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Manual Pipe Bending Mechanism.

(57)

The application discloses a manual pipe bending mechanism, which includes a bottom plate, wherein a bending disc is arranged above the bottom plate; a rotary arm is coaxially arranged below the center of the bending disc, the rotary arm is provided with a bending abutting block, and when the rotary arm rotates around the center of the bending disc, the bending abutting block remains tangent to the bending disc; the bottom plate is provided with a clamping assembly parallel to the rotary arm, and an output end of the clamping assembly abuts against the bending disc, so that a pipe is fixed; one side of the bending disc on the bottom plate is provided with a clamping block,. By using the bending disc and the bending abutting block on the rotary arm, through the manual control, the pipes or steel bars may be freely bent to 0-180 degrees.

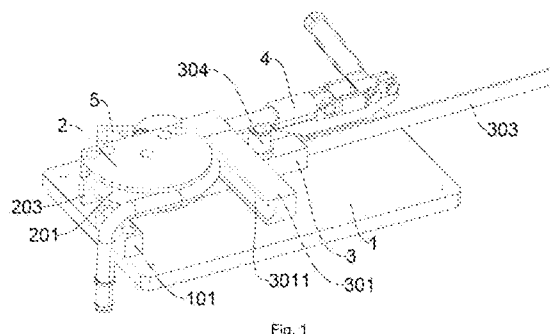


Fig. 1

MANUAL PIPE BENDING MECHANISM

TECHNICAL FIELD

The application relates to the technical field of pipe bending devices, in particular
5 to a manual pipe bending mechanism.

BACKGROUND

In a process of automobile manufacturing, as main components of an automobile
are integrated in an automobile head part, pipelines in a limited space are
complicated, so that more pipelines in the automobile need to be bent and shaped to
10 avoid confusion. In a pipe bending and forming process of a low carbon steel pipe, a
manual pipe bender is widely used.

A conventional manual pipe bender includes a pipe bending base, a pipe
bending bracket, and a pipe bending unit. The pipe bending base and the pipe
bending bracket are welded together by angle iron before, which is inconvenient to
15 adjust and maintain; and the overall portability is poor.

Therefore, it is necessary to provide a new manual pipe bending mechanism to
solve the above problem.

SUMMARY

The application aims to provide a manual pipe bending mechanism.

20 In order to achieve the above purpose, the application adopts the following
contents.

A manual pipe bending mechanism includes a bottom plate. A bending disc is
arranged above the bottom plate. A rotary arm is coaxially arranged below the center
of the bending disc, the rotary arm is provided with a bending abutting block, and
25 when the rotary arm rotates around the center of the bending disc, the bending
abutting block remains tangent to the bending disc. The bottom plate is provided with
a clamping assembly parallel to the rotary arm, and an output end of the clamping
assembly abuts against the bending disc, so that a pipe is fixed. One side of the
bending disc on the bottom plate is provided with a clamping block, so that a pipe
30 end is clamped in the clamping block.

A new manual bending mechanism is designed to bend objects such as pipes
and steel bars. The overall structure is simple. By using the bending disc and the
bending abutting block on the rotary arm, through the manual control, the pipes or

steel bars may be freely bent to 0-180 degrees.

Preferably, the bending disc is semicircular, and is provided with an arc-shaped groove adapted to the pipe on the circumferential side of a semicircle. The center of the bending disc is connected to the bottom plate through a fixed shaft. Two protruding connection parts extend from a straight edge of the bending disc toward the direction of the bottom plate, and are connected to the bottom plate through fasteners.

The semicircle of the bending disc determines that the maximum bending angle of the pipe and the steel bar is 180 degrees. At the same time, three fixed points, two connecting parts and the fixed shaft are arranged below the bending disc to ensure the strength and durability of the whole bending disc.

Preferably, the rotary arm includes a rotating part rotatably connected to the fixed shaft, a hand lever located at a tail end of the rotating part, and the bending abutting block arranged on the rotating part. The rotating part is provided with a connector configured to connect an external power piece.

Preferably, the clamping assembly includes a base fixedly arranged on the bottom plate, a connecting rod arranged on the base, and a handle hinged to a tail end of the connecting rod and the base. The other end of the connecting rod is provided with an abutting joint, which is driven by the connecting rod to move close to or away from the bending disc. A middle part of the handle is hinged with the connecting rod, and a tail end thereof is hinged with the base, so that two hinged points on the handle and the tail end of the connecting rod form a triangular structure.

Preferably, the clamping block is provided with a curved groove configured to abut against a pipe head.

Preferably, the bending abutting block is strip-shaped, is provided with a groove configured to accommodate the pipe on a side toward the bending disc, and is spliced with the arc-shaped groove of the bending disc to form a closed channel.

Preferably, one side of the bending disc on the bottom plate is provided with a supporting block.

The application has the following advantages.

1. A new manual bending mechanism is designed to bend objects such as pipes and steel bars. The overall structure is simple. By using the bending disc and the bending abutting block on the rotary arm, through the manual control, the pipes or steel bars may be freely bent to 0-180 degrees.

2. The semicircle of the bending disc determines that the maximum bending angle of the pipe and the steel bar is 180 degrees. At the same time, three fixed points, two connecting parts and the fixed shaft are arranged below the bending disc to ensure the strength and durability of the whole bending disc.

LU504367

BRIEF DESCRIPTION OF THE DRAWINGS

The application is elaborated in detail below with reference to the drawings and specific implementation modes.

Fig. 1 is a schematic structural diagram of a manual pipe bending mechanism according to the application.

Fig. 2 is a schematic structural diagram of a back of a manual pipe bending mechanism according to the application.

Fig. 3 is a schematic diagram of a matching structure between a rotary arm and a bending disc of a manual pipe bending mechanism according to the application.

Fig. 4 is a bottom structure view of a manual pipe bending mechanism in Fig. 3 according to the application.

Fig. 5 is a schematic structural diagram of a clamping assembly and a bending disc of a manual pipe bending mechanism according to the application.

Fig. 6 is a schematic structural diagram of a clamping block of a manual pipe bending mechanism according to the application.

In the figures, reference signs are as follows:

1-bottom plate, 101-supporting block, 2-bending disc, 201-arc-shaped groove, 202-fixed shaft, 203-connecting part, 3-rotary arm, 301-bending abutting block, 3011-groove, 302-rotating part, 303-hand lever, 304-connector, 4-clamping assembly, 401-base, 402-connecting rod, 403-handle, 404-abutting joint, 5-clamping block, and 501-curved groove.

DETAILED DESCRIPTION OF THE EMBODIMENTS

In order to more clearly illustrate the application, the application will be further described below in conjunction with the preferred embodiments. It should be understood by those skilled in the art that the following detailed description is illustrative rather than restrictive, and is not intended to limit the scope of protection of the application.

In the description of the application, it is to be noted that the orientations or positional relationships indicated by the terms "center", "upper", "down", "left", "right", "vertical", "horizontal", "front", "rear", etc. are based on the orientations or positional

relationships shown in the drawings, and are only for the convenience of describing the application and simplifying the description. The description does not indicate or imply that the device or element referred to must have a specific orientation, be constructed and operated in a specific orientation, and therefore cannot be construed as limiting the application. LU504367

In the description of the application, it is to be noted that the terms "install", "connect", "set" should be broadly understood, unless otherwise specified and defined, for example, may be fixedly connected, set, or detachably connected, set, or integrally connected, set. The specific meaning of the above-mentioned terminology in the application may be understood by those of ordinary skill in the art in specific circumstances.

As shown in Figs. 1 to 6, a manual pipe bending mechanism includes a bottom plate 1. A bending disc 2 is arranged above the bottom plate 1. A rotary arm 3 is coaxially arranged below the center of the bending disc 2, and the rotary arm 3 is provided with a bending abutting block 301, and when the rotary arm 3 rotates around the center of the bending disc, the bending abutting block 301 remains tangent to the bending disc 2. The bottom plate 1 is provided with a clamping assembly 4 parallel to the rotary arm 3, and an output end of the clamping assembly 4 abuts against the bending disc 2, so that a pipe is fixed. One side of the bending disc 2 on the bottom plate 1 is provided with a clamping block 5, so that a pipe end is clamped in the clamping block 5.

A new manual bending mechanism is designed to bend objects such as pipes and steel bars. The overall structure is simple. By using the bending disc and the bending abutting block on the rotary arm, through the manual control, the pipes or steel bars may be freely bent to 0-180 degrees.

Further, the bending disc 2 is semicircular, and is provided with an arc-shaped groove 201 adapted to the pipe on the circumferential side of a semicircle. The center of the bending disc 2 is connected to the bottom plate 1 through a fixed shaft 20. Two protruding connection parts 203 extend from a straight edge of the bending disc 2 toward the direction of the bottom plate 1, and are connected to the bottom plate through fasteners.

The semicircle of the bending disc determines that the maximum bending angle of the pipe and the steel bar is 180 degrees. At the same time, three fixed points, two connecting parts and the fixed shaft are arranged below the bending disc to ensure

the strength and durability of the whole bending disc.

Further, the rotary arm 3 includes a rotating part 302 rotatably connected to the fixed shaft 202, a hand lever 303 located at a tail end of the rotating part 302, and the bending abutting block 301 arranged on the rotating part 302. The rotating part 302 is provided with a connector 304 configured to connect an external power piece.

Further, the clamping assembly 4 includes a base 401 fixedly arranged on the bottom plate 1, a connecting rod 402 arranged on the base 401, and a handle 403 hinged to a tail end of the connecting rod 402 and the base 401. The other end of the connecting rod 402 is provided with an abutting joint 404, which is driven by the connecting rod 402 to move close to or away from the bending disc. A middle part of the handle 403 is hinged with the connecting rod 402, and a tail end thereof is hinged with the base 401, so that two hinged points on the handle 403 and the tail end of the connecting rod form a triangular structure.

Further, the clamping block 5 is provided with a curved groove 501 configured to abut against a pipe head.

Further, the bending abutting block 301 is strip-shaped, is provided with a groove 3011 configured to accommodate the pipe on a side toward the bending disc, and is spliced with the arc-shaped groove of the bending disc to form a closed channel. One side of the bending disc on the bottom plate 1 is provided with a supporting block 101.

A working principle of an apparatus is as follows.

A pipe that needs to be bent is placed between the bending disc and the abutting joint, the handle is toggled, and the abutting joint abuts against the bending disc through the connecting rod, so that the pipe is clamped.

Through manual rotation of the hand level, the bending abutting block may bend the pipe.

It is apparent that the above-mentioned embodiments of the application are only examples for clearly illustrating the application and are not intended to limit the implementation modes of the application. Other variations or modifications in various forms may be made by those of ordinary skill in the art based on the above description. There is no need and no way to exhaust all of the implementation modes. Any apparent variations or modifications derived from the technical solutions of the application are still within the scope of protection of the application.

CLAIMS

1. A manual pipe bending mechanism, comprising a bottom plate, wherein bending disc is arranged above the bottom plate; a rotary arm is coaxially arranged below the center of the bending disc, the rotary arm is provided with a bending abutting block, and when the rotary arm rotates around the center of the bending disc,
5 the bending abutting block remains tangent to the bending disc;

the bottom plate is provided with a clamping assembly parallel to the rotary arm, and an output end of the clamping assembly abuts against the bending disc, so that a pipe is fixed; and

10 one side of the bending disc on the bottom plate is provided with a clamping block, so that a pipe end is clamped in the clamping block.

2. The manual pipe bending mechanism as claimed in claim 1, wherein the bending disc is semicircular, and is provided with an arc-shaped groove adapted to the pipe on the circumferential side of a semicircle; the center of the bending disc is
15 connected to the bottom plate through a fixed shaft; and two protruding connection parts extend from a straight edge of the bending disc toward the direction of the bottom plate, and are connected to the bottom plate through fasteners.

3. The manual pipe bending mechanism as claimed in claim 2, wherein the rotary arm comprises a rotating part rotatably connected to the fixed shaft, a hand lever located at a tail end of the rotating part, and the bending abutting block
20 arranged on the rotating part, wherein the rotating part is provided with a connector configured to connect an external power piece.

4. The manual pipe bending mechanism as claimed in claim 1, wherein the clamping assembly comprises a base fixedly arranged on the bottom plate, a
25 connecting rod arranged on the base, and a handle hinged to a tail end of the connecting rod and the base, wherein the other end of the connecting rod is provided with an abutting joint, which is driven by the connecting rod to move close to or away from the bending disc; and a middle part of the handle is hinged with the connecting rod, and a tail end thereof is hinged with the base, so that two hinged points on the
30 handle and the tail end of the connecting rod form a triangular structure.

5. The manual pipe bending mechanism as claimed in claim 1, wherein the clamping block is provided with a curved groove configured to abut against a pipe head.

6. The manual pipe bending mechanism as claimed in claim 3, wherein the

bending abutting block is strip-shaped, is provided with a groove configured to^{LU504367}
accommodate the pipe on a side toward the bending disc, and is spliced with the
arc-shaped groove of the bending disc to form a closed channel.

- 5 7. The manual pipe bending mechanism as claimed in claim 1, wherein one side
of the bending disc on the bottom plate is provided with a supporting block.

1. Manuelle Rohrbiegemechanismus, dadurch gekennzeichnet, dass er Folgendes umfasst: eine Grundplatte, über der Grundplatte eine Biegescheibe angeordnet ist; einen koaxial unterhalb der Mitte der Biegescheibe angeordneten Dreharm, am Dreharm ein Biegeanschlagblock vorgesehen ist, wobei der Biegeanschlagblock tangential zur Biegescheibe bleibt, wenn sich der Dreharm um die Mitte der Biegescheibe dreht; eine Eingriffsbaugruppe auf der Grundplatte parallel zum Dreharm angeordnet ist und das Ausgangsende der Eingriffsbaugruppe an der Biegeplatte anliegt, um die Rohrleitung fixiert zu halten; auf einer Seite der Biegeplatte an der Grundplatte ein Eingriffsblock angeordnet ist, so dass ein Rohrende in den Eingriffsblock einrastet.

5

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 2. Manuelle Rohrbiegemechanismus nach Anspruch 1, dadurch gekennzeichnet, dass die Biegeplatte halbkreisförmig ist und auf der Umfangsseite des Halbkreises eine an die Rohrleitung angepasste bogenförmige Nut ausgebildet ist; die Mitte der Biegescheibe über eine feste Welle mit der Grundplatte verbunden ist; und sich von der geraden Seite der Biegeplatte zwei vorstehende Verbindungsteile zur Grundplatte hin erstrecken und über ein Befestigungsstück mit der Grundplatte verbunden sind.

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 3. Manuelle Rohrbiegemechanismus nach Anspruch 2, dadurch gekennzeichnet, dass der Dreharm Folgendes umfasst: einen Drehteil, der drehbar mit der Befestigungswelle verbunden ist, einen Handhebel am hinteren Ende des Drehteils und einen am Drehteil angeordneten Biegeanschlagblock; wobei am Drehteil ein Anschlusskopf zum Anschluss externer Leistungsteile angeordnet ist.

25
 4. Manuelle Rohrbiegemechanismus nach Anspruch 1, dadurch gekennzeichnet, dass die Eingriffsbaugruppe umfasst: eine an der Grundplatte befestigte Basis, eine an der Basis angeordnete Pleuelstange, einen am hinteren Ende der Pleuelstange und an der Basis angelenkten Griff; wobei das andere Ende der Pleuelstange mit einem Widerlagerkopf versehen ist und die einander zugewandten Biegescheiben durch die Pleuelstange zum Annähern oder Auseinanderbewegen angetrieben werden; der mittlere Teil des Griffs an der
- 30

Pleuelstange angelenkt ist und das hintere Ende an der Basis angelenkt ist, so LU504367 dass die beiden Gelenkpunkte am Griff und das hintere Ende der Pleuelstange eine dreieckige Struktur bilden.

5. Manuelle Rohrbiegemechanismus nach Anspruch 1, dadurch gekennzeichnet,
5 dass der Eingriffsblock mit einer gekrümmten Nut zur Anlage am Rohrkopf versehen ist.
6. Manuelle Rohrbiegemechanismus nach Anspruch 3, dadurch gekennzeichnet,
dass der Biegeanschlagblock als langes Band ausgebildet ist und auf der der
Biegescheibe zugewandten Seite eine Nut zur Aufnahme der Rohrleitung
10 vorgesehen ist, und mit der bogenförmigen Nut der Biegescheibe verbunden ist,
um einen geschlossenen Kanal zu bilden.
7. Manuelle Rohrbiegemechanismus nach Anspruch 1, dadurch gekennzeichnet,
dass auf einer Seite der Biegescheibe an der Grundplatte eine Stützblock
vorgesehen ist.

DRAWINGS

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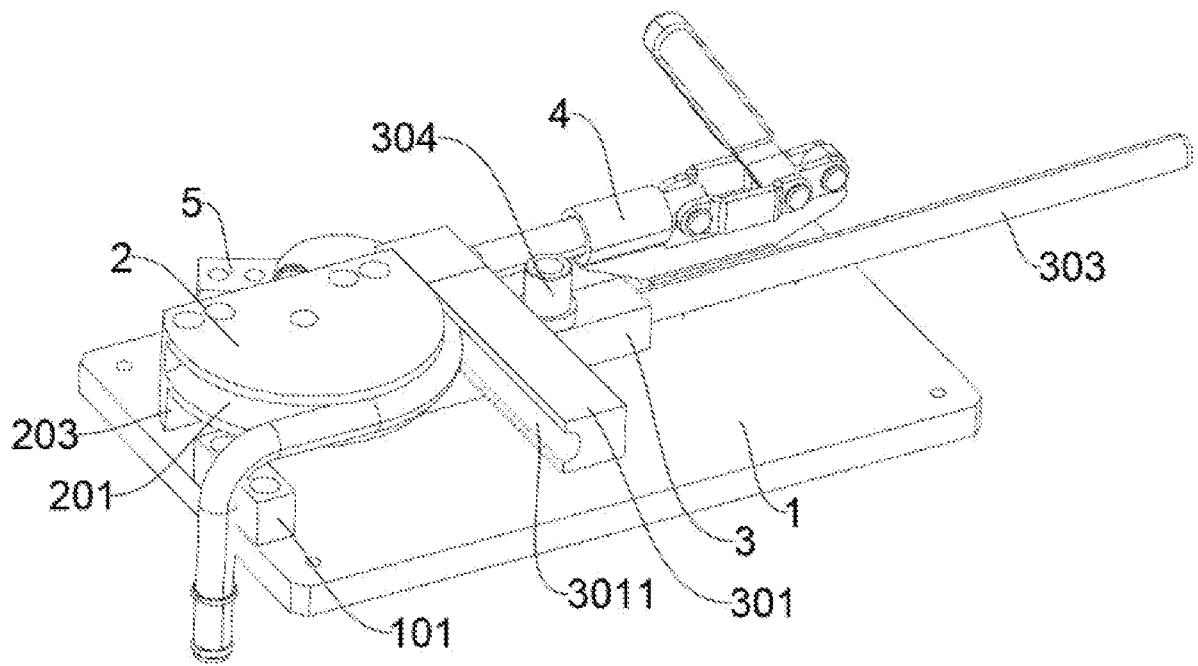


Fig. 1

5

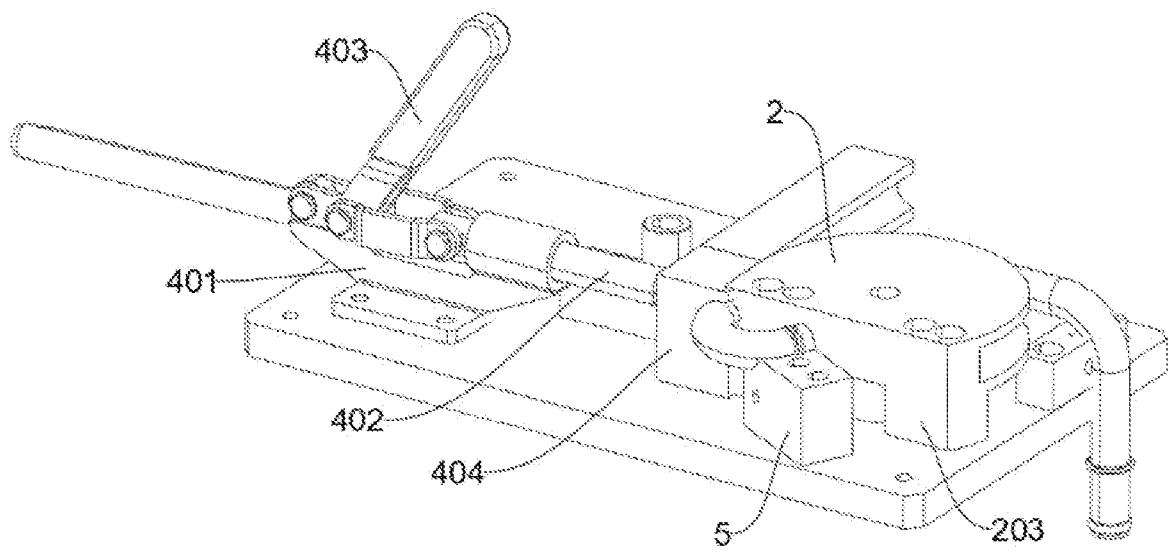


Fig. 2

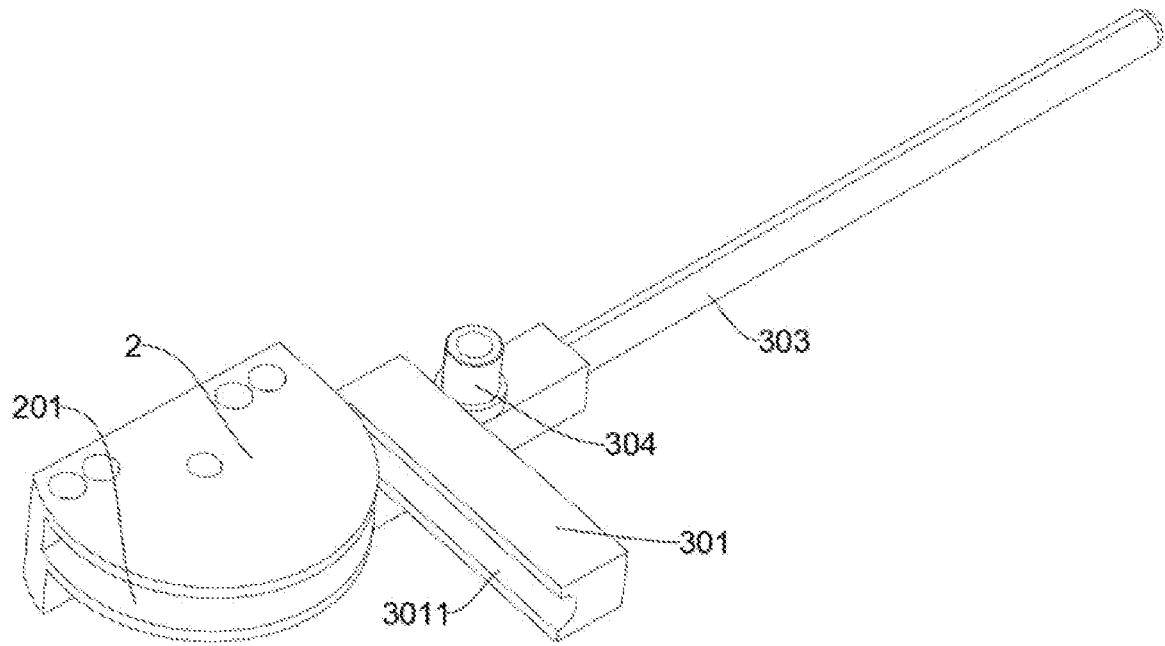


Fig. 3

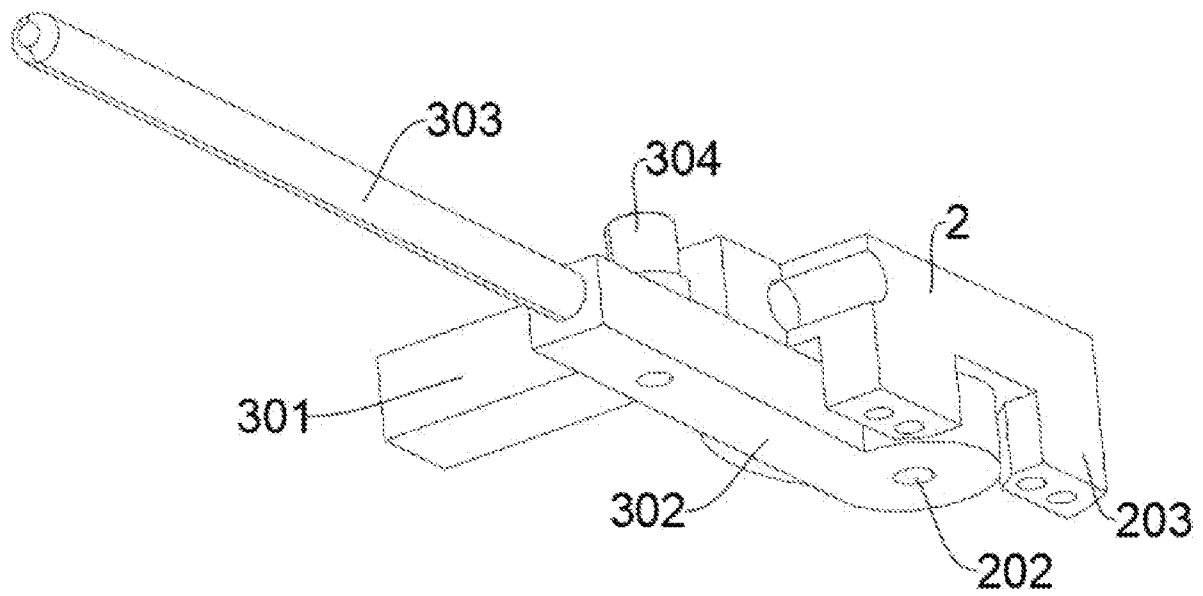


Fig. 4

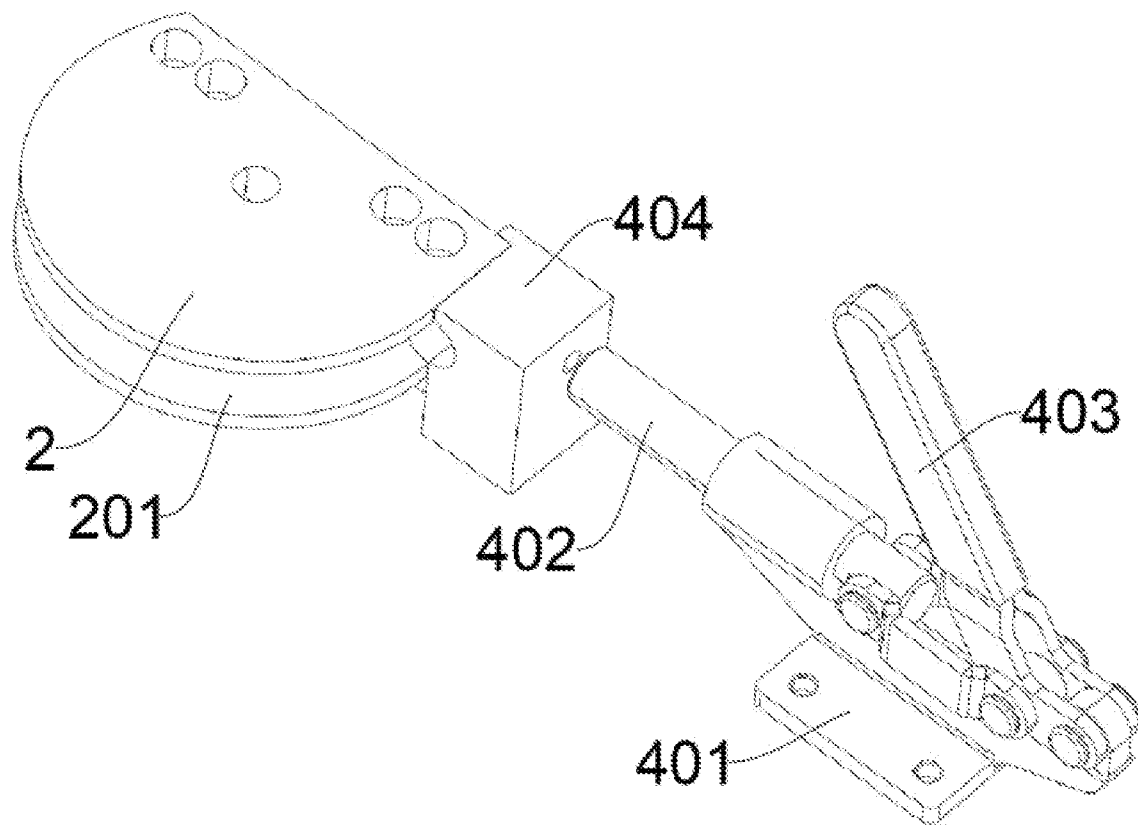


Fig. 5

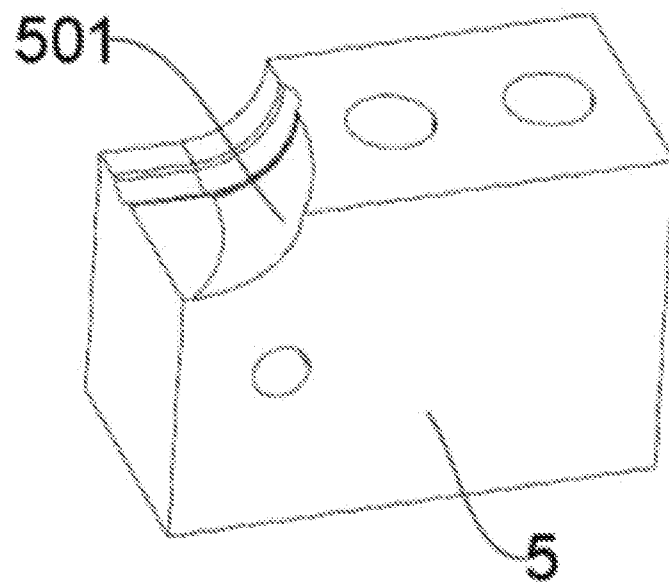


Fig. 6