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(54) **Tool holder**

(57) A tool holder includes a receiving unit for receiving a plurality of hexagon wrenches. The receiving unit includes a first receiving seat and a second receiving seat. The first receiving seat and the second receiving seat are provided with a plurality of closed oval receiving holes having different dimensions and arranged in a row, so that the hexagon wrenches can be inserted into the receiving holes respectively. An axial end of each receiving hole is provided with a tapered inclined surface. Each receiving hole is provided with two symmetrical buckling portions for positioning the hexagon wrench. The hexagon wrench is positioned in the receiving seat by the buckling portions. After the hexagon wrench is rotated by 60 degrees, the hexagon wrench can be pushed to abut against the inclined surface with its engaging surfaces leaving the buckling portions, so that the hexagon wrench can be taken out of the receiving hole along the axial direction of the inclined surface.

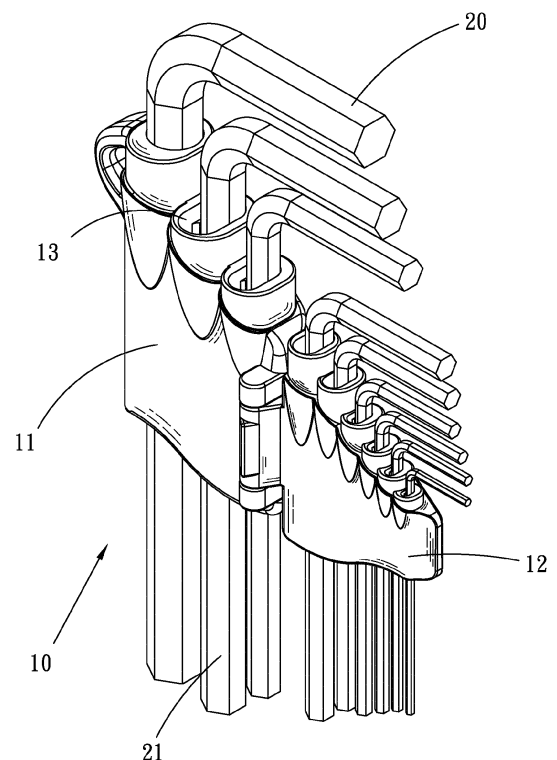


FIG. 1

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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The embodiment of the invention relates to a tool holder, and in particular to a tool holder which allows hexagon wrenches to be received therein and taken out easily.

2. Description of Prior Art

[0002] Currently, hexagon wrenches have been widely used in our daily life. In practice, a plurality of hexagon wrenches having different outer diameters are received in a hexagon wrench box, so that a user can carry these hexagon wrenches easily. For this reason, the hexagon wrench box is a practical and popular utensil for most people.

[0003] A common tool holder is provided with a plurality of receiving holes having different inner diameters corresponding to the outer diameters of the hexagon wrenches respectively, so that all the hexagon wrenches can be inserted into these receiving holes correctly. In general, the hexagon wrench having a smaller outer diameter is first inserted into a corresponding receiving hole. Then, the hexagon wrench having a larger outer diameter is inserted into another corresponding receiving hole. Further, bending portions of all L-shaped hexagon wrenches are disposed horizontally on the tool holder for easy use or stage. However, the fact that bending portions of all the L-shaped hexagon wrenches are horizontally disposed in the tool holder will make it inconvenient for the user to take the hexagon wrenches out of the tool holder. For example, if a user needs to take a small-diameter hexagon wrench out of the tool holder, he/she has to first rotate the bending portion of other large-diameter hexagon wrenches until they do not interfere with the bending portion of the desired small-diameter hexagon wrench. After using the small-diameter hexagon wrench and inserting it back into the tool holder, the user has to rotate the bending portions of other large-diameter hexagon wrenches back to their original position, which is inconvenient for the user. Further, when the user intends to use a much smaller hexagon wrench, he/she needs to rotate more hexagon wrenches each larger than the desired small-diameter hexagon wrench. Thus, in the conventional tool holder, it is very inconvenient to take out the hexagon wrenches and put them back.

[0004] In view of the above, the present inventor proposes a novel tool holder based on his expert experience and delicate researches to solve the problems in conventional tool holder that the hexagon wrenches cannot be taken out and put in conveniently.

SUMMARY OF THE INVENTION

[0005] A primary objective of the embodiment of the invention is to provide a tool holder, which allows each hexagon wrench to be stored in position correctly without falling off easily. When the user intends to take out a desired hexagon wrench, it is unnecessary for the user to rotate other hexagon wrenches adjacent to the desired hexagon wrench. The user only needs to rotate the desired hexagon wrench and forwardly draw it out, which is convenient in use.

[0006] In order to achieve the above objective, the embodiment of the invention provides a tool holder, which includes a receiving unit having a first receiving seat and a second receiving seat. The tool holder is configured to allow hexagon wrenches (Allen wrenches) to be received therein from two sides. The first receiving seat and the second receiving seat are connected to each other via pivotal shafts and associated pivotal holes, so that these two receiving seats can be pivotally folded or unfolded. Each receiving seat is provided with a plurality of closed oval receiving holes having different dimensions and arranged in a row, so that the hexagon wrenches can be inserted in the receiving holes respectively. An axial end of each receiving hole is provided with a tapered inclined surface. Each receiving hole is provided with two symmetrical buckling portions. Each buckling portion is provided with a first rib and a second rib. Since the hexagon wrench is formed into an L-shaped wrench having six engaging surfaces. The user rotates the hexagon wrench in such a manner that the six engaging surfaces cooperate with the two buckling portions to thereby fix or release the hexagon wrench. Since both ends of each receiving hole are provided with two inclined surfaces, the user rotates the hexagonal wrench by 60 degrees and forwardly draws the hexagonal wrench with the engaging surfaces of the hexagonal wrench leaving the buckling portions and passing through the second rib. In this way, the hexagonal wrench can be taken out of the receiving seat.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007]

FIG. 1 is an assembled perspective view of the embodiment of the invention;

FIG. 2 is an exploded perspective view showing a preferred embodiment of the embodiment of the invention;

FIG. 3 is a partially enlarged view of the preferred embodiment of the embodiment of the invention showing a state before the hexagon wrench rotates; FIG. 4 is a partially enlarged view of the preferred embodiment of FIG. 3 showing a state when the hexagon wrench rotates clockwise;

FIG. 5 is a partially enlarged view of the preferred embodiment of FIG. 3 showing a state when the hex-

agon wrench rotates clockwise to 60 degrees;
 FIG. 6 is a cross-sectional view of the preferred embodiment of FIG. 3 showing a state before the hexagon wrench rotates;
 FIG. 7 is a partially enlarged view of the preferred embodiment of FIG. 5 showing a state when the hexagon wrench rotates clockwise to 60 degrees;
 FIG. 8 is a schematic view of the preferred embodiment showing a state when the hexagon wrench is removed from the buckling portions; and
 FIG. 9 is a schematic view of the preferred embodiment showing a state when the hexagon wrench is taken out of the hexagonal wrench holder.

DETAILED DESCRIPTION OF THE INVENTION

[0008] Please refer to FIGS. 1 to 9. A preferred embodiment of the invention provides a tool holder, which includes a receiving unit 10.

[0009] First, with reference to FIGS. 1 to 3, the receiving unit 10 comprises a first receiving seat 11, a second receiving unit 12, and a plurality of receiving holes 13 provided on the two receiving seats 11 and 12. The first receiving seat 11 is provided with pivotal posts 111 pivotally connected to pivotal holes 121 of the second receiving seat 12 respectively. By this arrangement, the first receiving seat 111 and the second receiving seat 12 can be pivotally folded or unfolded by using the pivotal connection between the pivotal posts 111 and the pivotal holes 121. The receiving seats 11 and 12 are provided with the receiving holes 13 having closed oval shapes and arranged in a row. An upper portion and a lower portion of each receiving hole 13 are symmetrical to each other. An axial end of each receiving hole 13 is provided with a tapered inclined surface 132. Each receiving hole 13 is provided with two buckling portions 131 symmetrically to each other. Each buckling portion 131 is provided with a first rib 1311 and a second rib 1312 for allowing a hexagon wrench 20 to be inserted in the receiving hole 13 properly. Two opposite sides of the hexagon wrench 20 cooperate with the two buckling portions 131 to thereby fix or release the hexagon wrench 20. After the user slightly rotates the hexagon wrench 20 to leave the buckling portions 131, the user can rotate the hexagon wrench 60 by 60 degrees and then pushes the hexagon wrench 20 toward the inclined surface 132 to thereby leave the buckling portions 131. In this way, the user can take out the hexagon wrench 20 along the axial direction of the inclined surface 132.

[0010] Please refer to FIGS. 1 to 3 again. The hexagon wrench 20 is formed into an L shape and has six engaging surfaces 21. The engaging surfaces 21 are configured to abut against the buckling portions 131 of the receiving hole 13, so that the hexagon wrench 20 can be properly positioned in the receiving unit 10.

[0011] Please refer to FIGS. 3 to 9, which are schematic views showing the actions of the embodiment of the invention respectively. When the hexagon wrench 20

is inserted into the receiving hole 13, the engaging surfaces 21 will be wedged and thus positioned between the first rib 1311 and the second rib 1312 of the buckling portion 131. The distance between the first rib 1311 and the second rib 1312 is greater than the width of the engaging surface. In the state shown in FIGS. 3 and 6 that the hexagon wrench 20 does not leave the buckling portions 131, after the user slightly rotates the hexagon wrench 20 with its engaging surfaces 21 leaving the buckling portions 131 to cross the first rib 1311 and the second rib 1312, the hexagon wrench 20 gets loosened as shown in FIG. 4. Next, the user continues to rotate the hexagon wrench 20 until a 60-degree angle is formed between the hexagon wrench 20 and the receiving seat as shown in FIGS. 5 and 7. At this time, by using the inclined surface 132 provided in the receiving hole 13, the user can pull forwardly the hexagon wrench 20 inserted into the receiving hole 13 to pass through the second rib 1312 until the hexagon wrench 20 abuts against the inclined surface 132 as shown in FIG. 8. Then, the user can exert a force to draw the hexagon wrench 20 out of the buckling portions 131. At this time, as shown in FIG. 9, the user can take the hexagon wrench 20 out of the receiving unit 10 easily.

[0012] Although the receiving unit 10 of the embodiment of the invention is constituted of a first receiving seat 11 and a second receiving seat 12, the receiving unit 10 may be integrally formed into one body. Further, the receiving unit 10 may be made of soft materials, so that the engaging surfaces 21 of the hexagon wrench 20 can be wedged into or removed from the buckling portions 131 of the receiving hole 13 easily. However, in other embodiments (not shown), the first receiving seat 11 and the second receiving seat 12 can be used as two separate parts without departing from the scope of the embodiment of the invention.

[0013] Although the invention has been described with reference to the foregoing preferred embodiments, it will be understood that the invention is not limited to the details thereof. Various equivalent variations and modifications can still occur to those skilled in this art in view of the teachings of the embodiment of the invention. Thus, all such variations and equivalent modifications are also embraced within the scope of the invention as defined in the appended claims.

Claims

1. A tool holder, including a receiving unit for receiving a plurality of hexagon wrenches, wherein the receiving unit comprises a first receiving seat and a second receiving seat, the first receiving seat and the second receiving seat are provided with a plurality of closed oval receiving holes having different dimensions and arranged in a row, an upper portion and a lower portion of each receiving hole are symmetrical to each other, an axial end of each receiving hole is provided

with a tapered inclined surface, each receiving hole is provided with two symmetrical buckling portions, each buckling portion is provided with a first rib and a second rib, engaging surfaces of the hexagon wrench are wedged between the first rib and the second rib to thereby position the hexagon wrench; whereby, the hexagon wrench is positioned in any of the first and the second receiving seats by the buckling portions, after the hexagon wrench is rotated by 60 degrees, the hexagon wrench is pushed forwardly to abut against the inclined surface with the engaging surfaces leaving the buckling portions, so that the hexagon wrench can be taken out of the receiving hole along an axial direction of the inclined surface.

2. The tool holder according to claim 1, wherein the receiving unit is integrally formed into one body.
3. The tool holder according to claim 1, wherein the receiving unit is made of soft materials.
4. The tool holder according to claim 1, wherein the distance between the first rib and the second rib is greater than the width of the engaging surface.

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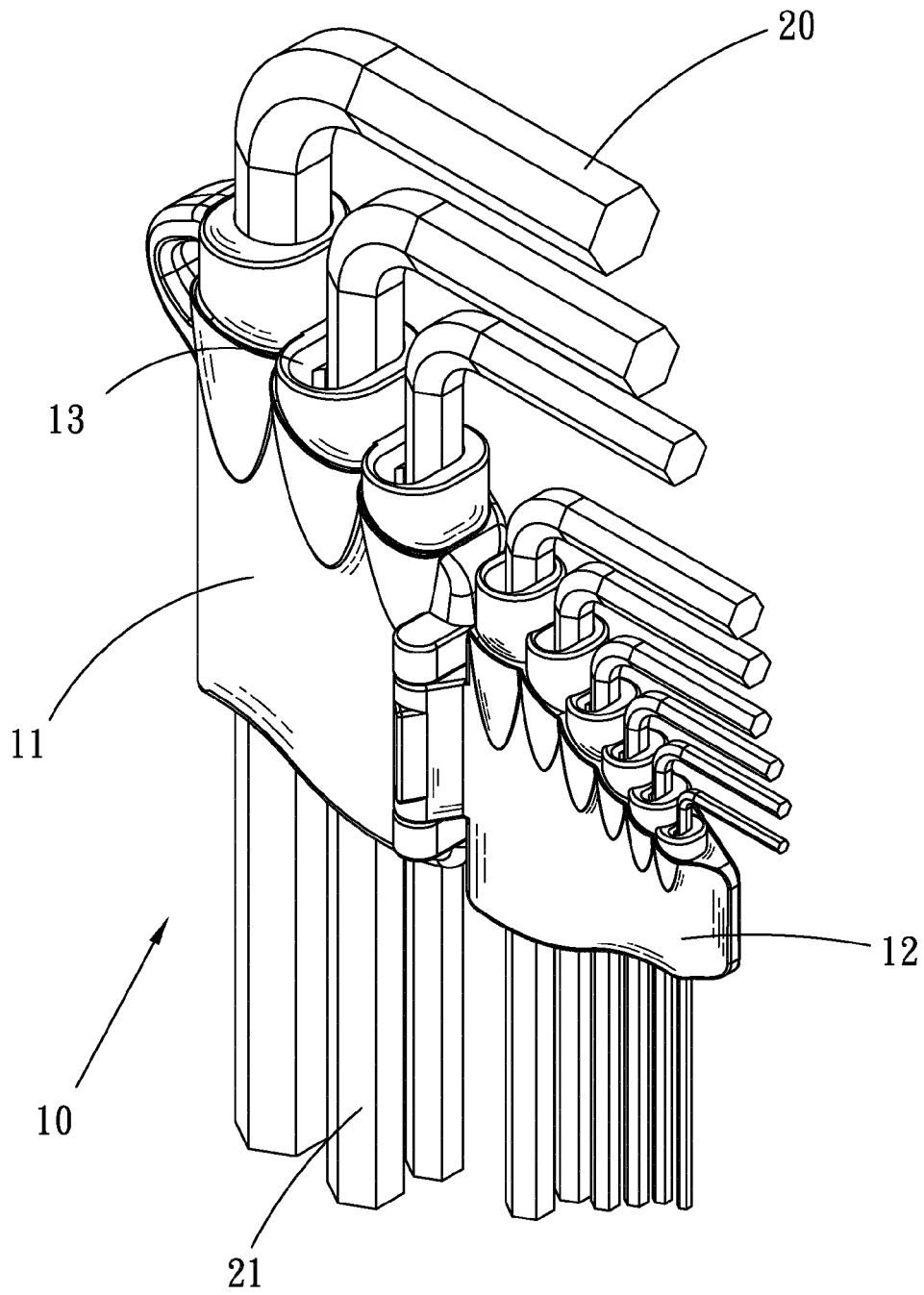


FIG. 1

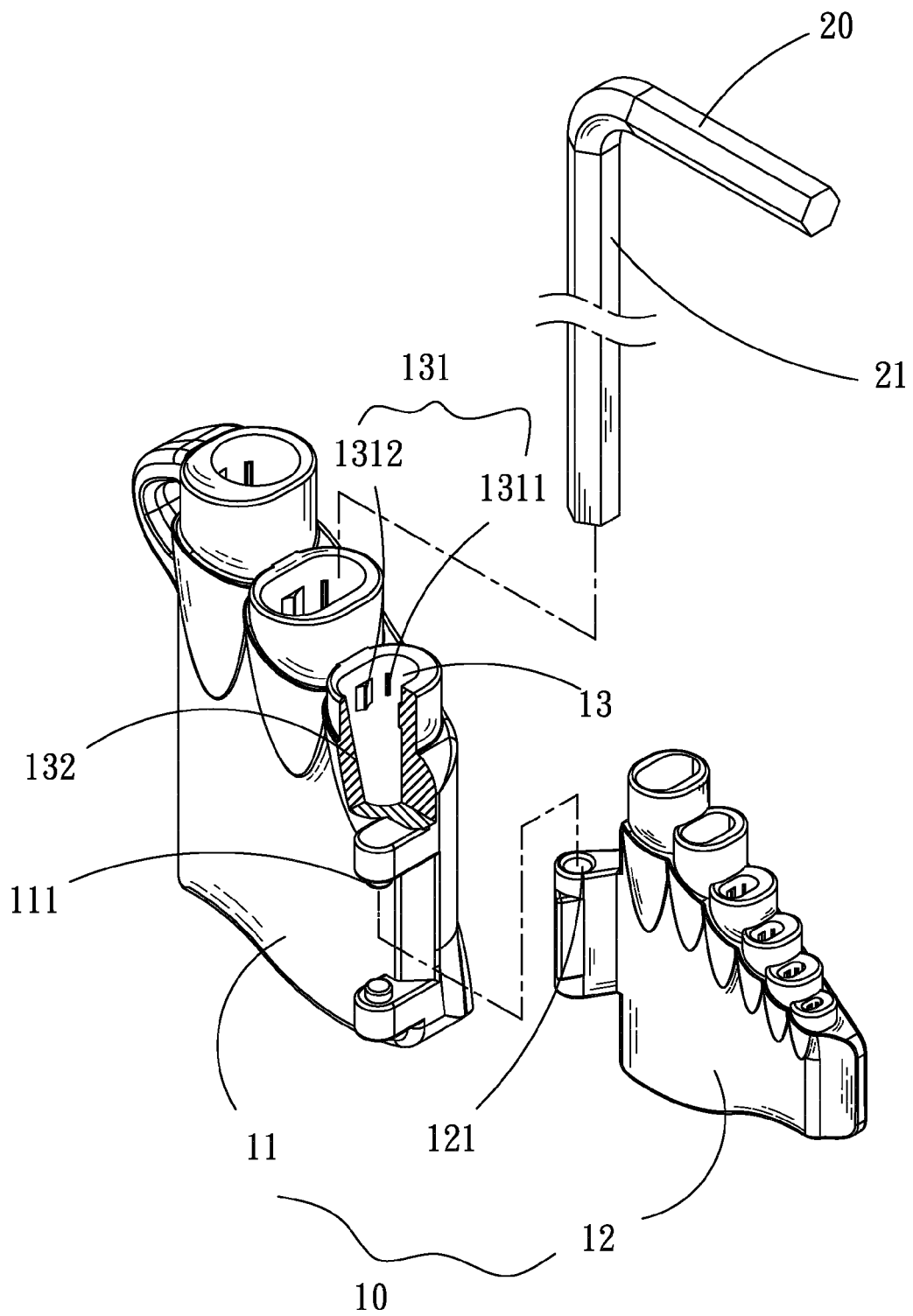
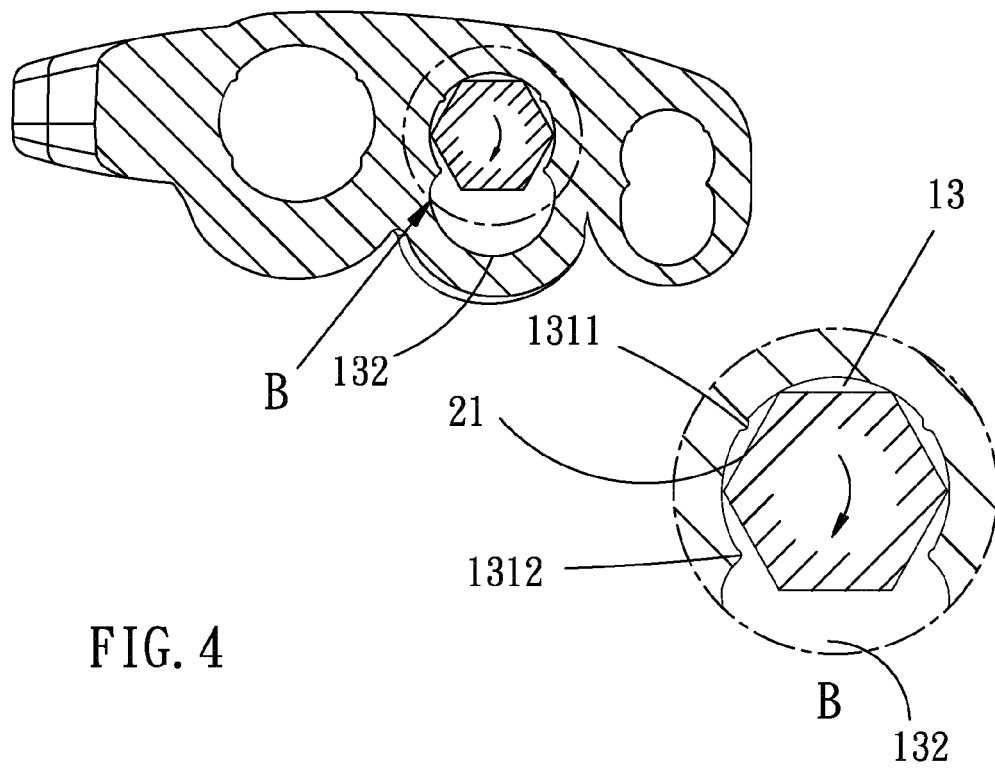
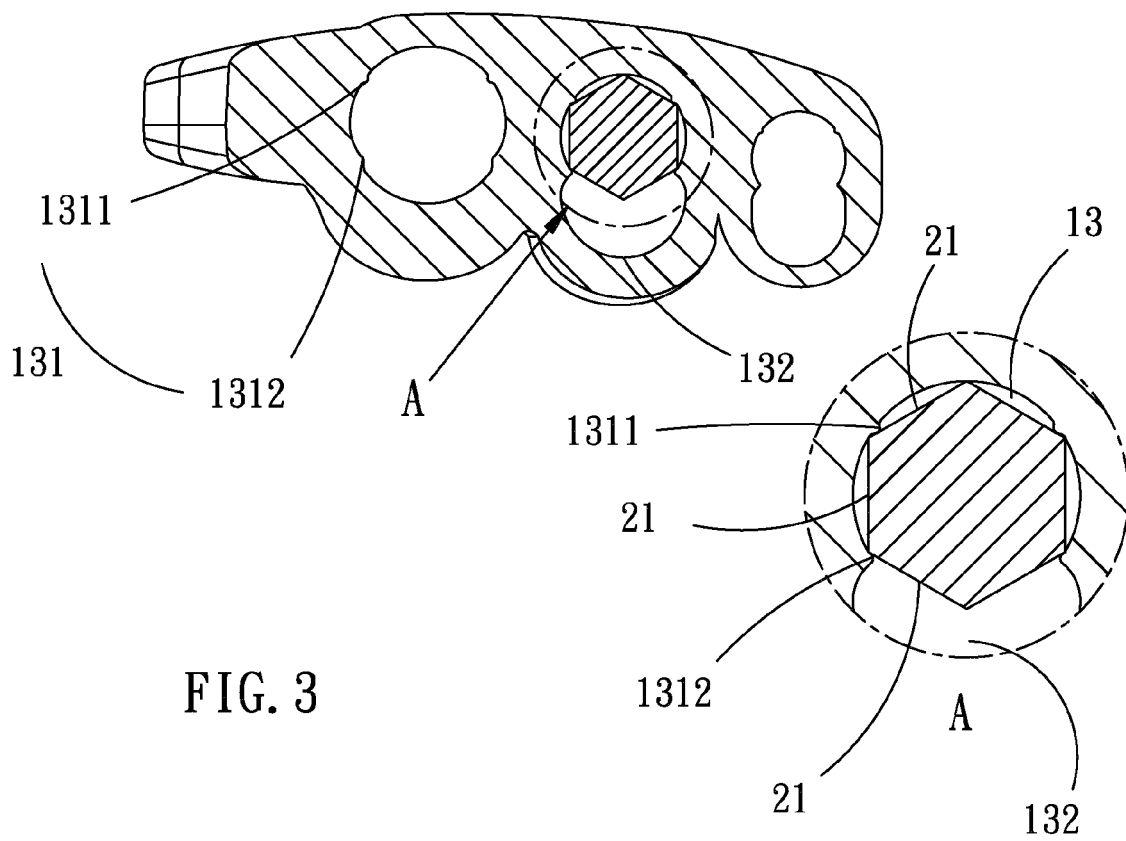
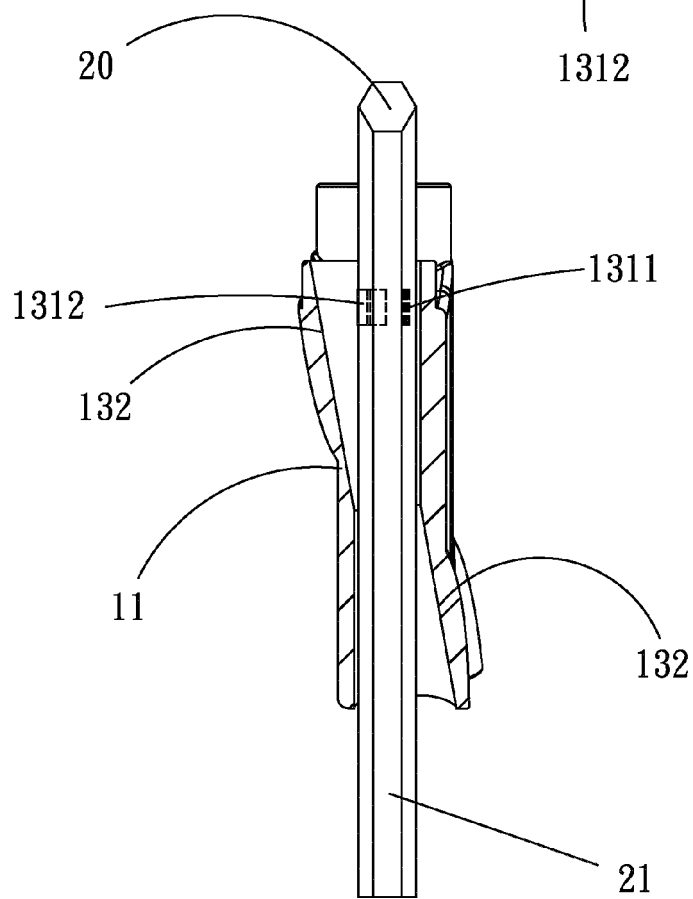
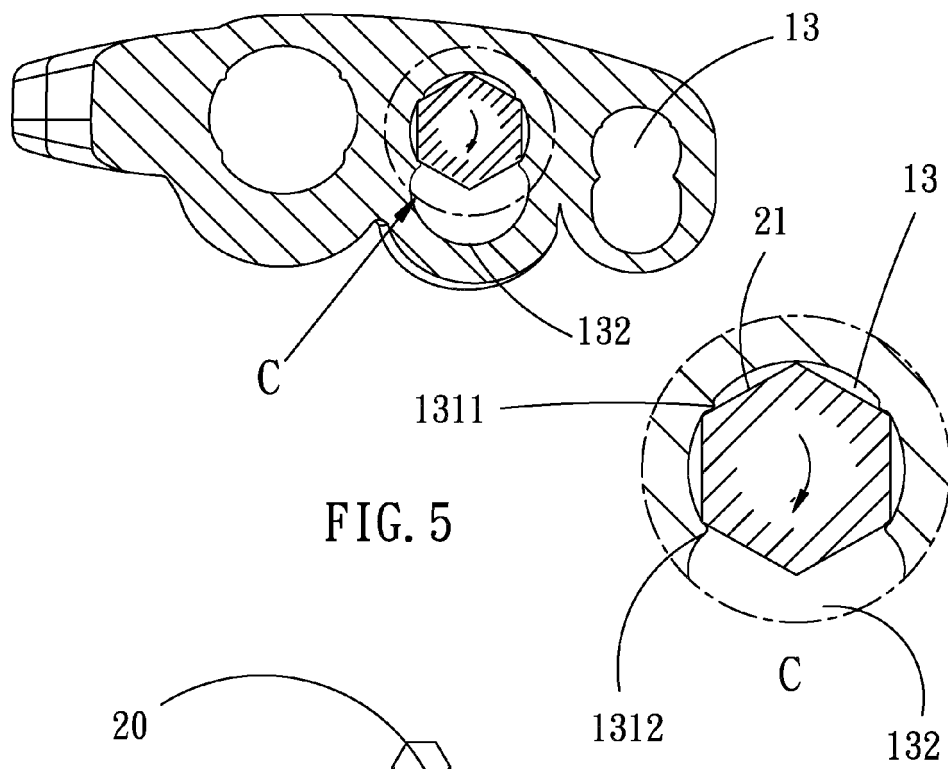


FIG. 2





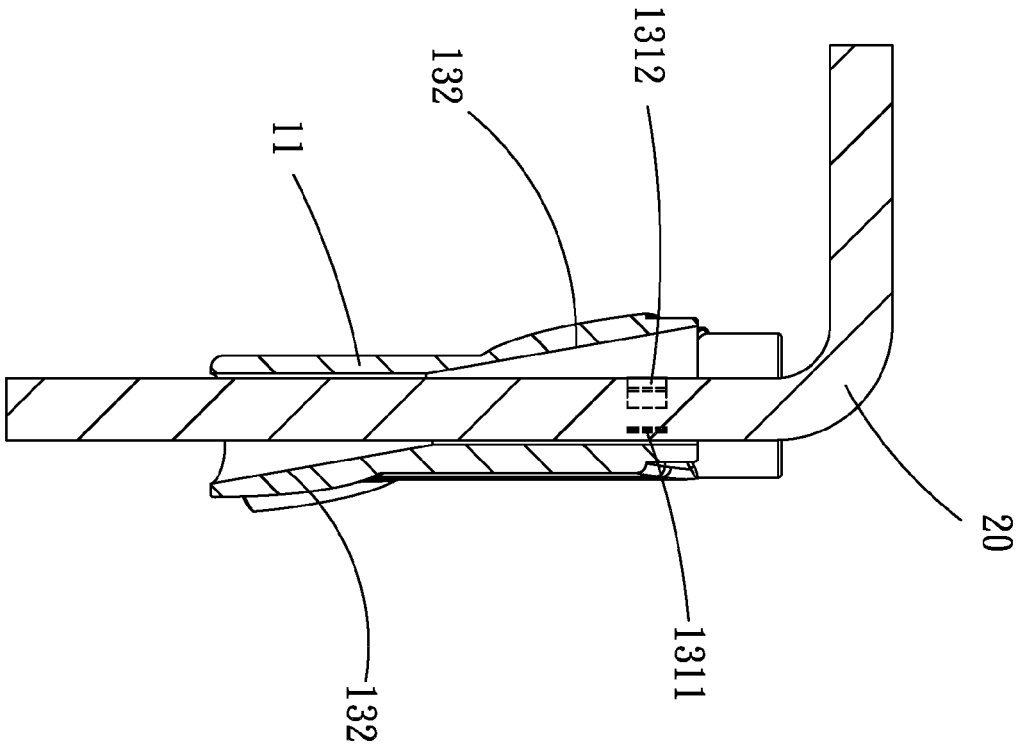


FIG. 7

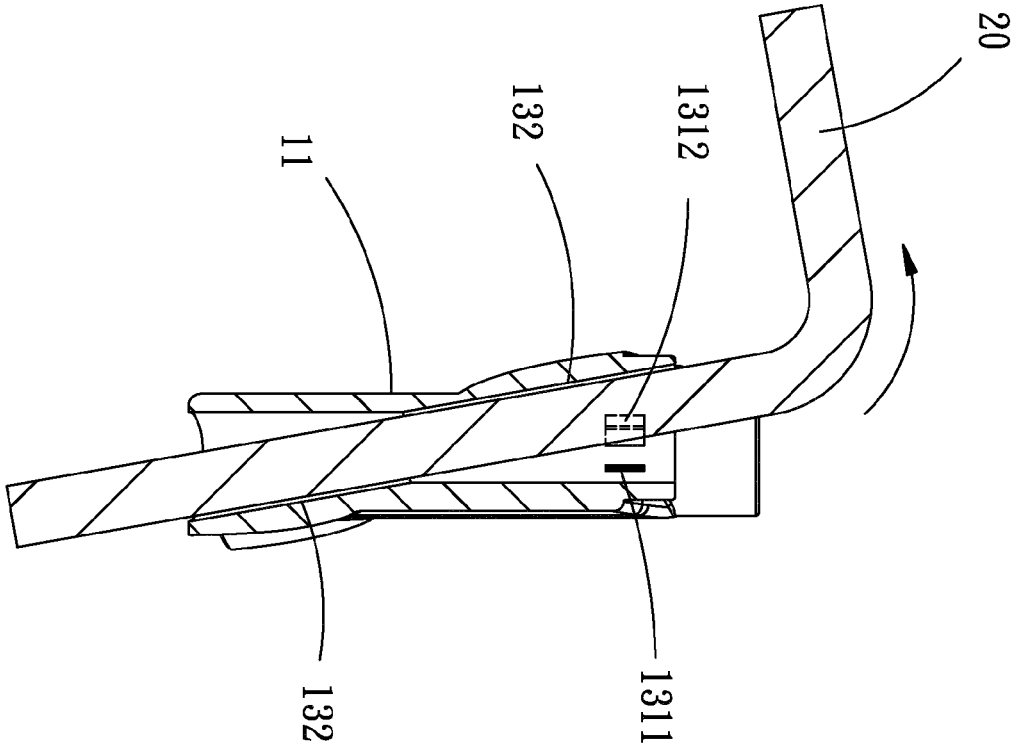


FIG. 8

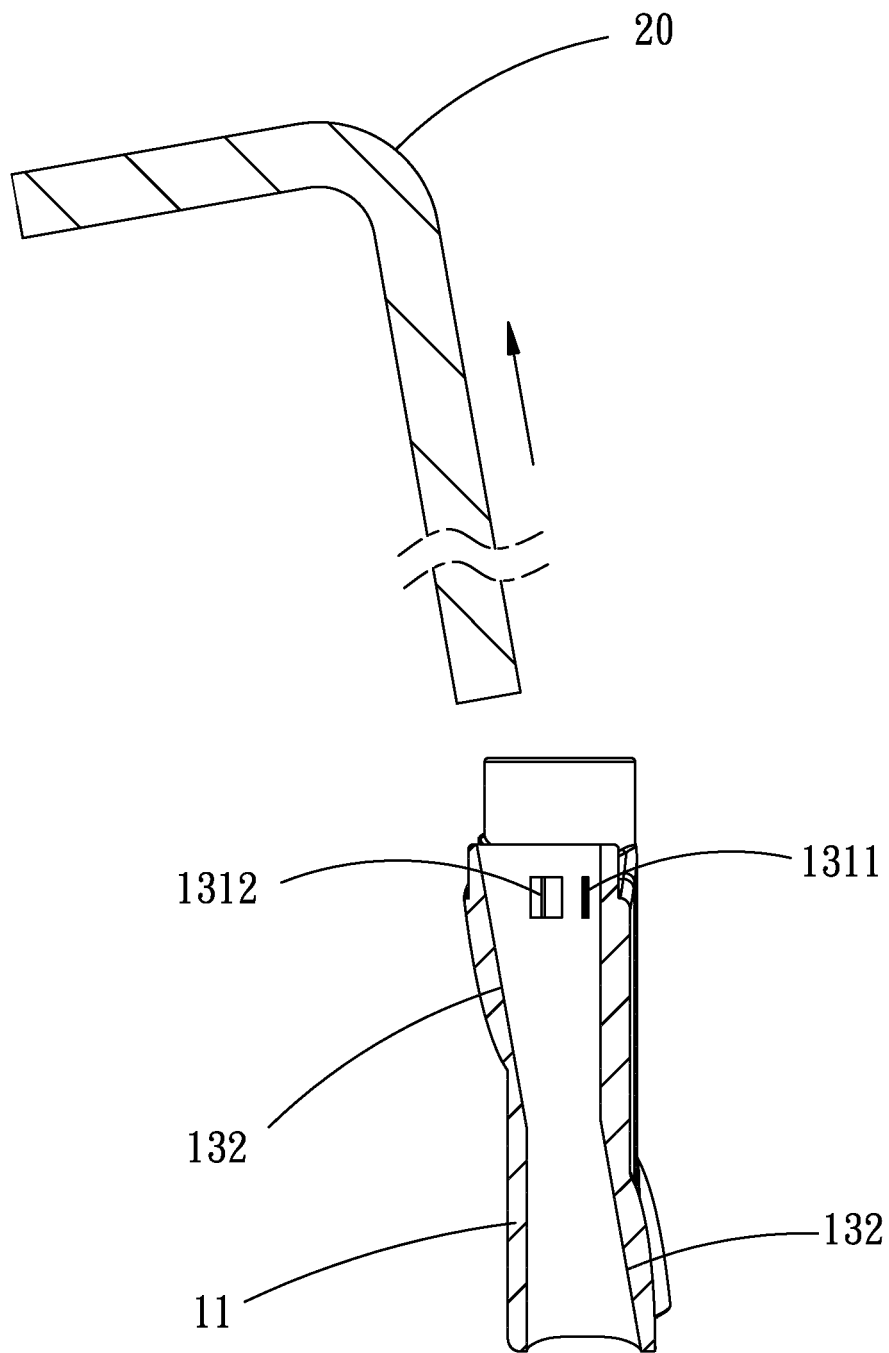


FIG. 9



EUROPEAN SEARCH REPORT

Application Number
EP 12 17 0751

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	DE 94 00 947 U1 (FACOM MORANGIS [FR]) 21 April 1994 (1994-04-21) * pages 3-5; figures *	1-4	INV. B25H3/00
Y	EP 1 090 719 A1 (HU BOBBY [TW]) 11 April 2001 (2001-04-11) * paragraphs [0012] - [0017]; figures *	1-4	
A	EP 1 090 721 A1 (HU BOBBY [TW]) 11 April 2001 (2001-04-11) * paragraphs [0003] - [0008]; figures *	1-4	
A	DE 199 52 223 A1 (WERNER HERMANN WERA WERKE [DE]) 11 May 2000 (2000-05-11) * abstract; figures *	1-4	
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			TECHNICAL FIELDS SEARCHED (IPC)
			B25G B25H B25B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 7 January 2013	Examiner David, Radu
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 12 17 0751

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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07-01-2013

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