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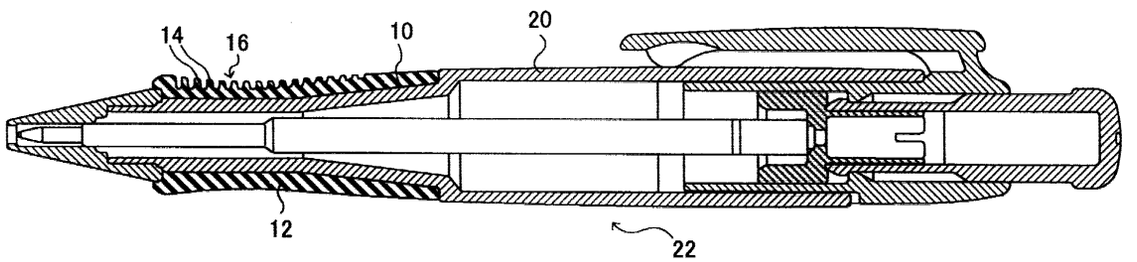
(54) Writing equipment grip and writing equipment shaft body

(57) A writing equipment grip (10) which can give an appropriate cushion effect and improve durability. A plurality of groups (16), for example, three groups including a plurality of strips (14) projecting radially which can be bent by a clamping force are provided apart from each other around the circumference of a grip body on the outer surface (12A) of the grip body. The height of each strip is set so that as viewed along a cross section parallel to each strip in each group, the strip does not project radially beyond an extension of the profile of that outer surface of the grip body where no strips are formed.

Fig.5



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Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to a writing equipment grip and a writing equipment shaft body with the writing equipment grip, and more particularly to improvements of the writing equipment grip.

Description of the Prior Art

[0002] Conventional writing equipment grips of this type are disclosed in Japanese Patent Laid-Open No. 10-181274 and No. 2000-108575, for example. All grips described in these applications are provided on their outer surface with a plurality of planar projections which project radially. Even if a grip is formed with a relatively hard material, forming such planar projections on the grip allows it to be soft for uses to touch. In addition, because planar projections allow a user's fingers clamping writing equipment to locally sink deep into the grip, the fingers is not prevented from slippery.

BRIEF SUMMARY OF THE INVENTION

Object of the Invention

[0003] However, most of the planar projections disclosed in the above-mentioned applications are formed around the entire circumference of a grip. The planar projections basically project radially beyond a body of the grip. Because of this, when the writing equipment with the grip is held, the planar projections are knocked down, thus providing a good touch. However, because a force maintaining a shape of the planar projections is weak, they can not sometimes recover from being knocked down, thus remaining being knocked down after a clamping force is removed. Further, the restoring capability of the planar projections progressively decreases due to prolonged periods of use, thus making the above described problem more serious, so that the durability of the projections deteriorates. In addition, the planar projections are knocked down one after another in series around the portion that the fingers clamps, thus causing fingers clamping a grip to tend to slidably move easily. The fingers become tired due to a burden which is rather imposed on them in opposition to such sliding movement.

[0004] It is an object of the present invention, achieved in the light of the foregoing, to provide a writing equipment grip which has an appropriate cushion effect and enhances durability and a writing equipment shaft body with such a writing equipment grip.

Summary of the Invention

[0005] According to a first aspect of the present invention, a writing equipment grip comprises a grip body and a plurality of groups comprising a plurality of radially projecting strips which can be bent under a clamping force. The groups are provided apart from each other around the circumference of the grip body on its outer surface. As viewed along a cross section parallel to each strip in each group, the height of each strip is set so that the strip does not project radially beyond an extension of the profile of that outer surface of the grip body where no strips are formed. Because each strip does not project radially beyond an extension of the profile of that outer surface of the grip body where no strips are formed, both ends of each strip are completely secured to the outer surface of the grip body in the direction of height of the strip, thus the strips being restrained. Thus the strips, which are not knocked down significantly, retaining a high restoring capability and elasticity. This arrangement enhances durability.

[0006] According to a second aspect of the present invention, a number of the groups is no more than three.

[0007] According to a third aspect of the present invention, each strip in each group extends in a circumferential direction of the grip body, and provided that each group is divided into front and rear subgroups, an average circumferential dimension of the strips in the front subgroup is set larger than an average circumferential dimension of the strips in the rear subgroup. Because clamped sections with which a user brings his or her fingers into contact tend to concentrate in the front subgroup, the circumferential dimension of the strips in the front subgroup should be adapted to be larger than the circumferential dimension of the strips in the rear subgroup, thus allowing the clamped sections to bend largely.

[0008] According to a fourth aspect of the present invention, provided that each group is divided into front and rear subgroups, an average height of the strips in a front subgroup is set larger than an average height of the strips in a rear subgroup. Because clamped sections with which a user brings his or her fingers into contact tend to concentrate in the front subgroup, the height of the strips in the front subgroup should be adapted to be larger than the height of the strips in the rear subgroup, thus allowing the clamped sections to bend largely.

[0009] According to a fifth aspect of the present invention, a writing equipment grip is formed by parts of the grip body including each group comprising the plurality of strips and a surrounding around each group, and the remaining part of the grip body integrally with each other by two-color molding. Two-color molding allows designs of the writing equipment grip to be full of variety.

[0010] According to a sixth aspect of the present invention, a writing equipment shaft body is formed by forming the writing equipment grip and a writing equipment shaft made of an inelastic material integrally with

each other by two-color molding. Forming the writing equipment grip and writing equipment shaft by two-color molding eliminates a process of attaching the writing equipment grip to the writing equipment shaft and allows designs of the writing equipment shaft body to be full of variety.

[0011] According to a seventh aspect of the present invention, the grip body is extended back to an interdigital support which supports a part between a thumb and an index finger of a user, and a group comprising a plurality of strips projecting radially which can be bent by a supporting force are provided on the interdigital support. This makes the inter-digital support more cushiony.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012]

FIG. 1 is a longitudinal sectional view showing a first embodiment of a writing equipment grip of the present invention.

FIG. 2 is a plan view of the first embodiment.

FIG. 3 is a sectional view taken along a line 3-3 in FIG. 2.

FIG. 4 is a sectional view taken along a line 4-4 in FIG. 2.

FIG. 5 is a plan view showing a writing equipment grip of the first embodiment attached to a writing equipment shaft body 22.

FIG. 6 is a sectional view illustrating use of a writing equipment grip of the first embodiment.

FIG. 7 is a longitudinal sectional view showing a second embodiment of a writing equipment grip of the present invention.

FIG. 8 is a plan view of the second embodiment.

FIG. 9 is a view showing the state in which the second embodiment of FIG. 8 is 30° turned centering around an axis of FIG. 8.

FIG. 10 is a side view showing a third embodiment of a writing equipment grip of the present invention.

FIG. 11 is a sectional view taken along a line 11-11 in FIG. 10.

FIG. 12 is a sectional view showing a fourth embodiment of a writing equipment grip of the present invention, which view is taken in parallel with a strip.

FIG. 13 is a sectional view showing a fifth embodiment of a writing equipment grip of the present invention, which view is taken in parallel with a strip.

FIG. 14 is a longitudinal sectional view showing a sixth embodiment of a writing equipment grip of the present invention.

FIG. 15 is a side view showing an embodiment of a writing equipment shaft body with a writing equipment grip of the present invention.

FIG. 16 is a sectional view taken along a line 16-16 in FIG. 15.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0013] Referring now to the drawings, embodiments of the present invention will be described below.

[0014] FIGS. 1 through 5 show a first embodiment of the present invention. In the drawings, reference numeral 10 denotes a writing equipment grip. The writing equipment grip 10 is attached to a writing equipment shaft 20. The grip 10 can be made of an elastic material, specifically synthetic rubber, silicone rubber, thermoplastic elastomer, or the like. The grip 10 has a substantially cylindrical grip body 12, which serves as the base of the grip. A plurality of groups 16 comprising a plurality of strips 14 which radially project are provided on an outer surface 12a apart from each other around the circumference of the grip body 12. The groups 16, whose number is three, are circumferentially formed at equal intervals of 120°. These groups correspond to the thumb, index finger, and middle finger, which are frequently used to hold writing equipments. The number of groups 16, which is not limited to three, may be two or one as the case may be. Although the number may also be four or more, it is preferable that the strips 14 not be divided into too many groups to provide the strips 14 with a sufficient circumferential dimension if the strips 14 extend in a circumferential direction as in the embodiment. The groups appropriately number three or less.

[0015] Each strip 14 extends in a circumferential direction. As shown in FIGS. 3 and 4, the profile of that outer surface 12a of the grip body 12 where any strips 14 are not formed is arcuate as viewed along a cross section parallel to the strips 14. Combining together extensions of discrete outer surfaces 12a forms an extension C which in turn forms a circular profile together with the profile of an outer surface 12a. Each strip 14 is at the same level as the extension C. Because the strips 14 do not project radially beyond the extension C as described above, both ends of each strip 14 are completely secured to the outer surface of the grip body 12 in the direction of height (i.e., radially) to restrain the ends. In addition, the strips 14 are not knocked down or bent significantly because the middle of the strips 14 does not project radially beyond the extension C. Thus, the strips keep high elasticity.

[0016] Because both ends of each strip 14 are bound to the grip body 12, the bend in the middle of a strip 14 in the circumferential direction is limited to a small extent if the strip 14 has a small circumferential dimension, while the middle of the strip 14 in the circumferential direction can bend largely if the strip 14 has a large circumferential dimension. In the embodiment, the strips are adapted to become progressively larger toward the front of the grip body or equal in circumferential dimension so that, provided that each group 16 is divided into front and rear subgroups 16A, 16B, the average circumferential dimension of the strips 14 in the front subgroup 16A is set larger than the average circumferential di-

mension of the strips 14 in the rear subgroup 16B, and so that the strip 14 at the front of the grip body has a maximum circumferential dimension.

[0017] Similarly, because the root of each strip 14 is bound to the grip body 12, the bend of the strips 14 is limited to a small extent if they are short, while the displacement of the top of the strips 14 is large if they are tall. In the embodiment, a plurality of strips 14 configuring each group 16 are adapted to become progressively taller toward the front of the grip body or equal in height so that the average height of the strips 14 in the front subgroup 16A is larger than the average height of the strips 14 in the rear subgroup 16B and so that the strip 14 at the front of the grip body has a maximum height.

[0018] As described above, the circumferential dimension and height of the strips are set so that the strips 14 in the front subgroup 16A bend more largely than the strips 14 in the rear subgroup.

[0019] As shown in FIG. 5, the writing equipment grip 10 is placed around the outer circumference of the writing equipment shaft 20 to configure a writing equipment body 22 together with the writing equipment shaft 20. The writing equipment shaft 20 can be configured by one member or a plurality of members, including a front shaft and a rear shaft.

[0020] As shown in FIG. 6, when a user holds the writing equipment body 22, with the writing equipment grip 10 clamped between fingers, the clamping force bends the strips 14. Although clamped sections with which a user brings fingers into contact differ depending on an individual user, majority of users tend to clamp sections positioned in the front subgroup 16A of a group 16. Because the strips 14 in the front subgroup 16A are adapted to bend more largely than the strips 14 in the rear subgroup 16B, effects of cushion and slip prevention are sufficiently provided. Among all the strips 14 in each group 16, strips 14 which come into direct contact with fingers and strips 14 which are adjacent to those strips 14 and are affected by those strips 14 bend mainly in the middle in the circumferential direction. On the other hand, because both ends of each strip 14 are bound to the grip body 12, it deforms only slightly, and a large restoring force acts on each strip. Thus the strips do not give too soft a touch to a user but offer proper hardness, so that a user is less tired even after a long time of writing.

[0021] When a user releases the writing equipment shaft body 22, thus removing a clamping force from it, the strips 14 immediately return to their original standing position due to their high elasticity. Because of their structure, the strips 14 have a high restoring capability, so that durability can be improved.

[0022] FIGS. 7 through 9 show a second embodiment of the present invention. A writing equipment grip 10-2 of the embodiment differs from the writing equipment grip of the first embodiment in that the circumferential dimension of each strip 14-2 in each group 16-2 is largest at a section a little back from the front end of each group 16-2. Except this difference, the writing equipment grip 10-2 is the same as in the case of the first embodiment. The section at which the circumferential dimension is largest corresponds to a section which most people clamp. As is the case with the first embodiment, in this embodiment also, provided that each group is divided into a front and rear subgroups 16A, 16B, an average circumferential dimension of the strips 14-2 in the front subgroup 16A is larger than an average circumferential dimension of the strips 14-2 in the rear subgroup 16B, and the average height of the strips 14-2 in the front subgroup 16A is larger than the average height of the strips 14-2 in the rear subgroup 16B. Thus maximizing the circumferential dimension at the section to make it easier for the strips to bend so that a sufficient cushion effect is obtained as in case of the first embodiment.

[0023] FIGS. 10 and 11 show a third embodiment, in which a writing equipment grip 10-3 is attached to the writing equipment shaft body 22. On the writing equipment grip 10-3, two groups 16-3 comprising a plurality of strips 14-3 which project radially are provided apart from each other around the circumference of a grip body 12-3. As viewed along a cross section parallel to the strips 14-3, combining together extensions of the profiles of those outer surfaces 12-3a of the grip body 12-3 where no strips 14-3 are formed forms an extension C-3 which in turn forms an oval profile together with the profile of the outer surface 12-3a. Because each strip 14-3, which is at the same level as the extension C-3, does not project beyond the extension C-3, the same effect as in the first embodiment can be obtained.

[0024] As described above, a profile comprising a grip body on which no strips are formed and its extensions is not limited to a circular shape but can be given any shape. FIGS. 12 and 13 are sectional views illustrating fourth and fifth embodiments, which views are taken along a cross section parallel to strips. In each example, profiles comprising a grip body have a shape other than a circle.

[0025] On a writing equipment grip 10-4 in FIG. 12, three groups 16-4 comprising a plurality of strips 14-4 which project radially are provided apart from each other around the circumference of a grip body 12-4. Combining together extensions of the profiles of those outer surfaces of the grip body 12-4 where no strips 14-4 are formed forms an extension C-4 which in turn forms a triangular profile together with the profile of the outer surfaces. Each strip 14-4 is at the same level as the extension C-4. Similarly as the first embodiment, the strips 14-4 in the front subgroup of each group 16-4 may have a larger circumferential dimension or a larger height than the strips 14-4 in the rear subgroup.

[0026] On a writing equipment grip 10-5 in FIG. 13, two groups 16-5 comprising a plurality of strips 14-5 which project radially are provided apart from each other around the circumference of a grip body 12-5. Combining together extensions of the profiles of outer surfaces

of the grip body 12-5 where no strips 14-5 are formed forms an extension C-5 which in turn forms a substantially oval profile together with the profile of the outer surfaces. Each strip 14-5 is at the same level as the extension C-5. Similarly as the first embodiment, the strips 14-5 in the front subgroup of each group 16-5 may have a larger circumferential dimension or a larger height than the strips 14-5 in the rear subgroup.

[0027] FIG. 14 shows a sixth embodiment. The writing equipment grip 10-6 in FIG. 14, differs from the writing equipment grip of the first embodiment (and those of the second through fifth embodiments) in that surrounding parts 12-6b of a grip body 12-6 which surround and include the groups 16-6 comprising a plurality of strips 14-6, and the other parts 12-6c of the grip body 12-6 are formed integrally with each other by two-color molding. Except this difference, the writing equipment grip 10-6 is the same as in the case of the first embodiment (and the second through fifth embodiments). The strips 14-6 and the surrounding parts 12-6b of the grip body 12-6 are made of an elastic material, such as synthetic rubber, silicone rubber, or thermoplastic elastomer, while the remaining parts 12-6c may be made of the same elastic material or material other than an elastic material. Alternatively, instead that the strips 14-6, the surrounding parts 12-6b of the grip body 12-6, and its remaining parts 12-6c are made of the same material, they may be made of materials differing in color to improve design.

[0028] FIG. 15 shows another embodiment of the writing equipment shaft body with a writing equipment grip. In the embodiment, any of the writing equipment grips 10 to 10-6, described by using the first to sixth embodiments, and a writing equipment shaft 20-7 made of an inelastic material are formed integrally with each other by two-color molding to form the writing equipment shaft body. In the embodiment, the same writing equipment grip 10-7 as in case of the second embodiment and the writing equipment shaft 20-7 made of an inelastic material are formed integrally with each other by two-color molding. A body 12-7 of the writing equipment grip 10-7 is extended backward, and groups 16-7 comprising a plurality of strips 14-7 projecting radially from the grip body 12-7 are provided on an interdigital support which supports a part between a thumb and an index finger of a user. The strips 14-7 can be bent by a supporting force between the interdigital portion of a user. This has a cushion effect on not only the tips of the fingers but the part between the fingers, thus providing a user with a better touch feeling.

[0029] Like the height of the other strips 14-1 through 14-6, the height of the strips 14-7 is set so that they do not project radially beyond a circular profile C-7, that is, an extension of that outer surface of the grip body where no strips 14-7 is formed as shown in FIG. 16. Because of this, the strips 14-7 have a high restoring capability and high durability.

[0030] In the embodiments described above, the strips extend in the circumferential direction, but the present invention is not limited to this direction. The strips can be intended to extend in an axial direction. In this case, setting the height of the strips so that they do not project beyond an extension of the profile of that outer surface of the grip body where no strips are formed and completely securing both ends, that is, the front and rear ends of a strip to the outer surface of the grip body in the direction of height (i.e., radially) provides the same effect as in the above embodiments.

[0031] As described above, according to the present invention, a user holding a writing equipment shaft body can be provided with an appropriate cushion effect, and strips exercising such a cushion effect which project radially have a high restoring capability and high durability.

Claims

1. A writing equipment grip, comprising: a grip body, and a plurality of groups comprising a plurality of strips projecting radially which can be bent by a clamping force, said group provided apart from each other around the circumference of the grip body on the outer surface of the grip body, a height of each strip being set so that as viewed along a cross section parallel to each strip in each group, the strip does not project radially beyond an extension of the profile of that outer surface of the grip body where no strips are formed.

2. The writing equipment grip according to claim 1, wherein a number of said groups is more than three.

3. The writing equipment grip according to claim 1, wherein each strip in each group extends in a circumferential direction, and provided that each group is divided into a front and rear subgroups, an average circumferential dimension of the strips in the front subgroup is set larger than an average circumferential dimension of the strips in the rear subgroup.

4. The writing equipment grip according to claim 1, wherein provided that each group is divided into a front and rear subgroups, an average height of the strips in the front subgroup is set larger than an average height of the strips in the rear subgroup.

5. The writing equipment grip according to claim 1, wherein a part of the grip body including each group comprising said plurality of strips and a surrounding around each group, and the remaining part of the grip body are formed integrally with each other by two-color molding.

6. A writing equipment shaft body, wherein the writing equipment grip according to any one of the preced-

ing claims and a writing equipment shaft made of an inelastic material are formed integrally with each other by two-color molding.

7. The writing equipment grip according to claim 1, wherein said grip body is extended backward to an interdigital support which is adapted to support a part between fingers of a user and a group comprising a plurality of strips projecting radially which can be bent by a supporting force are provided on the interdigital support.

Fig.1

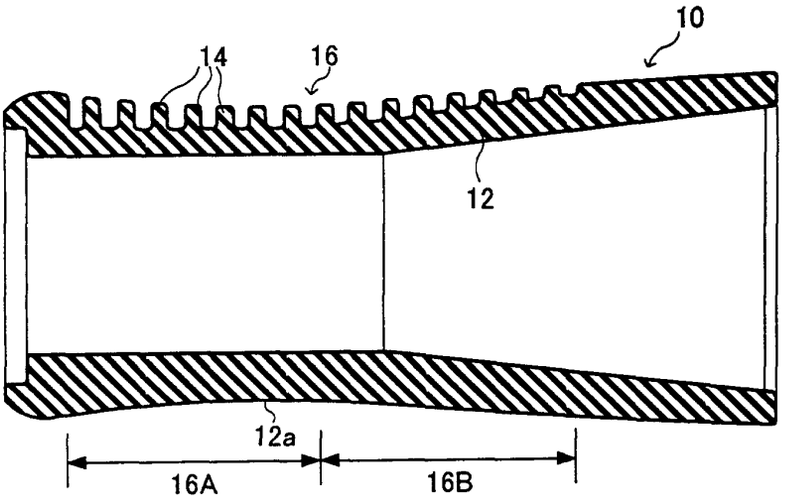


Fig.6

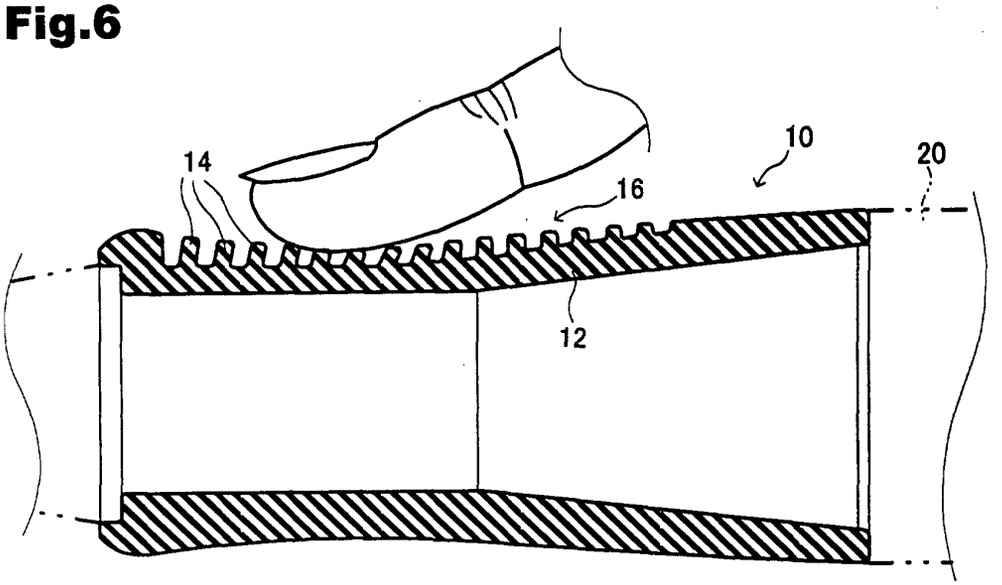


Fig.2

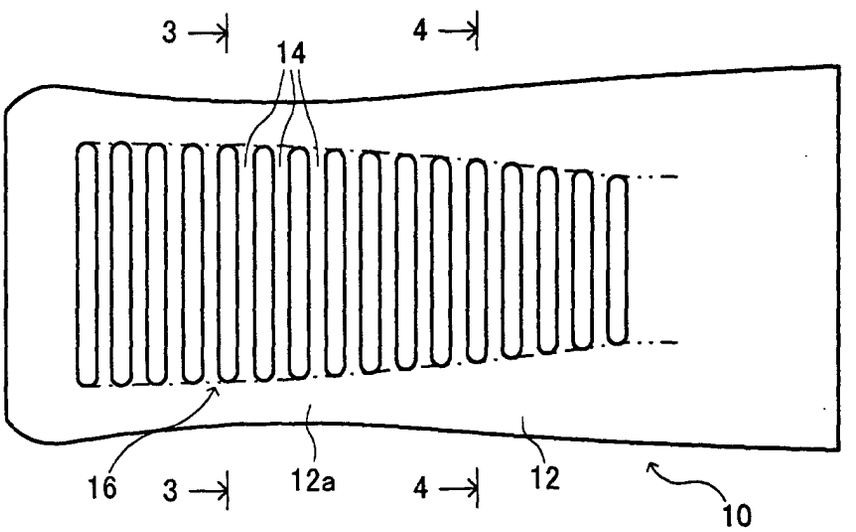


Fig.3

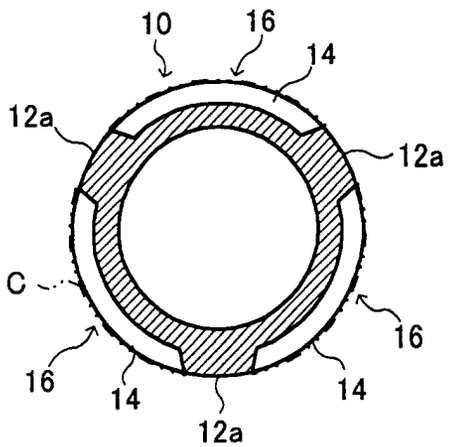
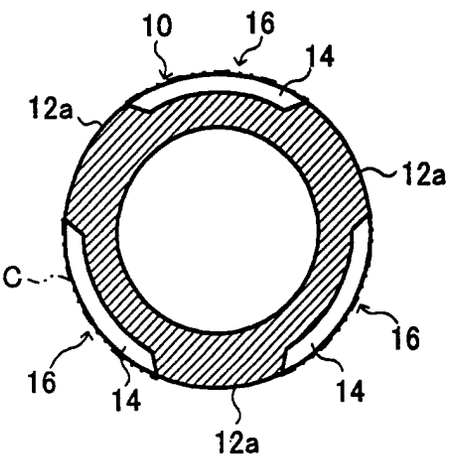


Fig.4



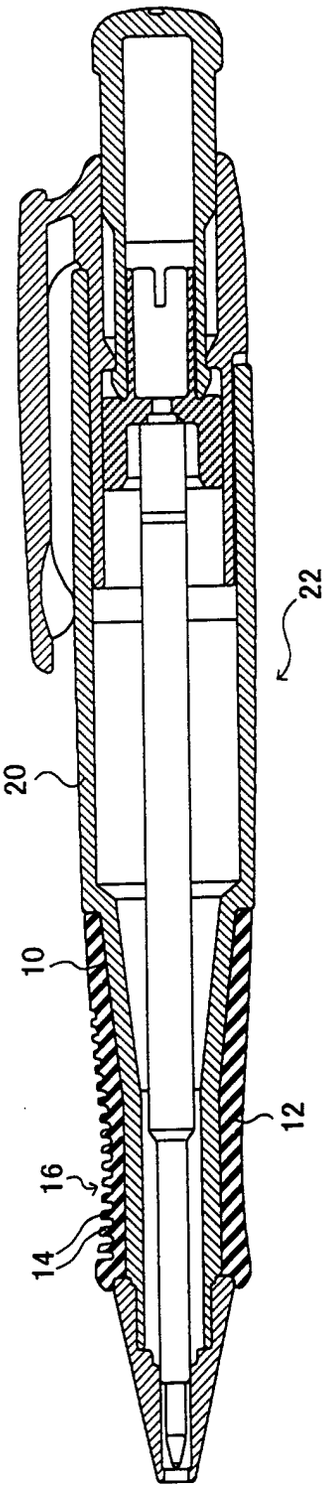


Fig.5

Fig.7

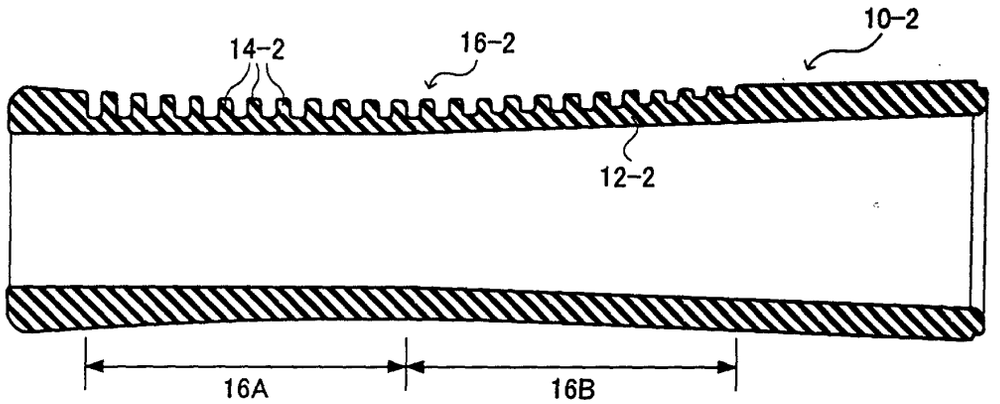


Fig.8

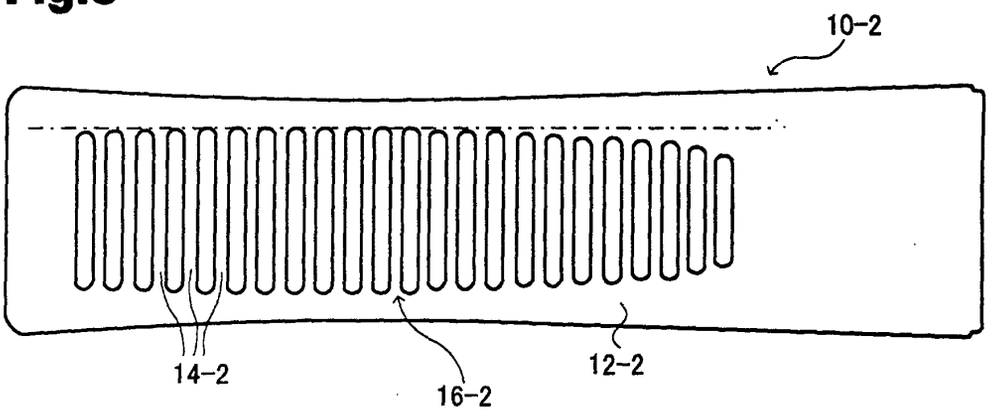


Fig.9

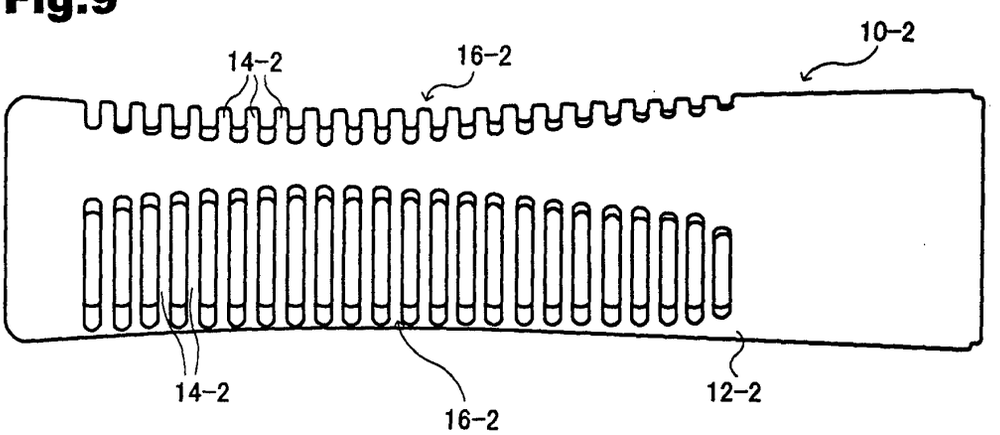


Fig.10

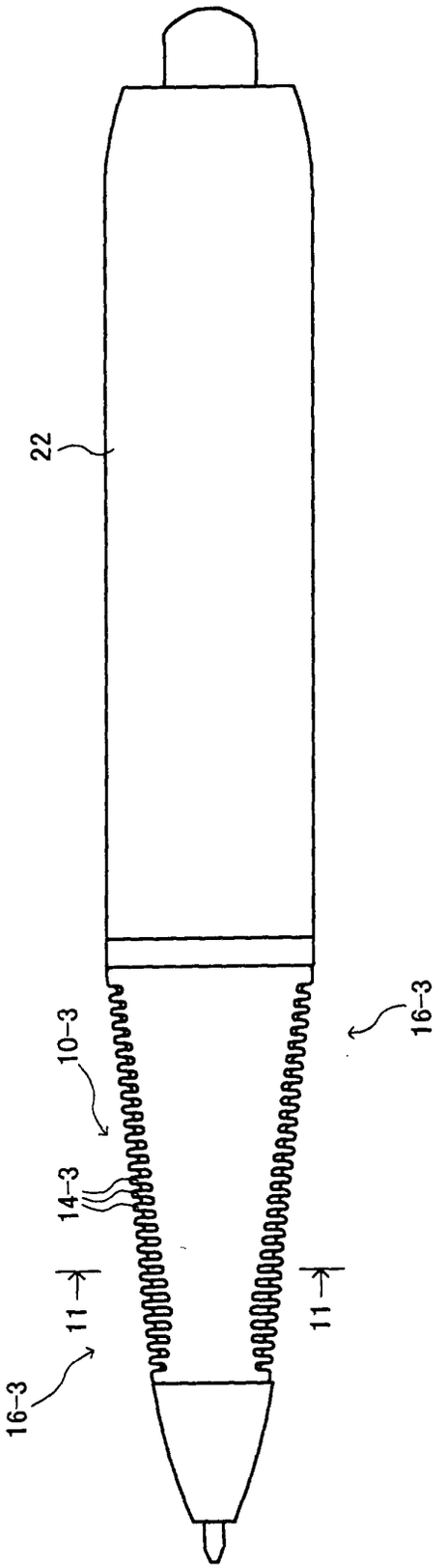


Fig.11

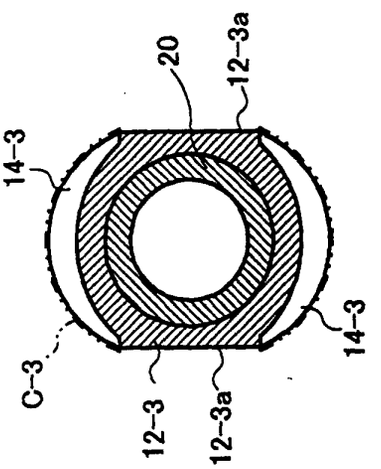


Fig.12

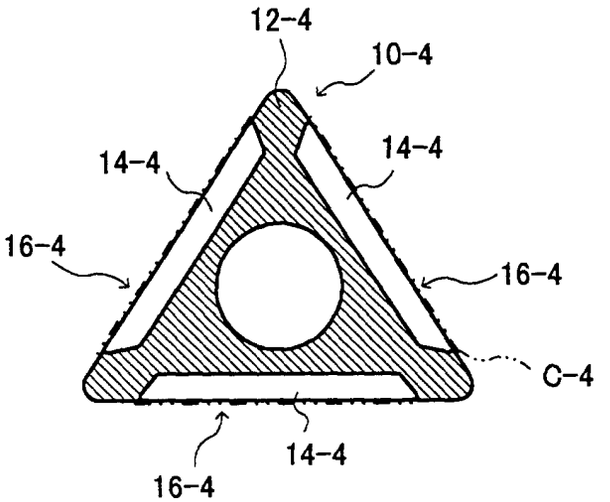


Fig.13

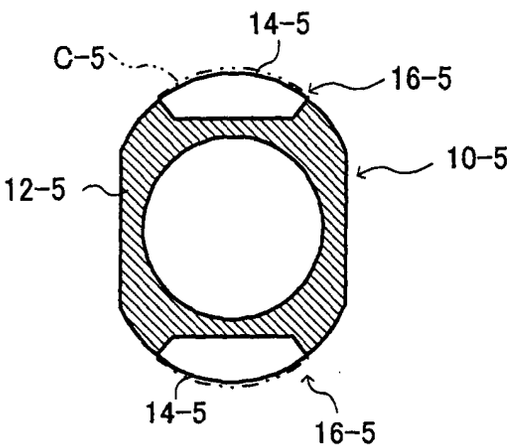


Fig.14

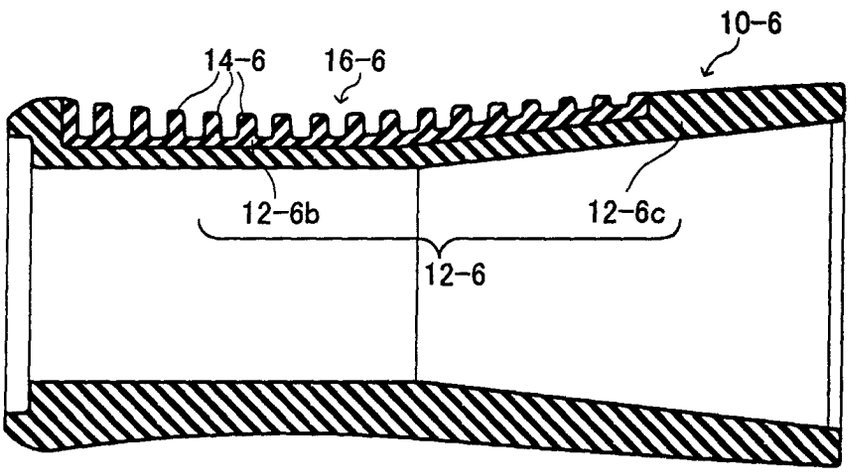


Fig.15

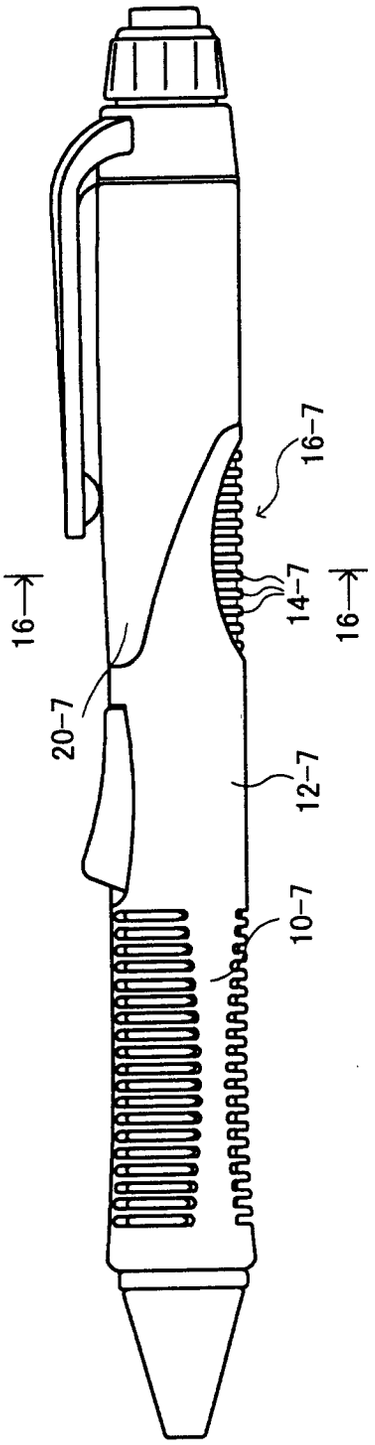
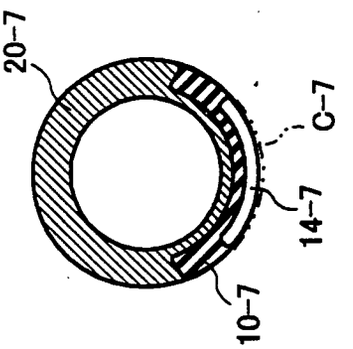


Fig.16



European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 00 12 1816

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	EP 0 982 151 A (KOTOBUKI & CO) 1 March 2000 (2000-03-01) * the whole document *	1,3,4,7	B43K23/008
P,X	EP 1 036 671 A (KOTOBUKI & CO) 20 September 2000 (2000-09-20) * the whole document *	1,3,4	
A	DE 661 874 C (HERIG) * figures *	1	
A	DE 12 75 410 B (GEHA-WERKE) * figures *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

B43K

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	12 September 2001	Perney, Y

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 00 12 1816

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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12-09-2001

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