



US 20060150418A1

(19) **United States**

(12) **Patent Application Publication**
Hsieh

(10) **Pub. No.: US 2006/0150418 A1**

(43) **Pub. Date: Jul. 13, 2006**

(54) **HAND TOOL WITH REPLACEABLE BLADE**

Publication Classification

(76) Inventor: **Chih Ching Hsieh**, Fongyuan City
(TW)

(51) **Int. Cl.**
A45D 29/00 (2006.01)

(52) **U.S. Cl.** **30/28**

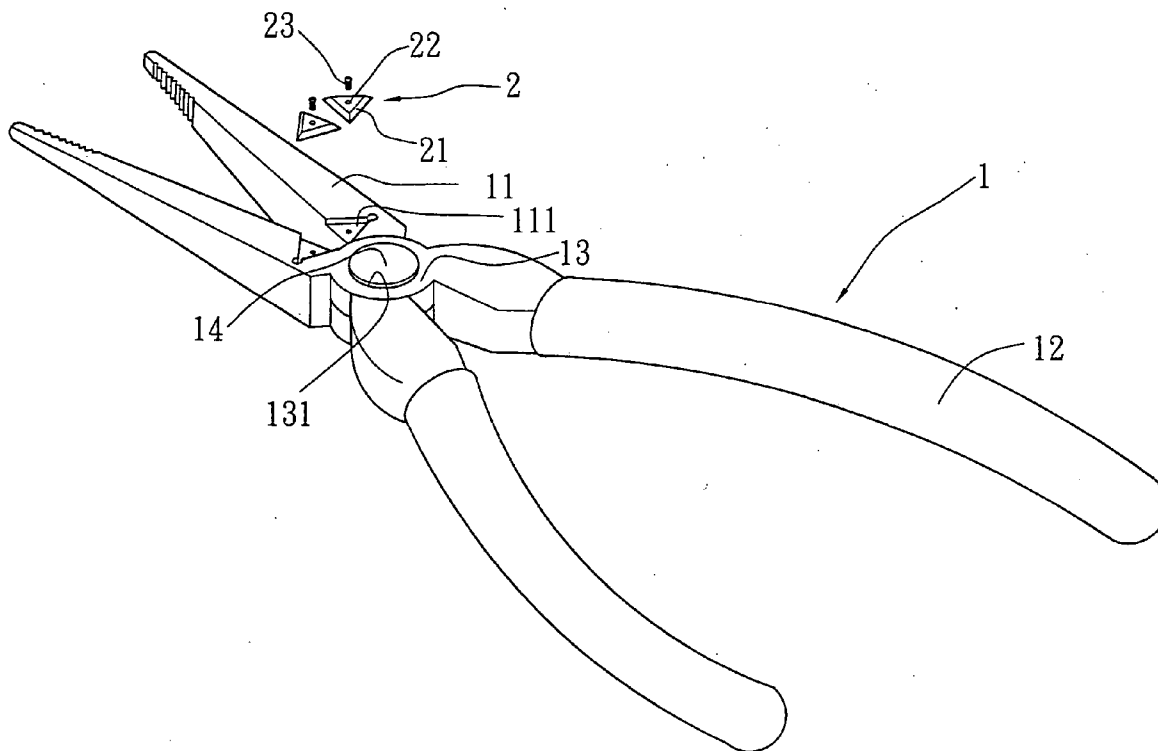
(57) **ABSTRACT**

Correspondence Address:
ROSENBERG, KLEIN & LEE
3458 ELLICOTT CENTER DRIVE-SUITE 101
ELLICOTT CITY, MD 21043 (US)

A hand tool with replaceable blade includes two handles pivoted to each other by means of two slip joints respectively disposed to the front end of each handle; an active part extending forward from each slip joint of the handle; a slot being provided to each active part at where close to the relative inner sides of the slip joint for the installation of a blade; the blade being provided with one or a plurality of shearing sections and one or a plurality of locking holes; and a locking member being disposed to each locking hole to secure the blade.

(21) Appl. No.: **11/031,042**

(22) Filed: **Jan. 10, 2005**



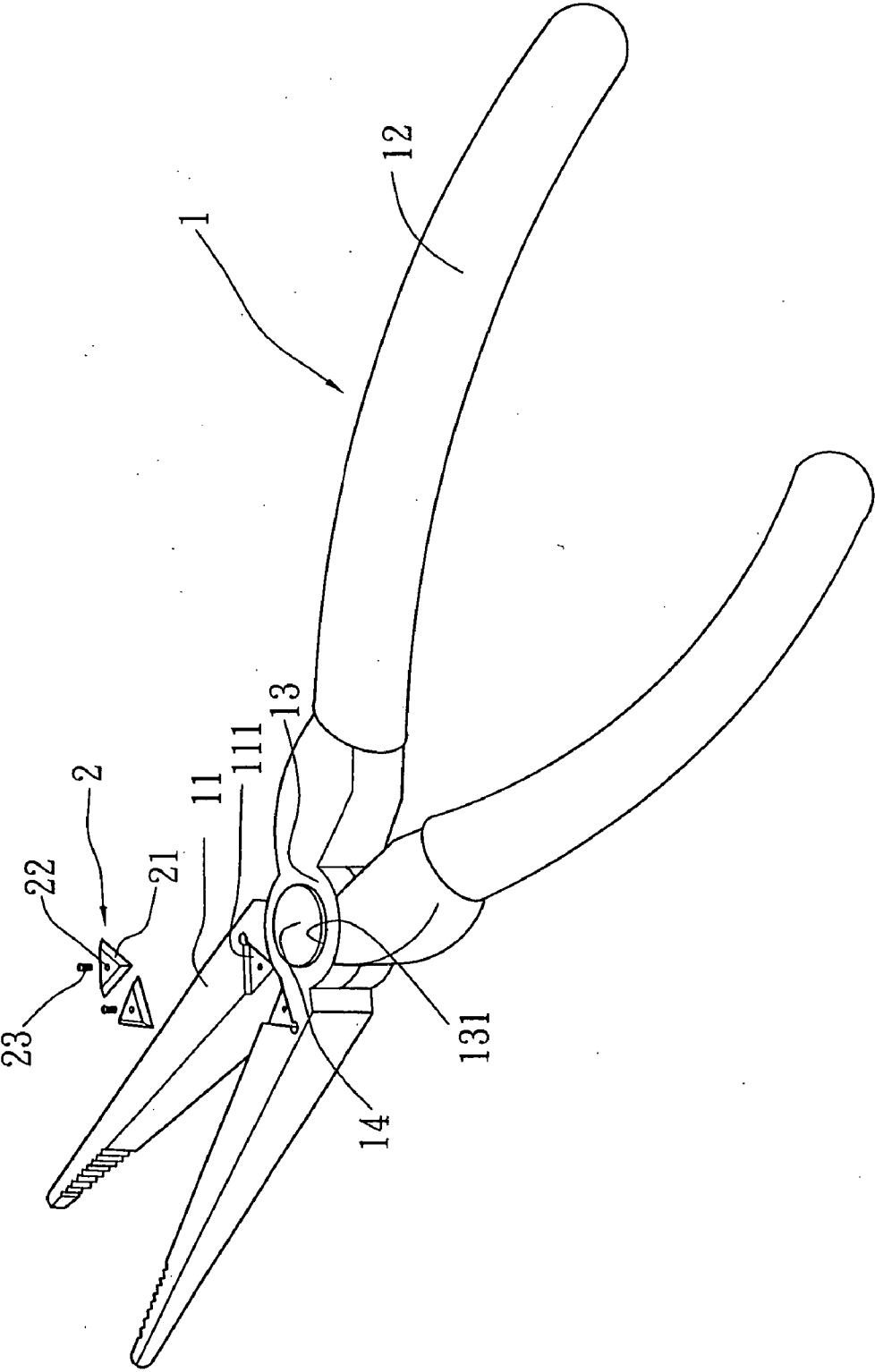


FIG. 1

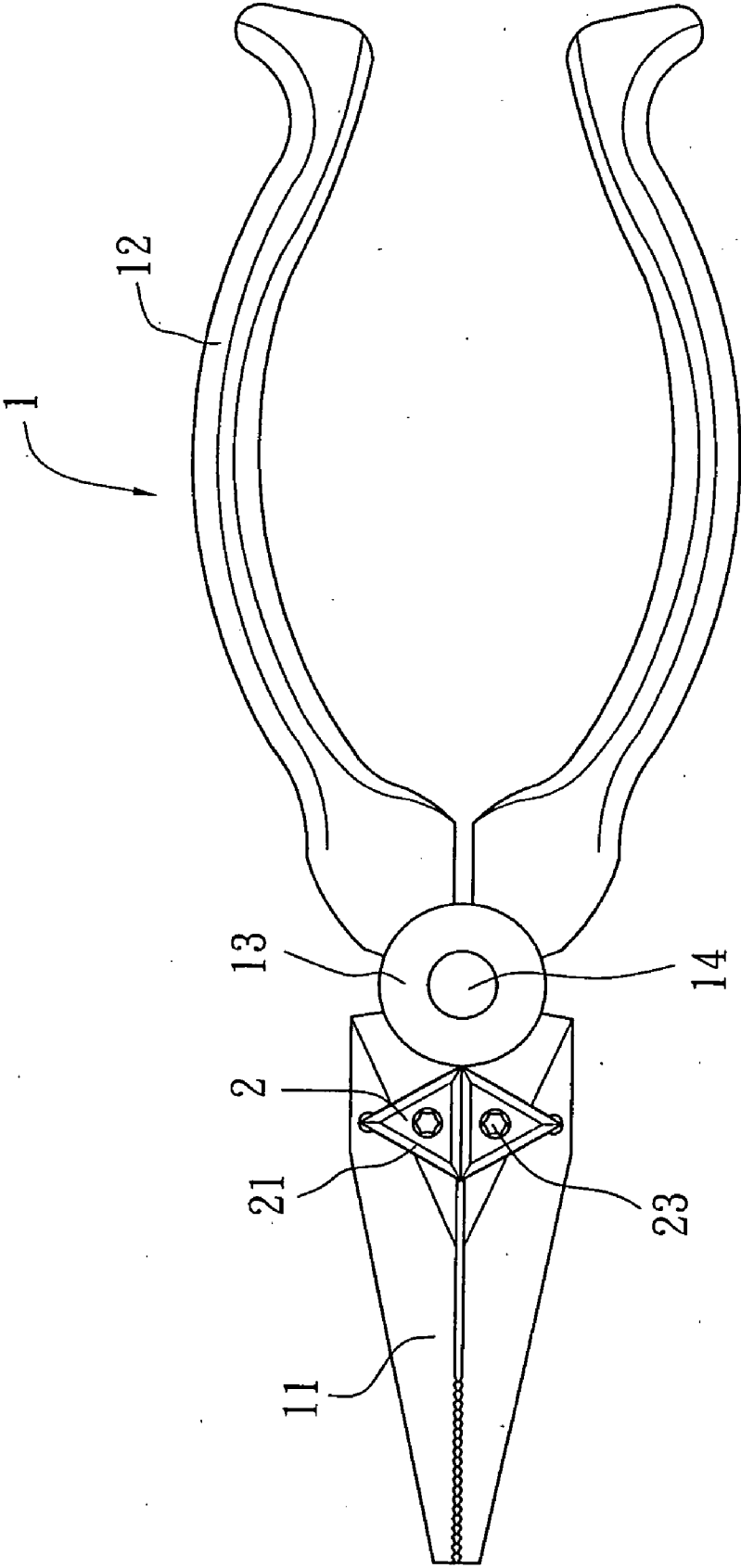


FIG. 2

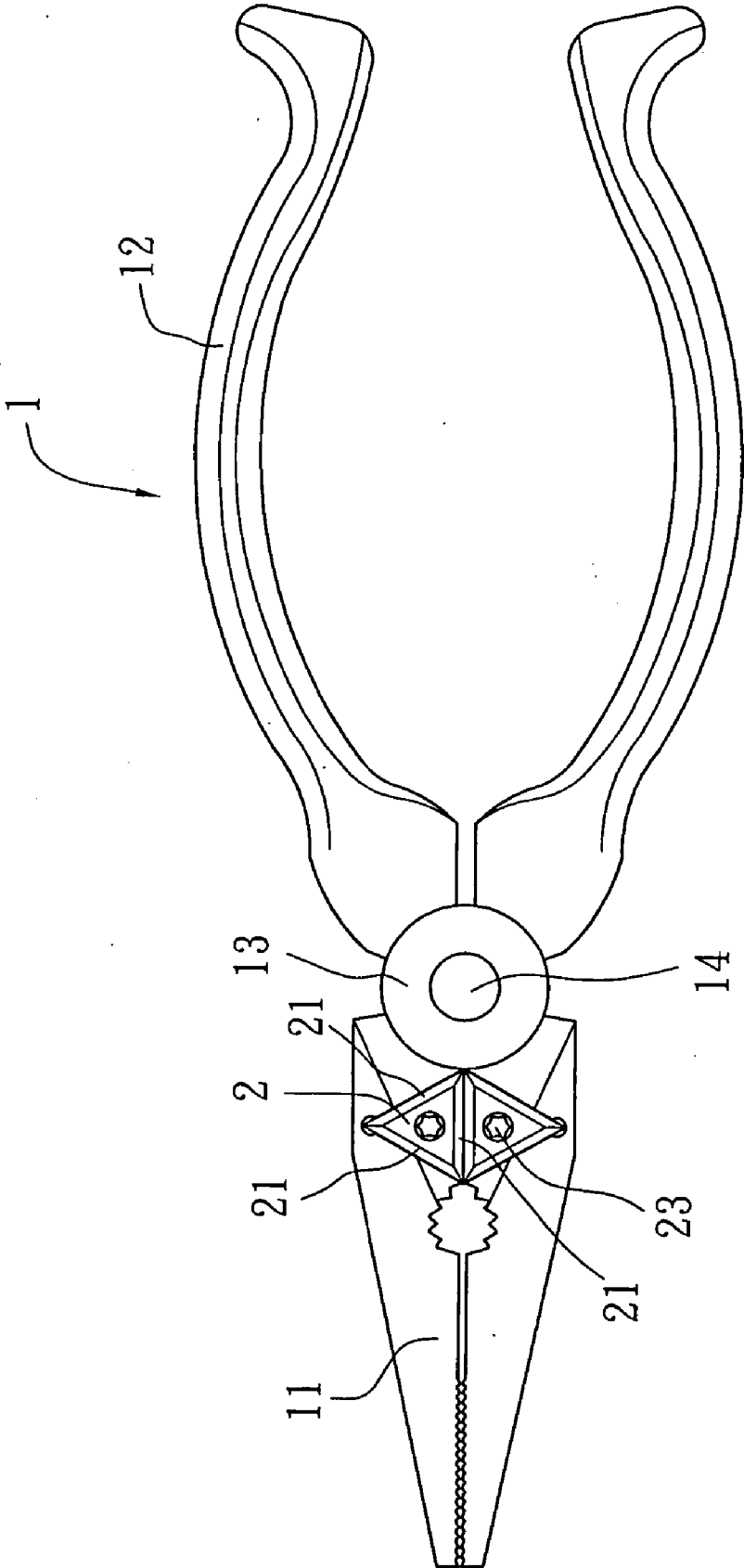


FIG. 3

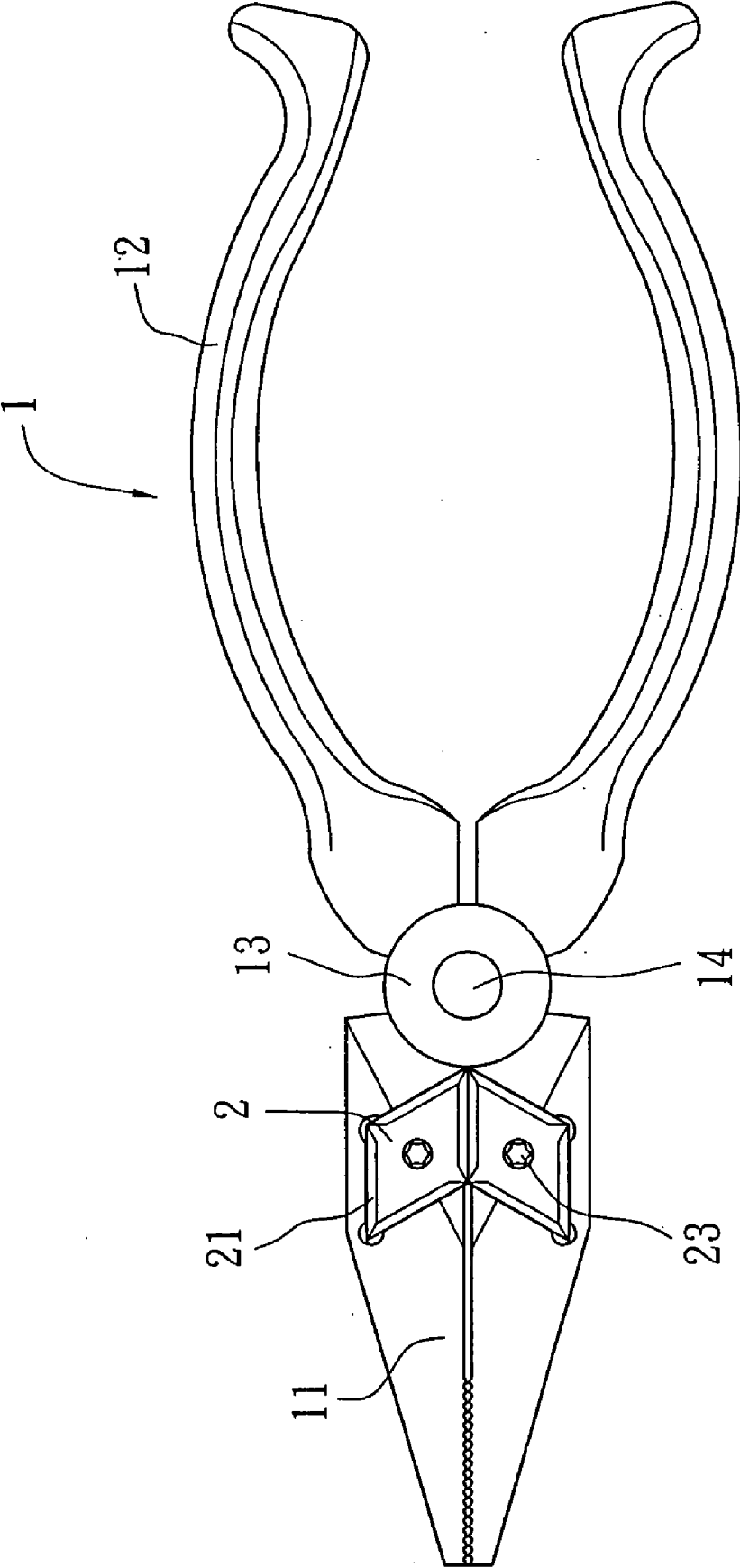


FIG. 4

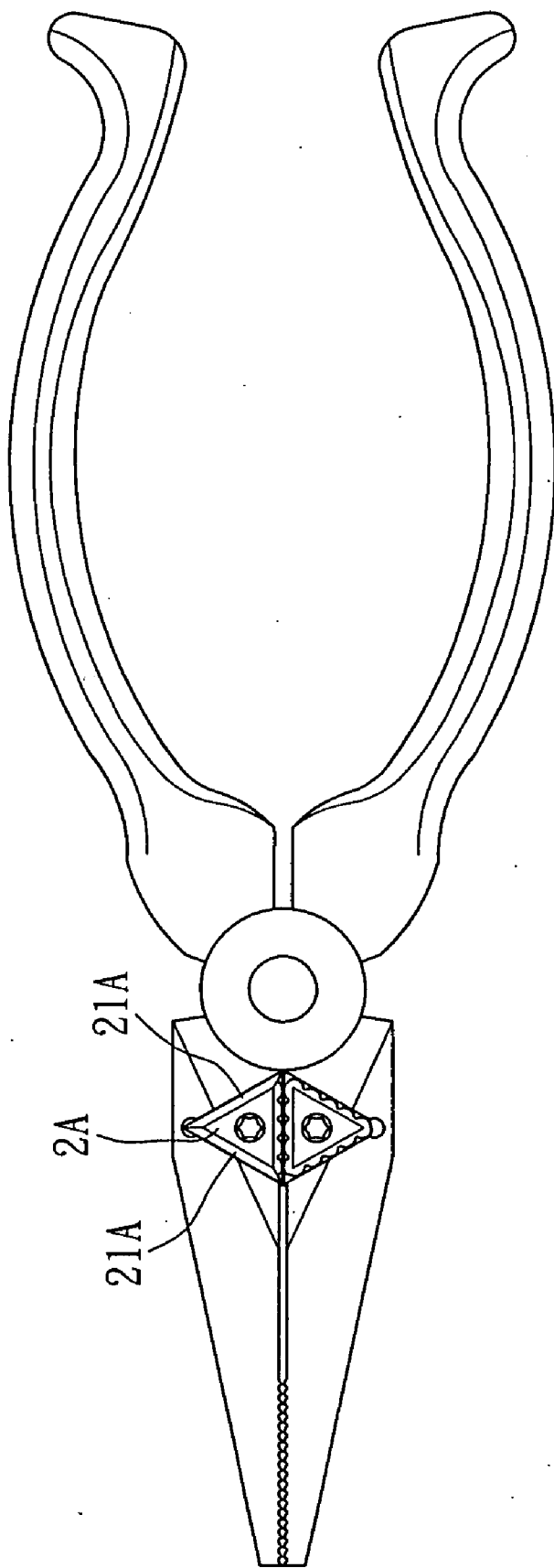


FIG. 5

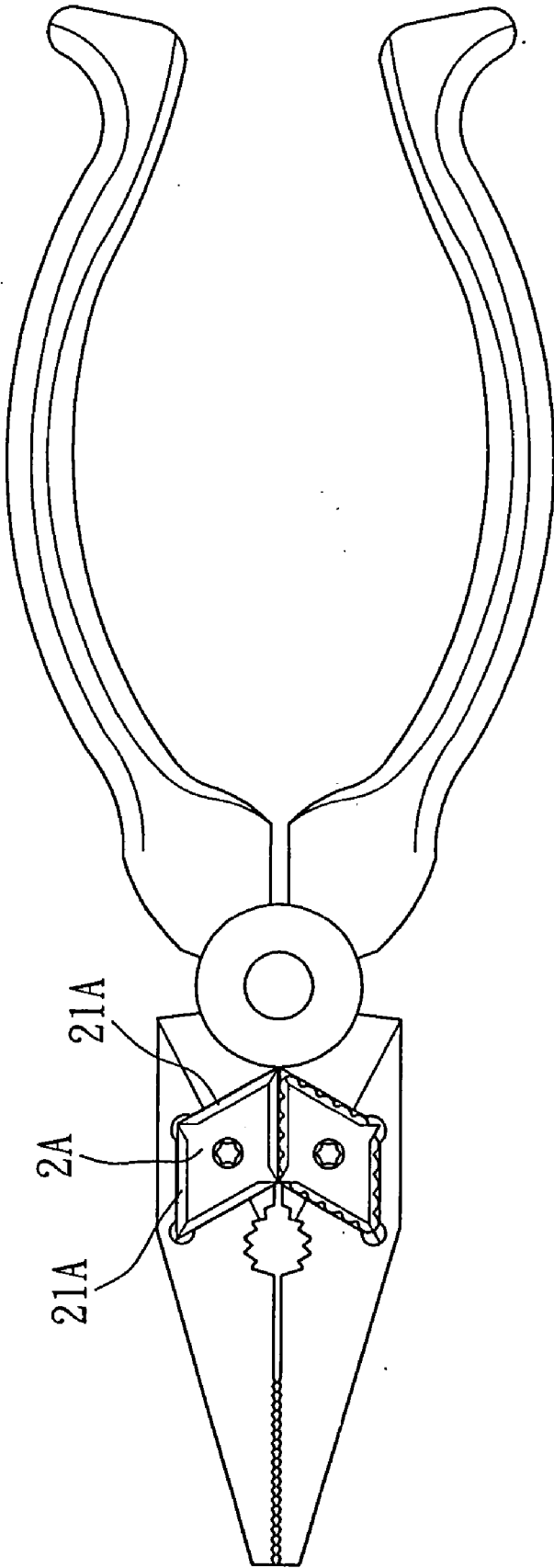


FIG. 6

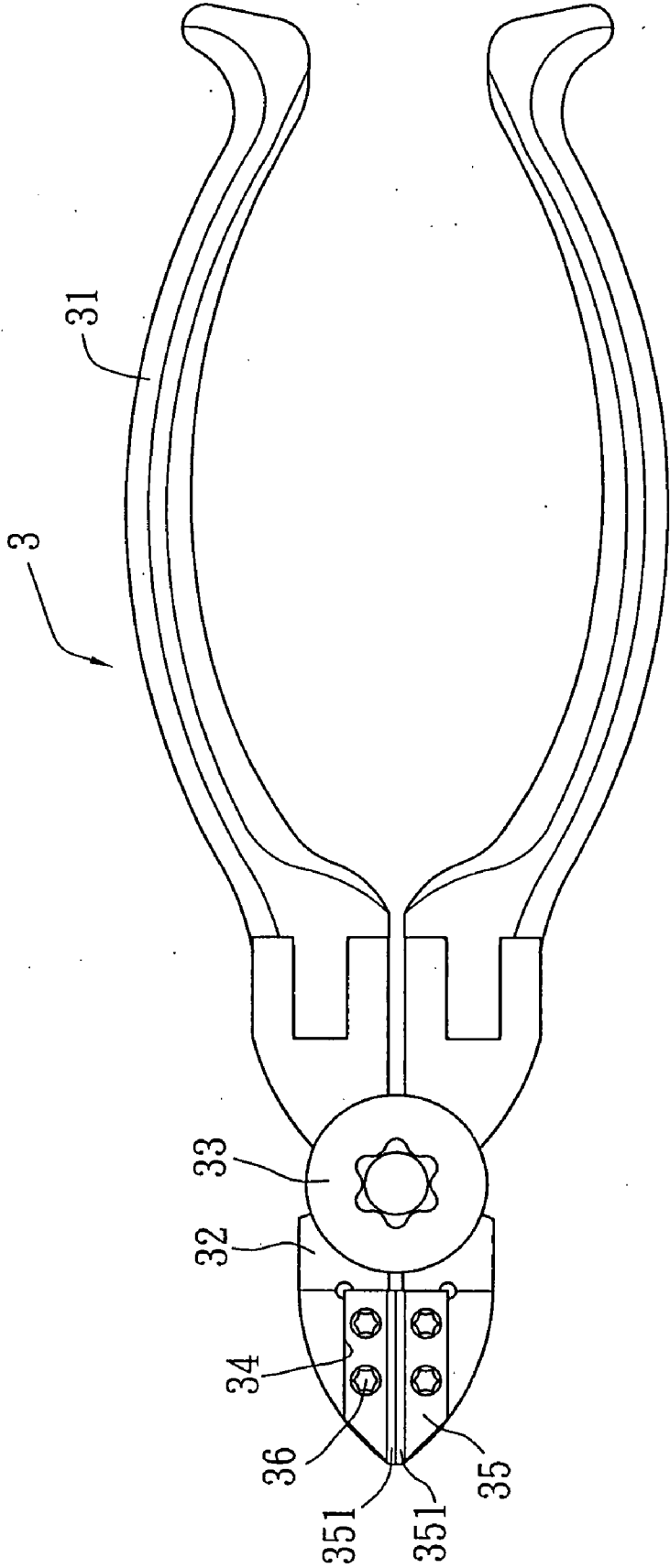


FIG. 7

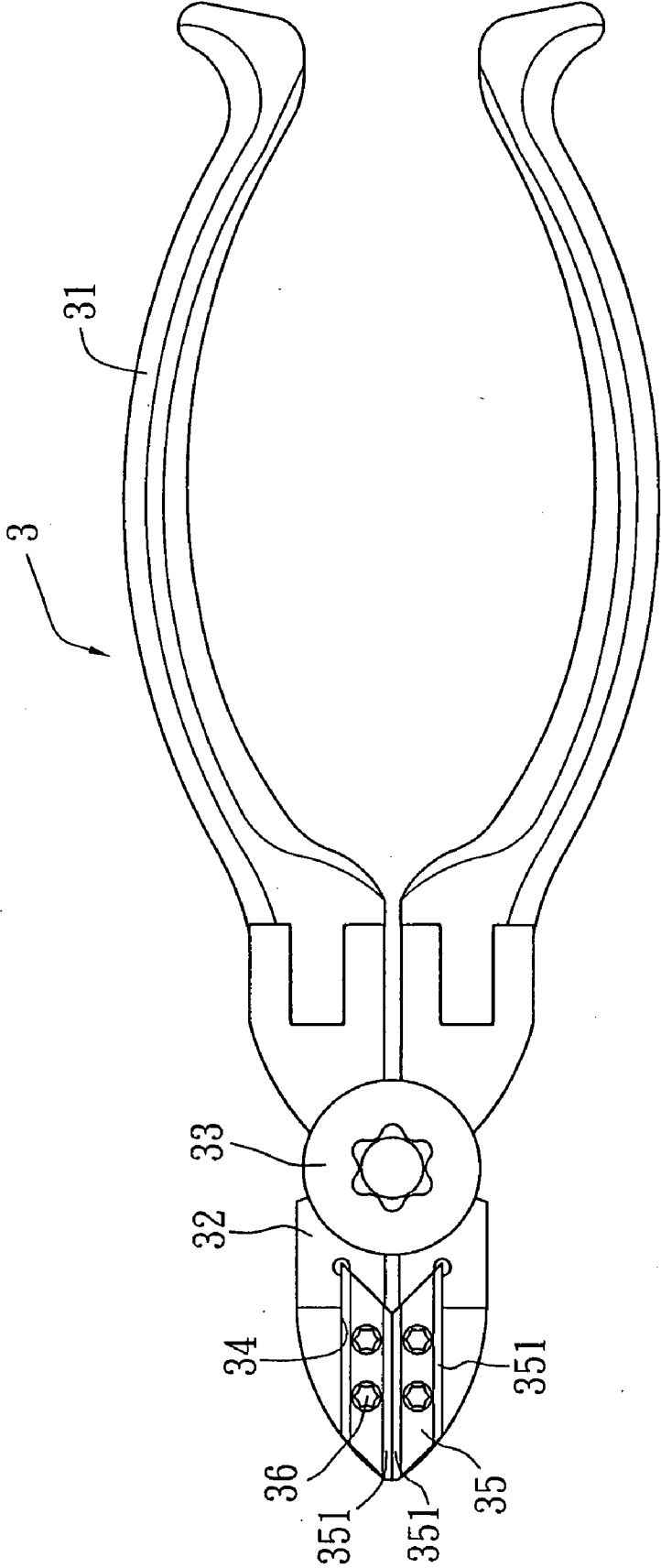


FIG. 8

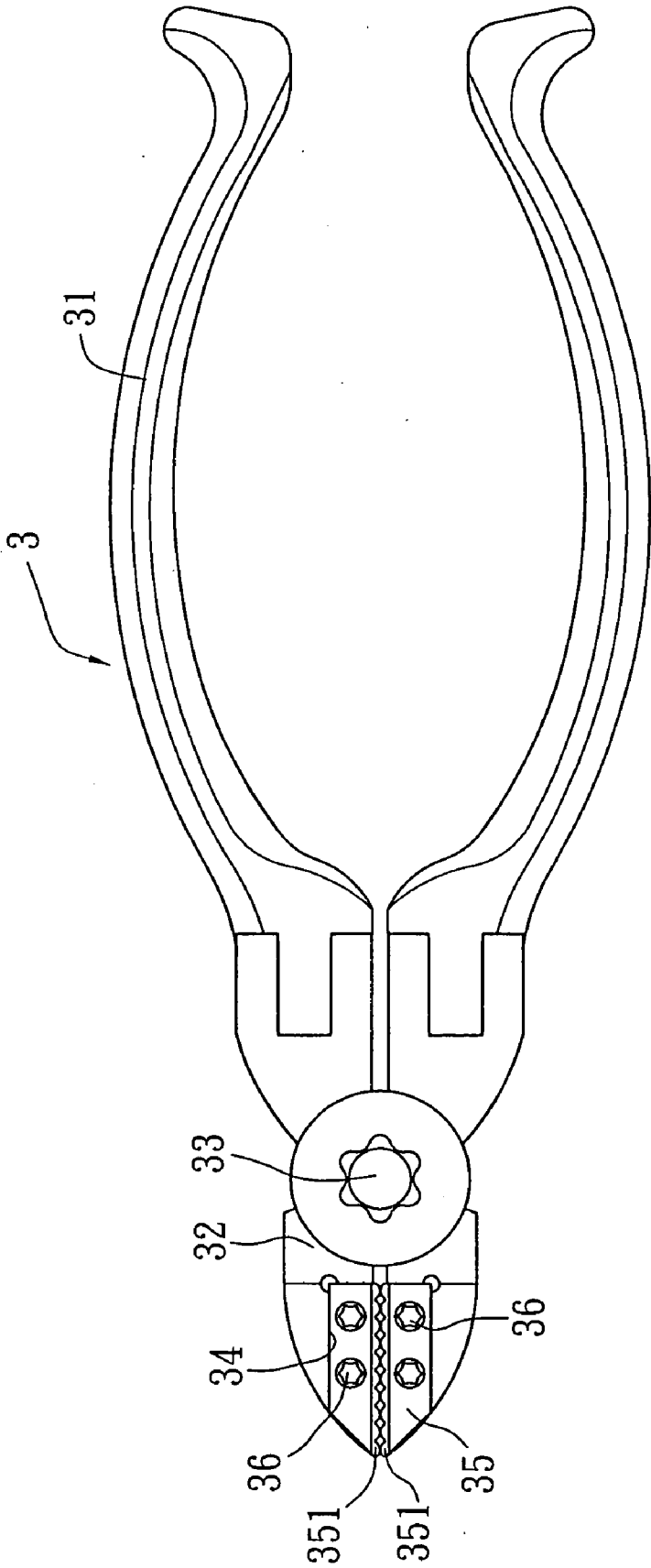


FIG. 9

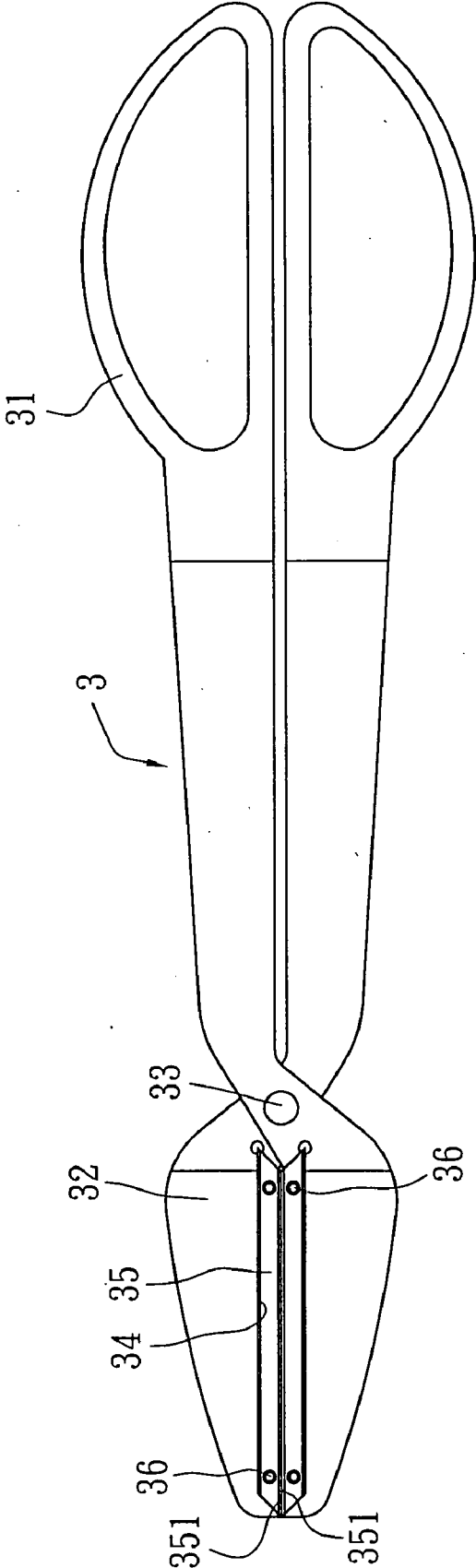


FIG. 10

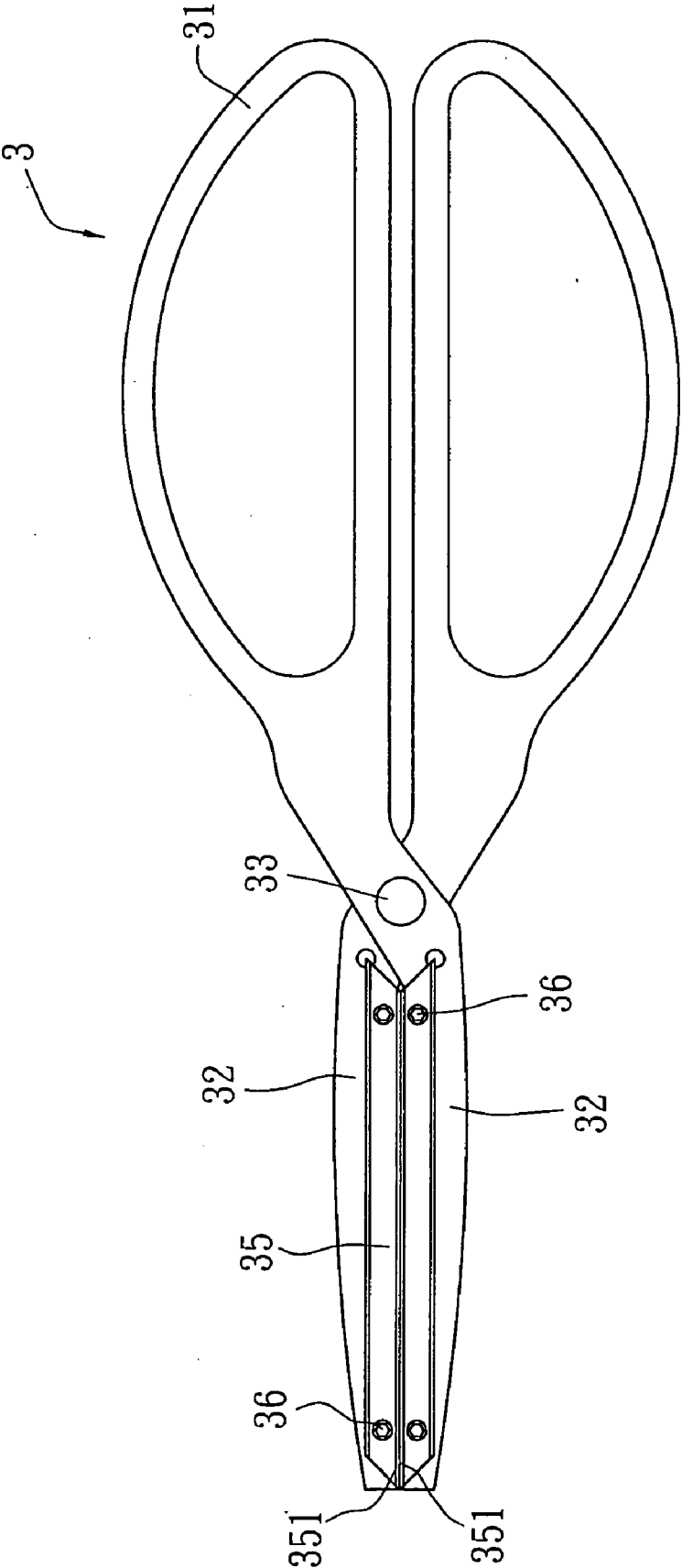


FIG. 11

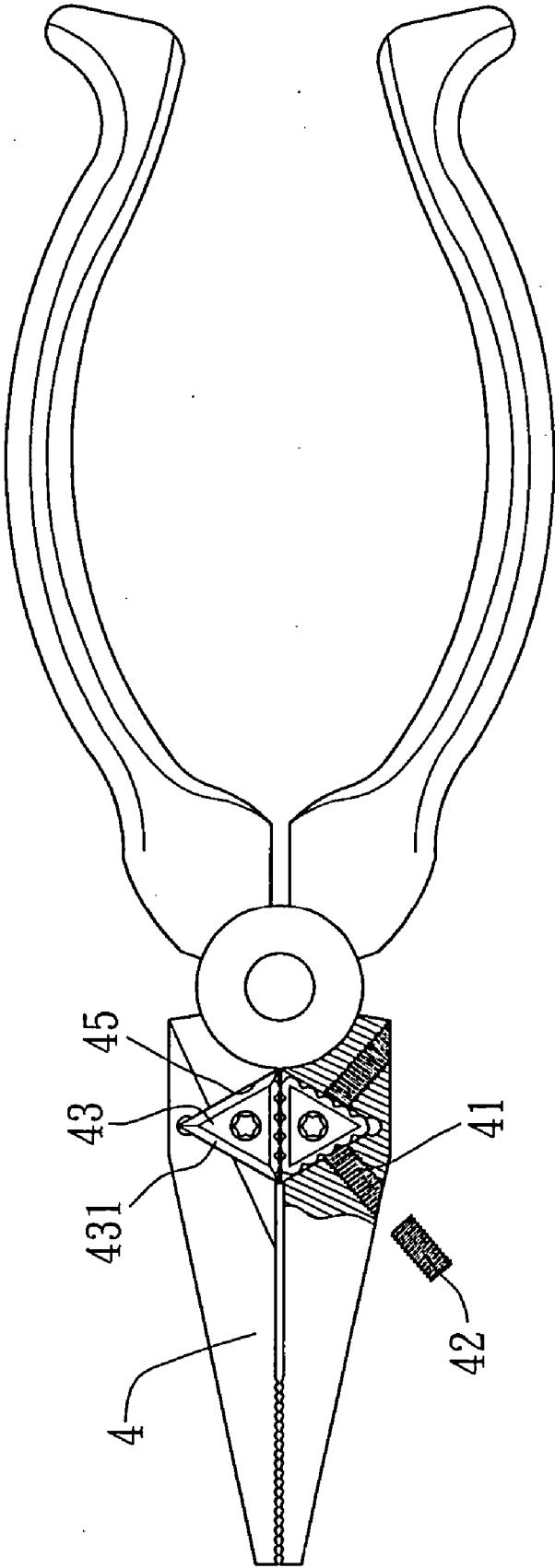


FIG. 12

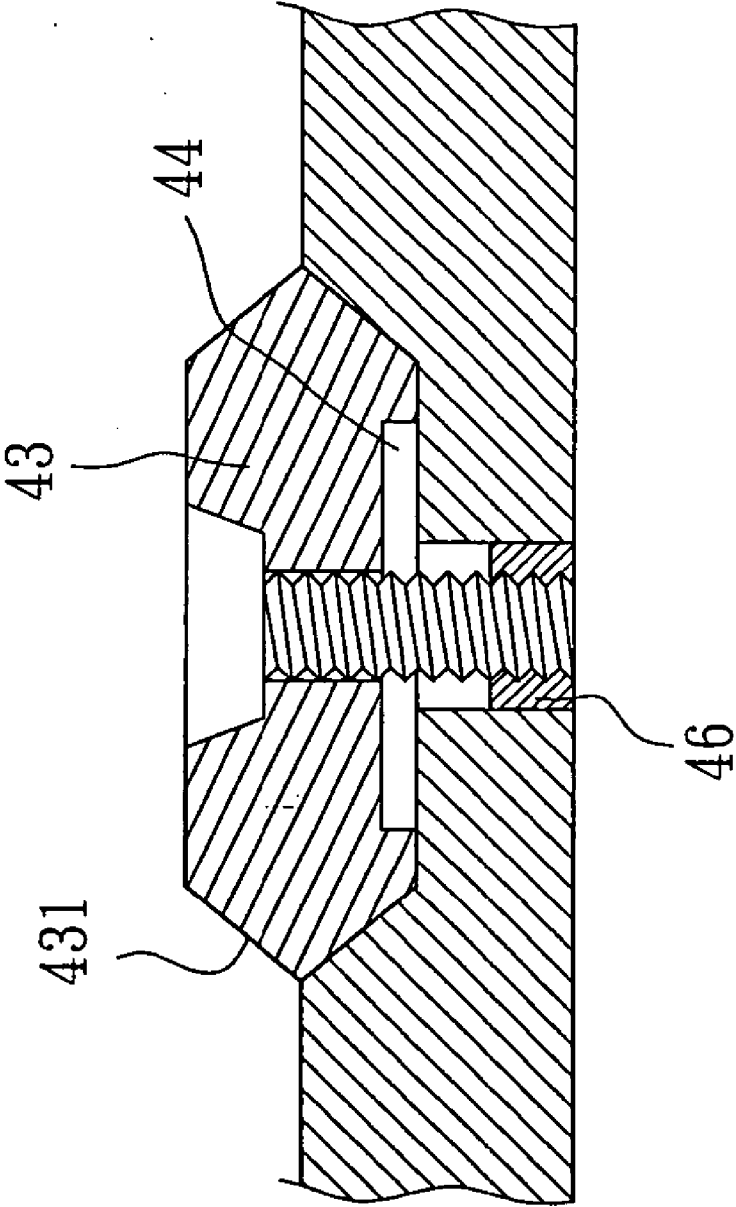


FIG. 13

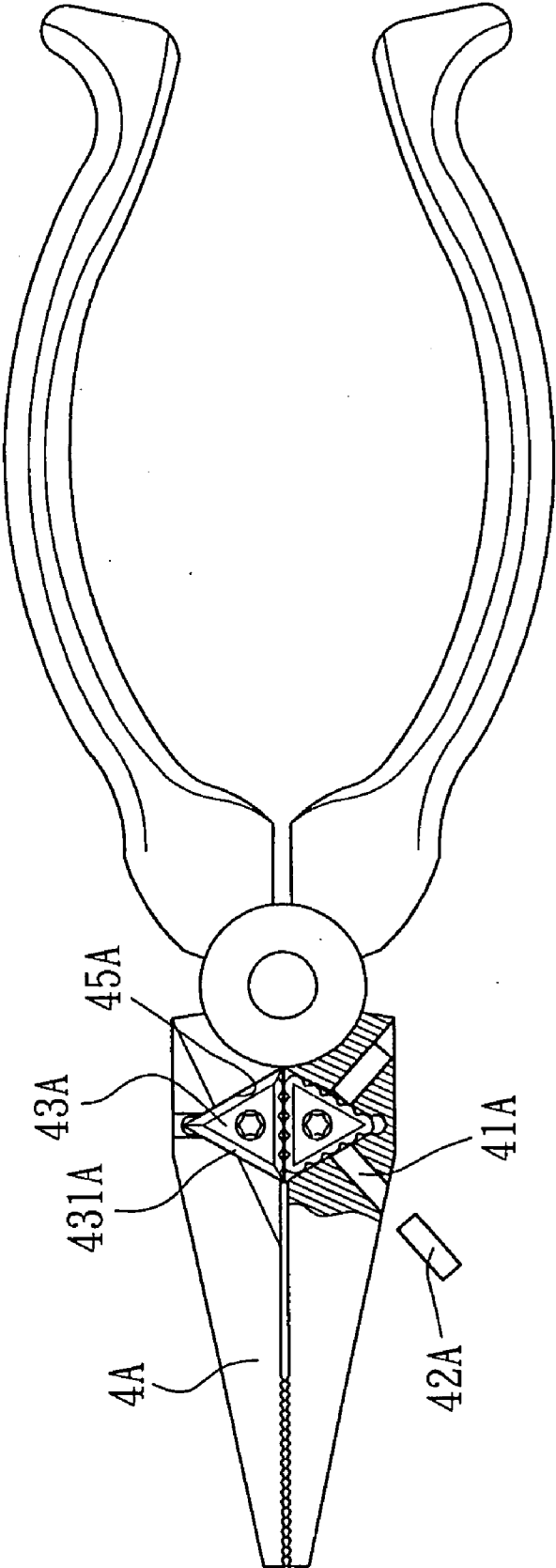


FIG. 14

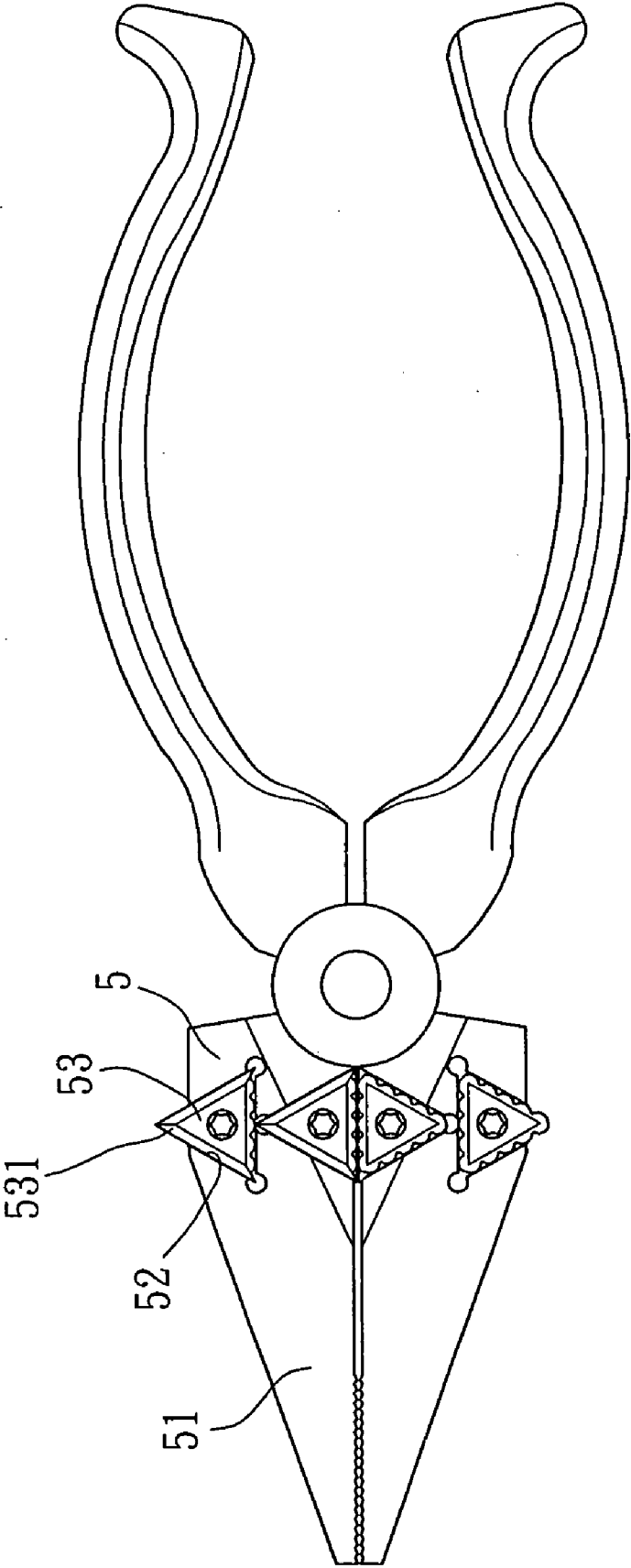


FIG. 15

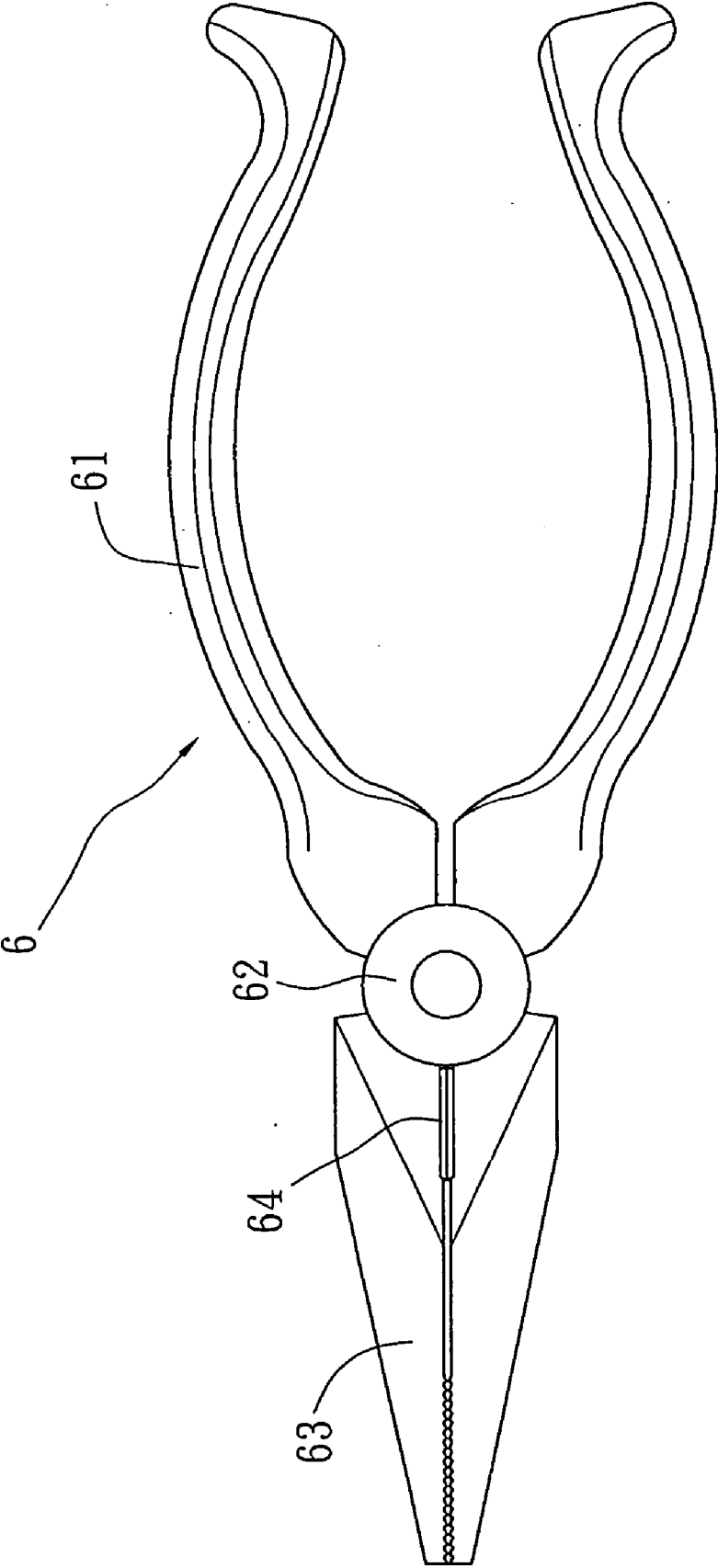


FIG. 16
PRIOR ART

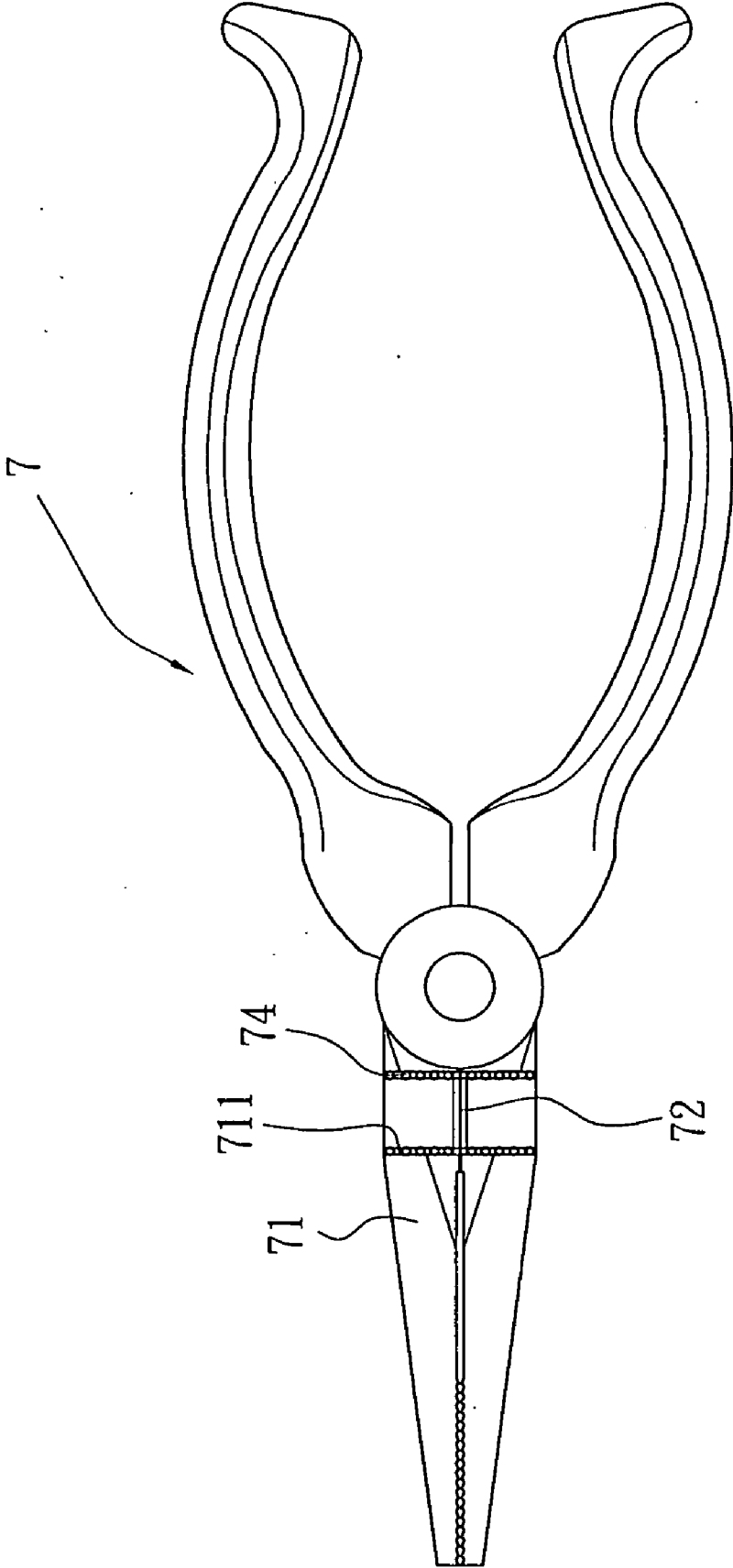


FIG. 17
PRIOR ART

HAND TOOL WITH REPLACEABLE BLADE

BACKGROUND OF THE INVENTION

[0001] (a) Field of the Invention

[0002] The present invention is related to a hand tool with replaceable blade, and more particularly to one provided with one or a plurality of shearing jaw that is mounted in an active part of the hand tool and is replaceable.

[0003] (b) Description of the Prior Art

[0004] Referring to FIG. 16 of the accompanying drawings for a hand tool generally available in the market, the hand tool relates to a pair of pliers comprised of two handles 61 pivoted to each other; a slip joint 62 is provided to the front end of each handle 61 for two handles 61 to be pivoted to each other; a jaw 63 extends from the slip joint 62 of each handle 61, and a blade 64 is each provided between the abutted inner sides of both jaws at where close to the slip joint 62 both blades 64 to exercise shearing function.

[0005] Whereas the blade, 64 and the jaw 63 are integrated by high frequency process and a local treatment of high frequency process is further applied to the blade 64, the strength and hardness of the blade 64 high frequency treated twice are higher at the expense of weaker tenacity and extensibility to cause the blade 64 to be vulnerable to break and crack after use for a certain time.

[0006] To prevent the blade 64 from breaking or cracking up due to the secondary high frequency treatment, another type of a pair of pliers 7 as illustrated in FIG. 17 has been introduced by having providing a slot 711 of each jaw 71 for the mounting of a blade 72. The blade 72 is separately made, that is, the blade 72 is first made before being put through high frequency treatment to fix by welding to the slot 711. The blade 72 though is prevented from braking or carking up, poor welding technique or frequent subject to pressure could easily create destruction to a welding point 74 to break the blade 72 into two parts. Therefore, the utility of this type of pliers 7 stays low.

[0007] After having been used for a certain time, the blade 72 will fail its function to shear due to tear and wear. The entire pair of pliers must be replaced to increase the cost.

SUMMARY OF THE INVENTION

[0008] The primary purpose of the present invention is to provide a hand tool that allows replacement of the blade. A slot is provided in each jaw, and a replaceable blade is placed in each slot to provide

[0009] Another purpose of the present invention is to provide a hand tool that each blade to give good practicality and lower the hand tool replacement cost.

[0010] To achieve these purposes, the present invention includes two handles, and a slip joint is disposed at the front end of each handle for both handles to be pivoted to each other. Each handle extends from the slip joint an active part. A slot is provided to each active part at where close to the relative inner sides of both slip joint with the base of the slot smaller than that of the inclined top to accommodate installation of a blade. The blade includes one or a plurality of shearing section and a locking hole. A locking member is

provided in relation to the locking hole to lock up the blade for both relative shearing sections to exercise shearing function.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. 1 is a perspective view of the present invention.

[0012] FIG. 2 is a schematic view showing an assembly of the present invention.

[0013] FIG. 3 is a schematic view showing a shearing section of a blade installed in a slot of an active part of the present invention.

[0014] FIG. 4 is a schematic view showing another type of shearing section of the blade installed in the slot of the active part of the present invention.

[0015] FIG. 5 is a schematic view showing a shearing section of a blade in a second preferred embodiment of the present invention.

[0016] FIG. 6 is a schematic view showing another type of shearing section of a blade in a second preferred embodiment of the present invention.

[0017] FIG. 7 is a schematic view of a third preferred embodiment of the present invention.

[0018] FIG. 8 is another schematic view of the third preferred embodiment of the present invention.

[0019] FIG. 9 is another schematic view yet of the third preferred embodiment of the present invention.

[0020] FIG. 10 is another schematic view yet of the third preferred embodiment of the present invention.

[0021] FIG. 11 is another schematic view yet of the third preferred embodiment of the present invention.

[0022] FIG. 12 is a schematic view yet of a fourth preferred embodiment of the present invention.

[0023] FIG. 13 is a magnified view of a blade in the fourth preferred embodiment of the present invention.

[0024] FIG. 14 is a schematic view of a fifth preferred embodiment of the present invention.

[0025] FIG. 15 is a schematic view of a sixth preferred embodiment of the present invention.

[0026] FIG. 16 is a schematic view of a hand tool of the prior art.

[0027] FIG. 17 is a schematic view of another hand tool of the prior art.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0028] Referring to FIGS. 1 through 15 for multiple preferred embodiments of a hand tool adapted with replaceable blades. As illustrated in FIG. 1, the hand tool in the form of a pair of nipping pliers includes two handles 1 pivoted to each other. Two active parts 11 are respectively provided to one end of each handle 1 to hold a work piece. Two grips 12 are respectively provided to the other end of each handle 1 for the user to hold the nipping pliers. At where both handles 1 are pivoted to each other a slip joint

13 is disposed to each handle **1**. Each slip joint **13** is provided at its middle section a pivoting hole **131**. A bolt **14** penetrating through both pivoting holes **131** for both handles **1** to be pivoted to each other, and further to drive both active parts on the grips **12** of both handles **1** to open up and close in for clamping the work piece. A slot **111** is provided to each active part at where close to the relative inner sides of the slip joint **13**. The slot **111** has a configuration wherein the base area is smaller than that of the slop **20** at the top for the installation of a blade **2**. Each blade **2** contains one or a plurality of shearing sections **21** and a locking hole **22**. A locking member **23** is provided in relation to the locking hole **22** for both blades **2** to shear the work piece by their respective shearing sections **21**.

[**0029**] The blade **2** containing one or a plurality of shearing sections **21** is made separately before being assembled to the pliers and is plated with a reinforcement. In the preferred embodiment, the reinforcement relates to plating liquid containing titanium. Both shearing sections **21** are abutted and disposed on the peripheral of the blade **2** for the blade to maintain adequate strength and hardness. Since the blade **2** has been properly high-frequency treated, both of the blade **2** and the shearing section **21** are given good tenacity and extensibility and the shearing section **21** is made integrated as one piece with the blade **2**, the shearing section **21** of the blade will not be vulnerable to developing crack or creating destruction to the welding point.

[**0030**] As illustrated in **FIG. 2**, the blade is retractably installed in the slot **111** of the active part **11**. The locking member **23** is inserted into the locking hole on the blade **2** to secure the blade **2** in the slot **10111** of the active part **11** without falling off when the blade **2** is in operation. To replace the blade, simply release the locking member **23** for the present invention to achieve the purpose of fast replacement.

[**0031**] Now referring to **FIGS. 3 and 4**, the user may choose the blade **2** adapted with the shearing section **21** in the form as desire, e.g., triangle, diamond or quadrangle. Once the shearing section **21** of the blade **2** is worn out, another shearing section **21** is readily available just by releasing the locking member **23** of the blade **2** to rotate it to where another shearing section **21** to enter in place **20** without the necessity to fetch for another pair of the nipping pliers.

[**0032**] Therefore, the present invention provides the benefit of lowering the cost.

[**0033**] To sum up, the present invention gives the following advantages:

[**0034**] 1. Fast replacement of the blade.

[**0035**] 2. The blade maintains adequate strength and hardness as well as good tenacity and extensibility.

[**0036**] 3. The blade is provided with a plurality of shearing sections to allow repeated use when one is worn out without the necessity to replace the entire pair of pliers.

[**0037**] It can be appreciated that with mild change to certain details, there are many other preferred embodiments are available. As illustrated in **FIGS. 5 and 6** for a second preferred embodiment of the present invention, a blade **2A** is provided with one or a plurality of shearing sections **21A** with each made in different forms to compromise various shearing method.

[**0038**] A third preferred embodiment of the present invention as illustrated in **FIGS. 7 through 11**, a pair of shearing tool is related to a pair of tool shears, thin metal shears or scissors. An active part **32** is provided to each handle **3** in relation to one end of a grip **31**, and a slot **34** is provided to each active part **32** at where close to both relative inner sides of a slip joint **33** for the installation of a blade **35**. The blade **35** includes one or a plurality of shearing sections **351** and one or a plurality of locking holes (not illustrated). A locking member **36** in relation to the locking hole to secure the blade **35** for both shearing sections **351** to exercise shearing work for providing the similar results to those by the aforesaid preferred embodiment.

[**0039**] As illustrated in **FIGS. 12 and 13**, a fourth preferred embodiment of the present invention includes two active parts **4** and each active part **4** is disposed with one or a plurality of threaded channels **41**. An adjustment screw **42** is provided to each channel **41**. In this preferred embodiment, the blade **43** has two inclined edges and a slide hole **44** is disposed on the base of the blade **43**. A nut is provided in the slide hole **44** so that once all the shearing sections **431** of the blade **43** are worn out, they can be retracted for polishing again and restored into a slot **45** disposed on the active part **4**. The adjustment screw **42** is used to secure the blade **43** in position for each shearing section **431** of the blade **43** to shear again.

[**0040**] Now referring to **FIG. 14** for a fifth preferred embodiment of the present invention, one or a plurality slots **41A** is provided to each active part **4A**. A pin **42A** is provided in each slot **41A**; a slide hole is provided on the base of a blade **43A**; and a nut is disposed in the slide hole so that the shearing section **431** when worn out can be retracted for polishing once again. The polished shearing section **431** is then restored into the slot **45A** of the active part **4** with the insertion of the pin **42A** into the slot **41A** to secure the blade **43A** in position for the shearing section **431A** of each blade **43A** to perform shearing operation once again.

[**0041**] A sixth preferred embodiment of the present invention as illustrated in **FIG. 15** has one side of a slot **51** of each active part **5** provided with a locking slot **52**. A cutting member **53** disposed in relation to the locking slot **52** contains multiple cutting sections. In this preferred embodiment, the cutting section **531** is made of diamond for the user to cut a work piece by means of the cutting section **531** of the cutting member **53**.

I Claim:

1. A hand tool with replaceable blade includes two handles pivoted to each other by means of two slip joints respectively disposed to the front end of each handle; an active part extending forward from each slip joint of the handle; a slot being provided to each active part at where close to the relative inner sides of the slip joint for the installation of a blade; the blade being provided with one or a plurality of shearing sections and one or a plurality of locking holes; and a locking member being disposed to each locking hole to secure the blade.

2. The hand tool of claim 1, wherein the hand tool relates to a clamping tool to clamp a work piece.

3. The hand tool of claim 1, wherein the hand tool relates to a shearing tool to shear a work piece.

4. The hand tool of claim 1, wherein the blade is made in a form of a triangle for performing shearing work.

5. The hand tool of claim 1, wherein the blade is made in a form of a diamond for performing shearing work.

6. The hand tool of claim 1, wherein the blade is made in a form of a quadrangle for performing shearing work.

7. The hand tool of claim 1, wherein a shearing section of each blade is made in a form of a straight line.

8. The hand tool of claim 1, wherein a shearing section of each blade is made in a form of corrugation.

9. The hand tool of claim 1, wherein each blade is plated with a reinforcement material to improve its resistance to tear and wear.

10. The hand tool of claim 9, wherein the reinforcement relates to a plating liquid containing titanium composition

11. The hand tool of claim 1, wherein one or a plurality of threaded slot is provided to each active part; an adjustment screw is provided to each threaded slot; a slide hole is

provided on the base of the blade; a nut is disposed in the slide hole; any shearing section when worn out is retracted for polishing; the polished shearing section is restored into the slot; and the adjustment screw is used to secure the blade for the shearing section of each blade to perform shearing operation once again.

12. The hand tool of claim 1, wherein on one side opposite to the slot of each active part is provided with a locking slot; a cutting member is provided to each locking slot; and the cutting member is adapted to multiple cutting sections to cut a work piece.

13. The hand tool of claim 12, wherein each cutting section is made of diamond to cut a work piece.

14. The hand tool of claim 1, wherein a slot is configured with its base area smaller than that of the inclined plane at the top to accommodate a blade.

* * * * *