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(54) **HAND TOOL**

HANDWERKZEUG

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Description

[0001] The present invention relates to a hand tool, and particular to a multi purpose hand tool, comprising two metal blades, which can be attached to each other, or to a housing, by using a locking device comprising a bushing.

[0002] Currently, a person going out to hunt, camp or fish needs to bring a number of tools for cutting, opening bottles, setting a fire etc. There are more or less two alternatives available to these persons, either they bring one single tool for each task, or they can bring a known multi-functional /multi-purpose hand tool.

[0003] The first option, to bring the tools separated from each other has two main problems: it is hard to find the tool when you need it and it is bulky to bring all the tools with you. The solution to this problem would be to bring a multi-functional hand tool instead.

[0004] However, conventional multi-functional hand tools are generally not adapted to be used as a hunting knife or adapted to camping.

[0005] For example, the conventional small multi-purpose hand tools, e.g. a multipurpose folding tool comprising for example a pair of scissors, a knife, a can opener, a pliers etc., typically comprises only a very small knife and a very small pair of scissors, none of them are adapted for efficient use during hunting, fishing or camping. The knife is both too small and too weak to be used as a hunting knife and the scissors are not strong enough to be used in typical outdoors situations.

[0006] There are also multi-functional tools that are the size of a normal pair of kitchen- or office scissors. The problem with this type of multi-functional tool is that it is more adapted to be used at home and not outdoors. Although it, in some cases, is possible to separate the knife part from the scissors part, the knife is too weak to be used as a hunting knife. Furthermore and importantly, the locking device in this multi-functional hand tool is not adapted to be used with a hunting knife. Additionally, there is a risk of undesired play or gap between the blades. Hand tools according to the state of the art are known for example from US 2007/0209213 A1, EP 0143543 A1, or also from JP S60-171148 U.

[0007] Furthermore, the rivets/screws or other connecting parts both on the separate tools and the conventional multi-functional tools are generally not adapted to be used in rain or wet environment, which leads to the risk that they can start rusting and/or breaking.

[0008] The present invention solves these problems in accordance with the appended claims.

[0009] Hence, the invention relates to a hand tool comprising two parts that are movable in relation to each other and releasably attached to each other using a locking device so as to in an attached state form said hand tool, characterized in that the locking device comprises a bushing, arranged on the first part, and at least one non circular through hole on the second part, wherein the bushing and the hole are arranged to engage so as to provide said releasable attachment, wherein the non-circular through hole features a shape allowing the bushing to be inserted when in a first rotational relationship with the bushing and to retain the bushing when in a second rotational relationship with the bushing. The first part is slightly concave in longitudinal direction. The bushing comprises flanges in the upper end and means for limiting movement of the bushing when attached to said first part in the lower end.

[0010] In the following, the invention will be described in detail, with reference to exemplifying embodiments of the invention and to the enclosed drawings, in which:

Fig. 1A shows a side view of the first part.
Fig. 1B shows a rear side view of the first part.
Fig. 2A shows a side view of the second part.
Fig. 2B shows a rear side view of the second part.
Fig. 3A shows a side view of another embodiment of the second part.
Fig. 3B shows a rear side view of another embodiment of the second part.
Fig. 4A shows a perspective view of the bushing.
Fig. 4B shows another perspective view of the bushing, as seen from its bottom.
Fig. 5A shows a front view the first part and the second part when attached to each other using the locking device.
Fig. 5B shows a rear view of the first part and the second part when attached to each other using the locking device.
Fig. 6A shows a front overview of the hand tool in a housing.
Fig. 6B shows a rear overview of the hand tool in a housing.
Fig. 7 shows the second part attached to the rear of the housing.
Fig. 8A shows a side view of the pliers part.
Fig. 8B shows a rear side view of the pliers part.

[0011] Referring to Figures 1-8, a hand tool in accordance with the present invention suitably comprises a first part 1 and a second part 2 releasably connected to each other using a locking device, arranged to allow the parts 1, 2 to engage with each other so as to form a connected state in which said parts 1, 2 together form said hand tool. The locking device is arranged to provide a rotational engagement between the parts 1, 2, and comprises a bushing 3, arranged on the first part 1 and permanently fastened to the first part 1 with a fastening means 4, and at least one, preferably at least two (see below) non-circular through hole 5, 6, arranged in the second part 2. The bushing 3 and the hole 5 are arranged to engage so as to provide a releasable attachment, wherein the hole 5 features a shape allowing the bushing 3 to be inserted into the hole 5 when the bushing 3 is in a first rotational relationship with the hole 5 and to retain the bushing 3 when the bushing is in a second rotational relationship with the hole 5.

[0012] The hand tool can be placed in a housing 7 for holding the parts. The housing 7 may also function as a third part of the hand tool. Namely, the second part 2 can be attached to a further bushing 8 attached to a pliers part 32 that is mounted on the rear of the housing 7, which bushing 8 is similar to the bushing 3 and also arranged to engage in a corresponding manner with a through hole 6, on the second part 2, similar to through hole 5 (above).

[0013] Fig. 1A shows the first part 1, in the shape of one half of a piece of hand-operated scissors. The first part 1 consists of a metal blade 9 comprising a cutting edge 10 and a locking device attached to it, wherein the locking device comprises the above discussed bushing 3 and a fastening means 4, for permanently fasten the bushing 3 to the metal blade 9. The metal blade 9 also comprises a sharpened edge, 31 opposite the cutting edge 10, as shown in Fig. 1A and 1B. The sharpened edge 31 can for example be used as a smaller knife, or can be used to make up fire with a fire striker. The fastening means is preferably a rivet or a screw (as shown in Fig. 5B). The first part 1 further has a handle 11 with a finger hole 12 for handling the tool by hand. The metal blade 9 is partly inserted into the handle 11.

[0014] The handle 11 is preferably made of plastic material molded to the metal blade 9. Of course also other suitable materials could be used.

[0015] The metal blade 9 is further provided with a cavity forming a can opener 13 and another cavity forming a bottle opener 14.

[0016] Fig. 1B shows a rear side view of the first part 1, wherein the sharpened edge 31 and the cutting edge 10 is visible. The figure also shows a through hole 25, wherein the bushing 3 is inserted and attached with the fastening device 4.

[0017] The metal blade 9 of the first part 1 further has a shape which allows the metal blade 9 and the metal blade 15 of the second part 2 to be pressed against each other when engaged with the locking device. This feature can preferably be achieved by a slight concave shape in longitudinal direction of the metal blade 9 of the first part 1, on the side of the metal blade 9 abutting the metal blade 15 of the second part 2, once the first and second parts have been engaged to each other using the locking device. This slight concave shape results in a higher pressure against the metal blade 15 of the second part.

[0018] The shape is concave in the sense that the face of the blade 9 arranged to face the opposing blade 15 when mounted, is not planar, but rather slightly curved in longitudinal direction of the metal blade 9 in the plane perpendicular to the plane shown in fig. 1A, between the bottle opener 14 and the can opener 13, so that the end portions of that part of the blade 9 are located closer to the opposing blade 15 as seen in the main extension plane of the blade in question.

[0019] This feature ensures that there is no play or looseness, apart from the rotational engagement provided by the locking part 3, 4, when the first part 1 is attached to the second part 2 using the bushing 3.

[0020] The concave shape of the metal blade 9 on the first part 1, has preferably a maximum protuberance of about 0,5-1,5 mm from a straight line, along the longitudinal direction of the metal blade 9, between the bottle opener 14 and the can opener 13.

[0021] Fig. 2A shows a side view of the second part 2 of the hand tool, in the shape of a knife. The second part 2 of the hand tool comprises a metal blade 15 and a handle 16 with a finger hole 17. The metal blade 15 is partly inserted into the handle 16. The metal blade 15 of second part 2 comprises at least one through hole 5, 6 each arranged to engage with one or several respective bushings 3, 8. The metal blade 15 preferably comprises two non-circular through holes 5, 6 located at a distance from each other in the longitudinal direction of the metal blade 15. The first non-circular through hole 5 is located near the handle 16 of the metal blade 15 and the second non circular through hole 6 is located closer to the tip of the metal blade 15.

[0022] The shape of the non-circular through holes 5, 6 is individually adapted to allow one or more protrusions 18 of the bushing 3, 8 to pass through the hole and, after pivotal movement of the handle 16, to lock the first part 1 to the second part 2 using the bushing 3 as shown in Fig. 5A, or to attach the second part 2 to the bushing 8 arranged on a pliers part 32 on the rear of the housing 7 as shown in Fig. 7. The through holes 5, 6 are arranged to allow the protrusions 18 of the bushing 3, 8, as can be seen from the figures 2A and 2B, to pass through the respective through hole. Preferably, the shape of each through hole 5, 6 essentially corresponds to the shape of the protrusions 18 of the respective bushing 3, 8 in the plane of relative rotation between the parts 1, 2 when engaged forming said connected state.

[0023] The handle 16 is preferably made of plastic material molded to the metal blade 15. Of course also other suitable materials could be used.

[0024] Fig. 2B shows a rear side view of the second part 2. In this view, the rear of the through holes 5, 6 are visible, showing that each respective through hole comprises a countersunk hole or cavity 21, 22 which is aligned with the through hole 5, 6 and in which where the bushing 3 can be rotated after being inserted through the respective hole. This countersunk hole 21, 22 further ensures the lack of looseness/play after having attached the second part 2 to the first part 1 using the locking device.

[0025] The metal blade 15 of the second part 2 has a cutting edge 19 on the top of the metal blade. This cutting edge 19, in cooperation with cutting edge 10 of the first part 1, gives the cutting function of a pair of scissors when the second part is connected to the first part. The knife edge 20 of the metal blade 15 has a curved shape to function as a conventional knife.

[0026] The second part 2, the knife part, differs from other products in that the cutting edge 19, to be used as one half of a pair of scissors, is located on the back of the knife and not at the knife edge 20, as in other conventional hand tools. Since, for instance, the scissor func-

tion requires a cutting edge with considerably larger edge angle than the knife function, this allows for better specialization of the scissor function.

[0027] In order to attach the second part 2 to the first part 1 the second part 2 has to be positioned so that its main direction of elongation of its blade is at a predetermined angle, preferably 90 degrees angle, in respect to the main direction of elongation of the blade of the first part 1. The protrusions 18 on the bushing 3 of the first part 1 will then match the shape of the through hole 5 or 6 in the second part 2, so that the parts can be joined together and wherein the first and second parts thereafter are pivoted around the bushings axis into a locked, connected state. When the first and the second parts are attached to each other, forming the above said connected state, the first and second parts are capable of pivotal movement in respect to each other. The metal blades of the first and second part 9, 15 are hence pivotable about said locking device, so that cutting edges of said first and second part slide against each other when their respective handles 11, 16 opposite to the pivot are closed. When in the connected state, the handles 11, 16 will be held firmly in position against each other, and the parts 1, 2 will together work as a pair of scissors (shown in Fig. 5A and 5B). The bushing 3 and said slightly curved shape of the metal blade 9 of the first part 1 ensures a tight fit and no play or looseness between the two parts 1, 2.

[0028] The second part 2 further has a cutting edge 30 constituting one part of a set of pliers when the second part 2 is connected to the housing 7 using a second bushing 8 and the hole 6.

[0029] It is important that there is no play or looseness between the metal blades of the first and the second parts in the connected state. Such play/looseness is prevented by the locking device in combination with the concave longitudinal shape of the metal blade 9 of the first part 1. The slightly curved shape of the metal blade 9 on the first part 1 forces the metal blades 9 and 15 against each other when engaged with the bushing 3.

[0030] Fig. 3A shows a side view of another embodiment of the second part 2. In this embodiment the shape of the through holes 5 and 6, on the metal blade 15, has been altered. The hole 5, 6 has a central circle area (5A, 6A) with projecting protrusions in the form of half circles (5B, 6B). Between the projecting parts and the central circle area (5A, 6A) edge portions (5C, 6C) are formed on each side of the half circular protrusions (5B, 6B).

[0031] This embodiment has shown to be especially advantageous with regard to the lack of play or looseness when the first part 1 or housing 7 is attached to the second part 2 using the bushing 3, 8.

[0032] The second part 2 further has a combined abdominal opener and cutting edge 35, constituting one part of a set of pliers when the second part 2 is connected to the housing 7 using a second bushing 8 and the hole 6. The abdominal opener is used for opening up the abdominal of an animal during slaughter. The shape of the abdominal opener has the advantage that it, in contrast to a conventional knife, protects the stomach and other organs in the animal during the slaughter. If a conventional knife is used there is a risk that the stomach of the animal is damaged.

[0033] It is to be understood that the combined abdominal opener and cutting edge 35 can be used with any shape of the through holes 5 and 6 and that it can be used as one part of a set of pliers in the same way as has been described for the cutting edge 30. In the same way it is also to be understood that the cutting edge 30 can be used with any shape of the through holes 5 and 6.

[0034] Fig. 3B shows a rear side view of the embodiment shown in Fig. 3A. The shape of the through holes 5 and 6 are as have been described above, as well as the combined abdominal opener and cutting edge 35. All other parts of the second part 2 are as have been described above for Fig. 2A and 2B.

[0035] Fig. 4A shows the bushing 3, 8 of a locking device. The bushing 3, 8 comprises at least one protrusion 18, arranged essentially in parallel to a main surface of a part to which the bushing 3, 8 is permanently fastened using a fastening means 4. The bushing is adapted to be permanently mounted on the first part 1 or the pliers part 32 using fastening means 4, such as for example a rivet or a screw, (shown in Fig. 5B) by being inserted through a central through hole 23 in the bottom of the bushing 3, for receiving the head of such a fastening means 4 in a countersunk manner. The at least one protrusion 18 in the upper end of the bushing 3 can for example be a flange, an asymmetrical shaped cam or any other shape giving a clamping connection when inserted through the holes 5 or 6 and rotated. The bushing preferably comprises three flanges as shown in Fig. 4A, but could also comprise 1, 2, 4, 5 or more flanges. As mentioned, the flanges could also have other shapes. It is important that the non-circular holes 5, 6 on the second part 2 are adapted to match both the shape of the flanges and the number of flanges on the bushing 3, 8. This ensures that the bushing 3, 8 is tightly connected to the countersunk hole 21, 22 in the metal blade 15.

[0036] Fig. 4B shows that the bushing 3, 8 is arranged with a through hole 23, wherein the means of the lower end of the through hole 23 has a non-circular cam shape 24 on a part of the hole 23 to cooperate with a fastening means 4 when attached to said first part 1 of the hand tool. The fastening means 4 is arranged so as to limit movement between the fastening means 4 and the bushing 3, 8, when the bushing is permanently fastened with the fastening means 4 on the metal blade 9 or the pliers part 32. The bushing 3 is inserted through a through hole 25 (shown in Fig. 1B) in the metal blade 9 of part 1 and the fastening means 4 is thereafter inserted in the hole 23 and compressed, whereby the non-circular cam shape 24 contributes to a tight and permanent mounting of the fastening means 4 in the bushing 3. The bushing 8 is in a similar way inserted through a through hole 33 (shown in Fig. 8B) in the pliers part 32 and the fastening means 4 is thereafter inserted in the hole 23 and com-

pressed, whereby the non-circular cam shape 24 contributes to a tight and permanent mounting of the fastening means 4 in the bushing 8.

[0037] The fastening means 4 fits very tightly in the hole 23 of the bushing 3,8, both in a rotational direction and in a direction in which the part is retracted from the metal blade 9 or the pliers part 32. It is hence not possible to remove the bushing from the first part 1 or pliers part 32 once the fastening means 4 has been put into place. This further ensures the lack of play or looseness in the locking device, since there is no way for the bushing 3, 8 to move, neither in a direction in which the part is retracted from the pliers part 32 or the metal blade 9, nor in a pivotal direction in relation to the other part. The tight fit also reduc-es/eliminates the risk of water entering the bushing and thereby minimizes the risk of rust.

[0038] Fig. 5A shows a front view when the first part 1 has been attached to the second part 2, by bringing the bushing 3 through the hole 5, to form said connected state, the handles 11, 16 have been pressed towards each other and the locking device has been engaged. When the first and second parts 1,2 are pivoted around the bushing 3 into a closed state of the pair of scissors, the cutting edge 10 of said first part 1 and the cutting edge 19 of said second part 2 slide against each other as the handles are closing. Also, the protrusion 18 of the bushing 3 are rotated out of alignment with the corresponding shape of the non-circular through hole 5, and engage in a pressing fashion with a surface of the countersunk hole 22 on the metal blade 15. At the same time, the concave shape of the metal blade 9 of the first part 1 gives a further pressing fashion with the surface of the metal blade 15 of the second part 2.

[0039] To separate the first part 1 from the second part 2, the second part 2 must again be oriented so that the general longitudinal direction of the first part 1 is at a predetermined, preferably 90 degree, angle to the general longitudinal direction of the second part 2, whereby the protrusion 18 of the bushing 3 align with the corresponding non-circular through hole 5. The locking device will then be in an open position and the parts can be pulled apart, and subsequently stored in the housing 7.

[0040] Fig. 5B shows a rear view when the first part 1 has been attached to the second part 2 in said connected state, forming a closed pair of scissors. This view also shows the fastening means 4 when attached in the bushing 3 through the through hole 24 in the metal blade 9 on the first part 1.

[0041] Fig. 6A shows the first 1 and second 2 parts when they are held in the housing 7. The housing 7 does no only function as a holding place, it also forms a multi-purpose hand tool together with the first 1 and the second 2 part. The multi-purpose hand tool further comprises a fire striker 26, a sharpener 27 for metal blades and one part of a set of pliers 32, all attached to the housing 7.

[0042] Fig. 6B shows a rear view of the first 1 and second 2 parts when they are held in the housing 7. The housing 7 further comprises a belt hanger 29. The belt hanger 29 can be attached and removed from the housing 7 by rotation of the belt hanger. The housing 7 further comprises a pliers part 32 with a bushing 8 to releasably attach the second part 2 to the rear of the housing 7, wherein the cutting edge 30, 35 on the second part 2 and a cutting edge 28 of the plier part 32 on the housing 7 together forms a set of pliers (shown in Fig. 6A, 6B and 7). The bushing 8 is attached to the plier part 32 on the housing 7 in a similar way as has been described for attaching the bushing 3 to the first part 1. It is noted that the bushing 8 works together with either through hole 5, 6 in the corresponding way as the bushing 3.

[0043] The second part 2 and the housing 7 can together form a multi-purpose hand tool, as described above, wherein the housing 7 comprises a bushing 8, allowing the second part 2 to be releasably attached to the housing 7 and thereby forming a set of pliers.

[0044] Fig. 7 shows a rear view of the housing 7 when the second part 2 and the housing 7 have been put into mutual engagement using the bushing 8, and the through hole 6, so as to together form said set of pliers in a connected state similar to the above described connected state between parts 1, 2. In order to attach the second part to the housing 7, the second part 2 has to be put in a predetermined, preferably 90 degrees, angle in respect to the housing 7, in a way that corresponds to the above described between parts 1 and 2. The bushing 8 on the housing 7 will then be aligned with the matching shape of the through hole 6 in the second part 2, so that the parts 2, 7 can be joined together and then brought into said connected state by a rotational motion in relation to each other. The housing 7 will function as the second handle of the set of pliers. Hence, when the housing 7 and second part 2 are pivoted in relation to each other and about the engagement means comprising the bushing 8 and the through hole 6, the cutting edges 30, 28 will slide against each other and form the set of pliers as the handles 16, 7 closes. It is to be noted that the combined abdominal opener and cutting edge 35, shown in Fig. 3A and B, can be used instead of the cutting edge 30 and will work in the same way.

[0045] Fig. 7 further shows the locking device in a locked state, hence where the second part 2 has been attached to the housing 7 in a predetermined, preferably 90 degrees, angle and then pivoted around its axis counter clockwise towards and angle of 0 degrees.

[0046] To separate the housing 7 from the second part 2, the second part 2 has to be again positioned in the predetermined, preferably 90 degrees, angle in respect to housing 7. The locking device 8, 6 will then be in an open position, in which the protrusion 18 align with the non-circular shape of the through hole 6, and the parts 2, 7 can then be pulled apart and thereby be disassembled.

[0047] The housing 7 is preferably of a plastic material as wells as the belt hanger 29. Of course also other suitable materials could be used.

[0048] Fig. 8A shows a side view of a pliers part 32

which can be attached to the back of the housing 7 (as shown in Fig. 6B). The pliers part 32 has a through hole 33, wherein the bushing 8 is inserted and permanently attached to the pliers part 32, with a fastening device 4, in the same way as has been described for fastening the bushing 3 to the first part 1 above.

[0049] When the bushing 8 has been attached to the pliers part, the pliers part can further be mounted to the back of the housing 7, using fastening means such as rivets or screws which are inserted through the holes 34.

[0050] The pliers part 32 is preferably mounted to the back of the housing 7 by a molded connection, whereby the holes 34 are filled with the molding material. The molding material is preferably a plastics material, but could of course also be of other appropriate materials.

[0051] Also other appropriate fastening means could be used to attach the pliers part 32 to the housing 7, such as for example rivets or screws.

[0052] Fig. 8B shows a rear side view of the pliers part 32. The pliers part 32 further has a cutting edge 28 constituting one part of a set of pliers when the second part 2 is connected to the housing 7 using a second bushing 8 and the hole 6. This cutting edge 28 on the pliers part 32, in cooperation with cutting edge 30, 35 of the second part 2, gives the cutting function of a set of cutting pliers when the second part 2 is connected to the first part 1.

[0053] The shape of the cutting edge 28 on the pliers part 32 has the same shape as the cutting edge 30 of the second part 2. The shape of the set of pliers has been adapted to give a strong and effective set of pliers for cutting e.g. wires, cables or steel wires. The adapted shape also prevents the cable or wire from gliding or come loose before the cutting has been performed.

[0054] The shape of the combined abdominal opener and cutting edge 35 will give the same properties as the cutting edge 30 and can be used together with the cutting edge 28 on the pliers part 32 in the same way as has been described for the cutting edge 30.

[0055] The hand tool, as well as the multi-purpose hand tool, as described herein is adapted to work as a knife and, when attached to the scissors part 2 or the housing 7, a pair of scissors or a set of pliers. The shape of the knife generally shows the intended use of the knife, in the present application the knife shown is a hunting knife. The present application shall however not be limited to hunting knives; the invention can also be applied to other types of knives for other applications.

[0056] Above, an exemplifying preferred embodiment has been described. However, it is realized that the invention can be varied without departing from the basic idea of the invention.

[0057] For instance, the above described bushing 3 and through hole 5 can be arranged with a bushing 8 on the second part 2, arranged to cooperatively engage with a corresponding through hole on the first part 1, or any other similar combination of bushing and through hole positioning on either one of two, three or more parts together forming the hand tool.

[0058] Furthermore, there may be more than two through holes arranged on any one part 1, 2 of the hand tool arranged to cooperate with one and the same bushing on another part, and there may also be more than one bushing on one such part arranged to cooperate with one and the same through hole arranged on another part.

[0059] Hence, the invention is not to be considered limited to the above described embodiments, but may be varied within the scope of the enclosed claims.

Claims

1. Hand tool comprising two parts that are movable in relation to each other and releasably attached to each other using a locking device so as to in an attached state form said hand tool, wherein the locking device comprises a bushing (3,8), arranged on a first part (1), and at least one non-circular through hole (5,6) in a second part (2), wherein the bushing (3,8) and the at least one non-circular through hole (5,6) are arranged to engage so as to provide said releasable attachment, wherein the at least one non-circular through hole (5,6) features a shape allowing the bushing (3,8) to be inserted when in a first rotational relationship with the bushing and to retain the bushing when in a second rotational relationship with the bushing, **characterised in that** the bushing is arranged with a through hole (23), wherein the lower end of the through hole (23) has a non-circular cam shape (24) on a part of the hole (23) to cooperate with a fastening means (4) when attached to said first part (1) of the hand tool.

2. Hand tool according to claim 1, wherein the locking device comprises a bushing (3,8) with at least one protrusion (18), arranged essentially in parallel to a main surface of a part to which the bushing (3,8) is permanently fastened using a fastening means (4).

3. Hand tool according to claim 2, comprising at least three protrusions (18) and wherein the protrusions (18) are flanges.

4. Hand tool according to any of claims 1 to 3, wherein a metal blade (15) of the second part (2) comprises the at least one non-circular through hole (5,6) each arranged to engage with one respective bushing (3,8).

5. Hand tool according to claim 4, wherein the second part (2) comprises two non-circular through holes (5,6) located at a distance from each other in the longitudinal direction of the metal blade (15).

6. Hand tool according to claim 4 or 5, wherein the shape of the at least one non-circular through hole is individually adapted to allow at least one protru-

sions (18) of the bushing (3,8) to pass through the hole and after pivotal movement lock the first part (1) to the second part (2).

7. Hand tool according to any of the preceding claims, wherein the first part (1), which first part (1) is provided with a metal blade (9), is attached to the second part (2) by positioning the second part (2) so that the main direction of elongation of the metal blade (15) of the second part (2) is at a predetermined angle in respect to the main direction of the elongation of the metal blade (9) of the first part (1), whereby at least one protrusions (18) of the bushing (3,8) of the first part (1) will match the shape of the through hole (5, 6) of the second part (2), so that the parts can be joined together and wherein the first and second parts thereafter are pivoted around the bushings axis into a locked, connected state.

8. Hand tool according to claim 7, wherein the predetermined angle is 90 degrees.

9. Hand tool according to claim 7 or 8, wherein said first part (1) has a slight concave shape in longitudinal direction of the metal blade (9), on the side of the metal blade (9) abutting the metal blade (15) of the second part (2), once the first and second parts have been engaged to each other using the locking device.

10. Hand tool according to any one of the preceding claims, wherein said first and second part comprises a pair of metal blades (9,15) and handles (11, 16) pivotable about said locking device, so that cutting edges (10, 19) of said first and second part slide against each other when their respective handles (11,16) opposite to the pivot are closed.

11. Hand tool according to any one of the preceding claims, wherein said first part (1) has the shape of one half of a piece of hand-operated scissors and wherein said second part (2) has the shape of a knife.

12. Multi-purpose hand tool comprising a hand tool according to any one of the preceding claims and a housing (7), wherein the housing (7) functions as a holding place for the first (1) and second (2) parts.

13. Multi-purpose hand tool according to claim 12, wherein the housing (7) comprises a bushing (8), allowing the second part (2) to be releasably attached to the housing (7) and thereby forming a set of pliers, wherein the housing (7) functions as the second handle of the set of pliers.

Patentansprüche

1. Handwerkzeug, umfassend zwei Teile, die relativ zueinander beweglich sind und mittels einer Verriegelungsvorrichtung lösbar aneinander befestigt sind, so dass sie im befestigten Zustand das Handwerkzeug bilden, wobei die Verriegelungsvorrichtung eine Buchse (3, 8), die an einem ersten Teil (1) angeordnet ist, und mindestens ein nicht-kreisförmiges Durchgangsloch (5, 6) in einem zweiten Teil (2) umfasst, wobei die Buchse (3, 8) und das mindestens eine nicht-kreisförmige Durchgangsloch (5, 6) so angeordnet sind, dass sie ineinander eingreifen, um die lösbare Befestigung bereitzustellen, wobei das mindestens eine nicht-kreisförmige Durchgangsloch (5, 6) eine Form aufweist, die es in einer ersten Drehbeziehung mit der Buchse ermöglicht, dass die Buchse (3,8) eingesetzt wird, und in einer zweiten Drehbeziehung mit der Buchse, dass die Buchse festgehalten wird, **dadurch gekennzeichnet, dass** die Buchse mit einem Durchgangsloch (23) angeordnet ist, wobei das untere Ende des Durchgangslochs (23) eine nicht-kreisförmige Nockenform (24) auf einem Teil des Lochs (23) aufweist, um mit einem Befestigungsmittel (4) zusammenzuwirken, wenn es an dem ersten Teil (1) des Handwerkzeugs angebracht ist.

2. Handwerkzeug nach Anspruch 1, wobei die Verriegelungsvorrichtung eine Buchse (3, 8) mit mindestens einem Vorsprung (18) umfasst, der im Wesentlichen parallel zu einer Hauptfläche eines Teils angeordnet ist, an dem die Buchse (3, 8) unter Verwendung eines Befestigungsmittels (4) dauerhaft befestigt ist.

3. Handwerkzeug nach Anspruch 2, das mindestens drei Vorsprünge (18) umfasst und wobei die Vorsprünge (18) Flansche sind.

4. Handwerkzeug nach einem der Ansprüche 1 bis 3, wobei eine Metallklinge (15) des zweiten Teils (2) das mindestens eine nicht-kreisförmige Durchgangsloch (5, 6) umfasst, das jeweils so angeordnet ist, dass es in eine entsprechende Buchse (3, 8) eingreift.

5. Handwerkzeug nach Anspruch 4, wobei der zweite Teil (2) zwei nicht-kreisförmige Durchgangslöcher (5, 6) umfasst, die in Längsrichtung der Metallklinge (15) in einem Abstand voneinander angeordnet sind.

6. Handwerkzeug nach Anspruch 4 oder 5, wobei die Form des mindestens einen nicht-kreisförmigen Durchgangslochs individuell angepasst ist, um mindestens einen Vorsprung (18) der Buchse (3, 8) durch das Loch hindurchtreten zu lassen und nach einer Schwenkbewegung den ersten Teil (1) mit dem

zweiten Teil (2) zu verriegeln.

7. Handwerkzeug nach einem der vorhergehenden Ansprüche, wobei das erste Teil (1), welches erste Teil (1) mit einer Metallklinge (9) versehen ist, an dem zweiten Teil (2) befestigt wird, indem das zweite Teil (2) so positioniert wird, dass die Hauptlängsrichtung der Metallklinge (15) des zweiten Teils (2) in einem vorbestimmten Winkel in Bezug auf die Hauptlängsrichtung der Metallklinge (9) des ersten Teils (1) liegt, wobei mindestens ein Vorsprung (18) der Buchse (3, 8) des ersten Teils (1) an die Form des Durchgangslochs (5, 6) des zweiten Teils (2) angepasst ist, so dass die Teile miteinander verbunden werden können, und wobei das erste und das zweite Teil danach um die Buchsenachse in einen verriegelten, verbundenen Zustand geschwenkt werden.

8. Handwerkzeug nach Anspruch 7, wobei der vorbestimmte Winkel 90 Grad beträgt.

9. Handwerkzeug nach Anspruch 7 oder 8, wobei der erste Teil (1) eine leicht konkave Form in Längsrichtung der Metallklinge (9) aufweist, wobei die Seite der Metallklinge (9) an der Metallklinge (15) des zweiten Teils (2) anliegt, nachdem der erste und der zweite Teil unter Verwendung der Verriegelungsvorrichtung miteinander in Eingriff gebracht worden sind.

10. Handwerkzeug nach einem der vorhergehenden Ansprüche, wobei der erste und der zweite Teil ein Paar Metallklingen (9, 15) und Griffe (11, 16) umfassen, die um die Verriegelungsvorrichtung schwenkbar sind, so dass die Schneidkanten (10, 19) des ersten und des zweiten Teils gegeneinander gleiten, wenn ihre jeweiligen Griffe (11, 16) gegenüber dem Schwenkgelenk geschlossen sind.

11. Handwerkzeug nach einem der vorhergehenden Ansprüche, wobei der erste Teil (1) die Form einer Hälfte einer handbetätigten Schere hat und wobei der zweite Teil (2) die Form eines Messers hat.

12. Mehrzweck-Handwerkzeug umfassend ein Handwerkzeug nach einem der vorhergehenden Ansprüche und ein Gehäuse (7), wobei das Gehäuse (7) als Halteplatz für das erste (1) und das zweite (2) Teil dient.

13. Mehrzweck-Handwerkzeug nach Anspruch 12, wobei das Gehäuse (7) eine Buchse (8) aufweist, die es ermöglicht, den zweiten Teil (2) lösbar an dem Gehäuse (7) zu befestigen und dadurch einen Zangensatz zu bilden, wobei das Gehäuse (7) als der zweite Griff des Zangensatzes fungiert.

Revendications

1. Outil à main comprenant deux parties qui sont mobiles l'une par rapport à l'autre et fixées de manière amovible entre elles à l'aide d'un dispositif de verrouillage afin de, dans un état fixé, former ledit outil à main, dans lequel le dispositif de verrouillage comprend une douille (3, 8) agencée sur une première partie (1), et au moins un trou débouchant non circulaire (5, 6) dans une seconde partie (2), dans lequel la douille (3, 8) et le au moins un trou débouchant non circulaire (5, 6) sont agencés pour se mettre en prise afin de fournir ladite fixation amovible, dans lequel le au moins un trou débouchant non circulaire (5, 6) présente une forme permettant d'insérer la douille (3, 8) lorsqu'il est dans une première relation de rotation avec la douille, et retenir la douille, lorsqu'il est dans une seconde relation de rotation avec la douille, **caractérisé en ce que** la douille est agencée avec un trou débouchant (23), dans lequel l'extrémité inférieure du trou débouchant (23) a une forme de came non circulaire (24) sur une partie du trou (23) afin de coopérer avec un moyen de fixation (4) lorsqu'il est fixé à ladite première partie (1) de l'outil à main.

2. Outil à main selon la revendication 1, dans lequel le dispositif de verrouillage comprend une douille (3, 8) avec au moins une saillie (18), agencée essentiellement parallèlement à une surface principale d'une partie à laquelle la douille (3, 8) est fixée de manière permanente à l'aide d'un moyen de fixation (4).

3. Outil à main selon la revendication 2, comprenant au moins trois saillies (18) et dans lequel les saillies (18) sont des brides.

4. Outil à main selon l'une quelconque des revendications 1 à 3, dans lequel une lame métallique (15) de la seconde partie (2) comprend le au moins un trou débouchant non circulaire (5, 6), chacun agencé pour se mettre en prise avec une douille (3, 8) respective.

5. Outil à main selon la revendication 4, dans lequel la seconde partie (2) comprend deux trous débouchants non circulaires (5, 6) positionnés à une certaine distance l'un de l'autre dans la direction longitudinale de la lame métallique (15).

6. Outil à main selon la revendication 4 ou 5, dans lequel la forme du au moins un trou débouchant non circulaire est individuellement adaptée pour permettre à au moins l'une des saillies (18) de la douille (3, 8) de passer à travers le trou et après le mouvement pivotant, bloquer la première partie (1) sur la seconde partie (2).

7. Outil à main selon l'une quelconque des revendications précédentes, dans lequel la première partie (1), laquelle première partie (1) est prévue avec une lame métallique (9), est fixée sur la seconde partie (2) en positionnant la seconde partie (2) de sorte que la direction principale d'allongement de la lame métallique (15) de la seconde partie (2) est à un angle prédéterminé par rapport à la direction principale de l'allongement de la lame métallique (9) de la première partie (1), moyennant quoi au moins une saillie (18) de la douille (3, 8) de la première partie (1) correspond à la forme du trou débouchant (5, 6) de la seconde partie (2), de sorte que les parties peuvent être assemblées et dans lequel les première et seconde parties sont ensuite pivotées autour de l'axe de douille dans un état raccordé, verrouillé.

8. Outil à main selon la revendication 7, dans lequel l'angle prédéterminé est de 90 degrés.

9. Outil à main selon la revendication 7 ou 8, dans lequel ladite première partie (1) a une forme légèrement concave dans la direction longitudinale de la lame métallique (9), du côté de la lame métallique (9) venant en butée contre la lame métallique (15) de la seconde partie (2), une fois que les première et seconde parties ont été mises en prise entre elles à l'aide du dispositif de verrouillage.

10. Outil à main selon l'une quelconque des revendications précédentes, dans lequel lesdites première et seconde parties comprennent une paire de lames métalliques (9, 15) et des poignées (11, 16) pouvant pivoter autour dudit dispositif de verrouillage, de sorte que les bords de coupe (10, 19) desdites première et seconde parties coulissent l'un contre l'autre lorsque leurs poignées (11, 16) respectives opposées au pivot, sont fermées.

11. Outil à main selon l'une quelconque des revendications précédentes, dans lequel ladite première partie (1) a la forme d'un demi-ciseau actionné à la main et dans lequel ladite seconde partie (2) a la forme d'un couteau.

12. Outil à main multifonction comprenant un outil à main selon l'une quelconque des revendications précédentes et un boîtier (7), dans lequel le boîtier (7) sert d'emplacement de support pour les première (1) et seconde (2) parties.

13. Outil à main multifonction selon la revendication 12, dans lequel le boîtier (7) comprend une douille (8), permettant à la seconde partie (2) d'être fixée, de manière amovible, au boîtier (7) et formant ainsi un jeu de pinces, dans lequel le boîtier (7) sert de seconde poignée du jeu de pinces.

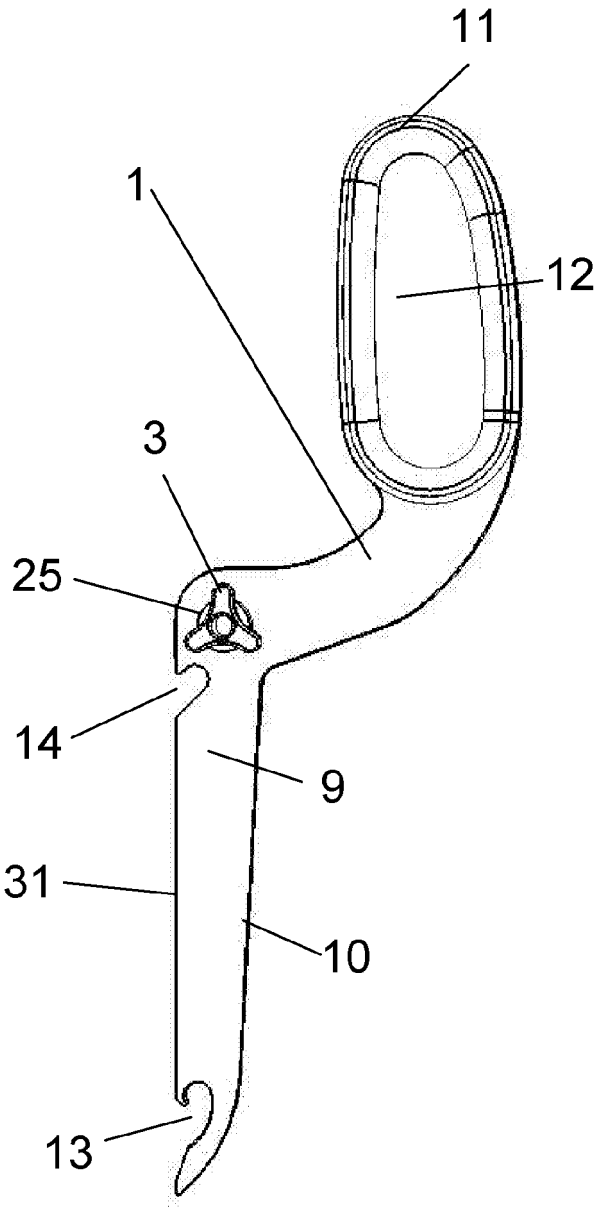

Fig. 1A

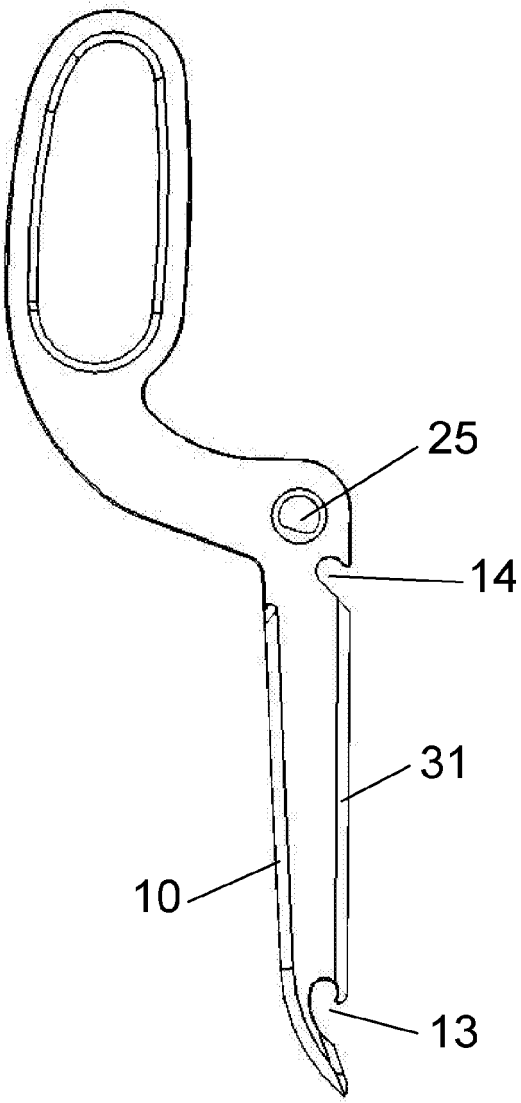

Fig. 1B

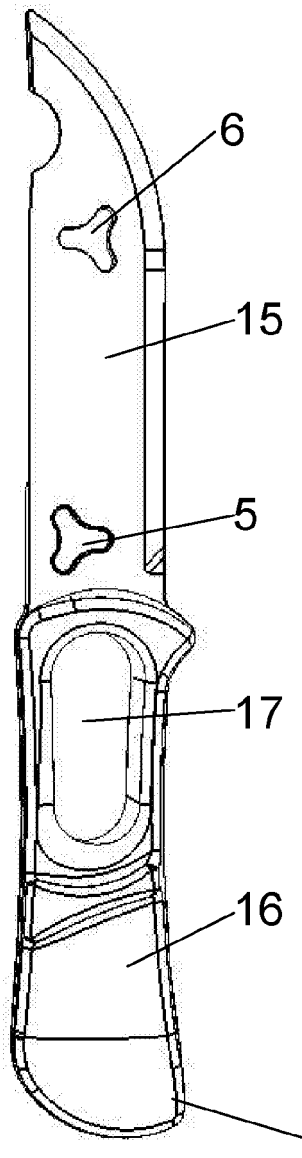

Fig. 2A

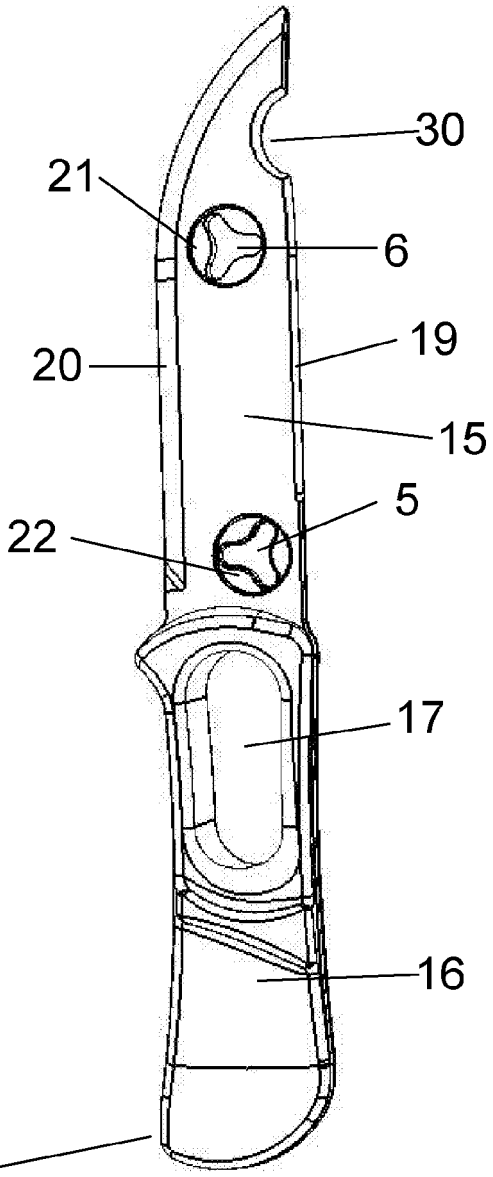

Fig. 2B

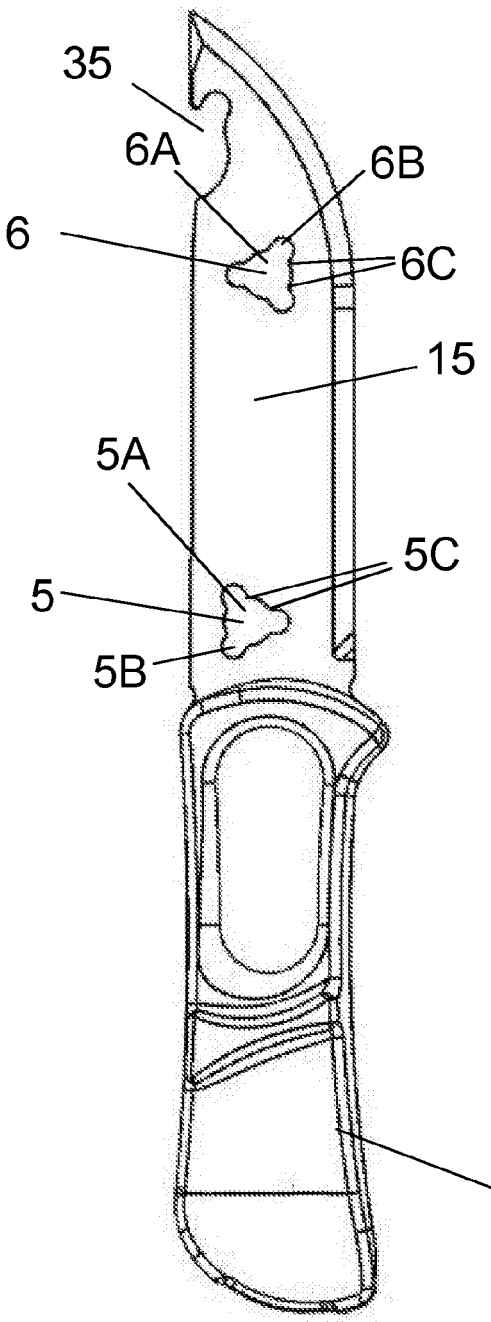

Fig. 3A

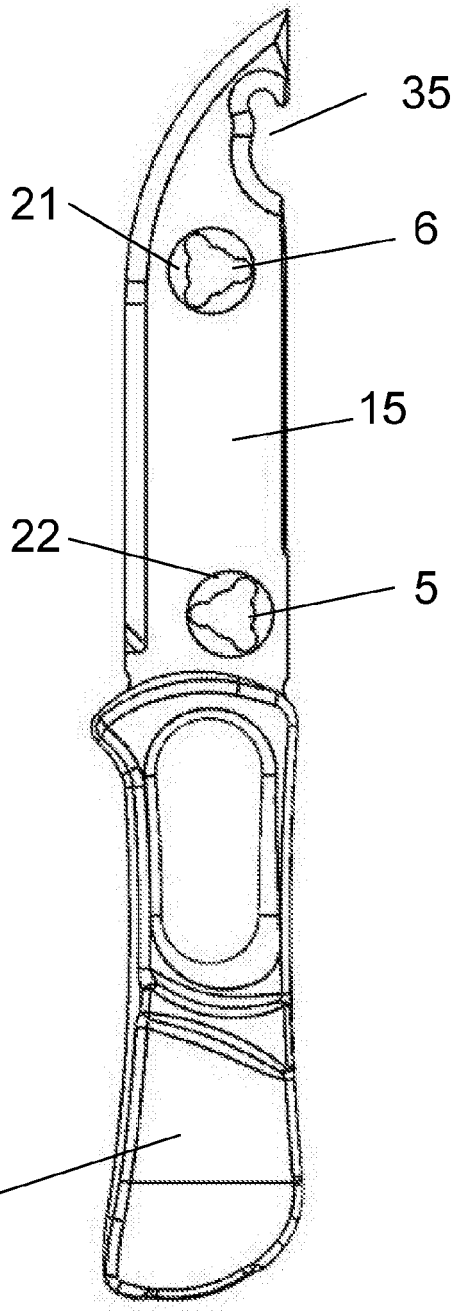

Fig. 3B

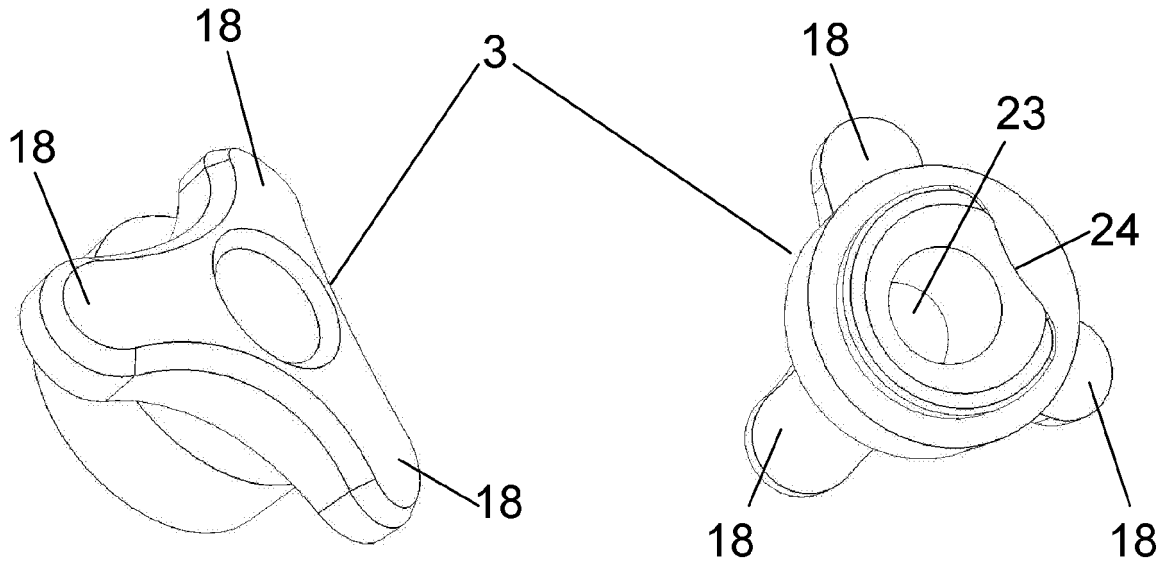

Fig. 4A

Fig. 4B

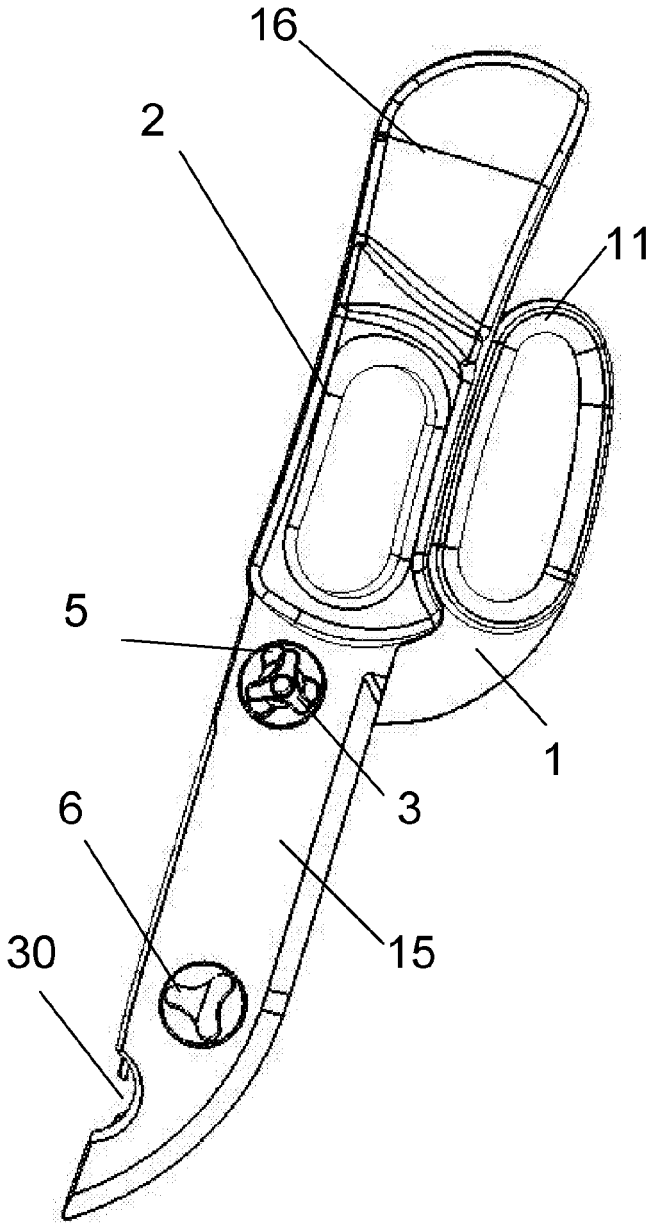

Fig. 5A

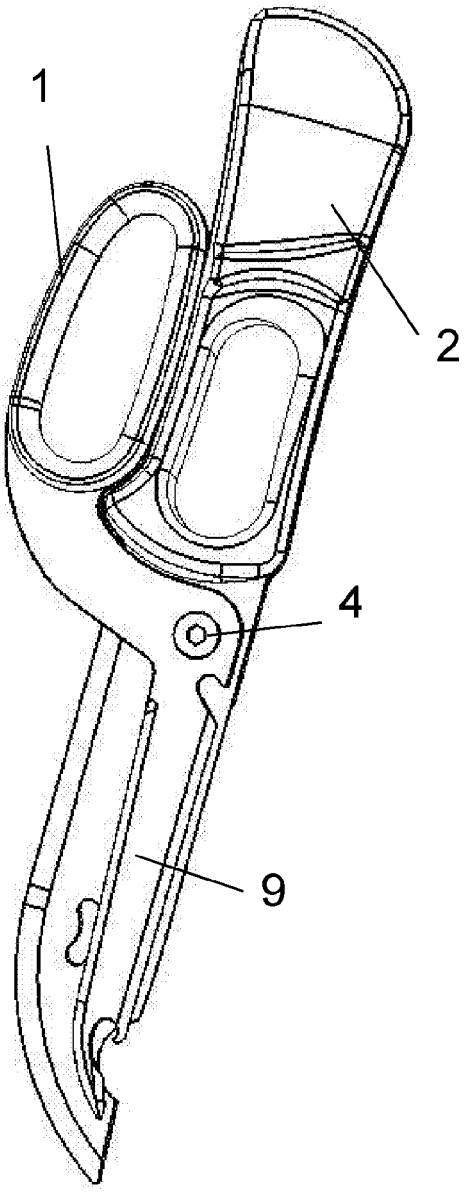

Fig. 5B

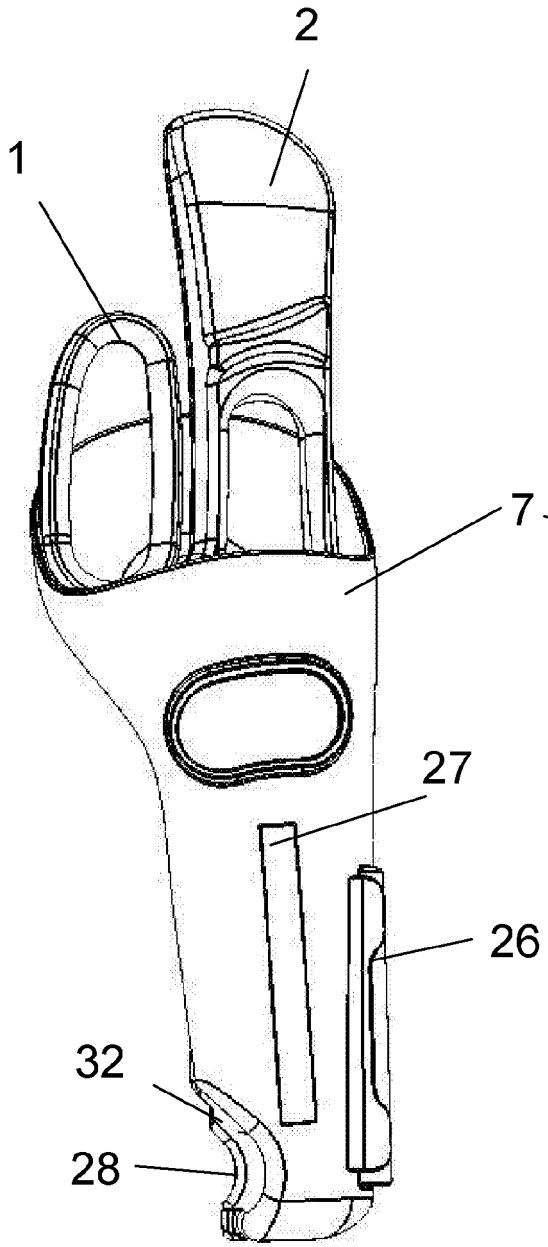

Fig. 6A

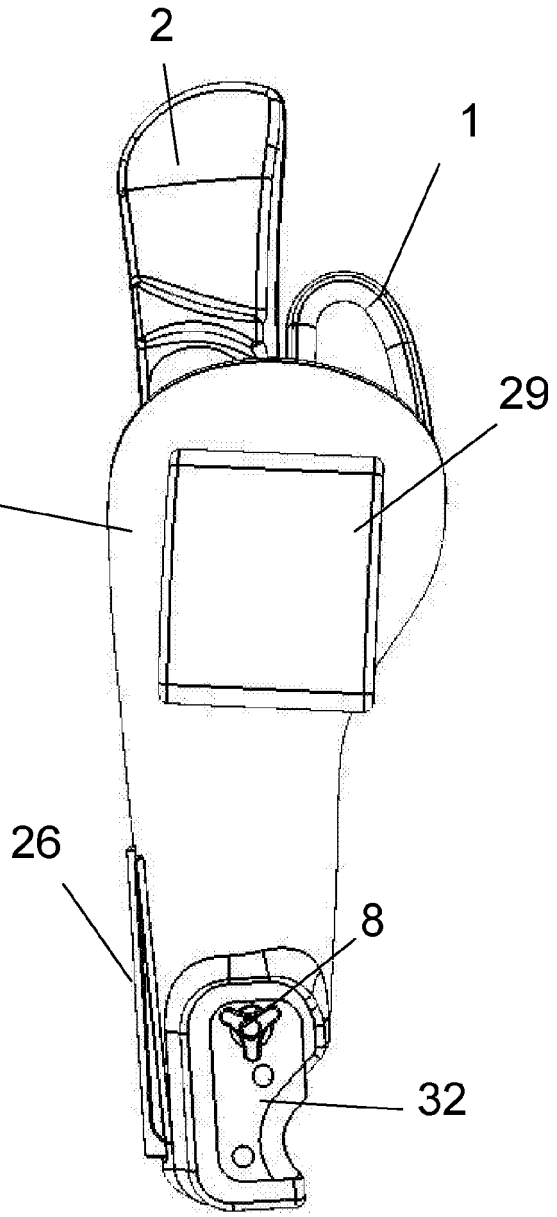

Fig. 6B

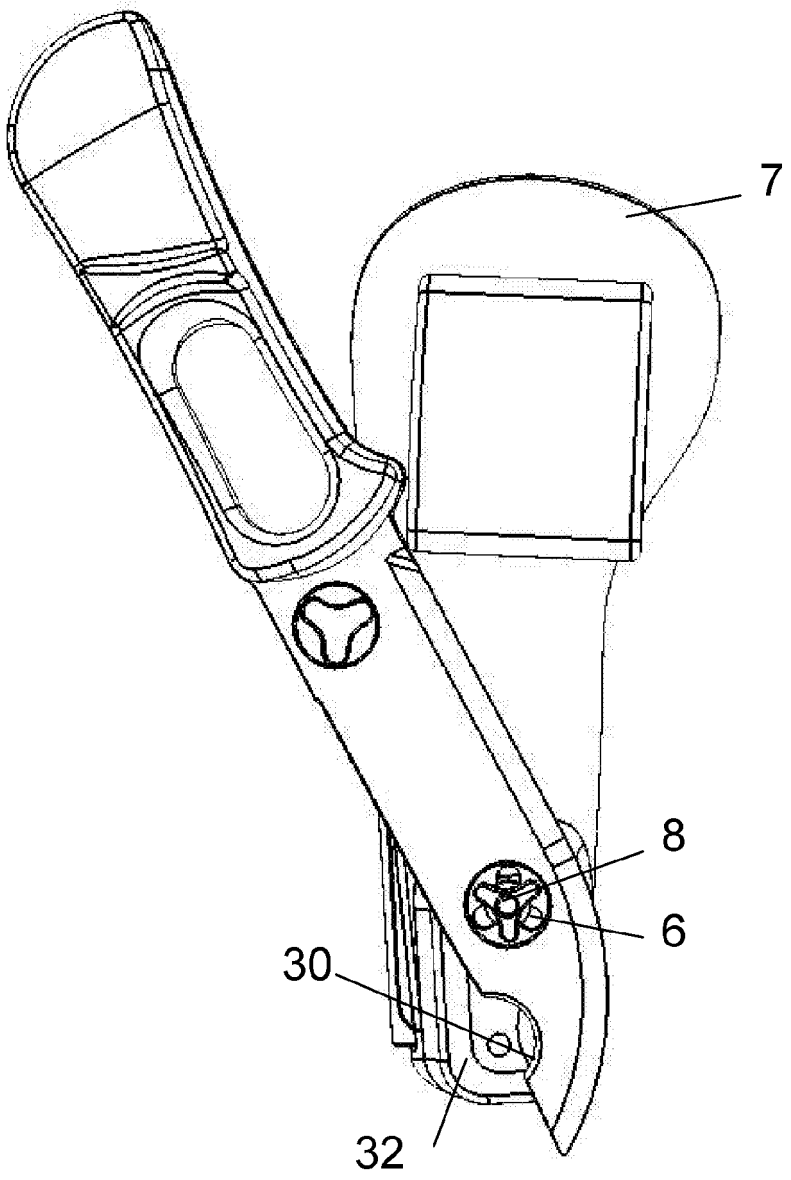

Fig. 7

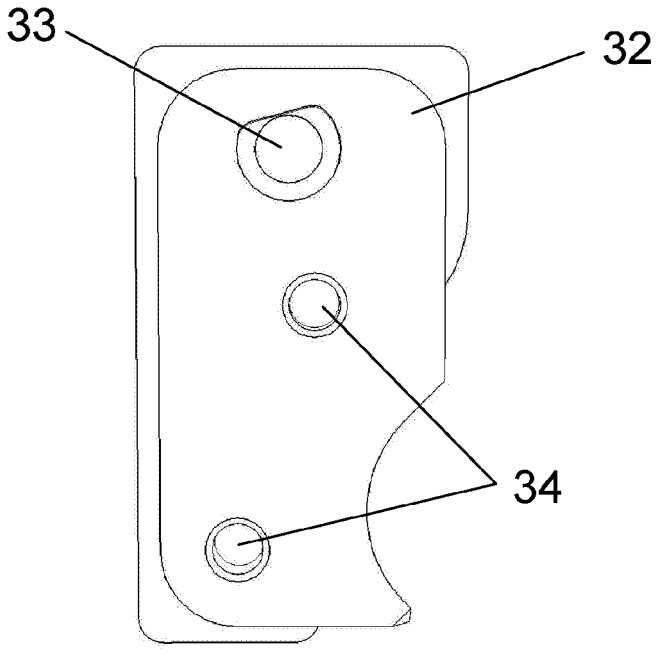

Fig. 8A

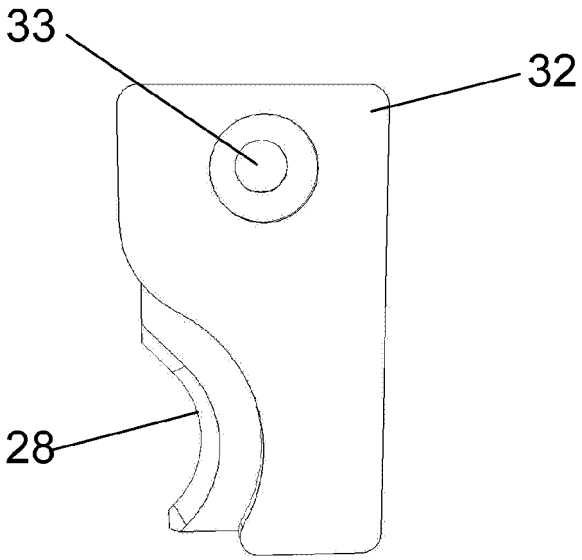

Fig. 8B

REFERENCES CITED IN THE DESCRIPTION

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