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(54) **HIGH-SPEED INTELLIGENT NUMERICAL CONTROL HYDRAULIC CUTTING MACHINE**

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MACHINE DE COUPE HYDRAULIQUE À COMMANDE NUMÉRIQUE INTELLIGENTE À GRANDE VITESSE

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Description

TECHNICAL FIELD

[0001] The present invention relates to the technical field of cutting machines and in particular to a high-speed smart numerical control hydraulic cutting machine.

BACKGROUND

[0002] The cutting machines requires frequency change of die cutters based on cutting patterns, and the die cutters are usually placed on die cutter plates. For the existing cutting machines, the die cutters are mostly changed manually, which leads to long change time and low efficiency. Furthermore, the position of the changed die cutters has poor repeatability and the size of the cut products is low in accuracy. Although some cutting machines adopt a mechanical device for automatic die cutter change, the mechanical device is complex in structure and the size accuracy of the cut products is still unsatisfactory. CN 106 734 503 A discloses a numerical control cutting machine, comprising a die cutter fixing plate and a die cutter for cutting an object, wherein a die cutter clamping and limiting device is disposed on the die cutter fixing plate to clamp the die cutter, wherein the die cutter clamping and limiting device comprises a clamping assembly and a limiting assembly which are mounted on the die cutter fixing plate, wherein the clamping assembly comprises pressing cylinders, wherein the limiting assembly comprises front limiting components and rear limiting components located at front and rear side surfaces of the die cutter fixing plate, wherein two pressing cylinders are disposed at the right and left sides of the die cutter fixing plate respectively, and wherein the two pressing cylinders act simultaneously to press or release the die cutter. The limiting components are used respectively to limit a maximum distance between the left die pressing plate/the right die pressing plate and the die cutter fixing plate.

SUMMARY

TECHNICAL PROBLEM

[0003] In order to address the above technical problems, the present invention provides a high-speed smart numerical control hydraulic cutting machine to achieve clamping on a die cutter automatically and change the die cutter automatically. It is simple in structure and can shorten the time for changing the die cutter and noticeably improve the use rate of the cutting machine. Further, the position repeatability and the positioning accuracy of the die cutter are improved, and the size accuracy and stability of the cut products are also increased, so as to satisfy the users.

SOLUTIONS TO THE PROBLEMS AND TECHNICAL SOLUTIONS

[0004] The present invention is achieved by providing a high-speed smart numerical control hydraulic cutting machine, which includes a die cutter fixing plate and a die cutter for cutting an object. A die cutter clamping and limiting device is disposed on the die cutter fixing plate to clamp the die cutter. The die cutter clamping and limiting device includes a clamping assembly and a limiting assembly which are mounted on the die cutter fixing plate. The clamping assembly includes a left die pressing plate, a right die pressing plate, and pressing cylinders. The left die pressing plate and the right die pressing plate are disposed on the left and right side edges of a lower surface of the die cutter fixing plate respectively. The pressing cylinders are disposed inside the die cutter fixing plate and drive the left die pressing plate and the right die pressing plate respectively to press the die cutter closely against the lower surface of the die cutter fixing plate. The limiting assembly includes front limiting components and rear limiting components located at front and rear side surfaces of the die cutter fixing plate. The front limiting components perform limiting or unlocking for the front and rear side surfaces of the die cutter in linkage with the left die pressing plate or the right die pressing plate. Two pressing cylinders are disposed at the right and left sides of the die cutter fixing plate respectively. The two pressing cylinders act simultaneously to press or release the die cutter. Limiting screws are disposed between the left die pressing plate /the right die pressing plate and the die cutter fixing plate. The limiting screws are used to limit a maximum distance between the left die pressing plate/the right die pressing plate and the die cutter fixing plate.

[0005] Furthermore, the pressing cylinder includes a cylindrical hole, a valve core shaft, an upper piston, a lower piston, an upper air chamber and a lower air chamber, where the cylindrical hole is disposed inside the die cutter fixing plate, and the valve core shaft, the upper piston, the lower piston, the upper air chamber and the lower air chamber are disposed inside the cylindrical hole. The upper piston and the lower piston are disposed on the valve core shaft respectively. The upper air chamber is disposed between the upper piston and the top wall of the cylindrical hole. The lower air chamber is disposed between the upper piston and the lower piston. An upper air pipe connector and a lower air pipe connector are disposed on the die cutter fixing plate respectively.

[0006] The upper air pipe connector and the lower air pipe connector are in communication with the upper air chamber and the lower air chamber through an upper channel and a lower channel disposed in the die cutter fixing plate.

[0007] Furthermore, a stop washer is disposed on an inner wall of the cylindrical hole to limit a movement position of the lower piston.

[0008] Furthermore, side covers 10 are also disposed

on the die cutter fixing plate.

[0009] Furthermore, the rear limiting component includes a limiting block and a fastening bolt. The limiting block limits the movement position of the die cutter, and the fastening bolt fixes the limiting block on a side surface of the die cutter fixing plate.

[0010] Furthermore, the front limiting component includes a first connection bar, a second connection bar, a first rotary shaft, a second rotary shaft, and a third rotary shaft. The first rotary shaft is fixed on the die cutter fixing plate, and the third rotary shaft is fixed on the left die pressing plate or the right die pressing plate. The first rotary shaft is movable disposed in the middle of the first connection bar, and the second rotary shaft movably connects an end of the first connection bar to an end of the second connection bar. A blocking portion is disposed on the other end of the first connection bar to limit the die cutter, and the other end of the second connection bar is movably connected with the third rotary shaft.

[0011] Furthermore, one segment of inclined surface or arc-shaped surface is disposed on the blocking portion of the first connection bar.

BENEFICIAL EFFECTS OF THE PRESENT INVENTION

[0012] Compared with the prior arts, the high-speed smart numerical control hydraulic cutting machine provided by the present invention includes the die cutter fixing plate and the die cutter for cutting an object. A die cutter clamping and limiting device is disposed on the die cutter fixing plate to clamp the die cutter. The die cutter clamping and limiting device includes the clamping assembly and the limiting assembly which are mounted on the die cutter fixing plate. The clamping assembly presses the die cutter closely against the lower surface of the die cutter fixing plate, and the limiting assembly limits the front and rear side surfaces of the die cutter. Thus, clamping on the die cutter and the change on the die cutter can be automatically achieved. The present invention is simple in structure and can shorten the time for changing the die cutter and noticeably improve the use rate of the cutting machine. Further, the position repeatability and the positioning accuracy of changing the die cutter are improved, and the size accuracy and stability of the cut products are also increased.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013]

FIG. 1 is a stereoscopic schematic diagram of a die cutter fixing plate and a die cutter clamping and limiting device in an assembled state in a high speed smart numerical control hydraulic cutting machine according to the present invention.

FIG. 2 is a stereoscopic schematic diagram of the die cutter clamping and limiting device in FIG. 1.

FIG. 3 is a stereoscopic schematic diagram of the die cutter clamping and limiting device in FIG. 2 from another perspective, showing M-M section.

FIG. 4 is a stereoscopic schematic diagram of a first connection bar in FIG. 2.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0014] In order to make the technical problems, the technical solutions and the beneficial effects of the present invention 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.

[0015] By referring to FIGS. 1, 2 and 3, a high-speed smart numerical control hydraulic cutting machine provided by the present invention includes a die cutter fixing plate and a die cutter A for cutting an object. A die cutter clamping and limiting device is disposed on the die cutter fixing plate 3 to clamp the die cutter. The die cutter clamping and limiting device includes a clamping assembly 1 and a limiting assembly which are mounted on the die cutter fixing plate 3.

[0016] The clamping assembly 1 includes a left die pressing plate 4, a right die pressing plate 5, and pressing cylinders 6. The left die pressing plate 4 and the right die pressing plate 5 are disposed on the left and right side edges of a lower surface of the die cutter fixing plate 3 respectively. The pressing cylinders 6 are disposed inside the die cutter fixing plate 3 and located at four corners of the die cutter fixing plate 3 in a manner of left-right and back-front symmetry. The pressing cylinders 6 drive the left die pressing plate 4 and the right die pressing plate 5 respectively to press the die cutter A closely against the lower surface of the die cutter fixing plate 3.

[0017] The limiting assembly includes front limiting components and rear limiting components located at front and rear side surfaces of the die cutter fixing plate 3, where the front limiting components 7 are movable limiting components and the rear limiting components are fixed limiting components. The front limiting components 7 perform limiting or unlocking for the front and rear side surfaces of the die cutter A in linkage with the left die pressing plate 4 or the right die pressing plate 5. As shown in FIGS. 1, 2, and 3, the front limiting components 7 are respectively disposed at the front and rear side surfaces of the die cutter fixing plate 3.

[0018] When the die cutter A is in a clamped state, the left die pressing plate 4 and the right die pressing plate 5 press the die cutter A closely against the lower surface of the die cutter fixing plate 3 along an up-down direction under the drive of the pressing cylinders 6. At this time,

the limiting assembly performs limiting for the front and rear side surfaces of the die cutter A. In this way, the position repeatability and positioning accuracy of the die cutter is improved and the size accuracy of the cut products is also improved.

[0019] The limiting assembly acts in the following process: when the left die pressing plate 4 and the right die pressing plate 5 of the clamping assembly 1 press the die cutter A closely against the lower surface of the die cutter fixing plate 3, the front limiting components 7 perform limiting for the front side surface and/or rear side surface of the die cutter A immediately. On the contrary, when the left die pressing plate 4 and the right die pressing plate 5 of the clamping assembly 1 release the up-down press on the die cutter A, the front limiting components 7 release limitation for the front side surface and/or the rear side surface of the die cutter A immediately.

[0020] Two pressing cylinders 6 are disposed at the right and left sides of the die cutter fixing plate 3 respectively. The two pressing cylinders 6 act simultaneously to press or release the die cutter A.

[0021] The pressing cylinder 6 includes a cylindrical hole 61, a valve core shaft 62, an upper piston 63, a lower piston 64, an upper air chamber 65 and a lower air chamber 66, where the cylindrical hole 61 is disposed inside the die cutter fixing plate 3 and the valve core shaft 62, the upper piston 63, the lower piston 64, the upper air chamber 65 and the lower air chamber 66 are disposed inside the cylindrical hole 61. The upper piston 63 and the lower piston 64 are disposed on the valve core shaft 62 respectively. The upper air chamber 65 is disposed between the upper piston 63 and the top wall of the cylindrical hole 61. The lower air chamber 66 is disposed between the upper piston 63 and the lower piston 64. An upper air pipe connector 8 and a lower air pipe connector 9 are disposed on the die cutter fixing plate 3 respectively. The upper air pipe connector 8 and the lower air pipe connector 9 are in communication with the upper air chamber 65 and the lower air chamber 66 through an upper channel 67 and a lower channel 68 disposed in the die cutter fixing plate 3.

[0022] In the present invention, the pressing cylinders 6 are directly made inside the die cutter fixing plate 3, which simplifies the structure of the die cutter clamping and limiting device, reduces the weight of the die cutter fixing plate 3 and improves its stability.

[0023] The pressing cylinders 6 act in the following process: when high pressure air is introduced into the upper air chamber 65 via the upper air pipe connector 8, the lower air chamber 66 recovers air via the lower air pipe connector 9, and then the valve core shaft 62 is driven to move down together with the upper piston 63 and the lower piston 64 disposed thereon, and then the valve core shaft 62 pushes open the left die pressing plate 4 or the right die pressing plate 5, thereby unlocking the die cutter A. When high pressure air is introduced into the lower air chamber 66 via the lower air pipe connector 9, the upper air chamber 65 recovers air via the upper air pipe connector 8, and then the valve core shaft 62 is driven to move up for resetting together with the upper piston 63 and the lower piston 64 disposed thereon, and then the valve core shaft 62 drives the left die pressing plate 4 or the right die pressing plate 5 closely against the die cutter A.

[0024] A stop washer 69 is disposed on an inner wall of the cylindrical hole 61 to limit a movement position of the lower piston 64, so as to limit a movement position of the valve core shaft 62, thereby limiting a telescoping height of the pressing cylinder 6.

[0025] The rear limiting component includes a limiting block and a fastening bolt (not shown). The limiting block limits the movement position of the die cutter A, and the fastening bolt fixes the limiting block on a side surface of the die cutter fixing plate 3.

[0026] The front limiting component 7 includes a first connection bar 71, a second connection bar 72, a first rotary shaft 73, a second rotary shaft 74, and a third rotary shaft 75. The first rotary shaft 73 is fixed on the die cutter fixing plate 3, and the third rotary shaft 75 is fixed on the left die pressing plate 4 or the right die pressing plate 5. The first rotary shaft 73 is movable disposed in the middle of the first connection bar 71, and the second rotary shaft 74 movably connects an end of the first connection bar 71 to an end of the second connection bar 72. A blocking portion 76 is disposed on the other end of the first connection bar 71 to limit the die cutter A, and the other end of the second connection bar 72 is movably connected with the third rotary shaft 75.

[0027] As shown in FIG. 4, one segment of inclined surface or arc-shaped surface 77 is disposed on the blocking portion 76 of the first connection bar 71, and thus it is convenient to push the die cutter A back to a correct limiting position when the first connection bar 71 performs limiting for the die cutter A.

[0028] The front limiting component 7 acts in the following process: when the pressing cylinders 6 drive the left die pressing plate 4 or the right die pressing plate 5 to move down, the third rotary shaft 75 and the second connection bar 72 move down accordingly, and the second connection bar 72 also drives, via the second rotary shaft 74, an end of the first connection bar 71 to move down. Thus, the first connection bar 71 rotates around the first rotary shaft 73, so as to lift up the other end of the first connection bar 71, thus releasing the limited die cutter A. When the pressing cylinders 6 drive the left die pressing plate 4 or the right die pressing plate 5 to move up, the third rotary shaft 75 and the second connection bar 72 move up accordingly, and the second connection bar 72 drives, via the second rotary shaft 74, an end of the first connection bar 71 to move up. Thus, the first connection bar 71 rotates around the first rotary shaft 73, so as to lower the other end of the first connection bar 71, thus limiting the die cutter A.

[0029] Limiting screws 2 are disposed between the left die pressing plate 4/the right die pressing plate 5 and the die cutter fixing plate 3. The limiting screws 2 are used to

adjust and limit a maximum distance between the left die pressing plate 4/the right die pressing plate 5 and the die cutter fixing plate 3.

[0030] With the clamping and limiting device of the present invention, the die cutter A can be quickly limited and clamped, thus achieving quick change of the die cutter A. Further, good position repeatability and high positioning accuracy are ensured.

[0031] Side covers 10 are also disposed on the die cutter fixing plate 3 to cover the upper air pipe connector 8 and the lower air pipe connector 9.

Claims

1. A high-speed smart numerical control hydraulic cutting machine, comprising a die cutter fixing plate (3) and a die cutter (A) for cutting an object, wherein a die cutter clamping and limiting device is disposed on the die cutter fixing plate (3) to clamp the die cutter (A), the die cutter clamping and limiting device comprises a clamping assembly (1) and a limiting assembly which are mounted on the die cutter fixing plate (3), the clamping assembly (1) comprises a left die pressing plate (4), a right die pressing plate (5), and pressing cylinders (6), the left die pressing plate (4) and the right die pressing plate (5) are disposed on the left and right side edges of a lower surface of the die cutter fixing plate (3) respectively, the pressing cylinders (6) are disposed inside the die cutter fixing plate (3) and drive the left die pressing plate (4) and the right die pressing plate (5) respectively to press the die cutter (A) closely against the lower surface of the die cutter fixing plate (3), the limiting assembly comprises front limiting components (7) and rear limiting components located at front and rear side surfaces of the die cutter fixing plate (3), the front limiting components (7) perform limiting or unlocking for the front and rear side surfaces of the die cutter (A) in linkage with the left die pressing plate (4) or the right die pressing plate (5), two pressing cylinders (6) are disposed at the right and left sides of the die cutter fixing plate (3) respectively, the two pressing cylinders (6) act simultaneously to press or release the die cutter (A), limiting screws (2) are disposed between the left die pressing plate (4)/the right die pressing plate (5) and the die cutter fixing plate (3), and the limiting screws (2) are used respectively to limit a maximum distance between the left die pressing plate (4)/the right die pressing plate (5) and the die cutter fixing plate (3).

2. The high-speed smart numerical control hydraulic cutting machine of claim 1, wherein the pressing cylinder (6) comprises a cylindrical hole (61), a valve core shaft (62), an upper piston (63), a lower piston (64), an upper air chamber (65) and a lower air chamber (66), the cylindrical hole (61) is disposed inside the die cutter fixing plate (3), and the valve core shaft (62), the upper piston (63), the lower piston (64), the upper air chamber (65) and the lower air chamber (66) are disposed inside the cylindrical hole (61), the upper piston (63) and the lower piston (64) are disposed on the valve core shaft (62) respectively, the upper air chamber (65) is disposed between the upper piston (63) and the top wall of the cylindrical hole (61), the lower air chamber (66) is disposed between the upper piston (63) and the lower piston (64), an upper air pipe connector (8) and a lower air pipe connector (9) are disposed on the die cutter fixing plate (3) respectively, and the upper air pipe connector (8) and the lower air pipe connector (9) are in communication with the upper air chamber (65) and the lower air chamber (66) through an upper channel (67) and a lower channel (68) disposed in the die cutter fixing plate (3).

3. The high-speed smart numerical control hydraulic cutting machine of claim 2, wherein a stop washer (69) is disposed on an inner wall of the cylindrical hole (61) to limit a movement position of the lower piston (64).

4. The high-speed smart numerical control hydraulic cutting machine of claim 2, wherein side covers (10) are further disposed on the die cutter fixing plate (3).

5. The high-speed smart numerical control hydraulic cutting machine of claim 1, wherein the rear limiting component comprises a limiting block and a fastening bolt, the limiting block limits the movement position of the die cutter (A), and the fastening bolt fixes the limiting block on a side surface of the die cutter fixing plate (3).

6. The high-speed smart numerical control hydraulic cutting machine of claim 1, wherein the front limiting component (7) comprises a first connection bar (71), a second connection bar (72), a first rotary shaft (73), a second rotary shaft (74), and a third rotary shaft (75), the first rotary shaft (73) is fixed on the die cutter fixing plate (3), the third rotary shaft (75) is fixed on the left die pressing plate (4) or the right die pressing plate (5), the first rotary shaft (73) is movable disposed in the middle of the first connection bar (71), the second rotary shaft (74) movably connects an end of the first connection bar (71) to an end of the second connection bar (72), a blocking portion (76) is disposed on the other end of the first connection bar (71) to limit the die cutter (A), and the other end of the second connection bar (72) is movably connected with the third rotary shaft (75).

7. The high-speed smart numerical control hydraulic cutting machine of claim 6, wherein one segment of inclined surface or arc-shaped surface (77) is dis-

posed on the blocking portion (76) of the first connection bar (71).

Patentansprüche

1. Eine hochgeschwindigkeitsfähige, intelligente, numerisch gesteuerte hydraulische Schneidemaschine, umfassend eine Stanzmesser-Befestigungsplatte (3) und ein Stanzmesser (A) zum Schneiden eines Objekts, wobei eine Spann- und Begrenzungsvorrichtung für das Stanzmesser auf der Stanzmesser-Befestigungsplatte (3) angeordnet ist, um das Stanzmesser (A) zu spannen, wobei die Spann- und Begrenzungsvorrichtung ein Spannsystem (1) und ein Begrenzungssystem umfasst, die an der Stanzmesser-Befestigungsplatte (3) montiert sind, wobei das Spannsystem (1) eine linke Stanzpressplatte (4), eine rechte Stanzpressplatte (5) und Druckzylinder (6) umfasst, die linke Stanzpressplatte (4) und die rechte Stanzpressplatte (5) jeweils an den linken und rechten Seitenrändern einer unteren Fläche der Stanzmesser-Befestigungsplatte (3) angeordnet sind, die Druckzylinder (6) innerhalb der Stanzmesser-Befestigungsplatte (3) angeordnet sind und die linke Stanzpressplatte (4) und die rechte Stanzpressplatte (5) antreiben, das Stanzmesser (A) dicht gegen die untere Fläche der Stanzmesser-Befestigungsplatte (3) zu drücken, wobei das Begrenzungssystem vordere Begrenzungselemente (7) und hintere Begrenzungselemente umfasst, die sich an den vorderen und hinteren Seitenflächen der Stanzmesser-Befestigungsplatte (3) befinden, wobei die vorderen Begrenzungselemente (7) eine Begrenzung oder Entriegelung der vorderen und hinteren Seitenflächen des Stanzmessers (A) in Verbindung mit der linken Stanzpressplatte (4) oder der rechten Stanzpressplatte (5) durchführen, zwei Druckzylinder (6) jeweils an den rechten und linken Seiten der Stanzmesser-Befestigungsplatte (3) angeordnet sind, die zwei Druckzylinder (6) gleichzeitig wirken, um das Stanzmesser (A) zu drücken oder zu lösen, Begrenzungsschrauben (2) zwischen der linken Stanzpressplatte (4)/der rechten Stanzpressplatte (5) und der Stanzmesser-Befestigungsplatte (3) angeordnet sind, und die Begrenzungsschrauben (2) jeweils verwendet werden, um einen maximalen Abstand zwischen der linken Stanzpressplatte (4)/der rechten Stanzpressplatte (5) und der Stanzmesser-Befestigungsplatte (3) zu begrenzen.

2. Die hochgeschwindigkeitsfähige, intelligente, numerisch gesteuerte hydraulische Schneidemaschine nach Anspruch 1, wobei der Druckzylinder (6) eine zylindrische Bohrung (61), eine Ventilkernwelle (62), einen oberen Kolben (63), einen unteren Kolben (64), eine obere Luftkammer (65) und eine untere Luftkammer (66) umfasst, die zylindrische Bohrung (61) sich innerhalb der Stanzmesser-Befestigungsplatte (3) befindet und die Ventilkernwelle (62), der obere Kolben (63), der untere Kolben (64), die obere Luftkammer (65) und die untere Luftkammer (66) sich innerhalb der zylindrischen Bohrung (61) befinden, der obere Kolben (63) und der untere Kolben (64) jeweils an der Ventilkernwelle (62) angeordnet sind, die obere Luftkammer (65) sich zwischen dem oberen Kolben (63) und der oberen Wand der zylindrischen Bohrung (61) befindet, die untere Luftkammer (66) sich zwischen dem oberen Kolben (63) und dem unteren Kolben (64) befindet, ein oberer Luftrohranschluss (8) und ein unterer Luftrohranschluss (9) sich jeweils auf der Stanzmesser-Befestigungsplatte (3) befinden, und der obere Luftrohranschluss (8) und der untere Luftrohranschluss (9) mit der oberen Luftkammer (65) und der unteren Luftkammer (66) durch einen oberen Kanal (67) und einen unteren Kanal (68), die in der Stanzmesser-Befestigungsplatte (3) angeordnet sind, in Kommunikation sind.

3. Die hochgeschwindigkeitsfähige, intelligente, numerisch gesteuerte hydraulische Schneidemaschine nach Anspruch 2, wobei eine Anschlagunterlegscheibe (69) an einer Innenwand der zylindrischen Bohrung (61) angebracht ist, um eine Bewegungsposition des unteren Kolbens (64) zu begrenzen.

4. Die hochgeschwindigkeitsfähige, intelligente, numerisch gesteuerte hydraulische Schneidemaschine nach Anspruch 2, wobei Seitenabdeckungen (10) zusätzlich an der Stanzmesser-Befestigungsplatte (3) angebracht sind.

5. Die hochgeschwindigkeitsfähige, intelligente, numerisch gesteuerte hydraulische Schneidemaschine nach Anspruch 1, wobei das hintere Begrenzungselement einen Begrenzungsblock und eine Befestigungsschraube umfasst, der Begrenzungsblock die Bewegungsposition des Stanzmessers (A) begrenzt und die Befestigungsschraube den Begrenzungsblock an einer Seitenfläche der Stanzmesser-Befestigungsplatte (3) befestigt.

6. Die hochgeschwindigkeitsfähige, intelligente, numerisch gesteuerte hydraulische Schneidemaschine nach Anspruch 1, wobei das vordere Begrenzungselement (7) eine erste Verbindungsstange (71), eine zweite Verbindungsstange (72), eine erste Drehachse (73), eine zweite Drehachse (74) und eine dritte Drehachse (75) umfasst, die erste Drehachse (73) an der Stanzmesser-Befestigungsplatte (3) befestigt ist, die dritte Drehachse (75) an der linken Stanzpressplatte (4) oder der rechten Stanzpressplatte (5) befestigt ist, die erste Drehachse (73) beweglich in der Mitte der ersten Verbindungsstange (71) angeordnet ist, die zweite Drehachse (74) ein

Ende der ersten Verbindungsstange (71) mit einem Ende der zweiten Verbindungsstange (72) beweglich verbindet, ein Sperrteil (76) sich am anderen Ende der ersten Verbindungsstange (71) befindet, um das Stanzmesser (A) zu begrenzen, und das andere Ende der zweiten Verbindungsstange (72) beweglich mit der dritten Drehachse (75) verbunden ist.

7. Die hochgeschwindigkeitsfähige, intelligente, numerisch gesteuerte hydraulische Schneidemaschine nach Anspruch 6, wobei ein Abschnitt einer geneigten Fläche oder einer bogenförmigen Fläche (77) auf dem Sperrteil (76) der ersten Verbindungsstange (71) angeordnet ist.

Revendications

1. Une machine de découpe hydraulique à commande numérique intelligente et à haute vitesse, comprenant une plaque de fixation de matrice (3) et une matrice de découpe (A) pour découper un objet, dans laquelle un dispositif de serrage et de limitation de matrice est disposé sur la plaque de fixation de matrice (3) pour serrer la matrice de découpe (A), le dispositif de serrage et de limitation de matrice comprend un ensemble de serrage (1) et un ensemble de limitation montés sur la plaque de fixation de matrice (3), l'ensemble de serrage (1) comprend une plaque de pression gauche (4), une plaque de pression droite (5) et des cylindres de pression (6), la plaque de pression gauche (4) et la plaque de pression droite (5) sont respectivement disposées sur les bords gauche et droit de la surface inférieure de la plaque de fixation de matrice (3), les cylindres de pression (6) sont disposés à l'intérieur de la plaque de fixation de matrice (3) et entraînent respectivement la plaque de pression gauche (4) et la plaque de pression droite (5) à presser la matrice de découpe (A) contre la surface inférieure de la plaque de fixation de matrice (3), l'ensemble de limitation comprend des composants de limitation avant (7) et des composants de limitation arrière situés sur les surfaces latérales avant et arrière de la plaque de fixation de matrice (3), les composants de limitation avant (7) effectuent la limitation ou le déverrouillage des surfaces latérales avant et arrière de la matrice de découpe (A) en liaison avec la plaque de pression gauche (4) ou la plaque de pression droite (5), deux cylindres de pression (6) sont respectivement disposés sur les côtés droit et gauche de la plaque de fixation de matrice (3), les deux cylindres de pression (6) agissent simultanément pour presser ou libérer la matrice de découpe (A), des vis de limitation (2) sont disposées entre la plaque de pression gauche (4)/la plaque de pression droite (5) et la plaque de fixation de matrice (3), et les vis de limitation (2) sont respectivement utilisées pour limiter une distance maximale entre la plaque de pression gauche (4)/la plaque de pression droite (5) et la plaque de fixation de matrice (3).

2. La machine de découpe hydraulique à commande numérique intelligente et à haute vitesse selon la revendication 1, dans laquelle le cylindre de pression (6) comprend un trou cylindrique (61), un arbre de noyau de soupape (62), un piston supérieur (63), un piston inférieur (64), une chambre d'air supérieure (65) et une chambre d'air inférieure (66), le trou cylindrique (61) est disposé à l'intérieur de la plaque de fixation de matrice (3), et l'arbre de noyau de soupape (62), le piston supérieur (63), le piston inférieur (64), la chambre d'air supérieure (65) et la chambre d'air inférieure (66) sont disposés à l'intérieur du trou cylindrique (61), le piston supérieur (63) et le piston inférieur (64) sont respectivement disposés sur l'arbre de noyau de soupape (62), la chambre d'air supérieure (65) est située entre le piston supérieur (63) et la paroi supérieure du trou cylindrique (61), la chambre d'air inférieure (66) est située entre le piston supérieur (63) et le piston inférieur (64), un raccord de tuyau d'air supérieur (8) et un raccord de tuyau d'air inférieur (9) sont respectivement disposés sur la plaque de fixation de matrice (3), et le raccord de tuyau d'air supérieur (8) et le raccord de tuyau d'air inférieur (9) sont en communication avec la chambre d'air supérieure (65) et la chambre d'air inférieure (66) via un canal supérieur (67) et un canal inférieur (68) disposés dans la plaque de fixation de matrice (3).

3. La machine de découpe hydraulique à commande numérique intelligente et à haute vitesse selon la revendication 2, dans laquelle une rondelle d'arrêt (69) est disposée sur une paroi intérieure du trou cylindrique (61) pour limiter une position de mouvement du piston inférieur (64).

4. La machine de découpe hydraulique à commande numérique intelligente et à haute vitesse selon la revendication 2, dans laquelle des couvercles latéraux (10) sont également disposés sur la plaque de fixation de matrice (3).

5. La machine de découpe hydraulique à commande numérique intelligente et à haute vitesse selon la revendication 1, dans laquelle le composant de limitation arrière comprend un bloc de limitation et un boulon de fixation, le bloc de limitation limite la position de mouvement de la matrice de découpe (A), et le boulon de fixation fixe le bloc de limitation sur une surface latérale de la plaque de fixation de matrice (3).

6. La machine de découpe hydraulique à commande

numérique intelligente et à haute vitesse selon la revendication 1, dans laquelle le composant de limitation avant (7) comprend une première barre de connexion (71), une deuxième barre de connexion (72), un premier arbre rotatif (73), un deuxième arbre rotatif (74) et un troisième arbre rotatif (75), le premier arbre rotatif (73) est fixé sur la plaque de fixation de matrice (3), le troisième arbre rotatif (75) est fixé sur la plaque de pression gauche (4) ou la plaque de pression droite (5), le premier arbre rotatif (73) est mobile au milieu de la première barre de connexion (71), le deuxième arbre rotatif (74) relie de manière mobile une extrémité de la première barre de connexion (71) à une extrémité de la deuxième barre de connexion (72), une partie de blocage (76) est disposée sur l'autre extrémité de la première barre de connexion (71) pour limiter la matrice de découpe (A), et l'autre extrémité de la deuxième barre de connexion (72) est reliée de manière mobile au troisième arbre rotatif (75).

7. La machine de découpe hydraulique à commande numérique intelligente et à haute vitesse selon la revendication 6, dans laquelle une surface inclinée ou une surface en arc (77) est disposée sur la partie de blocage (76) de la première barre de connexion (71).

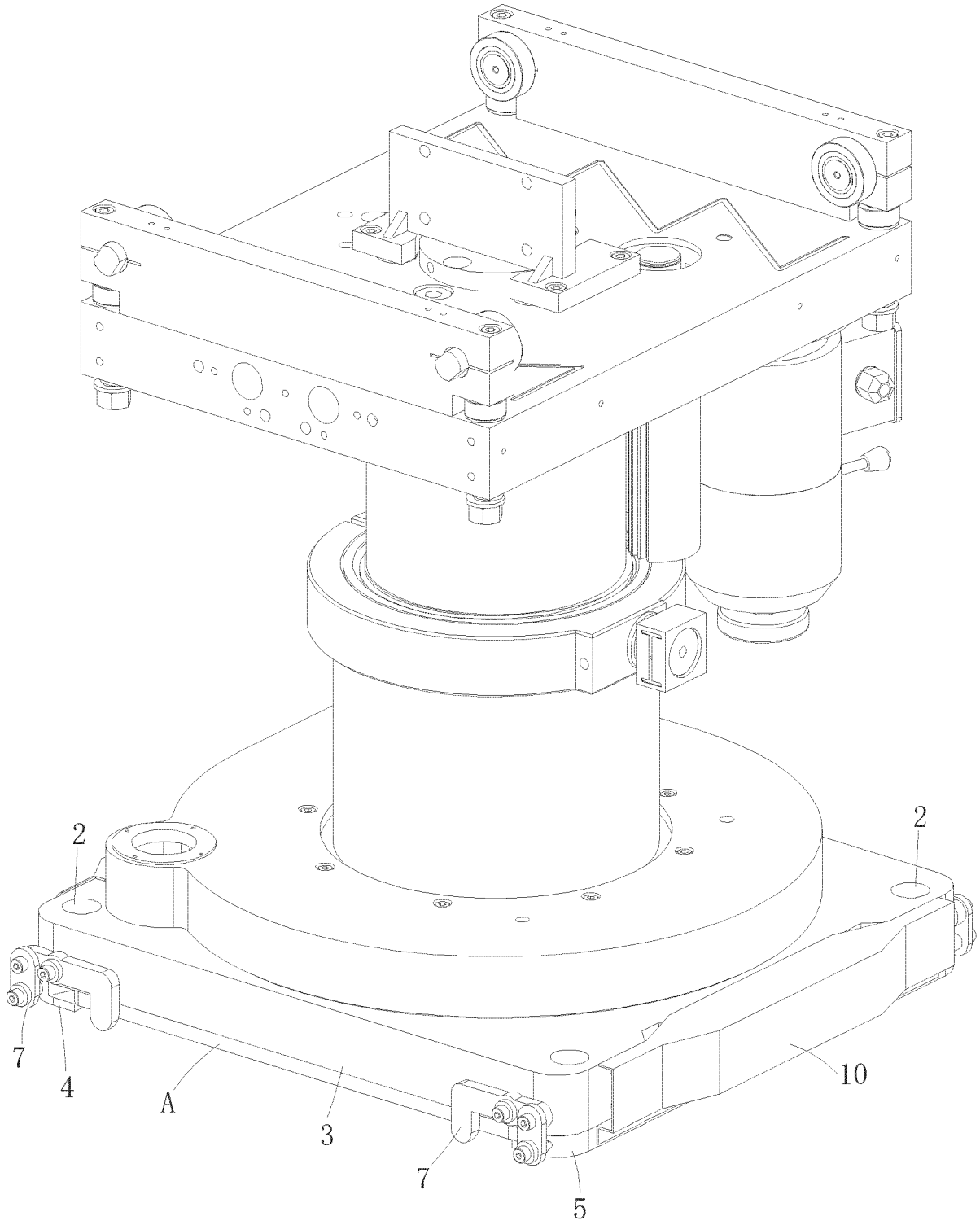

FIG.1

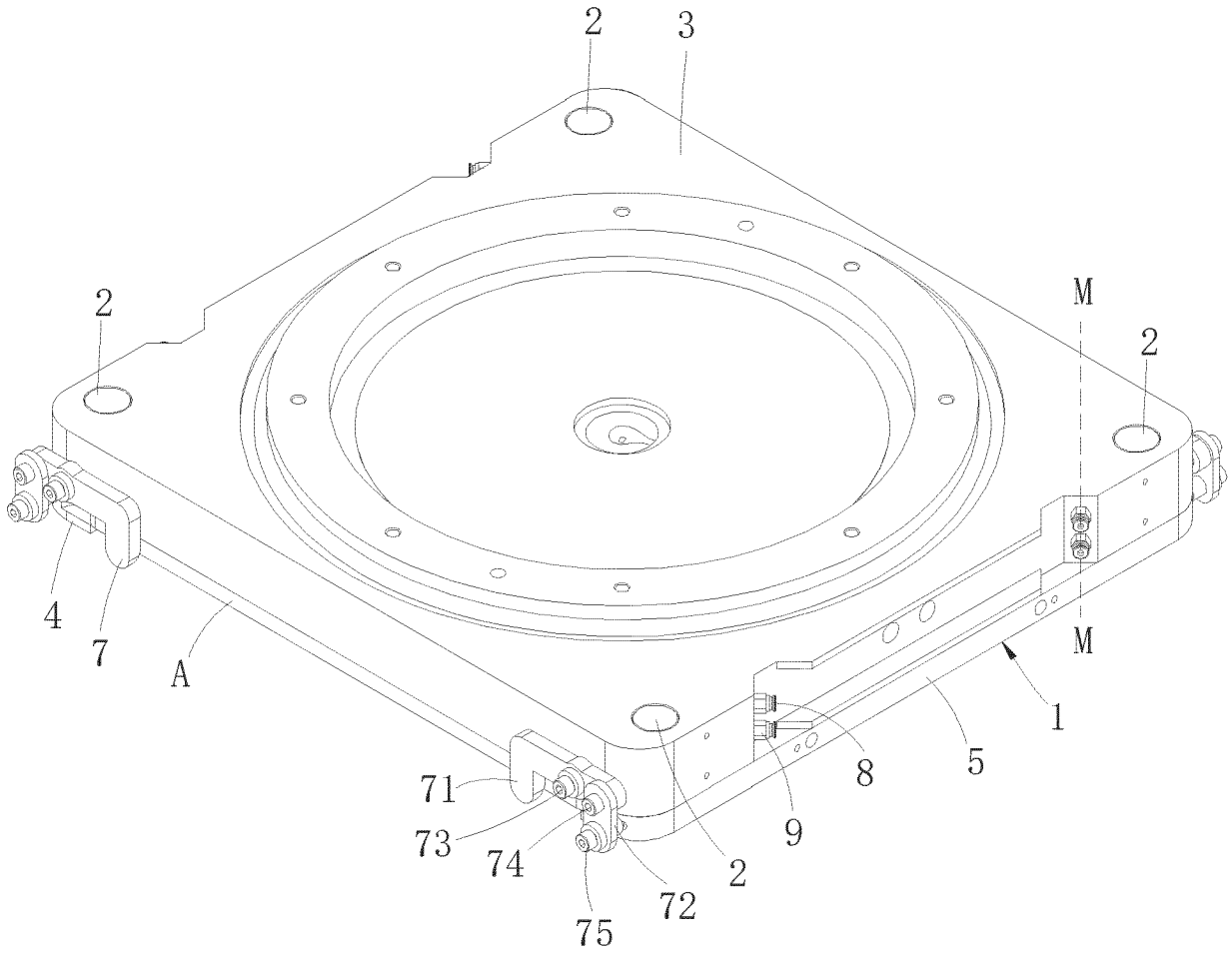

FIG.2

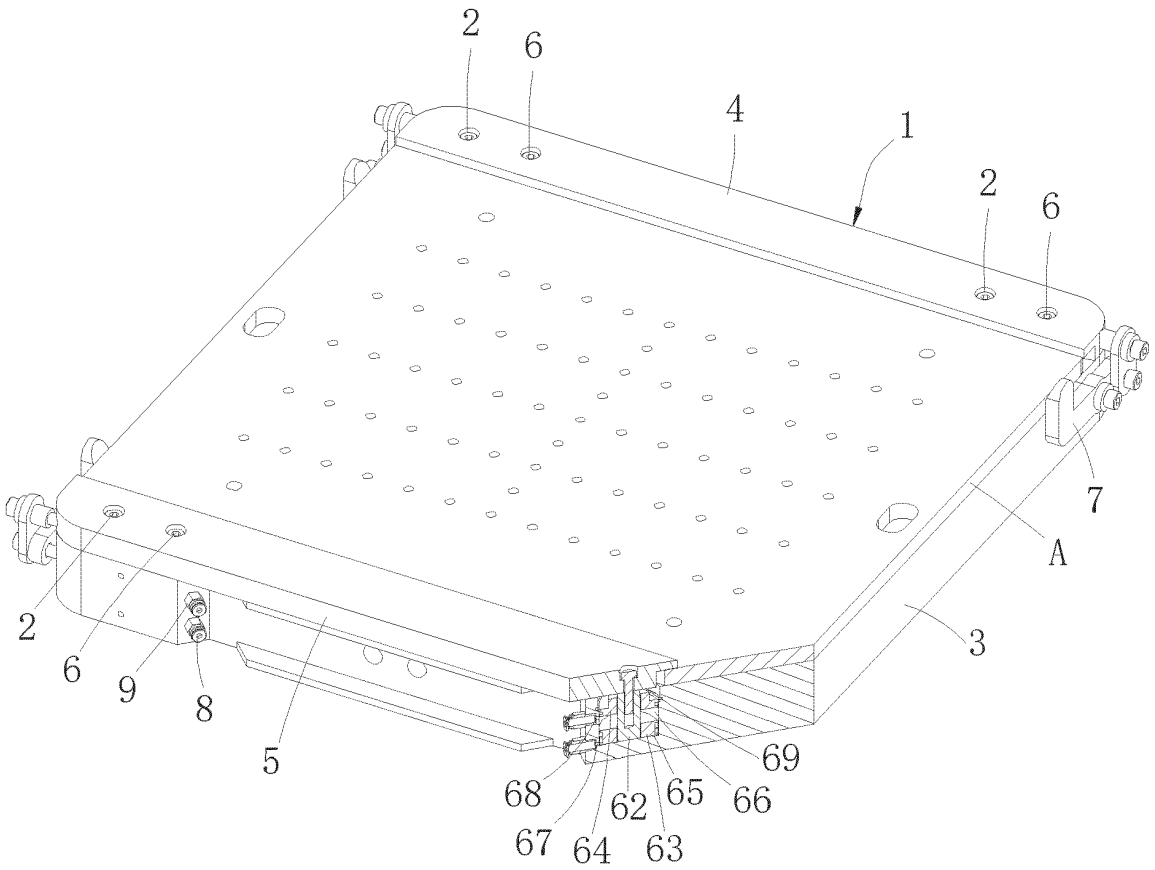

FIG.3

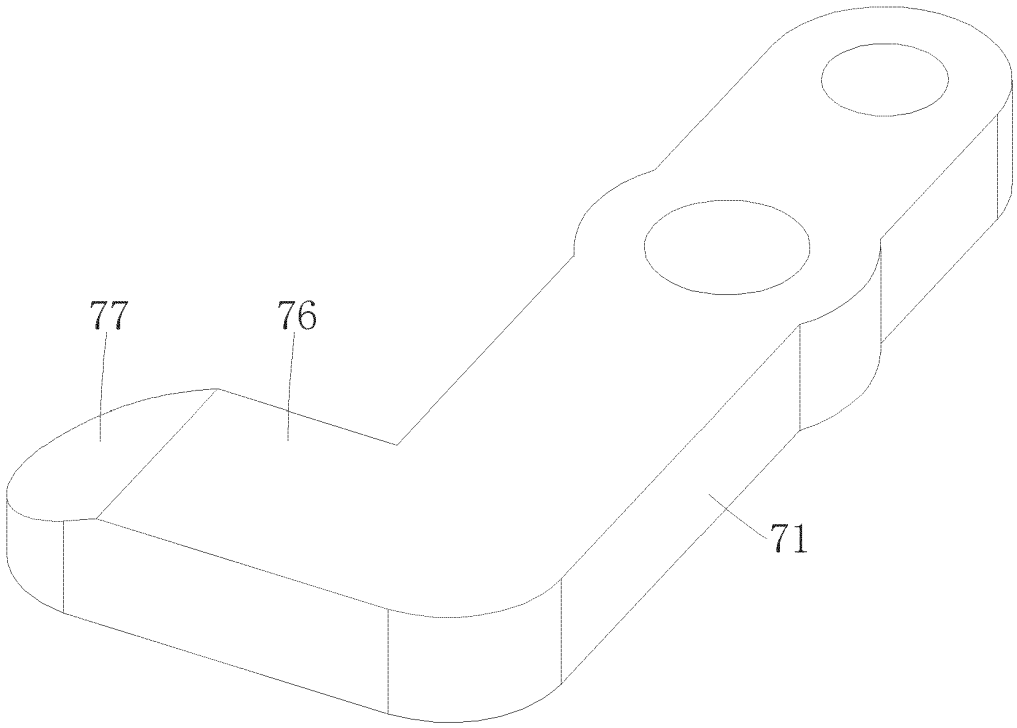

FIG.4

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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