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(54) HIGH-SPEED NEGATIVE SUCTION ROLLER-TYPE OBLIQUE FEED FOLDING MACHINE

HOCHGESCHWINDIGKEITSFALTMASCHINE MIT QUEREINZUG VOM UNTERDRUCKSAUGWALZENTYP

MACHINE DE PLIAGE À ALIMENTATION OBLIQUE DU TYPE À ROULEAU À ASPIRATION NÉGATIVE À GRANDE VITESSE

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Description

Technical Field

[0001] This invention relates to the field of pharmaceutical machinery, in particular to a high-speed negative suction roller-type folding machine for folding package inserts.

Background Art

[0002] Package inserts are generally placed in medicine boxes, and a package insert needs to be folded many times by the folding machine before being putting into the medicine box. In the process of automatic boxing, the folding speed of the folding machine shall match the boxing speed of the boxing machine. However, with the continuous innovation and development of domestic boxing machine technology, the packaging speed of the boxing machine has gradually increased from the original output of 100 boxes/minute to 200 boxes/minute, 300 boxes/minute, or even 400 boxes/minute. At present, the most advanced folding machine is a high-speed negative suction roller-type folding machine, and this folding machine is featured by high folding efficiency, stable operation, low noise, etc. The existing folding machines adopt horizontal feeding, that is, the paper stack is horizontally placed on the stacking platform, and the paper is horizontally fed into the machine one piece by one piece. Such folding machines are suitable for the paper of standard size, but for the paper of longer length, such folding machines are not suitable, because the longer paper placed horizontally on the stacking platform takes up a lot of space, and the placement of the paper stack is also very inconvenient.

[0003] CH 607 977 A5 discloses a folding machine according to the preamble of claim 1.

Summary of the Invention

[0004] In view of the deficiencies of the prior art, this invention provides a high-speed negative suction roller-type oblique feeding folding machine that allows oblique placement of a paper stack. The high-speed negative suction roller-type oblique feeding folding machine comprises a frame, a paper stacking platform, a folding mechanism and a paper feeding mechanism for feeding the paper on the stacking platform into the folding mechanism, wherein the said paper feeding mechanism comprises a negative suction roller and a paper feeding pressure roller that rotate in a coupled manner for feeding paper, a negative suction hole connected to the vacuum source is arranged on the roller surface of the said negative suction roller, and the said negative suction roller is provided with a paper pressure bearing that presses against the paper feeding pressure roller, characterized in that: the said stacking platform is obliquely disposed, the said negative suction roller is drivingly connected with a paper suction transmission mechanism that drives the negative suction roller to rotate back and forth along the curved surface on the paper feeding pressure roller, a curved rack is mounted on the said frame, a negative suction roller pinion is mounted at one end of the said negative suction roller, and the said negative suction roller pinion engages with the tooth surface of the curved rack.

[0005] The diameter of the said paper feeding pressure roller is larger than that of the negative suction roller, the inner end of the said stacking platform is located above the negative suction roller, the said negative suction roller is located between the inner end of the stacking platform and the negative suction roller, and the said negative suction roller rotates back and forth along the oblique direction of the stacking platform on the paper feeding pressure roller.

[0006] The said paper suction transmission mechanism comprises a transmission shaft, a transmission pulley, a transmission swing arm and a curved rack, the said transmission pulley is mounted on the transmission shaft, one end of the said transmission swing arm is hinged at an eccentric position on the transmission pulley, the other end of the said transmission swing arm is hinged on the negative suction roller, the said curved rack is mounted on the frame, one end of the said negative suction roller is mounted with a suction roller pinion, and the said negative suction roller pinion engages with the tooth surface of the curved rack.

[0007] The other end of the said negative suction roller is mounted with a positioning bearing, the said frame is mounted with a positioning curved bar, and the said positioning bearing acts on the inner curved surface of the positioning curved bar.

[0008] The said negative suction roller is drivingly connected with the separation push plate through a connecting arm, the said separation push plate is connected with a guiding sheet, the said guiding sheet is slidably disposed between the two pressing blocks, the said separation push plate and the stacking platform keep tilted in the same direction, the said separation push plate is provided with a blowing hole connected to the air source, and the blowing port of the blowing hole faces the upper portion or the position above the upper portion of the negative suction roller.

[0009] A front baffle plate is disposed above the said separation push plate, the said front baffle plate keeps perpendicular to the stacking platform, the said front baffle plate is provided with an air jet hole connected to the air source, the air jet port of the said air jet hole faces the upper portion of the negative suction roller.

[0010] The said transmission shaft is provided with an eccentric weight, and the center of gravity of the said eccentric weight and the eccentric connection point of the transmission pulley are respectively located on both sides centered on the axis of the transmission shaft.

[0011] A drive shaft and a driven shaft are mounted on the said frame, the said driven shaft is drivingly connected

with the negative suction roller and the paper feeding pressure roller, the left drive synchronizing pulley and the right drive synchronizing pulley are disposed on the said drive shaft, the left driven synchronizing pulley and the right driven synchronizing pulley are disposed on the said driven shaft, the said left drive synchronizing pulley is connected to the left driven synchronizing pulley through the first synchronizing belt, and the said right drive synchronizing pulley is connected to the right driven synchronizing pulley through the second synchronizing belt.

[0012] The said frame is mounted with a control shaft, and the said control shaft is mounted with a mechanical valve pneumatic control mechanism and a solenoid valve pneumatic control mechanism capable of controlling the air jet hole, blowing hole and negative suction hole.

[0013] The said stacking platform is provided with a left clamping bar and a right clamping bar for retaining the paper stack, and the position of the said left clamping bar and the right clamping bar on the stacking platform can be adjusted.

[0014] A high-speed negative suction roller-type oblique feeding folding machine is provided according to this invention, wherein the stacking platform is disposed obliquely, and at the same time, to couple with the oblique stacking platform, the transmission mode and the moving direction of the negative suction roller are changed; through various upgrades and improvements, the oblique feeding mode of the folding machine is achieved, thus meeting the feeding requirement of different sizes of paper while ensuring stable operation at the folding rate of 500 pieces/min.

Description of the Drawings

[0015]

Figure 1 is an exploded view 1 of this invention;

Figure 2 is an exploded view 2 of this invention;

Figure 3 is an internal structural view of this invention;

Figure 4 is a rear view of this invention;

Figure 5 is a cross-sectional view of this invention;

Figure 6 is a schematic diagram of paper feeding through the coupling of the negative suction roller and the paper feeding pressure roller.

Detailed Description of the Preferred Embodiments

[0016] As shown in Figures 1 and 2, the high-speed negative suction roller-type oblique feeding folding machine comprises a frame 1, a stacking platform 2, a folding mechanism 4 and a paper feeding mechanism 3. The stacking platform 2 is used for placing a paper stack, that is, package inserts; the folding mechanism 4 is used for folding the paper, which may be folded once or more times; the paper feeding mechanism 3 is used for feeding the paper stack on the stacking platform 2 to the folding mechanism 4 one piece by one piece from the bottom, and finally the folding operation is completed by the folding mechanism 4.

[0017] The paper feeding mechanism 3 of a general horizontal feeding folding machine comprises a negative suction roller 32 and a paper feeding pressure roller 31 that rotate in a coupled manner for feeding paper, a negative suction hole 320 connected to the vacuum source is arranged on the roller surface of the negative suction roller 32; in order to realize paper feeding, the negative suction roller 32 and the paper feeding pressure roller 31 of the horizontal feeding folding machine are mounted on the sliding block, and paper feeding is realized through the movement of the sliding block and the coupled rotation of the negative suction roller 32 and the paper feeding pressure roller 31.

[0018] As shown in Figure 1, the stacking platform 2 of this invention is disposed obliquely. As the stacking platform 2 is disposed obliquely, paper feeding cannot be realized by the movement of the sliding block; in order to couple with the obliquely disposed stacking platform 2, the negative suction roller of this invention is drivingly connected with a paper suction transmission mechanism that drives the negative suction roller 32 to rotate back and forth along the curved surface on the paper feeding pressure roller 31. As shown in Figure 5, as the negative suction roller 32 rotates back and forth along the curved surface on the paper feeding pressure roller 31, its movement trajectory is also an oblique line from the start point to the end point, which corresponds to the oblique direction of the stacking platform 2. As shown in Figures 5 and 6, when the negative suction roller 32 sucks the leading edge of the paper through its negative suction hole 320, the paper suction transmission mechanism drives the negative suction roller 32 to move on the paper feeding pressure roller 31 in the direction of the lower left corner (the direction in Figure 6) along the curved surface of the paper feeding pressure roller 31, that is, The arc of the wheel 31, that is, it rotates in the oblique direction of the stacking platform 2, so that the paper is smoothly wound around the negative suction roller 32; in other words, the negative suction roller 32 travels along the paper while rotating, so that the paper is naturally wound on the negative suction drum 32 instead of pulling the paper by force; in this way, the front side of the paper is mostly wound around the negative suction roller 32; as the portion of the paper pressed by the paper stack above is reduced, and the paper enters between the negative suction roller 32 and the paper feeding pressure roller 31, the paper pressure bearing 322 on the negative suction roller 32 and the paper feeding pressure roller 31 grip the paper to take it out and convey it down (the negative suction hole 320 on the negative suction roller 32 is responsible for sucking the paper, and the paper pressure

bearing 322 is used to press the paper against the paper feeding pressure roller 31; as the paper pressure bearing 322 is rotatable, the paper pressure bearing 322 and the paper feeding pressure roller 31 press the paper without causing resistance to the paper when the negative suction roller 32 rotates back and forth); when the paper is conveyed down, the paper suction transmission mechanism drives the negative suction roller 32 to move on the paper feeding pressure roller 31 in the direction of the upper right corner (direction in Figure 5) along the curved surface of the paper feeding pressure roller 31 and take another piece of paper.

[0019] The negative suction roller 32 has a negative suction hole 320. Each time a piece of paper is fed, the negative suction hole 320 sucks once. If the negative suction roller 32 rotates in only one direction, the negative suction roller 32 needs to rotate once to complete the feeding of one piece of paper, which not only affects the paper feeding efficiency, but also makes it difficult to ensure the continuity and accuracy of paper feeding. Therefore, a curved rack 35 is fixedly mounted on the frame 1 according to this invention, a negative suction roller pinion 320 is mounted at one end of the negative suction roller 32, and the negative suction roller pinion 320 engages with the curved rack 35; with the reaction force of the curved rack 35, the negative suction roller 32 can achieve clockwise rotation and counterclockwise rotation when moving back and forth. The advantage of this rotation mode is as follows: as shown in Figure 6, the negative suction roller 32 moves towards the lower left corner (the direction of the stacking platform 2), the negative suction roller 32 rotates only by 180° clockwise to couple with the counterclockwise rotation of the paper feeding pressure roller 31, then the paper is conveyed down, and in this process, the negative suction hole 320 on the negative suction roller 32 only rotates by 180° while sucking the paper; after the paper feeding is completed, the negative suction roller 32 moves towards the upper right corner, and then with the reaction force of the curved rack 35, the negative suction roller 32 rotates by 180° counterclockwise, so that the negative suction hole 320 on the negative suction roller 32 returns to the bottom of the paper stack to suck the next piece of paper; driven by the power source, the paper feeding pressure roller 31 rotates in only one direction, that is, the counterclockwise direction as shown in Figure 6. With the above method, to feed one piece of paper, the negative suction roller 32 only needs to rotate by 180° back and forth, thus significantly increasing the paper feeding speed, and ensuring the continuity and accuracy of the entire paper folding process; meanwhile, the transmission relationship is also simpler, and the structure is also more reasonable.

[0020] The diameter of the paper feeding pressure roller 31 of this invention is larger than that of the negative suction roller 32, the paper feeding pressure roller 31 with a larger diameter can realize different speed ratios, and is more suitable for feeding different sizes of paper, and at the same time, it can make the movement trajectory of the negative suction roller 32 on its surface closer to the tangent, so that the paper can be more easily wound around the negative suction roller 32; in addition, the inner end of the stacking platform 2 is located above the negative suction roller 32, the negative suction roller 32 is located between the inner end of the stacking platform 2 and the negative suction roller 32, and the negative suction roller 32 rotates back and forth along the oblique direction of the stacking platform 2 on the paper feeding pressure roller 31.

[0021] The movement of the negative suction roller 32 on the paper feeding pressure roller 31 is driven by the paper suction transmission mechanism, as shown in Figures 1-3. The paper suction transmission mechanism comprises a transmission shaft 33, a transmission pulley 330 and a transmission swing arm 34, the transmission pulley 330 is mounted on the transmission shaft 33, one end of the transmission swing arm 34 is hinged at an eccentric position on the transmission pulley 330, and the other end of the transmission swing arm is hinged on the negative suction roller 32. During operation, the power source drives the transmission shaft 33 to rotate, and the transmission pulley 330 mounted on the transmission shaft 33 rotates accordingly; one end of the transmission swing arm 34 is hinged at an eccentric position on the transmission pulley 330, and the other end of it is hinged on the negative suction roller 32, so the transmission swing arm 34 drives the negative suction roller 32 to move on the paper feeding pressure roller 31 along the curved surface of the paper feeding pressure roller 31.

[0022] As only one end of the negative suction roller is pressed by the curved rack 35, if the other end is not pressed, the negative suction roller 32 may be lifted when rotating back and forth (if pressed by the left and right two curved racks 35, it is difficult to ensure the consistency of the curved racks 35 on both sides); to this end, the other end of the negative suction roller 32 is mounted with a positioning bearing, the frame 1 is mounted with a positioning curved bar 36, as shown in Figure 1, the positioning bearing acts on the inner curved surface of the positioning curved bar 36. With this structure, it is possible to effectively prevent the negative suction roller 32 from being lifted when moving back and forth, and to ensure the stability of the movement of the negative suction roller 32.

[0023] In the case where the paper stack is high, the paper may not be taken out by the movement of the negative suction roller 32. In order to ensure that the paper feeding mechanism 3 can work normally, this invention further provides a separation push plate 37, the separation push plate 37 is drivingly connected with the negative suction roller 32 through a connecting arm, the separation push plate 37 is connected with a guiding sheet 371, the guiding sheet 371 is slidably disposed between the two pressing blocks 372, the separation push plate 37 and the stacking platform 2 keep tilted in the same direction, the separation push plate 37 is provided with a blowing hole 370 connected to the air source, and the blowing

port of the blowing hole 370 faces the upper portion or the position above the upper portion of the negative suction roller 32. The separation push plate 37 is slidably disposed between the two pressing blocks 372 through the guiding sheet 371, the negative suction roller 32 moves along the curved trajectory, and the separation push plate 37 also moves along with the negative suction roller 32 (the trajectory of the separation push plate 37 is also an arc, so the guiding sheet 371 is resilient); when the negative suction roller 32 sucks the paper, the blowing hole 370 blows toward the upper portion or the position above the upper portion of the negative suction roller 32, the air blown from the blowing hole 370 separates the paper sucked by the negative suction roller 32 from the upper paper and in this way, it is further ensured that the paper can be smoothly taken out.

[0024] As the front edge of the paper may warp, the negative suction roller 32 can not suck the whole leading edge of the paper. In order to solve this problem, a front baffle plate 38 is disposed above the separation push plate 37 according to this invention, the front baffle plate 38 keeps perpendicular to the stacking platform 2, the front baffle plate 38 is provided with an air jet hole 380 connected to the air source, the air jet port of the air jet hole 380 faces the upper portion of the negative suction roller 32. The front baffle plate 38 can be used to position the front side of the paper stack, and the air jet hole on it can blow the front edge of the paper down after being connected to the air source, so that the front edge of the paper can be completely attached to the negative suction roller 32.

[0025] As shown in Figure 3, the transmission shaft of this invention is provided with an eccentric weight 311, and the center of gravity of the eccentric weight 311 and the eccentric connection point of the transmission pulley 330 are respectively located on both sides centered on the axis of the transmission shaft. The eccentric weight 331 is used to compensate the transmission shaft 33 for driving the negative suction roller 32 to perform eccentric motion, so that the folding machine can fold the paper smoothly and smoothly at the folding rate of 500 pieces/min.

[0026] As shown in Figure 4, in order to achieve different speed ratios to realize the fastest folding of different sizes of paper, a drive shaft 65 and a driven shaft 66 are mounted on the frame 1 of this invention, the driven shaft 65 is drivingly connected with the negative suction roller 32 and the paper feeding pressure roller 31, the left drive synchronizing pulley 60 and the right drive synchronizing pulley 62 are disposed on the drive shaft 65, the left driven synchronizing pulley 61 and the right driven synchronizing pulley 63 are disposed on the driven shaft 66, the left drive synchronizing pulley 60 is connected to the left driven synchronizing pulley 61 through the first synchronizing belt, and the right drive synchronizing pulley 62 is connected to the right driven synchronizing pulley 63 through the second synchronizing belt. Every two combination speed ratios can be set on the drive shaft and the driven shaft at the same time, and the change of the paper format area can be completed by simply toggling the shifting device 64, so the combinations are rich, the switching is simple, and the application is wide.

[0027] As shown in Figure 3, a control shaft 5 is mounted on the frame 1, and the control shaft 5 is mounted with a mechanical valve pneumatic control mechanism 50 and a solenoid valve pneumatic control mechanism 51 capable of controlling the air jet hole 37, blowing hole 38 and negative suction hole 320. The requirements for the linking of the folding machine and the boxing machine are relatively low, and package inserts can be linked with the paper gripping device of the boxing machine only through aeration. The solenoid valve is usually controlled by the photoelectric switch of the boxing machine and the cam controller, and the folding machine can achieve paper folding by programming the PLC and entering the corresponding parameters in the man-machine interface.

[0028] Finally, it is worth mentioning that in order to prevent the obliquely placed paper stack from sliding down, as shown in Figure 1, the stacking platform 2 of this invention is also provided with a left clamping bar 20 and a right clamping bar 21 for retaining the paper stack, and the position of the left clamping bar 20 and the right clamping bar 21 on the stacking platform can be adjusted to accommodate different sizes of paper.

Claims

1. A high-speed negative suction roller-type oblique feeding folding machine, comprising a frame (1), a stacking platform (2), a folding mechanism (4) and a paper feeding mechanism (3) for feeding the paper on the stacking platform (2) into the folding mechanism (4), wherein the said paper feeding mechanism (3) comprises a negative suction roller (32) and a paper feeding pressure roller (31) that rotate in a coupled manner for feeding paper, a negative suction hole (320) connected to the vacuum source is arranged on the roller surface of the said negative suction roller (32), and the said negative suction roller (32) is provided with a paper pressure bearing (322) that presses against the paper feeding pressure roller (31), the said stacking platform (2) is obliquely disposed, the said negative suction roller (32) is drivingly connected with a paper suction transmission mechanism that drives the negative suction roller (32) to rotate back and forth along the curved surface on the paper feeding pressure roller (31), a curved rack (35) is mounted on the said frame (1), a negative suction roller pinion (320) is mounted at one end of the said negative suction roller (32), and the said negative suction roller pinion (320) engages with the tooth surface of the curved rack (35) **characterized in that**: the said paper suction transmission mechanism comprises a transmission shaft (33), a transmission pulley (330) and a transmission

swing arm (34), the said transmission pulley (330) is mounted on the transmission shaft (33), one end of the said transmission swing arm (34) is hinged at an eccentric position on the transmission pulley (330), the other end of the said transmission swing arm (34) is hinged on the negative suction roller (32).

2. A high-speed negative suction roller-type oblique feeding folding machine according to Claim 1, **characterized in that**: the diameter of the said paper feeding pressure roller (31) is larger than that of the negative suction roller (32), the inner end of the said stacking platform (2) is located above the negative suction roller (32), the said negative suction roller (32) is located between the inner end of the stacking platform (2) and the negative suction roller (32), and the said negative suction roller (32) rotates back and forth along the oblique direction of the stacking platform (2) on the paper feeding pressure roller (31).

3. A high-speed negative suction roller-type oblique feeding folding machine according to Claim 1, **characterized in that**: the other end of the said negative suction roller (32) is mounted with a positioning bearing, the said frame (1) is mounted with a positioning curved bar (38), and the said positioning bearing acts on the inner curved surface of the positioning curved bar (38).

4. A high-speed negative suction roller-type oblique feeding folding machine according to Claim 2, **characterized in that**: the said negative suction roller (32) is drivingly connected with the separation push plate (37) through a connecting arm, the said separation push plate (37) is connected with a guiding sheet (371), the said guiding sheet (371) is slidably disposed between the two pressing blocks (372), the said separation push plate (37) and the stacking platform (2) keep tilted in the same direction, the said separation push plate (37) is provided with a blowing hole (370) connected to the air source, and the blowing port of the blowing hole (370) faces the upper portion or the position above the upper portion of the negative suction roller (32).

5. A high-speed negative suction roller-type oblique feeding folding machine according to Claim 4, **characterized in that**: a front baffle plate (38) is disposed above the said separation push plate (37), the said front baffle plate (38) keeps perpendicular to the stacking platform (2), the said front baffle plate (38) is provided with an air jet hole (380) connected to the air source, the air jet port of the said air jet hole (380) faces the upper portion of the negative suction roller (32).

6. A high-speed negative suction roller-type oblique feeding folding machine according to Claim 1, **characterized in that**: the said transmission shaft (33) is provided with an eccentric weight (331), and the center of gravity of the said eccentric weight (331) and the eccentric connection point of the transmission pulley (330) are respectively located on both sides centered on the axis of the transmission shaft (33).

7. A high-speed negative suction roller-type oblique feeding folding machine according to Claim 1, **characterized in that**: a drive shaft (65) and a driven shaft (66) are mounted on the said frame (1), the said driven shaft (66) is drivingly connected with the negative suction roller (32) and the paper feeding pressure roller (31), the left drive synchronizing pulley (60) and the right drive synchronizing pulley (62) are disposed on the said drive shaft (65), the left driven synchronizing pulley (61) and the right driven synchronizing pulley (63) are disposed on the said driven shaft (66), the said left drive synchronizing pulley (60) is connected to the left driven synchronizing pulley (61) through the first synchronizing belt, and the said right drive synchronizing pulley (62) is connected to the right driven synchronizing pulley (63) through the second synchronizing belt.

8. A high-speed negative suction roller-type oblique feeding folding machine according to Claim 5, **characterized in that**: the said frame (1) is mounted with a control shaft (5), and the said control shaft (5) is mounted with a mechanical valve pneumatic control mechanism (50) and a solenoid valve pneumatic control mechanism (51) capable of controlling the air jet hole (380), blowing hole (370) and negative suction hole (320).

9. A high-speed negative suction roller-type oblique feeding folding machine according to Claim 1, **characterized in that**: the said stacking platform (2) is provided with a left clamping bar (20) and a right clamping bar (21) for retaining the paper stack, and the position of the said left clamping bar (20) and the right clamping bar (21) on the stacking platform can be adjusted.

Patentansprüche

1. Falzmaschine der Hochgeschwindigkeitsansaugwalzenbauart mit Schrägeinzug, umfassend einen Rahmen (1), eine Stapelplattform (2), einen Falzmechanismus (4) und einen Papiereinzugsmechanismus (3) zum Einziehen des Papiers auf der Stapelplattform (2) in den Falzmechanismus (4), wobei der Papiereinzugsmechanismus (3) eine Vakuumansaugwalze (32) und eine Papiereinzugsandrückwalze (31) umfasst, die gekoppelt rotieren, um Papier einzuziehen, wobei ein Vakuumansaugloch

(320), das mit einer Vakuumquelle verbunden ist, an der Rollenoberfläche der Vakuumansaugwalze (32) angeordnet ist und die Vakuumansaugwalze (32) mit einem Papierandrücklager (322) versehen ist, das gegen die Papiereinzugsandrückwalze (31) drückt, wobei die Stapelplattform (2) schräg angeordnet ist, die Vakuumansaugwalze (32) in Antriebsverbindung mit einem Papieransauggetriebemechanismus steht, der die Vakuumansaugwalze (32) drehend antreibt, sodass sie an der gekrümmten Oberfläche der Papiereinzugsandrückwalze (31) vor und zurück rollt, eine gekrümmte Zahnstange (35) am Rahmen (1) angebracht ist, ein Vakuumansaugwalzenritzel (320) an einem Ende der Vakuumansaugwalze (32) angebracht ist und das Vakuumansaugwalzenritzel (320) mit der Zahnoberfläche der gekrümmten Zahnstange (35) in Eingriff steht, **dadurch gekennzeichnet, dass**: der Papieransauggetriebemechanismus eine Getriebewelle (33), eine Getrieberolle (330) und einen Getriebeschwungarm (34) umfasst, die Getrieberolle (330) an der Getriebewelle (33) angebracht ist, und ein Ende des Getriebeschwungarms (34) drehbar an einer exzentrischen Position an der Getrieberolle (330) angebracht ist und das andere Ende des Getriebeschwungarms (34) drehbar an der Vakuumansaugwalze (32) angebracht ist.

2. Falzmaschine nach Hochgeschwindigkeitsvakuumansaugwalzenbauart mit Schrägeinzug nach Anspruch 1, **dadurch gekennzeichnet, dass**: der Durchmesser der Papiereinzugsandrückwalze (31) größer als derjenige der Vakuumansaugwalze (32) ist, das innere Ende der Stapelplattform (2) über der Vakuumansaugwalze (32) angeordnet ist, die Vakuumansaugwalze (32) zwischen dem inneren Ende der Stapelplattform (2) und der Vakuumansaugwalze (32) angeordnet ist und die Vakuumansaugwalze (32) in der Schrägrichtung der Stapelplattform (2) an der Papiereinzugsandrückwalze (31) vor und zurück rollt.

3. Falzmaschine nach Hochgeschwindigkeitsvakuumansaugwalzenbauart mit Schrägeinzug nach Anspruch 1, **dadurch gekennzeichnet, dass**: das andere Ende der Vakuumansaugwalze (32) an einem Positionierungslager angebracht ist, eine gekrümmten Positionierungsstange (38) am Rahmen (1) angebracht ist und das Positionierungslager auf die innere gekrümmte Fläche der gekrümmten Positionierungsstange (38) einwirkt.

4. Falzmaschine nach Hochgeschwindigkeitsvakuumansaugwalzenbauart mit Schrägeinzug nach Anspruch 2, **dadurch gekennzeichnet, dass**: die Vakuumansaugwalze (32) durch einen Verbindungsarm mit einer Trennschubplatte (37) in Antriebsverbindung steht, die Trennschubplatte (37) mit einer Führungsplatte (371) verbunden ist, die Führungsplatte (371) verschiebbar zwischen zwei Andruckblöcken (372) angeordnet ist, die Trennschubplatte (37) und die Stapelplattform (2) in dieselbe Richtung geneigt bleiben, die Trennschubplatte (37) mit einem Blasloch (370) versehen ist, das mit einer Luftquelle verbunden ist, und die Blasöffnung des Blaslochs (370) dem oberen Abschnitt oder der Position oberhalb des oberen Abschnitts der Vakuumansaugwalze (32) zugewandt ist.

5. Falzmaschine nach Hochgeschwindigkeitsvakuumansaugwalzenbauart mit Schrägeinzug nach Anspruch 4, **dadurch gekennzeichnet, dass**: eine vordere Ablenkplatte (38) über der Trennschubplatte (37) angeordnet ist, die vordere Ablenkplatte (38) die Stapelplattform (2) senkrecht hält, die vordere Ablenkplatte (38) mit einem Luftdüsenloch (380) versehen ist, das mit der Luftquelle verbunden ist, und die Luftdüsenöffnung des Luftdüsenlochs (380) dem oberen Abschnitt der Vakuumansaugwalze (32) zugewandt ist.

6. Falzmaschine nach Hochgeschwindigkeitsvakuumansaugwalzenbauart mit Schrägeinzug nach Anspruch 1, **dadurch gekennzeichnet, dass**: die Getriebewelle (33) mit einem Exzentergewicht (331) versehen ist und der Schwerpunkt des Exzentergewichts (331) und der exzentrische Verbindungspunkt der Getrieberolle (330) jeweils auf den beiden Seiten um die Getriebewelle (33) als Mittelpunkt angeordnet sind.

7. Falzmaschine nach Hochgeschwindigkeitsvakuumansaugwalzenbauart mit Schrägeinzug nach Anspruch 1, **dadurch gekennzeichnet, dass**: eine Antriebswelle (65) und eine Abtriebswelle (66) am Rahmen (1) angebracht sind, die Abtriebswelle (66) mit der Vakuumansaugwalze (32) und der Papiereinzugsandrückwalze (31) in Antriebsverbindung steht, eine linke Antriebssynchronisierungsrolle (60) und eine rechte Antriebssynchronisierungsrolle (62) an der Antriebswelle (65) angeordnet sind, eine linke Abtriebssynchronisierungsrolle (61) und eine rechte Abtriebssynchronisierungsrolle (63) an der Abtriebswelle (66) angeordnet sind, die linke Antriebssynchronisierungsrolle (60) durch einen ersten Taktungsriemen mit der linken Abtriebssynchronisierungsrolle (61) verbunden ist und die rechte Antriebssynchronisierungsrolle (62) durch einen zweiten Taktungsriemen mit der rechten Abtriebssynchronisierungsrolle (63) verbunden ist.

8. Falzmaschine nach Hochgeschwindigkeitsvakuumansaugwalzenbauart mit Schrägeinzug nach Anspruch 5, **dadurch gekennzeichnet, dass**: am Rahmen (1) eine Steuerungswelle (5) angebracht ist und an der Steuerungswelle (5) ein mechanischer Ven-

tilpneumatiksteuermechanismus (50) und ein magnetischer Ventilpneumatiksteuermechanismus (51) angebracht sind, die das Luftdüsenloch (380), das Blasloch (370) und das Vakuumansaugloch (320) steuern können.

9. Falzmaschine nach Hochgeschwindigkeitsvakuumansaugwalzenbauart mit Schrägeinzug nach Anspruch 1, **dadurch gekennzeichnet, dass**: die Stapelplattform (2) mit einer linken Klemmstange (20) und einer rechten Klemmstange (21) zum Halten des Papierstapels versehen ist und die Position der linken Klemmstange (20) und der rechten Klemmstange (21) an der Stapelplattform einstellbar ist.

Revendications

1. Une machine de pliage à alimentation oblique du type à rouleau à aspiration négative à grande vitesse, comprenant un cadre (1), une plateforme d'empilement (2), un mécanisme de pliage (4) et un mécanisme d'alimentation en papier (3) pour alimenter la plateforme d'empilement (2) en papier dans le mécanisme de pliage (4), dans laquelle ledit mécanisme d'alimentation en papier (3) comprend un rouleau à aspiration négative (32) et un rouleau de pression d'alimentation en papier (31) qui tournent de façon couplée pour alimenter en papier, un trou d'aspiration négative (320) connecté à une source de vide est agencé sur la surface de rouleau dudit rouleau à aspiration négative (32), et ledit rouleau à aspiration négative (32) est muni d'un palier de pression de papier (322) qui appuie contre le rouleau de pression d'alimentation en papier (31), ladite plateforme d'empilement (2) est placée de façon oblique, ledit rouleau à aspiration négative (32) est connecté par entraînement à un mécanisme de transmission d'aspiration qui entraîne la rotation en va-et-vient du rouleau à aspiration négative (32) le long de la surface courbe sur le rouleau de pression d'alimentation en papier (31), un rack courbe (35) est monté sur ledit cadre (1), un pignon de rouleau d'aspiration négative (320) est monté à une extrémité dudit rouleau à aspiration négative (32), et ledit pignon de rouleau d'aspiration négative (320) s'engrène avec la surface dentée du rack courbe (35), **caractérisée en ce que** : ledit mécanisme de transmission d'aspiration de papier comprend un arbre de transmission (33), une poulie de transmission (330) et un bras pivotant de transmission (34), ladite poulie de transmission (330) est montée sur l'arbre de transmission (33), une extrémité dudit bras pivotant de transmission (34) est articulée sur une position excentrée de la poulie de transmission (330), l'autre extrémité dudit bras pivotant de transmission (34) est articulée sur le rouleau à aspiration négative (32).

2. Une machine de pliage à alimentation oblique du type à rouleau à aspiration négative à grande vitesse selon la revendication 1, **caractérisée en ce que** : le diamètre dudit rouleau de pression d'alimentation en papier (31) est plus large que celui du rouleau à aspiration négative (32), l'extrémité interne de ladite plateforme d'empilement (2) est située au-dessus du rouleau à aspiration négative (32), ledit rouleau à aspiration négative (32) est situé entre l'extrémité interne de la plateforme d'empilement (2) et le rouleau à aspiration négative (32), et ledit rouleau à aspiration négative (32) pivote en va-et-vient dans le sens oblique de la plateforme d'empilement (2) sur le rouleau de pression d'alimentation en papier (31).

3. Une machine de pliage à alimentation oblique du type à rouleau à aspiration négative à grande vitesse selon la revendication 1, **caractérisée en ce que** : l'autre extrémité dudit rouleau à aspiration négative (32) est montée avec un palier de positionnement, ledit cadre (1) est monté avec une barre courbe de positionnement (38), et ladite barre courbe de positionnement agit sur la surface courbe interne de la barre courbe de positionnement (38).

4. Une machine de pliage à alimentation oblique du type à rouleau à aspiration négative à grande vitesse selon la revendication 2, **caractérisée en ce que** : ledit rouleau à aspiration négative (32) est connecté par entraînement avec la plaque de poussée de séparation (37) via un bras de connexion, ladite plaque de poussée de séparation (37) est connectée à une feuille de guidage (371), ladite feuille de guidage (371) est agencée de façon coulissante entre les deux blocs de pression (372), ladite plaque de poussée de séparation (37) et la plateforme d'empilement (2) restent inclinée dans la même direction, ladite plaque de poussée de séparation (37) est munie d'un trou souffleur (370) connecté à l'arrivée d'air, et l'orifice de soufflage du trou souffleur (370) fait face à la portion supérieure ou à la position située au-dessus de la portion supérieure du rouleau à aspiration négative (32).

5. Une machine de pliage à alimentation oblique du type à rouleau à aspiration négative à grande vitesse selon la revendication 4, **caractérisée en ce que** : un déflecteur avant (38) est placé au-dessus de ladite plaque de poussée de séparation (37), ledit déflecteur avant (38) reste perpendiculaire à la plateforme d'empilement (2), ledit déflecteur avant (38) est muni d'un trou de projection d'air (380) connecté à l'alimentation en air, l'orifice de projection d'air dudit trou de projection d'air (380) fait face the à la portion supérieure du rouleau à aspiration négative (32).

6. Une machine de pliage à alimentation oblique du

type à rouleau à aspiration négative à grande vitesse selon la revendication 1, **caractérisée en ce que** : ledit arbre de transmission (33) est muni d'un poids excentré (331), et le centre de gravité dudit poids excentré (331) et le point de connexion excentrée de la poulie de transmission (330) sont respectivement situés sur les deux côtés du centre de l'axe de l'arbre de transmission (33).

7. Une machine de pliage à alimentation oblique du type à rouleau à aspiration négative à grande vitesse selon la revendication 1, **caractérisée en ce que** : un arbre d'entraînement (65) et un arbre entraîné (66) sont montés sur ledit cadre (1), ledit arbre entraîné (66) est connecté par entraînement au rouleau à aspiration négative (32) et le rouleau de pression d'alimentation en papier (31), la poulie de synchronisation d'entraînement gauche (60) et la poulie de synchronisation d'entraînement droite (62) sont placées sur ledit arbre d'entraînement (65), la poulie de synchronisation entraînée gauche (61) et la poulie de synchronisation entraînée droite (63) sont placées sur ledit arbre entraînée (66), ladite poulie de synchronisation d'entraînement gauche (60) est connectée à la poulie de synchronisation entraînée gauche (61) via une première courroie de synchronisation, et ladite poulie de synchronisation d'entraînement droite (62) est connectée à la poulie de synchronisation entraînée droite (63) via une deuxième courroie de synchronisation.

8. Une machine de pliage à alimentation oblique du type à rouleau à aspiration négative à grande vitesse selon la revendication 5, **caractérisée en ce que** : ledit cadre (1) est monté avec un arbre de commande (5), et ledit arbre de commande (5) est monté avec un mécanisme de commande pneumatique à vanne mécanique (50) et un mécanisme de commande pneumatique à vanne solénoïde (51) capable de commander le trou de projection d'air (380), le trou souffleur (370) et le trou d'aspiration négative (320).

9. Une machine de pliage à alimentation oblique du type à rouleau à aspiration négative à grande vitesse selon la revendication 1, **caractérisée en ce que** : ladite plateforme d'empilement (2) est munie d'une barre de serrage gauche (20) et d'une barre de serrage droite (21) pour retenir la pile de papier, et la position de ladite barre de serrage gauche (20) et de ladite barre de serrage droite (21) sur la plateforme d'empilement peut être ajustée.

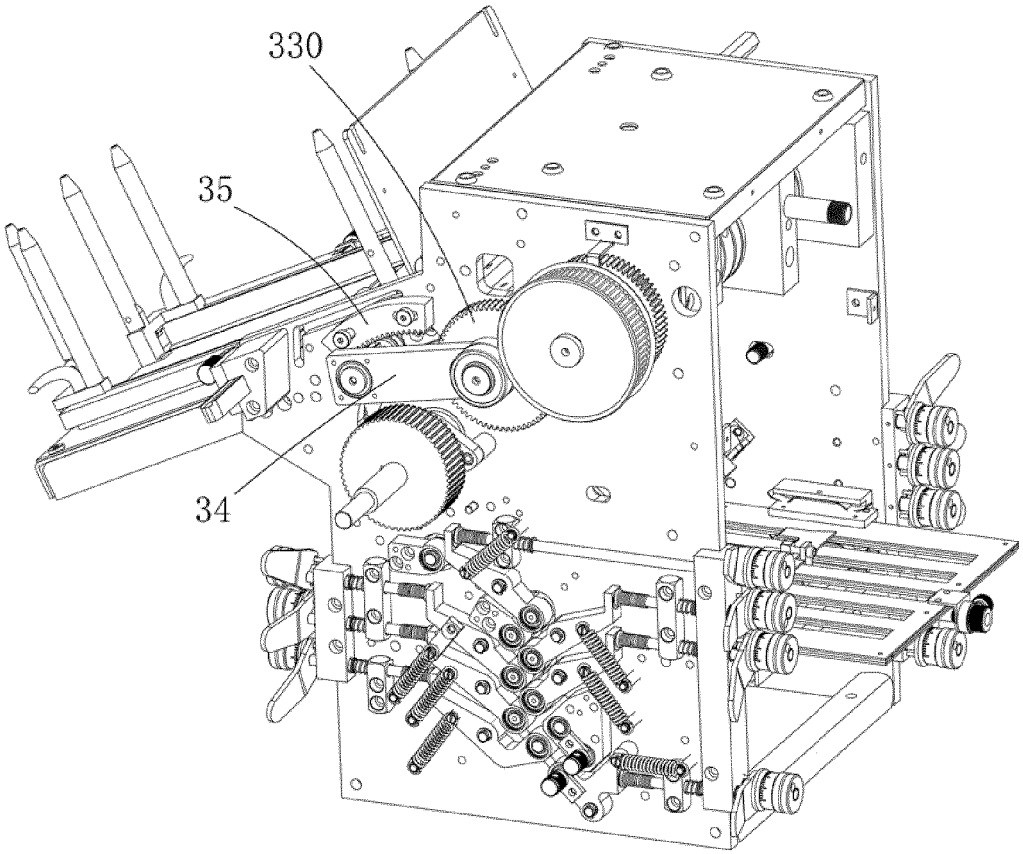

FIG 1

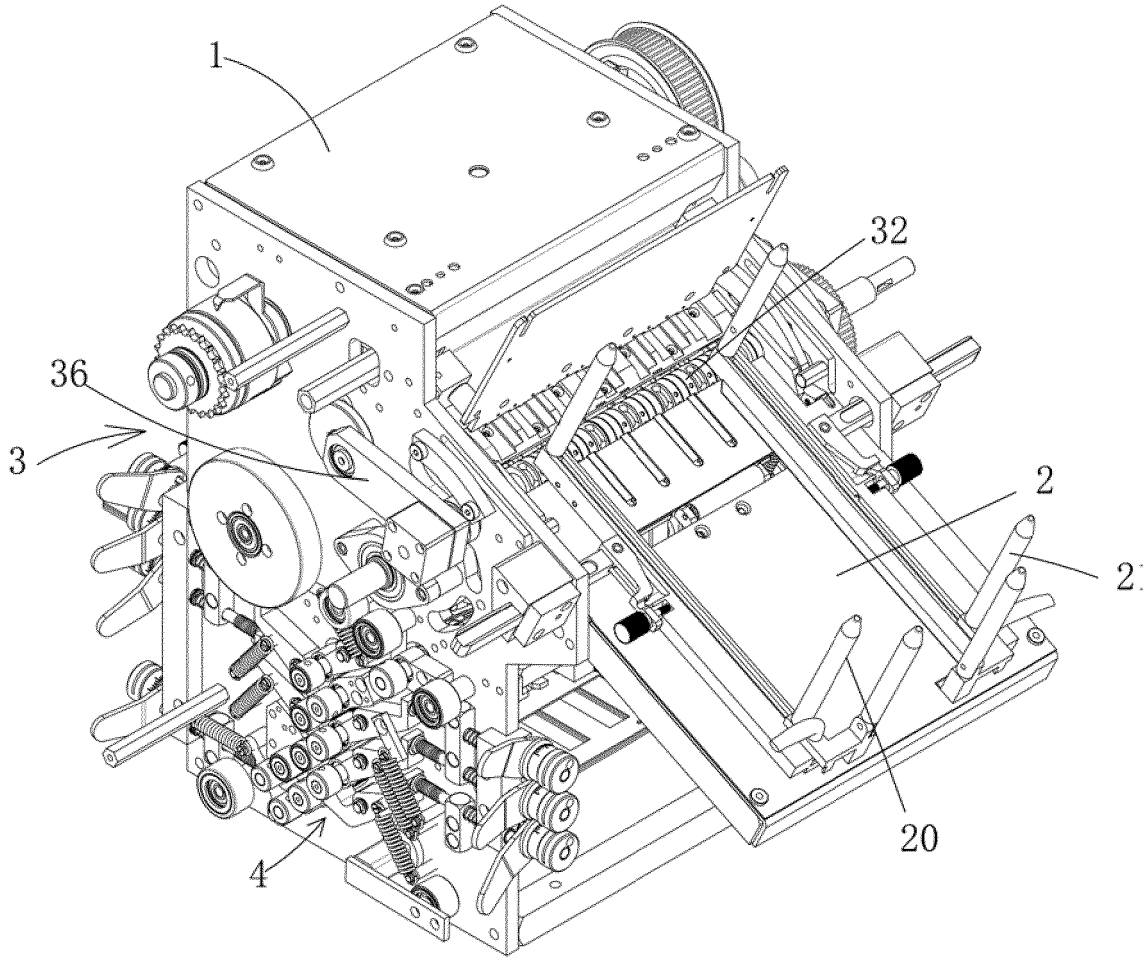

FIG 2

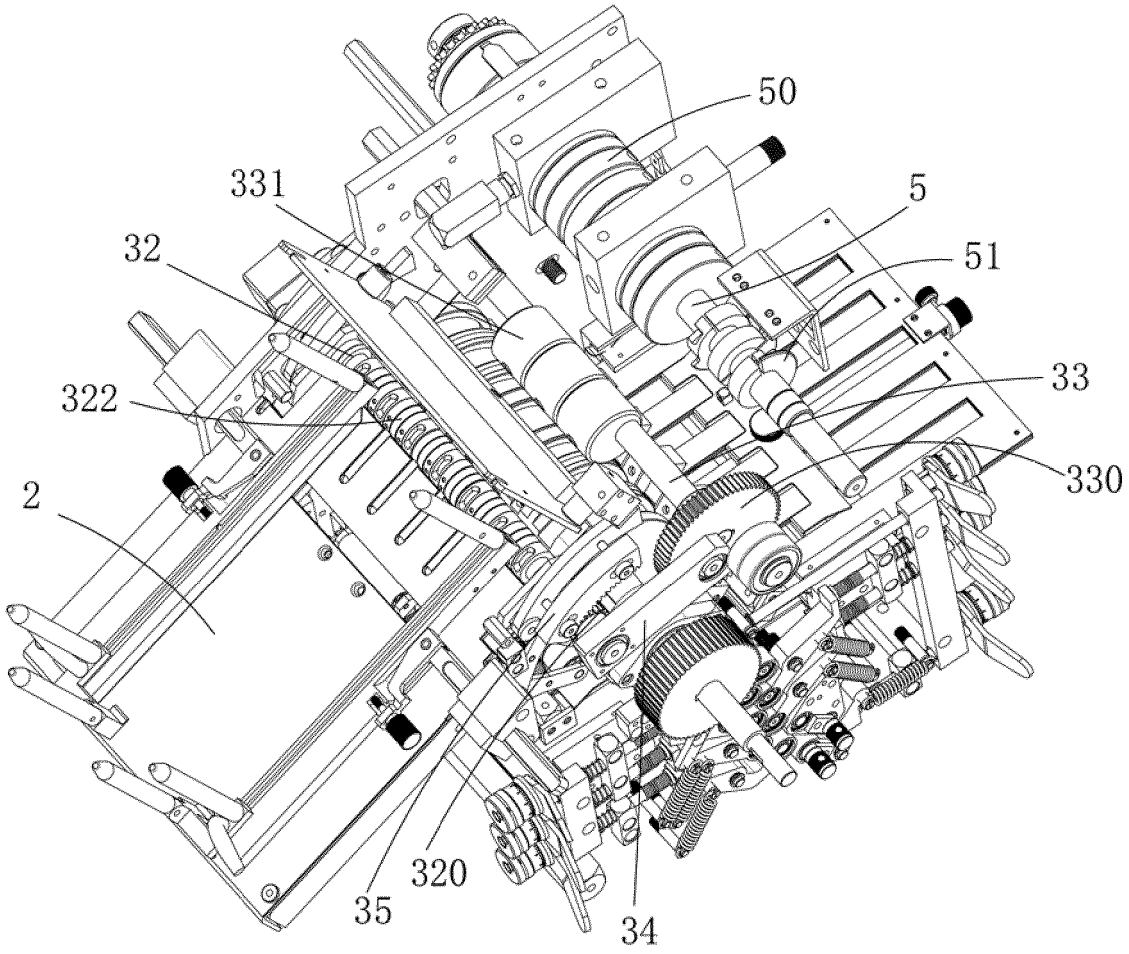

FIG 3

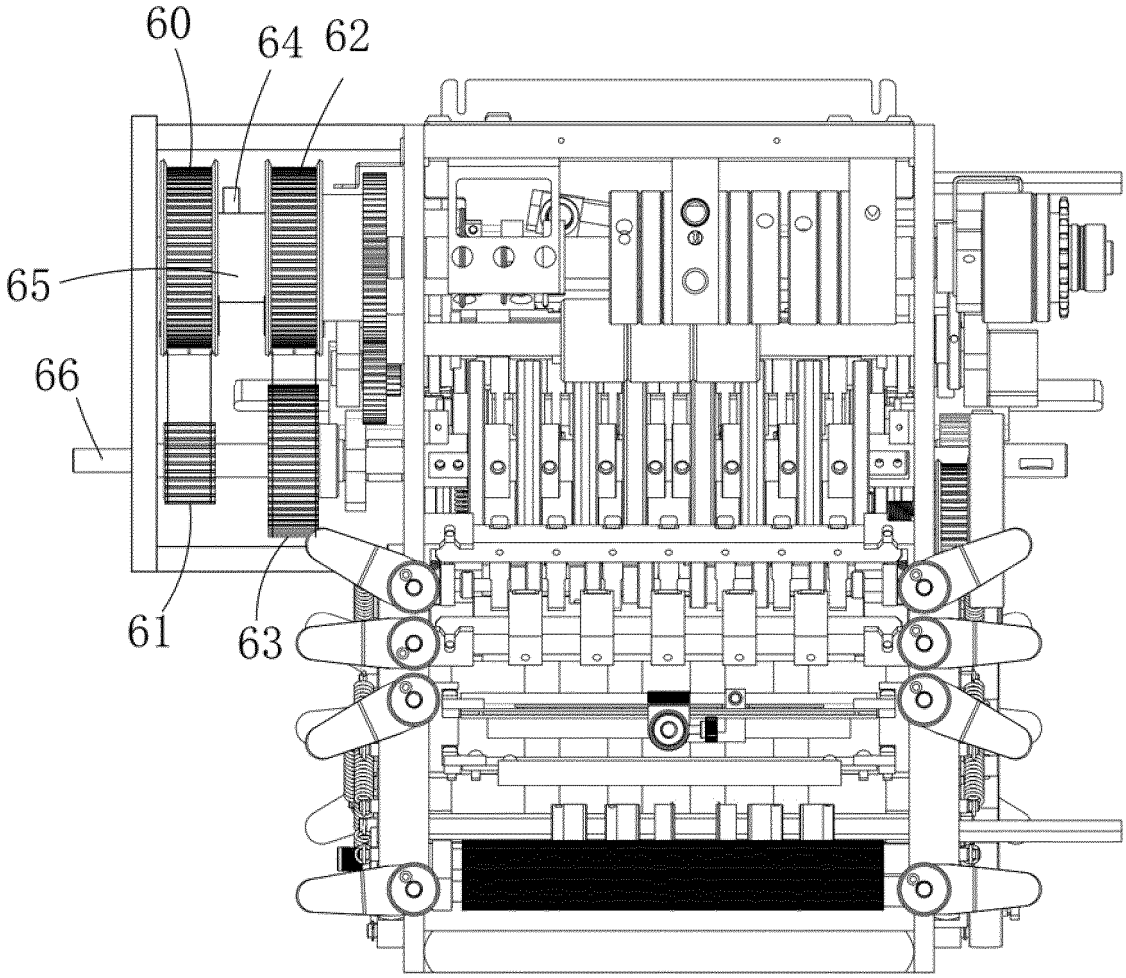

FIG4

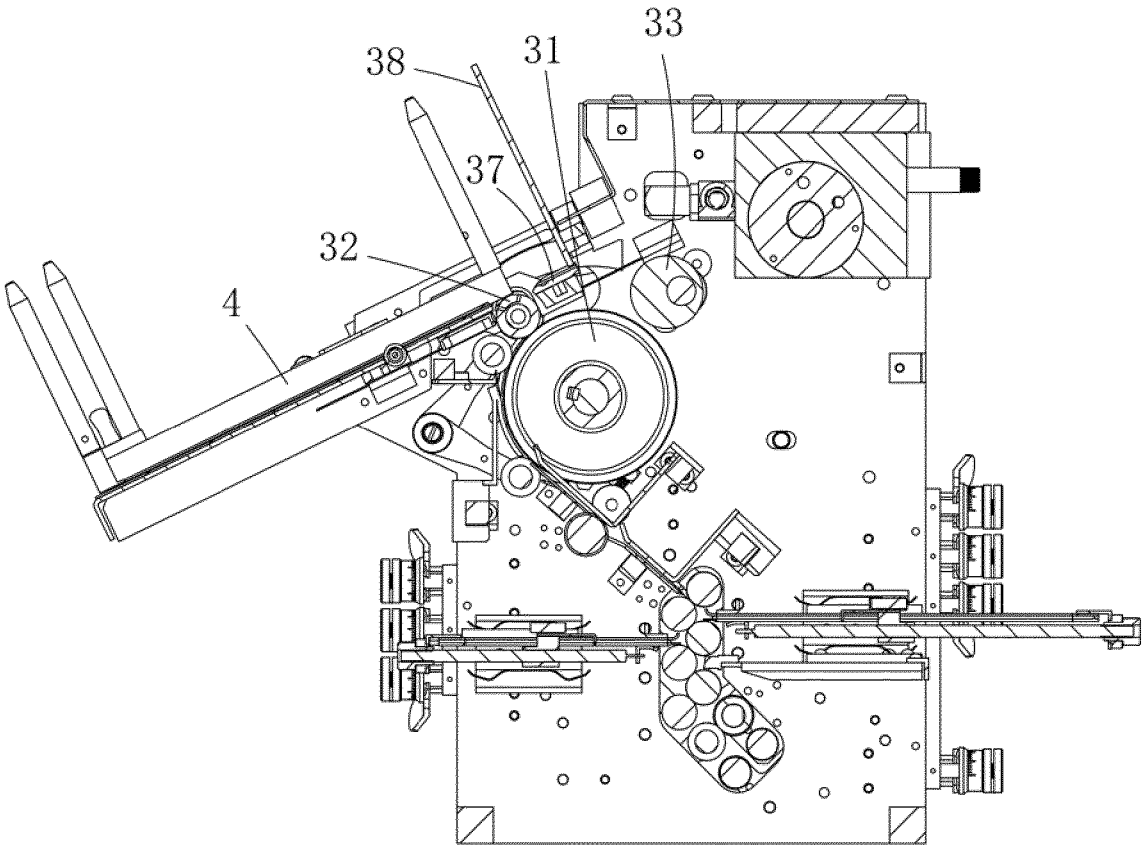

FIG 5

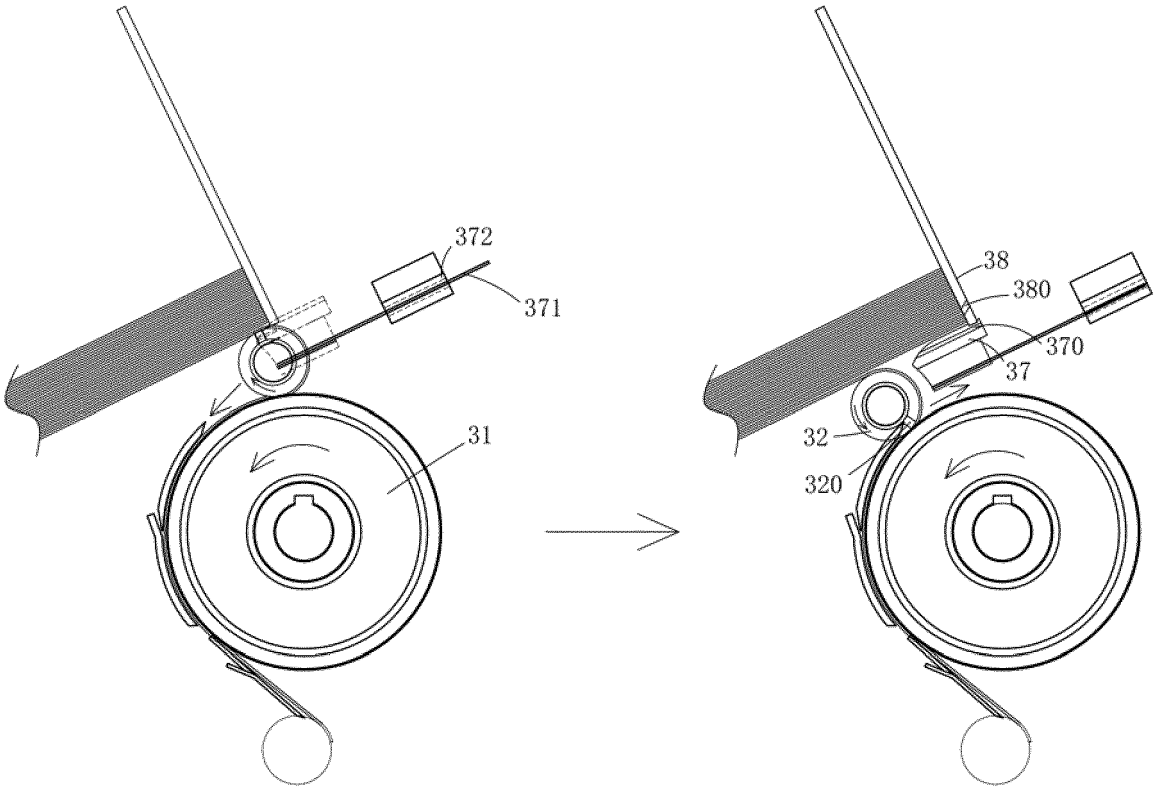

FIG 6

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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