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(54) **DIE CUTTER SUPPLY SYSTEM**

VERSORGUNGSSYSTEM FÜR STANZWERKZEUGE

SYSTÈME D'ALIMENTATION POUR OUTILS DE POINÇONNAGE

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(73) Proprietor: **Quzhou Taiwei Precise Machinery Co., Ltd.**
Quzhou, Zhejiang 324000 (CN)

(72) Inventors:
• **WANG, Xiebin**
Quzhou, Zhejiang 324000 (CN)
• **TONG, Junxiang**
Quzhou, Zhejiang 324000 (CN)

- **TONG, Huizhong**
Quzhou, Zhejiang 324000 (CN)
- **WANG, Wenyin**
Quzhou, Zhejiang 324000 (CN)
- **TONG, Xiaozhong**
Quzhou, Zhejiang 324000 (CN)

(74) Representative: **Sun, Yiming**
HUASUN Patent- und Rechtsanwälte
Friedrichstraße 33
80801 München (DE)

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Description

TECHNICAL FIELD

[0001] The present invention relates to the technical field of automatic cutting machines, and in particular to a die cutter supply system and a high-speed smart cutting and processing center using the system.

BACKGROUND

[0002] The die cutters of the existing cutting machines are usually fixed mounted on the heads of the cutting machines and the die cutters need to be replaced manually each time the die cutters are to be changed to another model. This requires huge workload as well as position and angle debugging following each change of the die cutters, leading to much time wastes and low production efficiency as well as uncontrolled quality. Although some cutting machines adopt automatic die cutter change technology, these cutting machines are complex in structure, large in volume, huge in land occupation area, high in failure rate and poor in running stability. CN 107 097 294 A discloses a cutting machine for sheet cutting which comprises a die cutting head, a cutting die replacement mechanism, a tool magazine, a rack, a bracket and a control box. The die cutting head is arranged on the rack which is arranged at one end of the die cutting head. The tool magazine is arranged in the bracket. The cutting die replacement mechanism is arranged between the tool magazine and the die cutting head. A cutting die is arranged under the die cutting head, and the control box is arranged on the rack. CN 201 231 508 Y discloses a foam board cutting machine.

SUMMARY

TECHNICAL PROBLEMS

[0003] In order to address the above technical problems, the present invention provides a die cutter supply system and a high-speed smart cutting and processing center using the system, which feature simple structure, small volume and good stability.

SOLUTIONS TO THE PROBLEMS

[0004] The present invention is achieved by providing a die cutter supply system, which includes a frame and a die cutter storage rack and a drive device disposed within the frame. An exit-entry portion for die cutters to enter and exit the storage rack is disposed at back and front sides of the frame respectively. A plurality of die cutters are stacked up and down in different layers in the storage rack. Guide columns are respectively disposed at four corners of the frame, and guide sleeves slidable cooperating with the guide columns are disposed on the storage rack. The drive device drives the storage rack

up and down along the guide columns. The drive device includes a motor gear box provided with a dual-output shaft, driving belt wheels, a driven shaft, driven bearings, driven belt wheels and synchronous belts. The motor gear box is disposed on the top of the frame. Two driving belt wheels are respectively disposed on both ends of the output shaft. Two driven bearings are fixed at a lower portion of the frame and located below the storage rack. The driven shaft is penetrated through the two driven bearings, and the driven belt wheels are disposed on both ends of the driven shaft. The driving belt wheels drive the driven belt wheels to rotate by the synchronous belts. A synchronous belt is disposed on left and right sides of the frame respectively, and each synchronous belt is provided with a cutter rack fixing plate. One end of the cutter rack fixing plate is fixed on the synchronous belt, and the other end is fixed on the storage rack at this side.

[0005] According to present invention, a plurality of slideways for placing die cutters are disposed up and down at right and left sides of the storage rack respectively. A die cutter locking device for positioning a die cutter in a slideway is disposed at the right side of the storage rack. The die cutter locking device includes a locking cylinder, a locking operation rod, locking bearings, driving rods, locking rods, locking rod rotary shafts, and a rotary shaft fixing rod. The locking cylinder is fixed on an upper portion of the storage rack, and the locking operation rod is fixedly connected with an output shaft of the locking cylinder. The locking operation rod is penetrated through two locking bearings, and the two locking bearings are fixed on the storage rack and respectively located at both ends of the locking operation rod. The locking operation rod is slid up and down along the locking bearings under the drive of the locking cylinder. The rotary shaft fixing rod is fixed at a side of the storage rack, and the rotary shaft fixing rod is provided with a plurality of avoiding holes corresponding to a placement position of each layer of die cutter. The driving rods, the locking rods and the locking rod rotary shafts are respectively disposed at a side of the placement position of each layer of die cutter by sets. The locking rods are provided with a waist-shaped hole, a rotary shaft hole, and an arc-shaped portion. The locking rod rotary shafts are penetrated through the rotary shaft fixing rod and the rotary shaft holes of the locking rods to movably connect the locking rods in the avoiding holes of the locking rods. One end of the driving rods is fixed on the locking rods, and the other end is movably inserted into the waist-shaped holes of the locking rods. The arc-shaped portions of the locking rods are fitted into limiting grooves of side edges of the die cutters. The locking operation rod slides up and down and thus drives the locking rods to rotate around the locking rod rotary shafts through the driving rods.

[0006] Optionally, a roller is disposed at a sidewall of each slideway 7.

[0007] Optionally, the locking operation rod is provided with a contact block, and an upper travel switch and a lower travel switch cooperating with the contact block are

respectively disposed on the frame.

[0008] Optionally, a cutter rack support column is disposed at the bottom of the storage rack, and a cutter rack limiting column is disposed on the top of the frame 1.

[0009] Optionally, a stop switch triggered by the storage rack is disposed on the frame.

[0010] The present invention is achieved by providing a high-speed smart cutting and processing center. The high-speed smart cutting and processing center uses the above die cutter supply system.

BENEFICIAL EFFECTS OF THE PRESENT INVENTION

[0011] Compared with the prior arts, in the die cutter supply system and the high-speed smart cutting and processing center using the system in the present invention, the die cutter supply system includes a die cutter storage rack and a drive device disposed within the frame; the die cutters are stacked up and down in different layers in the storage rack; the guide columns are respectively disposed at four corners of the frame; guide sleeves slidable cooperating with the guide columns are disposed on the storage rack; the drive device drives the storage rack to move up and down along the guide columns; the drive device includes synchronous belts disposed at the right and left sides of the frame, and each synchronous belt is provided with a cutter rack fixing plate, one end of which is fixed to the synchronous belt and the other end is fixed to the storage rack at this side; the two synchronous belts drive the storage rack to move up and down through respective cutter rack fixing plates at the same time. With the synchronous belt structure, the drive structure is simplified, and the device volume is effectively reduced, and further the repeatability of the up and down moving position of the die cutter storage rack is improved, thereby ensuring good device stability. On the other hand, the present invention facilitates change of die cutters, which not only shortens the change time but also increases the working efficiency. Further, accurate positioning can be achieved so as to improve the cutting accuracy of the high-speed smart cutting and processing center.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012]

FIG. 1 is a front view of a preferred embodiment of a die cutter supply system in the present invention.

FIG. 2 is a stereoscopic schematic diagram of FIG. 1.

FIG. 3 is a stereoscopic schematic diagram of FIG. 2 from another perspective.

FIG. 4 is a partially-enlarged view of an M part in FIG. 2.

FIG. 5 is a stereoscopic schematic diagram of a die cutter in FIG. 2.

FIG. 6 is a stereoscopic schematic diagram of a locking rod in FIG. 2.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0013] In order to make the technical problems, the technical solutions and the beneficial effects clearer and more intelligible, the present invention will be further elaborated in combination with accompanying drawings and specific embodiments. It should be understood that the specific embodiments described herein are used only to explain the present invention rather than limit the present invention.

[0014] By referring FIGS. 1 to 4 at the same time, a preferred embodiment of a die cutter supply system of the present invention includes a frame 1 and a die cutter storage rack 2 and a drive device 3 disposed within the frame 1.

[0015] An exit-entry portion 4 for die cutters A to enter and exit the storage rack 2 is disposed at back and front sides of the frame 1 respectively. The exit-entry portion 4 at one side is used to connect with a high-speed smart cutting and processing center to provide a desired die cutter A for the high-speed smart cutting and processing center. The exit-entry portion 4 at the other side is used to change and sequentially configure the die cutters A in the frame 1. A plurality of die cutters A are stacked up and down in different layers in the storage rack 2. Guide columns 5 are respectively disposed at four corners of the frame 1. Guide sleeves 6 slidably cooperating with the guide columns 5 are disposed on the storage rack 2. The drive device 3 drives the storage rack 2 up and down along the guide columns 5.

[0016] The drive device includes a motor gear box 31 provided with a dual output shaft, driving belt wheels 32, a driven shaft 33, driven bearings 34, driven belt wheels 35 and synchronous belts 36. The motor gear box 31 is disposed on the top of the frame 1. Two driving belt wheels 32 are respectively disposed on both ends of the output shaft. Two driven bearings 34 are fixed at a lower portion of the frame 1 and located below the storage rack 2. The driven shaft 33 is penetrated through the two driven bearings 34, and the driven belt wheels 35 are disposed on both ends of the driven shaft 33. The driving belt wheels 32 drive the driven belt wheels 35 to rotate by the synchronous belts 36. A synchronous belt 36 is disposed on left and right sides of the frame 1 respectively, and each synchronous belt 36 is provided with a cutter rack fixing plate 37, one end of the cutter rack fixing plate 37 is fixed on the synchronous belt 36, and the other end is fixed on the storage rack 2 at this side. The two synchronous belts 36 drive the storage rack 2 to move up and down along the guide columns 5 through respective cutter rack fixing plates 37 at the same time. With the synchronous belt technology, the structure of the drive

device 3 is simplified and the repeatability of the up and down moving position of the storage rack 2 is improved, thereby increasing the running stability.

[0017] A plurality of slideways 7 for placing the die cutters A are disposed at the left and right sides of the storage rack 2 respectively and a die cutter locking device 8 for positioning the die cutters A in the slideways 7 is disposed at the right side of the storage rack 2.

[0018] The die cutter locking device 8 includes a locking cylinder 81, a locking operation rod 82, locking bearings 83, driving rods 84, locking rods 85, locking rod rotary shafts 86, and a rotary shaft fixing rod 87. The locking cylinder 81, the locking bearing 83, and the rotary shaft fixing rod 87 are respectively fixed to the storage rack 2.

[0019] The locking cylinder 81 is fixed on an upper portion of the storage rack 2, and the locking operation rod 82 is fixedly connected with an output shaft of the locking cylinder 81. The locking operation rod 82 is penetrated through two locking bearings 83 which are fixed on the storage rack 2 and respectively located both ends of the locking operation rod 82. The locking operation rod 82 is slid up and down along the locking bearings 83 under the drive of the locking cylinder 81. The rotary shaft fixing rod 87 is fixed at a side of the storage rack 2, and the rotary shaft fixing rod 87 is provided with a plurality of avoiding holes 871 each corresponding to a placement position of the each layer of die cutter A.

[0020] The driving rods 84, the locking rods 85 and the locking rod rotary shafts 86 are disposed at a side of the placement position of each layer of die cutter A respectively by sets. As shown in FIG. 6, the locking rod is provided with a waist-shaped hole 851, a rotary shaft hole 852 and an arc-shaped portion 853 respectively, where the waist-shaped hole 851 and the arc-shaped portion 853 are located at both sides of the rotary shaft hole 852. The locking rod rotary shafts 86 are penetrated through the rotary shaft fixing rod 87 and the rotary shaft holes 852 of the locking rods 85 to movably connect the locking rods 85 in the locking rod avoiding holes 871 such that the locking rods 85 can rotate around the locking rod rotary shafts 86. One end of the driving rods 84 is fixed on the locking rods 85, and the other end is movable inserted into the waist-shaped holes of the locking rods 85. The arc-shaped portions 853 of the locking rods 85 are fitted into limiting grooves B of side edges of the die cutters A, as shown in FIG. 5.

[0021] The locking operation rod 82 slides up and down and thus drives the locking rods 85 to rotate around the locking rod rotary shafts 86 through the driving rods 84, such that the arc-shaped portions 853 of the locking rods 85 are fitted into the limiting grooves B of the die cutters A so as to lock up the die cutters A, or the arc-shaped portions 853 of the locking rods 85 are released from the limiting grooves B of the die cutters A so as to unlock the die cutters A.

[0022] The locking operation rod 82 is provided with a contact block 88, and an upper travel switch 10 and a

lower travel switch 11 cooperating with the contact block 88 are respectively disposed on the frame 1. The contact block 88 moves up and down along with the locking operation rod 82 to trigger the upper travel switch 10 and the lower travel switch 11 respectively so as to limit the upper and lower positions for the movement of the locking operation rod 82, thereby improving the operation safety of the die cutter locking device 8.

[0023] With the locking cylinder 81 as power, the response time of the die cutter locking device 8 can be shortened and the working efficiency of the die cutter supply system can be improved.

[0024] A roller 9 is disposed at a sidewall of each slideway 7. The rollers 9 are located above the die cutters A and close to the exit-entry portion 4 at the back of the frame 1, so as to achieve limiting and guiding effect when the die cutters A are guided into or out of the storage rack 2. A cutter rack support column 12 is disposed at the bottom of the storage rack 2 and fixed on the frame 1. A cutter rack limiting column 13 is disposed on the top of the frame 1. In this embodiment, four cutter rack support columns 12 are disposed correspondingly at four corners of the bottom of the storage rack 2, and four cutter rack limiting columns 13 are disposed correspondingly at four corners of the top of the frame 1. In this way, the safety and stability of the storage rack 2 can be improved. A stop switch 14 triggered by the storage rack 2 is disposed on the frame 1. The stop switch 14 is used to limit a descending position of the storage rack 2, thereby improving the movement safety and stability of the storage rack 2.

EMBODIMENTS OF THE PRESENT INVENTION

[0025] The present invention is achieved by providing a high-speed smart cutting and processing center. The high-speed smart cutting and processing center uses the above die cutter supply system. The die cutter supply system can automatically provide the die cutters A desired for cutting operation to the high-speed smart cutting and processing center.

[0026] The above descriptions are made only to preferred embodiments of the present invention and are not used to limit the present invention, which is defined by the claims.

Claims

1. A die cutter supply system, comprising: a frame (1) and a die cutter storage rack (2) and a drive device (3) disposed within the frame (1), wherein an exit-entry portion (4) for die cutters (A) to enter and exit the storage rack (2) are disposed at back and front sides of the frame (1) respectively, a plurality of die cutters (A) are stacked up and down in different layers in the storage rack (2), guide columns (5) are respectively disposed at four corners of the frame (1), guide sleeves (6) slidably cooperating with

the guide columns (5) are disposed on the storage rack (2), and the drive device (3) drives the storage rack (2) up and down along the guide columns (5); **characterised in that** the drive device (3) comprises a motor gear box (31) provided with a dual output shaft, driving belt wheels (32), a driven shaft (33), driven bearings (34), driven belt wheels (35) and synchronous belts (36), the motor gear box (31) is disposed on the top of the frame (1), two driving belt wheels (32) are respectively disposed on both ends of the output shaft, two driven bearings (34) are fixed at a lower portion of the frame (1) and located below the storage rack (2), the driven shaft (33) is penetrated through the two driven bearings (34), the driven belt wheels (35) are disposed on both ends of the driven shaft (33), the driving belt wheels (32) drive the driven belt wheels (35) to rotate by the synchronous belts (36), a synchronous belt (36) is disposed on left and right sides of the frame (1) respectively, each synchronous belt (36) is provided with a cutter rack fixing plate (37), one end of the cutter rack fixing plate (37) is fixed on the synchronous belt (36), and the other end is fixed on the storage rack (2) at this side, wherein a plurality of slideways (7) for placing die cutters (A) are disposed up and down at right and left sides of the storage rack (2) respectively, a die cutter locking device (8) for positioning a die cutter (A) in a slideway (7) is disposed at the right side of the storage rack (2), the die cutter locking device (8) comprises a locking cylinder (81), a locking operation rod (82), locking bearings (83), driving rods (84), locking rods (85), locking rod rotary shafts (86), and rotary shaft fixing rods (87), the locking cylinder (81) is fixed on an upper portion of the storage rack (2), the locking operation rod (82) is fixedly connected with an output shaft of the locking cylinder (81), the locking operation rod (82) is penetrated through two locking bearings (83), the two locking bearings (83) are fixed on the storage rack (2) and respectively located at both ends of the locking operation rod (82), the locking operation rod (82) is slid up and down along the locking bearings (83) under the drive of the locking cylinder (81), the rotary shaft fixing rod (87) is fixed at a side of the storage rack (2), the rotary shaft fixing rod (87) is provided with a plurality of avoiding holes (871) corresponding to a placement position of each layer of die cutter (A), the driving rods (84), the locking rods (85) and the locking rod rotary shafts (86) are respectively disposed at a side of the placement position of each layer of die cutter (A) by sets, the locking rods (85) are provided with a waist-shaped hole (851), a rotary shaft hole (852), and an arc-shaped portion (853), the locking rod rotary shafts (86) are penetrated through the rotary shaft fixing rod (87) and the rotary shaft holes (852) of the locking rods (85) to movably connect the locking rods (85) in the avoiding hole (871) of the locking rods

(85), one end of the driving rods (84) is fixed on the locking rods (85), the other end is movably inserted into the waist-shaped holes (851) of the locking rods (85), the arc-shaped portion (853) of the locking rods (85) is fitted into limiting grooves (B) of side edges of the die cutters (A) and the locking operation rod (82) slides up and down and thus drives the locking rods (85) to rotate around the locking rod rotary shafts (86) through the driving rods (84).

2. The die cutter supply system of claim 1, wherein a roller (9) is disposed at a sidewall of each slideway (7).
3. The die cutter supply system of claim 1, wherein the locking operation rod (82) is provided with a contact block (88), and an upper travel switch (10) and a lower travel switch (11) cooperating with the contact block (88) are respectively disposed on the frame (1).
4. The die cutter supply system of claim 1, wherein a cutter rack support column (12) is disposed at the bottom of the storage rack (2), and a cutter rack limiting column (13) is disposed on the top of the frame (1).
5. The die cutter supply system of claim 1, wherein a stop switch (14) triggered by the storage rack (2) is disposed on the frame (1).
6. A high-speed smart cutting and processing center, using the die cutter supply system of any one of claims 1 to 4.

Patentansprüche

1. Ein Stanzmesserversorgungssystem, umfassend: einen Rahmen (1), einen Stanzmesserlagerrahmen (2) und eine Antriebsvorrichtung (3), die innerhalb des Rahmens (1) angeordnet sind, wobei an den Vorder- und Rückseiten des Rahmens (1) jeweils ein Ein- und Austrittsbereich (4) für Stanzmesser (A) angeordnet ist, eine Vielzahl von Stanzmessern (A) in unterschiedlichen Ebenen im Lagerrahmen (2) übereinander gestapelt sind, Führungssäulen (5) jeweils an den vier Ecken des Rahmens (1) angeordnet sind, Führungshülsen (6), die gleitend mit den Führungssäulen (5) zusammenwirken, am Lagerrahmen (2) angebracht sind, und die Antriebsvorrichtung (3) den Lagerrahmen (2) entlang der Führungssäulen (5) auf- und abbewegt;

dadurch gekennzeichnet, dass die Antriebsvorrichtung (3) ein Motorgetriebe (31) mit einer Doppelausgangswelle, Antriebsriemenscheiben (32), eine Abtriebswelle (33), Abtriebslager (34), Abtriebsriemenscheiben (35) und Syn-

chronriemen (36) umfasst, wobei das Motorge-
triebe (31) oben am Rahmen (1) angebracht ist,
zwei Antriebsriemenscheiben (32) jeweils an
den beiden Enden der Ausgangswelle ange-
bracht sind, zwei Abtriebslager (34) an einem
unteren Bereich des Rahmens (1) befestigt und
unterhalb des Lagerrahmens (2) angeordnet
sind, die Abtriebswelle (33) durch die beiden
Abtriebslager (34) hindurchgeführt ist, die Ab-
triebsriemenscheiben (35) an beiden Enden der
Abtriebswelle (33) angebracht sind, die An-
triebsriemenscheiben (32) die Abtriebsriemen-
scheiben (35) über die Synchronriemen (36) in
Rotation versetzen, jeweils ein Synchronriemen
(36) an der linken und rechten Seite des Rah-
mens (1) angebracht ist, jeder Synchronriemen
(36) mit einer Stanzmesserrahmenbefestigungs-
platte (37) versehen ist, wobei ein Ende der
Stanzmesserrahmenbefestigungsplatte (37) am
Synchronriemen (36) befestigt ist und das andere
Ende am Lagerrahmen (2) auf dieser Seite befestigt
ist,
wobei eine Vielzahl von Führungsschienen (7) zum
Platzieren von Stanzmessern (A) jeweils links und
rechts am Lagerrahmen (2) übereinander angeordnet
sind, eine Stanzmesserverriegelungsvorrichtung (8) zum
Positionieren eines Stanzmessers (A) in einer Führungsschiene
(7) auf der rechten Seite des Lagerrahmens (2) angeordnet
ist, die Stanzmesserverriegelungsvorrichtung (8) einen
Verriegelungszylinder (81), eine Verriegelungsbetätigungs-
stange (82), Verriegelungslager (83), Antriebsstangen
(84), Verriegelungsstangen (85), Verriegelungsstangen-
Drehachsen (86) und Verriegelungsstangen-Befestigungs-
stangen (87) umfasst, wobei der Verriegelungszylinder (81)
an einem oberen Bereich des Lagerrahmens (2) befestigt
ist, die Verriegelungsbetätigungsstange (82) fest mit einer
Ausgangswelle des Verriegelungszylinders (81) verbunden
ist, die Verriegelungsbetätigungsstange (82) durch zwei
Verriegelungslager (83) hindurchgeführt ist, die beiden
Verriegelungslager (83) am Lagerrahmen (2) befestigt
und jeweils an beiden Enden der Verriegelungsbetätigungs-
stange (82) angeordnet sind, die Verriegelungsbetätigungs-
stange (82) entlang der Verriegelungslager (83) unter
Antrieb des Verriegelungszylinders (81) auf- und abgeleitet,
die Verriegelungsstangen-Befestigungsstange (87) an einer
Seite des Lagerrahmens (2) befestigt ist, die Verriegelungs-
stangen-Befestigungsstange (87) mit einer Vielzahl von
Aussparungen (871) versehen ist, die den Positionen der
einzelnen Stanzmesserebenen entsprechen, die Antriebsstangen
(84), die Verriegelungsstangen (85) und die Verriegelungs-
stangen-Drehachsen (86) jeweils in den

Positionen der einzelnen Stanzmesserebenen
angebracht sind, die Verriegelungsstangen (85) mit
einem schlitzförmigen Loch (851), einem Drehachsenloch
(852) und einem bogenförmigen Abschnitt (853) versehen
sind, die Verriegelungsstangen-Drehachsen (86) durch
die Verriegelungsstangen-Befestigungsstange (87) und
die Drehachsenlöcher (852) der Verriegelungsstangen
(85) hindurchgeführt sind, um die Verriegelungsstangen
(85) beweglich in den Aussparungen (871) der Verriegelungs-
stangen zu verbinden, ein Ende der Antriebsstangen
(84) an den Verriegelungsstangen (85) befestigt ist,
das andere Ende beweglich in die schlitzförmigen Löcher
(851) der Verriegelungsstangen (85) eingeführt ist, der
bogenförmige Abschnitt (853) der Verriegelungsstangen
(85) in Begrenzungsnuten (B) der Seitenkanten der
Stanzmesser (A) eingepasst ist, und die Verriegelungs-
betätigungsstange (82) auf- und abgeleitet und dadurch
die Verriegelungsstangen (85) durch die Antriebsstangen
(84) um die Verriegelungsstangen-Drehachsen (86)
dreht.

2. Das Stanzmesserversorgungssystem nach Anspruch 1, wobei eine Rolle (9) an einer Seitenwand jeder Führungsschiene (7) angebracht ist.
3. Das Stanzmesserversorgungssystem nach Anspruch 1, wobei die Verriegelungsbetätigungsstange (82) mit einem Kontaktblock (88) versehen ist und ein oberer Endschalter (10) und ein unterer Endschalter (11), die mit dem Kontaktblock (88) zusammenwirken, jeweils am Rahmen (1) angebracht sind.
4. Das Stanzmesserversorgungssystem nach Anspruch 1, wobei eine Stanzmesserrahmenstützsäule (12) am Boden des Lagerrahmens (2) und eine Stanzmesserrahmen-Begrenzungssäule (13) oben am Rahmen (1) angebracht sind.
5. Das Stanzmesserversorgungssystem nach Anspruch 1, wobei ein durch den Lagerrahmen (2) ausgelöster Stoppschalter (14) am Rahmen (1) angebracht ist.
6. Ein Hochgeschwindigkeits-Smart-Schneid- und Bearbeitungszentrum, das das Stanzmesserversorgungssystem nach einem der Ansprüche 1 bis 4 verwendet.

Revendications

1. Un système d'alimentation en couteaux de découpe, comprenant :

un cadre (1), un support de stockage des couteaux de découpe (2) et un dispositif d'entraînement (3) disposés à l'intérieur du cadre (1), dans lequel une section d'entrée-sortie (4) pour permettre aux couteaux de découpe (A) d'entrer et de sortir du support de stockage (2) est disposée respectivement sur les côtés avant et arrière du cadre (1), une pluralité de couteaux de découpe (A) sont empilés en différentes couches dans le support de stockage (2), des colonnes de guidage (5) sont disposées aux quatre coins du cadre (1), des manchons de guidage (6) coopérant de manière coulissante avec les colonnes de guidage (5) sont disposés sur le support de stockage (2), et le dispositif d'entraînement (3) déplace le support de stockage (2) de haut en bas le long des colonnes de guidage (5) ;

caractérisé en ce que le dispositif d'entraînement (3) comprend une boîte de vitesses à moteur (31) équipée d'un arbre de sortie double, des poulies d'entraînement (32), un arbre entraîné (33), des paliers entraînés (34), des poulies entraînées (35) et des courroies synchrones (36), la boîte de vitesses à moteur (31) est disposée au sommet du cadre (1), deux poulies d'entraînement (32) sont respectivement disposées aux deux extrémités de l'arbre de sortie, deux paliers entraînés (34) sont fixés dans la partie inférieure du cadre (1) et situés en dessous du support de stockage (2), l'arbre entraîné (33) traverse les deux paliers entraînés (34), les poulies entraînées (35) sont disposées aux deux extrémités de l'arbre entraîné (33), les poulies d'entraînement (32) entraînent les poulies entraînées (35) en rotation via les courroies synchrones (36), une courroie synchrone (36) est respectivement disposée sur les côtés gauche et droit du cadre (1), chaque courroie synchrone (36) est équipée d'une plaque de fixation de support de couteaux (37), une extrémité de la plaque de fixation de support de couteaux (37) est fixée sur la courroie synchrone (36), et l'autre extrémité est fixée sur le support de stockage (2) du même côté,

dans lequel une pluralité de glissières (7) pour placer les couteaux de découpe (A) sont respectivement disposées verticalement sur les côtés gauche et droit du support de stockage (2), un dispositif de verrouillage des couteaux de découpe (8) pour positionner un couteau de découpe (A) dans une glissière (7) est disposé sur le côté droit du support de stockage (2), le dispositif de verrouillage des couteaux de découpe (8) comprend un cylindre de verrouillage (81), une tige d'opération de verrouillage (82), des paliers de verrouillage (83), des tiges d'entraînement (84), des tiges de verrouillage (85),

des axes rotatifs des tiges de verrouillage (86), et des barres de fixation des axes rotatifs (87), le cylindre de verrouillage (81) est fixé sur une partie supérieure du support de stockage (2), la tige d'opération de verrouillage (82) est fixée de manière permanente à un arbre de sortie du cylindre de verrouillage (81), la tige d'opération de verrouillage (82) traverse deux paliers de verrouillage (83), les deux paliers de verrouillage (83) sont fixés sur le support de stockage (2) et respectivement situés à chaque extrémité de la tige d'opération de verrouillage (82), la tige d'opération de verrouillage (82) coulisse verticalement le long des paliers de verrouillage (83) sous l'entraînement du cylindre de verrouillage (81), la barre de fixation des axes rotatifs (87) est fixée sur un côté du support de stockage (2), la barre de fixation des axes rotatifs (87) est équipée de plusieurs orifices de dégagement (871) correspondant aux positions de placement de chaque couche de couteaux de découpe (A), les tiges d'entraînement (84), les tiges de verrouillage (85) et les axes rotatifs des tiges de verrouillage (86) sont respectivement disposés sur un côté des positions de placement de chaque couche de couteaux de découpe (A) en ensembles, les tiges de verrouillage (85) sont pourvues d'un trou en forme de fente (851), d'un trou d'axe rotatif (852) et d'une partie arquée (853), les axes rotatifs des tiges de verrouillage (86) traversent la barre de fixation des axes rotatifs (87) et les trous d'axes rotatifs (852) des tiges de verrouillage (85) pour connecter de manière mobile les tiges de verrouillage (85) dans les orifices de dégagement (871), une extrémité des tiges d'entraînement (84) est fixée sur les tiges de verrouillage (85), l'autre extrémité est insérée de manière mobile dans les trous en forme de fente (851) des tiges de verrouillage (85), la partie arquée (853) des tiges de verrouillage (85) est insérée dans les rainures de limitation (B) des bords latéraux des couteaux de découpe (A), et la tige d'opération de verrouillage (82) coulisse verticalement, entraînant ainsi les tiges de verrouillage (85) à pivoter autour des axes rotatifs des tiges de verrouillage (86) via les tiges d'entraînement (84).

2. Le système d'alimentation en couteaux de découpe selon la revendication 1, dans lequel un rouleau (9) est disposé sur une paroi latérale de chaque glissière (7).
3. Le système d'alimentation en couteaux de découpe selon la revendication 1, dans lequel la tige d'opération de verrouillage (82) est équipée d'un bloc de contact (88), et un interrupteur de fin de course supérieur (10) et un interrupteur de fin de course

inférieur (11) coopérant avec le bloc de contact (88)
sont respectivement disposés sur le cadre (1).

4. Le système d'alimentation en couteaux de découpe
selon la revendication 1, dans lequel une colonne de
support de couteaux (12) est disposée en bas du
support de stockage (2), et une colonne de limitation
des couteaux (13) est disposée sur le dessus du
cadre (1).
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5. Le système d'alimentation en couteaux de découpe
selon la revendication 1, dans lequel un interrupteur
d'arrêt (14) activé par le support de stockage (2) est
disposé sur le cadre (1).
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6. Un centre de découpe et de traitement intelligent à
grande vitesse utilisant le système d'alimentation en
couteaux de découpe selon l'une quelconque des
revendications 1 à 4.
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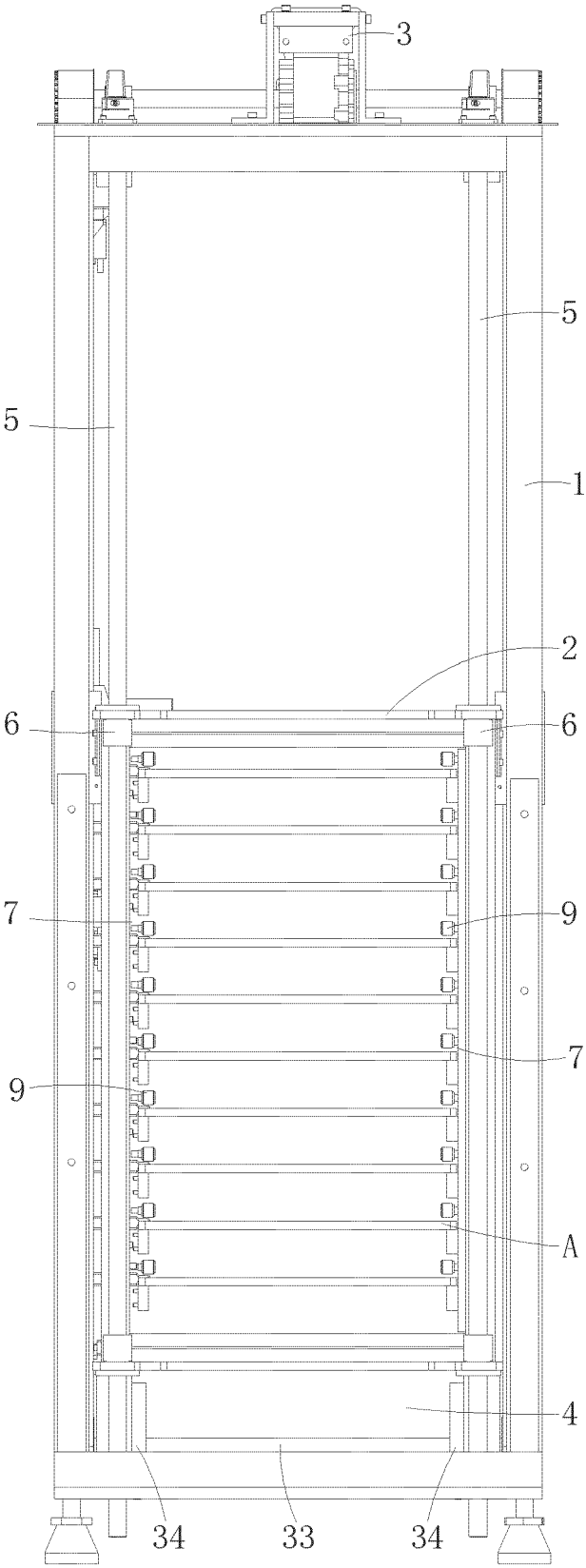


FIG.1

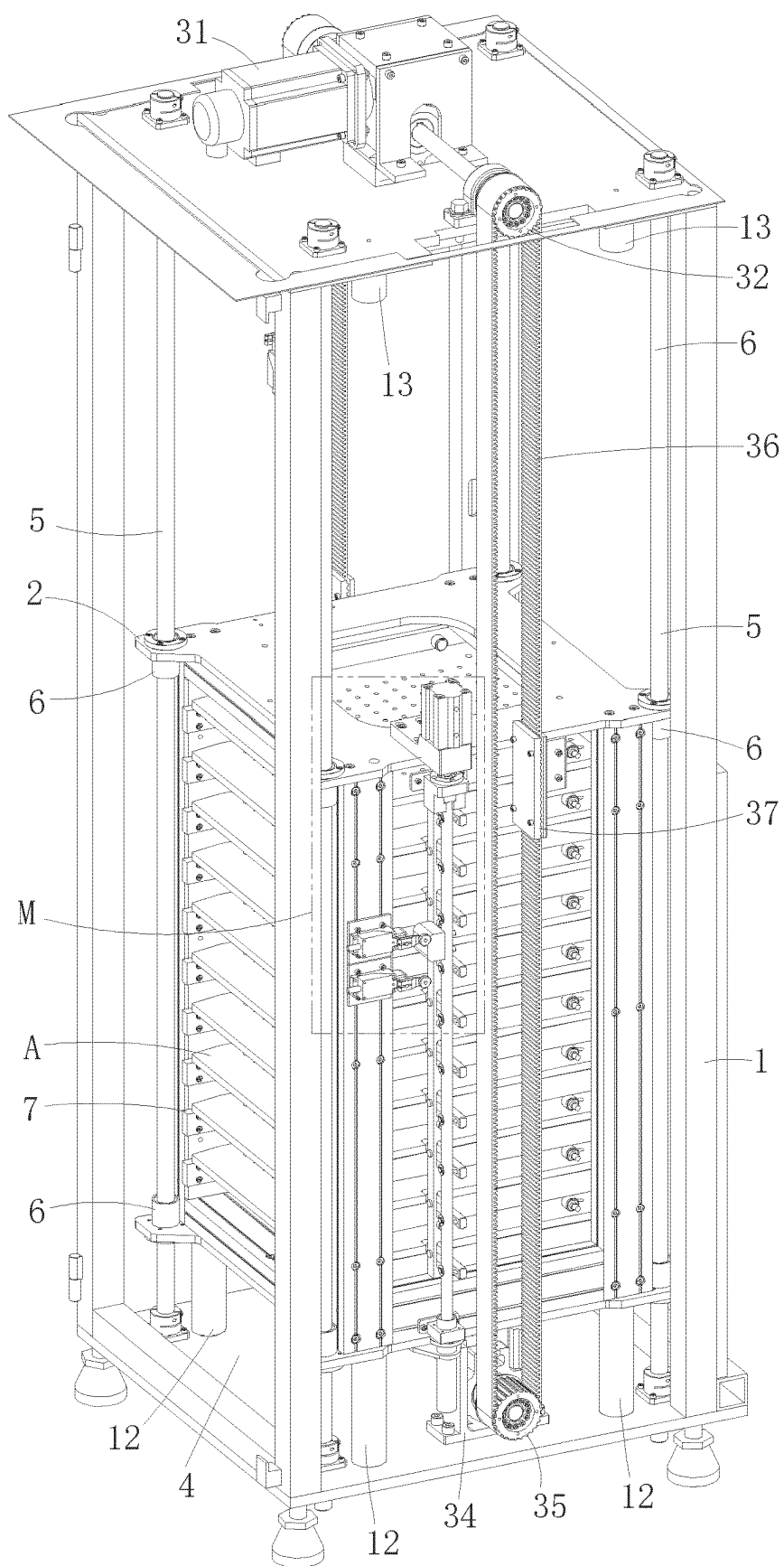


FIG.2

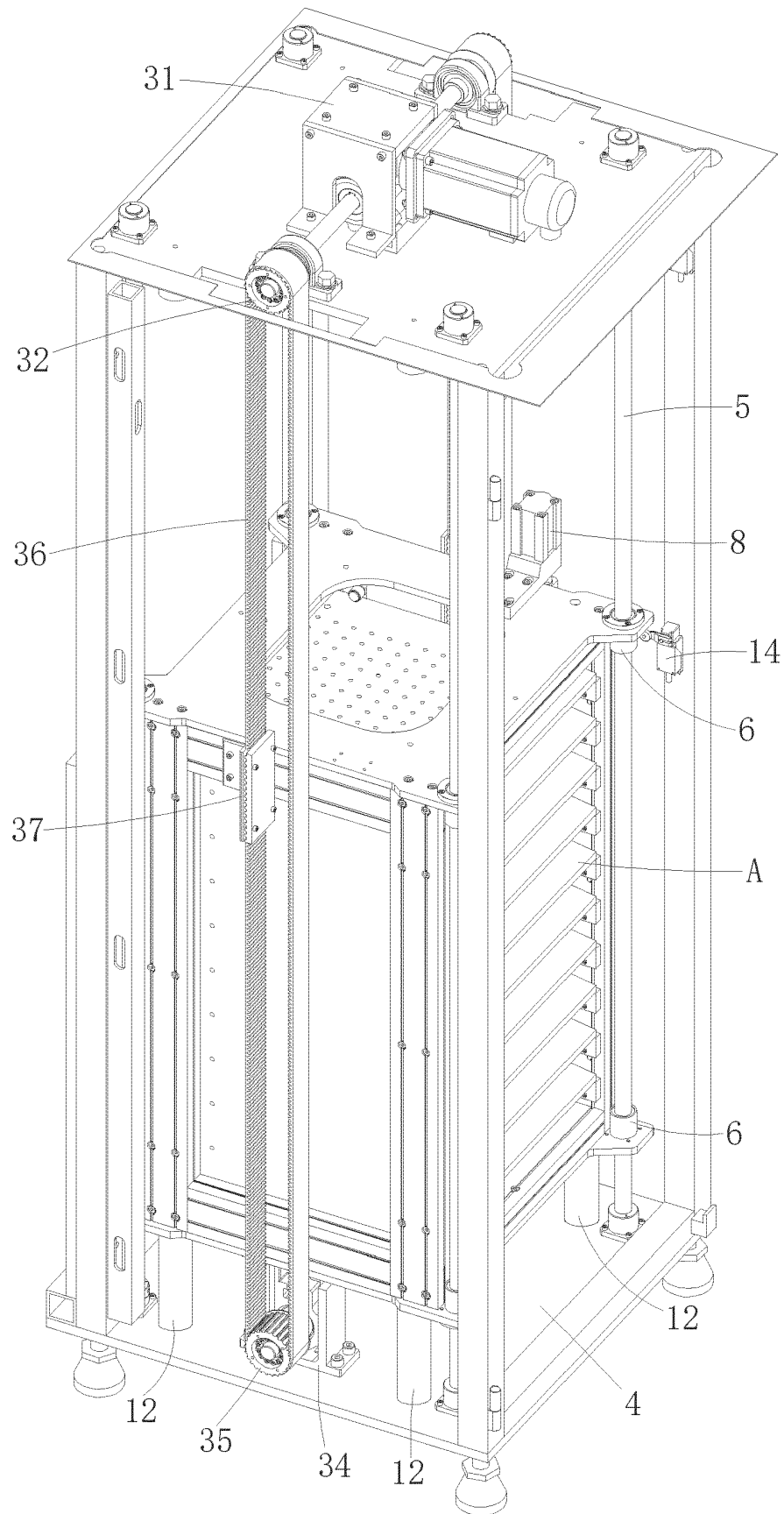


FIG.3

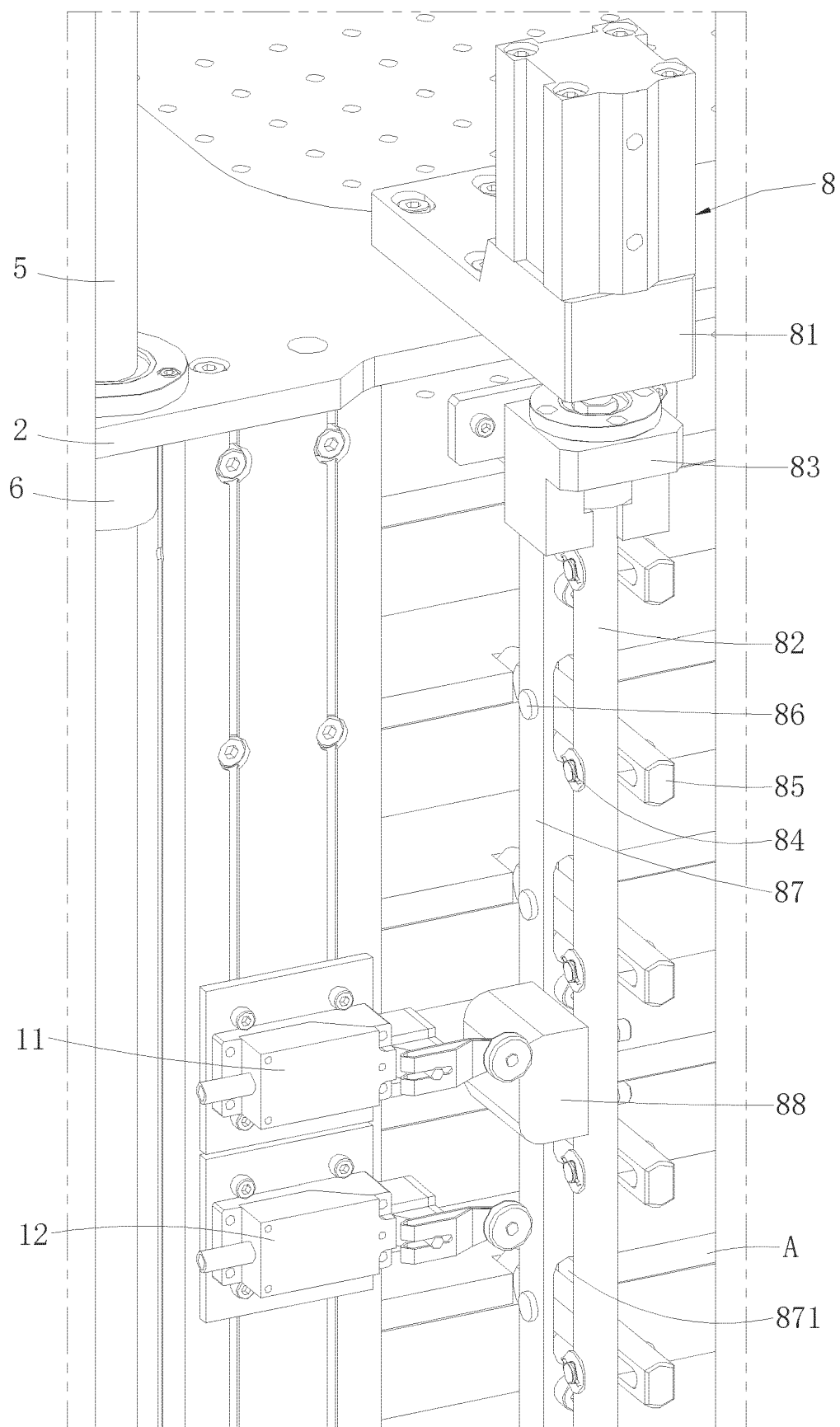


FIG.4

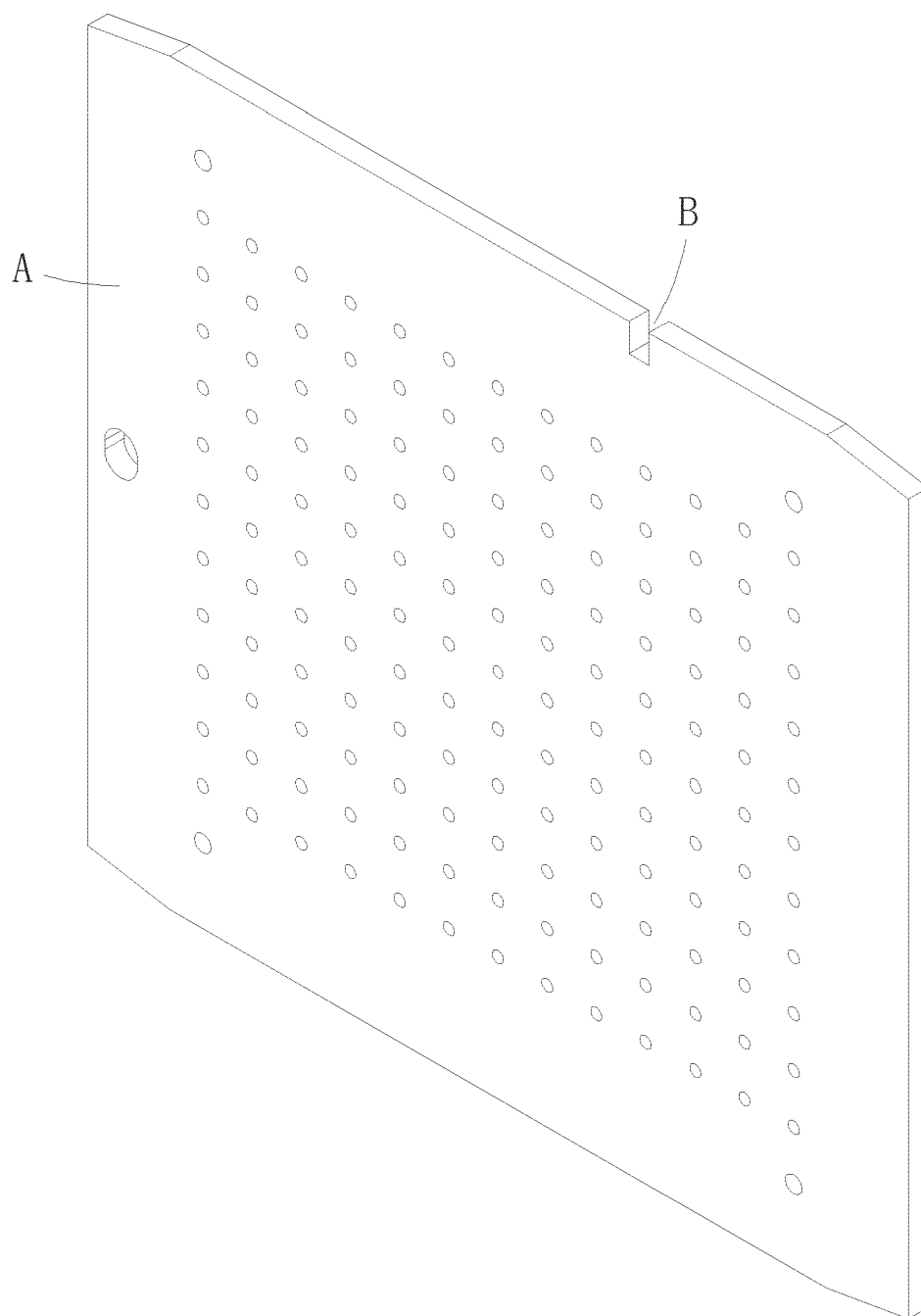


FIG.5

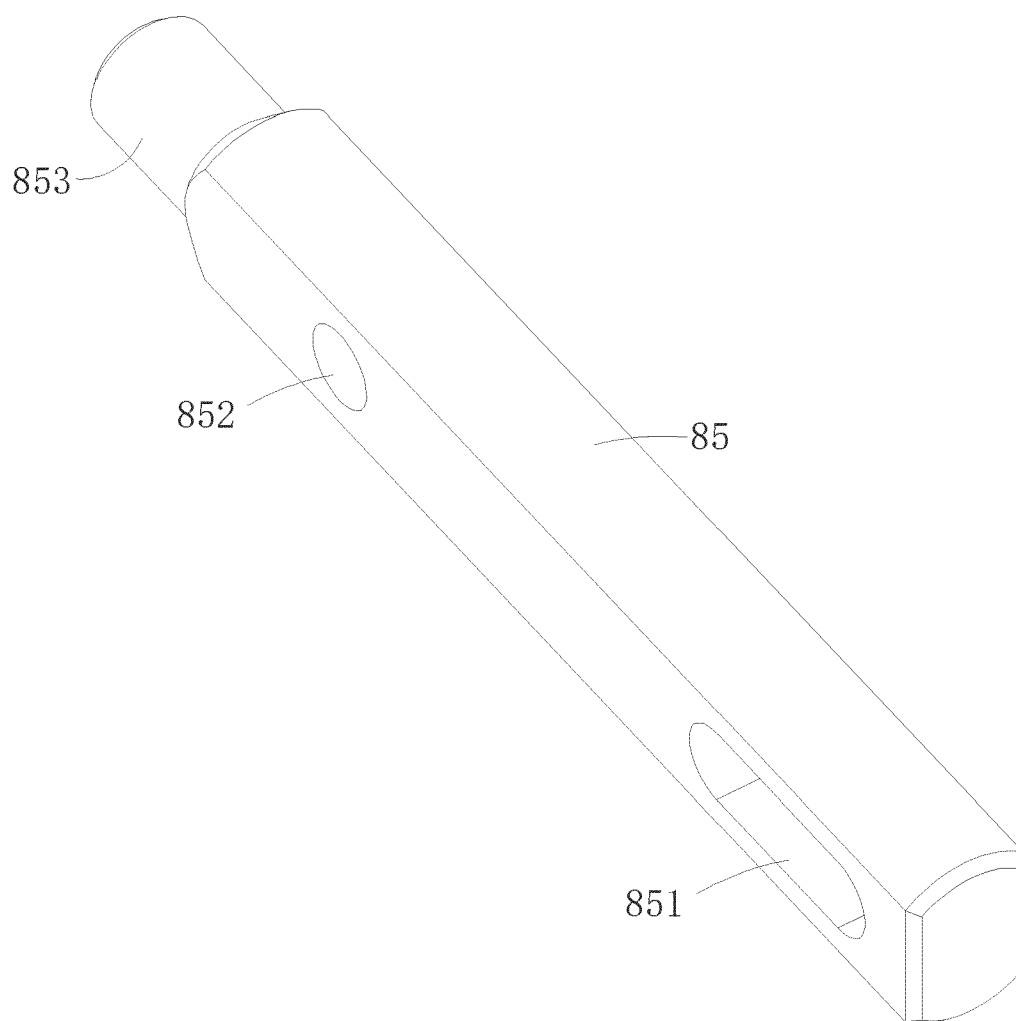


FIG. 6

REFERENCES CITED IN THE DESCRIPTION

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