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(54) **COMB**

(57) Backcombed hair can easily be formed uniformly. A comb 1 includes total of three rows of outer comb teeth 7 and 8 and inner comb teeth 20, and a pitch dimension of the inner comb teeth 20 is narrower than pitch dimensions of the outer comb teeth 7 and 8. In the inner comb teeth 20, each comb tooth is formed with a stepped part at an intermediate position of the comb tooth in a protruding direction thereof, and a height of a tip end of each comb tooth are different from each other and a depth of a tooth bottom are also different from each other. By providing the three rows of comb teeth, hair is easily caught with each comb tooth entirely. Further by providing the stepped part in the inner comb teeth 20, hair is easily caught. As a result, resistance when using the comb can be increased, suitable tension can be obtained when backcombing hair, and backcombed hair can easily be formed. Moreover, the height of each tip end and the depth of each tooth bottom of the inner comb teeth 20 are differentiated to distribute the resistance, sweater-pill-like portions are generated less within the formed backcombed hair, and backcombed hair can be formed uniformly.

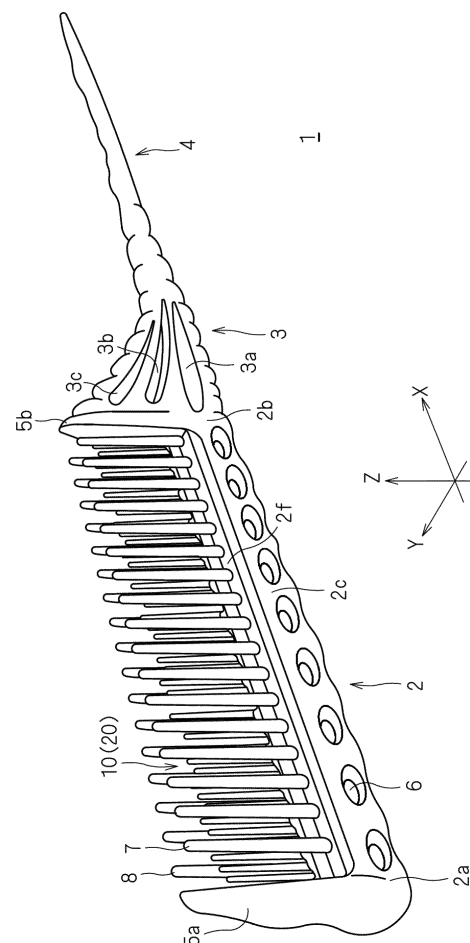


Fig.1

Description

TECHNICAL FIELD

[0001] The present invention relates to a comb, where a plurality of comb teeth protruding from a comb main body are arrayed. The present invention particularly relates to a comb which is devised in the shape etc. of the comb teeth so that backcombed hair can efficiently be set.

BACKGROUND ART

[0002] Conventionally, various types of combs exist, and such combs are used by a beautician, a barber, etc., to hairdress (to set hair) or cut hair of a customer, other than the purpose of a user using the combs, for example, for hairdressing his/her own hair. Various techniques exist for the hairdressing method using a comb, and one of the hairdressing methods is a backcomb (a technique of puffing up or teasing hair).

[0003] Fig. 21 illustrates one example of a method of backcombing (a method of puffing up or teasing hair). This method includes extracting a given volume of hair bundle from bangs, pulling up the hair bundle from a forehead of a user. The method also includes inserting a comb into the hair bundle, and moving the comb from a tip end side of the hair to a root side (a movement in an arrow direction in Fig. 19) so that the comb draws through the hair bundle to form backcombed hair which is comprised of a curled hair portion at the hair root part (hair root section) of the hair bundle (to puff up or tease hair). A voluminous hair style can be achieved by such a curled hair portion (the backcombed hair). Note that, although Fig. 21 illustrates one example in which the backcombed hair is formed at the root part of the hair, it is also possible to backcomb the hair in either one of an intermediate part (intermediate section) of the hair and a tip end part (tip end section), or all parts of the hair within the range from the root part to the tip end part. Further, in order to finish a hair style based on the backcombed hair, it is common to use a comb with a narrow comb teeth interval (a so-called fine-toothed comb) and perform a hairdressing in which the surface of backcombed hair is smoothed down by the comb to form the hair part at the surface of backcombed hair so as to flow into a certain direction, as a final hair setting. Note that hairdressing may be performed so that a hair part around the backcombed hair covers the surface of the backcombed hair. Such a hair setting by using the backcombed hair is effective in achieving the voluminous hair for a person who has thin or fine hair, and thus, it is a popular hair setting method in western countries etc. where many people have thin or fine hair.

[0004] As one example of a conventional comb which is used for the backcombing described above, Patent Document 1 discloses a comb which has comb teeth dramatically shortened in the overall length (3 mm to 7 mm).

Moreover, Patent Document 2 discloses a comb which is formed with, in addition to normal comb teeth (first comb teeth), second comb teeth that protrude sideways from a side surface part of a comb main body to keep the voluminous hair with the backcombing.

[0005] Note that, although it is not related to the backcombing, examples of a comb which has a characteristic shape are illustrated by using combs disclosed in Patent Documents 3 to 8. For example, Patent Document 3 discloses a comb where root side parts between adjacent comb teeth are blocked, and Patent Document 4 discloses a comb where a shallow slit is alternately formed in comb teeth. Moreover, Patent Document 5 discloses a comb where taller comb teeth and shorter comb teeth are alternately arrayed and tooth tips are sharpened in an upper part of each shorter comb tooth, and, further, Patent Document 6 discloses a comb where a group of thick comb teeth and a group of thin comb teeth are alternately arrayed.

[0006] Patent Document 7 discloses a comb for a shag haircut which is formed with a protruding portion (convex) at a part of a teeth root to provide a portion having different comb teeth lengths, and Patent Document 8 discloses a comb where first longer comb teeth and second shorter comb teeth are arrayed so as to form concave-convex teeth tips at each comb tooth (zigzag shape).

Reference Documents of Conventional Art

Patent Documents

[0007]

Patent Document 1 Japanese Registered Utility Model Publication No. 3139095
 Patent Document 2 Japanese Registered Utility Model Publication No. 3107399
 Patent Document 3 Japanese Unexamined Patent Application Publication No. H09-154625
 Patent Document 4 Japanese Unexamined Utility Model Application Publication No. S50-065695
 Patent Document 5 Japanese Unexamined Patent Application Publication No. 2001-078826
 Patent Document 6 Japanese Examined Utility Model Application Publication No. S07-008911
 Patent Document 7 Japanese Registered Utility Model Publication No. 3119191
 Patent Document 8 Japanese Unexamined Patent Application Publication No. H10-215943

DISCLOSURE OF THE INVENTION

Problems to be Solved by the Invention

[0008] Since the comb in accordance with Patent Document 1 has the extremely short comb teeth, an amount of hair which enters into a gap between the comb teeth decreases, and thereby an amount of backcombed hair

which can be formed as the result is limited. Therefore, in order to make the hair voluminous, it is necessary to repeat the procedure of backcombing, and thus, it is burdensome. Further, there is also a problem that a part of the hair is formed locally and compactly like sweater pills (fluff), and thus, it is difficult to uniformly form the voluminous backcombed hair as a whole. Further, as for the comb in accordance with Patent Document 1, hair is pressed against the tooth bottoms of the comb in order to backcomb the hair. However, as for the comb in accordance with Patent Document 1, since the depth of the tooth bottoms is constant or uniform, the hair to be set hits the tooth bottoms uniformly. Therefore, there is also a problem of it being difficult to obtain tension in the hair which is suitable for backcombing the hair (tension obtained by pressing the comb against the hair) unless the comb is strongly pressed against the hair.

[0009] As for the comb in accordance with Patent Document 2, when backcombing the hair, in order to improve the durability of the voluminousness created by the backcomb, it is necessary to use both the first comb teeth and the second comb teeth. Therefore, since it is significantly different in the way to use the comb from the normal comb, there is a problem that a special technique is required for the way to use each of the comb teeth (the first comb teeth and the second comb teeth).

[0010] Moreover, generally, in order to efficiently puff up or tease the hair upon backcombing the hair, it is important to suitably increase a degree to which the comb is caught by the hair when combing the hair from the tip toward the root by the comb (equivalent to a degree to which the hair is pulled by the comb, tension in the hair, friction or resistance between the comb and the hair, etc.) within a range in which the hair is not damaged (the hair surface is not damaged). Even if the combs in accordance with Patent Documents 3 to 8 described above are used for backcombing the hair, a problem will arise in which a given amount of the hair required for the backcombing cannot be suitably caught, or is caught too much and causes damage to the hair, etc.

[0011] For example, in order to divide a hair bundle for hair dyeing, the comb in accordance with Patent Document 3 has larger gaps between the comb teeth compared with the normal combs. Therefore, resistance between the comb teeth is reduced when backcombing the hair, and thus, the hair is not easily caught between the comb teeth. Accordingly, a suitable tension cannot be obtained in the hair, but the hair is directly caught at the tooth bottoms between the comb teeth, and thus, it is easy to damage the hair at edges of the tooth bottoms. Moreover, as for the comb in accordance with Patent Document 4, since the hair tends to escape from the shallow slits at the comb teeth which have the shallow slits, a sufficient amount of hair cannot be backcombed by the shallow slits. Moreover, since a difference in a depth between the shallow slits and the normal tooth bottoms is too large, it is difficult to set the backcombed hair uniformly. A similar problem with the comb in accordance

with Patent Document 4 arises in the comb in accordance with Patent Document 5 because it has a structure in which a difference in the depth of the tooth bottoms between the wider tip side and the comb main body side is too large. Therefore, since the hair tends to fall out from the tooth tips provided in the upper part of the short comb teeth, the hair cannot efficiently be backcombed.

[0012] The comb in accordance with Patent Document 6 is a traditional Japanese boxwood comb (a comb made of a Japanese boxwood), and it is not originally made in consideration of being used for backcombing the hair. Thus, even if the boxwood comb is forcibly used for backcombing the hair, since an interval of thick teeth in the group of thick comb teeth is large, the hair cannot appropriately be backcombed because the hair does not tend to be caught, and the hair is easily damaged because the edge of each part is sharp. Moreover, as for the comb in accordance with Patent Document 7, the hair cannot be puffed up or teased easily because the one large protruding portion on the tooth bottom side becomes obstructive. Further, as for the comb in accordance with Patent Document 8, since the bottom depths between the teeth are the same at the first long comb teeth and the first short comb teeth, except for a center part in the longitudinal direction, the tension in the hair which is caught at the tooth bottoms is uniform, and thus, it is a problem that it is difficult to form the backcombed hair uniformly. Note that some comb products which are made of a synthetic resin or plastic and are not high in quality may have burrs which are projected from the perimeter of the comb teeth. It is known in practice that, if such a comb with burrs projected therefrom is used, the hair tends to be caught easily and the backcombed hair can easily be formed. However, since the burrs have a thin and sharp perimeter, it is a problem that the hair is damaged by such burrs excessively.

[0013] The present invention is made in view of the situations described above, and one purpose of the present invention is to provide a comb which is provided with stepped parts at intermediate positions of comb teeth in a direction parallel to a protruding direction of the comb teeth to additionally form hair catching parts when backcombing the hair, and which can easily obtain a suitable tension required for backcombing the hair, while the hair is damaged as little as possible.

[0014] Further, another purpose of the present invention is to provide a comb in which portions from tip end sides of the comb teeth to the stepped parts, or a portion from the stepped part to a root side, are tapered to form perimeters of the comb teeth themselves into a shape which causes more resistance to the hair. Therefore, suitable tension required for backcombing the hair can easily be obtained.

[0015] Further, another purpose of the present invention is to provide a comb in which tip end heights of the comb teeth or depths of tooth bottoms are formed different from each other to disperse the hair catching state. Therefore, it is easy to backcomb the hair with a uniform

voluminousness.

[0016] Further, another purpose of the present invention is to provide a comb in which comb teeth where stepped parts are not formed are arrayed to increase the number of hair catching parts by the plurality of rows of comb teeth.

[0017] Further, another purpose of the present invention is to provide a comb in which a shape of tooth bottoms is devised so as to cause the hair as little damage as possible by the tooth bottoms, and to be able to easily obtain tension stronger than that of the conventional arts.

[Summary of the Invention]

[0018] In order to solve the problems described above, in a comb in accordance with one aspect of the present invention, a plurality of comb teeth protruding from a comb main body having a longitudinal direction thereof are arrayed. Each comb tooth has a stepped part that is formed at an intermediate position of the comb tooth in a protruding direction thereof. A first section of each comb tooth that extends from a tip end side to the stepped part has a smaller dimension in a direction perpendicular to the protruding direction of the comb tooth, compared with a second section that extends from the stepped part to a root side.

[0019] Further, in the comb in accordance with the aspect of the present invention, the stepped part may be formed so as to be exposed between the comb tooth and an adjacent comb tooth.

[0020] Further, in the comb in accordance with the aspect of the present invention, the stepped part may be formed so as to be exposed on a perimeter of the comb tooth, when the comb tooth is seen in a direction corresponding to width directions of the comb main body.

[0021] Furthermore, in the comb in accordance with the aspect of the present invention, the stepped part may be formed slantly with respect to the protruding direction so that the stepped part spreads toward the root side of the comb tooth.

[0022] In the comb in accordance with the aspect of the present invention, the first section may be formed in a tapered shape so that the first section spreads from the tip end side toward the stepped part.

[0023] Further, in the comb in accordance with the aspect of the present invention, the second section may be formed in a tapered shape so that the second section spreads from the stepped part toward the root side.

[0024] Further, in the comb in accordance with the aspect of the present invention, heights of the tip ends of three or more adjacent comb teeth among the plurality of comb teeth may be different from each other.

[0025] Furthermore, in the comb in accordance with the aspect of the present invention, three or more tooth bottoms between adjacent comb teeth among the plurality of comb teeth may be different from each other in a tooth bottom depth.

[0026] In the comb in accordance with the aspect of

the present invention, a plurality of comb teeth where the stepped part is not formed may be arrayed parallel to the row of the plurality of comb teeth where the stepped part is formed. An interval of the comb teeth where the stepped part is not formed may be wider than an interval of the comb teeth where the stepped part is formed.

[0027] Further, in the comb in accordance with the aspect of the present invention, rows of a plurality of comb teeth where the stepped part is not formed may be formed parallel to and on both sides of the row of the plurality of comb teeth where the stepped part is formed. An interval of the comb teeth where the stepped part is not formed may be wider than an interval of the comb teeth where the stepped part is formed. Any of the plurality of comb teeth where the stepped part is not formed may be formed at both sides of any of the plurality of comb teeth where the stepped part is formed.

[0028] In the comb in accordance with the aspect of the present invention, the comb teeth where the stepped part is not formed may be longer than the comb teeth where the stepped part is formed.

[0029] Further, in the comb in accordance with the aspect of the present invention, the comb teeth where the stepped part is formed may be longer than the comb teeth where the stepped part is not formed.

[0030] Further, in the comb in accordance with the aspect of the present invention, some of the plurality of comb teeth where the stepped part is formed may be longer than the comb teeth where the stepped part is not formed. Other comb teeth where the stepped part is formed may be shorter than the comb teeth where the stepped part is not formed.

[0031] Furthermore, in the comb in accordance with the aspect of the present invention, the tooth bottom of the comb tooth where the stepped part is formed may be formed so as to be convexed in a center part of the comb main body in width directions thereof.

[0032] In accordance with the aspect of the present invention, since each comb tooth is formed with the stepped part, and the first section of each comb tooth that extends from the tip end side to the stepped part has a smaller dimension in the direction perpendicular to the protruding direction of the comb tooth, compared with the second section that extends from the stepped part to the root side, the stepped part is formed so as to be exposed on the perimeter of the comb tooth at the intermediate position of the comb tooth from the tip end side to the root side. Therefore, when backcombing hair, the stepped part becomes a catching part against the hair combed by the comb, and necessary resistance can be obtained at the stepped part. Thus, the tension to the hair can be increased throughout the entire comb to be higher than that with a conventional comb, and backcombed hair can easily be formed.

[0033] In accordance with the aspect of the present invention, since the stepped part is formed so as to be exposed between the comb tooth and an adjacent comb tooth, the dimension of the interval between the comb

teeth changes in stages due to the existence of the exposed stepped part. Therefore, when hair enters between the comb teeth while backcombing hair, the resistance against the hair changes accordingly, a degree of catching hair increases, and the necessary tension can easily be obtained.

[0034] Further, in accordance with the aspect of the present invention, the stepped part is formed so as to be exposed on the perimeter of the comb tooth, when the comb tooth is seen in the direction corresponding to the width directions of the comb main body. Therefore, when backcombing hair, the hair is flowed in the width directions of the comb main body along the perimeter of the comb tooth, and then contacts the stepped parts. Thus, the resistance against the hair when combing hair with the comb increases, and the necessary tension can easily be obtained.

[0035] In accordance with the aspect of the present invention, since the stepped part is formed slantly with respect to the protruding direction, a situation such that hair is caught strongly by the stepped part and the hair is damaged or the hair is cut can be avoided. Moreover, when more than a certain degree of tension is applied, the hair can be allowed to escape from the stepped part formed slantly and then to the tooth bottom, and thus, backcombed hair can be formed with care to the hair.

[0036] Further, in accordance with the aspect of the present invention, since the first section which is formed from the tip end side toward the stepped part of the comb tooth, or the second section which is formed from the stepped part toward the root side, is formed in a tapered shape, compared with a comb tooth formed in a straight shape, the resistance against hair becomes stronger even at the perimeter of the comb tooth itself which the hair contacts, and thus, suitable tension required for backcombing hair can easily be obtained.

[0037] In accordance with the aspect of the present invention, since the heights of the tip ends of three or more adjacent comb teeth are different from each other, when the comb is inserted into hair from the tooth tips when backcombing hair, timings of the hair contacting the tooth tips are different between the adjacent comb teeth. Compared with parts where the tooth tips project more than other parts, parts where the tooth tips project less than other parts contact the hair at the tooth tips later, and thus, the resistance becomes relatively low against hair contacting the parts where the tooth tips are less projected. As a result, the resistance against the hair at the tooth tips is dispersed, and when backcombing hair, sweater-pill-like portions are generated less within some part of the backcombed hair, and uniformly spread backcombed hair can easily be formed without increasing density of the hair. Note that in the present invention, the reason why the number of teeth of which the heights of the tip ends differ is limited to three or more adjacent comb teeth is that the degree of dispersion of resistance by the tooth tips is not enough with two adjacent comb teeth.

[0038] In accordance with the aspect of the present invention, since three or more tooth bottoms between adjacent comb teeth are different from each other in the tooth bottom depth, when backcombing hair, timings of the hair contacting the tooth bottoms are different between the adjacent comb teeth, and accordingly, a degree of catching hair at the tooth bottoms is different from each tooth bottom. In other words, a part of hair caught at the tooth bottoms more convexed than other parts is caught strongly because the tooth bottoms are protruding. This results in causing locally strong and weak parts in the degree of catching hair at the tooth bottoms of the comb, and suitable tension for backcombing hair can be obtained mainly on the part of hair caught strongly, and thus, backcombed hair can easily be set. Further, since the tooth bottoms have more than three different depths, hair caught at the tooth bottoms with intermediate bottom depths obtains an intermediate degree of tension, and it mitigates a difference between the strong and weak parts of the degree of catching at the most convexed tooth bottoms and the most concaved tooth bottoms. Therefore, tangles of hair due to the difference between the strong and weak parts of the degree of catching are suppressed, and the comb can be moved smoothly when backcombing hair.

[0039] In accordance with the aspect of the present invention, since the plurality of comb teeth where the stepped part is not formed are arrayed parallel to the row of the plurality of comb teeth where the stepped part is formed, hair enters even between the row of comb teeth where the stepped part is formed and the row of comb teeth where the stepped part is not formed, and the resistance against the hair can be increased. In addition, since intervals between the comb teeth are different between the respective rows, the degree of catching hair can be dispersed.

[0040] In accordance with the aspect of the present invention, since rows of the plurality of comb teeth where the stepped part is not formed are formed on both sides of the row of the plurality of comb teeth where the stepped part is formed, hair enters even between the row of comb teeth where the stepped part is formed and the rows of comb teeth where the stepped part is not formed, and the resistance against the hair can further be increased. In addition, since the intervals between the comb teeth are different between the respective rows, the degree of catching hair can be dispersed.

[0041] In accordance with the aspect of the present invention, since the comb teeth where the stepped part is not formed are formed longer than the comb teeth where the stepped part is formed, the tip ends of comb teeth where the stepped part is not formed is located higher than the tip ends of comb teeth where the stepped part is formed. Also, the comb teeth where the stepped part is not formed have wide intervals between the comb teeth, and therefore, the tip ends of the comb teeth where the stepped part is not formed can be used as coarse teeth suited for parting the hair, rough hairdressing, etc.

Thus, the usability of the comb can be widened.

[0042] In accordance with the aspect of the present invention, since the comb teeth where the stepped part is formed are longer than the comb teeth where the stepped part is not formed, the tip ends of the comb teeth where the stepped part is formed are located higher than the tip ends of the comb teeth where the stepped part is not formed. Also, the comb teeth where the stepped part is formed have narrow intervals between the comb teeth, and therefore, the tip ends of the comb teeth where the stepped part is formed can be used as so-called fine teeth to smooth down the surface of the formed backcombed hair. The comb used to form backcombed hair can be used as it is to smooth down the surface of the backcombed hair, and thus, a series of procedures from forming backcombed hair to hairdressing the surface of the backcombed hair can smoothly be performed with one comb.

[0043] In accordance with the aspect of the present invention, since some of the plurality of comb teeth where the stepped part is formed are longer than the comb teeth where the stepped part is not formed, and also other comb teeth where the stepped part is formed are shorter than the comb teeth where the stepped part is not formed, the comb has a range where the comb teeth can be used as the so-called fine teeth, and a range where the comb teeth can be used as the so-called coarse teeth. As a result, one comb can be applied to the usage as the fine teeth and also to the usage as the coarse teeth, and thus, a series of procedures from forming backcombed hair to hairdressing can more smoothly be performed.

[0044] In accordance with the aspect of the present invention, since the tooth bottom of the comb tooth, where the stepped part is formed, is formed so as to be convexed in the center part of the comb main body in width directions thereof, hair caught at the tooth bottom contacts at the convexed center part of the tooth bottom in a line contact or a point contact. Thus, contact pressure of the hair against the tooth bottom is increased, the degree of catching hair at the tooth bottom is increased more, and therefore, backcombed hair can easily be formed, and damage to the hair by an edge of the tooth bottom etc. can be reduced.

Effects of the Invention

[0045] In accordance with the aspect of the present invention, since the stepped part is formed so as to be exposed on the perimeter of the comb tooth, when backcombing hair, the hair combed by the comb is caught at the stepped part and the necessary resistance can be obtained. Thus, as an entire comb, the tension to the hair can be increased to be higher than the conventional comb, and the hair can suitably be backcombed.

[0046] In accordance with the aspect of the present invention, since the stepped part is formed slantly with respect to the protruding direction, it can be avoided that the hair is caught strongly by the stepped part and dam-

aged. Moreover, when more than a certain degree of tension is applied to the hair, the hair is allowed to escape from the stepped part formed slantly toward the tooth bottom, and thus, backcombed hair can be formed with care to the hair.

[0047] In accordance with the aspect of the present invention, since the first section which is formed from the tip end side toward the stepped part of the comb teeth, or the second section which is formed from the stepped part toward the root side is formed in a tapered shape, compared to comb teeth formed in a straight shape, the resistance against the hair can be stronger, even at the perimeters of the comb teeth themselves where the hair contacts, and thus, the suitable tension required for backcombing hair can be obtained.

[0048] In accordance with the aspect of the present invention, since the heights of the tip ends are different from each other, the resistance against the hair at the tooth tips is dispersed, and when backcombing hair, it can be prevented that the sweater-pill-like portions are generated within some part of the backcombed hair, and uniformly spread backcombed hair can be formed without increasing density of the hair.

[0049] In accordance with the aspect of the present invention, since the tooth bottoms are different from each other in the tooth bottom depth, when backcombing hair, the degree of catching hair at the tooth bottoms can be different between respective tooth bottoms, and thus, the suitable tension required for backcombing hair can be obtained, and backcombed hair can uniformly be set.

[0050] In accordance with the aspect of the present invention, since the plurality of comb teeth where the stepped part is not formed are arrayed parallel to the row of the plurality of comb teeth where the stepped part is formed, the resistance against the hair can be increased. In addition, since the intervals between the comb teeth are different between the respective rows, the degree of catching hair is dispersed and backcombed hair can easily be set.

[0051] In accordance with the aspect of the present invention, since the comb teeth where the stepped part is not formed are longer than the comb teeth where the stepped part is formed, the tip ends of the comb teeth where the stepped part is not formed can be used as the coarse teeth, and the usability of the comb can be widened.

[0052] In accordance with the aspect of the present invention, since the comb teeth where the stepped part is formed are longer than the comb teeth where the stepped part is not formed, the tip ends of the comb teeth where the stepped part is formed can be used as the fine teeth, and the usability of the comb can be widened.

[0053] In accordance with the aspect of the present invention, since some of the plurality of comb teeth where the stepped part is formed are longer than the comb teeth where the stepped part is not formed, and other comb teeth where the stepped part is formed are shorter than the comb teeth where the stepped part is not formed,

some range of the comb can be used as the dense teeth and another range can be used as the coarse teeth. In addition to the usage of backcombing hair, the comb can be used for other usages.

[0054] In accordance with the aspect of the present invention, since the tooth bottom of the comb tooth, where the stepped part is formed, is formed to be convexed in the center part of the comb main body in the width directions thereof, hair caught at the tooth bottom contacts the tooth bottom at the convexed center part in a line contact or a point contact. Thus, the contact pressure of the hair against the tooth bottom can be increased, and therefore, the degree of catching hair at the tooth bottom is increased more, and backcombed hair can easily be formed.

BRIEF DESCRIPTION OF DRAWINGS

[0055]

Fig. 1 is a perspective view of a comb in accordance with one embodiment of the present invention.

Fig. 2 is a front elevational view of the comb in accordance with the embodiment.

Fig. 3 is a plan view of a substantial part of the comb in accordance with the embodiment, seen from a tip end side of comb teeth.

Fig. 4 is a cross-sectional view of the comb substantial part taken along a line A-A illustrated in Fig. 3, illustrating a state in which an inner comb teeth member is removed.

Fig. 5 is an enlarged front elevational view illustrating a relation between outer comb teeth and inner comb teeth.

Fig. 6 is an enlarged front elevational view illustrating the inner comb teeth.

Fig. 7 is a cross-sectional view of the inner comb teeth etc., taken along a line B-B in Fig. 6.

Fig. 8 is an enlarged plan view of a substantial part illustrating a state in which hair is entered into the comb teeth.

Fig. 9 is an enlarged front elevational view of a substantial part illustrating a situation in which hair enters between the inner comb teeth.

Fig. 10 is an enlarged view of a substantial part which is partially illustrated as a cross section, illustrating a situation in which hair enters between the inner comb teeth and the outer comb teeth, etc.

Fig. 11 illustrates inner comb teeth of a modification, where Fig. 11(a) is an enlarged front elevational view and Fig. 11(b) is an enlarged side elevational view, seen from a tip end side of a comb main body.

Fig. 12 illustrates inner comb teeth of a modification, where Fig. 12(a) is an enlarged front elevational view and Fig. 12(b) is an enlarged side elevational view, seen from a tip end side of a comb main body.

Figs. 13(a), (b), and (c) are schematic diagrams illustrating patterns of a tip end height of inner comb

teeth of a modification.

Figs. 14(a), (b), and (c) are schematic diagrams illustrating patterns of a tooth bottom depth between the inner comb teeth of a modification.

Fig. 15(a) is an enlarged plan view of a substantial part illustrating a modification in which four rows of comb teeth are provided, and Fig. 15(b) is an enlarged plan view of a substantial part illustrating a modification in which five rows of comb teeth are provided.

Fig. 16(a) is an enlarged plan view of a substantial part illustrating a modification in which two rows of comb teeth are provided, and Fig. 16(b) is an enlarged plan view of a substantial part illustrating a modification in which one row of comb teeth is provided.

Fig. 17 is an enlarged view of a substantial part which is partially illustrated as a cross section, where a modification seen from a tip end side of a comb main body is illustrated.

Fig. 18 is a front elevational view illustrating a modification of the comb which is a type without a grip part.

Fig. 19 is an enlarged front elevational view illustrating a relation between outer comb teeth and inner comb teeth of a modification.

Fig. 20 is a front elevational view of a comb of a modification in which lengths of inner comb teeth are different between sections.

Fig. 21 is a schematic diagram illustrating a way to move a comb when backcombing hair.

MODES FOR CARRYING OUT THE INVENTION

[0056] Figs. 1 to 3 are schematic diagrams illustrating an overall appearance of a comb 1 in accordance with one embodiment of the present invention. The comb 1 of this embodiment is a type which is called a "tail comb" having a shape in which a bar-shaped grip part 4 projects from a comb main body 2, and the comb 1 is made of a synthetic resin in this embodiment. As illustrated in Figs. 1, 3, etc., the comb 1 is provided with a total of three rows of comb teeth, in which outer comb teeth 7 and 8 are arrayed in parallel to and on both sides of a row of the inner comb teeth 20, and the inner comb teeth 20 etc. are formed in a characteristic shape. Therefore, it is easy to backcomb hair. Hereinafter, the comb 1 of this embodiment is described in detail. Note that an X-axis in Fig. 1 is an axis parallel to a longitudinal direction of the comb main body 2 from which the pluralities of the outer comb teeth 7 and 8 and a plurality of inner comb teeth 20 are protruding (the X-axis extends in the same direction as a longitudinal direction of the bar-shaped grip part 4). Further, a Y-axis is an axis parallel to width directions of the comb main body 2 (an axis which is perpendicular to the X-axis described above), and a Z-axis is an axis parallel to the protruding direction of the inner comb teeth 20 (an axis which is perpendicular to both the X-axis and

the Y-axis described above). The directions of the X-axis, the Y-axis, and the Z-axis (X-axis direction, Y-axis direction, and Z-axis direction) are similar in other drawings.

[0057] In the comb main body 2, pointed comb protecting parts 5a and 5b are protruding in the Z-axis direction from a tip end part 2a and a rear end part 2b, respectively, of a bar-shaped portion which extends in the X-axis direction. These comb protecting parts 5a and 5b are located so as to sandwich therebetween the pluralities of outer comb teeth 7 and 8 and inner comb teeth 20 which are arrayed in the X-axis direction, and serve as protection for the comb teeth 7, 8 and 20. In addition, in the comb main body 2, a plurality of through-holes 6 which penetrate the comb main body 2 from one side surface 2c to the other side surface 2d (penetrate in the Y-axis direction) are formed in the bar-shaped portion, at a given interval in the X-axis direction. These through-holes 6 have an elliptical shape in which their major axes are parallel to the X-axis direction, and a counter bore in an elliptically recessed shape is formed around each through-hole.

[0058] Further, the comb main body 2 is formed with a triangular-shaped coupling part 3 at the rear end part 2b so that the comb main body 2 is connected with the bar-shaped grip part 4. In the coupling part 3, a grooved recessed portion 3a which extends in the X-axis direction is formed, and raindrop-shaped through-holes 3b and 3c are formed so as to be separated from the recessed portion 3a in the Z-axis direction. Since these recessed portion 3a and through-holes 3b and 3c are formed in the coupling part 3, the rigidity of the coupling part 3 is reduced to allow itself to be elastically bent. Thus, when a user, such as a beautician, a barber, etc., uses the comb 1 and if he/she applies a gripping force in such a way that he/she holds both the grip part 4 and the comb main body 2, the coupling part 3 is elastically curved or bent so that the entire comb conforms to the user's hand.

[0059] Moreover, as illustrated in Fig. 3, both the side surfaces 2c and 2d of the comb main body 2 are formed in wavy surfaces having a concavo-convex shape (the through-hole 6 is located at each concave part) so that the wavy surfaces of the concave-convex shape exhibit an anti-slip function for user's fingertips when the user holds the comb main body 2 at the side surfaces 2c and 2d with his/her fingers. Based on a similar reason, a back surface 2e of the comb main body 2 (a surface opposite from the side where the comb teeth 7, 8 and 20 are located) is formed in a wavy surface having a concave-convex shape, and a perimeter of the coupling part 3 which continues from the comb main body 2 and a perimeter of the grip part 4 are formed in concave-convex shapes, so that those concave-convex shape parts exhibit the anti-slip function.

[0060] As illustrated in Fig. 5, in the comb main body 2, a plurality of pin-like comb teeth 7 and 8 are protruding from an upper surface 2f, and an interval of the comb teeth 7 and 8 is set to a dimension P (a pitch dimension P). Note that, as a numerical value example of the pitch

dimension P, a value within a range from about 3 mm to about 8 mm can be considered, and it is suitable to set the value at about 5 mm in order to easily backcomb the hair. In addition, as illustrated in Fig. 4, an elongated groove-like slot portion 2g is formed in the comb main body 2 so as to extend in the X-axis direction at a center part in width directions of the comb main body 2. The inner comb teeth member 10 which is a separate member from the inner comb teeth 20 and where the inner comb teeth 20 are formed is inserted or fitted into the slot portion 2g. A latching protrusion 2h for latching the inner comb teeth member 10 projects from a back end side of the slot portion 2g. Note that the comb main body 2 in Fig. 4 is illustrated as a cross-sectional shape taken along a line A-A in Fig. 3.

[0061] As illustrated in Fig. 4, the inner comb teeth member 10 is a plate-like member as a whole, and a plurality of inner comb teeth 20 are protruding from an elongated-plate-like base part 11 of the inner comb teeth member 10. A plurality of ellipse holes 12 (these ellipse holes 12 penetrate the base part 11) are formed at a given interval in the base part 11 from one end part 11c to the other end part 11d. These ellipse holes 12 are aligned with the through-holes 6 of the comb main body 2 so that the ellipse holes 12 communicate with the through-holes 6, respectively, when the inner comb teeth member 10 is attached to the slot portion 2g of the comb main body 2. Ventilation is secured by the through-holes 6 which communicate with the ellipse holes 12. Thus, if the user, such as a beautician, a barber, etc., places his/her fingers on the side surface 2c (or the other side surface 2d) of the comb main body 2, his/her fingertips are guided to the through-holes 6 located at the concave part because of the wavy surface having the concavo-convex shape of the side surface 2c (or the other side surface 2d). Therefore, a situation in which the comb is slippery with wet fingertips can be improved because the fingertips placed on the side surface 2c (or the other side surface 2d) can be exposed to open air via the through-holes 6 to dry the fingertips faster even if the fingertips are wet with moisture, chemical solutions, etc.

[0062] In addition, a plurality of elongated groove portions 13 are formed in the base part 11 of the inner comb teeth member 10 at three locations above the ellipse holes 12, respectively, so that the inner comb teeth member 10 easily enters into the slot portion 2g of the comb main body 2. In addition, a latching recessed portion 11e is formed in the other end part 11d of the inner comb teeth member 10. When the inner comb teeth member 10 is fitted or inserted into the slot portion 2g of the comb main body 2, the locking projection 2h of the slot portion 2g is engaged with the latching recessed portion 11e and the latching recessed portion 11e functions as a stopper of the inner comb teeth member 10. Note that a surface of an upper part 11b where the inner comb teeth 20 protrude and which is opposite from a back surface 11a of the base part 11 of the inner comb teeth member 10, is formed in a zigzag shape by differentiating bottom depths

between the comb teeth in the inner comb teeth 20 as will be described later.

[0063] Fig. 6 illustrates the plurality of the inner comb teeth 20 provided to the inner comb teeth member 10 in detail. The inner comb teeth 20 of this embodiment have the inner comb teeth in a total of three patterns: first inner comb teeth 30, second inner comb teeth 40, and third inner comb teeth 50, of which tip end heights are different from each other. One of the first inner comb teeth 30, one of the second inner comb teeth 40, and one of the third inner comb teeth 50, which continue sequentially and are adjacent to each other, constitute one comb teeth group as a group unit. Thus, the inner comb teeth 20 are an aggregate of such comb teeth groups where a plurality of comb teeth groups are arrayed in the X-axis direction. Note that Fig. 6 illustrates the inner comb teeth 20, seen in a direction parallel to the Y-axis direction (a direction when the side surface 2c of the comb main body 2 is seen from a front elevational view).

[0064] Among the first inner comb tooth 30, the second inner comb tooth 40, and the third inner comb tooth 50, the third inner comb tooth 50 has the highest tip position. The second inner comb tooth 40 has the second highest tip position (a tip end 40a of the second inner comb tooth 40 is lower than a tip end 50a of the third inner comb tooth 50 by a height dimension h_2). The first inner comb tooth 30 has the lowest tip position (a tip end 30a of the first inner comb tooth 30 is lower than the tip end 40a of the second inner comb teeth 40 by a height dimension h_1). As numerical value examples of the height dimensions h_1 and h_2 , values within a range from about 1 mm to about 3 mm can be considered, and about 1 mm is preferred because it is easy to form the uniform back-combed hair.

[0065] Note that, as illustrated in Fig. 5, in a state where the inner comb teeth member 10 is inserted or fitted into the comb main body 2, even the third inner comb teeth 50 with the highest tip position are lower than the outer comb teeth 7 (the outer comb teeth 8) by a height dimension H (a dimension from a tip end 7a of the outer comb tooth 7 to the tip end 50a of the third inner comb tooth 50). Thus, the outer comb teeth 7 (the outer comb teeth 8) are longer than the inner comb teeth 20, and since the inner comb teeth 20 (the first inner comb teeth 30, the second inner comb teeth 40, and the third inner comb teeth 50) do not exist within a range of the height dimension H from the tip end side thereof, it is possible to use the outer comb teeth 7 (the outer comb teeth 8) of the comb 1 within a range of the height dimension H from the tip end side as coarse teeth with the pitch dimension P , and the parts of the outer comb teeth 7 (the outer comb teeth 8) can be used for parting the hair, rough hairdressing, etc. Note that, as a numerical value example of the height dimension H , a value within a range from about 3 mm to about 10 mm can be considered, and about 5 mm is preferred because this makes the comb easy to use.

[0066] Further, as illustrated in Fig. 6, a stepped part 32 is formed at an intermediate position of the first inner

comb tooth 30 in the comb tooth protruding direction (the Z-axis direction) which is the longitudinal direction of the first inner comb tooth 30. The stepped part 32 is formed so that its thickness dimension (a dimension parallel to the X-axis direction) increases toward the root side (the base part 11 side which is an origin of protrusion) and its perimeter becomes diagonal. As the result, the stepped part 32 has a trapezoidal shape as a whole. Such a perimeter side of the stepped part 32 seen in a direction parallel to the Y-axis direction (the direction when the side surface 2c of the comb main body 2 is seen from the front elevational view) is exposed between the adjacent second inner comb teeth 40 (between the comb teeth).

[0067] In addition, the first inner comb tooth 30 has a first section 31 ranging from the tip end 30a to an upper end 32a of the stepped part 32, and a second section 33 ranging from a lower end 32b of the stepped part 32 to a root 30b (a protrusion base part of the upper part 11b of the base part 11). The first section 31 is formed in a tapered shape so that a thickness dimension thereof parallel to the X-axis direction spreads from the tip end 30a to the stepped part 32 (a dimension in a direction perpendicular to the protruding direction of the first inner comb tooth 30). To be more specific, assuming that a thickness dimension on the tip end 30a side is w_1 and a thickness dimension on the upper end 32a side of the stepped part 32 is w_2 , a relation of $w_1 < w_2$ is satisfied. Similarly, the second section 33 is formed in a tapered shape so that a thickness dimension parallel to the X-axis direction spreads from the lower end 32b of the stepped part 32 to the root 30b. To be more specific, assuming that a thickness dimension of the lower end 32b of the stepped part 32 is w_3 and a thickness dimension on the root 30b side is w_4 , a relation of $w_3 < w_4$ is satisfied (a numerical value example of w_4 can be considered to be a value within a range from about 0.8 mm to about 2.0 mm). Note that since the entire stepped part 32 has the trapezoidal shape as described above, the thickness dimension w_2 at the lower side of the first section 31 is smaller than the thickness dimension w_3 at the upper side of the second section 33 ($w_2 < w_3$).

[0068] Stepped parts etc. of the second inner comb teeth 40 and the third inner comb teeth 50 basically have an equivalent structure to the first inner comb teeth 30 described above. That is, stepped parts 42 and 52 of a trapezoidal shape are formed at an intermediate position in the comb teeth protruding direction (the Z-axis direction), respectively, and sections from tip ends 40a and 50a to upper ends 42a and 52a of the stepped parts 42 and 52 are first sections 41 and 51 of a tapered shape, respectively. Sections from lower ends 42b and 52b of the stepped parts 42 and 52 to roots 40b and 50b are second sections 43 and 53 of a tapered shape, respectively. Note that although the inner comb teeth 30, 40, and 50 are differentiated from each other in their heights of the tip ends 30a, 40a, and 50a, respectively, as described above, the heights of the stepped parts 32, 42,

and 52 in the inner comb teeth 30, 40, and 50 are the same.

[0069] The intervals (pitch dimensions) of the adjacent inner comb teeth 30, 40, and 50 are the same in this embodiment. Specifically, if the pitch dimension between the first inner comb tooth 30 and the second inner comb tooth 40 is p_1 , the pitch dimension between the second inner comb tooth 40 and the third inner comb tooth 50 is p_2 , and the pitch dimension between the third inner comb tooth 50 and another first inner comb tooth 30 which constitutes the subsequent comb teeth group is p_3 , a relation of $p_1=p_2=p_3$ is satisfied. Since the inner comb teeth 30, 40, and 50 have the shape as described above, gap dimensions between the comb teeth varies depending on locations in the protruding direction (the Z-axis direction) of the inner comb teeth 30, 40, and 50, even if the intervals of the inner comb teeth 30, 40, and 50 are $p_1=p_2=p_3$. Note that, as specific numerical value examples of p_1 , p_2 , and p_3 , values within a range from about 0.7 mm to about 2 mm can be considered, and about 1 mm is preferred because this makes it easy to backcomb the hair.

[0070] As illustrated in Fig. 6, for example, a gap between the third inner comb tooth 50 and the first inner comb tooth 30 which constitutes the subsequent comb teeth group is w_5 , as the gap dimension at the tip end of the first inner comb tooth 30. However, since the first sections 31 and 51 have the tapered shape, respectively, a gap dimension w_6 at the upper end 52a of the stepped part 52 is narrower than the gap dimension w_5 ($w_6 < w_5$). Further, a gap dimension at the lower end 52b of the stepped part 52 is narrower so that a relation of [the gap dimension $w_7 < \text{the gap dimension } w_6$] is satisfied since the stepped parts 32 and 52 have the trapezoidal shape, respectively. Further, a gap dimension at the root 50b is further narrower so that a relation of [the gap dimension $w_8 < \text{the gap dimension } w_7$] is satisfied since the second sections 33 and 53 have the tapered shape, respectively. Note that, as a numerical value example of the gap dimension w_6 , a value within a range from about 0.8 mm to about 1.2 mm can be considered, and as a numerical value example of the gap dimension w_7 , a value within a range from about 0.3 mm to about 0.7 mm can be considered. As described above, the gap between the third inner comb teeth 50 and the first inner comb teeth 30 which constitutes the subsequent comb teeth group is narrower in the gap dimension toward the tooth bottom, and moreover, since the stepped parts 32 and 52 of the trapezoidal shape exist at the intermediate locations, the gap dimension does not become narrower constantly, but the gap dimension becomes narrower suddenly at the locations corresponding to the stepped parts 32 and 52. Therefore, when the hair enters between the third inner comb teeth 50 and the first inner comb teeth 30, the gap acts as friction or resistance to achieve the necessary tension in the hair. Such a condition of variation in the gap dimension between the comb teeth is similarly applied to the gap between the first inner comb teeth 30 and the second inner comb teeth 40, and the gap be-

tween the second inner comb teeth 40 and the third inner comb teeth 50.

[0071] Further, the bottom depths at the gaps between the respective inner comb teeth 30, 40, and 50, which continue and are adjacent to each other, are differentiated, similar to the tip end heights described above. For example, a first tooth bottom 25 at the gap between the third inner comb teeth 50 and the first inner comb teeth 30 which constitutes the subsequent comb teeth group is the deepest. The second deepest is a second tooth bottom 26 at the gap between the first inner comb teeth 30 and the second inner comb teeth 40. A third tooth bottom 27 at the gap between the second inner comb teeth 40 and the third inner comb teeth 50 is the shallowest and is located higher by a height dimension h_3 than the first tooth bottom 25 which is the deepest. The third tooth bottom 27 is located higher by a height dimension h_4 than the second deep bottom 26 which is the second deepest. Note that numerical value examples of the height dimensions h_3 and h_4 are about the same as the height dimensions h_1 and h_2 described above.

[0072] Fig. 7 illustrates a cross section taken along a line B-B in Fig. 6, and illustrates a state in which the first inner comb tooth 30 is seen from the tip end side of the comb main body 2 (a diagram seen in a direction parallel to the X-axis direction). Even when it is seen in this direction, the first inner comb tooth 30 is formed so that the stepped part 32 is exposed on the perimeter at the intermediate position in the comb teeth protruding direction (the Z-axis direction), and even when it is seen in the direction illustrated in Fig. 7, the perimeter side of the stepped part 32 is formed slantly (the stepped part 32 is also formed in the trapezoidal shape when seen in the direction illustrated in Fig. 7) so that the width dimension (the dimension parallel to the Y-axis direction) increases toward the root side, similar to the case illustrated in Fig. 6.

[0073] Further, even when it is seen in the direction illustrated in Fig. 7, the first inner comb tooth 30 is formed in the tapered shape within the first section 31 from the tip end 30a to the upper end 32a of the stepped part 32. The first inner comb tooth 30 is also formed in the tapered shape, even when it is seen in the direction illustrated in Fig. 7, within the second section 33 from the lower end 32b of the stepped part 32 to the root 30b side. According to such a shape, if it is assumed that a width dimension on the tip end 30a side of the first inner comb tooth 30 when it is seen in the direction illustrated in Fig. 7 is w_{10} , and a width dimension on the upper end 32a side of the stepped part 32 is w_{11} , a relation of $w_{11} > w_{10}$ is satisfied. As for the second section 33, if it is assumed that a width dimension on the lower end 32b of the stepped part 32 is w_{12} ($w_{12} > w_{11}$) and a width dimension on the root side is w_{13} , a relation of $w_{13} > w_{12}$ is satisfied (as a numerical value example of w_{13} , a value within a range from about 1.5 mm to about 2.5 mm can be considered). The shapes of the second inner comb teeth 40 and the third inner comb teeth 50 are about the same as the shape of the

first inner comb teeth 30 when seen in the direction illustrated in Fig. 7 as described above. Note that although the outer comb teeth 7 and 8 where no stepped part is formed are illustrated by lines formed by alternating one long and two short dashes in Fig. 7, the outer comb teeth 7 and 8 are located at positions separated from the inner comb teeth 20 (the first inner comb teeth 30, the second inner comb teeth 40, and the third inner comb teeth 50) described above by a given gap.

[0074] Further, as illustrated in Fig. 7, the first tooth bottom 25 at the gap between the third inner comb tooth 50 and the first inner comb tooth 30 together have a chevron shape as a whole. More specifically, the first tooth bottom 25 is formed in a convex shape so that a center part 25a in the width directions of the comb main body 2 (Y-axis direction) is curved and protrudes the most, and both side parts 25b and 25c of the center part 25a are concavely curved. The shapes of the other second tooth bottom 26 and third tooth bottom 27 are similar to the shape of the first tooth bottom 25 described above. Thus, since the tooth bottoms 25 to 27 have the curved peripheral shapes at various locations, the hair which is caught by the first tooth bottoms 25 is made difficult to contact corner(s) of the upper part 11b in the base part 11 of the inner comb teeth member 10. Therefore, the hair will not be damaged more than necessary when backcombing the hair.

[0075] Figs. 1 to 3, and 5 illustrate a state in which the base part 11 of the inner comb tooth member 10 which is provided with the inner comb teeth 20 described above is inserted or fitted into the slot portion 2g of the comb main body 2. Since the base part 11 is inserted or fitted in this way, the base part 11 of the inner comb teeth member 10 becomes integral with the comb main body 2. Therefore, the inner comb teeth 20 of the inner comb teeth member 10 also protrude from the comb main body 2, and the row of the inner comb teeth 20 and the rows of the outer comb teeth 7 and 8 are parallel to the X-axis direction (refer to Fig. 3). Note that, in the state in which the inner comb teeth member 10 is inserted or fitted into the comb main body 2 and becomes integral with the comb main body 2, the first tooth bottoms 25 which are formed the deepest in the inner comb teeth 20 are disposed higher in the Z-axis direction than the upper surface 2f of the comb main body 2, and thereby, when backcombing the hair, the first tooth bottoms 25 at the deepest position can also contact the hair easily to apply the tension to the hair, as illustrated in Fig. 5 etc.

[0076] Further, the interval between the outer comb teeth 7 and 8 where the stepped parts are not formed (the pitch dimension P illustrated in Fig. 5) differs from the interval between the inner comb teeth 20 illustrated in Fig. 6 (the pitch dimensions p1, p2, and p3), and the pitch dimension P of the outer comb teeth 7 and 8 is wider than the pitch dimensions p1, p2, and p3 of the inner comb teeth 20 ($P > p1, p2, \text{ and } p3$). According to the difference between the pitch dimension P and the pitch dimensions p1, p2, and p3, when the inner comb teeth

member 10 is inserted into the comb main body 2, some of the plurality of inner comb teeth 20 are sandwiched from both sides by either the outer comb teeth 7 or the outer comb teeth 8. For example, in Fig. 5, the second one among the first inner comb teeth 30 and the third one among the second inner comb teeth 40 when counted from the comb protecting part 5a which is located on the tip end side of the comb 1 (from the left in Fig. 5) are sandwiched by the outer comb teeth 7 and the outer comb teeth 8.

[0077] Next, as illustrated in Fig. 19, a situation when backcombing the hair using the comb 1 having the structure described above is described. First, when the comb 1 is inserted into a bundle of hair of a given volume which is extracted and held up from the rest of the hair, the hair enters into respective intervals between the outer comb teeth 7, 8 and the inner comb teeth 20.

[0078] Fig. 9 illustrates a situation in which hair Hr enters into respective intervals between the inner comb teeth 20 (the first inner comb teeth 30, the second inner comb teeth 40, and the third inner comb teeth 50). Note that the hair Hr illustrated in Fig. 9 is illustrated as a circular cross-sectional shape.

[0079] When the comb 1 is inserted into the hair bundle, the hair Hr contacts each of the tip ends 30a, 40a, and 50a of the first inner comb teeth 30, the second inner comb teeth 40, and the third inner comb teeth 50. However, since the heights of the tip ends 30a, 40a, and 50a are different from each other as described above, the tip end 50a of the third inner comb teeth 50 which is located the highest tends to contact the hair Hr first. Thus, since the situations (timings) of the hair contacting the tip ends 30a, 40a, and 50a differ for the inner comb teeth 30, 40, and 50, the contacting situations to the inner comb teeth 30, 40, and 50 are dispersed. Therefore, the hair which can be backcombed becomes uniform, and sweater-pill-like portions are generated less within the backcombed hair.

[0080] Next, a situation in which the hair Hr enters into respective intervals between the inner comb teeth 20, 30, and 50 is described. As described above, since the first sections 31, 41, and 51 are formed in the tapered shape, the intervals between the tip ends are quite larger than the intervals between the tooth bottoms. Therefore, the hair Hr easily enters into intervals between the comb teeth smoothly.

[0081] Since among the hair Hr entered in intervals between the comb teeth, some of the hair Hr which enters along the inner comb teeth 20, 30, and 50 moves along the first sections 31, 41, and 51 of the tapered shape, certain levels of resistance can be obtained. Further, the hair Hr which has moved along the first sections 31, 41, and 51 then moves to the stepped parts 32, 42, and 52. However, since the stepped parts 32, 42, and 52 have different angles from the first sections 31, 41, and 51, high resistance can be obtained when the hair enters into the ranges of the stepped parts 32, 42, and 52. Therefore, the tension required for backcombing the hair can be

obtained. Further, since the stepped parts 32, 42, and 52 have the trapezoidal shape as described above, the hair Hr which moves along the stepped parts 32, 42, and 52 receives resistance stronger than the resistance at the first sections 31, 41, and 51 of the tapered shape described above.

[0082] Further, the hair Hr which has moved along the stepped parts 32, 42, and 52 then moves toward the second sections 33, 43, and 53. However, since the intervals between the comb teeth in the second sections 33, 43, and 53 are narrower than the intervals at the tip ends 30a, 40a, and 50a described above, resistance by pressure which is caused by the narrow intervals can be obtained. Since the second sections 33, 43, and 53 are also formed in the tapered shape, a certain level of resistance can be obtained in the hair Hr which moves toward the tooth bottoms along the second sections 33, 43, and 53. In addition, since the interval dimensions between the comb teeth in the second sections 33, 43, and 53 are narrower toward the tooth bottoms, resistance which is caused by increasing the density of the hair Hr can also be obtained according to the narrowing dimensions. Further, when the hair Hr which has moved to the tooth bottoms 25, 26, and 27 increases, the hair Hr is deposited at each tooth bottom part, and thus, resistance by increasing the hair density can be obtained. Note that quantities of the hair Hr which are deposited between the comb teeth in the second sections 33, 43, and 53 differ from each other because the depths of the tooth bottoms 25, 26, and 27 also differ from each other as described above, and the resistance between the comb teeth in the second sections 33, 43, and 53 varies accordingly. Therefore, the backcombed hair formed becomes uniform, and sweater-pill-like portions are generated less within the backcombed hair.

[0083] Further, Fig. 10 illustrates the contacting situation of hair Hr4 at the first tooth bottom 25. As described above, the first tooth bottom 25 protrudes so as to have a peak at the center part 25a while both the side parts 25b and 25c are dented. Therefore, the hair Hr4 which enters into the first tooth bottom 25 mainly comes to contact with the first tooth bottom 25 at the protruding center part 25a. Thus, the hair Hr4 contacts the first tooth bottom 25 in not a surface contact but a line contact or a point contact, and a contacting area is smaller than the surface contact. Accordingly, the contact pressure can be increased and a strong tension is applicable to the hair Hr4 which is in contact with the first tooth bottom 25. Further, since the center part 25a protrudes in the curved shape, it does not cause damage to the hair due to the tension. Further, since both the side parts 25b and 25c are dented, both the corners of the upper part of the base part 11 will not cause damage to the hair Hr4. Such a situation for the hair at the first tooth bottom 25 is similar for the other second tooth bottom 26 and third tooth bottom 27.

[0084] Note that, as illustrated in Fig. 10, the first inner comb teeth 30 have the peripheral shape in which the first section 31 and the second section 33 are formed in

the tapered shapes, similar to the case in which they are seen in the direction parallel to the Y-axis direction illustrated in Fig. 9 even when they are seen in the direction parallel to the X-axis direction. In addition, the stepped parts 32 are formed in the trapezoidal shape. Therefore, a given level of resistance can be obtained against the hair which contacts the first inner comb teeth 30 and moves toward the tooth bottoms. Further, when the first inner comb teeth 30 are seen in the direction parallel to the X-axis direction, the outer comb teeth 7 and 8 are located on both sides of the first inner comb teeth 30. Thus, even in the gap between the first inner comb teeth 30 and the outer comb teeth 7, or the gap between the first inner comb teeth 30 and the outer comb teeth 8, a given level of resistance can be obtained also at the gaps between the first inner comb teeth 30 and the outer comb teeth 7 and 8 because the first inner comb teeth 30 have the shape described above and the width dimension of the gap becomes narrower as it goes toward the tooth bottom. Situations at the gaps between the second inner comb teeth 40 and the outer comb teeth 7 and 8, or the gaps between the third inner comb teeth 50 and the outer comb teeth 7 and 8, are similar to the situation at the gaps between the first inner comb teeth 30 and the outer comb teeth 7 and 8.

[0085] Further, Fig. 8 illustrates a situation in which hair Hr1 to 3 enter into the gaps between the inner comb teeth 20 and the outer comb teeth 7 and 8 so as to transverse the inner comb teeth 20 and the outer comb teeth 7 and 8. Fig. 8 illustrates a situation in which the hair Hr1 enters into the gap on the right side in Fig. 8 of the outer comb teeth 7 and 8 parallel to the Y-axis direction. In such a case, the hair Hr1 is pinched linearly between the inner comb tooth 20 which is located immediately on the right side of the outer comb teeth 7 and 8 in the X-axis direction. Further, the hair Hr2 enters into one of the places where the outer comb teeth 7 and 8 are located on both sides of the inner comb tooth 20 in the direction parallel to the Y-axis direction. Therefore, the hair Hr2 is bent by the inner comb tooth 20 and is pinched by the inner comb tooth 20 and the outer comb tooth 7 or 8, and strong resistance can be obtained accordingly. Further, also in a situation in which the inner comb tooth 20 does not exist between the outer comb teeth 7 and 8, since a situation in which hair Hr3 is bent is produced as well, the given level of resistance can be obtained because the inner comb tooth 20 is located at a location adjacent to the outer comb teeth 7 and 8 in the X-axis direction.

[0086] As described above, since the comb 1 in accordance with this embodiment devises the shape which produces the given level of resistance at various locations, the comb 1 can give the hair a suitable tension as a whole when backcombing the hair. Therefore, it is easy to backcomb the hair. Further, in the comb 1 of this embodiment, there are three different patterns of the tip end heights of the inner comb teeth 20 and the depths of the tooth bottoms. Thus, since variations in the resistance feel are created, the uniform backcombed hair can be

formed while preventing parts where the hair is curled like pills from being created within the backcombed hair by the concentrated resistance. Moreover, if suitable tension is secured as described above, since the stepped parts 32, 42, and 52 are formed in the shapes in which their perimeters are open, situations in which the hair is damaged at sharp parts like the edges, and the hair is caught by the stepped parts 32, 42, and 52 and is damaged or torn off, do not occur. Note that the comb in accordance with the present invention is not limited to the embodiment described above but various modifications can be considered.

[0087] For example, although all the pitch dimensions p_1 , p_2 , and p_3 of the adjacent inner comb teeth 30, 40, and 50 of the inner comb teeth 20 are the same in the description related to Fig. 6, it is also possible to have dimensions different from each other. For example, the relation of the pitch dimensions may be set as $p_1 < p_2 < p_3$ so that the pitch dimension p_1 between the first inner comb tooth 30 and the second inner comb tooth 40 is the narrowest, the pitch dimension p_2 between the second inner comb tooth 40 and the third inner comb tooth 50 is the second narrowest, and the pitch dimension p_3 between the third inner comb tooth 50 and the first inner comb teeth 30 which constitutes the subsequent comb teeth group is the widest. Thus, since the pitch dimensions are different from each other, the resistance between the comb teeth at the narrowest pitch dimension p_1 is the highest when backcombing. The resistance between the comb teeth at the pitch dimension p_2 is the second highest, and the resistance between the comb teeth at the pitch dimension p_3 is lower than others. Therefore, the resistance is suitably dispersed by the difference in the pitch dimension between the inner comb teeth 20 as a whole, and it is useful to form the uniform backcombed hair. Note that a variation of the different pitch dimensions may include $p_1 > p_2 > p_3$, in addition to $p_1 < p_2 < p_3$. In such a case, the levels of resistance between the respective comb teeth are in a reversed order from the case described above.

[0088] Further, according to the previous description, as for the shape of the inner comb tooth 20, the stepped part 32 when the inner comb tooth 20 (the first inner comb tooth 30) is seen in the direction parallel to the Y-axis direction illustrated in Fig. 6 and the stepped part 32 when the inner comb tooth 20 (the first inner comb tooth 30) is seen in the direction parallel to the X-axis direction illustrated in Fig. 7 are formed at the same position in a direction parallel to the Z-axis direction (the protruding direction of the inner comb tooth 20), and both the stepped parts 32 in respective directions are continuously integral in all directions. Alternatively, the stepped part 32 (the first stepped part) in the direction illustrated in Fig. 6 and the stepped part 32 (the second stepped part) in the direction illustrated in Fig. 7 are formed at different positions in the direction parallel to the Z-axis direction so that these stepped parts 32 are exposed respectively on the perimeter of the inner comb tooth (the first inner comb

tooth 30) as separate parts from each other. As constructed in such a way, the resistance caused by the stepped parts (the first stepped part and the second stepped part) in the respective directions occurs at different positions in the Z-axis direction, between the direction parallel to the Y-axis direction illustrated in Fig. 6 and the direction parallel to the X-axis direction illustrated in Fig. 7. Therefore, multi-stage friction can be obtained against the hair bundle. Alternatively, each stepped part 32 may be formed so as to be revealed on the perimeter of the comb tooth only either when the inner comb tooth 20 (the first inner comb tooth 30) is seen in the direction parallel to the Y-axis direction illustrated in Fig. 6, or when the inner comb tooth 20 (the first inner comb tooth 30) is seen in the direction parallel to the X-axis direction illustrated in Fig. 7. Therefore, the shape of the comb teeth can be simplified.

[0089] Fig. 11(a) illustrates inner comb teeth (a first inner comb teeth 130, a second inner comb teeth 140, a third inner comb teeth 150) of a modification. Unlike the inner comb teeth 20 illustrated in Fig. 6, these inner comb teeth 130, 140, and 150 are characterized by being constructed so that first sections 131, 141, and 150 on the tip end 130a, 140a, and 150a sides and second sections 133, 143, and 153 on root 130b, 140b, and 150b sides are not formed in the tapered shapes, and their thickness dimensions (in the direction parallel to the X-axis direction) are constant. In addition, the oblique angles at the perimeter side of stepped parts 132, 142, and 153 are further increased (tilted to increase the angles with respect to the Z-axis).

[0090] Since the thickness dimensions of the first sections 131, 141, and 150 are constant, it is advantageous that projecting amounts of the stepped parts 132, 142, and 153 increase, and when the comb is inserted into the hair bundle, the resistance caused by the stepped parts 132, 142, and 153 against the hair which moves along the first sections 131, 141, and 150 increases. Further, since the thickness dimensions of the second sections 133, 143, and 153 are constant, the hair which enters between the respective comb teeth can be smoothly led to tooth bottoms 125, 126, and 127 on respective root 130b, 140b, and 150b sides of the inner comb teeth 130, 140, and 150, and it is easy to obtain tension produced by the tooth bottoms 125, 126, and 127, respectively.

[0091] Note that the constant thickness dimension of each section illustrated in Fig. 11(a) may also be applied to only one of the first sections 131, 141, and 150 or the second sections 133, 143, and 153. For example, the first sections 131, 141, and 150 on the tip ends 130a, 140a, and 150a sides may be formed to have the constant thickness dimensions as illustrated in Fig. 11(a), while the second sections 133, 143, and 153 may be formed in the tapered shapes as illustrated in Fig. 6. Alternatively, in a reversed manner, the first sections 131, 141, and 151 may be formed in the tapered shapes as illustrated in Fig. 6, while the second sections 133, 143, and 153 may have the constant thickness dimensions as illustrat-

ed in Fig. 11(a).

[0092] Fig. 11(b) illustrates the inner comb tooth (the first inner comb tooth 130) of the modification related to Fig. 11(a) described above. Also, when it is seen in the direction parallel to the X-axis direction, the first section 131 on the tip end 130a side and the second section 133 on the root 130b side are not formed in the tapered shapes, and their thickness dimensions are constant, similar to the case when seen in the direction parallel to the Y-axis direction of Fig. 11(a). Thus, since the thickness dimensions are also constant in the direction illustrated in Fig. 11(b), a similar advantage to the structure illustrated in Fig. 11(a) can be obtained. Although in Fig. 11(b), the case in which the thickness dimensions of both the first section 131 and the second section 133 are constant is illustrated, either the first section 131 or the second section 133 may be formed in the tapered shape, similar to the case of Fig. 11(a) described above. Note that, of course, the structures related to Figs. 11(a) and (b) described above are also applicable to the second inner comb teeth 140 and the third inner comb teeth 150 which are other inner comb teeth.

[0093] Fig. 12(a) illustrates an inner comb tooth (the first inner comb tooth 230) of another modification when seen in the direction parallel to the Y-axis direction, and illustrates the shape when a plurality of stepped parts 232 and 235 are provided. In other words, the first inner comb tooth 230 is sequentially provided with a first section 231, the first stepped part 232, a second section 236, the second stepped part 235, and a third section 233 from a tip end 230a side to a root 230b side. In this modification, since the two stepped parts (the first stepped part 232 and the second stepped part 235) are provided, it is advantageous in that the friction which is obtained by the stepped parts can be doubled compared with the case illustrated in Figs. 6 and 11. Although Fig. 12(a) illustrates one example in which the two stepped parts 232 and 235 are provided, three or more stepped parts may also be provided. Further, although Fig. 12(a) illustrates the case in which thickness dimensions of all the sections 231, 233 and 236 are constant, any one or two of the sections 231, 233, and 236 may also be formed in the tapered shapes, similar to the case of Fig. 11(a) described above. Note that the structure related to Fig. 12(a) described above is also applicable to the second and third inner comb teeth which are other inner comb teeth.

[0094] Fig. 12(b) illustrates an inner comb tooth (the first inner comb tooth 230) of a modification related to Fig. 12(a) described above. Also, when the inner comb tooth is seen in a direction parallel to the X-axis direction, Fig. 12(b) illustrates the shape where two stepped parts (the first stepped part 232 and the second stepped part 235) are provided, similar to the case in which it is seen in the direction parallel to the Y-axis direction of Fig. 12(a), and it is advantageous also in this case in that the friction which is obtained by the stepped parts can be doubled. Note that the elements illustrated in Fig. 12(a) described above are also similarly applicable to the case

illustrated in Fig. 12(b).

[0095] Figs. 13(a) to (c) illustrate various modifications of the tip end heights of the inner comb teeth. Fig. 13(a) illustrates one example in which the number of comb teeth having different tip end heights which are included in one comb teeth group is not three, as illustrated in Fig. 6 etc., but four. In other words, in the example of Fig. 13(a), one comb teeth group includes a total of four comb teeth: an inner comb tooth having a tip end 20A located the lowest, an inner comb tooth having a tip end 20B located the third highest, an inner comb teeth having a tip end 20C located the second highest, and an inner comb tooth having a tip end 20D located the highest. A plurality of such comb teeth groups are arrayed sequentially in a direction illustrated by an arrow in the X-axis direction. Thus, since the comb teeth group is constituted by a total of four inner comb teeth which have different tip end heights, a difference in the resistance which is produced by the difference in the tip end height can further be dispersed, and it becomes even easier to form the uniform backcombed hair. Although in Fig. 13(a) one example in which one comb teeth group is formed by the total of four inner comb teeth is described, one comb teeth group may also, of course, be formed by a total of five or more inner comb teeth. The difference in the resistance can further be dispersed by increasing the number of comb teeth having the different tip end heights which constitute the comb teeth group. The modifications illustrated in Figs. 11, 12, etc. described above are also applicable to the case illustrated in Fig. 13(a).

[0096] Fig. 13(b) illustrates a modification in which the arrayed order of the inner comb teeth having the different tip end heights is reversed, compared with the cases illustrated in Fig. 6, etc. In other words, in the example of Fig. 13(b), one comb teeth group includes, from the left in the drawing, an inner comb tooth having a tip end 20C located the highest, an inner comb tooth having a tip end 20B located the second highest, and an inner comb tooth having a tip end 20A located the lowest. A plurality of such comb teeth groups are sequentially arrayed in the direction illustrated by an arrow in the X-axis direction. Such an arrayed order is suitable because the friction on the comb tip end side which is an opposite from the side where the bar-shaped grip part is provided in the X-axis direction can be entirely increased. In other words, since the comb tip end side (equivalent to the tip end side of the comb main body) is the side apart from the grip part, the user's holding force is generally difficult to be transmitted to the comb tip end side. However, since the arrayed order as illustrated in Fig. 13(b) is adopted so that the friction on the comb tip end side is increased, the user can sense a suitable resistance of the entire comb also at the comb tip end side in an actual use scenario. Therefore, when backcombing the hair, uniform tension can be sensed by the user through the entire comb, and a suitable feel can be obtained when backcombing the hair. Note that the example in which the four or more inner comb teeth having the different tip end heights con-

stitute one comb teeth group as illustrated in Fig. 13(a) described above can also be applied to the case illustrated in Fig. 13(b), and further, the modifications illustrated in Figs. 11, 12, etc. described above are also applicable thereto.

[0097] Fig. 13(c) illustrates a modification in which the arrayed order of the inner comb teeth having the different tip end heights is random, compared with the case illustrated in Fig. 6, etc. In other words, the example of Fig. 13(c) includes an inner comb tooth having a tip end 20A located the lowest, an inner comb tooth having a tip end 20B located the second highest, and an inner comb tooth having a tip end 20C located the highest, and it is characterized by the fact that the arrayed order of these comb teeth is random (irregular). Thus, since the arrayed order of the tip end heights is random, friction produced by the hair contacting tip ends 20A, 20B, and 20C of the inner comb teeth also becomes random. Therefore, it is advantageous in that the resistance obtained by the entire comb can be uniform. Note that the example in which the four or more inner comb teeth having the different tip end heights are used as illustrated in Fig. 13(a) described above is also applicable to the case illustrated in Fig. 13(c), and further, the modifications illustrated in Figs. 11, 12, etc. described above are also applicable thereto. Note that if the structure (specification) of the inner comb teeth is to be simplified, the tip end heights of the inner comb teeth may be the same. In such a case, in order to facilitate the use of the outer comb teeth as coarse teeth, it is preferred that the inner comb teeth are aligned in the tip end height with the tip end 20A located the lowest or the tip end 20B located the second highest.

[0098] Figs. 14(a) to (c) illustrate various modifications of the tooth bottom depths of a plurality of inner comb teeth, based on the ideas equivalent to the various modifications of the tip end heights of the inner comb teeth illustrated in Figs. 13(a) to (c) described above. Fig. 14(a) corresponds to Fig. 13(a), and illustrates one example in which the number of inner comb tooth bottoms having different tooth bottom depths is four. In other words, in the example of Fig. 14(a), a tooth bottom 29A located the deepest, a tooth bottom 29B located the second deepest, a tooth bottom 29C located the third deepest, and a tooth bottom 29D located the shallowest are formed, and this arrayed order of the tooth bottoms continues repeatedly in the direction illustrated by an arrow in the X-axis direction. Thus, since the tooth bottoms are constructed so that the four different tooth bottom depths are repeated successively, tension produced by the tooth bottoms 29A to 29D can further be dispersed, and it becomes easy to form the uniform backcombed hair. Further, in Fig. 14(a), a total of five or more tooth bottoms having different tooth bottom depths is, of course, also formed similar to the case of Fig. 13(a), and further, the modifications illustrated in Figs. 11, 12, etc. are also applicable to the comb teeth which form the tooth bottoms described above.

[0099] Fig. 14(b) illustrates one example in which the

arrayed order of the tooth bottoms having different tooth bottom depths is reversed to the case illustrated in Fig. 6, based on the concept equivalent to Fig. 13(b). Thus, also in Fig. 14(b), the friction on the comb tip end side (the tip end side of the comb main body) can be increased, and it becomes suitable because the user can suitably sense the resistance through the entire comb, including the comb tip end side, in an actual use scenario. Note that the example in which the tooth bottom depth is different at the four or more places as illustrated in Fig. 14(a) described above is also applicable to the case illustrated in Fig. 14(b), and further, the modifications illustrated in Figs. 11, 12, etc. described above are also applicable thereto.

[0100] Fig. 14(c) illustrates one example in which the arrayed order of the tooth bottoms having different tooth bottom depths is random, based on the idea equivalent to Fig. 13(c). Thus, also in Fig. 14(c), the tension produced at the tooth bottoms 29A to 29C is dispersed, and it becomes easy to form the uniform backcombed hair. Note that the example in which the tooth bottom depth is different at four or more places as illustrated in Fig. 14(a) described above is also applicable to the case illustrated in Fig. 14(c), and, further, the modifications illustrated in Figs. 11, 12, etc. described above are also applicable thereto.

[0101] Note that in the modifications etc. illustrated in Figs. 14(a) to (c) described above, the shape of the tooth bottoms 29A-29C is preferably a shape in which a center part thereof in the Y-axis direction is convexed as illustrated in Fig. 7. However, in order to disperse the tension obtained at the tooth bottoms, any of the tooth bottoms may be formed in a flat shape, instead of the shape illustrated in Fig. 7. Thus, the possibility of any of the tooth bottoms being formed in the flat shape is entirely applicable to the comb in accordance with the present invention. In such a case, it is suitable that, in order to disperse the tension, the flat shape is repeatedly formed at a rate of one every two or more tooth bottoms. Further, in order to simplify the structure (specification) of the tooth bottoms between the inner comb teeth, the tooth bottom depths may be the same. In such a case, in terms of easily backcombing, it is preferable to align the tooth depths with the tooth bottom 29B located the second deepest, or the tooth bottom 29A located the deepest (of course, such an example of the bottom shape is also applicable to the comb 1 illustrated in Fig. 1, etc.).

[0102] Figs. 15 and 16 illustrate examples in which the number of rows of comb teeth is differentiated from the case illustrated in Fig. 3. Fig. 15(a) illustrates a modification of the comb in which the number of rows of the comb teeth is a total of four rows. The comb is characterized by the fact that inner comb tooth members 10' having inner comb teeth 20' are newly inserted into a comb main body 2' on one side surface 2c' of the comb main body 2' and the opposite side surface 2d'. Thus, from the one side surface 2c' toward the other side surface 2d', a total of four rows of comb teeth are formed:

the outer comb teeth 7, the inner comb teeth 20, the outer comb teeth 8, and the inner comb teeth 20'. In the example illustrated in Fig. 15(a), compared with the case illustrated in Fig. 3, it is advantageous in that the comb has a structure to which the row of the inner comb teeth 20' is added, and the tension obtained by the inner comb teeth described above can be doubled.

[0103] Fig. 15(b) illustrates a modification of the comb in which the number of rows of the comb teeth is a total of five rows, and the modified comb is characterized, compared with the example illustrated in Fig. 15(a), by the fact that a row of outer comb teeth 9 is further provided at a side surface 2d" which is opposite from one side surface 2c" of a comb main body 2". Thus, in the example illustrated in Fig. 15(b), since a total of three rows of outer comb teeth 7, 8, and 9 exist, it is advantageous in that the resistance of the hair can be increased by the hair being caught by the outer comb teeth 7 to 9 and the inner comb teeth 20 and 20' as illustrated in Fig. 8. Note that if four or more rows of comb teeth are provided, it is suitable, in terms of producing the caught state of the hair as illustrated in Fig. 8, to alternately array the row of the outer comb teeth 7 (the outer comb teeth 8) and the row of the inner comb teeth 20 in the Y-axis direction.

[0104] Fig. 16(a) illustrates a modification of the comb in which the number of rows of the comb teeth is a total of two, and the modified comb is characterized, compared with the case illustrated in Fig. 3, by the fact that the outer comb teeth are not provided at a side surface 102d which is opposite from one side surface 102c of a comb main body 102, but the inner comb teeth 20 of the inner comb teeth member 10 are arrayed. Since the example illustrated in Fig. 16(a) can be simplified in the structure, compared with the case illustrated in Fig. 3, and the outer comb teeth 7 exists at the one side surface 102c side, the situation in which the hair is caught by the respective outer comb teeth and the inner comb teeth so that the resistance as illustrated in Fig. 8 can still be produced, and the comb can also be applied to the usage in which the outer comb teeth 7, which exist in one row, are used as the coarse teeth.

[0105] Fig. 16(b) illustrates a modification of the comb in which the number of rows of the comb teeth is one, and the modified comb is characterized, compared with the case illustrated in Fig. 3, by having a structure in which the outer comb teeth located at one side surface 202c side of the comb main body 202 and the outer comb teeth located at the opposite side surface 202d side are omitted, but only the inner comb teeth 20 of the inner comb teeth member 10 still remain in existence. In this example illustrated in Fig. 16(b), since the structure can be dramatically simplified compared with the case illustrated in Fig. 3, it is advantageous in that the inner comb teeth 20 having a complicated shape can be easily molded integrally with the comb main body 52 (an integral molding with a synthetic resin etc. becomes easier. Of course, the integral molding of the entire comb with a synthetic resin etc. is also technically possible for the

examples other than Fig. 16(b)). Note that the structure of each modification described above is also applicable to any of the inner comb teeth 20 illustrated in Figs. 15 and 16 described above (including the inner comb teeth 20' illustrated in Fig. 15(a)).

[0106] Fig. 17 illustrates a modification of the outer comb teeth and illustrates one example in which outer comb teeth 107 and 108 are protruding so as to be tilted toward inner comb teeth 330, respectively. Thus, since the outer comb teeth 107 and 108 are tilted, intervals between the inner comb teeth 330 and the outer comb teeth 107 and 108 are narrower than the case illustrated in Fig. 7, and it is easy to increase the resistance of the hair at the intervals between the inner comb teeth 330 and the outer comb teeth 107 and 108. Note that in Fig. 17, the example in which a first section 331 of the inner comb tooth 330 is formed in the tapered shape and a second section 333 located below the stepped part 332 is formed in the straight shape is illustrated. However, it is also possible to use inner comb teeth having a shape other than the shape described above. Further, in Fig. 17, although tooth bottom 25 in Fig. 7 are illustrated (the tooth bottom shape in which the center part 25a is convexed), upper surfaces of the tooth bottoms 25 may be formed in a somewhat flat shape if the tension at the tooth bottoms is too strong as described above.

[0107] Fig. 18 illustrates one example in which the structure in accordance with the present invention is applied to a comb 350 having the structure without the bar-shaped grip part 4 illustrated in Fig. 1. Thus, also for the comb 350 which does not have the grip part, one row of the inner comb teeth 20 can be protruding from a comb main body 352 as illustrated in Fig. 16(a) between comb protecting parts 355a and 355b on both ends which protrude from both sides of the comb main body 352 in the Z-axis direction. Therefore, the advantages described above can be obtained by the one row of inner comb teeth 20. Note that the inner comb teeth 20 can possibly be provided to the inner comb teeth member 10 as described above and the inner comb teeth member 10 is then attached to the comb main body 352, or the inner comb teeth 20 can possibly be integrally molded with the comb main body 352. Further, also for the comb 350 which does not have the grip part illustrated in Fig. 18, the plurality of rows of comb teeth described above may be provided, or the various modifications described above may be applied thereto.

[0108] Fig. 19 illustrates a comb 400 of a modification in which a relation between the length of inner comb teeth and the length of outer comb teeth is reversed from the case illustrated in Fig. 5. A plurality of outer comb teeth 407 (408) of a pin shape which protrude from an upper surface 402f of a comb main body 402 are shorter than a comb protecting part 405a which projects from a tip end of the comb main body 402 in the Z-axis direction. In the meantime, although a plurality of inner comb teeth 420 (which are comprised of inner comb teeth 430, 440, and 450) provided to the inner comb teeth member 410

forms stepped parts 432, 442, and 452 similar to the inner comb teeth 20 (the inner comb teeth 30, 40, and 50) illustrated in Figs. 5, 6, etc., each tip end is formed to be located at a same level with the comb protecting part 405a so that the overall length is longer than the outer comb teeth 407 (408). Therefore, the tip ends of the inner comb teeth 20 (for example, tip ends 440a of the inner comb teeth 440 illustrated in Fig. 19) are located higher than tip ends 407a of the outer comb teeth 407 by a height dimension H'. Note that tooth bottoms 425, 426, and 427 between the inner comb teeth are similar to the tooth bottoms 25, 26, and 27 illustrated in Figs. 5, 6, etc., respectively. Further, although Fig. 19 illustrates a part of the modified comb 400, a relation of the inner comb teeth 420 and the outer comb teeth 407 (408) is equivalent to the structure illustrated in Fig. 19 also in other parts which are not illustrated in Fig. 19.

[0109] In such a modified comb 400 illustrated in Fig. 19, since the inner comb teeth 420 form the stepped parts 432, 442, and 452, and the tooth bottoms 425, 426, and 427 having different bottom depths, similar to the comb 1 illustrated in Figs. 5, 6, etc., it is advantageous in that the uniform backcombed hair can easily be formed, and when the surface of the backcombed hair is smoothed down and hairdressed, the tip ends of the inner comb teeth 420 which are longer than the outer comb teeth 407 can be used as fine teeth. In addition, it is also advantageous in that both the backcombed hair formation and the smoothing down (hairdressing) of the surface of the backcombed hair can be performed by the single comb 400. Note that since the smoothing down (hairdressing) of the surface of the backcombed hair is only to hairdress the surface, the tip end part of the comb teeth used for the hairdressing only extends within a very short dimensional range. Therefore, a numerical value example of the height dimension H' illustrated in Fig. 19 can be considered as the value within a range from about 1 mm to about 10 mm. Generally, if the height dimension H' is about 1 mm to about 3 mm, it is enough to smooth down (hairdress) the surface of the backcombed hair.

[0110] Further, in terms of smoothing down (hairdressing) the surface of the backcombed hair, it is preferred that the tip ends of the inner comb teeth 420 are formed to be located at the same height. Therefore, among the modifications described above, the modifications which have the tip end heights other than those illustrated in Figs. 13(a) to (c) can also be applied to the comb 400 illustrated in Fig. 19, and the structure of the modification illustrated in Fig. 19 is, of course, applicable to the type which does not have the grip part illustrated in Fig. 18.

[0111] Fig. 20 illustrates a comb 500 of a modification having a structure in which the case illustrated in Fig. 5 is combined with the case illustrated in Fig. 19, in terms of the relation in the length between the inner comb teeth and the outer comb teeth. In other words, within a section surrounded by comb protecting parts 505a and 505b which are provided on both sides of a comb main body 502 in the longitudinal direction thereof (the X-axis direc-

tion), the comb 500 has a structure equivalent to the structure illustrated in Fig. 19 within a first section 500a closer to the comb protecting part 505a which is a tip end side, and has a structure equivalent to the structure illustrated in Fig. 5 within a second section 500b closer to the comb protecting part 505b which is a grip part 504 side.

[0112] Specifically, inner comb teeth 520 located in the first section 500a among the plurality of inner comb teeth of the comb 500 have a structure equivalent to the comb teeth 420 illustrated in Fig. 19, and are formed longer than the outer comb teeth 507 (508), while inner comb teeth 620 located in the second section 500b have a structure equivalent to the comb teeth 20 illustrated in Fig. 5, and are formed shorter than the outer comb teeth 517 (518). Note that the outer comb teeth 507 (508) located in the first section 500a are formed shorter than the comb protecting part 505a similar to the outer comb teeth 407 (408) illustrated in Fig. 19, and, on the other hand, the outer comb teeth 517 (518) located in the second section 500b are formed to have a length equivalent to the length of the comb protecting part 505a (505b) similar to the outer comb teeth 7 (8) illustrated in Fig. 5, etc. Further, both the inner comb teeth 520 of the first section 500a and the inner comb teeth 620 of the second section 500b are provided to the same inner comb teeth member 510. Other than the parts described above, the modified comb 500 has a structure equivalent to the comb 1 illustrated in Fig. 1, etc.

[0113] Since such a modified comb 500 illustrated in Fig. 20 has the first section 500a having the structure equivalent to Fig. 19, tip end parts of the inner comb teeth 520 in the first section 500a can be used as fine teeth to smooth down (hairdress) the surface of the backcombed hair. Further, the efficient uniform backcombed hair can be formed mainly on the inner comb teeth 620 and the outer comb teeth 517 (518) of the second section 500b. In addition, tip end parts of the outer comb teeth 517 (518) in the second section 500b can be used as coarse teeth. Therefore, the modified comb 500 is advantageous in that the single comb 500 can be used for a variety of purposes. Note that, as for the comb 500, the modification equivalent to the illustrated case in Fig. 19 is applicable to the first section 500a, while the various modifications described above are applicable to the second section 500b. Further, the structure of the modification illustrated in Fig. 20 is also applicable to the type of the comb illustrated in Fig. 18 which does not have the grip part.

INDUSTRIAL APPLICABILITY

[0114] In accordance with the present invention, since the scheme where friction is easily produced at the comb teeth, intervals between the comb teeth, and the tooth bottoms, etc. is adopted when combing the hair, it is advantageous in that suitable tension can be obtained in the hair when backcombing the hair, the backcombed hair can easily be formed efficiently, and the uniformity of the backcombed hair becomes suitable.

DESCRIPTION OF REFERENCE NUMERALS

[0115]

1	Comb	5
2	Comb Main Body	
4	Grip Part	
7, 8	Outer Comb Tooth	
10	Inner Comb Tooth Member	
11	Base Part	10
20	Inner Comb Tooth	
25	First Tooth Bottom	
26	Second Tooth Bottom	
27	Third Tooth Bottom	
30	First Inner Comb Tooth	15
31	First Section	
32	Stepped Part	
33	Second Section	
40	Second Inner Comb Tooth	
50	Third Inner Comb Tooth	20

Claims

1. A comb, where a plurality of comb teeth protruding from a comb main body having a longitudinal direction thereof are arrayed, wherein the comb tooth has a stepped part that is formed at an intermediate position of the comb tooth in a protruding direction thereof, and wherein a first section of the comb tooth that extends from a tip end side to the stepped part has a smaller dimension in a direction perpendicular to the protruding direction of the comb tooth, compared with a second section that extends from the stepped part to a root side. 25
2. The comb in accordance with claim 1, wherein the stepped part is formed so as to be exposed between the comb tooth and an adjacent comb tooth. 30
3. The comb in accordance with claim 1 or 2, wherein the stepped part is formed so as to be exposed on a perimeter of the comb tooth, when the comb tooth is seen in a direction parallel to the longitudinal direction of the comb main body. 35
4. The comb in accordance with any one of claims 1 to 3, wherein the stepped part is formed slantly with respect to the protruding direction so that the stepped part spreads toward the root side of the comb tooth. 40
5. The comb in accordance with any one of claims 1 to 4, wherein the first section is formed in a tapered shape so that the first section spreads from the tip end side toward the stepped part. 45
6. The comb in accordance with any one of claims 1 to 5, wherein the second section is formed in a tapered shape so that the second section spreads from the stepped part toward the root side. 50
7. The comb in accordance with any one of claims 1 to 6, wherein heights of the tip ends of three or more adjacent comb teeth among the plurality of comb teeth are different from each other. 55
8. The comb in accordance with any one of claims 1 to 7, wherein three or more tooth bottoms between adjacent comb teeth among the plurality of comb teeth are different from each other in a tooth bottom depth.
9. The comb in accordance with any one of claims 1 to 8, wherein a plurality of comb teeth where the stepped part is not formed are arrayed parallel to the row of the plurality of comb teeth where the stepped part is formed, and wherein an interval of the comb teeth where the stepped part is not formed is wider than an interval of the comb teeth where the stepped part is formed.
10. The comb in accordance with any one of claims 1 to 8, wherein rows of a plurality of comb teeth where the stepped part is not formed are formed parallel to and on both sides of the row of the plurality of comb teeth where the stepped part is formed, wherein an interval of the comb teeth where the stepped part is not formed is larger than an interval of the comb teeth where the stepped part is formed, and wherein any teeth of the rows of the plurality of comb teeth where the stepped part is not formed is formed at both sides of any teeth of the row of the plurality of comb teeth where the stepped part is formed.
11. The comb in accordance with claim 9 or 10, wherein the comb teeth where the stepped part is not formed are longer than the comb teeth where the stepped part is formed.
12. The comb in accordance with claim 9 or 10, wherein the comb teeth where the stepped part is formed are longer than the comb teeth where the stepped part is not formed.
13. The comb in accordance with claim 9 or 10, wherein some of the plurality of comb teeth where the stepped part is formed are longer than the comb teeth where the stepped part is not formed, and wherein other comb teeth where the stepped part is formed are shorter than the comb teeth where the stepped part is not formed.
14. The comb in accordance with any one of claims 1 to 13, wherein a tooth bottom of the comb tooth where

the stepped part is formed is formed so as to be
convexed in a center part of the comb main body in
width directions thereof

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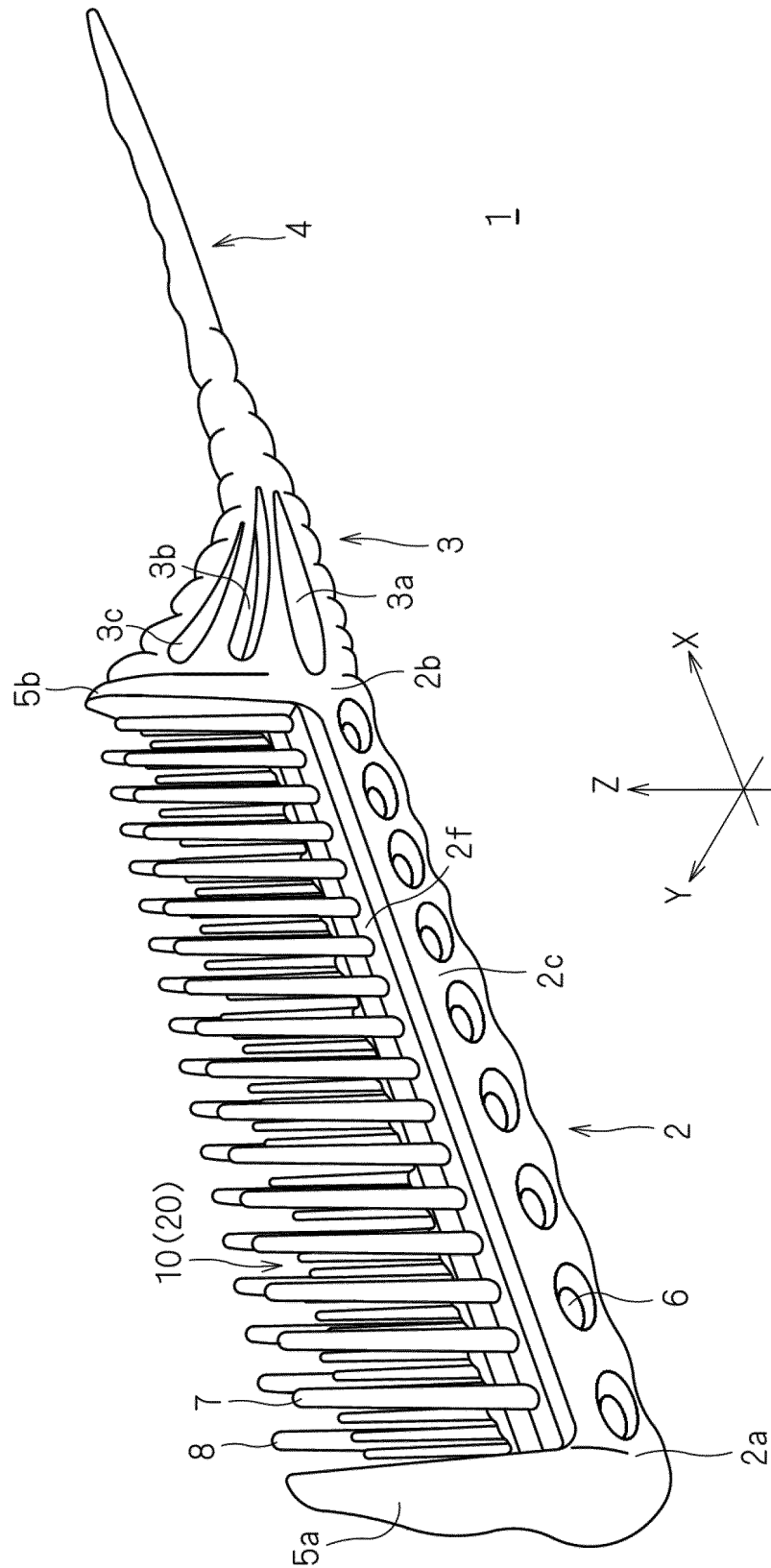


Fig.1

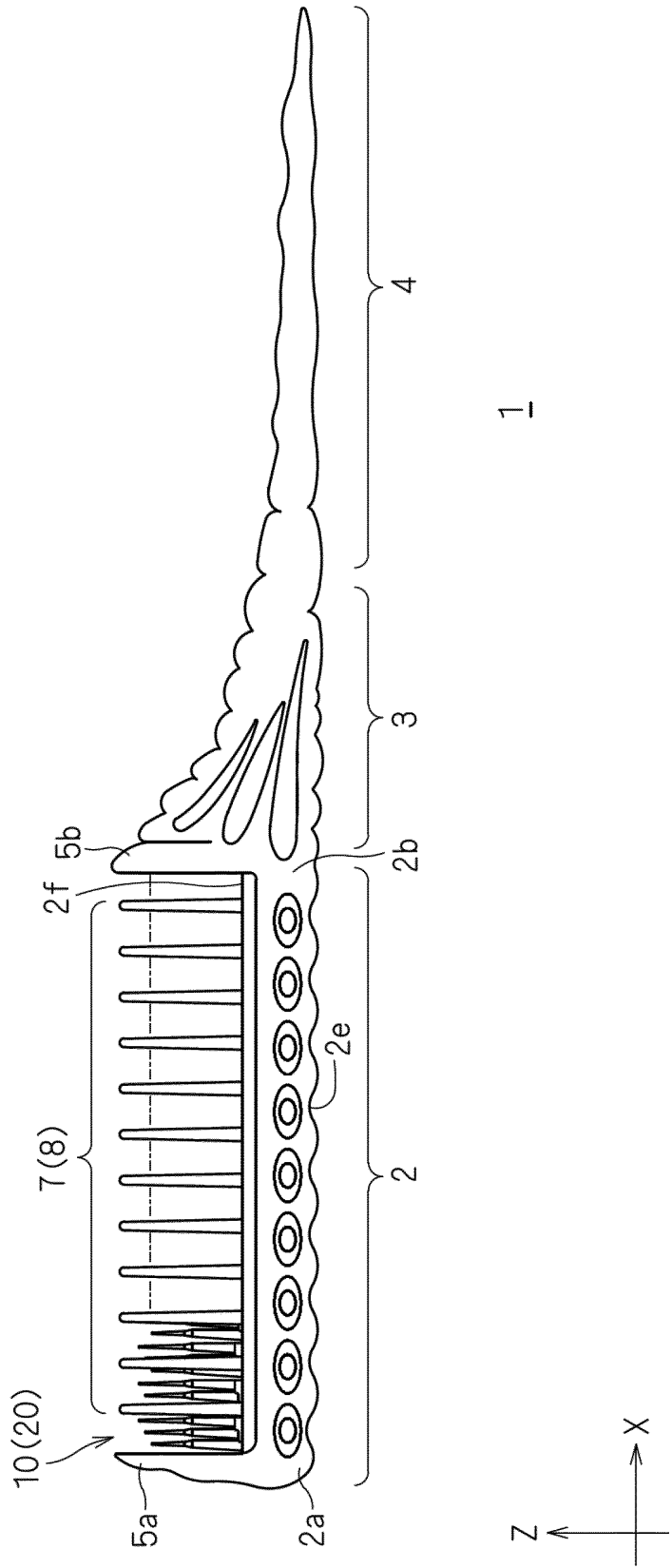


Fig.2

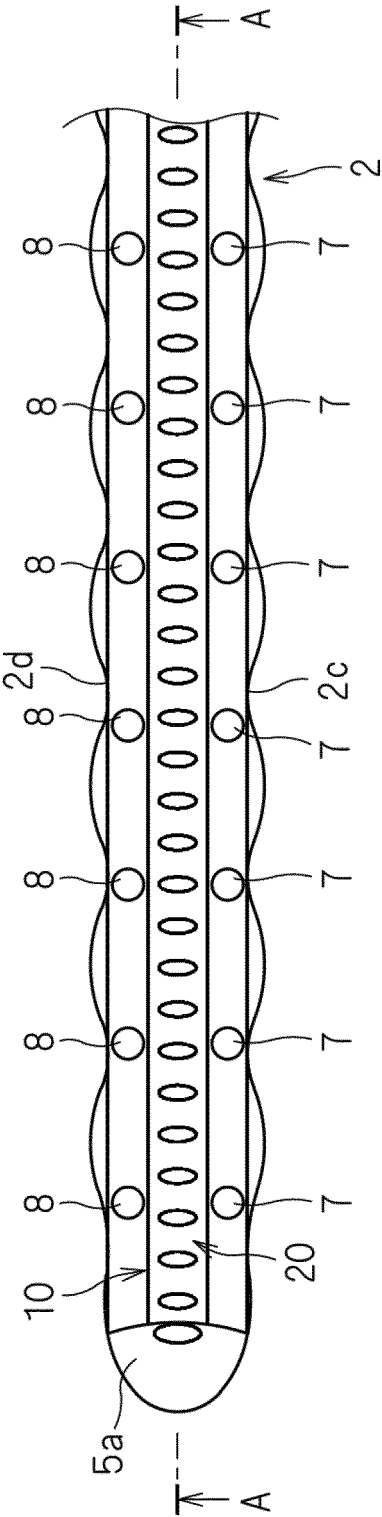


Fig.3

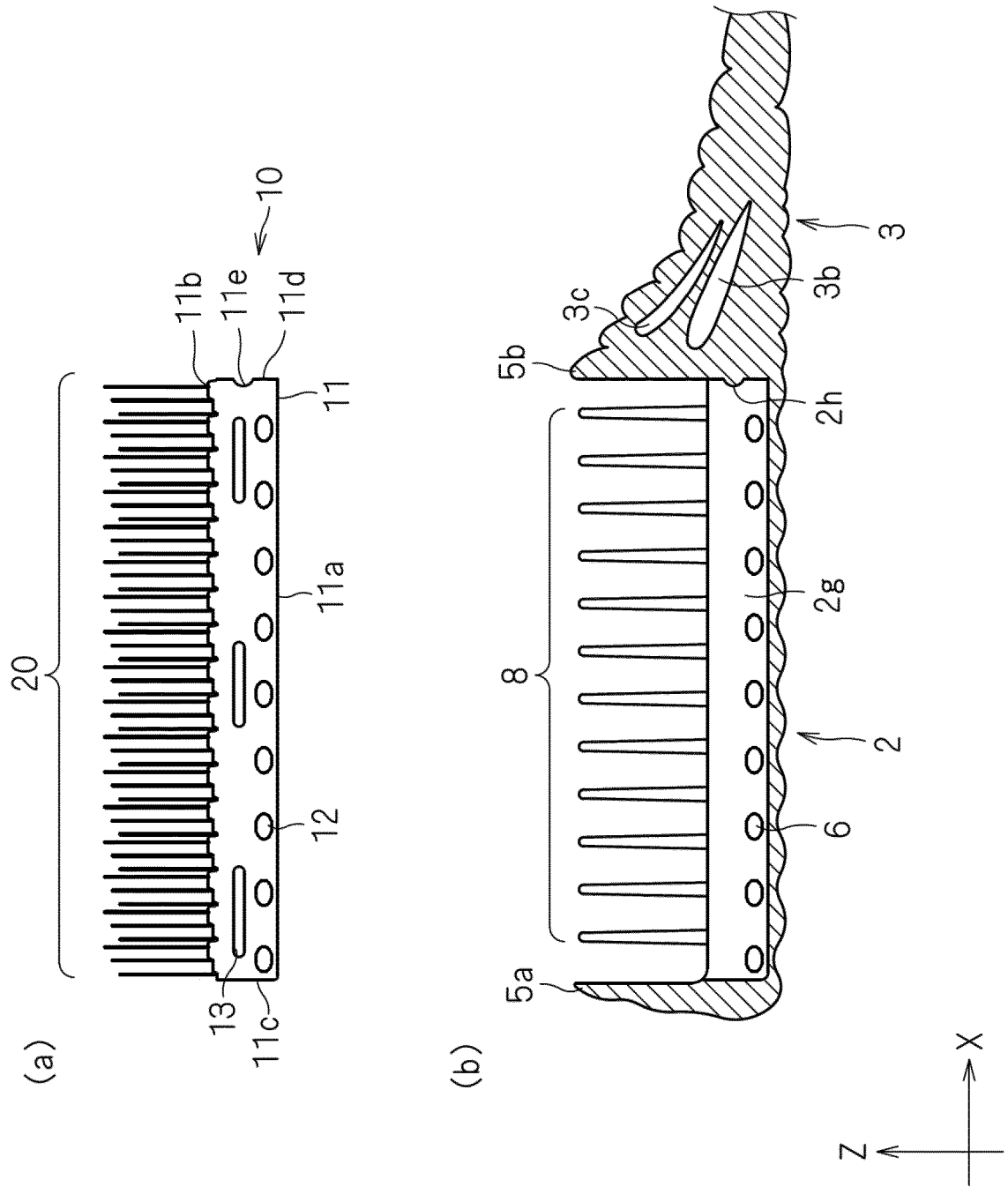


Fig.4

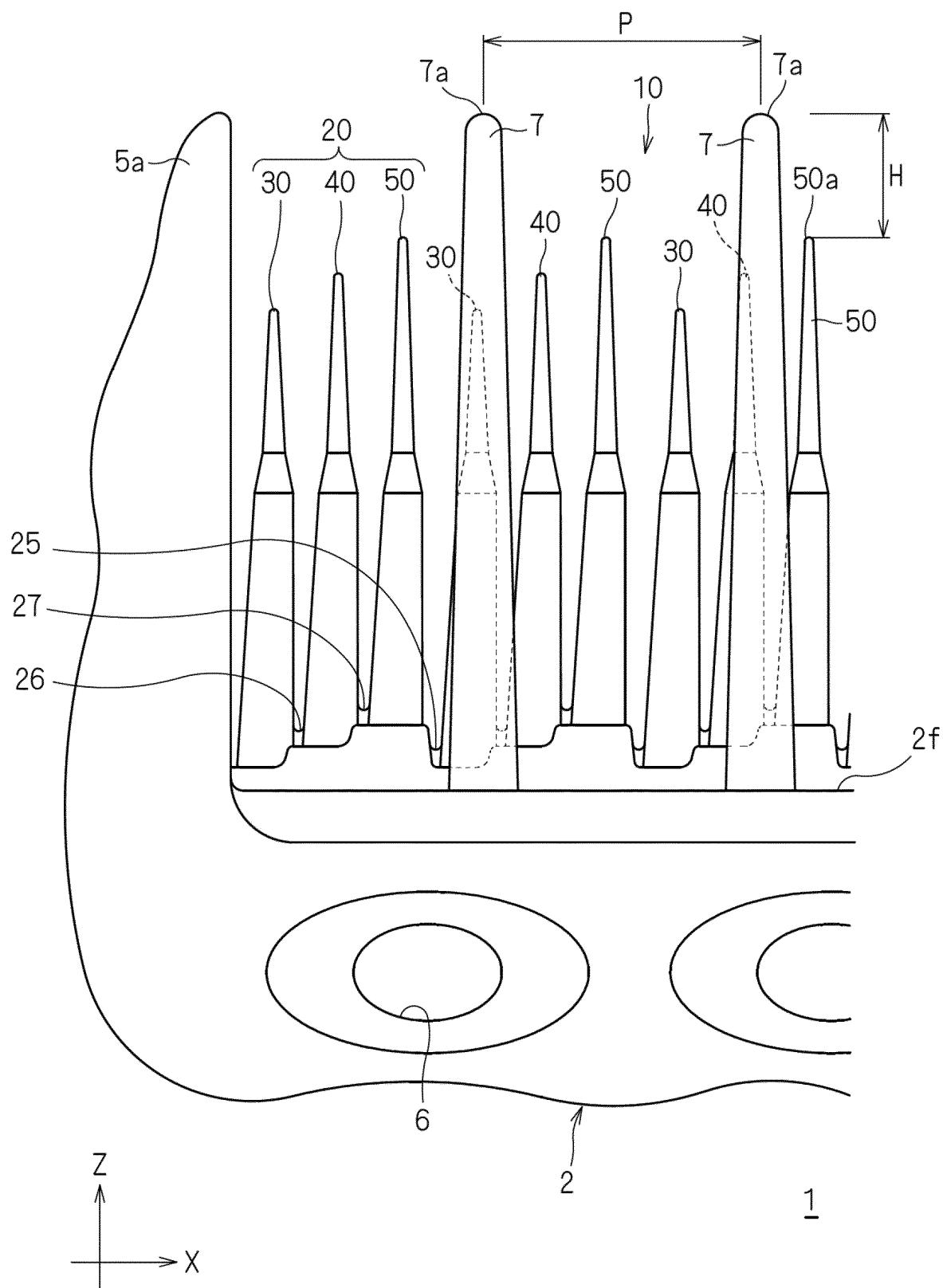


Fig.5

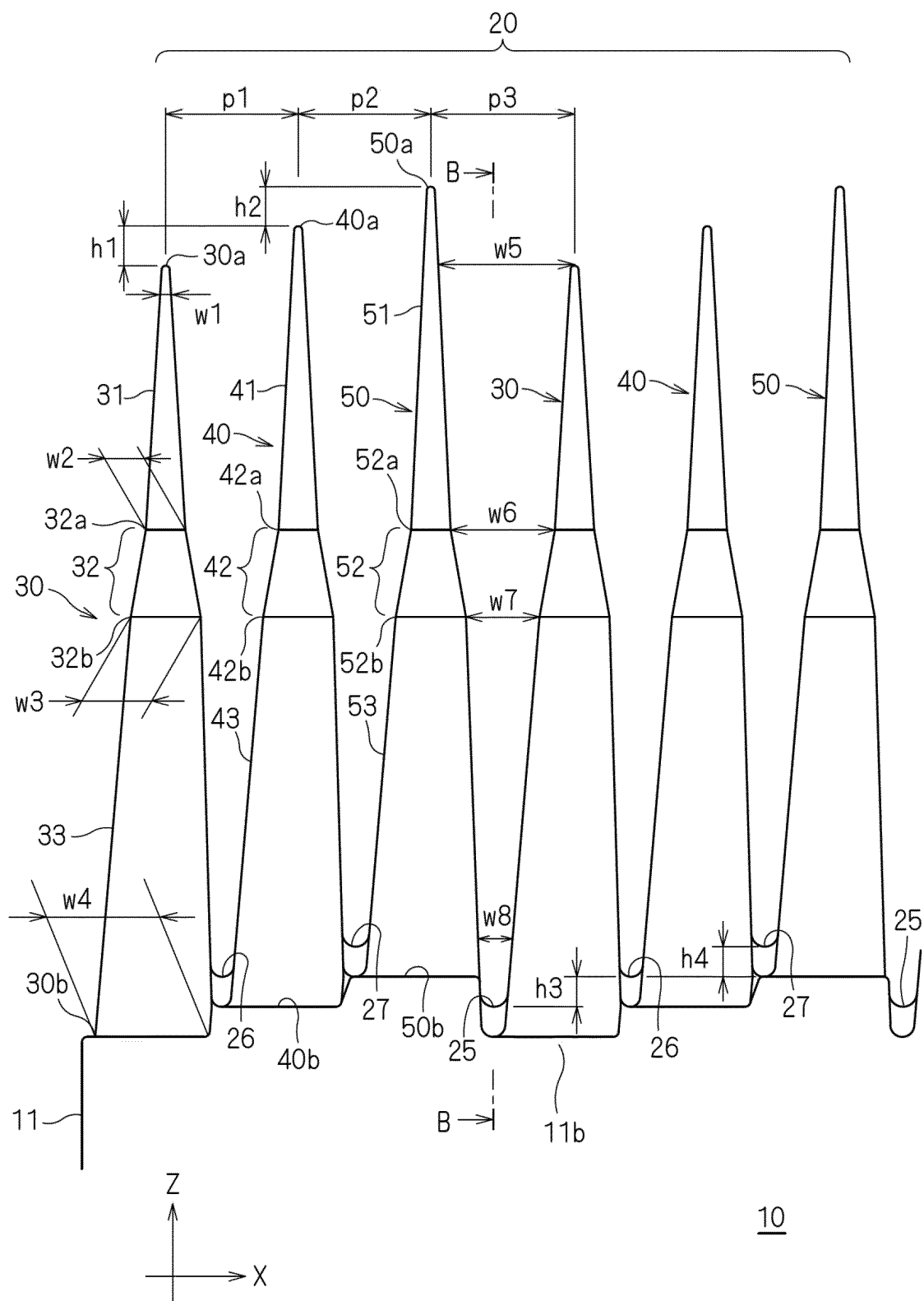


Fig.6

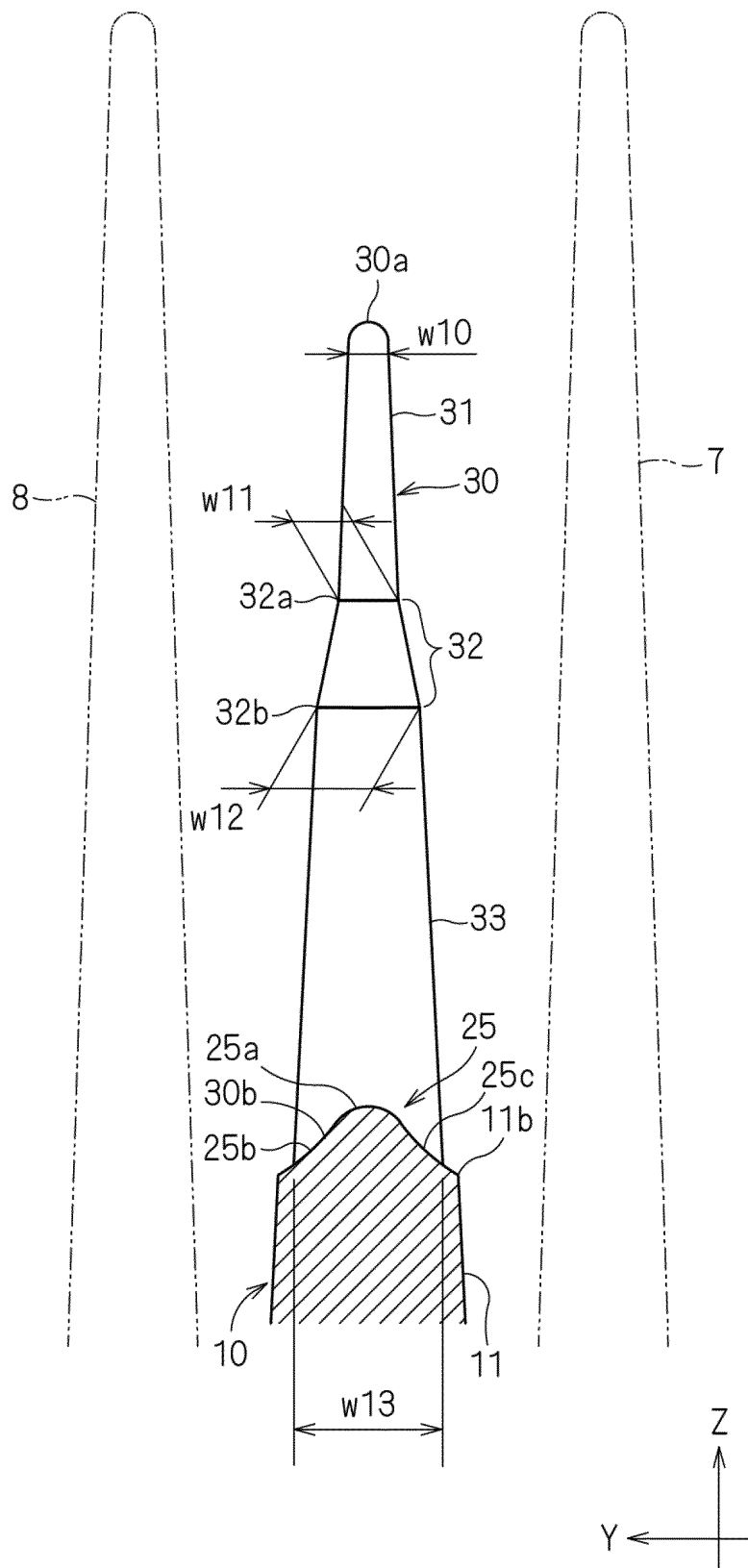


Fig.7

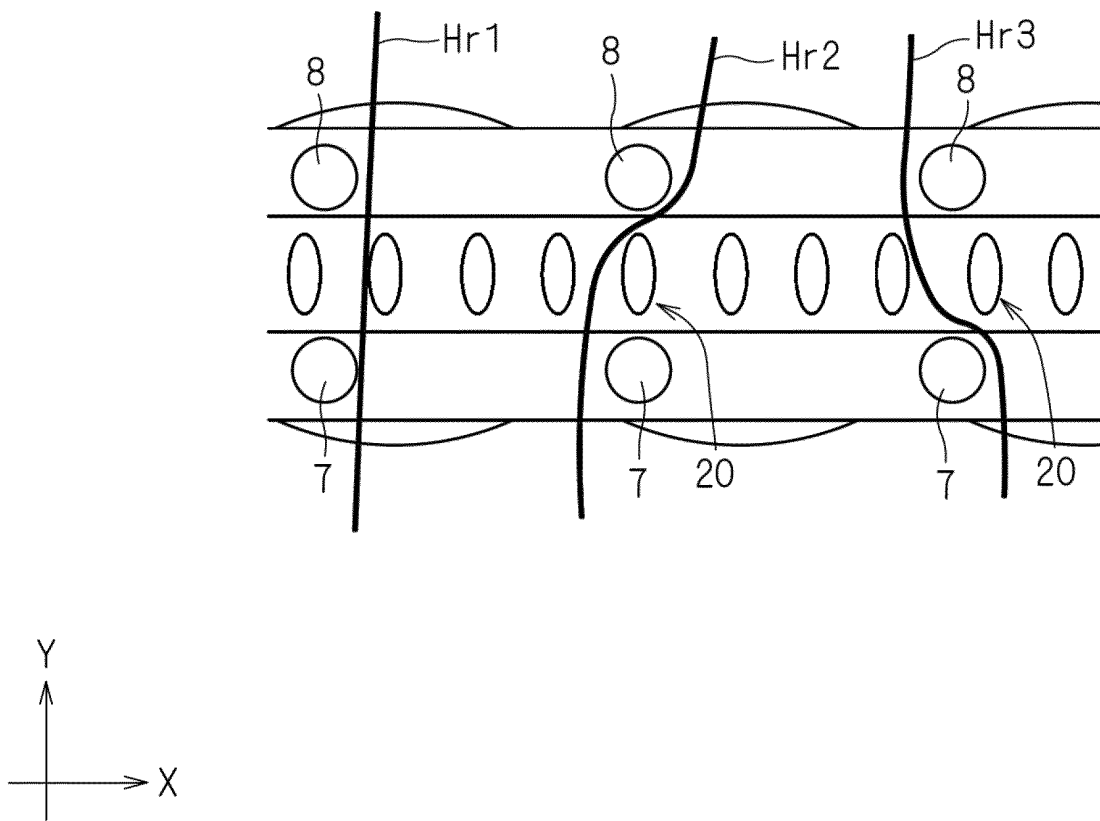


Fig.8

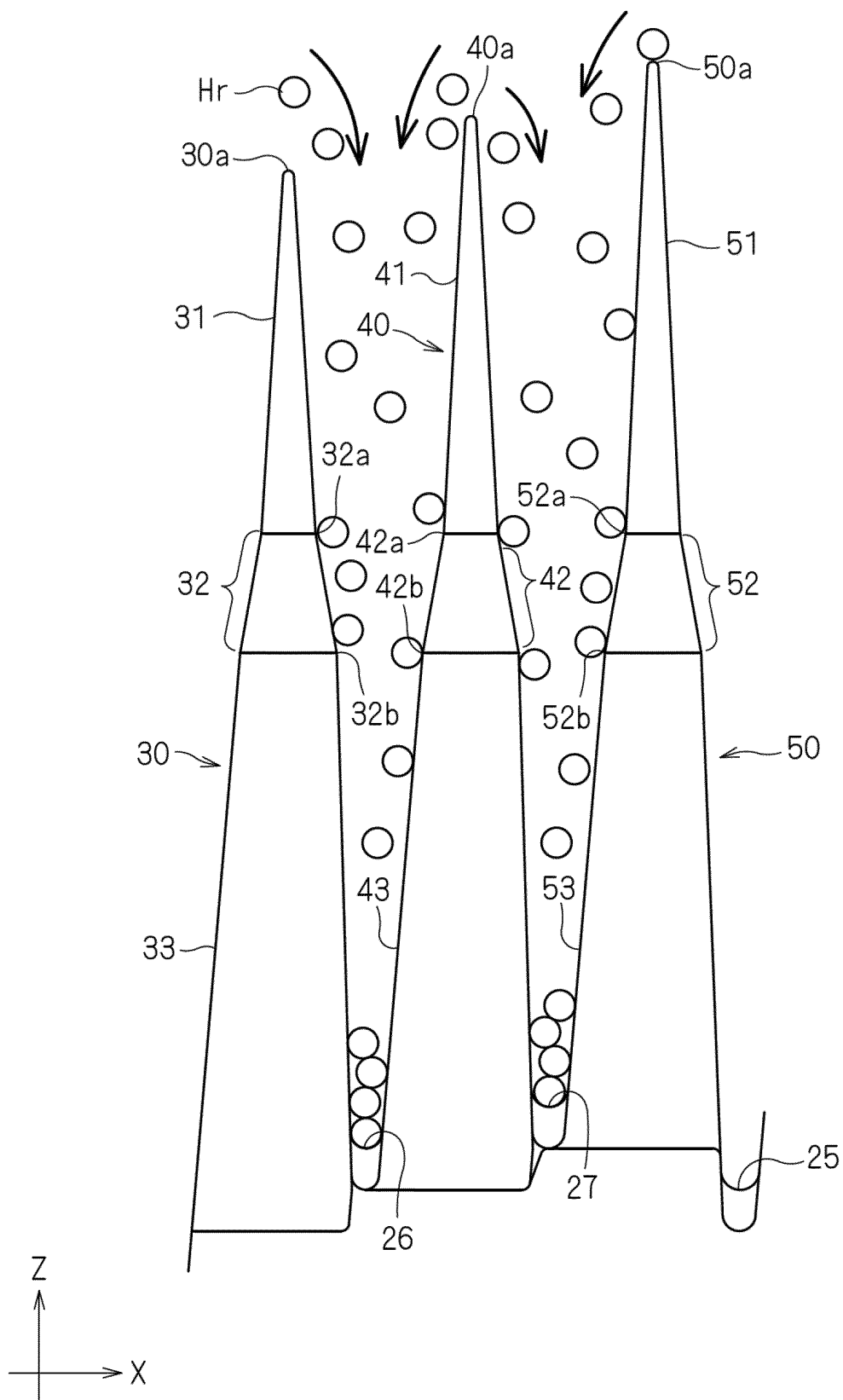


Fig.9

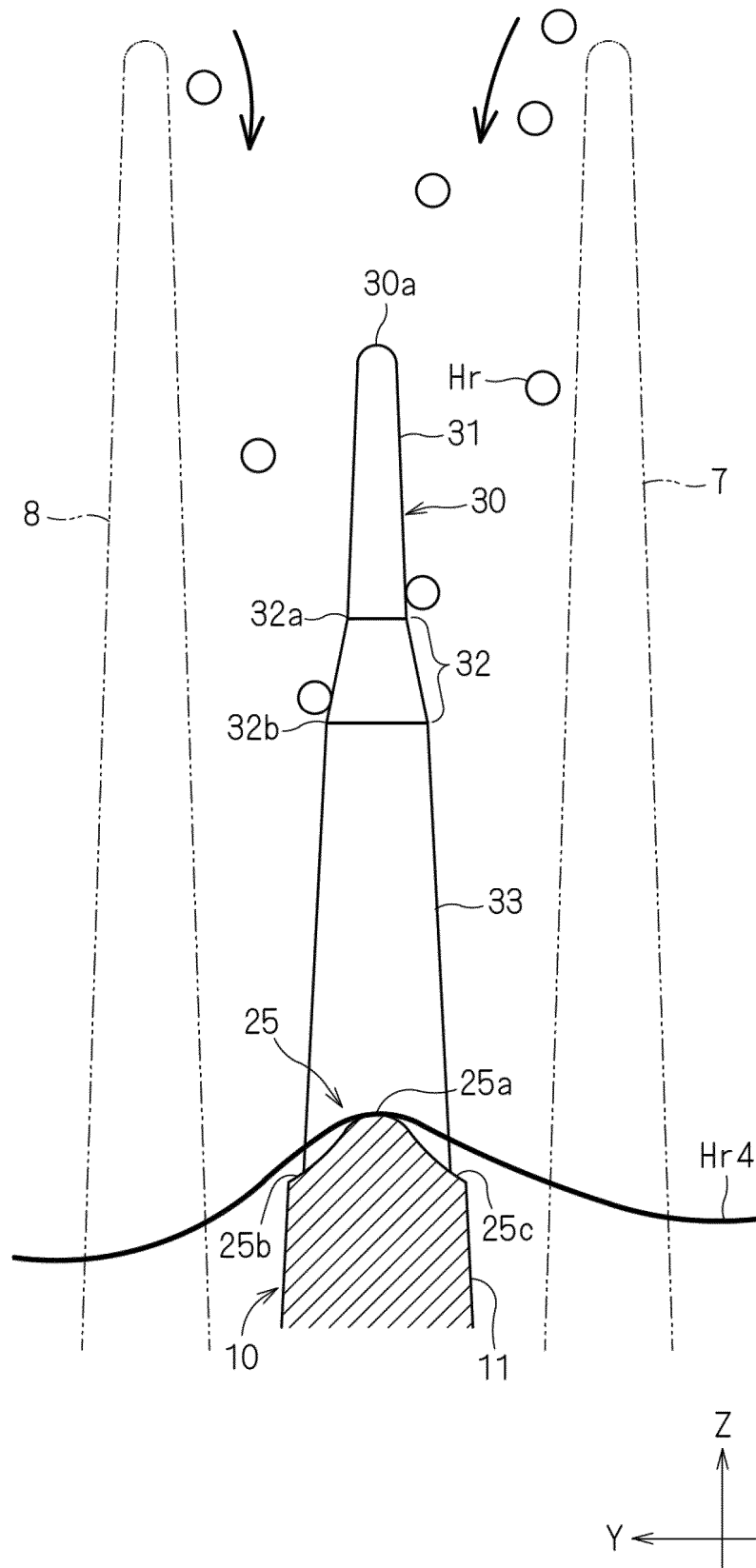


Fig.10

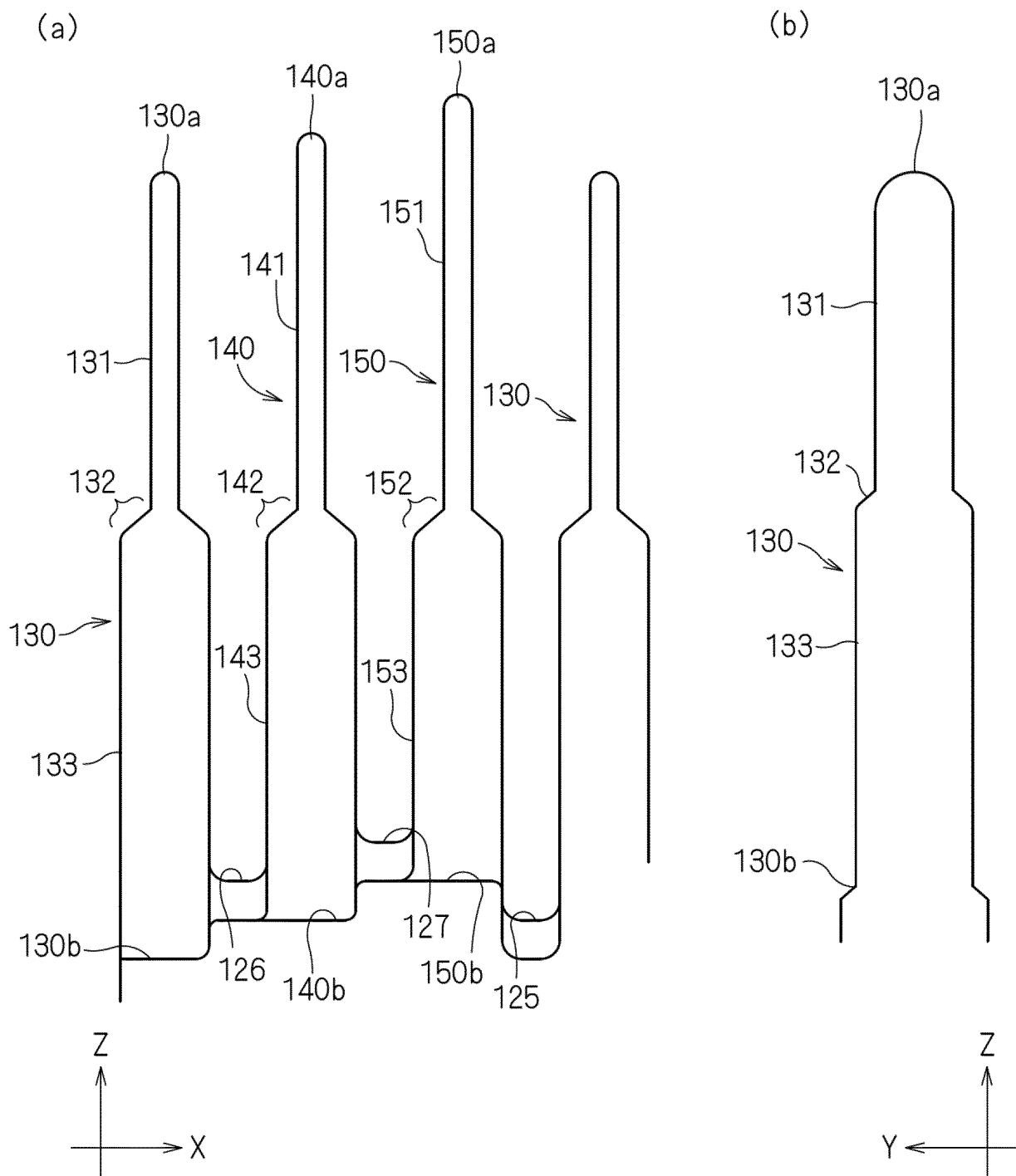


Fig.11

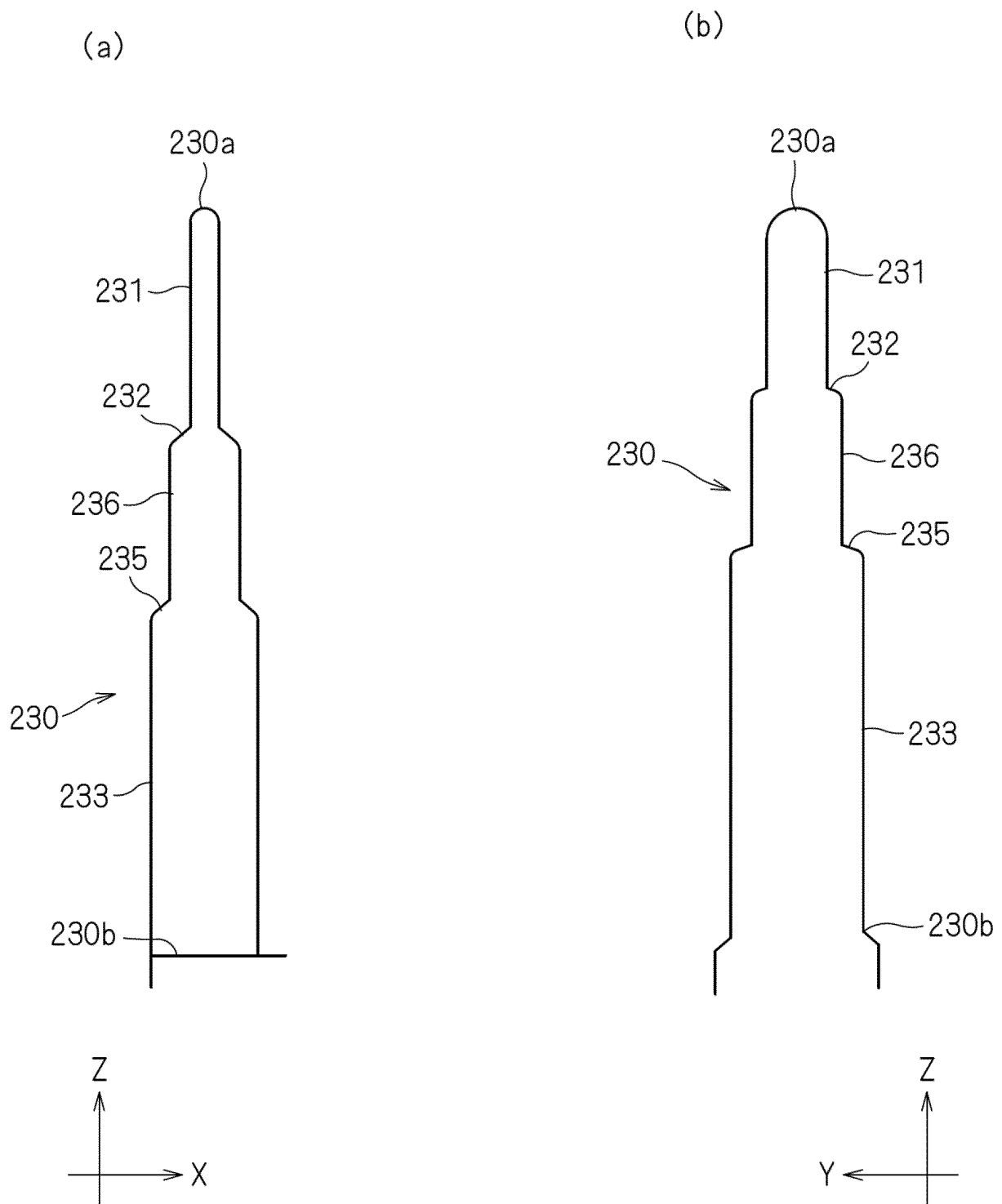


Fig.12

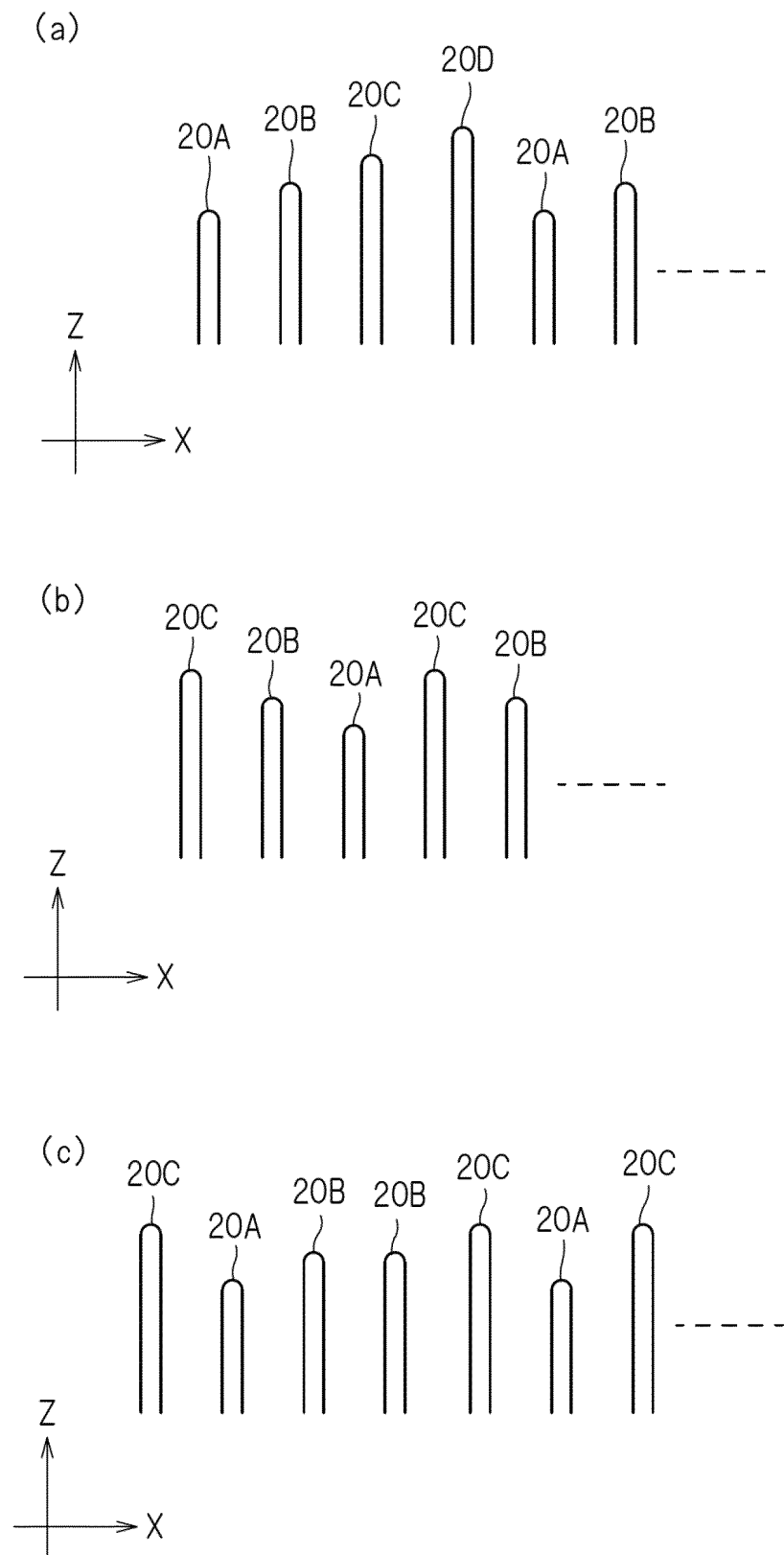


Fig.13

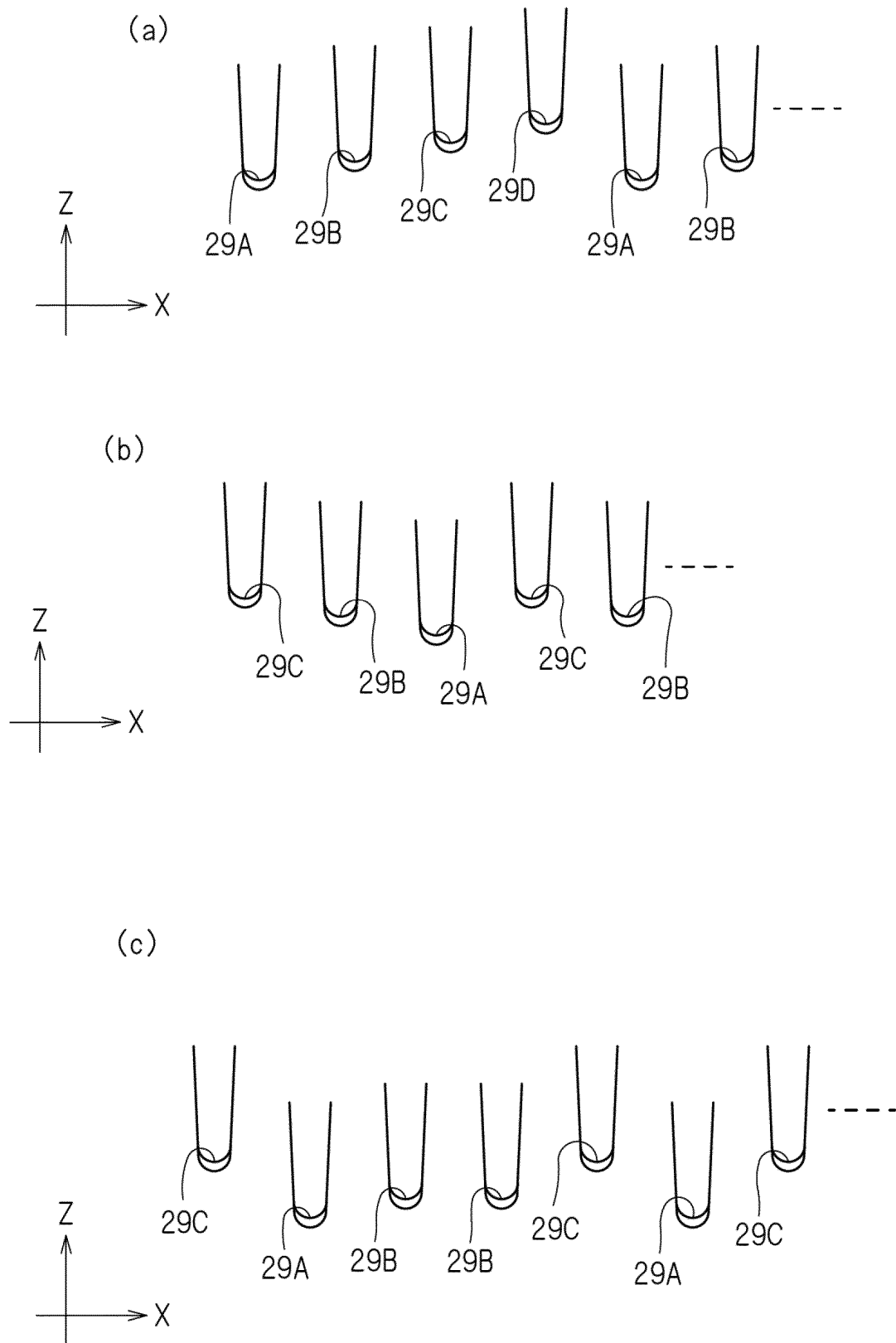


Fig.14

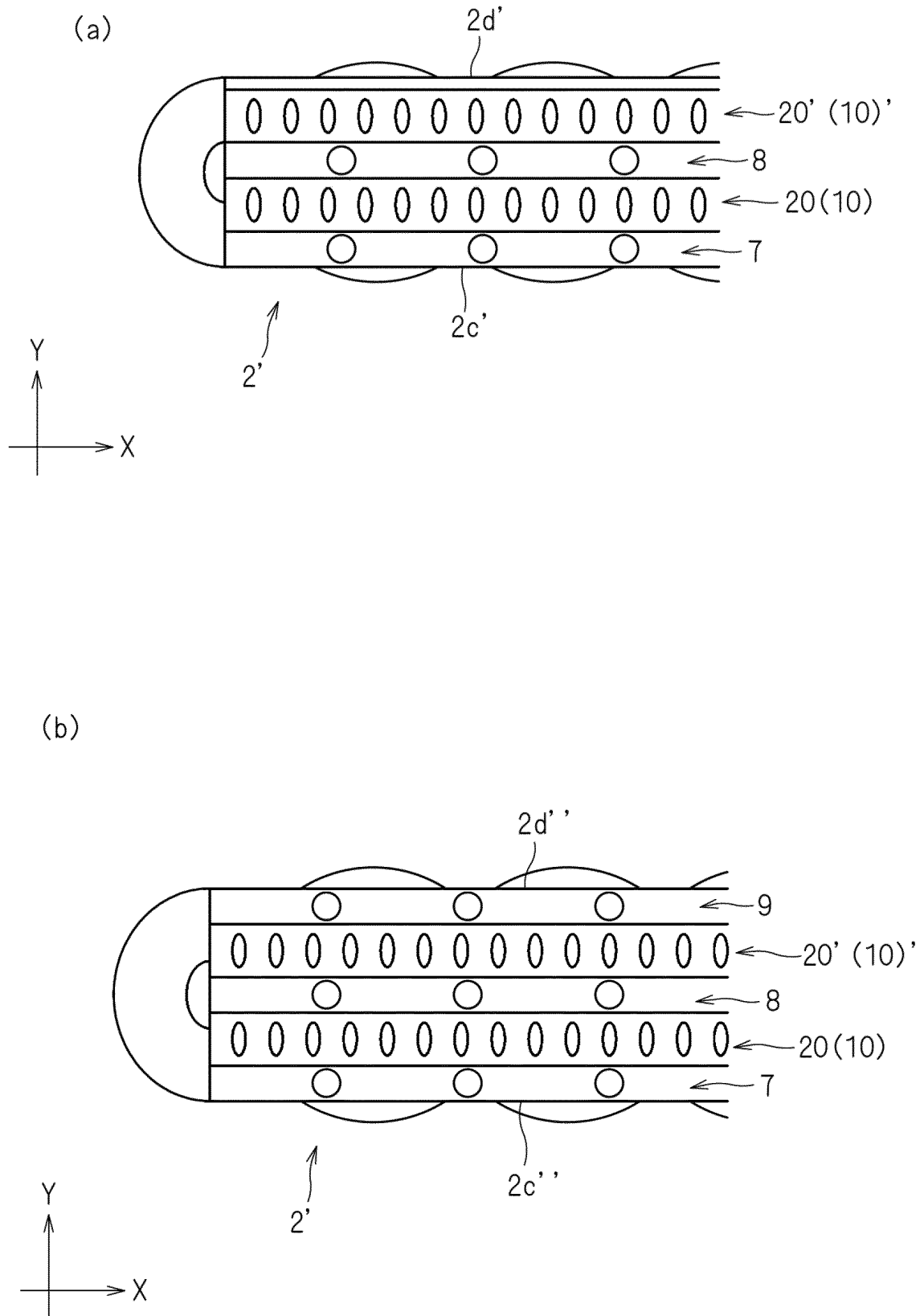


Fig.15

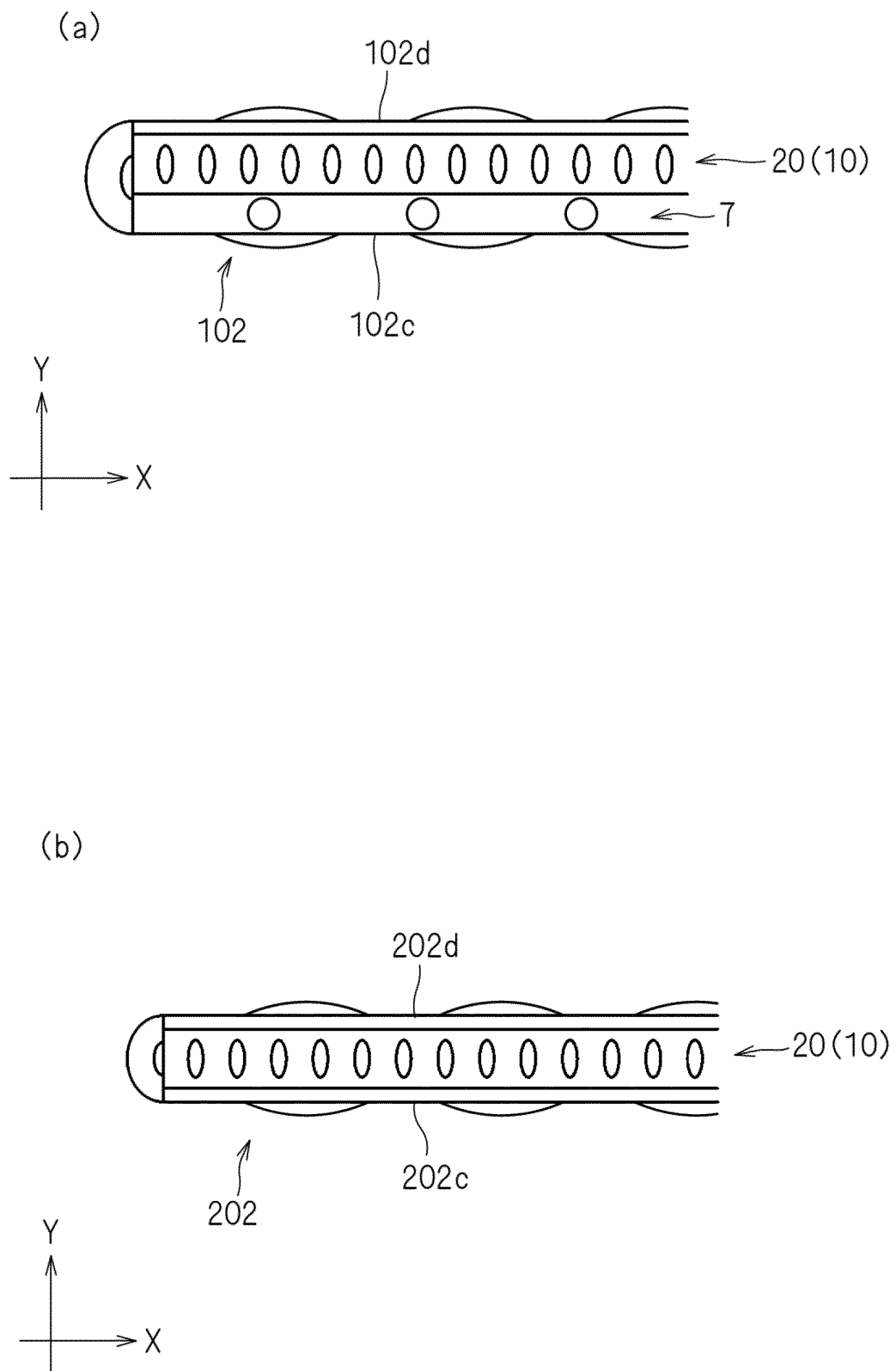


Fig.16

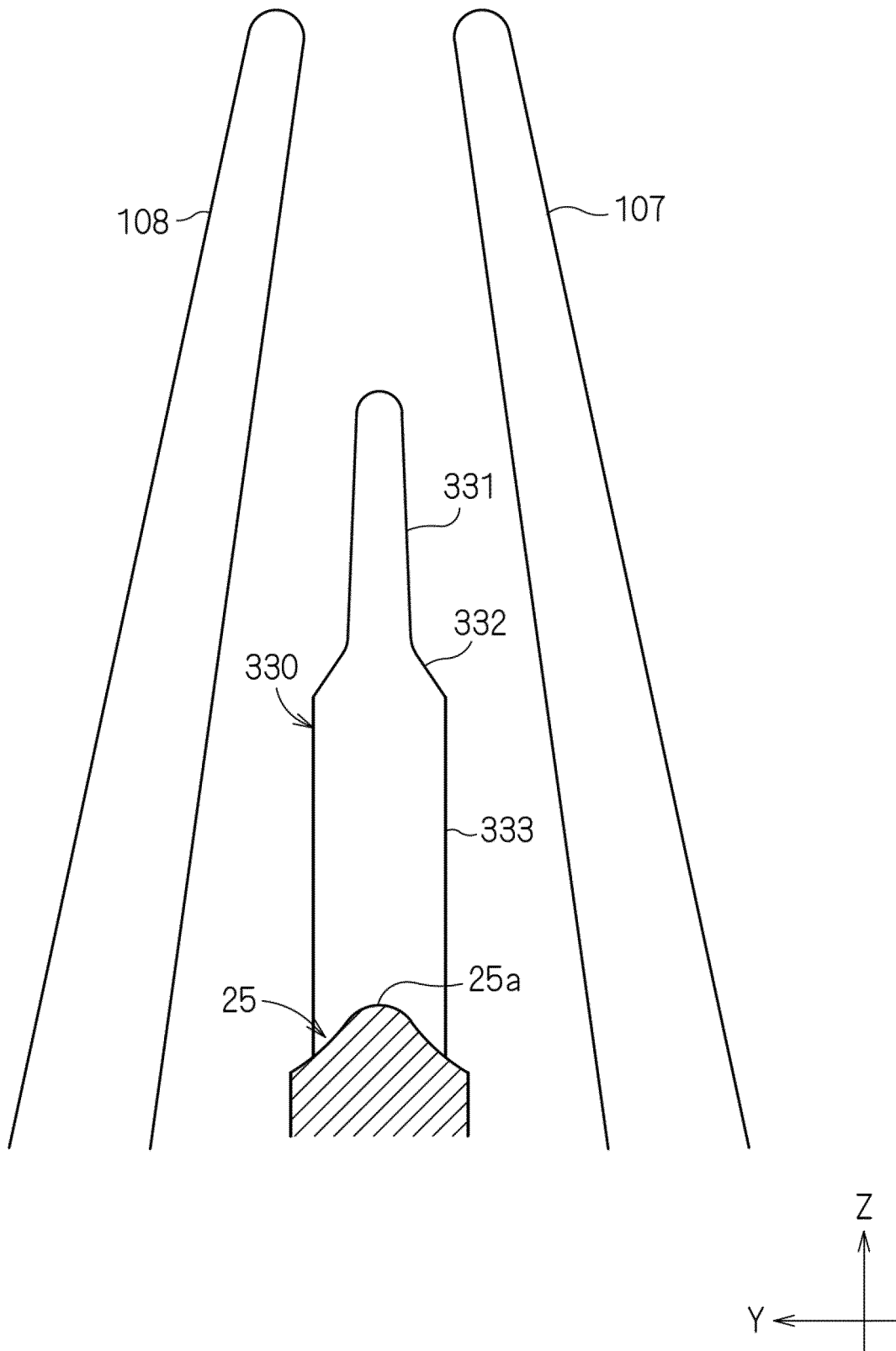


Fig.17

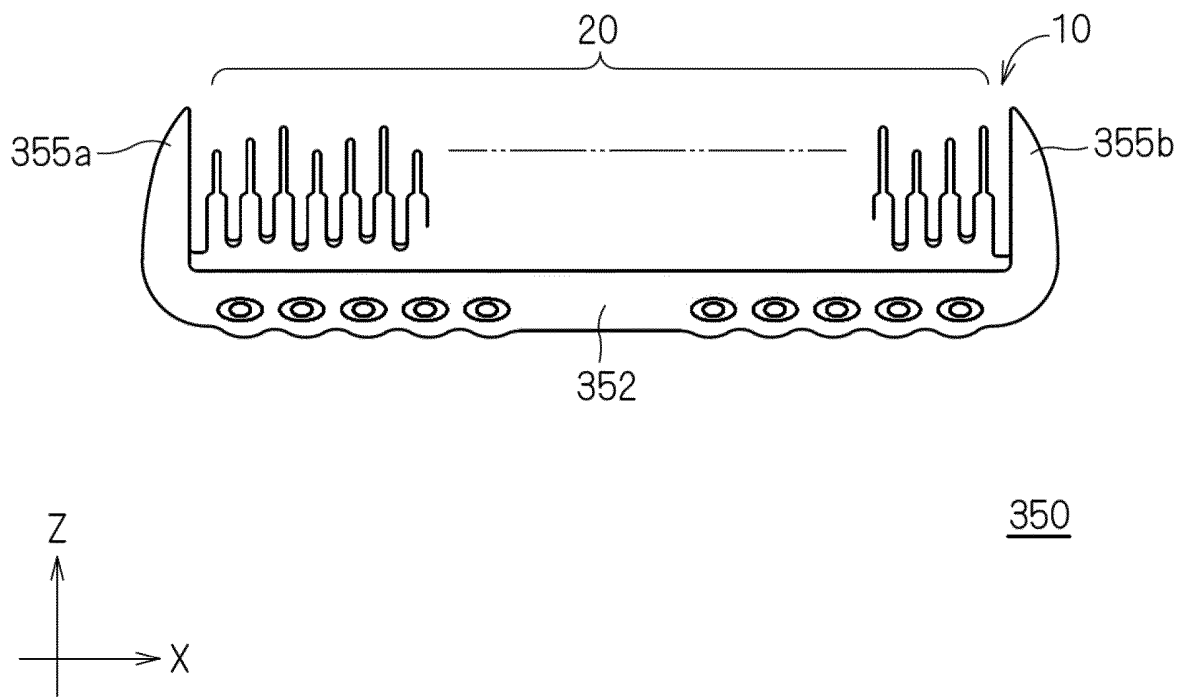


Fig.18

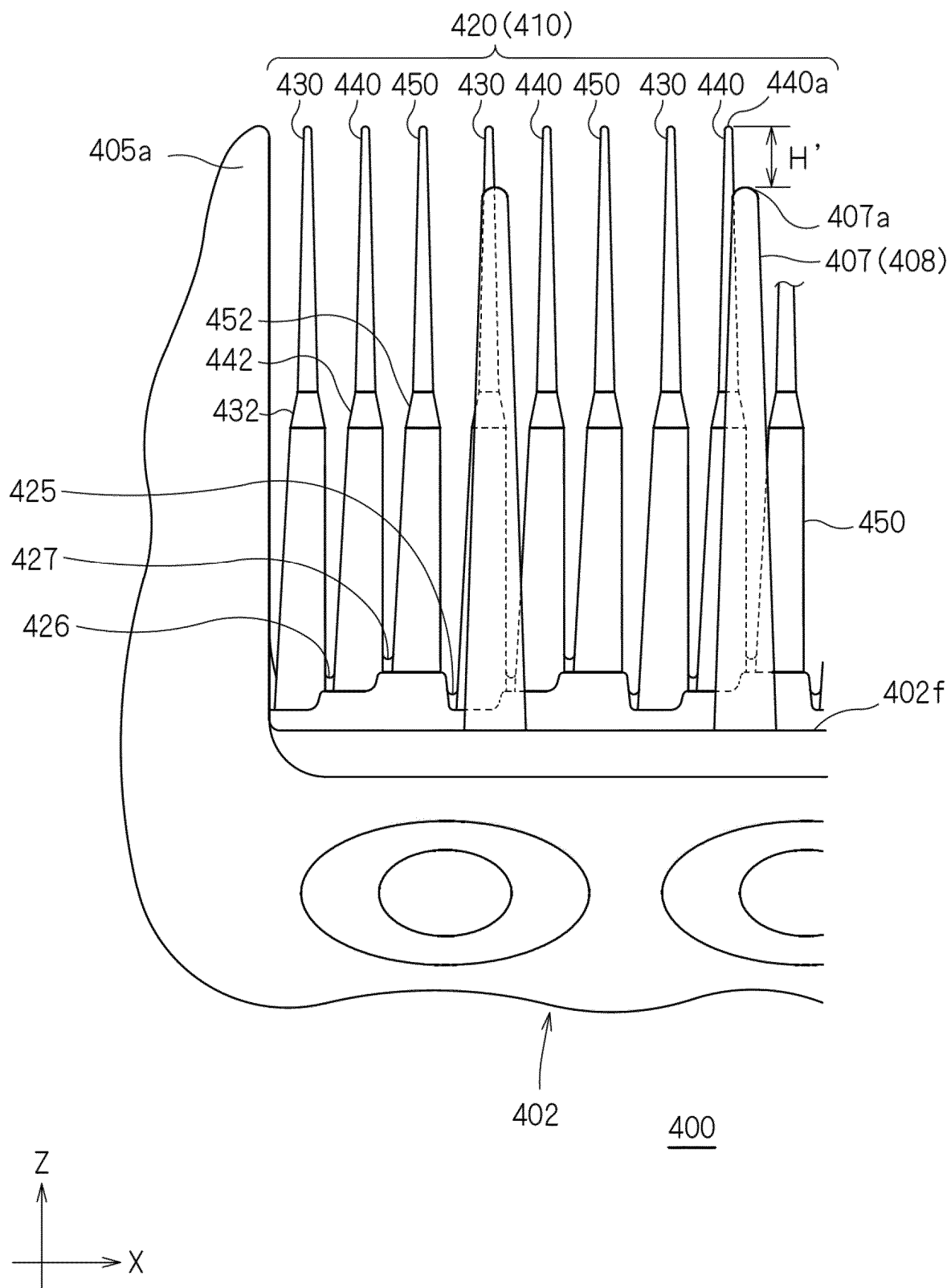


Fig.19

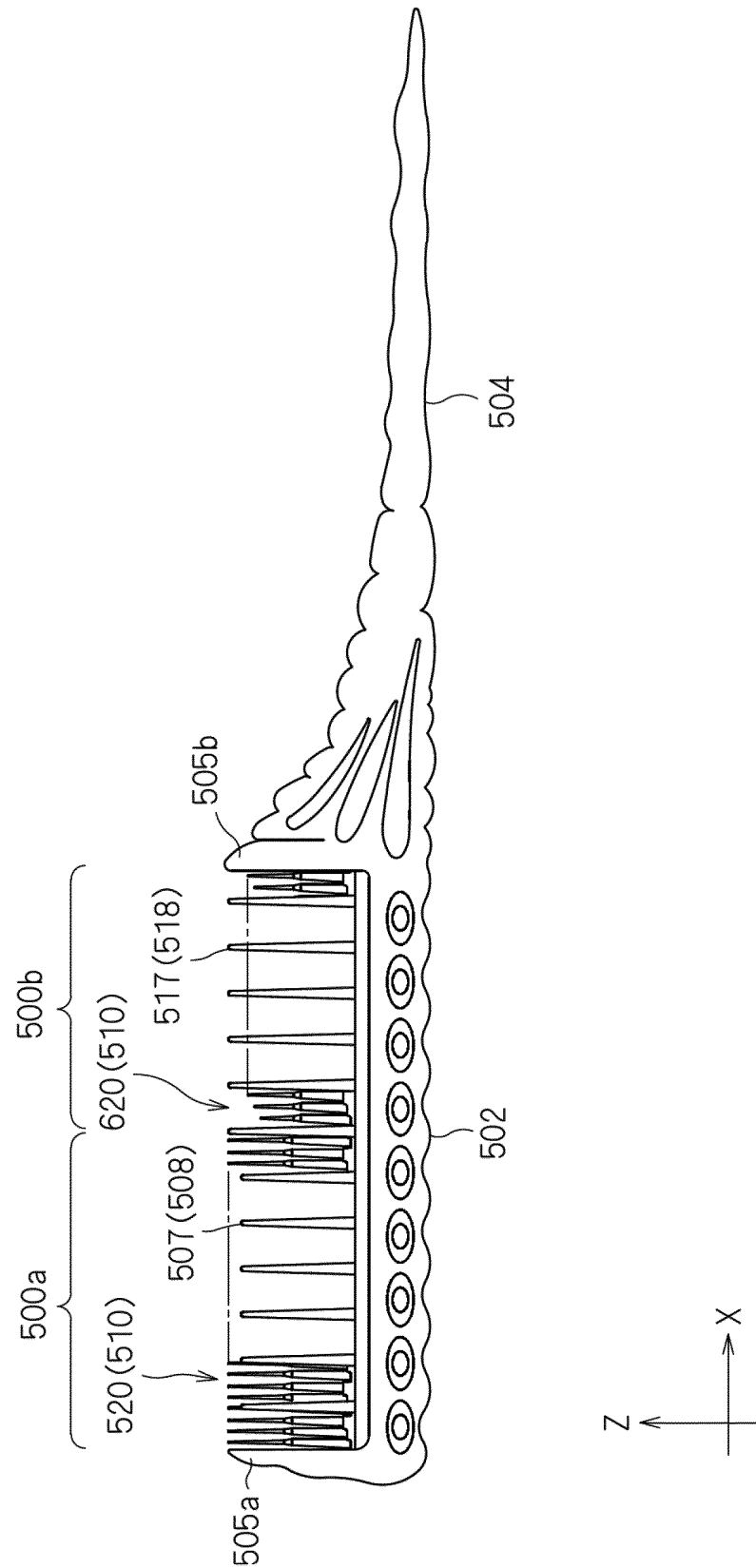


Fig.20

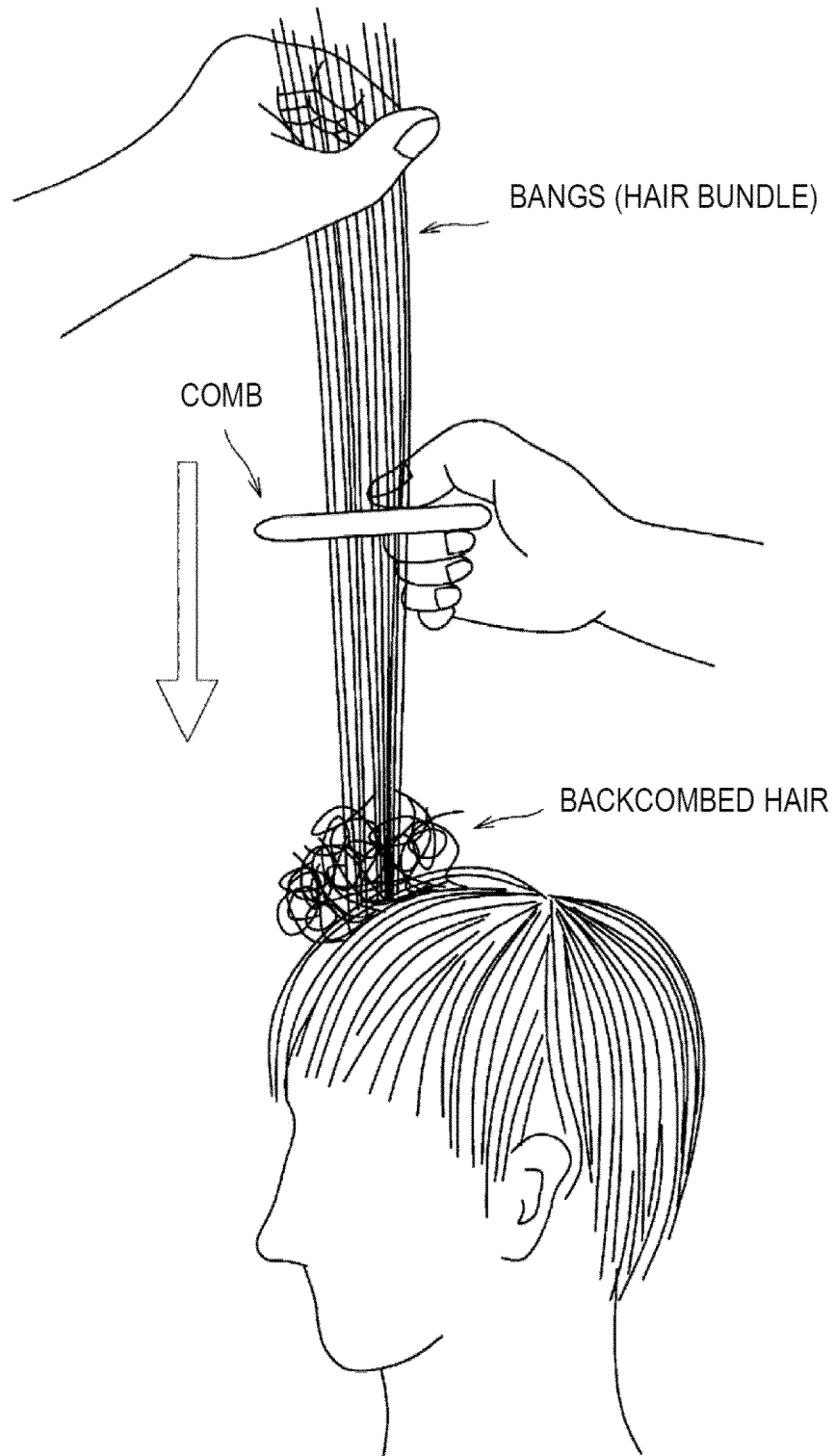


Fig.21

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2014/051120

A. CLASSIFICATION OF SUBJECT MATTER

A45D24/00(2006.01) i, A46B9/02(2006.01) i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A45D24/00, A46B9/02

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2014

Kokai Jitsuyo Shinan Koho 1971-2014 Toroku Jitsuyo Shinan Koho 1994-2014

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y A	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 90900/1989(Laid-open No. 128007/1991) (Hapio Yugen Kaisha), 24 December 1991 (24.12.1991), specification, page 1, line 19 to page 3, line 2; fig. 3 (Family: none)	1-3, 5, 6 7, 14 4, 8-13

☒ Further documents are listed in the continuation of Box C.☐ See patent family annex.

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

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Date of the actual completion of the international search
13 February, 2014 (13.02.14)Date of mailing of the international search report
25 February, 2014 (25.02.14)Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2014/051120

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y A	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 175100/1982 (Laid-open No. 77907/1984) (Minoru KOMAI), 26 May 1984 (26.05.1984), fig. 3 to 5 (Family: none)	1-3, 5, 6 7, 14 4, 8-13
Y	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 020286/1972 (Laid-open No. 095892/1973) (Juichiro TADE), 14 November 1973 (14.11.1973), fig. 1 (Family: none)	7
Y	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 043991/1972 (Laid-open No. 003790/1974) (Katsuhiro YOSHIDA), 12 January 1974 (12.01.1974), fig. 1 to 6 (Family: none)	14

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REFERENCES CITED IN THE DESCRIPTION

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