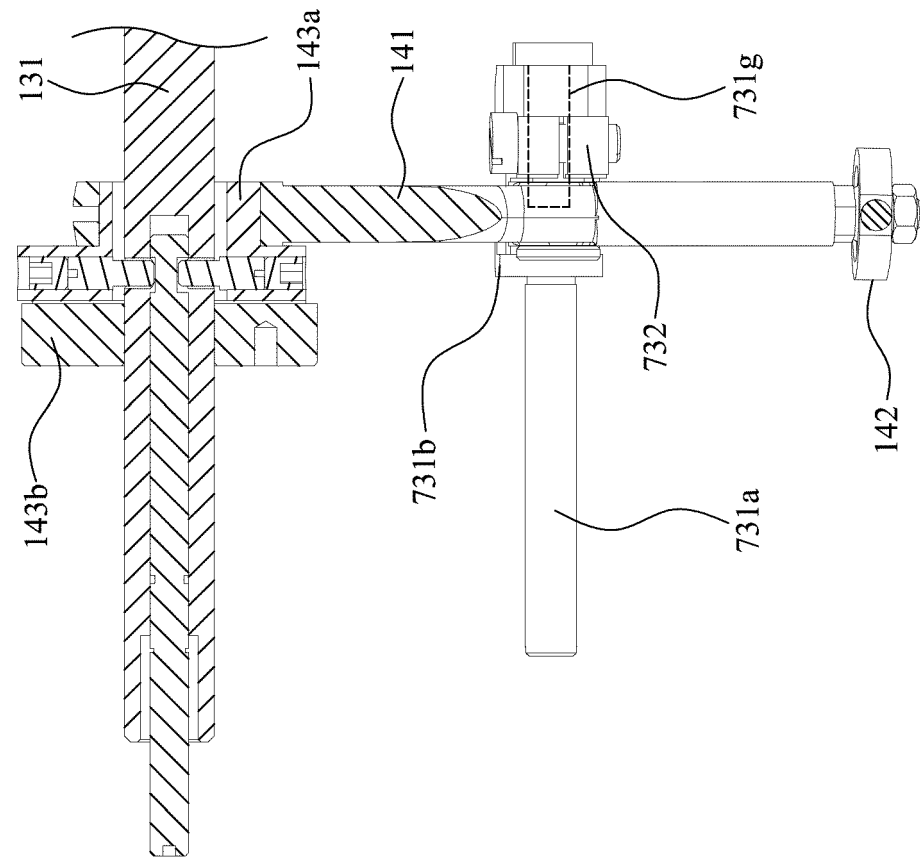


FIG. 6B

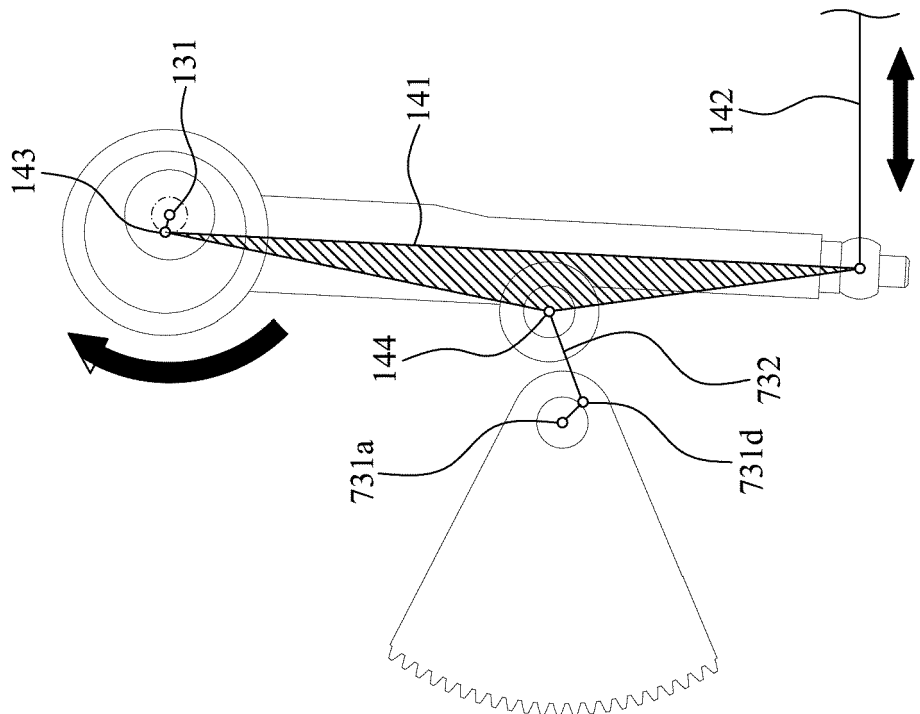


FIG. 6A

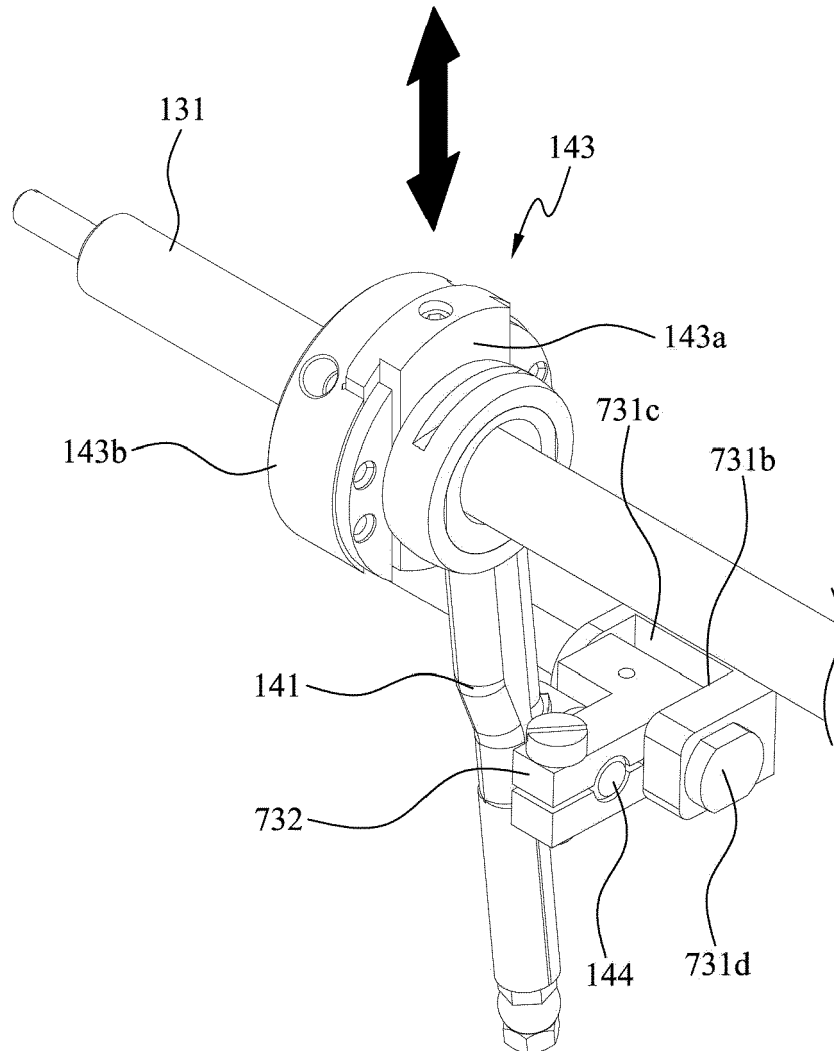


FIG. 6C

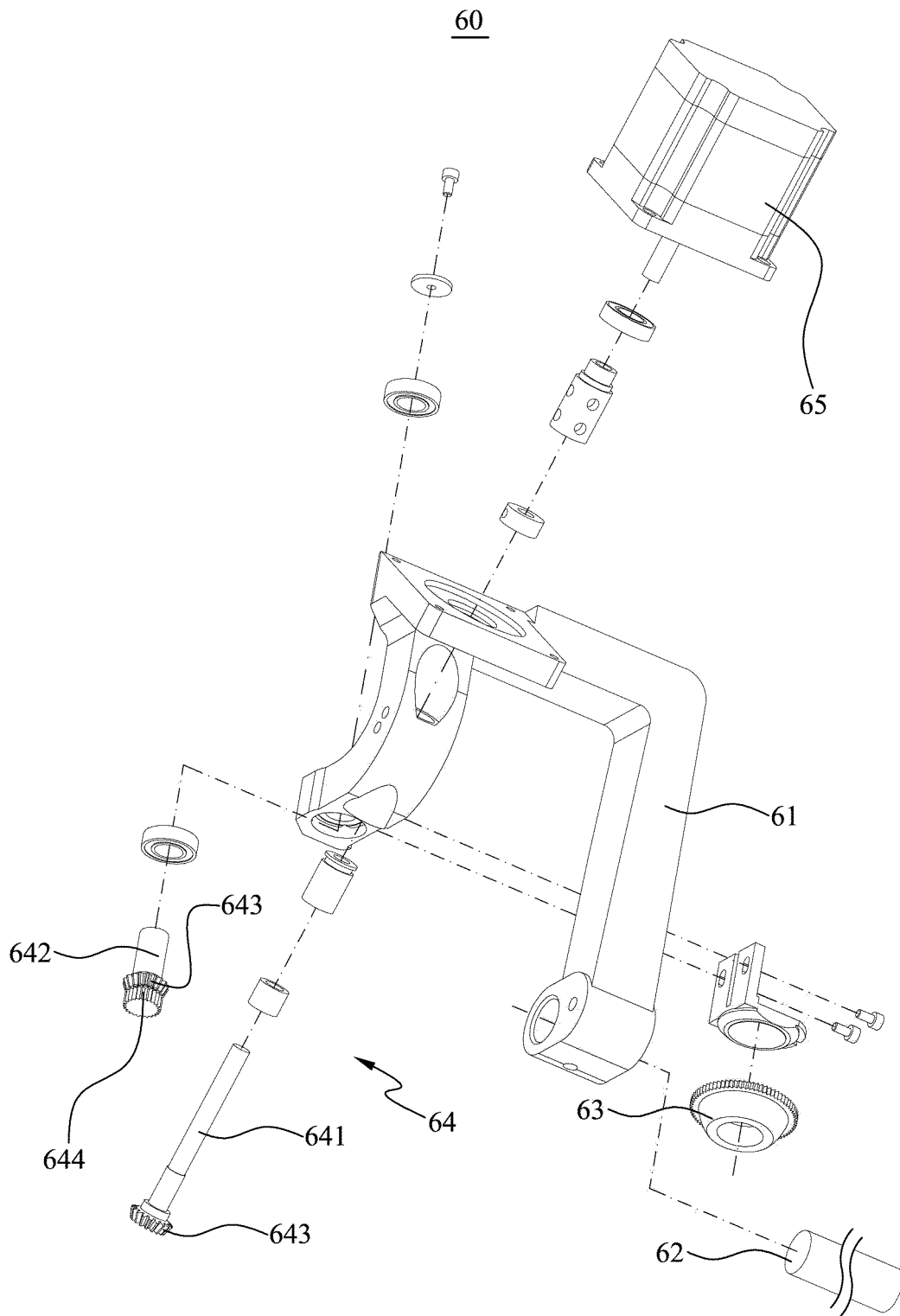


FIG. 7

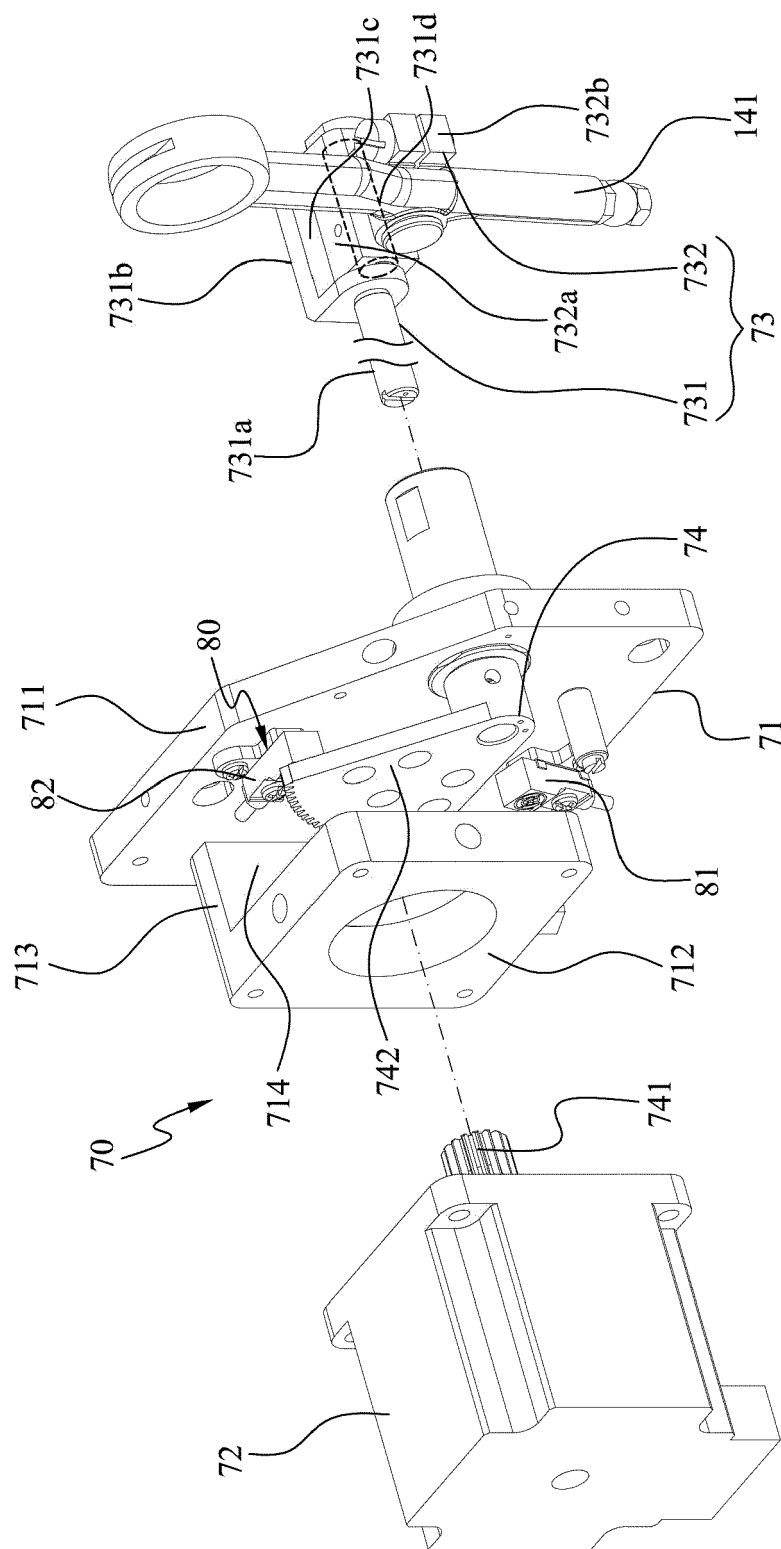


FIG. 8

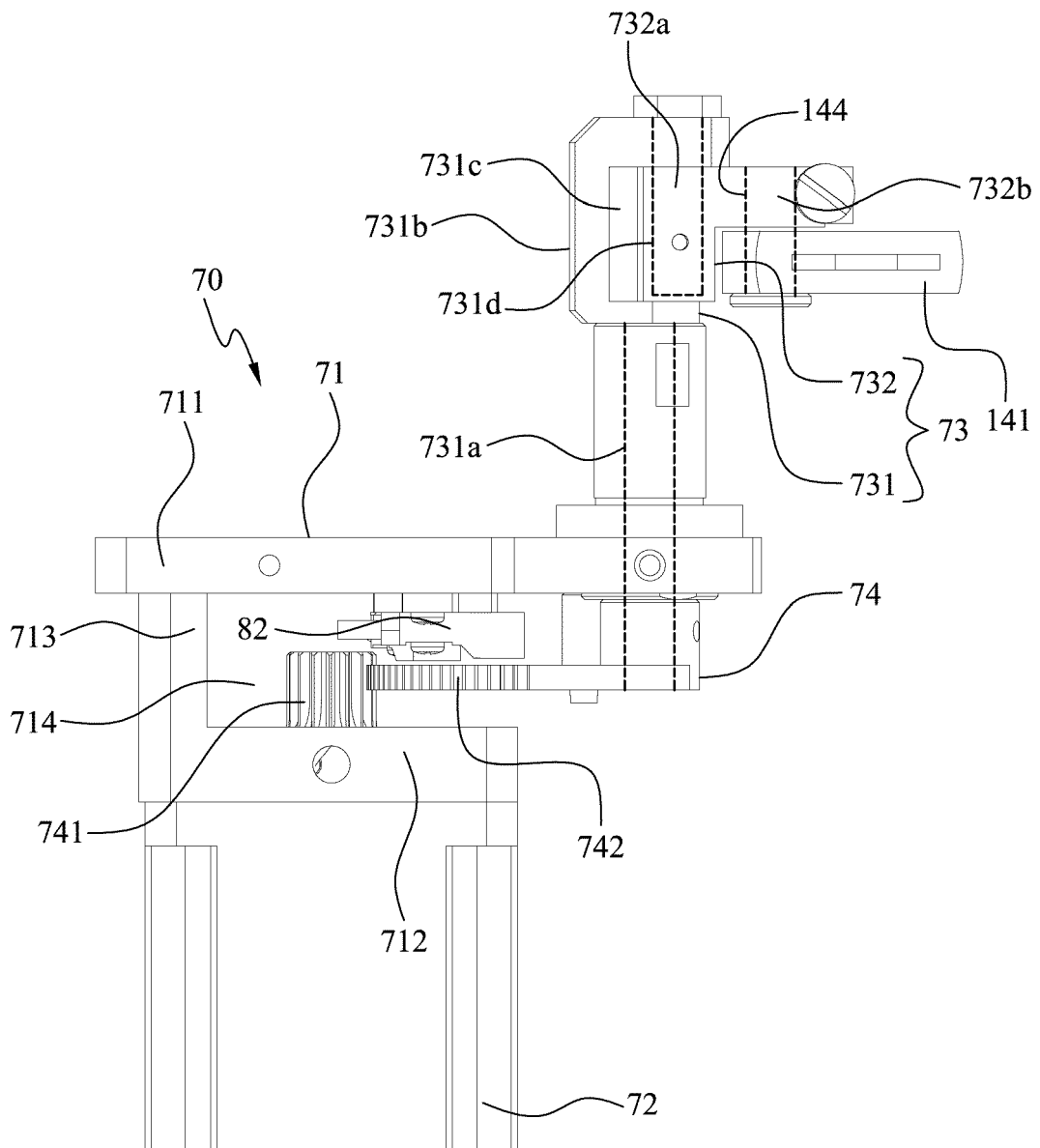


FIG. 9

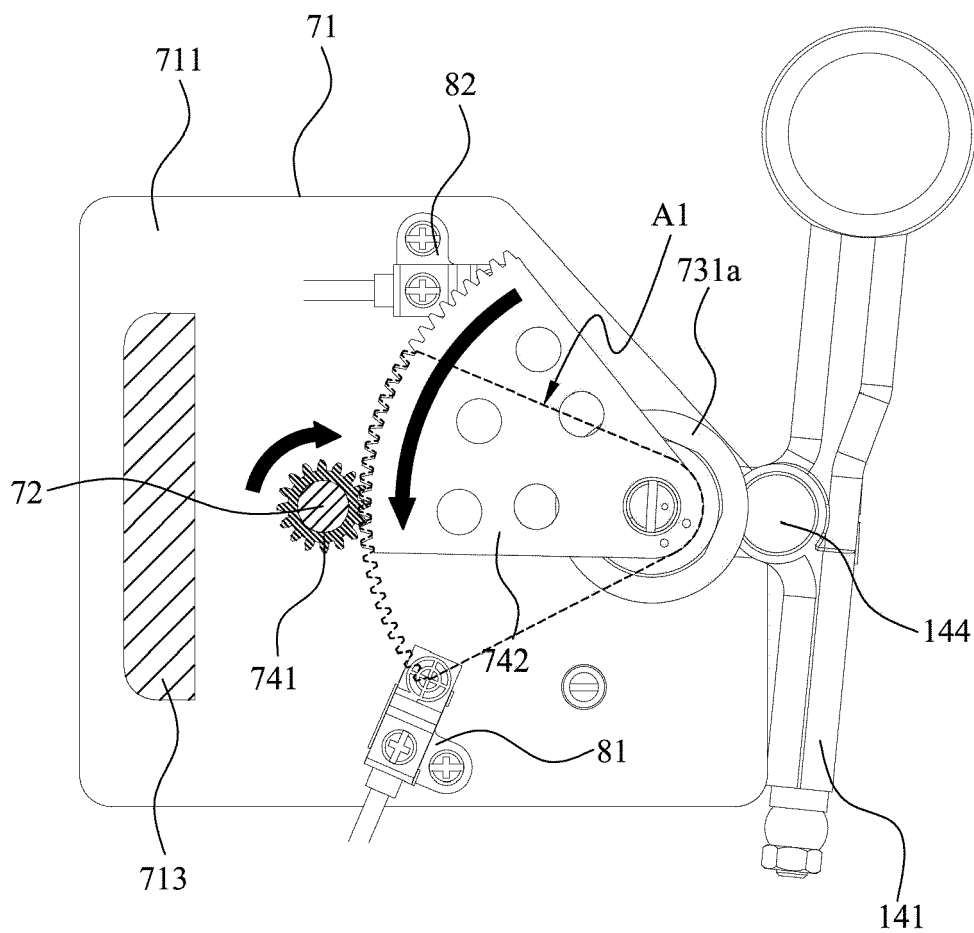


FIG. 10A

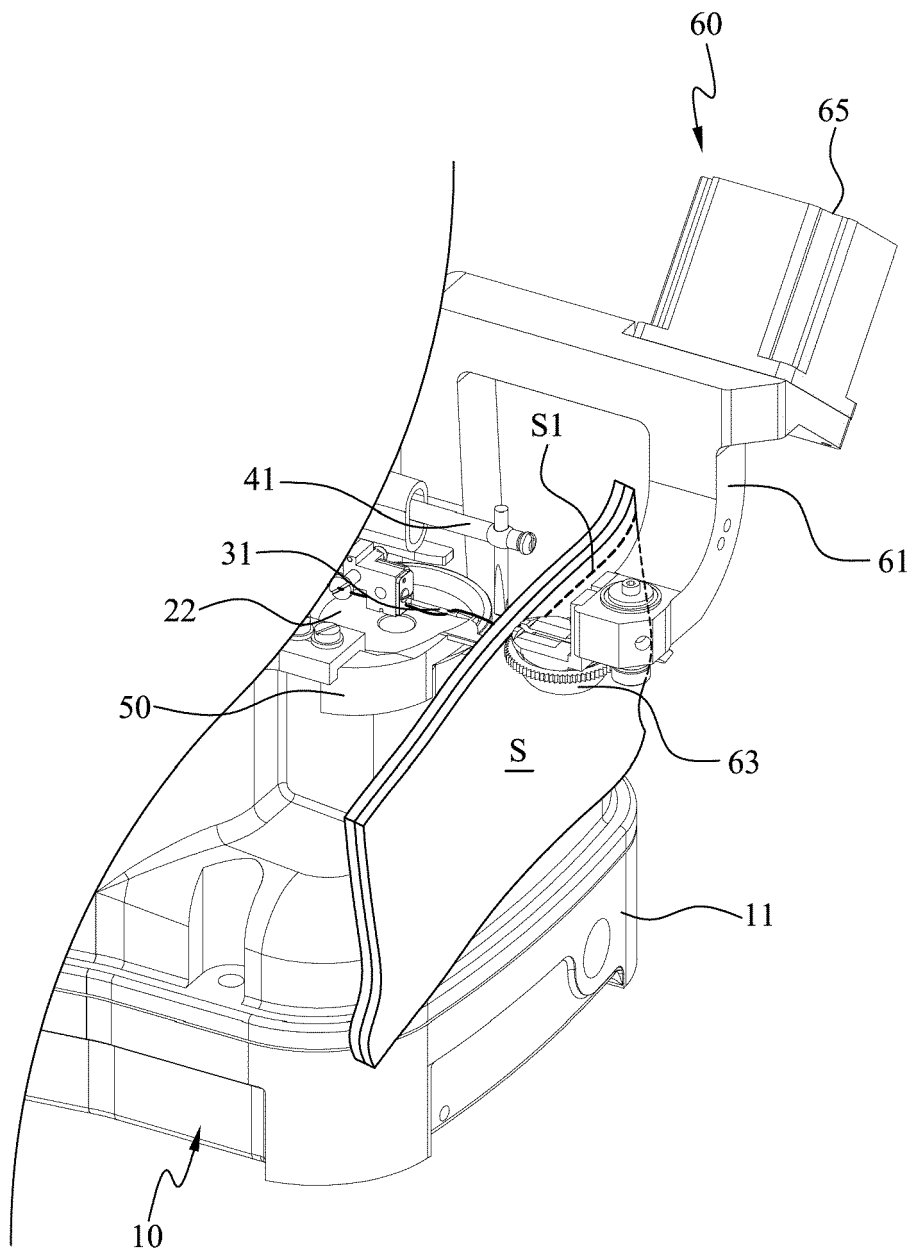


FIG. 10B

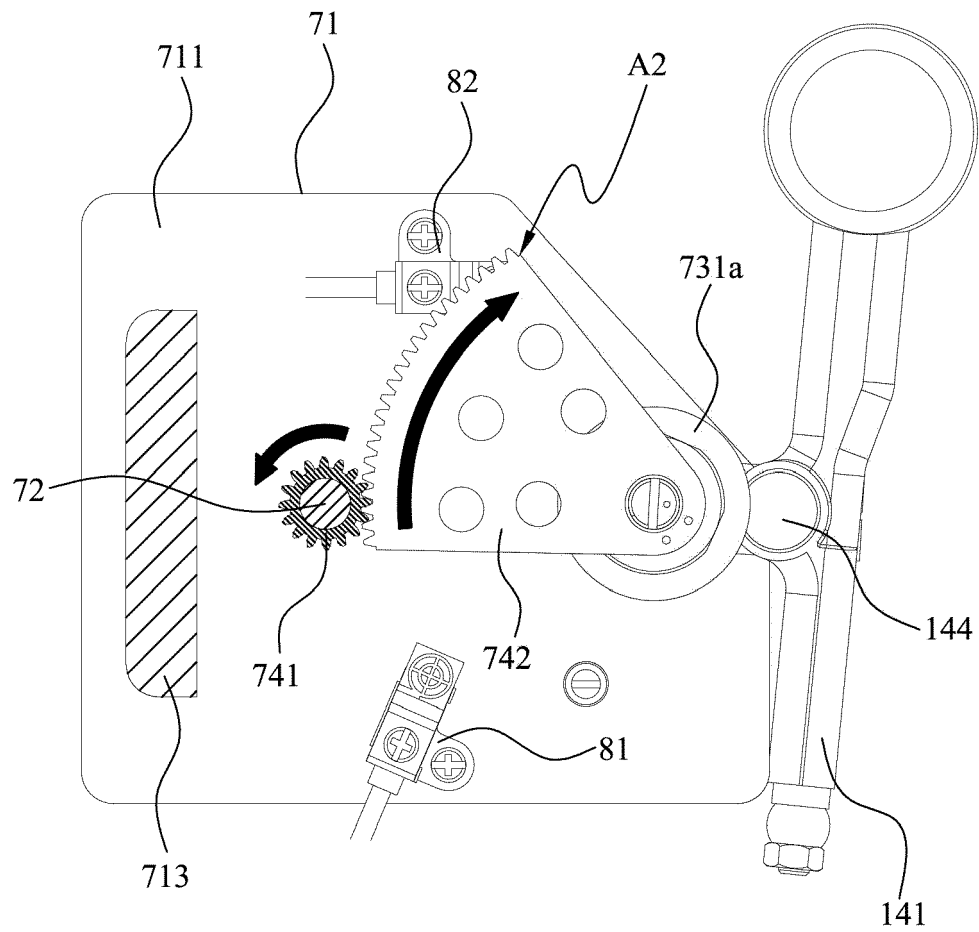


FIG. 10C

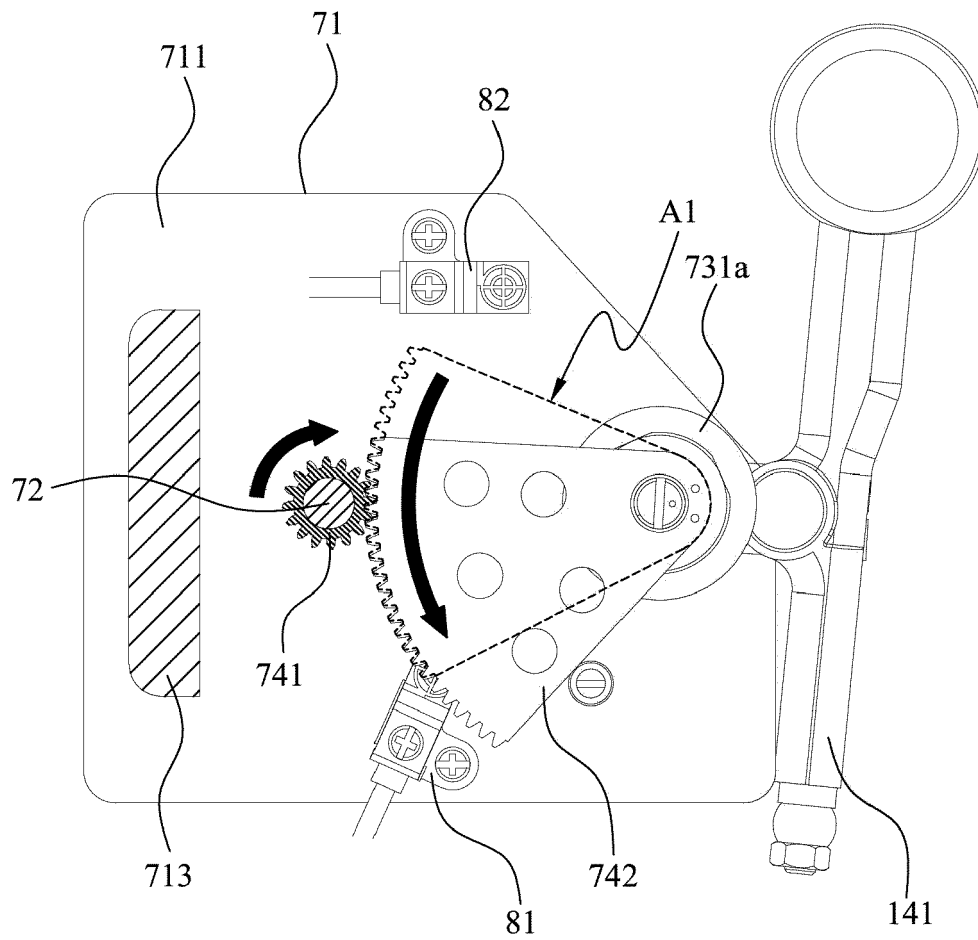


FIG. 10D



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