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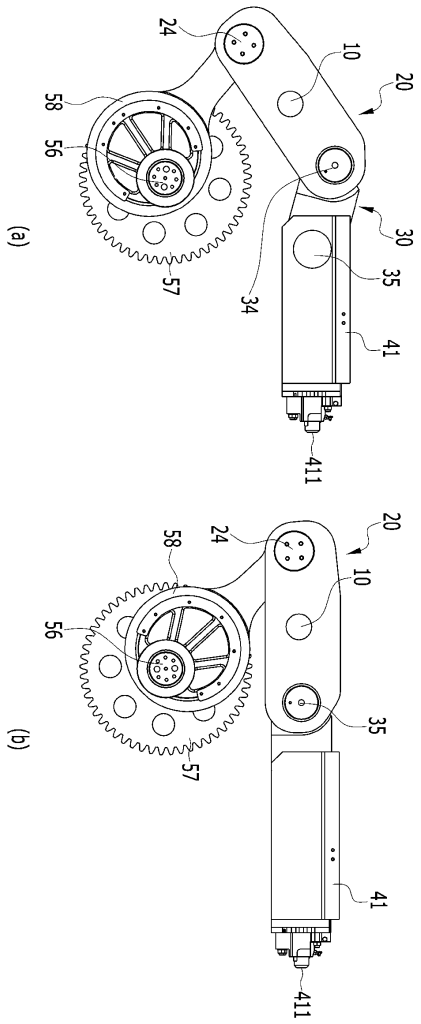
(54) LINK-TYPE DRIVEN FORMER

(57) The present disclosure relates to a link-type drive former, and is directed to providing a link-type driven former, which may move a drawing-out device forward or backward so that the drawing-out device hits and draws out a wire rod to be drawn out which is fitted into a forming mold, and in particular, improve a forming precision of a target to be drawn out which is formed by the forming mold by enabling the drawing-out device to reach a front of the wire rod faster than a conventional former and making a time at which the drawing-out device hits the wire rod slower than that of the conventional former when the drawing-out device moves forward in order to draw out the wire rod formed by the forming mold. According to the present disclosure, the link-type driven former for moving a drawing-out device forward or backward so that the drawing-out device hits and draws out a target fitted into a forming mold includes: a rotation guide shaft; an operation part mounted on the rotation guide shaft and vertically rotated by a drive source; and a connector part having one side and the other side coupled to each of the operation part and the drawing-out device, and configured to pull and move the drawing-out device backward or push and move the drawing-out device forward by the vertical rotation of the operation part.

Fig. 5



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Description

BACKGROUND

1. Field of the Invention

[0001] The present disclosure relates to a link-type driven former, and more specifically, to a link-type driven former, which may move a drawing-out device forward or backward so that the drawing-out device hits and draws out a wire rod to be drawn out which is fitted into a forming mold, and in particular, improve a forming precision of a target to be drawn out which is formed by the forming mold by enabling the drawing-out device to reach a front of the wire rod faster than a conventional former and making a time at which the drawing-out device hits the wire rod slower than that of the conventional former when the drawing-out device moves forward in order to draw out the wire rod formed by the forming mold.

2. Discussion of Related Art

[0002] In general, most bolts and nuts, which are widely used as fastening parts for industrial equipment, mechanical structures, and the like are formed through a former device.

[0003] The former device may largely include a wire rod winding unit wound by a wire rod, which is a material of a bolt or a nut, to continuously supply the wire rod, a wire rod supply unit configured to supply the wire rod at a constant pitch, a revolve unit formed with a movement guide hole configured to guide the movement of the wire rod, a cutting unit configured to gradually cut the wire rod transferred while being guided by the revolve unit, a tongs-holding type transformer configured to sequentially transfer the wire rod cut by the cutting unit to various forming mold units, and a punch unit configured to insert the wire rod into a forming space provided inside the forming mold by hitting the wire rod from the fronts of the forming mold units.

[0004] In addition, the wire rod is formed in the same shape as the forming space while being inserted into the forming space in a force-fitting method when hit by the punch unit.

[0005] Thereafter, the drawing-out unit of the former device operates to hit the wire rod tightly fitted into the forming space and draw out the wire rod to the outside of the forming mold unit.

[0006] At this time, since a diameter of the wire rod needs to be changed depending on a size of a bolt or a nut to be manufactured, the above-described revolve unit is formed with a plurality of movement guide holes having different diameters so as to guide the movement of the wire rod by diameter.

[0007] In addition, the above-described drawing-out unit is operated by a link or a cam to hit one end of a part (wire rod) formed by the forming mold unit, and the wire rod tightly fitted into the forming mold unit is drawn out to the outside of the forming mold unit by the hitting.

[0008] At this time, the drawing-out unit is moved forward and backward with respect to the forming molding unit by the link or the cam and hits the wire rod when moving forward.

[0009] However, in the conventional former, there is a problem that since the drawing-out unit operates at a fixed time, the drawing-out unit hits the wire rod before the forming mold forms the wire rod, resulting in defects.

[Related Art Document]

[Patent Document]

[0010] (Patent Document 1) Korean Registered Patent Publication No. 10-1539741

SUMMARY OF THE INVENTION

[0011] The present disclosure is directed to providing a link-type driven former, which may move a drawing-out device forward or backward so that the drawing-out device hits and draws out a wire rod to be drawn out which is fitted into a forming mold, and in particular, improve a forming precision of a target to be drawn out which is formed by the forming mold by enabling the drawing-out device to reach a front of the wire rod faster than a conventional former and making a time at which the drawing-out device hits the wire rod slower than that of the conventional former when the drawing-out device moves forward in order to draw out the wire rod formed by the forming mold.

[0012] According to the present disclosure, a link-type driven former for moving a drawing-out device forward or backward so that the drawing-out device hits and draws out a target fitted into a forming mold includes: a rotation guide shaft; an operation part mounted on the rotation guide shaft and vertically rotated by a drive source; and a connector part having one side and the other side coupled to each of the operation part and the drawing-out device, and configured to pull and move the drawing-out device backward or push and move the drawing-out device forward by the vertical rotation of the operation part.

[0013] In addition, the operation part may include: a base portion mounted on the rotation guide shaft; a first member disposed at one side of the base portion, and to which the connector part is coupled; a second member disposed at the other side of the base portion; and a first coupling shaft installed on the second member, and to which the drive source is coupled to be rotatable in place, wherein the first member is formed to have a length smaller than that of the second member.

[0014] In addition, the first members and the second members may be each disposed to be spaced apart from each other at certain intervals, and the connector part may include: a main body portion disposed between the first member and the drawing-out device; a plurality of

first protrusion pieces disposed on one surface of the main body portion to be spaced apart from each other and each accommodated between the first members, and formed with a first accommodation groove; a plurality of second protrusion pieces disposed on the other surface of the main body portion to be spaced apart from each other to form a space where a certain area of the drawing-out device is inserted therebetween, having a second accommodation groove formed on one surface, and facing the first protrusion pieces with the main body portion interposed therebetween; a second coupling shaft coupled to the first member to be rotatable in place and having a certain area accommodated in the first accommodation groove; and a third coupling shaft having a certain area accommodated in the second accommodation groove, and coupled to the drawing-out device to be rotatable in place.

[0015] In addition, the connector part may further include: couplers formed on one surface of the third coupling shaft to be spaced part from each other, and jointly passing through each of the second protrusion piece and the main body portion, and the second protrusion piece and the second coupling shaft; and a close-contact portion fastened to the coupler and coming into close contact with the second coupling shaft.

[0016] A link-type driven former according to the present disclosure can move a drawing-out device forward or backward so that the drawing-out device hits and draws out a wire rod to be drawn out which is fitted into a forming mold, and in particular, improve a forming precision of a target to be drawn out which is formed by the forming mold by enabling the drawing-out device to reach a front of the wire rod faster than a conventional former and making a time at which the drawing-out device hits the wire rod slower than that of the conventional former when the drawing-out device moves forward in order to draw out the wire rod formed by the forming mold, and can overcome a forming precision and a forming limit in a forging process of a hard-to-form material, reduce a forming load, and reduce a deformation resistance.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] The above and other objects, features and advantages of the present disclosure will become more apparent to those of ordinary skill in the art by describing exemplary embodiments thereof in detail with reference to the accompanying drawings, in which:

FIG. 1 is a plan perspective view showing a link-type driven former according to the present disclosure;

FIG. 2 is a bottom perspective view showing the link-type driven former according to the present disclosure;

FIG. 3 is a perspective view showing a connector part applied to the link-type driven former according to the present disclosure;

FIG. 4 is an exploded perspective view showing the connector part applied to the link-type driven former according to the present disclosure;

FIG. 5 is a view showing an operation process of the link-type driven former according to the present disclosure; and

FIG. 6 is a graph showing a difference between the link-type driven former according to the present disclosure and a general former.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

[0018] Advantages and features of the present disclosure and methods of achieving them will be made clear from embodiments described in detail below with reference to the accompanying drawings.

[0019] However, the present disclosure is not limited to embodiments disclosed below but will be implemented in various different forms, and only these embodiments are provided so that the disclosure of the present disclosure will be thorough and complete and will fully convey the scope of the present disclosure to those skilled in the art to which the present disclosure pertains, and the present disclosure is defined by the description of the claims. The same reference numerals refer to the same elements throughout the specification.

[0020] Hereinafter, embodiments of the present disclosure will be described in detail with reference to the accompanying drawings so that those skilled in the art may easily carry out the present disclosure. However, the present disclosure may be implemented in various different forms and is not limited to the embodiments described herein. Throughout the specification, similar parts are denoted by the same reference numerals.

[0021] FIG. 1 is a plan perspective view showing a link-type driven former according to the present disclosure, FIG. 2 is a bottom perspective view showing the link-type driven former according to the present disclosure, FIG. 3 is a perspective view showing a connector part applied to the link-type driven former according to the present disclosure, FIG. 4 is an exploded perspective view showing the connector part applied to the link-type driven former according to the present disclosure, FIG. 5 is a view showing an operation process of the link-type driven former according to the present disclosure, and FIG. 6 is a graph showing a difference between the link-type driven former according to the present disclosure and a general former.

[0022] A link-type driven former 1 according to an embodiment of the present disclosure is a device for processing a wire rod and forming the wire rod into parts such as bolts and pins.

[0023] To this end, the link-type driven former may include at least one of a rotation guide shaft 10, an operation part 20, and a connector part 30.

[0024] The link-type driven former 1 according to the embodiment of the present disclosure including these components may move a drawing-out device 40 forward

or backward so that the drawing-out device 40 hits and draws out a wire rod to be drawn out which is fitted into a forming mold, and in particular, improve a forming precision of a target to be drawn out which is formed by the forming mold by enabling the drawing-out device 40 to reach a front of the wire rod faster than a conventional former and making a time at which the drawing-out device 40 hits the wire rod slower than that of the conventional former when the drawing-out device 40 moves forward in order to draw out the wire rod formed by the forming mold.

[0025] Additionally, the link-type driven former 1 according to the embodiment of the present disclosure may include a revolve (not shown) formed with a plurality of movement guide holes having different diameters so as to guide the movement of the wire rod by diameter, a cutting unit (not shown) configured to gradually cut the wire rod transferred while being guided by the revolve, a tongs-holding type transformer configured to sequentially transfer the wire rod cut by the cutting unit to various forming molds, and a punch unit configured to insert the wire rod into a forming space provided inside the forming mold by hitting the wire rod from fronts of the forming molds. At this time, when the wire rod is hit by the punch unit, the wire rod is formed in the same shape as the forming space while being inserted into the forming space in a force-fitting manner.

[0026] At this time, the cutting unit may cut the wire rod to various lengths by changing a cutting operation time.

[0027] In other words, when the cutting unit operates quickly, the cutting unit may cut the wire rod to a short length, and in contrast, when the cutting unit operates slowly, the wire rod may be cut to a long length.

[0028] Since the above-described revolve, cutting unit, transformer, punch unit, and the like are commercialized techniques in the former, detailed descriptions thereof will be omitted.

[0029] Hereinafter, a configuration of the link-type driven former 1 according to the embodiment of the present disclosure will be described in detail.

[0030] The rotation guide shaft 10 is configured to guide a vertical rotation of the operation part 20.

[0031] The rotation guide shaft 10 may be formed in a simple circular bar shape having the same outer diameter as a whole.

[0032] The operation part 20 is mounted on the rotation guide shaft 10, and repeatedly rotated vertically by a drive source 50.

[0033] The connector part 30 moves the drawing-out device 40 forward or backward repeatedly with respect to the forming mold by the vertical rotation of the operation part 20.

[0034] When the drawing-out device 40 moves forward, the drawing-out device 40 draws out the wire rod from the forming mold by hitting the wire rod fitted into the forming mold.

[0035] At this time, the drawing-out device 40 may include a ram 41 connected to the connector part 30, and a hitting portion 42 disposed at a front of the ram 41 and configured to hit and draw out the wire rod tightly fitted into the forming mold.

[0036] The operation part 20 may include at least one of a base portion 21, a first member 22, a second member 23, and a first coupling shaft 24.

[0037] The base portion 21 may be formed in a hollow shape and mounted on the rotation guide shaft 10.

[0038] The first member 22 may be formed substantially in a lip shape.

[0039] A plurality of first members 22 are applied and disposed on one side surface of the base portion 21, that is, a surface facing the connector part 30 to be spaced apart from each other in a width direction of the base portion 21.

[0040] The first member 22 may be integrally formed with the base portion 21.

[0041] The second member 23 may be formed substantially in a lip shape.

[0042] A plurality of second members 23 are applied and disposed on the other side surface of the base portion 21 to be spaced apart from each other in the width direction of the base portion 21.

[0043] The second member 23 may also be integrally formed with the base portion 21.

[0044] Accordingly, the first member 22 and the second member 23 perform a seesaw motion with respect to the base portion 21.

[0045] In addition, the second member 23 may be formed to have a length greater than that of the first member 22.

[0046] At this time, the first member 22 may be formed to have a length of 30% to 80% of the length of the second member 23.

[0047] Accordingly, when the operation part 20 is rotated vertically with respect to the rotation guide shaft 10, a vertical rotation angle of the first member 22 is smaller than a vertical rotation angle of the second member 23.

[0048] A first coupling shaft 24 coupled to the drive source 50 is installed to pass through the second member 23.

[0049] A certain area of the first coupling shaft 24 is hidden inside the second member 23, and the other areas protrude between the second members 23.

[0050] The drive source 50 may include a motor 51, a pulley 52, a timing belt connecting the motor 51 and the pulley 52, a first rotation shaft 54 having the pulley 52 eccentrically mounted at one side, a first gear 55 coupled to the other side of the first rotation shaft 54, a second rotation shaft 56 disposed at a bottom of the operation part 20, a second gear 57 mounted on the second rotation shaft 56 and engaged with the first gear 55, and a cam part 58 eccentrically coupled to each of one side and the other side of the second gear 57 to be rotated together with the second gear 57, wherein the cam part 58 has a protrusion bar 581, and a mounting ring 582 formed at an end of the protrusion bar 581 and mounted on the first coupling shaft 24 between the second members 23

formed at one side thereof.

[0051] Accordingly, when the motor 51 is driven, the timing belt is rotated while forming a caterpillar, and thus the pulley 52, the first rotation shaft 54, the second rotation shaft 56, the first gear 55, the second gear 57, and the cam part 58 are rotated uniformly.

[0052] At this time, the protrusion bar 581 and the mounting ring 582 vertically rotate the operation part 20 by being rotated while drawing a curve when the cam part 58 is rotated.

[0053] In other words, when the protrusion bar 581 and the mounting ring 582 move up in a process in which the cam part 58 is rotated together with the second gear 57, the second member 23 is rotated upward and the first member 22 is rotated downward. In addition, when the protrusion bar 581 and the mounting ring 582 move down, the second member 23 is rotated downward and the first member 22 is rotated upward.

[0054] When the first member 22 is rotated downward, the connector part 30 pushes the ram 41 and thus the hitting portion 42 hits the wire rod fixed to the forming mold, and when the first member 22 is rotated upward, the connector part 30 pulls the ram 41 and thus the hitting portion 42 moves away from the forming mold.

[0055] Through this principle, the wire rods formed by the forming mold may be hit at certain time intervals to be drawn out.

[0056] Meanwhile, the connector part 30 is a configuration that is coupled to the operation part 20 and the drawing-out device 40, and pulls and moves the drawing-out device 40 backward or pushes and moves the drawing-out device 40 forward due to the vertical rotation of the operation part 20.

[0057] To this end, the connector part 30 may include at least one of a main body portion 31, a first protrusion piece 32, a second protrusion piece 33, a second coupling shaft 34, a third coupling shaft 35, a coupler 36, and a close-contact portion 37.

[0058] The main body portion 31 is disposed between the first member 22 and the ram 41.

[0059] The main body portion 31 may be formed in a substantially polygonal block shape.

[0060] A pair of through-holes 31a connected to each of a first accommodation groove 32a and a second accommodation groove 33a, which will be described below, are formed in the main body portion 31.

[0061] The first protrusion pieces 32 are disposed on one surface of the main body portion 31 to be spaced apart from each other, and each accommodated between the first members 22.

[0062] Accordingly, the first member 22 positioned at a center in FIG. 1 is accommodated between the first protrusion pieces 32.

[0063] Accordingly, the first member 22 and the first protrusion piece 32 are horizontally engaged with each other.

[0064] In addition, the first accommodation groove 32a, in which a certain area of the second coupling shaft 34 to be described below is accommodated, is formed in the first protrusion piece 32.

[0065] Since the second coupling shaft 34 is formed in a circular shape, the first accommodation groove 32a is formed in a semicircular shape.

[0066] The second protrusion pieces 33 are disposed on the other surface of the main body portion 31 to be spaced apart from each other, and each accommodated in an accommodation space formed at an end of the ram 41.

[0067] At this time, the second protrusion piece 33 faces the first protrusion piece 32 with the main body portion 31 interposed therebetween.

[0068] An insertion piece 411 disposed on a central portion of the accommodation space of the ram 41 is inserted into a space between the second protrusion pieces 33.

[0069] Accordingly, the second protrusion piece 33 and the ram 41 are horizontally engaged with each other.

[0070] In addition, the second accommodation groove 33a, in which a certain area of the third coupling shaft 35 to be described below is accommodated, is formed in the second protrusion piece 33.

[0071] Since the third coupling shaft 35 is formed in a circular shape, the second accommodation groove 33a is formed in a semicircular shape.

[0072] The second coupling shaft 34 is coupled to the first member 22 to be rotatable in place.

[0073] A certain area of the second coupling shaft 34 is hidden inside the first member 22, and the other areas protrude between the first members 22.

[0074] In addition, a certain area at a front side of the second coupling shaft 34 is accommodated in the first accommodation groove 32a.

[0075] The third coupling shaft 35 jointly passes through both sides of the ram 41 and the insertion piece 411.

[0076] Both sides and a center of the third coupling shaft 35 are inserted into both sides of the ram 41 and the insertion piece 411, respectively, and the remaining portions protrude to the outside.

[0077] At this time, the third coupling shaft 35 may be rotated in place at both sides of the ram 41 and the insertion piece 411.

[0078] In addition, a certain area at a rear side of the third coupling shaft 35 is accommodated in the second accommodation groove 33a.

[0079] The couplers 36 are formed on one surface of the third coupling shaft 35 to be spaced apart from each other.

[0080] The coupler 36 may be formed in a rod shape having a constant length and diameter.

[0081] The couplers 36 having the same number as the through-holes 31a of the main body portion 31 are applied.

[0082] In addition, the couplers 36 face each of the through-holes 31a of the main body portion 31.

[0083] Accordingly, each of the couplers 36 jointly

passes through the second protrusion piece 33 and the main body portion 31, and the second protrusion piece 33 and the second coupling shaft 34.

[0084] A certain area of the coupler 36 protrudes to the outside of the second coupling shaft 34. A spiral to which the close-contact portion 37 is fastened is formed in a protrusion area of the coupler 36.

[0085] The close-contact portion 37 may be formed as a bolt.

[0086] The close-contact portion 37 comes into close contact with an outer surface of the second coupling shaft 34 while being fastened to the spiral of the coupler 36 protruding to the outside of the second coupling shaft 34. Accordingly, the main body portion 31, the second coupling shaft 34, the third coupling shaft 35, and the coupler 36 are integrally coupled.

[0087] Next, an operation of the above-described link-type driven former and unique effects appearing in the above process will be described.

[0088] First, the motor 51 is driven to rotate the timing belt 53 in a caterpillar form.

[0089] Accordingly, the pulley 52, the first rotation shaft 54, the first gear 55, the second gear 57, the second rotation shaft 56, and the cam part 58 are rotated uniformly.

[0090] Since the cam part 58 is eccentrically coupled to each of both side surfaces of the second gear 57, the protrusion bar 581 repeatedly vertically rotates the second member 23 while being rotated together with the cam part 58.

[0091] At this time, as shown in FIG. 5A, when the operation part 20 does not initially receive power from the drive source 50, the first member 22 is positioned at a location higher than the rotation guide shaft 10, and the second member 23 is positioned at a location lower than the rotation guide shaft 10.

[0092] In other words, the first member 22 is rotated upward, and the second member 23 is rotated downward.

[0093] At this time, the connector part 30 is in a state of separating the hitting portion 42 from the forming mold by pulling the ram 41.

[0094] FIG. 5B shows a state in which the cam part 58 rotates the second member 23 upward by rotation, and when the second member 23 rotates upward, the first member 22 is rotated downward.

[0095] Accordingly, the first member 22 and the second member 23 are parallel to each other with the base portion 21 interposed therebetween.

[0096] In the state as shown in FIG. 5B, the connector part 30 pushes the ram 41 to move the hitting portion 42 forward, and thus the hitting portion 42 hits and draws out the wire rod tightly fitted into the forming mold.

[0097] In particular, since the second coupling shaft 34 and the third coupling shaft 35 are coupled to the first member 22 and the ram 41 to be rotatable in place at a predetermined angle in a forward or reverse direction, respectively, the cam pulls the ram 41 in a form in which the main body portion 31 is folded to the base portion 21 as shown in FIG. 5A in the state of rotating the second member 23 downward and rotating the first member upward.

[0098] In other words, as shown in FIG. 5A, the cam separates the hitting portion 42 from the wire rod of the drawing-out device 40 by pulling the ram 41 while forming an inclined shape in the form in which a left of the main body portion 31 is rotated upward and a right of the main body portion 31 is rotated downward.

[0099] In addition, in the state in which the cam rotates the second member 23 upward and rotates the first member 22 downward, the base portion 21, the first member 22, and the second member 23 form a horizontal state, and the main body portion 31 pushes the ram 41 in an unfolded form.

[0100] In other words, as shown in FIG. 5B, when the cam rotates the second member 23 downward, the main body portion 31 forms a horizontal shape together with the base portion 21, and at this time, the main body portion 31 gradually moves the ram 41 forward while being unfolded in the horizontal shape in a form in which an inclined angle is gradually smoothed in proportion to an angle at which the second member 23 is gradually rotated upward, and the first member 22 is gradually rotated downward.

[0101] As a result, a time at which the hitting portion 42 reaches the vicinity (1 to 5 cm) of the wire rod of the forming mold can be faster than or equal to that of the conventional former, and a time point at which the hitting portion 42 hits the wire rod of the forming mold can be slower than that of the conventional former by about 1 second to 3 seconds.

[0102] In other words, in the conventional former, there occurs a problem that the hitting portion 42 hits the wire rod before the forming mold forms the wire rod, resulting in defects, but the link-type driven former according to the embodiment of the present disclosure may make the time point at which the hitting portion 42 hits the wire rod of the forming mold slower than that of the conventional former by about 1 second to 3 seconds, thereby preventing the occurrence of the situation in which the hitting portion 42 hits the wire rod before the forming mold forms the wire rod.

[0103] Describing this in more detail with reference to FIG. 6, a precise drive control of the ram 41 in the former between processes is a factor that is very important to improve the forming quality, the life of the forming mold, and the like.

[0104] In the link-type driven former 1 according to the embodiment of the present disclosure, a knuckle mechanism is added to a crank mechanism to have a motion curve in which forward speeds of the ram 41 and the hitting portion 411 become very slow around the wire rod that is a forging transfer point.

[0105] In the link-type driven former 1 according to the embodiment of the present disclosure, it is possible to overcome a forming precision and a forming limit in a forging process of a hard-to-form material, reduce a form-

ing load, reduce a deformation resistance, and the like by applying a power transmission structure to the knuckle crank mechanism structure.

[0106] Those skilled in the art to which the present disclosure pertains will understand that the present disclosure may be carried out in other specific forms without changing the technical spirit or essential features thereof. Therefore, it should be understood that the above-described embodiments are illustrative and not restrictive in all respects. The scope of the present disclosure is defined by the appended claims rather than the above detailed description, and all changed or modified forms derived from the meaning and scope of the claims and their equivalent concepts should be interpreted as being included in the scope of the present disclosure.

Claims

1. A link-type driven former for moving a drawing-out device forward or backward so that the drawing-out device hits and draws out a target fitted into a forming mold, the link-type driven former, comprising:

   a rotation guide shaft;
   an operation part mounted on the rotation guide shaft, and vertically rotated by a drive source; and
   a connector part having one side and the other side coupled to each of the operation part and the drawing-out device, and configured to pull and move the drawing-out device backward or push and move the drawing-out device forward by the vertical rotation of the operation part.

2. The link-type driven former of claim 1, wherein the operation part includes:

   a base portion mounted on the rotation guide shaft;
   a first member disposed at one side of the base portion, and to which the connector part is coupled;
   a second member disposed at the other side of the base portion; and
   a first coupling shaft installed on the second member, and to which the drive source is coupled to be rotatable in place,
   wherein the first member is formed to have a length smaller than that of the second member.

3. The link-type driven former of claim 2, wherein the first members and the second members are each disposed to be spaced apart from each other at certain intervals, and
   the connector part includes:

   a main body portion disposed between the first member and the drawing-out device;
   a plurality of first protrusion pieces disposed on one surface of the main body portion to be spaced apart from each other and each accommodated between the first members, and formed with a first accommodation groove;
   a plurality of second protrusion pieces disposed on the other surface of the main body portion to be spaced apart from each other to form a space where a certain area of the drawing-out device is inserted therebetween, having a second accommodation groove formed on one surface, and facing the first protrusion pieces with the main body portion interposed therebetween;
   a second coupling shaft coupled to the first member to be rotatable in place, and having a certain area accommodated in the first accommodation groove; and
   a third coupling shaft having a certain area accommodated in the second accommodation groove, and coupled to the drawing-out device to be rotatable in place.

4. The link-type driven former of claim 3, wherein the connector part further includes:

   couplers formed on one surface of the third coupling shaft to be spaced part from each other, and jointly passing through each of the second protrusion piece and the main body portion, and the second protrusion piece and the second coupling shaft; and
   a close-contact portion fastened to the coupler and coming into close contact with the second coupling shaft.

Fig. 1

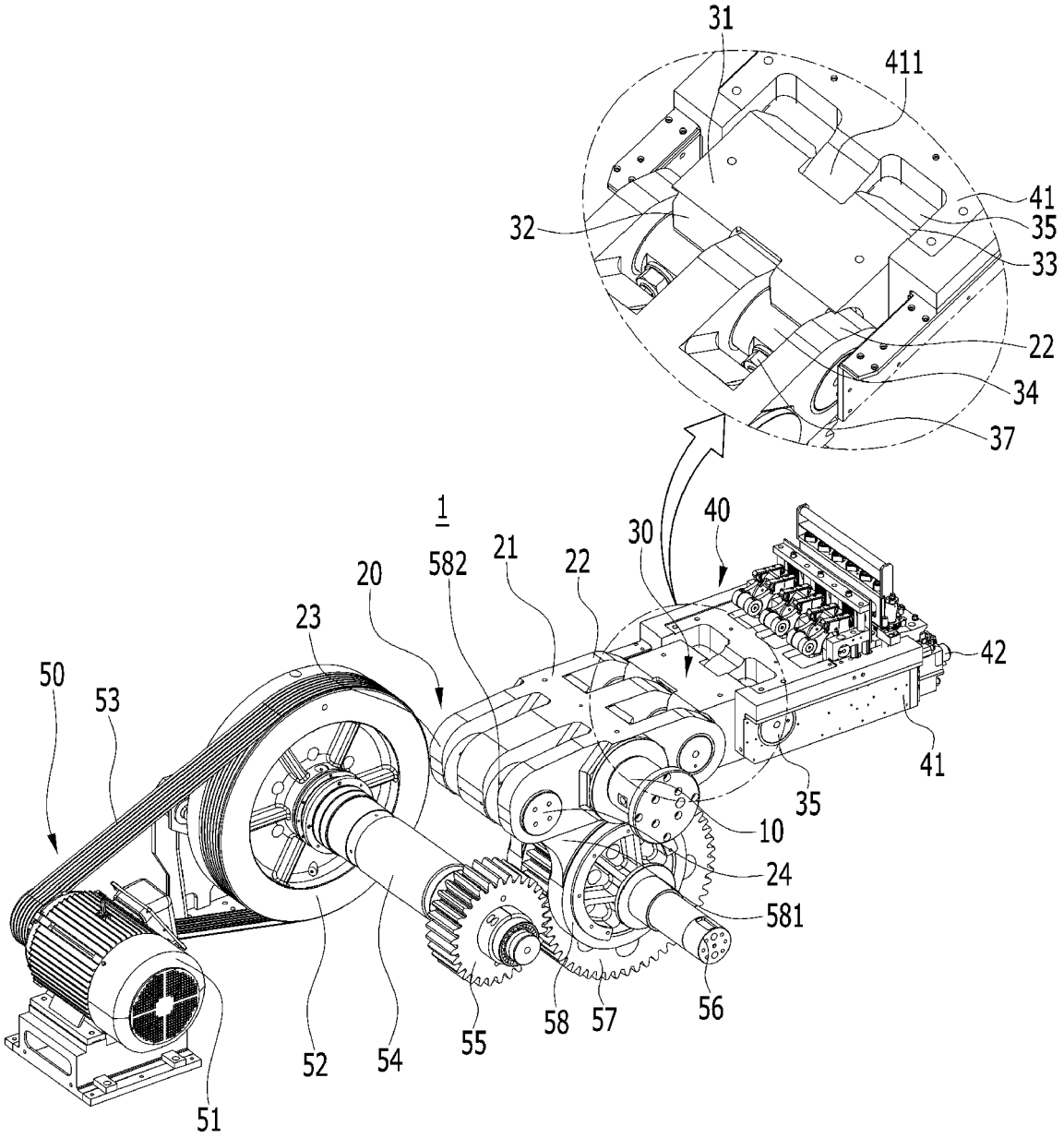
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Fig. 2

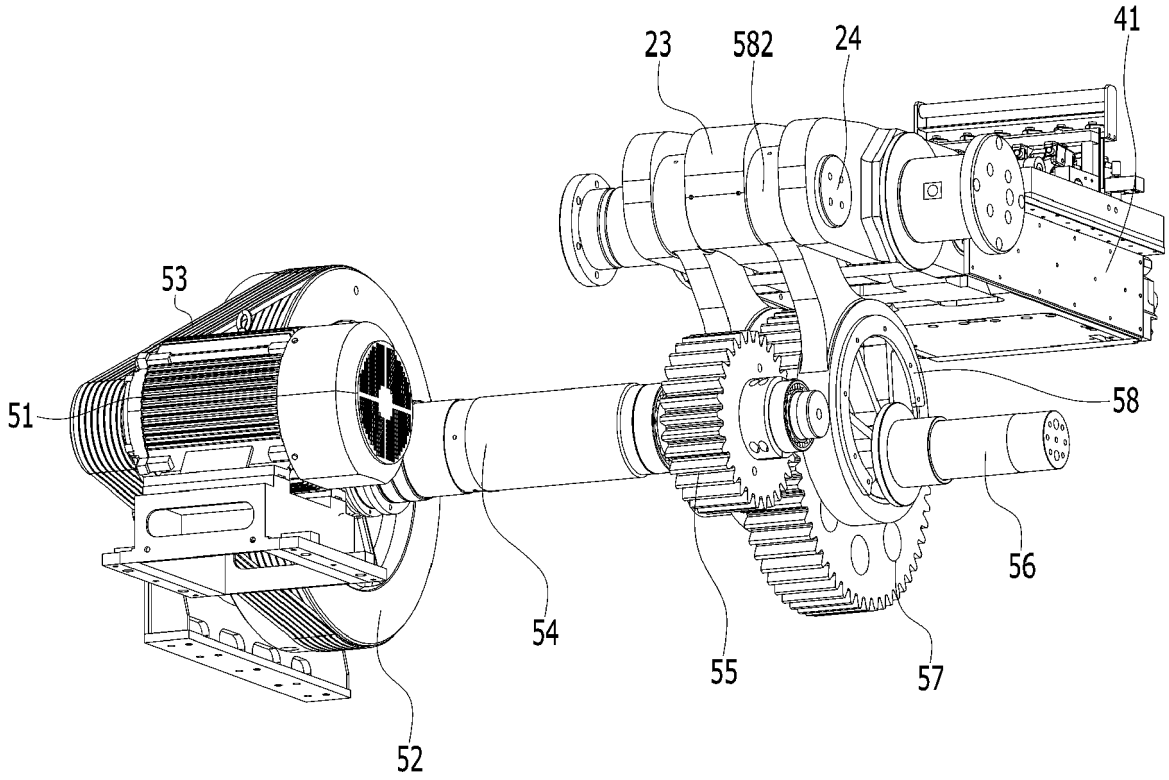


Fig. 3

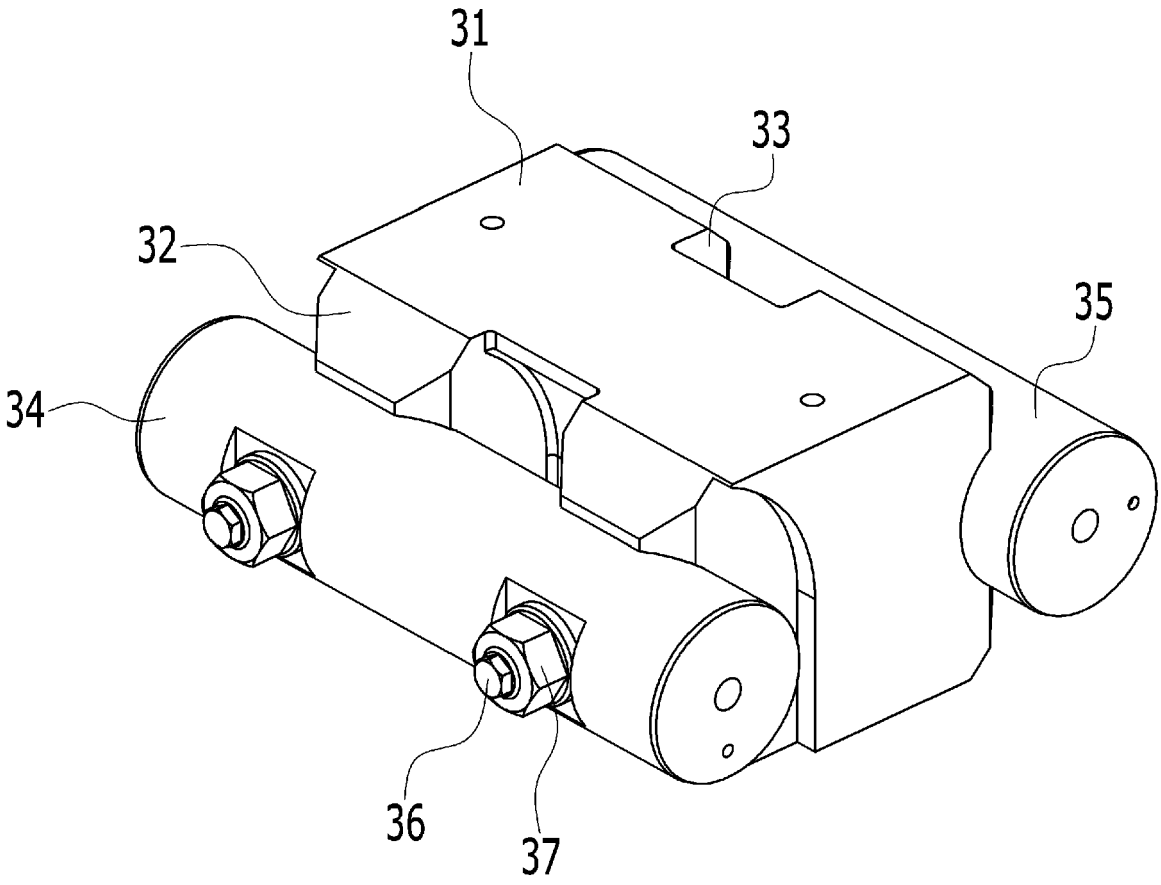


Fig. 4

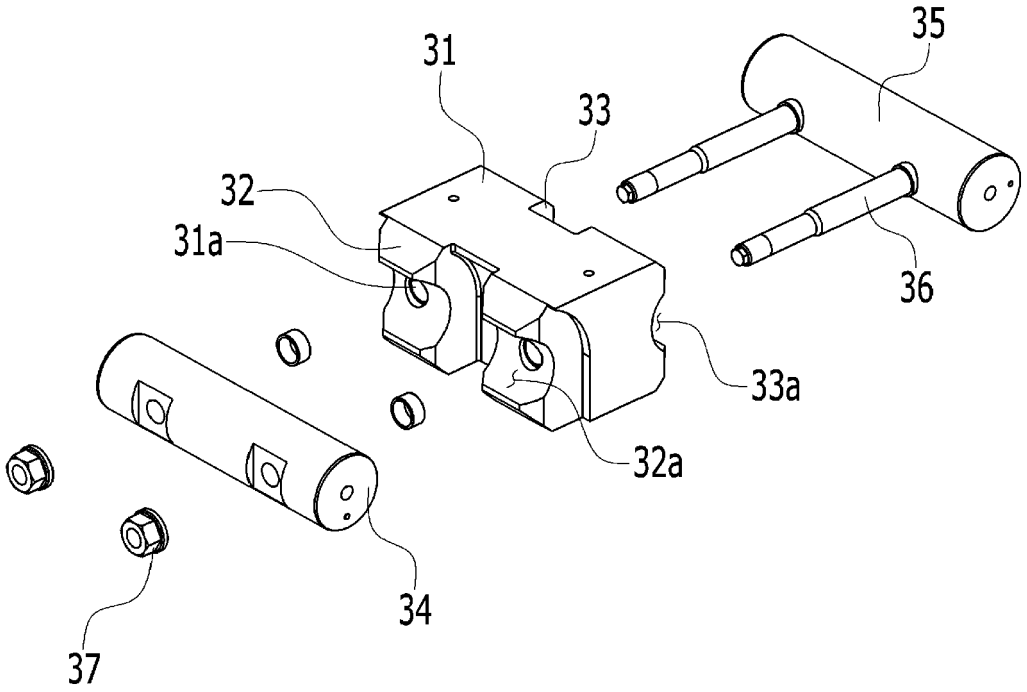


Fig. 5

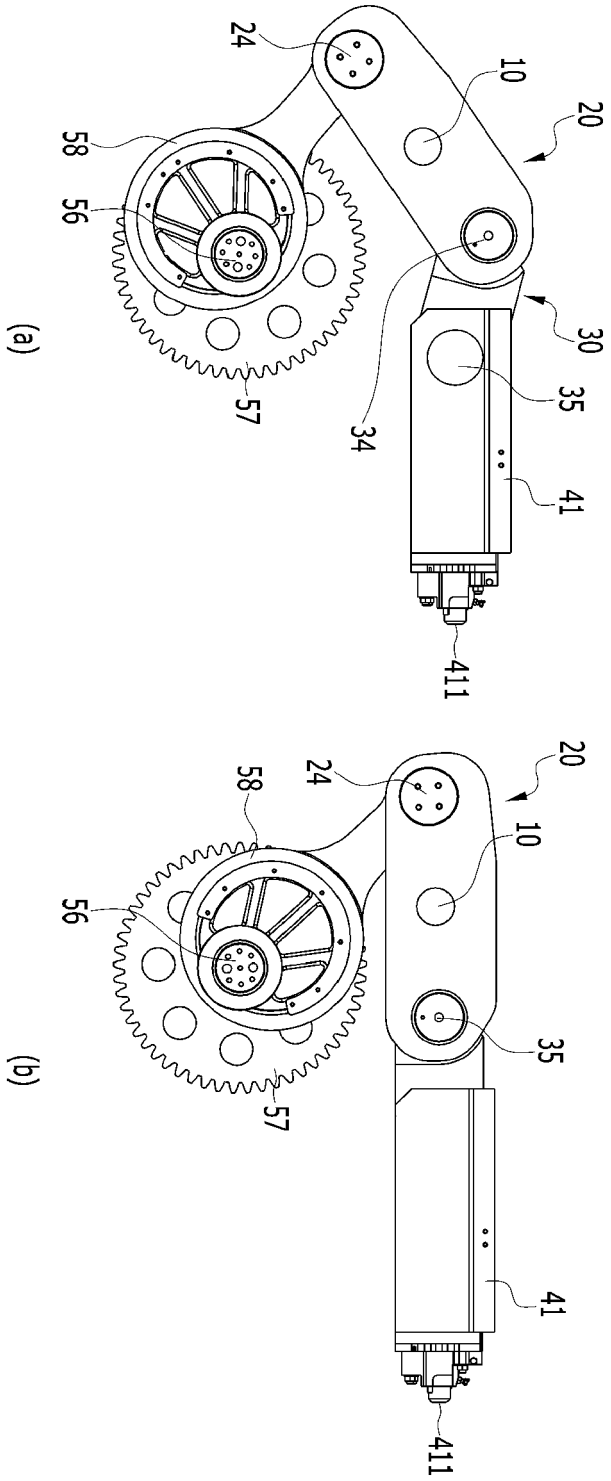
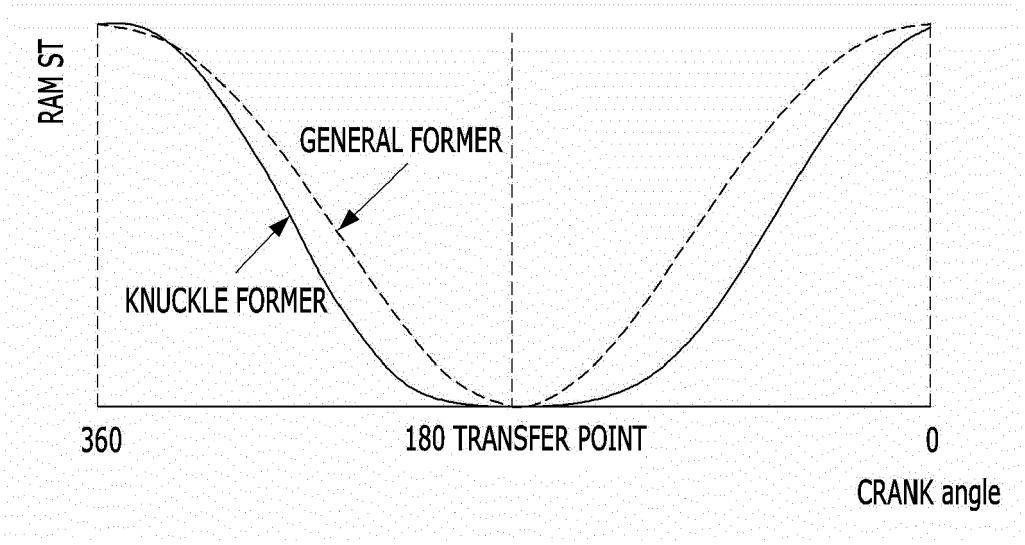


Fig. 6


RAM ST
GENERAL FORMER
KNUCKLE FORMER
360
180 TRANSFER POINT
0
CRANK angle

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EUROPEAN SEARCH REPORT

Application Number
EP 22 19 6880

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B21J
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B30B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	16 June 2023	Ritter, Florian

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