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(54) **CUTTING TOOL**

(71) Applicant: **Yuan-Chi Hsu**, New Taipei (TW)

(72) Inventor: **Yuan-Chi Hsu**, New Taipei (TW)

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B26D 7/01 (2006.01)
B26D 1/04 (2006.01)
B26D 5/08 (2006.01)

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CPC ***B26D 7/015*** (2013.01); ***B26D 1/045*** (2013.01); ***B26D 5/08*** (2013.01)

(58) **Field of Classification Search**

CPC B26D 7/015; B26D 5/08; B26D 1/045; B21D 45/006; Y10T 83/2159; Y10T 83/8696

See application file for complete search history.

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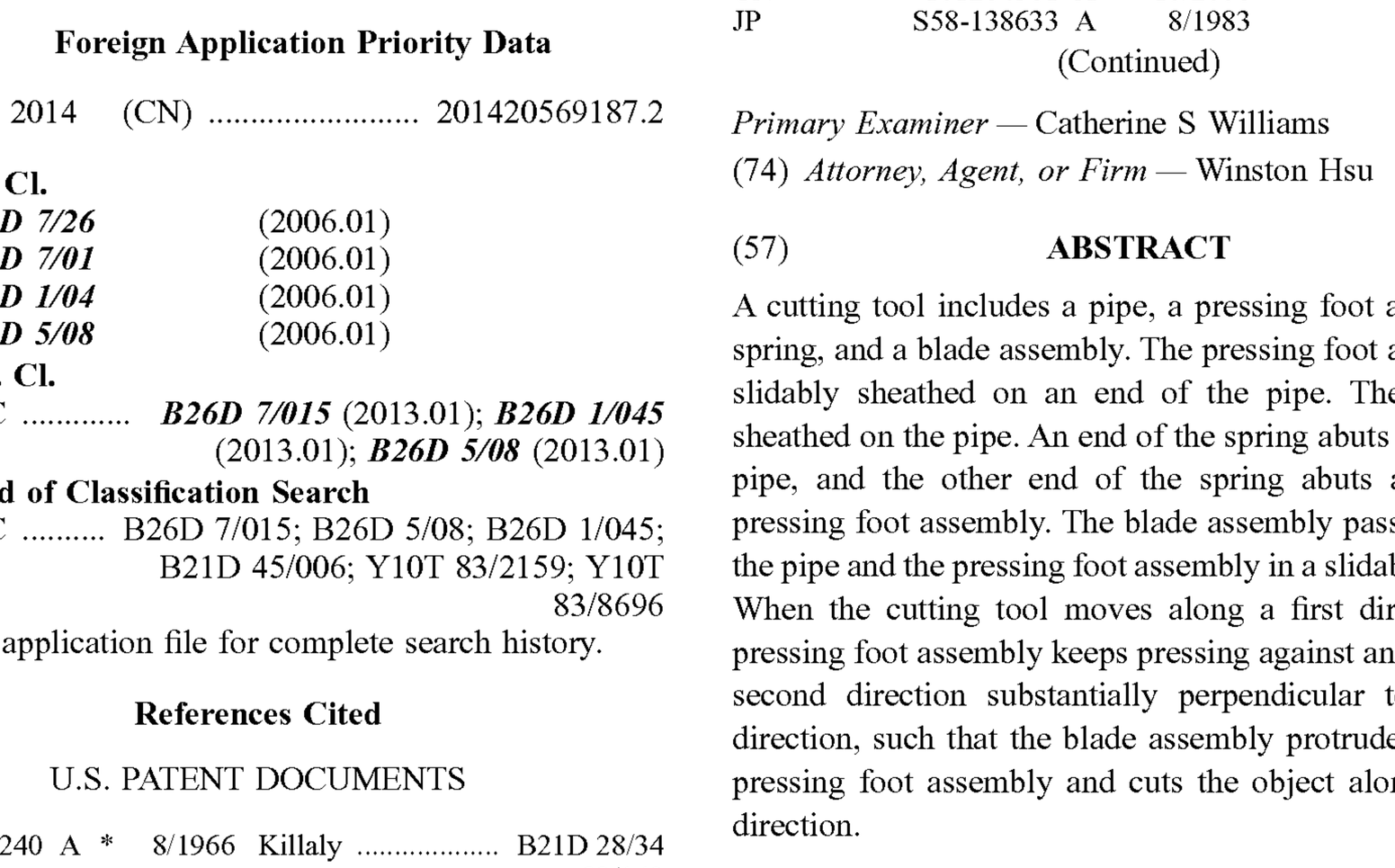
Primary Examiner — Catherine S Williams

(74) *Attorney, Agent, or Firm* — Winston Hsu

(57) **ABSTRACT**

A cutting tool includes a pipe, a pressing foot assembly, a spring, and a blade assembly. The pressing foot assembly is slidably sheathed on an end of the pipe. The spring is sheathed on the pipe. An end of the spring abuts against the pipe, and the other end of the spring abuts against the pressing foot assembly. The blade assembly passes through the pipe and the pressing foot assembly in a slidable manner. When the cutting tool moves along a first direction, the pressing foot assembly keeps pressing against an object in a second direction substantially perpendicular to the first direction, such that the blade assembly protrudes from the pressing foot assembly and cuts the object along the first direction.

11 Claims, 7 Drawing Sheets



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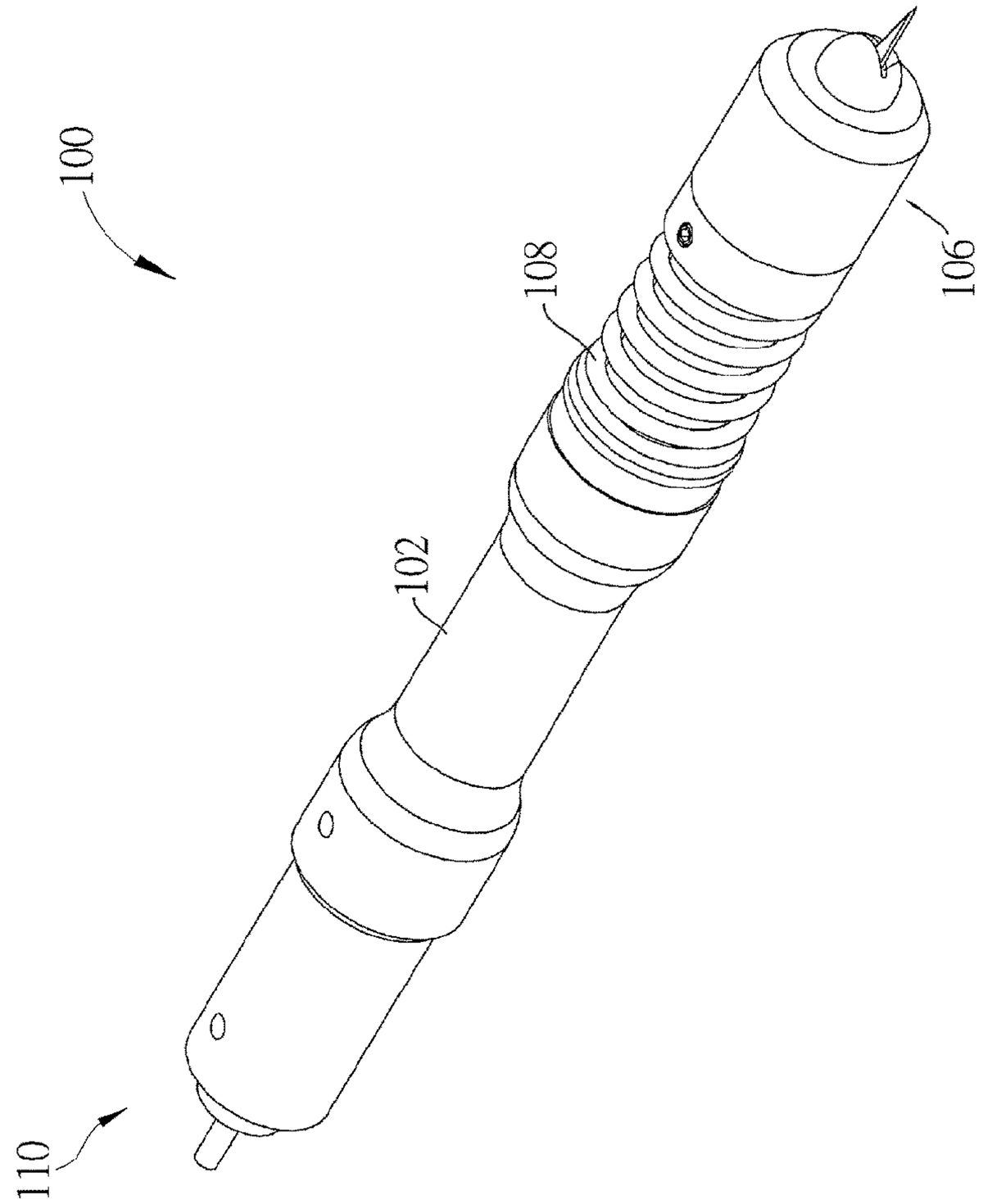
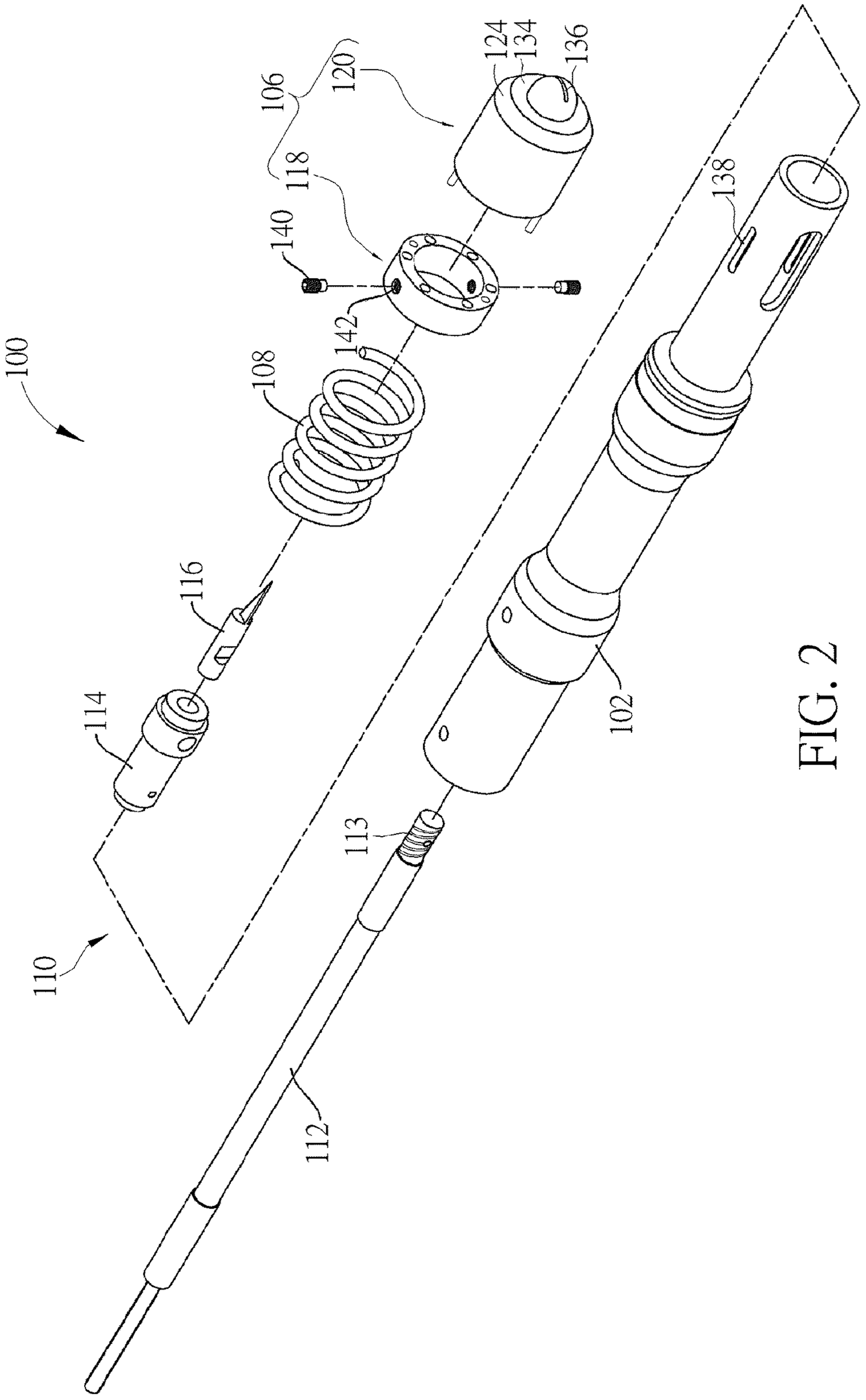


FIG. 1


100
106
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124
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136
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116
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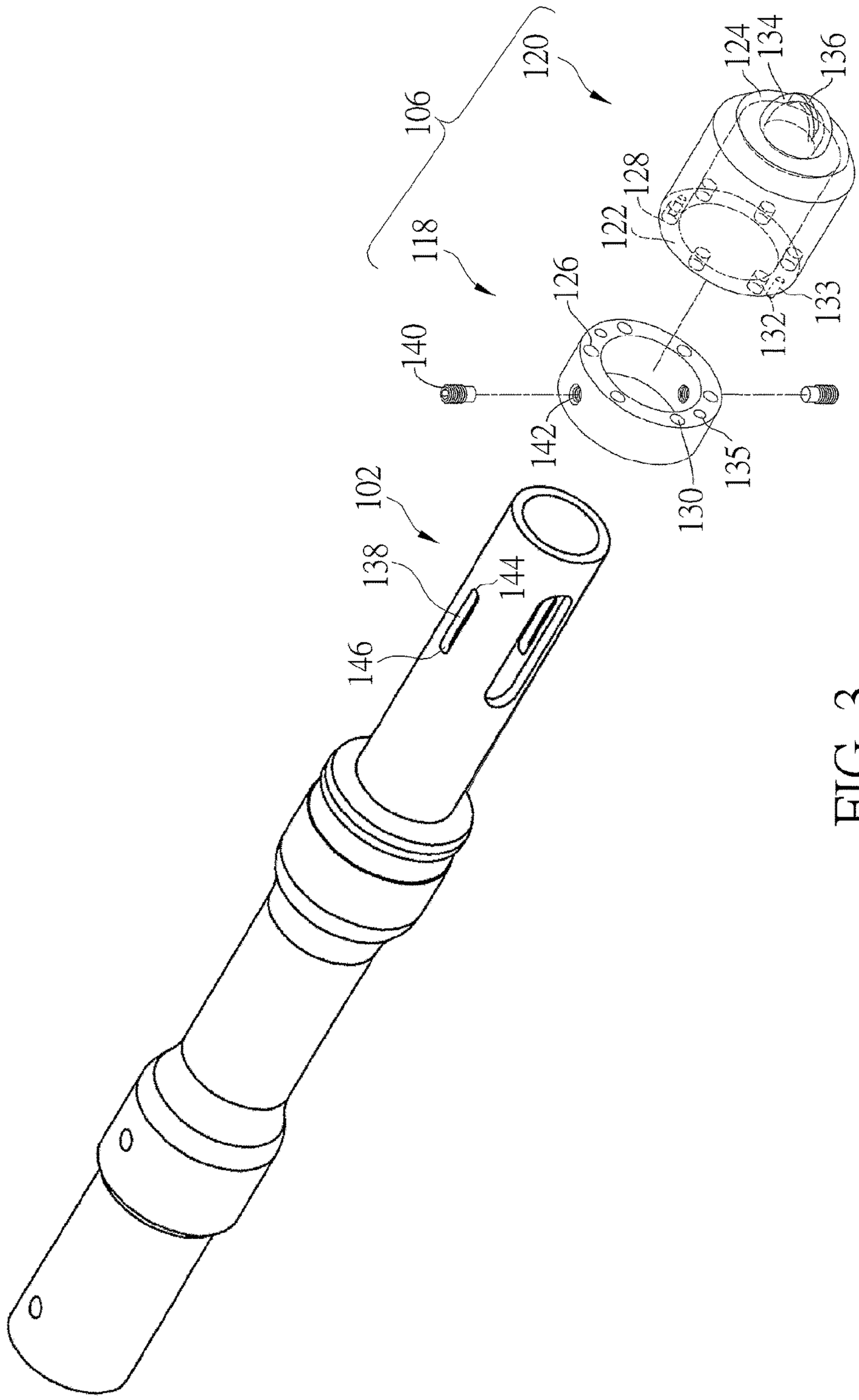
102
110
112

FIG. 2


106
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146

FIG. 3

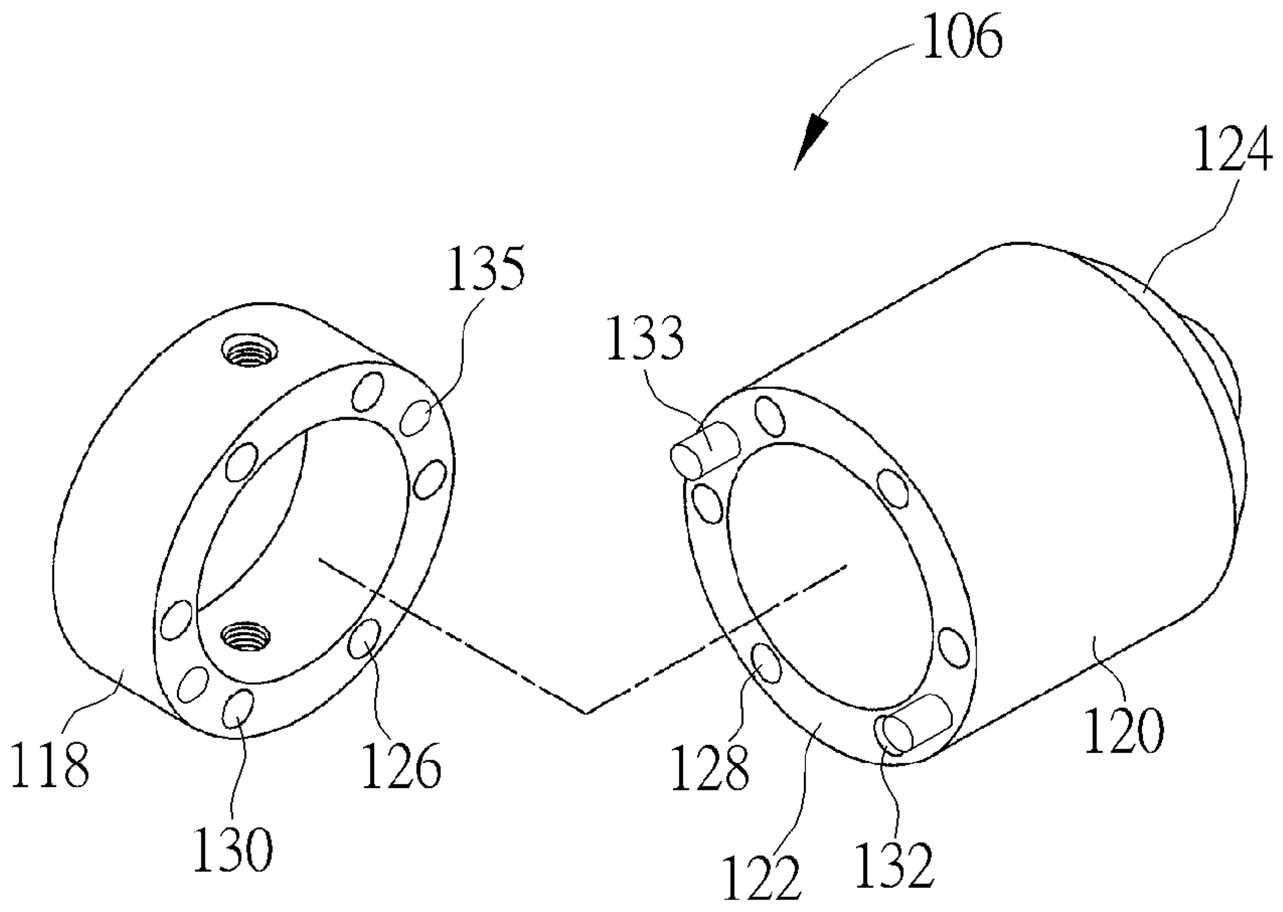
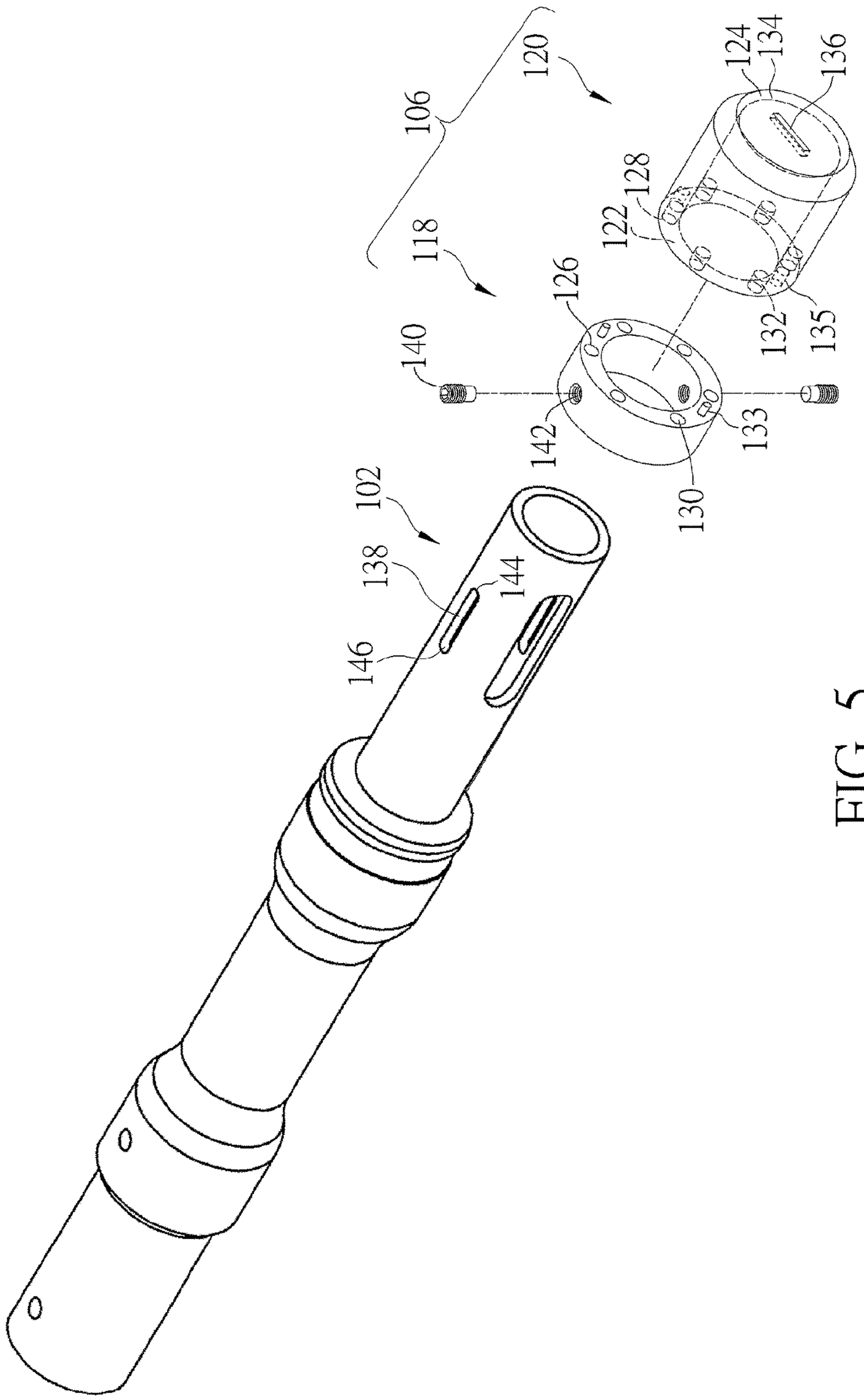


FIG. 4


106
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144
146

FIG. 5

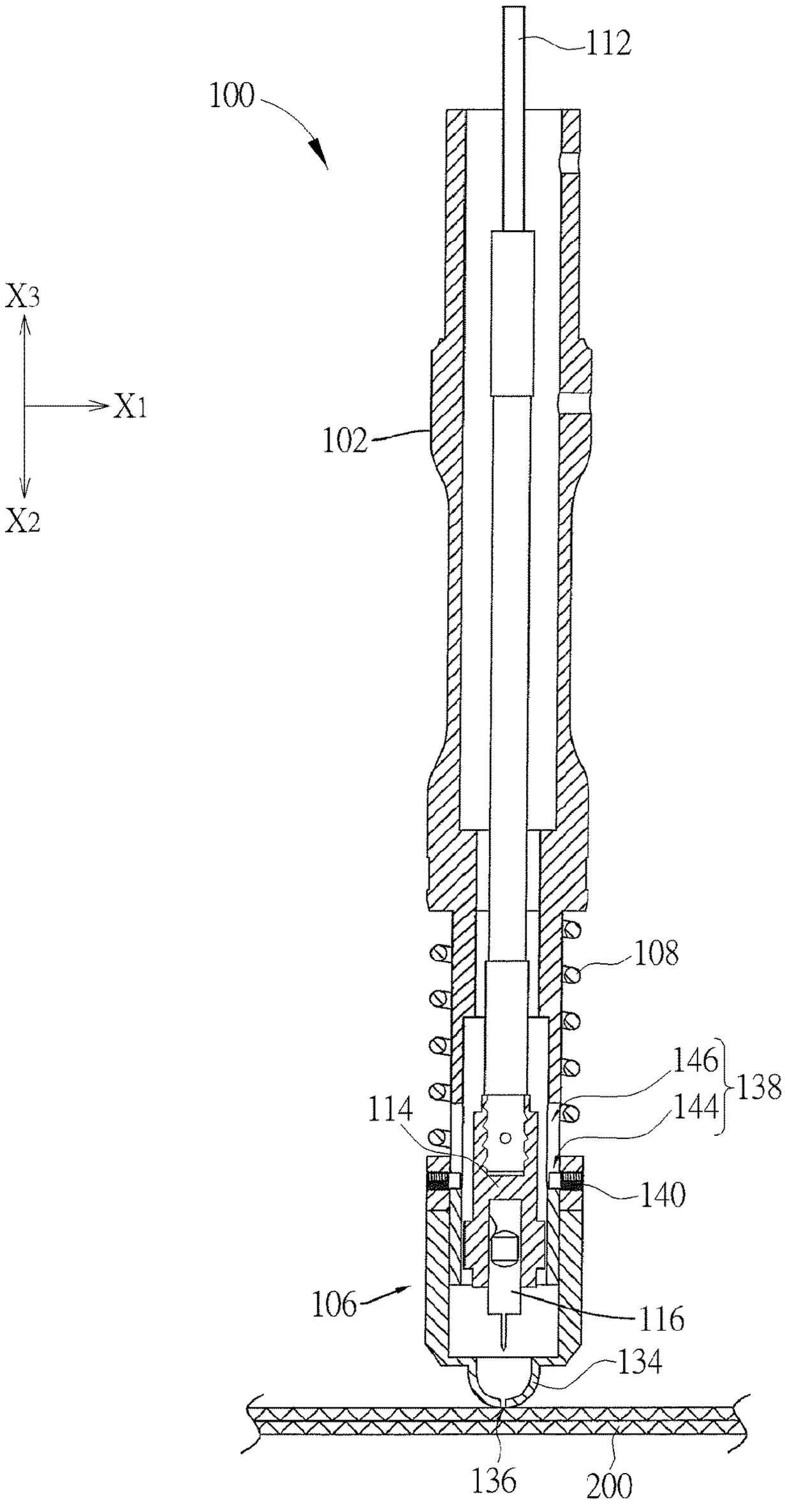

FIG. 6

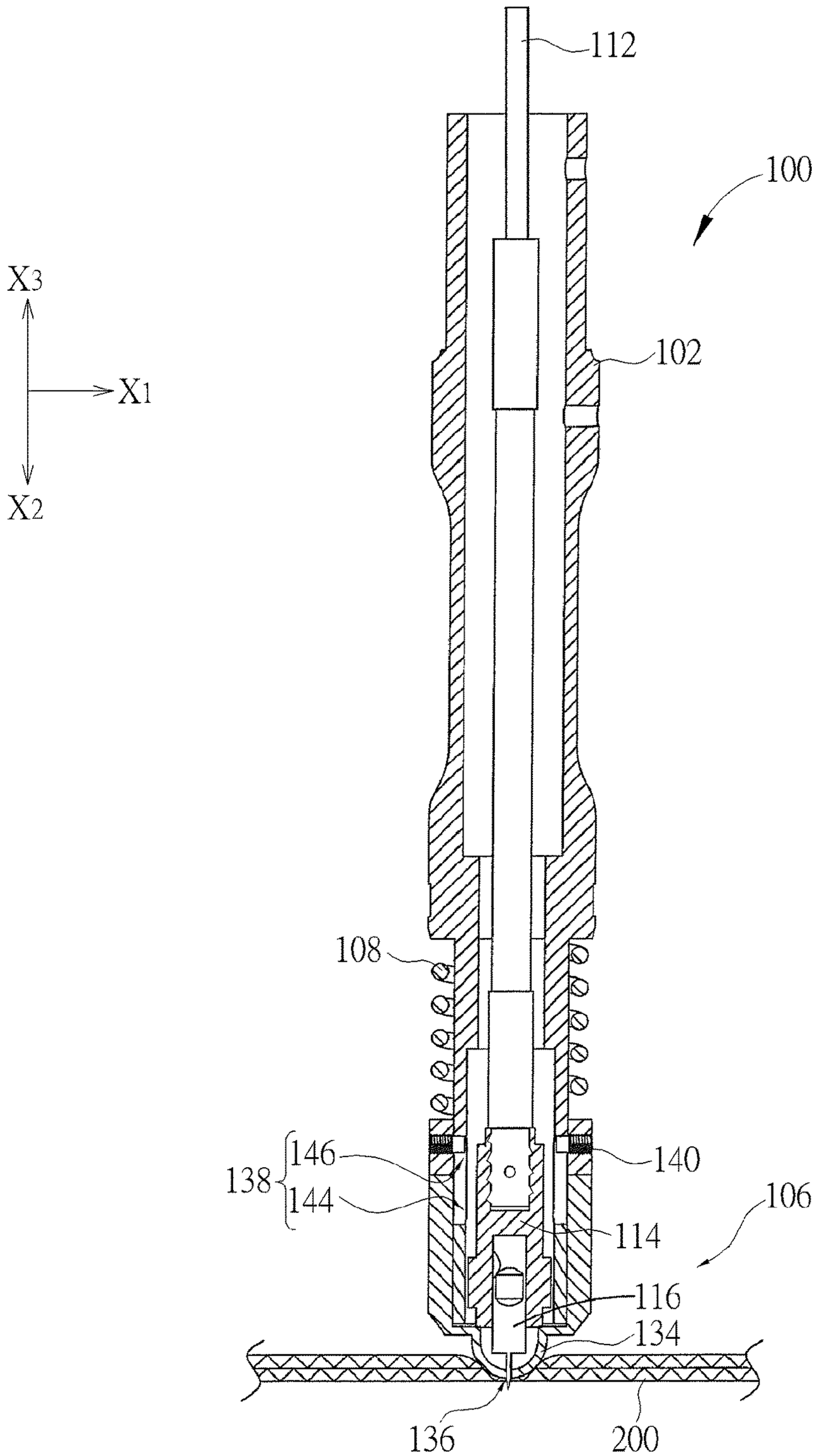

FIG. 7

CUTTING TOOL

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue; a claim printed with strikethrough indicates that the claim was canceled, disclaimed, or held invalid by a prior post-patent action or proceeding.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a cutting tool without being driven to swing up and down by a motor, and more particularly, to a cutting tool for cutting a corrugated sheet or a solid sheet.

2. Description of the Prior Art

A conventional cutting tool includes a body coupled to a motor, a socket, and a blade. The blade is fixed on an end of the body. The conventional cutting tool is assembled on a computer-aided manufacturing (CAM) machine and is driven to swing up and down vertically and move horizontally by the motor for cutting a sheet, such as a corrugated sheet or a solid sheet. Swinging amplitude of the conventional cutting tool driven by the motor is designed according to number of manufactured short fibers of the sheet. When it is desired to cut a corrugated sheet with numerous manufactured short fibers, it sets the larger swinging amplitude of the conventional cutting tool, so as to achieve a better cutting effect. However, it reduces a cutting speed of the conventional cutting tool. On the other hand, when it sets the smaller swinging amplitude to increase the cutting speed, the cutting effect gets worse. That is, the corrugated sheet may be torn due to cutting incompletion caused by the insufficient swinging amplitude or the excessive cutting speed of the conventional cutting tool. For example, when it is desired to cut a corrugated sheet with much more manufactured short fibers, it has to set the much larger swinging amplitude of the conventional cutting tool for a better cutting effect. Otherwise, the blade cannot cut the corrugated sheet effectively, and the corrugated sheet may get torn. Therefore, when it is desired to cut a corrugated sheet with numerous manufactured short fibers, it needs to increase the swinging amplitude of the conventional cutting tool to ensure an enhanced cutting effect. However, it reduces the cutting speed.

Furthermore, when it is desired to cut a solid sheet, the conventional cutting tool moves horizontally within a working area in the X-Y plane, the socket departs from the solid sheet instead of pressing the solid sheet all the time when the conventional cutting tool moves along a cutting path. The socket will slightly press the solid sheet only when the conventional cutting tool moves downwardly to cut the solid sheet. That is, the socket will move up and down repeatedly when the conventional cutting tool moves along the cutting path, which causes the solid sheet to be incapable of being effectively and stably pressed on a desktop or a working platform by the socket. Therefore, when the conventional cutting tool moves along the cutting path, the solid sheet may be pulled up by the blade, which causes a through hole on the solid sheet, and small pieces split from the solid sheet cannot support each other. Furthermore, the through hole results in air communication, so that a suction force generated by an air compressor is too weak to maintain a vacuum status for sucking the solid sheet effectively, which makes

the solid sheet torn due to cutting incompletion and fails to cut the solid sheet precisely and smoothly.

Therefore, there is a need to design a cutting tool to increase cutting speed when cutting a corrugated sheet and to enhance cutting precision when cutting a solid sheet.

SUMMARY OF THE INVENTION

In order to solve the drawbacks as mentioned above, the present invention provides a cutting tool without being driven to swing up and down by a motor, which allows a CAM machine to maximize a cutting speed to 100 percent of a design cutting speed when cutting a corrugated sheet, and achieves a precise cutting effect and a smooth cutting process when cutting a solid sheet.

According to the claimed invention, a cutting tool includes a pipe, a pressing foot assembly, a spring, and a blade assembly. The pressing foot assembly is slidably sheathed on an end of the pipe in a slidable manner. An opening is formed on an end of the pressing foot assembly away from the pipe. The spring is sheathed on the pipe. An end of the spring abuts against the pipe, and the other end of the pipe abuts against the pressing foot assembly. The blade assembly passes through the pipe and the pressing foot assembly in a slidable manner. The blade assembly includes an adjusting rod, a blade holder, and a blade. The adjusting rod passes through the pipe. An end of the blade holder is combined with an end of the adjusting rod. The blade is fixed on the other end of the blade holder. When the cutting tool moves along a first direction, the pipe drives the pressing foot assembly to keep pressing against an object in a second direction substantially perpendicular to the first direction, such that the blade protrudes from the opening and cuts the object during a process that the pressing foot assembly keeps pressing against the object along the second direction.

According to the claimed invention, the pressing foot assembly includes an adapter ring and a pressing foot. The adapter ring abuts against the spring. The opening is formed on the pressing foot, and the pressing foot detachably combines with the adapter ring.

According to the claimed invention, the pressing foot assembly further includes a first magnetic member and a second magnetic member. The pressing foot includes a combining end and a free end. A first assembling hole is formed on the adapter ring. The first magnetic member is fixed inside the first assembling hole. A second assembling hole is formed on the assembling end of the pressing foot and corresponding to the first assembling hole. The second magnetic member is fixed inside the second assembling hole, and the first magnetic member and the second magnetic member attract with each other, such that the combining end of the pressing foot is detachably combined with the adapter ring.

According to the claimed invention, the pressing foot assembly further includes a register pin and a register hole. The register hole is formed on one of the adapter ring and the pressing foot. The register pin is disposed on the other one of the adapter ring and the pressing foot, and the register pin engages with the register hole, such that a direction of the opening is parallel to a direction of the blade.

According to the claimed invention, a protrusion is formed on the free end of the pressing foot, and the opening is formed on the protrusion.

According to the claimed invention, the protrusion is an arc protrusion.

According to the claimed invention, a flat portion is formed on the free end of the pressing foot, and the opening is formed on the flat portion.

According to the claimed invention, a sliding slot is formed on the pipe. The pressing foot assembly further includes a sliding block disposed on a location corresponding to the sliding slot. When the pipe moves along the second direction, the sliding slot cooperates with the sliding block to guide the pressing foot assembly to slide along the second direction relative to the pipe, such that the spring is compressed by the pipe and the pressing foot assembly.

According to the claimed invention, the sliding block is a screw member. A screw hole is formed on a location of the pressing foot assembly corresponding to the sliding slot, and the screw member is screwed in the screw hole and accommodated in the sliding slot.

According to the claimed invention, the object is a corrugated sheet with wave-shaped core layers or a solid sheet

According to the claimed invention, a thread structure is formed on the end of the adjusting rod where the blade holder is combined, and the thread structure is combined with the blade holder, so as to adjust a length of the blade protruding from the opening.

In summary, the pressing foot assembly of the cutting tool of the present invention keeps pressing against an object by the resilient force generated from the spring during a cutting process. When cutting a corrugated sheet, the wave-shaped core layers of the corrugated sheet are collapsed by the pressing foot assembly. The collapsed corrugated sheet is similar to a plurality of overlaid solid sheets, which allows the cutting tool to cut the collapsed corrugated sheet with a maximum cutting speed. In other words, since it is not required to drive the cutting tool to swing up and down by a motor anymore, a computer-aided manufacturing (CAM) machine can maximize a cutting speed to 100 percent of a design cutting speed when cutting the corrugated sheet without considering relations between the swinging amplitude of the cutting tool, properties of the corrugated sheet, and a horizontal moving speed of the cutting tool relative to the corrugated sheet. Furthermore, when cutting a solid sheet, it prevents the solid sheet from being pulled up by the blade, such that a through hole is prevented from being formed on the solid sheet, which allows the solid sheet to be fixed on a working platform stably and ensures a precise cutting effect. Besides, the present invention further utilizes the first magnetic members and the second magnetic members attracting with each other for detaching the pressing foot from the adapter ring or combining the pressing foot with the adapter ring conveniently. Therefore, when it is desired to cut another corrugated sheet with a different height or a solid sheet, it can replace the original pressing foot with another pressing foot conveniently.

These and other objectives of the present invention will no doubt become obvious to those of ordinary skill in the art after reading the following detailed description of the preferred embodiment that is illustrated in the various figures and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a schematic diagram of a cutting tool according to an embodiment of the present invention.

FIG. **2** is an exploded diagram of the cutting tool according to the embodiment of the present invention.

FIG. **3** is a partial exploded diagram of a pipe and a pressing foot assembly of the cutting tool according to the embodiment of the present invention.

FIG. **4** is a partial exploded diagram of the pressing foot assembly of the cutting tool according to the embodiment of the present invention.

FIG. **5** is a partial exploded diagram of a pipe and a pressing foot assembly of a cutting tool according to another embodiment of the present invention.

FIG. **6** and FIG. **7** are sectional diagrams of the cutting tool at different positions according to the embodiment of the present invention.

DETAILED DESCRIPTION

Please refer to FIG. **1** and FIG. **2**. FIG. **1** is a schematic diagram of a cutting tool **100** according to an embodiment of the present invention. FIG. **2** is an exploded diagram of the cutting tool **100** according to the embodiment of the present invention. As shown in FIG. **1** and FIG. **2**, the cutting tool **100** includes a pipe **102**, a pressing foot assembly **106**, a spring **108**, and a blade assembly **110**. The pressing foot assembly **106** is slidably sheathed on an end of the pipe **102**. The spring **108** is sheathed on the pipe **102**. An end of the spring **108** abuts against the pipe **102**, and the other end of the spring **108** abuts against the pressing foot assembly **106**. In this embodiment, the spring **108** can be a spring. The blade assembly **110** passes through the pipe **102** and the pressing foot assembly **106** in a slidable manner. The blade assembly **110** includes an adjusting rod **112**, a blade holder **114**, and a blade **116**. The adjusting rod **112** passes through the pipe **102**. An end of the blade holder **114** is fixed on an end of the adjusting rod **112**. The blade **116** is fixed on the other end of the blade holder **114**. In this embodiment, a thread structure **113** is formed on the end of the adjusting rod **112**. The thread structure **113** is combined with the blade holder **114** for adjusting a length of the blade **116** protruding from an opening **136** formed on the pressing foot assembly **106**.

Please refer to FIG. **2** and FIG. **3**. FIG. **3** is a partial exploded diagram of the pipe **102** and the pressing foot assembly **106** of the cutting tool **100** according to the embodiment of the present invention. As shown in FIG. **2** and FIG. **3**, the pressing foot assembly **106** includes an adapter ring **118** and a pressing foot **120**. The adapter ring **118** abuts against the spring **108**. The pressing foot **120** is detachably combined with the adapter ring **118**. Specifically, the pressing foot **120** includes a combining end **122** and a free end **124**. At least first assembling hole **126** is formed on the adapter ring **118**. At least one second assembling hole **128** is formed on the combining end **122** of the pressing foot **120** and corresponding to the at least one first assembling hole **126**. For example, six assembling holes **126** are formed on the adapter ring **118**, and six second assembling holes **128** are formed on the combining end **122** of the pressing foot **120** and corresponding to the six first assembling holes **126**, in this embodiment. The pressing foot assembly **106** further includes at least one first magnetic member **130** and at least one second magnetic member **132**. For example, the six first magnetic members **130** are fixed inside the six first assembling holes **126**, and the six second magnetic members **132** are fixed inside the six second assembling holes **128**. However, the numbers of the first assembling hole **126**, the second assembling hole **128**, the first magnetic member **130**, and the second magnetic member **132** are not limited to this embodiment. The first magnetic members **130** and the second magnetic members **132** attract with each other, such that the combining end **122** of the pressing foot **120** is detachably combined with the adapter ring **118**, which brings convenience in replacing the pressing foot **120**.

However, a combining mechanism of the pressing foot **120** and the adapter ring **118** is not limited to this embodiment. For example, the pressing foot **120** can be combined with the adapter ring **118** by a screwing manner. Furthermore, the pressing foot assembly **106** further includes a register pin **133** and a register hole **135**. The register hole **135** is formed on one of the adapter ring **118** and the pressing foot **120**. The register pin **133** is disposed on the other one of the adapter ring **118** and the pressing foot **120**. In this embodiment, the register hole **135** is formed on an end of the adapter ring **118** close to the pressing foot **120**. The register pin **133** is disposed on an end of the pressing foot **120** close to the adapter ring **118** and protrudes from the combining end **122**. The register pin **133** engages with the register hole **135**, such that a direction of the opening **136** is parallel to a direction of the blade **116**.

Please refer to FIG. **3** and FIG. **4**. FIG. **4** is a partial exploded diagram of the pressing foot assembly **106** of the cutting tool **100** according to the embodiment of the present invention. As shown in FIG. **3** and FIG. **4**, in this embodiment, a protrusion **134** is formed on the free end **124** of the pressing foot **120**, and the opening **136** is formed on the protrusion **134**. Furthermore, the protrusion **134** can be an arc protrusion. Please refer to FIG. **5**. FIG. **5** is a partial exploded diagram of the pipe **102** and the pressing foot assembly **106** of the cutting tool **100** according to another embodiment of the present invention. Different from the cutting tool **100** in aforementioned embodiment, instead of the arc protrusion, a flat portion is formed on the free end **124** of the pressing foot **120**, and the opening **136** is formed on the flat portion. That is, a shape of the free end **124** of the pressing foot **120** is not limited to the aforementioned embodiments. It depends on practical design demands. In other words, the free end **124** of the pressing foot **120** of the present invention can be designed as a structure with a different arc shape according to a height or a property of wave-shaped core layers of an object. For example, when it is desired to cut a thicker object, such as a corrugated sheet, the free end **124** of the pressing foot **120** with the arc protrusion can be utilized for pressing against the thicker object. When it is desired to cut a thinner object, such as a solid sheet, the free end **124** of the pressing foot **120** with the flat portion can be utilized for pressing the thinner object. Furthermore, since the pressing foot **120** is detachably combined with the adapter ring **118** by the first magnetic members **130** and the second magnetic members **132** attracting with each other, it is easy to detach the original pressing foot **120** from the adapter ring **118** and combine another pressing foot **120** with the adapter ring **118** for cutting another object with a different height, so as to complete replacement of the pressing foot **120** conveniently. Besides, as shown in FIG. **5**, in this embodiment, the register pin **133** is disposed on the end of the adapter ring **118** close to the pressing foot **120**. The register hole **135** is formed on the end of the pressing foot **120** close to the adapter ring **118**.

As shown in FIG. **2** and FIG. **3**, a sliding slot **138** is formed on the pipe **102**. The pressing foot assembly **106** further includes a sliding block **140** disposed on a location corresponding to the sliding slot **138**. The sliding slot **138** cooperates with the sliding block **140** for guiding the pressing foot assembly **106** to slide relative to the pipe **102**, such that the spring **108** is compressed by the pipe **102** and the pressing foot assembly **106**. Specifically, in this embodiment, the sliding block **140** can be a screw member. Furthermore, a screw hole **142** is formed on the adapter ring **118** of the pressing foot assembly **106** and corresponding to the sliding slot **138**. The screw member is screwed in the screw hole **142** and accommodated in the sliding slot **138**. The sliding slot **138** has a first end **144** and a second end **146**. The screw member can slide back and forth between the first end **144** and the second end **146** of the sliding slot **138**. However, the configuration and the number of the sliding slot **138** and the sliding block **140** are not limited to the aforementioned embodiment. It depends on practical design demands.

Operational principle of the cutting tool **100** according to the embodiment of the present invention is described as follows. Please refer to FIG. **6** and FIG. **7**. FIG. **6** and FIG. **7** are sectional diagrams of the cutting tool **100** at different positions according to the embodiment of the present invention. As shown in FIG. **6**, the sliding block **140** is located at the first end **144** of the sliding slot **138**, and the blade **116** is received in the pressing foot assembly **106**. As shown in FIG. **7**, when it is desired to cut an object **200**, such as a corrugated sheet with wave-shaped core layers, along a first direction X**1**, the pipe **102** drives the protrusion **134** of the pressing foot assembly **106** to keep pressing against the object **200** along a second direction X**2** substantially perpendicular to the first direction X**1**, such that the sliding block **140** slides to the second end **146** of the sliding slot **138**. In the meantime, the spring **108** is compressed for providing a buffering effect, and the blade **116** protrudes from the opening **136** and moves along the first direction X**1**, such that the blade **116** cuts the object **200** along the first direction X**1** during a process that the protrusion **134** of the pressing foot assembly **106** keeps pressing against the object **200** along the second direction X**2**.

It should be noted that when the object **200** is a corrugated sheet with wave-shaped core layers, the cutting tool **100** can utilize the free end **124** of the pressing foot **120** with the arc protrusion and the spring **108** with a higher elasticity coefficient (K) for pressing against the corrugated sheet. Since the spring **108** with the higher elasticity coefficient can provide a larger resilient recovering force during a process that the pressing foot assembly **106** keeps pressing against the corrugated sheet, the pressing foot **120** with the arc protrusion collapses the wave-shaped core layers, so that the corrugated sheet can be considered as a plurality of overlaid solid sheets. Therefore, the pressing foot **120** presses against the corrugated sheet and the blade **116** cuts the corrugated sheet along a cutting path at the same time, which allows a computer-aided manufacturing (CAM) machine to process a cutting operation in a maximum cutting speed and improves a cutting effect of the corrugated sheet. Furthermore, the blade assembly **110** of the present invention can be a tangential knife tool instead of an oscillating knife tool, which allows the cutting tool **100** to execute an effective cutting operation in the maximum cutting speed of the CAM machine and improves an overall cutting performance. Besides, after the blade **116** finishes a cutting process that the blade **116** moves along the first direction X**1** by a specific distance, the blade **116** is to move to the next cutting point and execute the cutting operation as mentioned above. During a process that the blade **116** moves to the next cutting point, the pipe **102** moves along a third direction X**3** opposite to the second direction X**2**, such that the protrusion **134** separates from the corrugated sheet. At this moment, the blade **116** is received in the pressing foot assembly **106** again, which prevents other portions of the corrugated sheet from being crushed by the protrusion **134** or the blade **116**. Furthermore, structural design of a corrugated box is normally based on a thickness of a collapsed edge of a corrugated sheet. In the prior art, a corrugated sheet is cut without being collapsed. Therefore, it is still required to collapse an engaging portion of a corrugated sheet by hands or other

tools for being inserted into a corresponding slot in the prior art. In the present invention, since an engaging portion of a corrugated sheet has already been collapsed by the pressing foot **120**, it is not required to process the conventional and additional collapsing operation as mentioned above.

On the other hand, when the object **200** is a solid sheet, the cutting tool **100** can utilize the free end **124** of the pressing foot **120** with the flat portion and the spring **108** with lower elasticity coefficient because the solid sheet cannot be collapsed like the corrugated sheet with wave-shaped core layers. When the blade **116** moves up and down along a Z axis, i.e., the second direction X**2** or the third direction X**3**, and moves along the first direction X**1** in an X-Y plane to cut the solid sheet, the pressing foot **120** does not depart from the solid sheet by the resilient recovering force generated from the spring **108**, such that the pressing foot **120** can flat a cutting trace on the solid sheet and make sure that flatness of the cut solid sheet is similar to flatness of the uncut solid sheet. However, in the prior art, a gap or a through hole is formed on a solid sheet because of a thickness of a conventional blade, which results in air communication and reduces a sucking ability of an air compressor. Therefore, the solid sheet cannot be fixed stably on a desktop or a working platform during a cutting process in the prior art. When it is desired to cut a precise pattern, a gap or a through hole results in air communication and a solid sheet cannot be fixed stably, which leads the solid sheet to be torn by the blade and fails to complete the cutting process in the prior art. In the present invention, even when a solid sheet is pulled up by the blade **116**, the pressing foot **120** can stop the solid paper and prevent a through hole or a gap from being formed on the solid sheet to avoid the air communication, such that the solid sheet is fixed stably. In other words, since the pressing foot **120** does not depart from the solid sheet when cutting, the pressing foot **120** flats a cutting trace and fixes the solid sheet for ensuring completeness of the solid sheet and preventing the air communication, which allows the compressor to suck the solid paper and ensures that the solid paper is fixed on a desktop or a working platform stably.

In contrast to the prior art, the pressing foot assembly of the cutting tool of the present invention keeps pressing against an object by the resilient force generated from the spring during a cutting process. When cutting a corrugated sheet, the wave-shaped core layers of the corrugated sheet are collapsed by the pressing foot assembly. The collapsed corrugated sheet is similar to a plurality of overlaid solid sheets, which allows the cutting tool to cut the collapsed corrugated sheet with a maximum cutting speed. In other words, since it is not required to drive the cutting tool to swing up and down by a motor anymore, a CAM machine can maximize a cutting speed to 100 percent of a design cutting speed when cutting the corrugated sheet without considering relations between the swinging amplitude of the cutting tool, properties of the corrugated sheet, and a horizontal moving speed of the cutting tool relative to the corrugated sheet. Furthermore, when cutting a solid sheet, it prevents the solid sheet from being pulled up by the blade, such that a through hole is prevented from being formed on the solid sheet, which allows the solid sheet to be fixed on a working platform stably and ensures a precise cutting effect. Besides, the present invention further utilizes the first magnetic members and the second magnetic members attracting with each other for detaching the pressing foot from the adapter ring or combining the pressing foot with the adapter ring conveniently. Therefore, when it is desired to cut another corrugated sheet with a different height or a solid sheet, it can replace the original pressing foot with another pressing foot conveniently.

Those skilled in the art will readily observe that numerous modifications and alterations of the device and method may be made while retaining the teachings of the invention. Accordingly, the above disclosure should be construed as limited only by the metes and bounds of the appended claims.

What is claimed is:

1. A cutting tool comprising:

a pipe whereon a sliding slot is formed;

a pressing foot assembly slidably sheathed on an end of the pipe in a slidable manner, an opening formed on an end of the pressing foot assembly away from the pipe, the pressing foot assembly comprising an adapter ring, a pressing foot and a sliding block, the pressing foot being detachably combined with the adapter ring, the adapter ring being slidably connected to the pipe by the sliding block and the sliding slot, the opening being formed on the pressing foot, the sliding block being disposed on the adapter ring and located at a location corresponding to the sliding slot, the sliding block cooperating *with* the sliding slot to guide the pressing foot assembly to slide relative to the pipe along a second direction;

a spring sheathed on the pipe, an end of the spring abutting against the pipe, and the other end of the spring abutting against the adapter ring of the pressing foot assembly; and

a blade assembly **[**passing through**]** *disposed on* the pipe and *for selectively being received in or protruding from* the pressing foot assembly**[**in a slidable manner, the blade assembly comprising:

an adjusting rod passing through the pipe;

a blade holder, an end of the blade holder combined with an end of the adjusting rod; and

a blade fixed on the other end of the blade holder**]**.

2. The cutting tool of claim **1**, wherein the pressing foot assembly further comprises a first magnetic member and a second magnetic member, the pressing foot comprises a combining end and a free end, a first assembling hole is formed on the adapter ring, the first magnetic member is fixed inside the first assembling hole, a second assembling hole is formed on the assembling end of the pressing foot and corresponding to the first assembling hole, the second magnetic member is fixed inside the second assembling hole, and the first magnetic member and the second magnetic member attract with each other, such that the combining end of the pressing foot is detachably combined with the adapter ring.

3. The cutting tool of claim **2**, wherein the pressing foot assembly further comprises a register pin and a register hole, the register hole is formed on one of the adapter ring and the pressing foot, the register pin is disposed on the other one of the adapter ring and the pressing foot, and the register pin engages with the register hole, such that a direction of the opening is parallel to a direction of the blade *assembly*.

4. The cutting tool of claim **2**, wherein a protrusion is formed on the free end of the pressing foot, and the opening is formed on the protrusion.

5. The cutting tool of claim **4**, wherein the protrusion is an arc protrusion.

6. The cutting tool of claim **2**, wherein a flat portion is formed on the free end of the pressing foot, and the opening is formed on the flat portion.

7. The cutting tool of claim 1, wherein the sliding block is a screw member, a screw hole is formed on a location of the pressing foot assembly corresponding to the sliding slot, and the screw member is screwed in the screw hole and accommodated in the sliding slot.

8. The cutting tool of claim 1, wherein [the] *an* object *to be cut by the cutting tool* is a corrugated sheet with wave-shaped core layers or a solid sheet.

[9. The cutting tool of claim 1, wherein a thread structure is formed on the end of the adjusting rod where the blade holder is combined, and the thread structure is combined with the blade holder, so as to adjust a length of the blade protruding from the opening.]

10. The cutting tool of claim 1, wherein when the cutting tool moves along a first direction substantially perpendicular to the second direction, the pipe drives the pressing foot assembly to keep pressing against an object in the second direction, such that the blade *assembly* protrudes from the opening and cuts the object during a process that the pressing foot assembly keeps pressing against the object to collapse a plurality of wave-shaped core layers of the object along the second direction, and the spring generates a resilient force to drive the pressing foot assembly to collapse the plurality of wave-shaped core layers of the object before the blade *assembly* protrudes from the opening.

11. The cutting tool of claim 1, wherein the blade assembly passes through the pipe and the pressing foot assembly in a slidable manner, and the blade assembly comprises:

an adjusting rod passing through the pipe;

a blade holder, an end of the blade holder combined with an end of the adjusting rod; and

a blade fixed on the other end of the blade holder.

12. The cutting tool of claim 11, wherein a thread structure is formed on the end of the adjusting rod where the blade holder is combined, and the thread structure is combined with the blade holder, so as to adjust a length of the blade protruding from the opening.

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