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(71) Applicant: **Master Cutlery Corporation**
Chiba 273-0865 (JP)

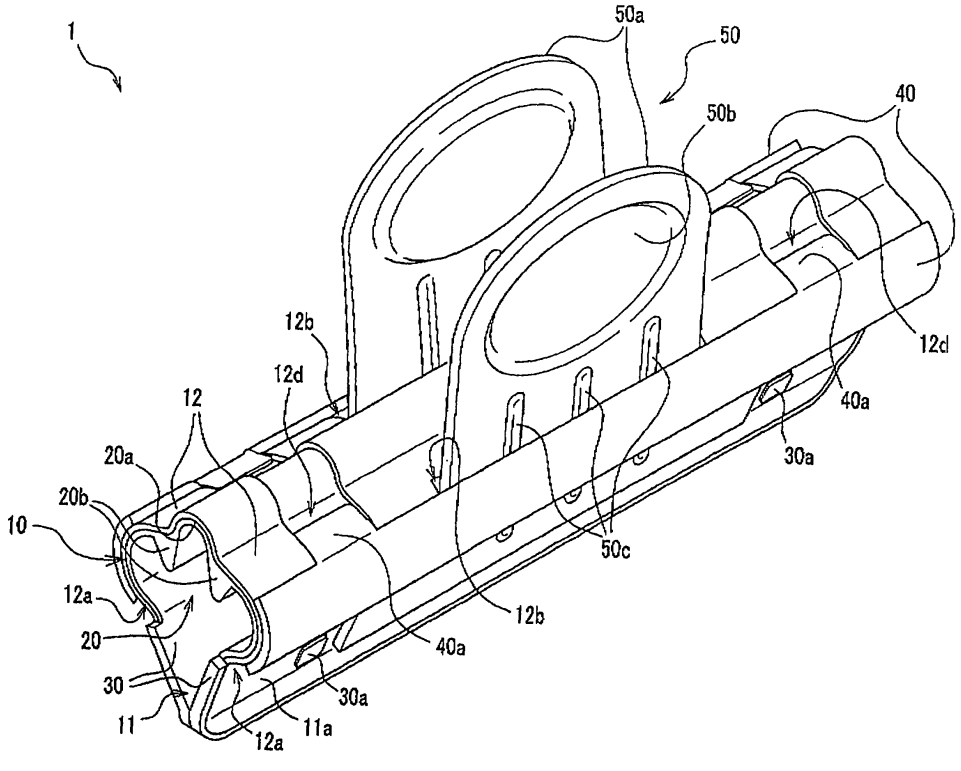
(72) Inventor: **Tsuchida, Mino,**
c/o Master Cutlery Corporation
Funabashi
Chiba 273-0865 (JP)

(74) Representative: **Carter, Stephen John et al**
Mewburn Ellis LLP
York House
23 Kingsway
London WC2B 6HP (GB)

(54) Cutting-tool holder for use in grinding

(57) A cutting-tool holder (1; 101) for use in grinding includes a pinching portion (11; 111) and a connecting portion (12; 112). The pinching portion (11; 111) includes a pair of pinching pieces (11a, 11a) configured to pinch a blade of a kitchen knife. The connecting portion (12; 112) has a generally C-shaped cross section. The connecting portion (12; 112) connects base ends of the pinching pieces (11a, 11a) with each other, and is configured to bias the pinching pieces (11a, 11a) toward each other. Further provided in the cutting-tool holder (1; 101) is a retaining portion (20; 20'; 120) disposed at an inside of the connecting portion (12; 112) and configured to retain a back of the blade of the kitchen knife pinched by the pinching pieces (11a, 11a).

FIG.3



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Description

[0001] This invention relates to an aid for sharpening a cutting tool, by which sharpness of the cutting tool can be maintained.

[0002] A kitchen knife has an edge provided with an appropriate angle, which is important for the capability of the kitchen knife and different in each food culture area where it is used.

[0003] Most kitchen knives used in Japan have an edge with an angle approximately in a range from 10 to 15 degrees. This is because they are designed to cut a material, such as a raw fish, with their edge applied to and slid along the surface of the material and such a sharp angle of the edge is expected to facilitate the sliding operation of the kitchen knives.

[0004] In contrast, kitchen knives of a type used in Western civilization (*e.g.,* in Europe and North America) typically have an edge with an angle approximately in a range from 30 to 40 degrees. This is because they are designed to cut a material, such as meat, with their edge pressed down against the material to sever it and thus require relatively great force to be applied to the kitchen knives and such a relatively greater angle is expected to avoid a nick in the edge.

[0005] Accordingly, it is to be understood that the sharpness of a kitchen knife (how well the kitchen knife cuts) depends upon the angle of the edge of its blade as determined with consideration given to the method of cutting a material which is supposed to be applied to the kitchen knife.

[0006] When the edge of a kitchen knife becomes nicked or blunted, the blade of the knife is ground on a whetstone, with the edge of the blade kept in contact with the whetstone at a predetermined angle approximately in the range from 10 to 15 degrees (or from 30 to 40 degrees) between the blade and the whetstone, so that the operation of grinding is performed repeatedly to make the edge of the blade into a shape having the predetermined angle.

[0007] It is however an operation requiring a great deal of skill to grind a blade on a whetstone while keeping such a fixed angle as above between the whetstone and the blade.

[0008] In this respect, a cutting-tool holder for use in grinding is disclosed in JP 2006-205283 A with which a contact angle between a whetstone and a blade can be easily maintained at a predetermined angle (*see* FIG. 1). The cutting-tool holder as disclosed in JP 2006-205283 will hereinafter be referred to as "conventional cutting-tool holder for use in grinding".

[0009] As shown in FIG. 1, the conventional cutting-tool holder 501 for use in grinding includes a holder body 510 and a pair of handgrips 530. The holder body 510 includes a pair of pinching portions 511 configured to hold a blade 502 (see FIG. 2) of a kitchen knife, and a connecting portion 512 with a substantially C-shaped cross section which connects the pinching portions 511. The pair of handgrips 530 is configured to assist a user in opening and closing the holder body 510. With this construction, when a blade 502, which has been pinched in the holder body 510 (thus held in the holder 501), is placed on a whetstone, and pressed from above against the whetstone as shown in FIG. 2A, the side face of the blade 502 is brought into face-to-face contact with an inner face of the lower of the pinching portions 511, and the contact angle of the blade 502 with the whetstone is set at θ_0, for example. Then, the blade 502 held in the holder 501 is caused to move to-and-fro while a pressing force applied constantly to the blade 502 from above, so as to rub against the whetstone. This operation makes the edge angle of the blade 502 into θ_0.

[0010] However, the above-described construction of the conventional cutting-tool holder 501 for use in grinding may serve to make the contact angle between the whetstone and the blade 502 into θ_0, but may be considered to require manual skill of no mean order in applying a force to the blade 502 so as to keep the contact angle constantly at θ_0 without causing the blade 502 to sway.

[0011] To be more specific, if the pressing force F_1 applied to the blade 502 toward the whetstone is weak (*i.e.,* F_1 is smaller than F), the side face of the blade 502 is separated from the inner face of the pinching portion 511, thus making the contact angle with the whetstone into θ_1 greater than θ_0, as shown in FIG. 2B. On the other hand, if the pressing force F_2 is too strong (*i.e.,* F_2 is greater than F), the contact angle of the blade 502 becomes θ_2 smaller than θ_0 during the grinding operation.

[0012] To sum up, the conventional cutting-tool holder for use in grinding, as the case may be, could disadvantageously allow the contact angle θ_0 to change depending upon the force applied to the blade during the grinding operation.

[0013] It would therefore be deemed desirable to provide a cutting-tool holder for use in grinding, with which a blade of a kitchen knife can be ground at a predetermined angle and by which sharpness of the cutting tool can be maintained.

[0014] The present invention has been made in an attempt to eliminate the above disadvantages. Illustrative, non-limiting embodiments of the present invention overcome the above disadvantages and other disadvantages not described above. However, the present invention is not required to overcome the disadvantages described above, and an illustrative, non-limiting embodiment of the present invention may not overcome any of the problems described above.

[0015] In one aspect of the present invention, there is provided a cutting-tool holder for use in grinding, which comprises a pinching portion, a connecting portion and a retaining portion. The pinching portion comprises a pair of pinching pieces configured to pinch a blade of a kitchen knife. The connecting portion has a generally C-shaped cross section which connects base ends of the pinching pieces with each other, and is configured to bias the pinching pieces toward each other. The retaining portion

is provided at an inside of the connecting portion and configured to retain a back of the blade of the kitchen knife pinched by the pinching pieces.

[0016] In the above arrangement, the retaining portion may comprise a channel formed at the inside of the connecting portion.

[0017] Alternatively, the retaining portion may comprise a recess formed between a pair of projections disposed at the inside of the connecting portion. Additionally, a channel may be formed in a surface between the projections disposed at the inside of the connecting portion.

[0018] According to the above-exemplified embodiments, the blade of the kitchen knife may be squeezed into the pinching portion in such a manner that the back of the blade comes in contact with the retaining portion. Thus, a swaying motion of the blade can be suppressed which could otherwise occur when the blade provided with the cutting-tool holder and placed on a whetstone is pressed from above, because the back of the blade is retained in the retaining portion. Consequently, the contact angle between the blade and the whetstone can be maintained constant.

[0019] In each of the above embodiments, the pinching pieces may have substantially parallel faces which are configured to come in contact with the blade of the kitchen knife. With this additional feature applied in combination, the blade can be pinched with increased stability. Furthermore, the blade, thus pinched, can be prevented from slipping during grinding operation.

[0020] The cutting-tool holder in accordance with each of the above embodiments may further comprise a reinforcing member disposed at an outside of the connecting portion. With this additional feature applied in combination, the outside of the connecting portion, which is supposed to come in contact with a whetstone, can be protected so that wear and tear can be minimized.

[0021] The cutting-tool bolder in accordance with each of the above embodiments may further comprise a gripper member which comprises a pair of handgrips corresponding to the pair of pinching pieces. In this embodiment, the connecting portion has a pair of openings disposed in positions corresponding to the pair of pinching pieces, and each of the handgrips has a first end portion, a middle portion and a second end portion. Here, the first end portion is attached to a corresponding pinching piece, the middle portion is disposed through a corresponding opening provided in the connecting portion, and the second end portion extends away from the pinching pieces. According to the embodiments with this additional features applied in combination, the cutting-tool holder can be attached to or detached from a blade of a kitchen knife with increased ease. Furthermore, since each handgrip of the gripper member is disposed (not outside but inside the connecting portion) through the opening provided in the connecting portion, the handgrips never interfere with the whetstone.

[0022] The cutting-tool holder in accordance with each of the above embodiments may further comprise a protective member covering an inner face of each pinching piece. With this additional feature, since what comes in direct contact with the blade of the kitchen knife is not the pinching portion but the protective member, the blade can be protected from being damaged, and prevented from slipping.

[0023] According to the present invention, during the grinding operation, irrespective of the user-adjusted pressing force applied to the blade when the blade is ground on a whetstone, a contact angle between the blade and the whetstone can be kept constant, with the result that the angle of an edge of the blade after grinding can be made into a predetermined angle. Accordingly, the sharpness of the kitchen knife can be maintained.

[0024] The above aspect, other advantages and further features of the present invention will become readily apparent from illustrative, non-limiting embodiments thereof with reference to the accompanying drawings, in which:

FIG. 1 is a perspective view of a conventional cutting-tool holder for use in grinding;

FIG. 2A is a sectional view of the conventional cutting-tool holder during grinding operation in which a force F is applied to a blade held in the holder;

FIG. 2B is a sectional view of the conventional cutting-tool holder during grinding operation in which the force F applied is weak;

FIG. 2C is a sectional view of the conventional cutting-tool holder during grinding operation in which the force F applied is strong;

FIG. 3 is a general perspective view of a cutting-tool holder for use in grinding according to an exemplary embodiment of the present invention;

FIG. 4 is a front elevation of the cutting-tool holder of FIG. 3;

FIG. 5A is a sectional view of the cutting-tool holder of FIG. 4 taken along line A-A;

FIG. 5B is a sectional view of an alternative example of the cutting-tool holder of FIG. 5A;

FIG. 6A is a sectional view showing a method of opening a cutting-tool holder for use in grinding according to an exemplary embodiment of the present invention, for explaining a method of attaching the holder to a kitchen knife;

FIG. 6B is a sectional view showing a state in which a blade of a kitchen knife is inserted into a cutting-tool holder for use in grinding according to an exemplary embodiment of the present invention, for explaining a method of attaching the holder to a kitchen knife;

FIG. 6C is a sectional view showing a state in which a blade is pinched by a cutting-tool holder for use in grinding according to an exemplary embodiment of the present invention, for explaining a method of attaching the holder to a kitchen knife;

FIG. 7A is a sectional view showing a state in which

a blade with a cutting-tool holder for use in grinding according to an exemplary embodiment of the present invention is placed on a whetstone, for explaining a method of grinding the blade;

FIG. 7B is a sectional view showing a state in which a blade with a cutting-tool holder for use in grinding according to an exemplary embodiment of the present invention is ground, for explaining a method of grinding the blade;

FIG. 8 is a diagram showing a state in which a cutting-tool holder for use in grinding according to an exemplary embodiment of the present invention is used;

FIG. 9 is a general perspective view of a cutting-tool holder for use in grinding according to a modified embodiment of the present invention;

FIG. 10A is a diagram showing a state in which a point of a blade is brought into contact with a retaining portion of the cutting-tool holder for use in grinding of FIG. 9, for explaining a method by which the blade of a kitchen knife is held in the holder; and

FIG. 10B is a diagram showing a step in which the blade is pinched by the cutting-tool holder for use in grinding of FIG. 9, for explaining the method by which the blade of a kitchen knife is held in the holder.

[0025] Next, some exemplary embodiments of the present invention will be described in detail, with reference made to the drawings where appropriate.

[0026] As shown in FIGs. 3 and 4, a cutting-tool holder 1 for use in grinding according to an exemplary embodiment of the present invention includes a holder body 10 configured to pinch a blade of a kitchen knife, a retaining portion 20 provided in the holder body 10, a protective member 30 fixed to an inner surface of the holder body 10, a reinforcing member 40 fixed to an outer surface of the holding body 10, and a gripper member 50 attached to the holder body 10. As shown in FIG. 5A, the cutting-tool holder 1 is shaped symmetrically with respect to a plane (central axis as indicated by a chain line C in sectional view of FIG. 5A).

[0027] The holder body 10 includes a pinching portion 11 and a connecting portion 12. The pinching portion 11 includes a pair of pinching pieces 11a, 11a configured to pinch a blade of a kitchen knife. The connecting portion 12 is a member which connects base ends of the pinching pieces 11a, 11a with each other. These components 11 (11a, 11a) and 12 of the holder body 10 are formed integrally of a single sheet of steel, stainless steel or other materials stamped into a predetermined shape as illustrated.

[0028] Each pinching piece 11a of the pinching portion 11 includes, as shown in FIG. 5A, a tip end portion 11b configured to hold a side of a blade when the blade is pinched, and a base end portion 11c integrally formed with the connecting portion 12 and thus connected therewith at a corresponding opening 12a provided in the connecting portion 12. The pinching piece 11a has a substantially L-shaped cross section and arranged so that a face of the tip end portion 11b which is configured to come in contact with the blade of the kitchen knife when the blade is pinched is substantially parallel to the side of the blade. This configuration makes it possible to stably hold the blade of the kitchen knife. Moreover, with this configuration, the blade to be pinched is prevented from being slid, and thus the back of the blade once engaged with the retaining portion 20 which will be described later would never come off during grinding operation.

[0029] The pinching piece 11a further includes substantially rectangular punched holes 11d (*see* FIG. 4) in which projections 30a of the protective member 30 which will be described later are fitted.

[0030] The connecting portion 12 has a generally rectangular shape as viewed in front elevation as shown in FIG. 4, and a generally C-shaped cross section as shown in FIG. 5A. The connecting portion 12 is thus configured to bias the pinching pieces 11a, 11a toward each other.

[0031] As shown in FIG. 5A, each opening 12a of the connecting portion 12 has its lower edge defined by an end face of the corresponding base end portion 11c. To the holder body 10 is thus imparted an elasticity such that the pinching pieces 11a, 11a are pressed (biased) against each other when the holder body 10 is closed and tend to approach to some extent when the holder body 10 is opened by the gripper member 50.

[0032] Also punched in the connecting portion 12 are openings 12b and 12c (*see* FIG. 5A) for gripper member 50 and openings 12d (*see* FIG. 3) for reinforcing members 40.

[0033] The protective member 30 is a member for preventing scratches or flaws which would be made on the sides of the blade if the blade were brought directly into contact with the pinching pieces 11a, 11a, and thus made, for example, of a material, such as polyethylene (PE) or other synthetic resins, which is lower in hardness than the blade. The shape of the protective member 30 is, in this embodiment, substantially the same as that of the holder body 10, so that the protective member 30 covers an inner surface of the holder body 10 almost in its entirety. The protective member 30 may be provided partially, for example, over an inner face of each pinching piece 11a alone. Alternatively or additionally, the protective member 30 may preferably but not necessarily be provided over a channel (or recess) 20a, which will be described later, formed at the inside of the connecting portion 12 so that the back of the blade can be fitted and engaged into the channel 20 with increased ease. Alternatively or additionally, the protective member 30 covering the inner face of each pinching piece 11a may be configured to extend out of its end and to further cover the tip end portion 11b (particularly over an end face thereof) of the pinching piece 11a, as shown in FIG. 5A. This configuration serves to prevent damage to the blade which could otherwise result from contact of the blade with the tip end portion 11b of the pinching piece 11a. The protective member 30 may be fixed to the inner surface of the holder body 10 with an adhesive, or with the

projections 30a provided in positions corresponding to openings 11 provided in the pinching piece 11a as in the present embodiment. According to the present embodiment, each projection 30a has a barb engageable with edges of a corresponding opening 11 of the pinching piece 11a, so that once the projections 30a are fitted into the openings 11, the protective member 30 is fixed to the holder body 10. The protective members 30 have openings 30b and 30c for gripper member 50 punched therein, through which handgrips 50a, 50a that will be described later are inserted therethrough.

[0034] The retaining portion 20 according to the present embodiment includes a pair of projections 20b, 20b and a channel 20a formed (as a recess) in a surface between the projections 20b and 20b. The channel 20a formed at the inside of the connecting portion 12 is contoured by an inner surface of a generally U-shaped cross section of the connecting portion 12. The inside of the channel 20a may have a curved cross section as in the present embodiment, but the present invention is not limited thereto; alternatively, the inside of the channel 20a may have a rectangular cross section. The channel 20a has dimensions enough to accommodate the back of the blade.

[0035] The projections 20b, 20b are made of the protective members 30 shaped like ribs which extend along respective edges of the channel 20a formed at the inside of the connecting portion 12, and protrude from the channel 20a toward the pinching pieces 11a. The projections 20b, 20b are integral parts of the protective member 30. The inside of the channel 20a is also covered by the protective member 30. Although the shape of the channel 20a in the present embodiment is provided by the contour of the inner surface of the connecting portion 12 between the projections 20b and 20b, the channel 20 may be shaped by the projections 20b, 20b (as a recess formed between the projections 20b and 20b).

[0036] Since the retaining portion 20 (comprised of the channel 20a and the projections 20b, 20b in the present embodiment) is provided in the connecting portion 12 as described above, the back of the blade is fitted and retained in the holder body 10 when the cutting-tool holder 1 is attached to the blade. Accordingly, the force applied to the blade from above during grinding operation would never cause the contact angle between the whetstone and the blade to change, and thus the blade can be ground with the contact angle kept constant.

[0037] Although the embodiment illustrated in FIG. 5A has been described with an example having specific dimensions and proportion for exemplary purposes, the dimensions and proportion of the whole structure and each component may be modified as the case may be. For example, the retaining portion 20 illustrated in FIG. 5A may be designed differently; e.g., like a retaining portion 20' illustrated in FIG. 5B in which the channel 20a' is deeper than the channel 20a because the recess in the inner surface of the connecting portion 12 in FIG. 5B is deeper than that in FIG. 5A and the projections 20b', 20b' are longer than the projections 20b, 20b. The deeper channel 20' such as to hold substantially half or more of the dimension of a blade of a kitchen knife from its back to its edge may be preferable depending on an application, because the blade is fixed more stably in the holder 1 for grinding operation so that the kitchen knife can be ground with the contact angle between the blade and a whetstone kept constant during the grinding operation. Accordingly the grinding operation can be performed with increased precision and improved safety, and may result in a desirably uniform edge of the blade.

[0038] The retaining portion 20 (20') comprised of the channel 20a (20a', 20a') or recess and the projections 20b, 20b (20b', 20b') may preferably but not necessarily have a generally V-shaped cross section, in that the retaining portion 20 (20') shaped like this can be engageable with any blade having different widths.

[0039] The reinforcing member 40, of which two are provided at an outside of the connecting portion 12 in this embodiment, has a substantially rectangular shape as viewed from the front as shown in FIG. 4, but the present invention is not limited to this particular configuration; any shape and arrangement may be possible as long as it serves to enhance the rigidity of the connecting portion 12 at its outside by covering the outer surface of the connecting portion 12.

[0040] The reinforcing member 40 is fixed on an outer surface of the connecting portion 12 by spot welding or the like, and besides, by means of projections 40a provided such that they are fitted in the openings 12d (*see* FIG. 3) for reinforcing member 40. The engagement of the projections 40a of the reinforcing member 40 with the openings 12d of the connecting portion 12 can enhance the fixation of the reinforcing member 40 relative to the connecting portion 12, and thus even when the blade to which the holder 1 is attached is slid across the whetstone in a direction of the length of the reinforcing member 40, the reinforcing member 40 can be anchored fast to the connecting portion 12 by the projections 40a fitted in the openings 12d.

[0041] Since the reinforcing member 40 is brought into contact with the whetstone during grinding operation, the reinforcing member 40 may preferably be made of material capable of resisting abrasion. Such abrasion-resistant material may include, for example, mild steel such as an unannealed steel material.

[0042] The gripper member 50 includes a pair of handgrips 50a, 50a. Each handgrip 50a is formed of a single sheet of steel, stainless steel or other materials stamped into a shape generally like a letter T as viewed from the front according to the present embodiment, but the shape consistent with the present invention is not limited to this embodiment.

[0043] As shown in FIG. 5A, each handgrip 50a has a first-end portion extending from one end of the handgrip 50a and fixed to an outer face of a corresponding pinching piece 11a by spot welding or the like, a middle portion adjacent the first-end portion and located in an inside

space of the holder body, and a second-end portion adjacent to the middle portion, extending to the opposite end of the handgrip 50a and located outside the holder body 10. The handgrip 50a extends from the one end into the inside space of the holder body 10 through the opening 12c for the handgrip 11a formed in the connecting portion 12 and the opening 30c for the handgrip 11a formed in the protective member 30. The handgrip 50a further extends and protrudes out from the holder body 10 through the opening 30b for the handgrip 11a formed in the protective member 30 and through the opening 12b for the handgrip 11a formed in the connecting portion 12, to the opposite end located a predetermined distance away from the connecting portion 12. Since each handgrip 50a is disposed inside the connecting portion 12 partially, it is not interfere with the whetstone during grinding operation.

[0044] In the present embodiment, each handgrip 50a has a recess 50b formed to facilitate the handling (pressing operation) of the gripper member 50, and a rib 50c formed to prevent deformation due to the force applied when the gripper member 50 is operated to pinch a blade. It is however to be understood that the recess 50b and the rib 50c are optional, and other shapes or arrangements may be adopted for similar purposes within the scope of the present invention.

[0045] With the construction as described above, when the recesses 50b, 50b are pressed in directions which cause the handgrips 50a, 50a to come closer to each other, the pinching pieces 11a, 11a are unfolded. Then, a blade is inserted through a gap between the tip end portions 11b and 11b into the unfolded pinching pieces 11a, 11a, so that the back of the blade may be accommodated in the retaining portion 20 (20'). When the pressing force applied to the recesses 50b, 50b of the handgrips 50a, 50a are abated, the biasing force derived from the elasticity of the connecting portion 12 causes the pinching pieces 11a, 11a to automatically close until the blade is pinched between the tip end portions 11b and 11b. In this way, the blade can be held in the holder 1.

[0046] Next, a description will be given of a method of grinding a kitchen knife 2 using a cutting-tool holder 1 with reference to FIGs. 6 through 8. FIGs. 6A-6C are diagrams showing a method of attaching the holder 1 to a blade of the kitchen knife 2. FIG. 6A shows a state of the cutting-tool holder 1 for explaining a method of opening the cutting-tool holder 1. FIG. 6B shows a state in which the blade of the kitchen knife 2 is inserted into the cutting-tool holder 1. FIG. 6C shows a state in which the blade is pinched by the cutting-tool holder 1. FIGs. 7A and 7B are vertical sections showing the cutting-tool holder 1 in use. FIG. 7A shows a state in which the blade held by the cutting-tool holder 1 is placed on a whetstone. FIG. 7B shows a state in which the blade held by the cutting-tool holder 1 is being ground. FIG. 8 is a perspective view showing a state in which the cutting-tool holder 1 is used to grind the kitchen knife 2.

[0047] First, a method of attaching the holder 1 to a blade of a kitchen knife 2 is described below. A user applies his/her fingers on the recesses 50b, 50b of the handgrips 50a, 50a, and presses them in directions indicated by outlined arrows in FIG. 6A. Through this operation, the pinching pieces 11a, 11a joined to the handgrips 50a, 50a are unfolded. Then, a blade 2a of the kitchen knife 2 is inserted from its back 2c through a gap between the pinching pieces 11a and 11a, as shown in FIG. 6B. The blade 2a is pressed in until the back 2c of the blade 2a is brought into contact with the protective member 30 covering the channel 20a (20a'). When the pressing force applied to the recesses 50b, 50b is abated, the biasing force derived from the elasticity of the connecting portion 12 causes the pinching pieces 11a, 11a to automatically close until the blade 2c is pinched between the tip end portions 11b and 11b as shown in FIG. 6C. In this way, the kitchen knife 2 is attached to the cutting-tool holder 1.

[0048] Next, a method of grinding a kitchen knife to which the cutting-tool holder 1 is attached is described below. The kitchen knife 2a with its blade 2a held by cutting-tool holder 1 is placed on a whetstone 3 as shown in FIG. 7A. In this state, the contact angle of the blade 2a with respect to the whetstone is set at θ.

[0049] While this state is being kept, the blade 2a with the holder 1 is slid repeatedly on the whetstone 3 with a force applied from upward to the blade 2a. In this way, the blade 2a can be ground. Referring now to FIG. 7B, which is a vertical section of the state in which the blade 2a is being ground, it is shown that even when the force is applied from upward during grinding operation, the back 2c of the blade 2a is accommodated and retained in the retainer 20 (20'), and thus the contact angle θ as shown in FIG. 7A can be kept unchanged, so that the grinding operation can be carried out with the contact angle kept constant. Consequently, the angle of the edge 2b of the blade 2a can be made into θ without fail.

[0050] After one side of the blade 2a is ground, the kitchen knife 2 to which the cutting-tool holder 1 is attached is turned upside down, and the other side of the blade 2a is ground by the same method as described above. When the kitchen knife 2 is ground, water, oil or other lubricants may be used where appropriate.

[0051] The contact angle θ may preferably be set at a predetermined angle approximately in a range from 10 to 15 degrees for Japanese cuisine, and in a range from 30 to 40 degrees for Western (European and American) cuisine.

[0052] The contact angle θ may be determined by the width of the blade and the shape of the holder. To be more specific, the smaller the radius of curvature of the generally C-shaped cross section of the connecting portion 12 is, the smaller the contact angle θ is; the larger the radius of curvature of the generally C-shaped cross section of the connecting portion 12 is, the larger the contact angle θ is. Accordingly, if the shape of the connecting portion 12 is determined in accordance with the optimum angle of the edge, the blade can be brought into contact with the whetstone at a desirable angle.

[0053] The cutting-tool holder 1 for use in grinding according to the present embodiment of the present invention has been specifically described above. Next, a cutting-tool holder 101 for use in grinding, as a modified embodiment of the cutting-tool holder 1 for use in grinding, is described below with reference to FIGs. 9 and 10A-10B. FIG. 9 is a general perspective view of the cutting-tool holder 101. FIG. 10A is a diagram showing a state in which a point of a blade 102a is brought into contact with a retaining portion 120 of the cutting-tool holder 101, and FIG. 10B is a diagram showing a step in which the blade 102a is pinched by the cutting-tool holder 101, for explaining the method by which the blade of a kitchen knife is held in the holder.

[0054] The cutting-tool holder 101 as shown in FIG. 9, unlike the cutting-tool holder 1 as described above, fails to include a gripper member 50. The retaining portion 120 is also different from the retaining portion 20 (20') of the cutting-tool holder 1, and fails to include projection 20b (20b').

[0055] The cutting-tool holder 101 includes a holder body 110, a retaining portion 120, a protective member 130, and a reinforcing member 140. The holder body 110 includes a pinching portion 111 and a connecting portion 112. The connecting portion 112 is substantially the same as the connecting portion 12 described above. Similarly, the pinching portion 111, a channel 120a making up the retaining portion 120, the holder body 110, the protective member 130, and the reinforcing member 140 are substantially the same as the pinching portion 11, the channel 20a (20a') making up the retaining portion 20 (20'), the holder body 10, the protective member 30, and the reinforcing member 40, respectively. Therefore, a duplicate description of these components will be omitted herein.

[0056] A method of using the cutting-tool holder 101 is described below. First, as shown in FIG. 10A, a back 102c of a blade 102a of a kitchen knife is oriented to face a channel 120a as the retaining portion 120, and a point 102d is brought into contact with the channel 120a. Then, as shown in FIG. 10B, the kitchen knife is pressed toward the holder body 110. In this way, the blade 102a of the kitchen knife is held in the pinching portion 111. Subsequently, the blade 2a is ground, following the method as described above. With the cutting-tool holder 101 for use in grinding, as well, the blade of the kitchen knife can be ground with a contact angle with a whetstone kept constant at a predetermined angle.

[0057] It is contemplated that numerous modifications may be made to the exemplary embodiments of the invention without departing from the scope of the embodiments of the present invention as defined in the following claims.

Claims

1. A cutting-tool holder (1; 101) for use in grinding, comprising:

a pinching portion (11; 111) comprising a pair of pinching pieces (11a, 11a) configured to pinch a blade of a kitchen knife;
a connecting portion (12; 112) with a generally C-shaped cross section which connects base ends of the pinching pieces (11a, 11a) with each other, and is configured to bias the pinching pieces (11a, 11a) toward each other; and
a retaining portion (20; 20'; 120) provided at an inside of the connecting portion (12; 112) and configured to retain a back of the blade of the kitchen knife pinched by the pinching pieces (11a, 11a).

2. The cutting-tool holder according to claim 1, wherein the retaining portion (20; 20'; 120) comprises a channel (20a; 20a'; 120a) formed at the inside of the connecting portion (12; 112).

3. The cutting-tool holder according to claim 1, wherein the retaining portion (20; 20') comprises a recess formed between a pair of projections (20b, 20b; 20b', 20b') disposed at the inside of the connecting portion (12).

4. The cutting-tool holder according to claim 3, wherein the retaining portion (20; 20') comprises a channel (20a; 20a') formed in a surface between the projections (20b, 20b; 20b', 20b') disposed at the inside of the connecting portion (12).

5. The cutting-tool holder according to any one of claims 1 through 4, wherein the pinching pieces (11a, 11a) have substantially parallel faces which are configured to come in contact with the blade of the kitchen knife.

6. The cutting-tool holder according to any one of claims 1 through 5, further comprising a reinforcing member (40; 140) disposed at an outside of the connecting portion (12; 112).

7. The cutting-tool holder according to any one of claims 1 through 6, further comprising a gripper member (50) which comprises a pair of handgrips (50a, 50a) corresponding to the pair of pinching pieces (11a, 11a), the connecting portion having a pair of openings (12a, 12b) disposed in positions corresponding to the pair of pinching pieces (11a, 11a), each of the handgrips (50a, 50a) having a first end portion, a middle portion and a second end portion, wherein the first end portion is attached to a corresponding pinching piece (11a, 11a), the middle portion is disposed through a corresponding opening (12a, 12b) provided in the connecting portion (12; 112), and the second end portion extends away from

the pinching pieces (11a, 11a).

8. The cutting-tool holder according to any one of claims 1 through 7, further comprising a protective member (30; 130) covering an inner face of each pinching piece (11a, 11a).

FIG.1

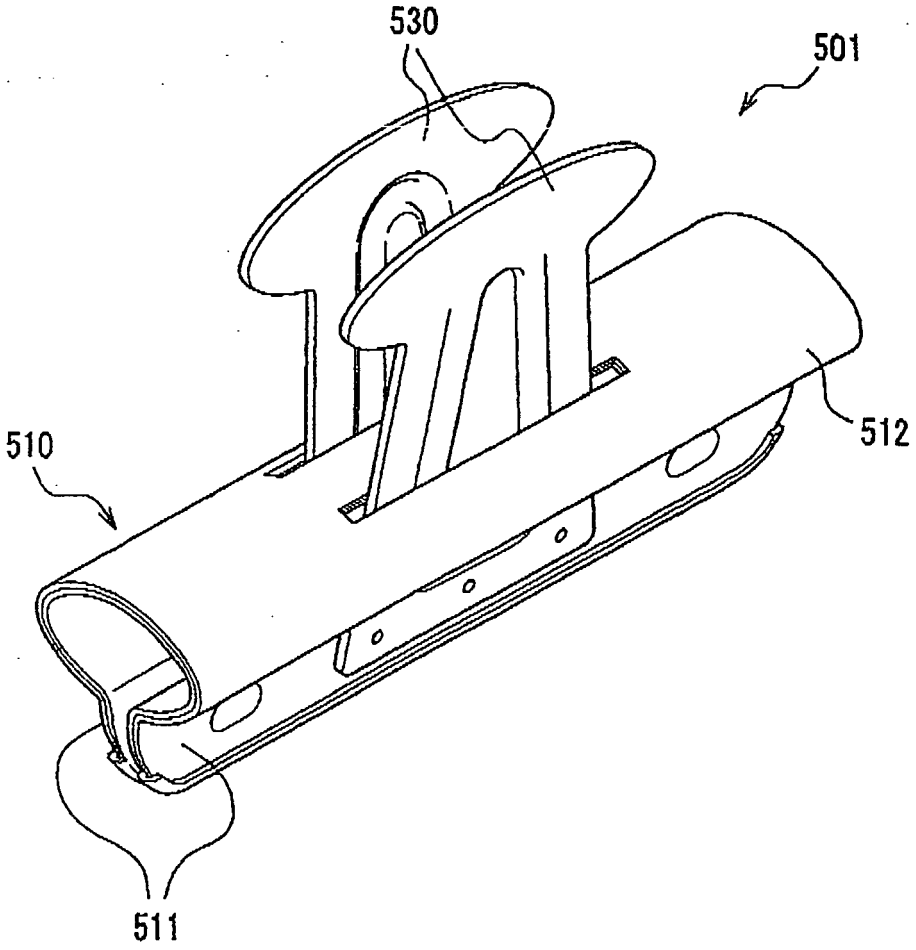


FIG.2A

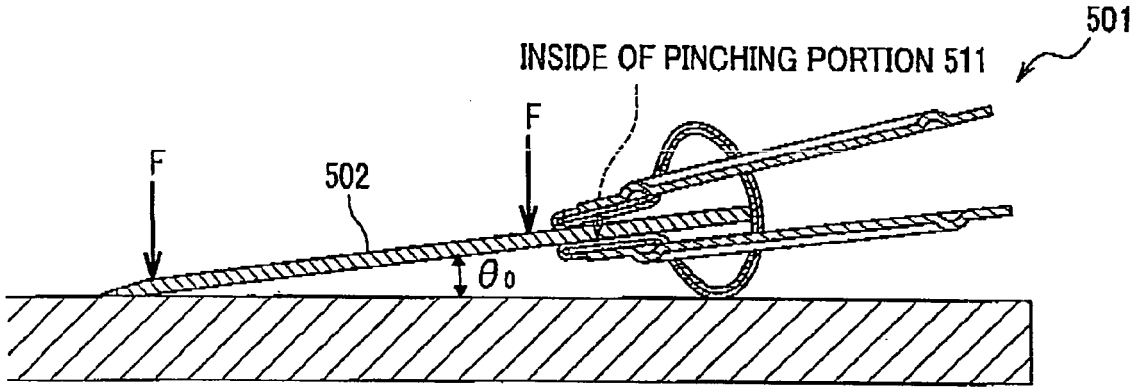


FIG.2B

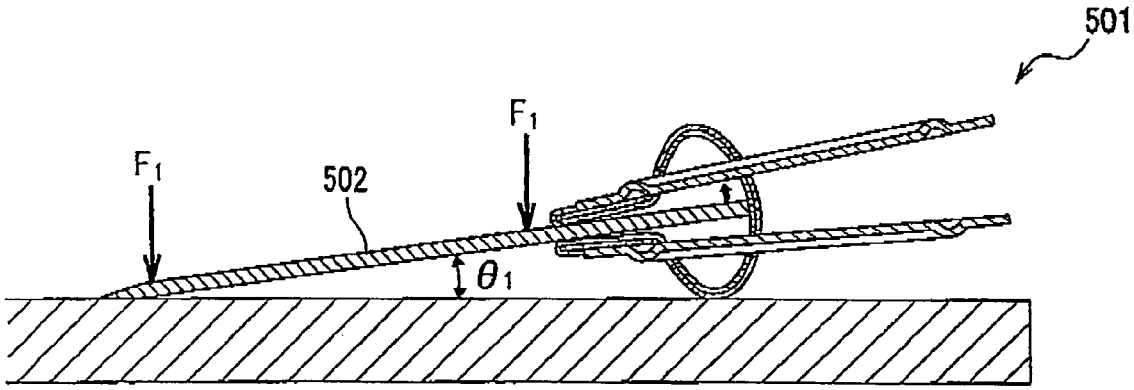


FIG.2C

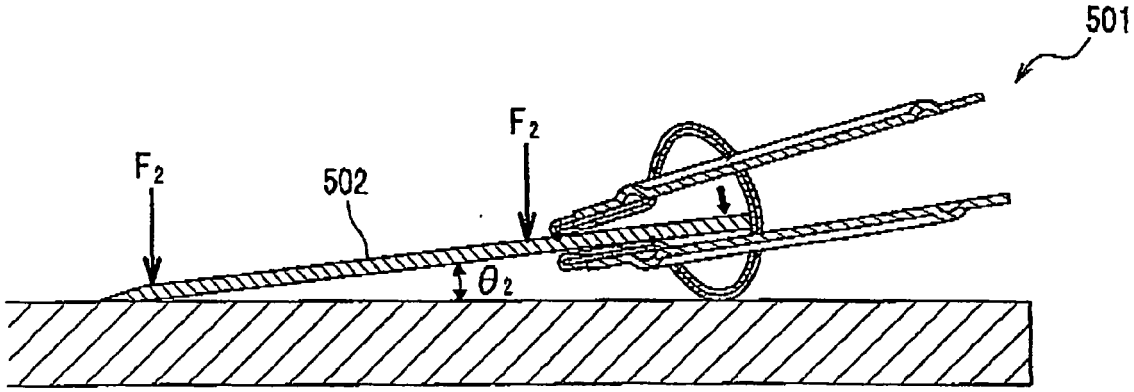


FIG.3

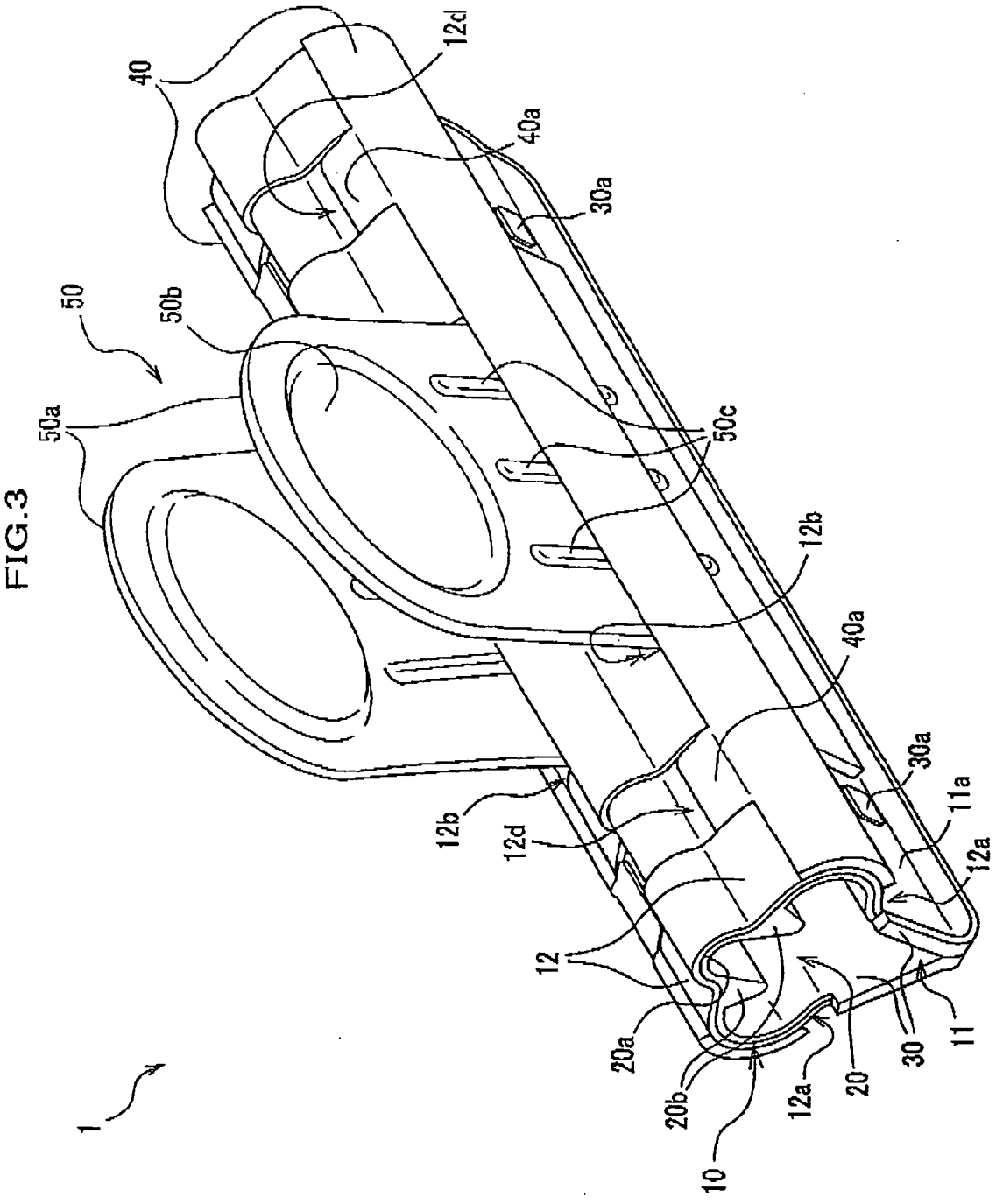

40
12c
40a
30a
50
50b
50a
50c
12b
40a
30a
11a
12a
12b
12d
12
20a
20b
10
12a
20
30
11
1

FIG.4

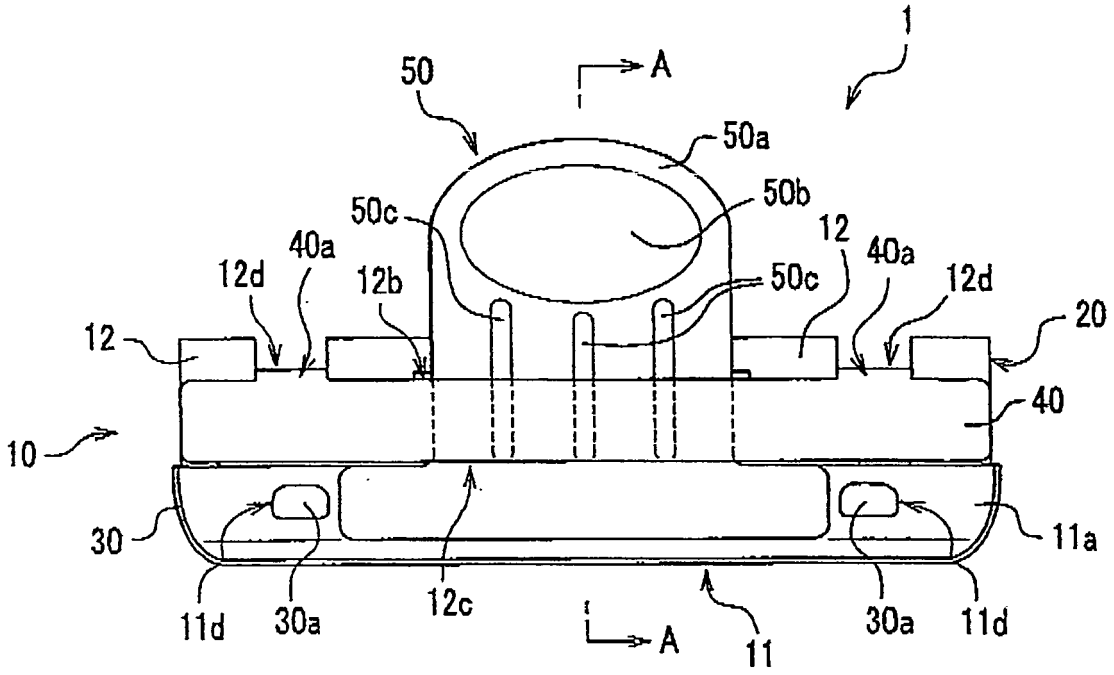
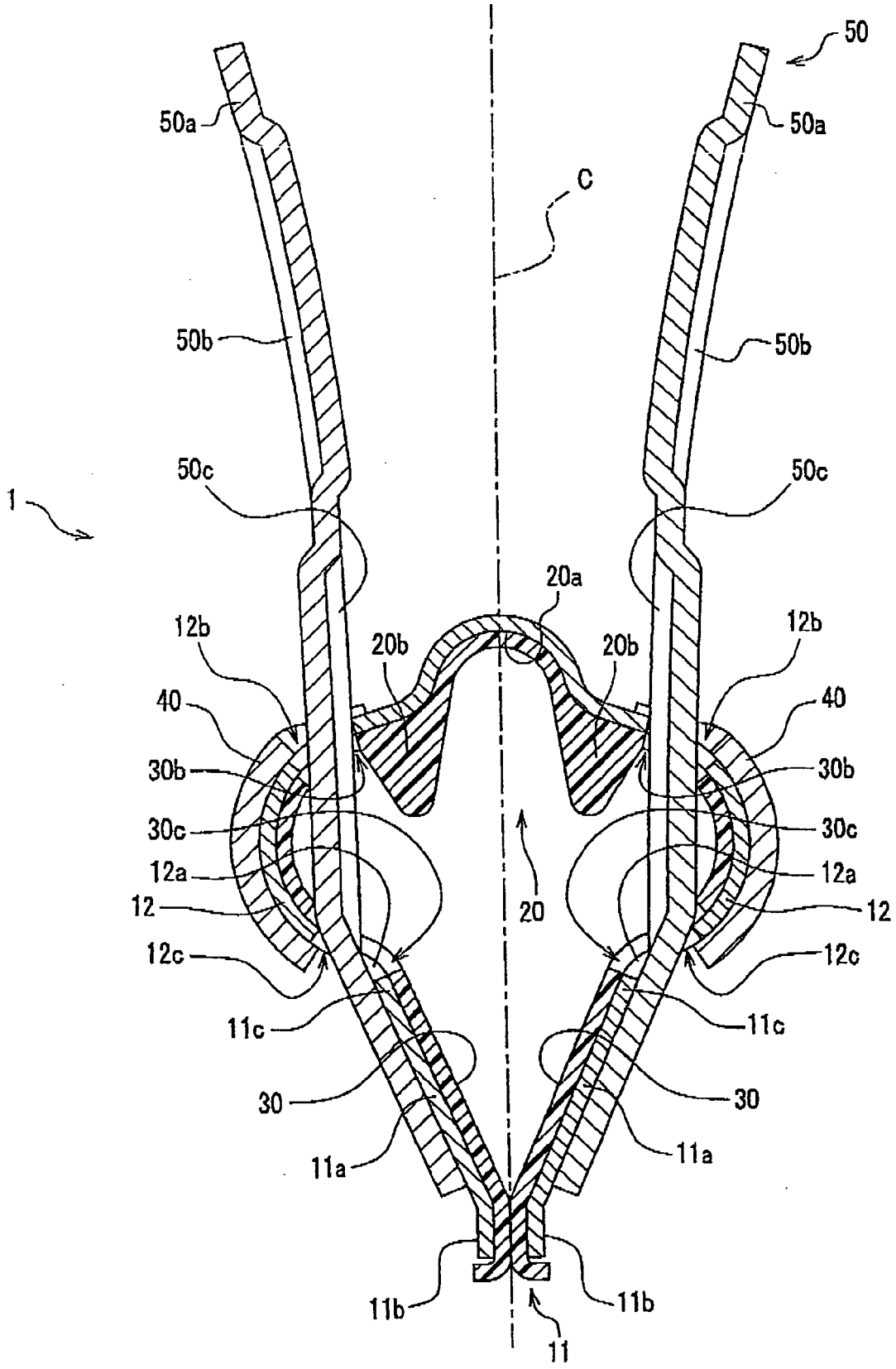


FIG.5A


50
50a
50a
C
50b
50b
50c
50c
1
20a
12b
20b
20b
12b
40
40
30b
30b
30c
30c
12a
12a
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12c
12c
11c
11c
30
30
11a
11a
11b
11b
11

FIG.5B

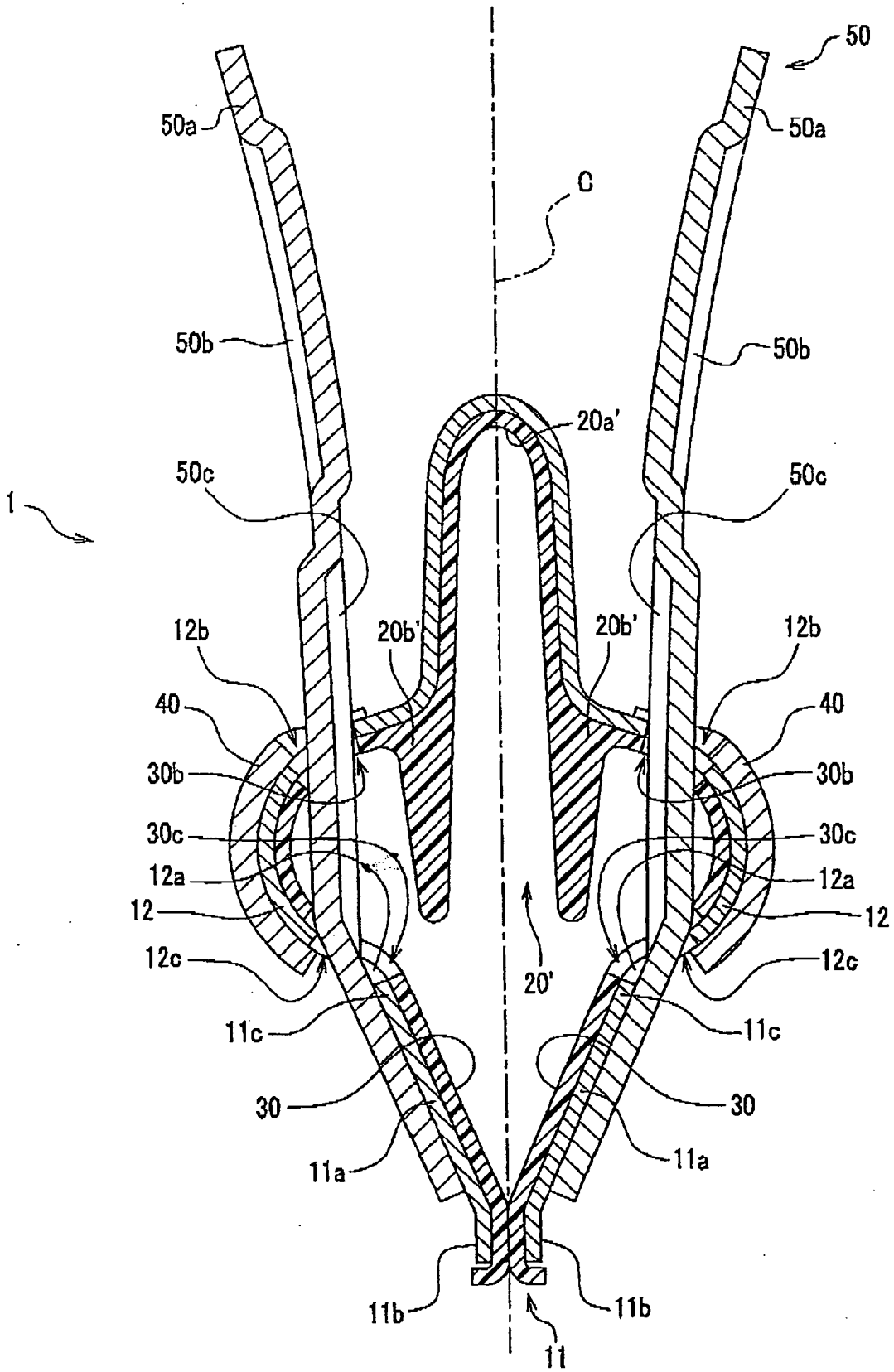

50
50a
50a
C
50b
50b
20a'
50c
50c
1
12b
20b'
20b'
12b
40
40
30b
30b
30c
30c
12a
12a
12
12
12c
12c
20'
11c
11c
30
30
11a
11a
11b
11b
11

FIG.6A

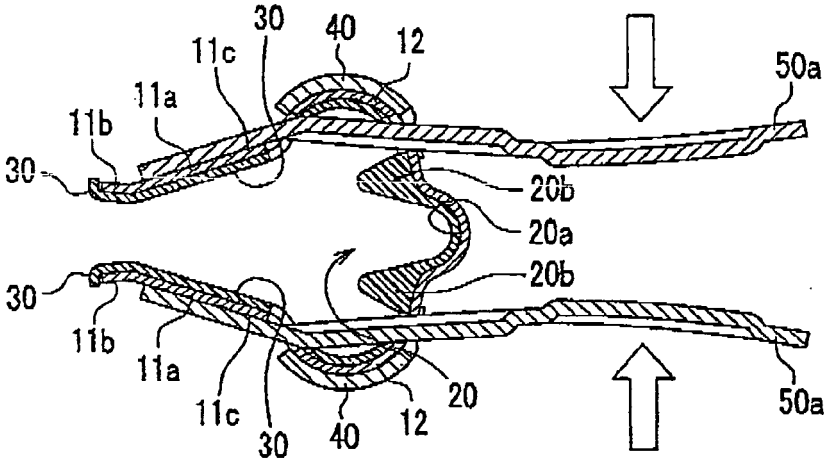


FIG.6B

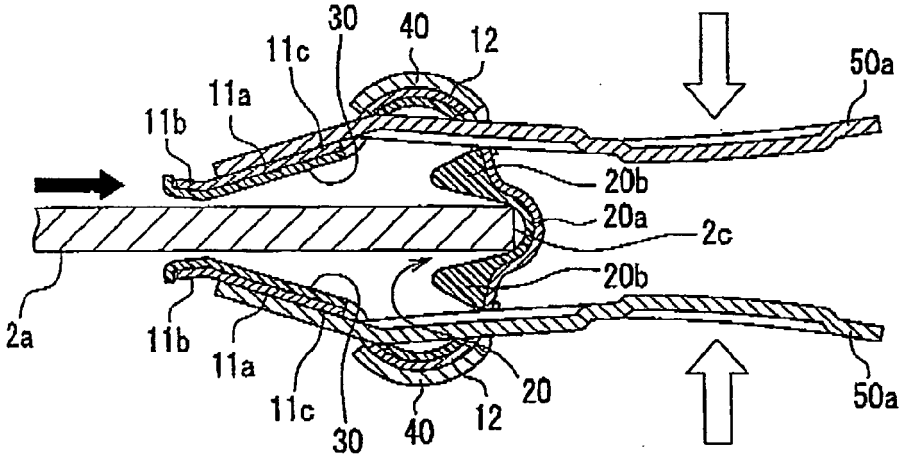


FIG.6C

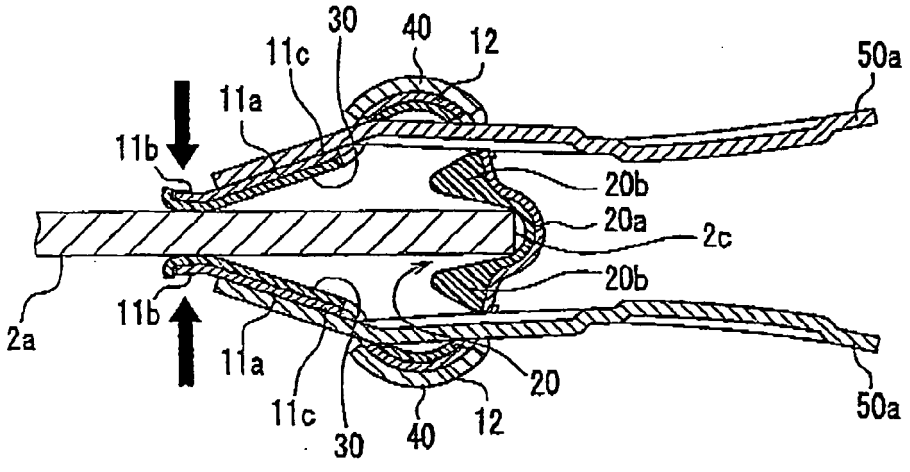


FIG.7A

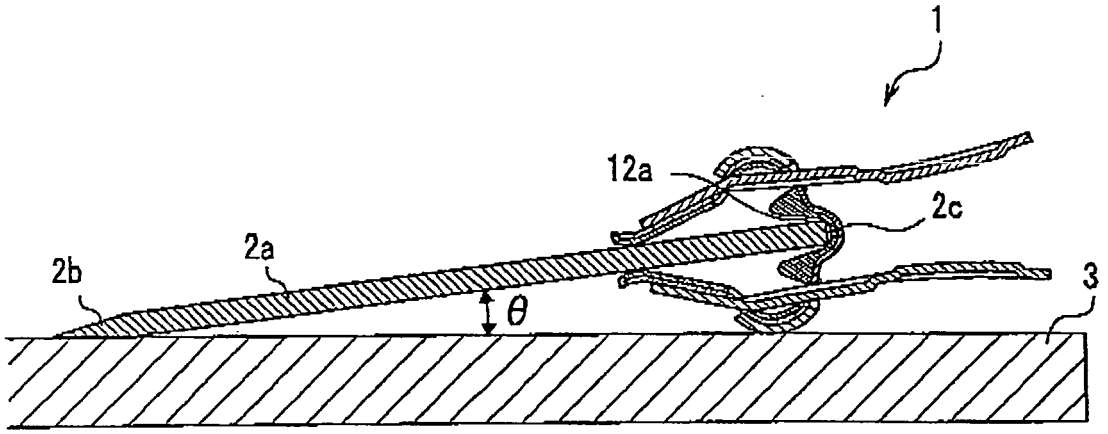


FIG.7B

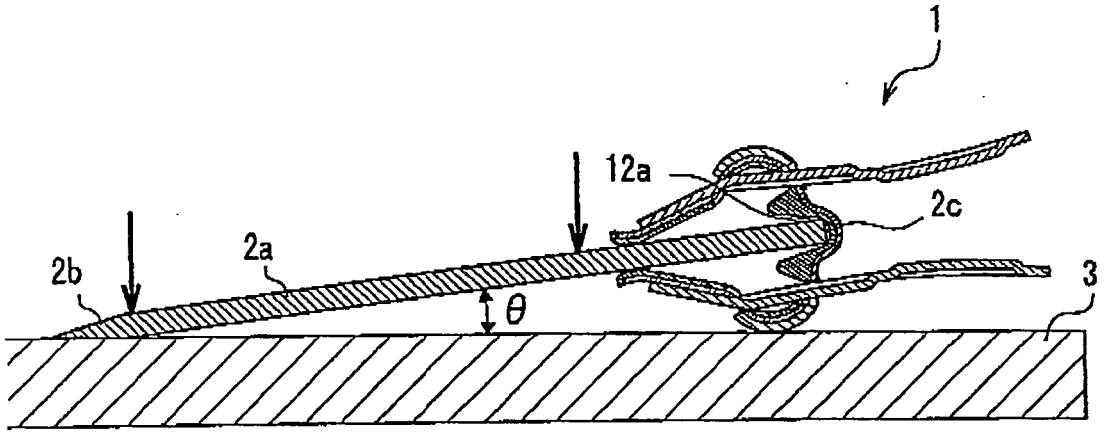


FIG.8

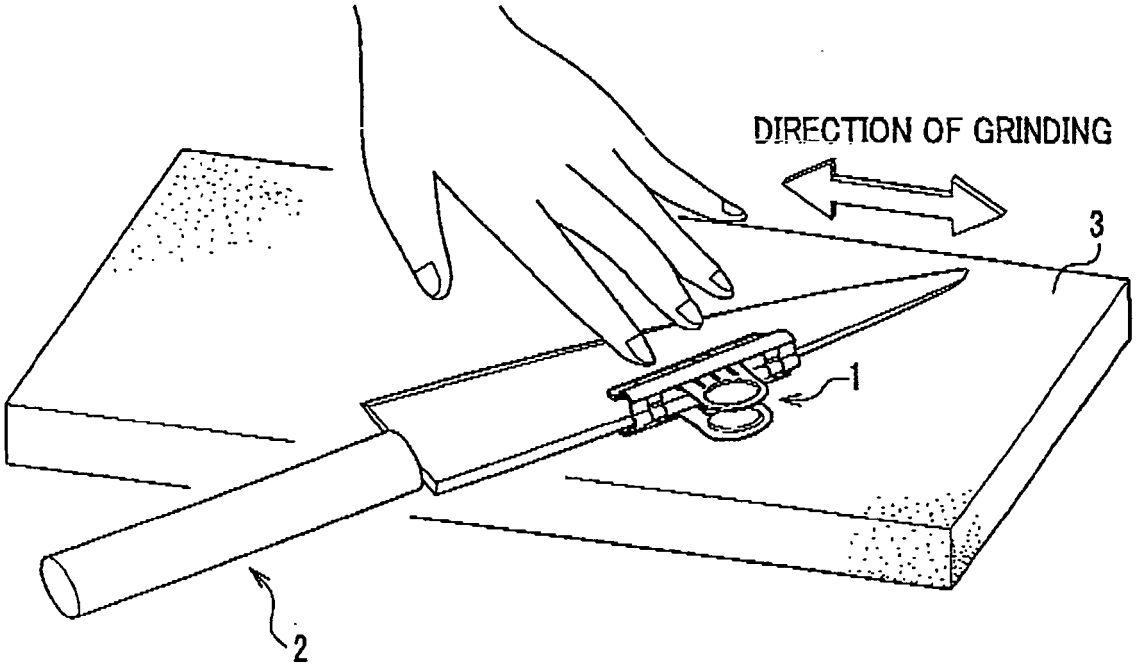


FIG.9

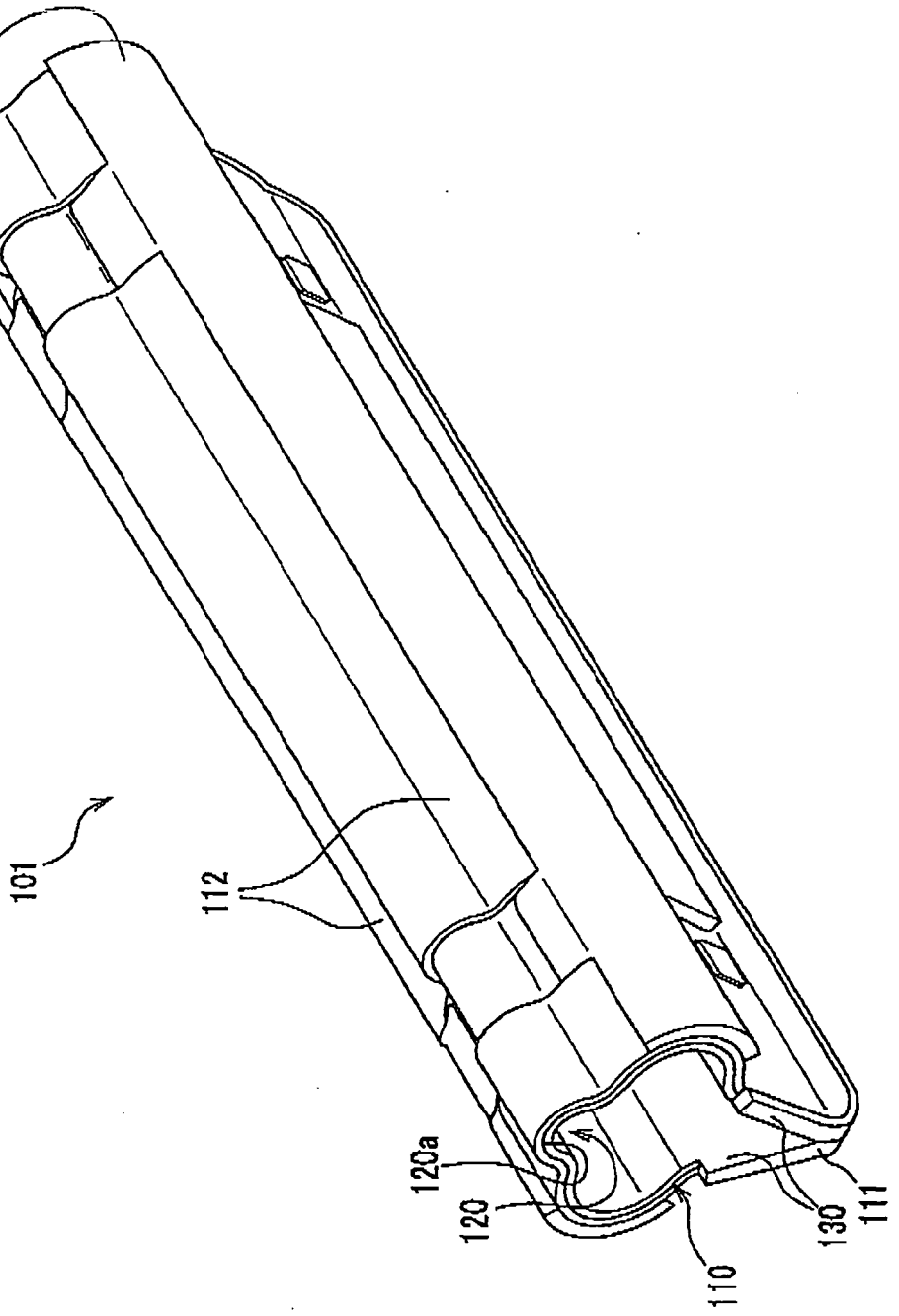


FIG.10A

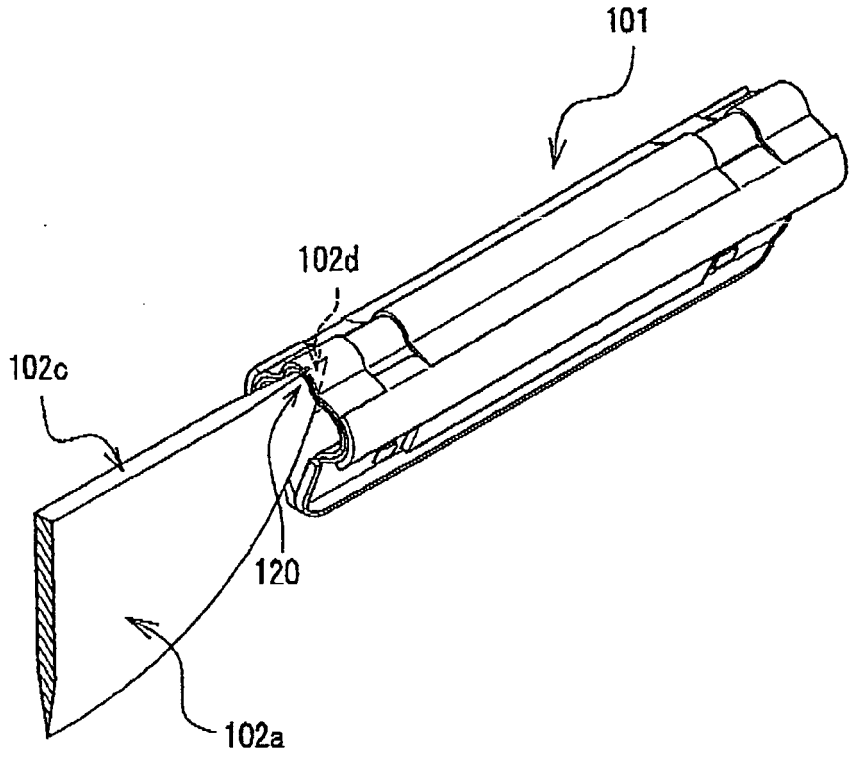
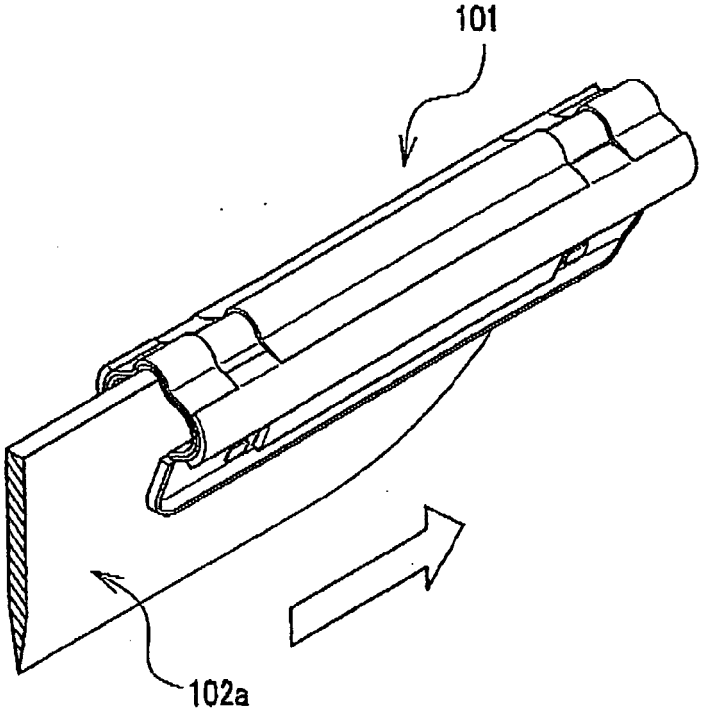


FIG.10B



European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 07 25 3513

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
D,X	AU 2005 242 117 A1 (MASTER CUTLERY CORP) 10 August 2006 (2006-08-10) * the whole document *	1,5-8	INV. B24B3/54 B24D15/08
X	US 1 470 514 A (ERNEST VOGES) 9 October 1923 (1923-10-09) * page 1, lines 8-11,35-58,63-78 *	1-8	
A	US 3 924 360 A (HAILE PAUL C ET AL) 9 December 1975 (1975-12-09) * the whole document *	1-8	
A	US 852 750 A (CEDAR SPRINGS, MICHIGAN) 9 October 1923 (1923-10-09) * page 1, lines 9-16,37-44,60-66 * * figures 1-3 *	6	

TECHNICAL FIELDS SEARCHED (IPC)

B24B
B24D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	5 November 2007	Eder, Raimund

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05-11-2007

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