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(54) **BRUSH FOR COSMETICS**

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(57) **ABSTRACT**

A cosmetic brush (**1**) is formed so that a number of bristles (**5**) sandwiched between deformed core wires (**3***i*) each having a non-circular cross section, and the bristles (**5**) are split into two parts with respect to a brush portion axial direction (P) and extend from twisted portions (**4**) of the deformed core wires (**3***i*) of a brush portion (**10**) formed by twisting the deformed core wires (**3***i*) together. Accordingly, the cosmetic brush (**1**) can be obtained which can retain an appropriate amount of a cosmetic liquid (**12**) and does not need any extra members, and is provided with gaps (**6**) of the bristles (**5**) in the brush portion axial direction (P).

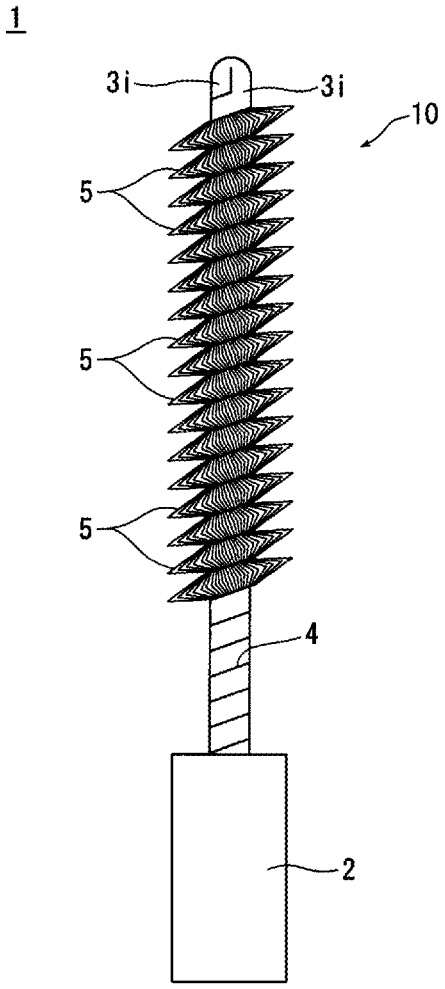


Fig. 1

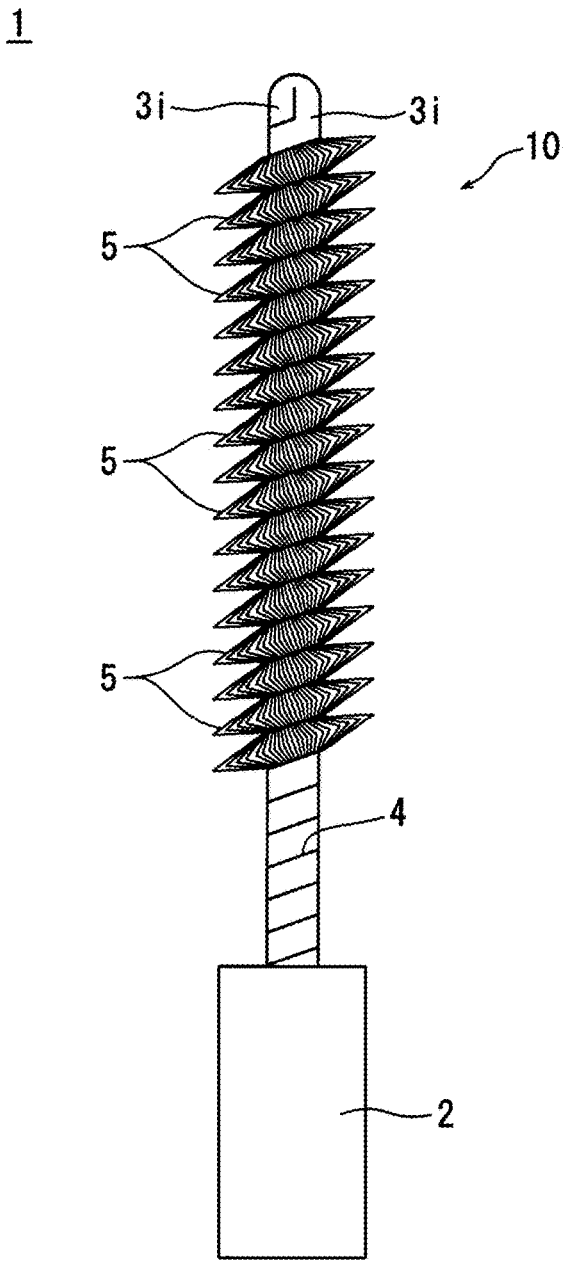


Fig. 2

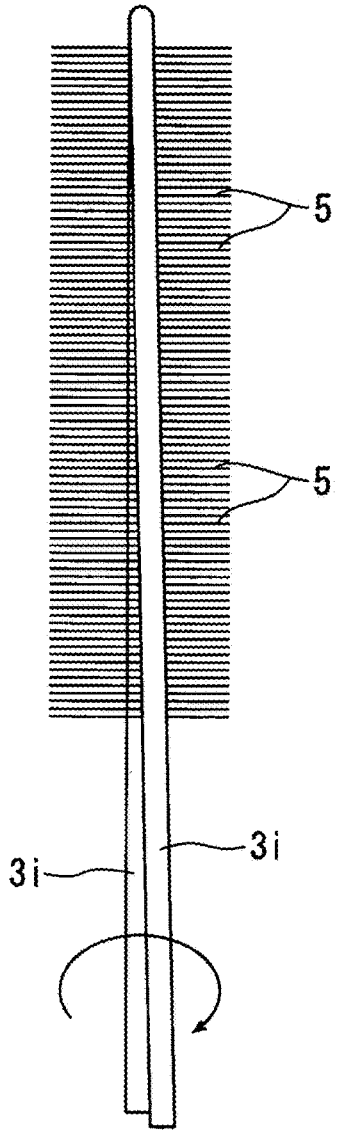


Fig. 3

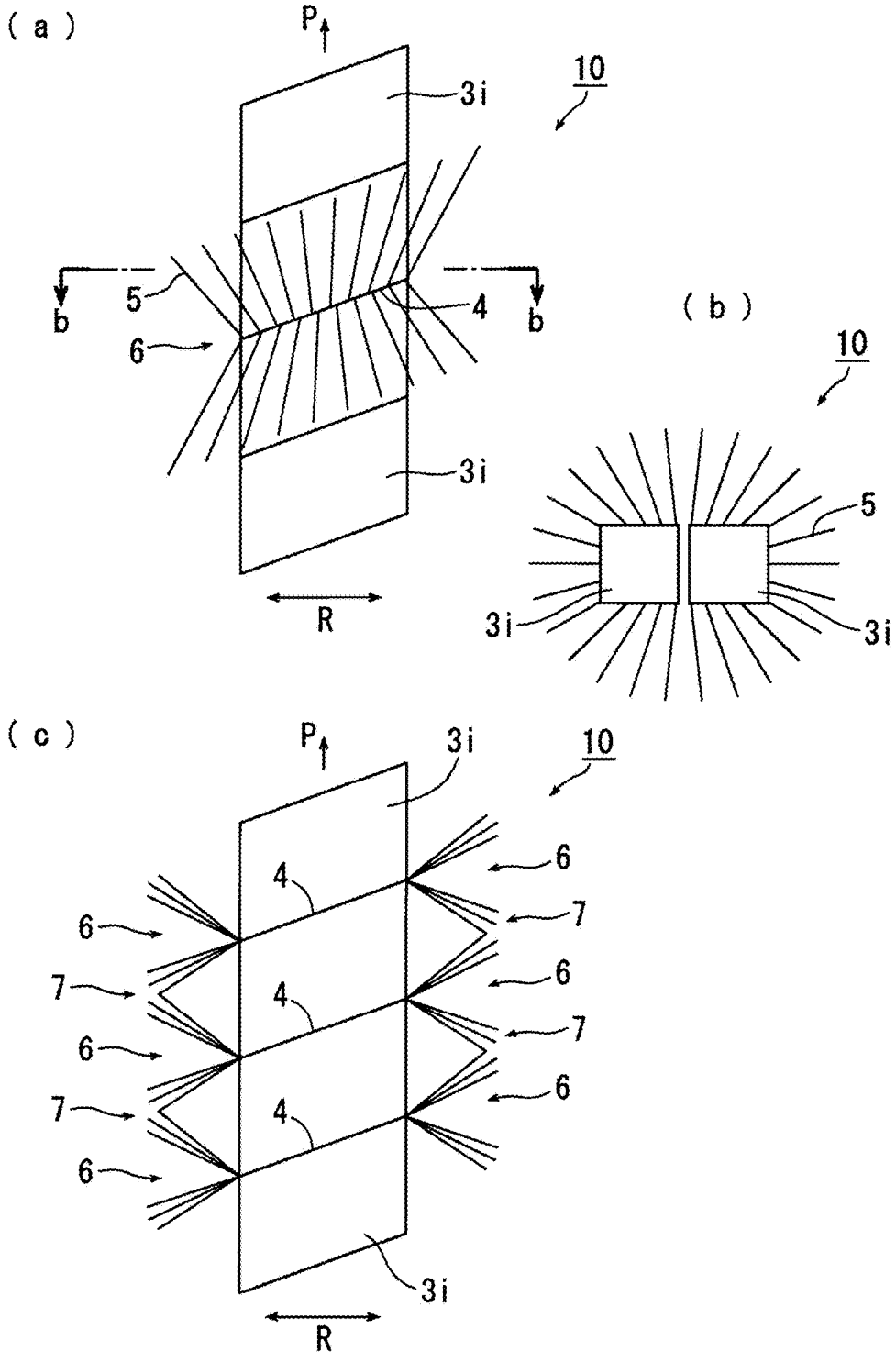


Fig. 4

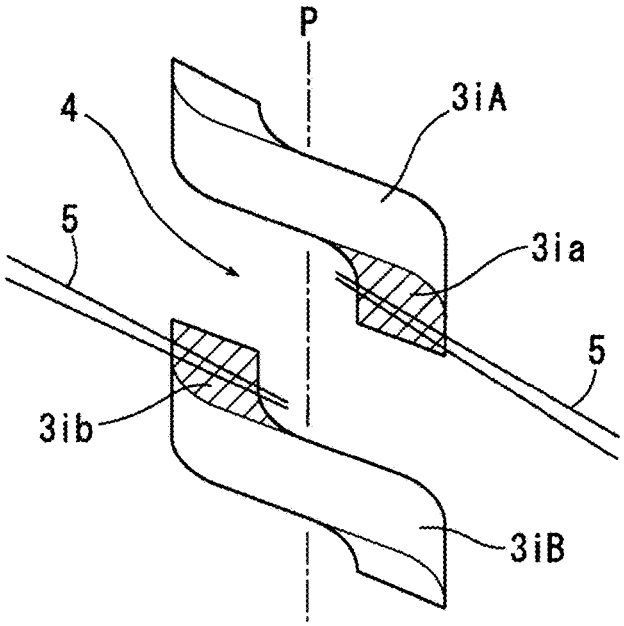


Fig. 5

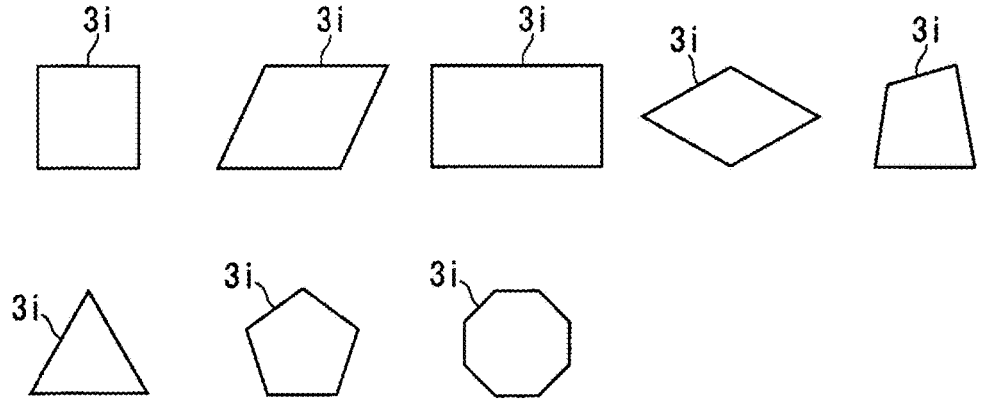


Fig. 6

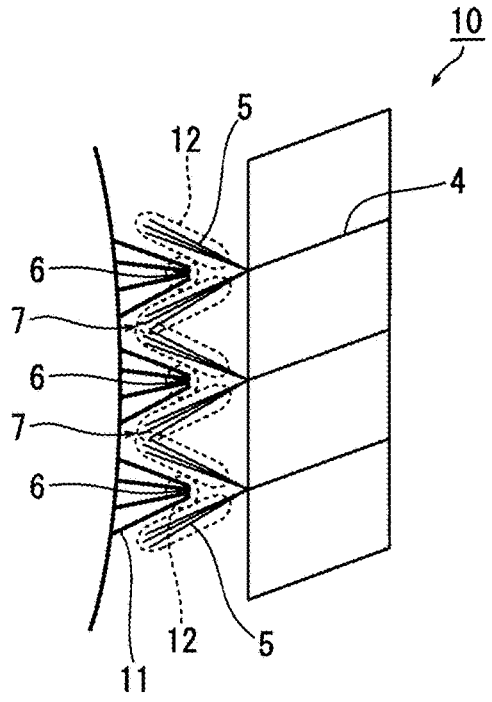
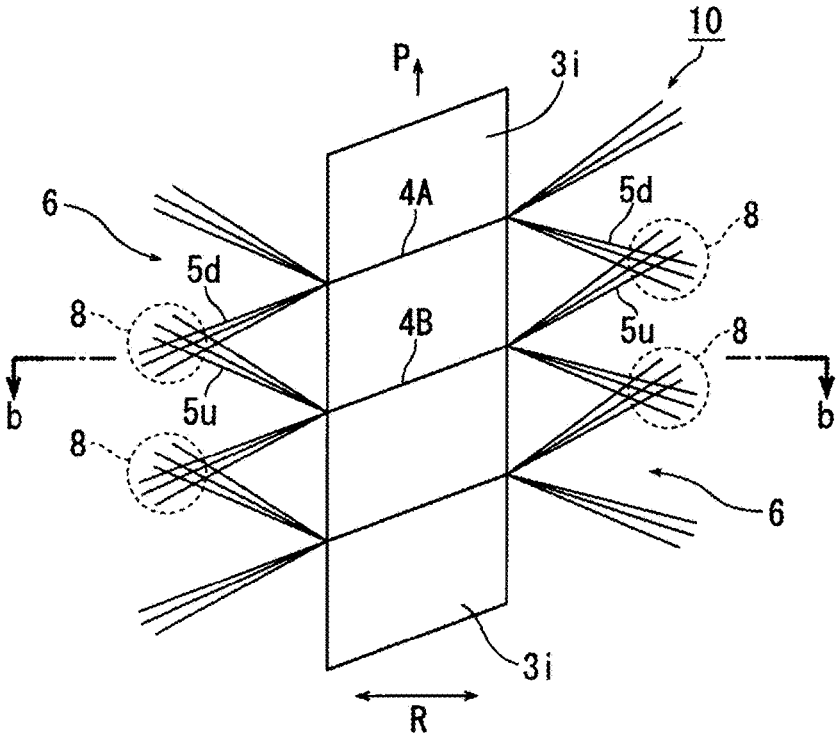
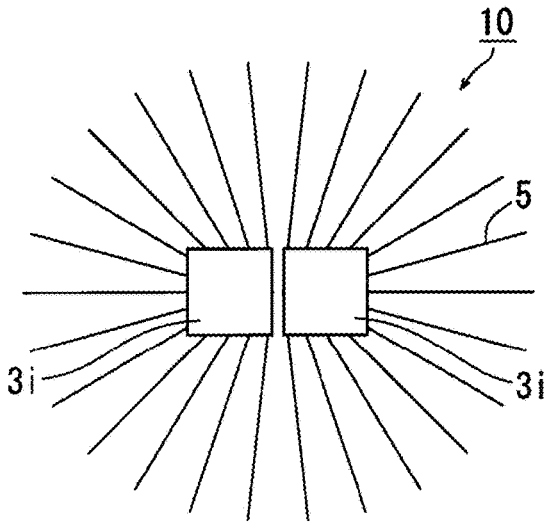


Fig. 7

(a)



(b)



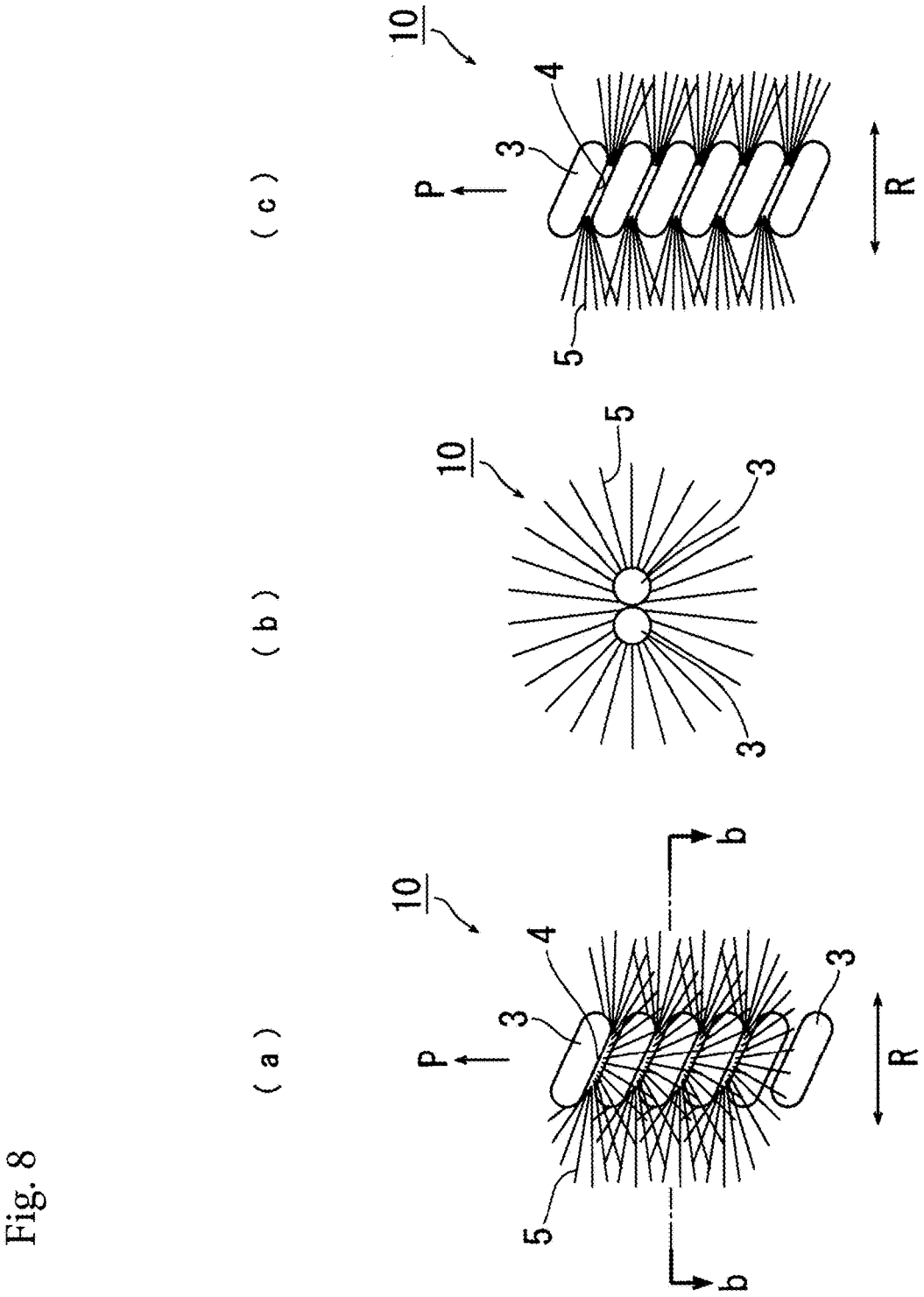
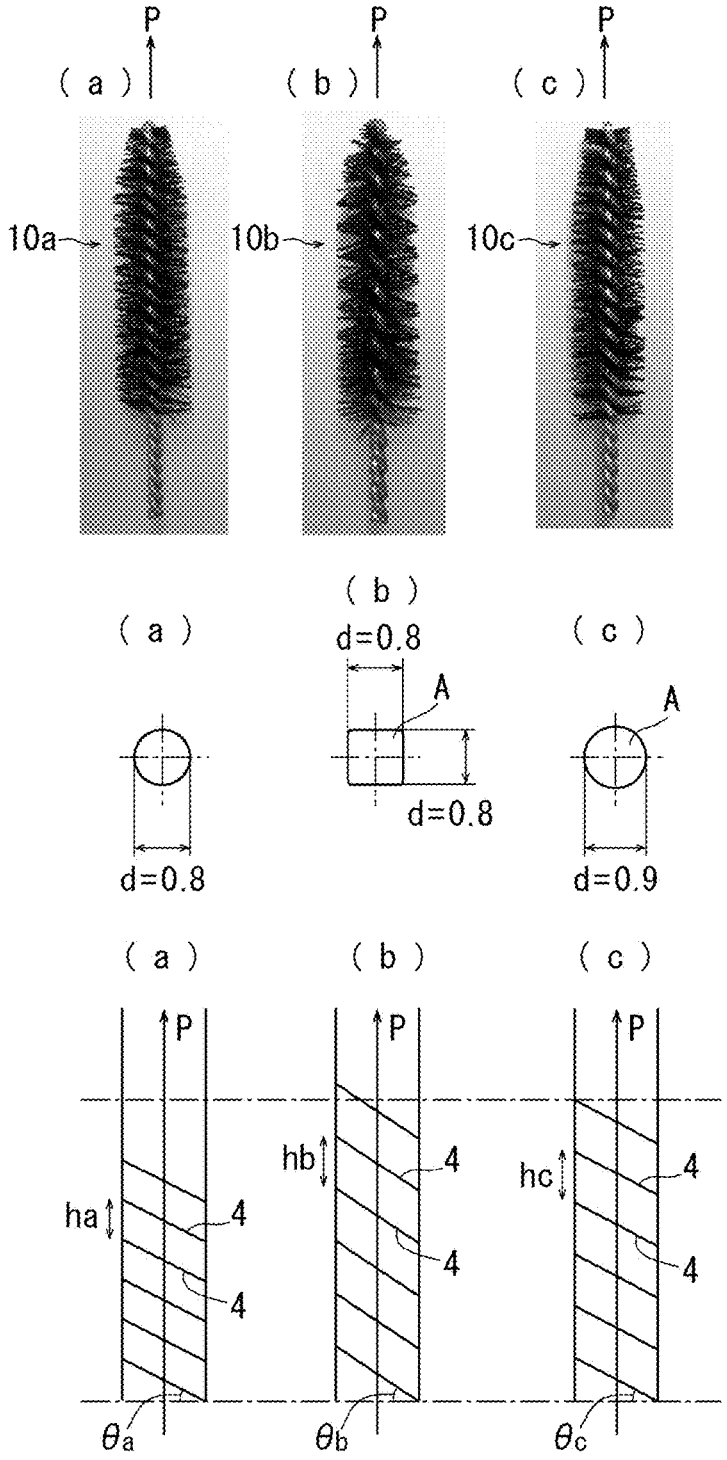


Fig. 8

Fig. 9


P
(a)
(b)
(c)
10a
10b
10c
(a)
(b)
(c)
d=0.8
A
d=0.8
A
d=0.8
d=0.9
(a)
(b)
(c)
P
P
P
ha
hb
hc
4
4
4
4
4
4
θa
θb
θc

BRUSH FOR COSMETICS

TECHNICAL FIELD

[0001] The present invention relates to a cosmetic brush, and in particular, to a cosmetic brush provided with a brush portion formed of core wires twisted to hold therebetween a plurality of bristles.

BACKGROUND ART

[0002] As shown in FIGS. **8**(*a*), (*b*), and (*c*), a brush portion **10** of a cosmetic brush **1** includes two core wires **3** each having a circular cross section, a bristles **5** inserted between the two core wires **3** twisted to pinch central portions of the bristles **5** therebetween, thereby, the bristles **5** extend from the twisted portions **4** of the core wires **3**, randomly with respect to the brush portion axial direction P, successively helicoidal fashion with respect to the brush portion radial direction R along to the twisted portions **4** of the core wires **3**, so that the entire shape of the brush **1** has a generally columnar shape. (FIG. **8**(*c*) is a brief schematic view with neglect of the bristles **5** expand in the direction perpendicular to the figure.)

[0003] On the other hand, a cosmetic brush provided with gaps of bristles by thinning out the bristles that expand randomly in the brush portion axial direction is known. In Patent Literature 1, by using core wires each having a circular cross section and twisting the core wires while pinching end portions of the bristles instead of central portions of the bristles, the bristles extend from every other twisted portions of the core wires, and the gaps of the bristles are formed. In Patent Literature 2, in a general type cosmetic brush whose core wire has a circular cross section as described above, an extra coil spring member is fittingly added to the brush portion in a post-process for changing directions of the bristles, and providing the gaps of the bristles.

PRIOR TECHNICAL PUBLICATIONS

Patent Literatures

[0004] Patent Literature 1: JPU 48-114656

[0005] Patent Literature 2: JPA 2010-69022

SUMMARY OF THE INVENTION

Problem to be Solved by the Invention

[0006] However, in the cosmetic brush of Patent Literature 1, the bristles appear from every other twisted portion, so that a volume of the bristles is small. Moreover, since gaps of the bristles in the brush portion axial direction are too wide, an amount of cosmetic liquid pooled in the gaps increases, which results in solid chunks of the cosmetic liquid adhering to eyelashes. In the cosmetic brush of Patent Literature 2, the extra member is needed, so that the number of brush components and working man hours for manufacture are increased.

[0007] The present invention has been made to solve the above-described problems in conventional technologies, and an object thereof is to provide a cosmetic brush that is provided with gaps in between groups of bristles in the brush portion axial direction, with an appropriate pool-amount of cosmetic liquid, without any extra members.

Means for Solving the Problems

[0008] In order to solve the problems described above, in a mode of the present invention, a cosmetic brush includes a brush portion formed of deformed core wires each having a non-circular cross section, the deformed core wires twisted to hold therebetween a plurality of bristles, wherein the bristles extend from twisted portions of the deformed core wires and split into two parts with respect to the brush portion axial direction.

[0009] In the cosmetic brush, it is also preferable that the brush portion has the twisted portions adjacent to each other in the brush portion axial direction, and bristles extending from the twisted portion toward another neighboring twisted portion are in contact with bristles extending from the another twisted portion toward the one twisted portion.

[0010] In another mode of the present invention, a cosmetic brush includes a brush portion formed of core wires that are twisted to hold therebetween a plurality of bristles, wherein the core wires are deformed core wires each having a non-circular cross section, and a pitch of twisted portions of the deformed core wire is formed wider in comparison with a pitch of twisted portions of core wires of which each cross section has a circular shape having the same wire diameter or the same cross-sectional area of the deformed core wires.

Effect of the Invention

[0011] According to the cosmetic brush of the present invention, its core wires are made up of deformed core wires each having a non-circular cross section, bristles that extend from twisted portions of the deformed core wires split into two parts in the brush portion axial direction. Therefore, a space formed between the split bristles becomes a gap of the bristles, so that gaps of the bristles can be formed in the brush portion axial direction.

[0012] In the inventive cosmetic brush, with respect to the brush portion radial direction, the bristles extend from respective helically twisted portions of the deformed core wires, so that the volume of the bristles portion is substantially the same as that of a conventional cosmetic brush. Moreover, the inventive cosmetic brush does not need any extra members for forming gaps of the bristles. The inventive cosmetic brush is formed of deformed core wires and formed by a manufacturing process similar to that of a conventional cosmetic brush, so that the number of brush members and working man hours are maintained.

[0013] When the inventive cosmetic brush is used to apply a cosmetic liquid such as a mascara liquid to eyelashes, the eyelashes are gathered and applied the cosmetic liquid in bundle in the successive gaps of the bristles distributed at a constant pitch in the brush portion axial direction, so that the eyelashes are finished in a well-bundled manner. Furthermore, when moving the cosmetic brush from the roots to the tips of eyelashes, the bristles act as a comb, so that long eyelashes keeping the well-bundled manner over the whole positions can be obtained.

[0014] Moreover, since each group of the bristles split into two parts, bristles that extend from the twisted portion toward the another neighboring twisted portion are in contact with bristles from the another twisted portion toward the one twisted portion. Such contact portions of the bristles fit eyelashes well in applying a cosmetic finely to every detail of eyelashes.

[0015] Furthermore, since the deformed core wires each has a non-circular cross section is used, twisted portions of the deformed core wires have a preferable inclination and a larger pitch in the brush portion axial direction than a pitch of twisted portions of core wires each having a circular cross section of the same diameter or of the same cross-sectional area of the deformed core wires. Therefore, bristles that extend from the twisted portions of the deformed core wires can be spread in the brush portion axial direction in comparison with that of the core wires having the circular cross section described above. Thus, a larger liquid-pool space of the brush portion is provided in the brush portion, which can contain a larger amount of cosmetic liquid in comparison with a brush portion of core wires having a circular cross section.

Embodiments for Implementing Invention

[0016] Next, a preferred embodiment of the present invention is described based on the drawings.

FIRST EXAMPLE

[0017] FIG. **1** is a side view of a cosmetic brush according to a first example of the present invention, FIG. **2** is an illustration showing a method for preparing the cosmetic brush, FIG. **3**(*a*) is a partial enlarged view of a side surface of the cosmetic brush, FIG. **3**(*b*) is a cross-sectional view of FIG. **3**(*a*), and FIG. **3**(*c*) is a brief schematic view of FIG. **3**(*a*).

[0018] A cosmetic brush **1** of the first example includes, as shown in FIG. **1**, a cap **2** capable of being screwed to a mouth portion of a cosmetic container not shown, and a brush portion **10** fixed to the cap **2**. On the inner periphery of the mouth portion of the cosmetic container, a tubular flexible member (wiper) is provided for scrapping off a cosmetic liquid **12** such as a mascara liquid excessively adhered to the brush portion **10** when the brush portion **10** is pulled out from the container.

[0019] The cosmetic brush **1** is formed by, as shown in FIG. **2**, inserting a number of bristles **5** perpendicularly between two deformed core wires **3***i* and **3***i* in the same manner as a conventional method and pinching central portions of the bristles **5**, and twisting the core wires together in an arbitrary direction. The two deformed core wires **3***i* may be formed by folding one deformed core wire **3***i* in half or using two deformed core wires **3**. The deformed core wires **3***i* will be described in detail later.

[0020] Accordingly, the cosmetic brush **1** has a form of the bristles **5** as shown in FIG. **3**(*a*) to FIG. **3**(*c*). That is, from a twisted portion **4** of the deformed core wires **3***i* and **3***i*, the bristles **5** are split into two parts with respect to a brush portion axial direction P (that is, split into two upper and lower parts in the drawing) and extend, and spread successively in a helicoidal fashion along the twisted portion **4** of the deformed core wires **3***i* with respect to a brush portion radial direction R (Particularly refer to FIG. **3**(*a*). In FIG. **3**(*a*), description of the bristles **5** extending from the twisted portions **4** other than the portion shown in the drawing is omitted.) . Therefore, a space formed between the split bristles **5** becomes a gap **6** of the bristles, and in the cosmetic brush **1**, in the brush portion axial direction P, gaps **6** of the bristles appear at positions corresponding to the twisted portions **4**, and crest portions **7** of the bristles appear between the twisted portions **4** and **4** at a constant pitch (Particularly refer to FIG. **3**(*c*). In the brief schematic view of FIG. **3**(*c*), description of bristles extending to the front side of the drawing of the bristles **5** spread in a helicoidal fashion from the twisted portions **4** is omitted.).

[0021] FIG. **4** is a schematic view to describe a state of the bristles **5** of the cosmetic brush **1**. It is assumed that, since the cosmetic brush **1** uses deformed core wires **3***i* as a core material, the bristles **5** sandwiched between the wires extend while being subjected to predetermined binding forces from the deformed core wires **3***i*, and accordingly, the bristles are split into two parts. The deformed core wire **3***i* has "surfaces" in the peripheral direction, so that when the deformed core wires **3***i* and **3***i* are twisted together, "surfaces" of the deformed core wires **3***i* appear at the twisted portion **4**. The bristles **5** extend in contact with the surfaces of the deformed core wires **3***i*, so that the extending directions of the bristles are determined according to the contact surface (if the core wires **3** are circular, such surfaces do not exist, so that the bristles extend randomly). For example, at the twisted portion **4** shown in FIG. **4**, bristles **5** subjected to a binding force of the deformed core wire **3***i*B positioned on the lower side come into contact with a twisted surface **3***ib* and are directed so as to extend upward, and bristles **5** subjected to a binding force of the deformed core wire **3***i*A positioned on the upper side come into contact with a twisted surface **3***i*a and are directed so as to extend downward. This state continues in a helicoidal fashion along the twisted portions **4**, and accordingly, in the cosmetic brush **1** using the deformed core wires **3***i*, bristles **5** are split into two parts with respect to the brush portion axial direction P from the twisted portions **4**.

[0022] FIG. **5** shows examples of the deformed core wires. The deformed core wire **3***i* has, as shown in FIG. **5**, a cross section having a quadrangular shape such as a shape of a square, a parallelogram, a rectangle, a diamond, or a trapezoid, or a non-circular shape such as a shape of a triangle, a pentagon, or a hexagon, that is, a cross sectional shape that causes surfaces to appear at the twisted portions **4**. FIG. **5** shows an example of the deformed core wires **3***i*, and includes variations in which corners of the shown shapes are rounded or some sides are curved. In consideration of a shape that causes surfaces to reliably appear at the twisted portions **4**, the deformed core wires **3***i* more preferably have a cross-sectional shape far from a circular cross-sectional shape. In consideration of convenience in a brush manufacturing process, the deformed core wires preferably have a rectangular cross section.

[0023] Next, advantages of application of a cosmetic liquid **12** by using the cosmetic brush **1** described above are described.

[0024] FIG. **6** is an illustration to describe use of the cosmetic brush **1**. When the cosmetic brush **1** is pulled out from a cosmetic container, a cosmetic liquid **12** is retained by the respective bristles **5** and in the gaps **6** of the bristles (shown by the dashed lines) . In this state, when the cosmetic brush **1** is held horizontally and brought into contact with eyelashes **11**, since the cosmetic brush **1** has gaps **6** of bristles at a constant pitch, the cosmetic liquid **12** is applied in a state where a plurality of eyelashes **11** are bundled, so that eyelashes **11** can be finished in a well-bundled manner. Further, when moving the cosmetic brush **1** from the roots to the tips of eyelashes **11**, the crest portions **7** of the bristles

act as a comb, so that long eyelashes **11** keeping the well-bundled manner over the whole positions can be obtained.

[0025] Further, as shown in the figure, a liquid-pool space of the cosmetic brush **1** is mainly formed of the respective bristles **5** to which the liquid is adhered and gaps **6** of the bristles split into two parts, so that an amount of the cosmetic liquid **12** retained by the cosmetic brush **1** according to the present example is larger than that retained by the conventional cosmetic brush shown in FIG. **8**. In the cosmetic brush **1** according to the present example, the bristles **5** are split into two parts, so that the deformed core wires **3***i* are not exposed, and troubles in which the cosmetic liquid **12** remains around the deformed core wires **3***i* and causes excessive application of the cosmetic liquid **12** and results in chunks of the cosmetic liquid **12**, or the cosmetic liquid **12** remaining on the deformed core wires **3***i* are solidified as time passes and becomes dust, are reduced.

SECOND EXAMPLE

[0026] FIG. **7**(*a*) is a brief schematic view of a side surface of a cosmetic brush according to a second example of the present invention, and FIG. **7**(*b*) is a cross-sectional view of FIG. **7**(*a*).

[0027] A cosmetic brush **1** according to a second example uses deformed core wires **3***i* in the same manner as in the first example, and a length of bristles **5** sandwiched by the deformed core wires **3***i* and **3***i* are designed to a predetermined length so that contact portions **8** of the bristles are formed. Components common to those in the first example are designated by the same reference symbols, and description thereof is omitted. In the brief schematic view of FIG. **7**(*a*), description of bristles extending toward the front side of the drawing of bristles **5** spread in a helicoidal fashion from twisted portions **4**A and **4**B is omitted.

[0028] The brush portion **10** according to the second example is formed so that bristles **5***d* extending from one twisted portion **4**A to the other twisted portion **4**B, the twisted portions **4**A and **4**B adjacent to each other in the brush portion axial direction P, and bristles **5***u* extending from the other twisted portion **4**B to the one twisted portion **4**A, cross each other.

[0029] In the present example as well, similar effects as in the first example are obtained. In addition, eyelashes **11** tangle well in the contact portions **8** of the bristles, so that a detailed work to apply a cosmetic liquid to portions such as eyelashes at the inner corner and the tail of the eyes to which a cosmetic liquid is not easily applied can be performed.

[0030] The degree of contact of the bristles with the contact portions **8** is not limited to crossing as in the case of the present example, but may make contact with only tip end portions of the bristles **5** or crossing of the central portions or base end portions of the bristles **5**. The degree of contact can be arbitrarily changed to these variations by adjusting the lengths of the bristles **5**. The contact portions **8** of the bristles may be formed at a part of the brush portion **10**. That is, depending on the form of the brush portion **10**, contact portions and non-contact portions may be mixed.

[0031] The bristles **5** to be adopted in the first and second examples described above may be fibers of a synthetic resin, animal or plant hairs, etc., and solid and hollow fibers and variations of cross-sectional shapes of the fibers may also be used. Preferably, as the bristles **5**, soft fibers are used. More preferably, as the bristles **5**, unstretched synthetic fibers produced without a stretching step after an extruding step in a bristle manufacturing process are used. Details of the unstretched fibers are not described here since they are described in Japanese Patent No. 5100985. The unstretched fibers low in rigidity are preferably used since binding forces from the deformed core wires **3***i* are easily reflected in the fibers when they are sandwiched by the deformed core wires **3***i* and **3***i* and twisted.

[0032] In the first and second examples described above, the cosmetic brush **1** is described as a cosmetic brush to apply a mascara liquid, however, it can also be applied to other cosmetic liquids.

[0033] Next, other effects to be obtained by using the deformed core wires **3***i* for the cosmetic brush **1** described above are described. FIG. **9** are diagrams comparing a mode obtained by using the deformed core wires and modes obtained by using core wires each having circular cross section.

[0034] FIG. **9**(*a*) shows a cosmetic brush using core wires each having a wire diameter "d" of 0.8 mm and a precise circular cross section, FIG. **9**(*b*) shows a cosmetic brush using deformed core wires **3***i* each having a wire diameter "d" of 0.8 mm and a square cross section, and FIG. **9**(*c*) shows a cosmetic brush using core wires each having a wire diameter "d" of 0.9 mm and a precise circular cross section. In FIG. **9**, drawings at the upper stage are photographs showing comparison among the brush portions, drawings at the middle stage are cross-sectional views of the core wires (perpendicular to the brush portion axial direction), and drawings at the lower stage are schematic views of twisted portions of the core wires . The alternate long and short dash lines shown in the drawings are auxiliary lines .

[0035] The brush portion **10***b* is obtained by using the deformed core wires **3***i*, the brush portion **10***a* is obtained by using core wires each having a circular cross section and the same wire diameter "d" as the deformed core wires **3***i*, and the brush portion **10***c* is obtained by using core wires each having a circular cross section and substantially the same cross-sectional area A as the deformed core wire **3***i*.

[0036] As shown in the upper stage of FIG. **9**, since the brush portion **10***b* uses deformed core wires **3***i* each having a non-circular cross section as core wires, the bristles **5** are more easily distributed in the brush portion axial direction P than the bristles of the brush portion **10***a* or the brush portion **10***c*.

[0037] A reason for this is that, as shown in the lower stage of FIG. **9**, since the brush portion **10***b* uses deformed core wires **3***i*, twisted portions **4** of the core wires are provided with an inclination θb, and the pitch "hb" of the twisted portions **4** in the brush portion axial direction P is increased. In the brush portion **10***b* using the deformed core wires **3***i*, the surfaces and corners shown in FIG. **4** appear at the twisted portion **4** of the core wires, and these interfere with each other and increase the inclination θb of the twisted portions, and accordingly, the inclination θb becomes larger than the inclination θa and inclination θc of the core wires each satisfying the conditions described above and having a circular cross section. As a result, the pitch "hb" of the twisted portions **4** of the brush portion **10***b* becomes larger than the pitch "ha" of the brush portion **10***a* and the pitch "hc" of the brush portion **10***c*.

[0038] Thereby, in the brush portion **10***b*, the bristles **5** are more widely distributed in the brush portion axial direction

P than the bristles in the brush portion **10***a* or brush portion **10***c*, and accordingly, a larger liquid-pool space of the brush portion **10***b* is provided, which can contain a larger amount of cosmetic liquid.

[0039] Conventionally, when it is desired to increase the pitch of the twisted portions **4** of the core wires, core wires with a thick wire diameter could only be selected, however, even if the wire diameter is the same, the pitch of the twisted portions **4** of the core wires can be increased by using the deformed core wires **3***i* as core wires.

BRIEF DESCRIPTION OF THE DRAWINGS

[0040] FIG. **1** is a side view of a cosmetic brush according to a first example of the present invention.

[0041] FIG. **2** is an illustration showing a method for preparing the same cosmetic brush.

[0042] FIG. **3**(*a*) is a partial enlarged view of a side surface of the same cosmetic brush, FIG. **3**(*b*) is a cross-sectional view of FIG. **3**(*a*), and FIG. **3**(*c*) is a brief schematic view of FIG. **3**(*a*).

[0043] FIG. **4** is a schematic view to describe a state of bristles of the same cosmetic brush.

[0044] FIG. **5** is a view showing examples of deformed core wires .

[0045] FIG. **6** is an illustration to describe use of the same cosmetic brush.

[0046] FIG. **7**(*a*) is a brief schematic view of a side surface of a cosmetic brush according to a second example of the present invention, and FIG. **7**(*b*) is a cross-sectional view of FIG. **7**(*a*).

[0047] FIG. **8**(*a*) is a partial enlarged view of a side surface of a conventional cosmetic brush, FIG. **8**(*b*) is a cross-sectional view of FIG. **8**(*a*), and FIG. **8**(*c*) is a brief schematic view of FIG. **8**(*a*).

[0048] FIG. **9** are diagrams comparing a mode obtained by using the deformed core wires according to the present invention and modes obtained by using core wires each having a circular cross section.

DESCRIPTION OF SYMBOLS

[0049] **1**: cosmetic brush, **3***i*: deformed core wire, **4**: twisted portion, **5**: bristle, **6**: gap of bristles, **7**: crest portion of bristles, **8**: contact portion of bristles, **10**: brush portion, **11**: eyelash, **12**: cosmetic liquid, P: brush portion axial direction, R: brush portion radial direction, d: wire diameter of core wire, A: cross-sectional area of core wire, h: pitch of twisted portions of core wires

1. A cosmetic brush comprising:

a brush portion formed of deformed core wires each having a non-circular cross section, the deformed core wires twisted to hold therebetween a plurality of bristles, wherein the bristles extend from twisted portions of the deformed core wires and split into two parts with respect to the brush portion axial direction.

2. The cosmetic brush according to claim **1**, wherein the brush portion has the twisted portions adjacent to each other in the brush portion axial direction, and bristles extending from the twisted portion toward another neighboring twisted portion are in contact with bristles extending from the another twisted portion toward the one twisted portion.

3. The cosmetic brush according to claim **1**, wherein a pitch of the twisted portions of the deformed core wires is formed wider in comparison with a pitch of twisted portions of core wires of which each cross section has a circular shape having the same wire diameter or the same cross-sectional area of the deformed core wires.

4. The cosmetic brush according to claim **2**, wherein a pitch of the twisted portions of the deformed core wires is formed wider in comparison with a pitch of twisted portions of core wires of which each cross section has a circular shape having the same wire diameter or the same cross-sectional area of the deformed core wires.

* * * * *