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(54) **IMPLEMENT FOR TRAINING FACIAL MUSCLE**

(57) A facial muscle training tool has weight portions (25) provided at the ends of left and right arms (31). A orally held portion (24), which is held by the lips, is provided between the arms (31). The arms (31) vibrate in resonance when the orally held portion (24) is vibrated in the vertical direction at a frequency of less than 6.50 hertz. Accordingly, the weight of the weight portions (25) acts as load on the orally held portion (24) and a facial muscle training effect is achieved.

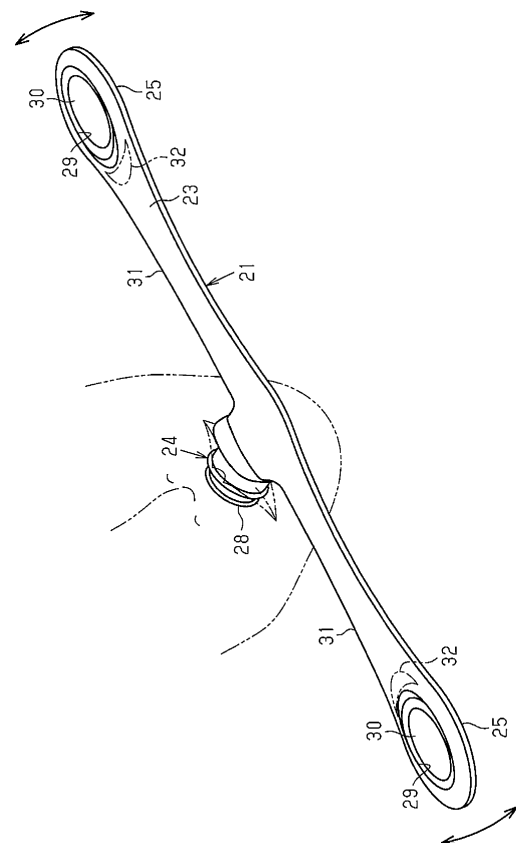


Fig. 1

Description

TECHNICAL FIELD

5 **[0001]** The present invention relates to a facial muscle training tool used for training facial muscles of a human face such as the orbicularis oris muscle.

BACKGROUND ART

10 **[0002]** A facial muscle training tool of this type conventionally has such a structure as one disclosed in Patent Document 1 for example. In this conventional structure, an orally held portion to be held with lips is provided on both the front and back surfaces of a central portion of a strip-shape elastic plate. A weight is fixed to each of opposite end portions of the elastic plate. With the orally held portion held with lips, the facial muscle training tool is shaken entirely up and down. By doing so, the repulsive force of the elastic plate resulting from the weight of each weight portion is transmitted to the
15 orally held portion to train facial muscles.

PRIOR ART DOCUMENT

Patent Document

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[0003] Patent Document 1: Japanese Registered Design No. 1223289

SUMMARY OF THE INVENTION

25 Problems that the Invention is to Solve

[0004] Patent Document 1 discloses the entire shape of the facial muscle training tool. However, Patent Document 1 does not describe properties that the facial muscle training tool must have for training facial muscles properly. Hence, in some cases, a beneficial training function cannot be achieved by this conventional facial muscle training tool.

30 **[0005]** The present invention is intended to provide a facial muscle training tool capable of achieving a beneficial training effect.

Means for Solving the Problems

35 **[0006]** The facial muscle training tool according to the present invention includes an elastically deformable portion and an orally held portion to be held with lips. The orally held portion is provided at a middle position of the elastically deformable portion in a longitudinal direction of the elastically deformable portion. The elastically deformable portion vibrates in resonance with vibration of the orally held portion in a vertical direction at a frequency of less than 6.50 hertz.

40 **[0007]** In such a structure, a load resulting from the resonance vibration of the elastically deformable portion is transmitted properly to the lips to train facial muscles.

EFFECTS OF THE INVENTION

45 **[0008]** The present is capable of achieving a beneficial training effect.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009]

50 Fig. 1 is a perspective view showing a use state of a facial muscle training tool according to a first embodiment.
Fig. 2 shows the facial muscle training tool in a state where an orally held portion cover is attached to the facial muscle training tool.
Fig. 3 is a plan view of the facial muscle training tool.
Fig. 4 is a front view of the facial muscle training tool.
55 Fig. 5 is a cross-sectional view taken along line 5-5 of Fig. 3.
Fig. 6 is an enlarged cross-sectional view showing a bushing and its periphery shown in Fig. 5 in a molding die.
Fig. 7 is a plan view of an elastic plate.
Fig. 8 is a plan view of the elastic plate in a state in which the bushing is attached to the elastic plate.

Fig. 9 is a cross-sectional view taken along line 9-9 of Fig. 4.

Fig. 10 is a perspective view of a mouthpiece.

Fig. 11 is an exploded cross-sectional view showing a relationship between a core and the mouthpiece.

Fig. 12 is a cross-sectional view of the mouthpiece taken along a plane at an angle different by 90 degrees from the angle of the plane of Fig. 11.

Fig. 13 is a cross-sectional view taken along line 13-13 of Fig. 11.

Fig. 14 is an exploded cross-sectional view of a weight portion.

Fig. 15 is a cross-sectional view showing a use state of the orally held portion cover.

Fig. 16 is a cross-sectional view of the orally held portion cover.

Fig. 17 is a perspective view showing the orally held portion cover in an open state.

Fig. 18 is a diagrammatic view showing deformation by warpage of the facial muscle training tool.

Fig. 19 is a plan view showing a facial muscle training tool according to a second embodiment.

Fig. 20A is a plan view of an elastic plate of a sample.

Fig. 20B is a side view showing a load test state on the sample.

Fig. 21 is a plan view showing a facial muscle training tool according to a third embodiment.

Fig. 22 is a cross-sectional view taken along a plane at a substantially central portion of the facial muscle training tool in its thickness direction.

Fig. 23 is a plan view of a weight piece.

Fig. 24 is a perspective view of an ornamental clip.

Fig. 25 is a side view of the ornamental clip.

Fig. 26 is a front view showing the ornamental clip and the weight piece.

Figs. 27A and 27B are explanatory views showing a condition for examination on the lift of the corner of a mouth.

Fig. 28 is a graph showing a result of the examination on the lift of the corner of a mouth.

Figs. 29A and 29B are explanatory views showing a condition for examination on the lift of a cheek.

Fig. 30 is a graph showing a result of the examination on the lift of a cheek.

Figs. 31A and 31B are explanatory views each showing a condition for examination on face line firming.

Fig. 32 is a graph showing a result of the examination on face line firming.

MODES FOR CARRYING OUT THE INVENTION

[0010] Embodiments will be described below by referring to the drawings.

First Embodiment

[0011] As shown in Fig. 1, a facial muscle training tool 21 according to a first embodiment is used for training the facial muscles of the user such as an orbicularis oris muscle, and a buccinator muscle, a risorius muscle, a greater zygomatic muscle, and a lesser zygomatic muscle connected to the orbicularis oris muscle by being held with the lips of the user and being swung up and down by the user.

[0012] As shown in Figs. 3, 4, and 8, the facial muscle training tool 21 includes an elastic plate 22 having a linear strip plate shape formed of a plate spring made of a steel plate. As shown in Figs. 9 and 11, a core 27 made of hard plastic such as polypropylene is fixed to a central portion of the elastic plate 22 in its longitudinal direction by means of molding using the elastic plate 22 as an insert.

The core 27 has a protruding portion 272 protruding from one edge of the elastic plate 22. A hollow mouthpiece 28 is attached detachably to the protruding portion 272 of the core 27. While being attached to the protruding portion 272, the mouthpiece 28 forms an orally held portion 24 to be held with lips.

[0013] As shown in Figs. 3, 6, and 8, the elastic plate 22 in its entirety and a portion of the core 27 except the protruding portion 272 are molded using a covering 23 made of synthetic plastic such as polyurethane. The covering 23 is made of a softer material than the core 27. A pair of through holes 222 is formed in positions near each of opposite end portions of the elastic plate 22. The inner through hole 222 functions to connect the elastic plate 22 and the covering 23 more tightly by allowing entry of the synthetic plastic during molding of the covering 23. As shown in Figs. 5 and 6, a bushing 26 is fitted in the outer through hole 222 to protrude from both the front and back surfaces of the elastic plate 22. The bushing 26 is formed into a height that prevents exposure of the bushing 26 to the surface of the covering 23. A small hole 224 is formed in each of the opposite ends of the elastic plate 22. The small hole 224 also functions to connect the elastic plate 22 and the covering 23 more tightly by allowing entry of the synthetic plastic.

[0014] The elastic plate 22 and the covering 23 on both the right side and the left side of the core 27 form a pair of right and left arms 31. A weight portion 25 is provided at a tip portion of the covering 23 of each of the arms 31.

[0015] As shown in Fig. 1, the orally held portion 24 is held with the lips and the facial muscle training tool 21 is entirely swung up and down. Then, both of the arms 31 are vibrated up and down in resonance with the swinging motion based

on the load of the weight portion 25, the elasticity of the elastic plate 22 and the like. The resonance vibration refers to large vibrating motion of the arms 31 resulting from application of vibration of a frequency within a predetermined range to the orally held portion 24. In particular, it is preferable that an end portion of each arm 31 warps to a position above the height of the orally held portion 24. In this way, a load acts on the facial muscles of the user holding the orally held

portion 24 to train the facial muscles.

[0016] As shown in Figs. 9 to 13, the core 27 has an outer peripheral surface where a concave-convex portion 271 is formed for hooking and holding the mouthpiece 28. The mouthpiece 28 is formed of soft synthetic plastic such as polyurethane that is softer and less slippery than the plastic for the core 27. The mouthpiece 28 has an inner peripheral surface where a concave-convex portion 281 is formed that can be fitted to the concave-convex portion 271 of the core 27. A depression 282 to be held with lips is formed at both the upper and lower central portions of the outer peripheral surface of the mouthpiece 28. As shown in Fig. 13, the outer peripheral surface of the mouthpiece 28 in a portion corresponding to the depression 282 is formed into an ellipse having a major diameter extending in the right and left direction. Thus, the curvature of the depression 282 is smaller in two vertically separated positions than in two horizontally separated positions, so that the depression 282 is flat in the two vertically separated positions. This allows the depression 282 to be orally held easily. A concave portion 283 is formed in the outer peripheral surface of a tip portion of the mouthpiece 28. A convex portion 284 having a spherical surface is formed at a front end surface of the mouthpiece 28.

[0017] A pair of flanges 285 to be positioned on both the front and back sides of each arm 31 is formed at the base end of the mouthpiece 28. The flanges 285 protrude further than the other portion of the mouthpiece 28. As shown in Fig. 9, if the facial muscle training tool 21 is placed on an installation surface 100 such as the upper surface of a table, the flanges 285 contact the installation surface 100 to point the mouthpiece 28 in an obliquely upward direction. This prevents a portion of the mouthpiece 28 to be held with lips from contacting the installation surface 100, so that the mouthpiece 28 can be kept clean.

[0018] Various types of mouthpieces 28 different in outer dimensions and the like are prepared. The user is allowed to select an appropriate mouthpiece 28 according to the size or the shape of the mouth of the user, for example, and to fit the selected mouthpiece 28 to the core 27 from outside. The mouthpiece 28 is softer than the core 27 and has hardness of 60 degrees measured using a type A durometer conforming to the JIS (Japanese Industrial Standards) K6253, for example. The body of the facial muscle training tool 21 except the weight 30, specifically, the body including the elastic plate 22, the covering 23, the core 27, and the mouthpiece 28 has a weight from about 50 to about 500 grams (g). The weight 30 has a weight from about 3 to about 120 g.

[0019] As shown in Figs. 5 and 14, a holding hole 29 is formed in a position at each of the opposite ends of the covering 23. Each weight portion 25 is configured with the weight 30 attached detachably to the holding hole 29. Various types of weights 30 having different weights are prepared. A weight 30 of an arbitrary weight is selected according to a training level requested by the user, for example, and attached detachably to the holding hole 29.

[0020] The facial muscle training tool 21 of the present embodiment is accompanied by a cover 51 that constitutes a facial muscle training tool set together with the facial muscle training tool 21.

[0021] As shown in Figs. 2, 15, 16, and 18, the cover 51 is made of transparent or semi-transparent synthetic plastic such as polypropylene plastic, polyethylene plastic, or polyamide plastic. The cover 51 has two halves including a cover piece 53 and a cover piece 54, via an integral hinge 52 at the center. One of the cover pieces 53 and 54 forms a body and the other forms a lid. In the present embodiment, the cover piece 53 on the lower side of Fig. 15 is the body and the cover piece 54 on the upper side of Fig. 15 is the lid. Both the cover pieces 53 and 54 are formed in a concave shape to form accommodation space 511 between the cover pieces 53 and 54. The orally held portion 24 and the central portion of the covering 23 of the facial muscle training tool 21 are accommodated in the accommodation space 511 and covered by the cover 51. The one cover piece 53 has a latching pawl 55 and the other cover piece 54 has a receiving portion 56 to which the latching pawl 55 is to be fitted. If the cover pieces 53 and 54 are closed, the latching pawl 55 and the receiving portion 56 are fitted to hold the cover 51 in a closed position.

[0022] Concave portions 58 are formed in the respective side walls of the cover pieces 53 and 54. When the cover pieces 53 and 54 are closed, the concave portions 58 form openings 59 for letting the arms 31 pass through while preventing interference with the arms 31. A gap 60 is formed between a marginal portion of each opening 59 and the outer peripheral surface of the corresponding arm 31. To prevent formation of a sharp edge at the opening 59, the marginal portion of the opening 59 may be formed into an arc in cross section. To increase the area of contact with the arm 31, the opening 59 may be increased in thickness at the marginal portion or may be increased in thickness and formed into an arc in cross section at the marginal portion. In this way, the occurrence of a scratch or a scar in the arm 31 can be prevented.

[0023] A method of using the facial muscle training tool 21 of the aforementioned structure will be described next.

[0024] As shown in Fig. 2, when the facial muscle training tool 21 is not in use, the cover 51 is attached to the central portion of the facial muscle training tool 21 to cover the orally held portion 24. This can maintain the cleanliness of the orally held portion 24 to be held with lips. Further, the shape of the cover 51 substantially conforms to the outer surface of the mouthpiece 28. Thus, the facial muscle

training tool 21 to which the cover 51 is attached can be housed in a dedicated case for carrying or storage.

[0025] To train facial muscles using the facial muscle training tool 21, the cover 51 is detached. A mouthpiece 28 having necessary outer dimensions conforming for example to a training level requested by the user of the facial muscle training tool 21 is attached in advance to the core 27. Further, the weight 30 of a required weight is attached to the holding hole 29 in each weight portion 25. In this state, the user puts the depression 282 of the orally held portion 24 between lips and swings his or her face up and down. By doing so, while the weight of the facial muscle training tool 21 acts on the lips, the weight portions 25 are vibrated up and down in resonance through the elastic plate 22 made of the plate spring. This vibration is transmitted to the orally held portion 24. As a result, a load is applied to facial muscles through the lips to train the facial muscles.

[0026] In this case, the orally held portion 24 protrudes from a side of the arms 31 to be located in a position displaced outwardly from this side. Thus, the facial muscle training tool 21 is held with the lips in a cantilever style to increase the weight to be bored on the lips. Thus, the load resulting from the resonance vibration acts efficiently as the load on the facial muscles to train the facial muscles effectively. At this time, as a result of the horizontally-long ellipsoidal shape in cross section of the depression 282, the mouthpiece 28 can be held while the mouth is opened widely. Holding the mouthpiece 28 with the mouth opened widely allows the load resulting from the resonance vibration to be transmitted to the entire orbicularis oris muscle. The orbicularis oris muscle is connected to muscles of facial expression such as the risorius muscle. This allows training of the risorius muscle and the like through the orbicularis oris muscle to allow efficient training.

[0027] In the facial muscle training tool 21 of the present embodiment, the elastic plate 22 is molded using the covering 23 made of synthetic plastic. Thus, when the arms 31 warp to vibrate in resonance, except the vertical vibration of the arms 31 intended to be obtained for training, motions such as distortion or subtle vibration of the elastic plate 22 can be suppressed. In this way, distracting motions are less likely to be transmitted to the lips of the user, so that the facial muscle training tool 21 can be used comfortably. Instead of molding the elastic plate 22 entirely, a plate or a sheet of synthetic plastic may be fixed for example with an adhesive to both or one of the front and back surfaces of the elastic plate 22.

[0028] The mouthpiece 28 has rubber properties of not being slippery and having proper hardness. Thus, the mouthpiece 28 is easy to hold orally and can be used for transmitting a load resulting from the vibration of the arms 31 to the lips. If the mouthpiece 28 is too hard, the mouthpiece 28 does not conform to the lips and is hard to hold orally. Conversely, if the mouthpiece 28 is too soft, even with the mouthpiece 28 held orally, the facial muscle training tool 21 cannot easily be maintained stably. Additionally, the mouthpiece 28 absorbs vibration of the arms 31 to reduce a load for training.

[0029] If the facial muscle training tool 21 is used by different users, the mouthpiece 28 on the core 27 is changed to a different mouthpiece 28 of a different outer shape and the like. By doing so, one facial muscle training tool 21 can be shared between users having different mouth sizes or different mouth shapes.

[0030] The weight 30 in the holding hole 29 of the weight portion 25 can be changed to a different weight 30 of a different weight according to the strength of facial muscles or a training level.

[0031] After the training, the mouthpiece 28 is detached from the core 27, if necessary, and can be cleaned. The cleaned mouthpiece 28 is attached to the core 27 again. This can maintain the cleanliness of the mouthpiece 28 and works advantageously in terms of a hygienic aspect. Then, the cover 51 is attached to the training tool 21 so as to cover the mouthpiece 28.

[0032] As described above, by covering the mouthpiece 28 with the cover 51, the cleanliness of the mouthpiece 28 can be maintained during carrying or storage of the training tool 21. By housing the mouthpiece 28 alone in the cover 51 after the mouthpiece 28 is detached from the core 27, the cleanliness of the mouthpiece 28 can be maintained during carrying or storage of the mouthpiece 28.

[0033] A method of manufacturing the facial muscle training tool 21 of the present embodiment will be described below.

[0034] First, the core 27 is formed by injection molding at the central portion of the elastic plate 22 shown in Fig. 7 using the elastic plate 22 as an insert.

[0035] Next, the bushings 26 are fitted in the two through holes 222 formed in positions near the opposite ends of the elastic plate 22. As a result, the bushings 26 protrude from both the front and back surfaces of the elastic plate 22. Next, as shown in Fig. 6, the elastic plate 22 is placed in a molding die 101 and synthetic plastic to become the covering 23 is injected into the die 101. In an initial stage of the injection of the synthetic plastic, the pressure of the injection does not act uniformly on the elastic plate 22 but it temporarily acts non-uniformly on the elastic plate 22. Hence, the elastic plate 22 is curved to cause risk such as an abrasion on a molding surface of a cavity 102 of the molding die 101 due to a sharp edge at the curved end of the elastic plate 22, for example. By contrast, in the present embodiment, if the elastic plate 22 is curved, the bushing 26 abuts on the molding surface of the cavity to prevent abutting contact of the elastic plate 22 with the molding surface.

[0036] Thus, risk of a scratch on the molding surface of the cavity 102 can be prevented. In a state in which filling of the cavity 102 with the synthetic plastic is finished, the injection pressure acts uniformly on the entire elastic plate 22. This makes the elastic plate 22 recover from the curved shape to restore its original shape. The elastic plate 22 in this

shape extends linearly in a central portion of the cavity 102. As a result, after the molding, the elastic plate 22 is molded in a fixed position in the molded covering 23.

[0037] In the facial muscle training tool 21 of the present embodiment, if the orally held portion 24 is held with the lips and shaken up and down, the arms 31 vibrate in resonance while warping. In the present embodiment, the length of each arm 31, the weight of the weight portion 25, the modulus of elasticity, spring constant and the like of the arms 31 including the elastic plate 22 are set such that the arms 31 vibrate in resonance if the orally held portion 24 vibrates at a frequency of less than 6.50 hertz (Hz).

This allows the user to hold the orally held portion 24 with the lips to vibrate the arms 31 in resonance and to do training effectively using a resultant load. By contrast, in the case of a vibration frequency exceeding 6.50 Hz, specifically, if the orally held portion 24 is moved reciprocally little by little, the arms 31 are not vibrated in resonance. This produces the same state as where a rigid substance not to warp is vibrated, so that the load resulting from resonance vibration of the arms 31 is not transmitted to the lips. In this case, beneficial training effect cannot be achieved.

[0038] In the facial muscle training tool 21 of the present embodiment, the rate of downward warpage of each arm 31 in a resting state, specifically, the amount of downward warpage **a** at the tip of each arm 31, is set to exceed 4.8 percent (%) relative to the length **b** of each arm 31 shown in Fig. 17. By doing so, the arms 31 vibrate while warping properly in response to vertical vibration of the orally held portion 24. This allows the user to achieve beneficial training effect. By contrast, if the rate of warpage is 4.8% or less, specifically, if then arms are rigid and hard to warp, the arms are hard to vibrate in resonance. In this case, it is difficult to achieve beneficial training effect.

[0039] Additionally, in the facial muscle training tool 21 of the present embodiment, the load to be applied to the orally held portion 24 in response to resonance vibration acting on the arms 31 is set to less than 7.4 newtons (N).

By doing so, when the user shakes the orally held portion 24 up and down to vibrate the arms 31 in resonance, a proper load acts on the user so as to be able to obtain beneficial training effect. By contrast, if a load is 7.4 N or more, the user under such excessively high load finds difficulty in shaking the orally held portion 24.

[0040] The following describes results of examinations on the action of the facial muscle training tool 21 of the present embodiment based on Tables 1 to 6. For these examinations, various types of elastic plates 22 shown in Fig. 20A described later were used. A protruding portion 223 was formed in a middle portion of the elastic plate 22 in its longitudinal direction. Weights of various types (not shown) to be described later were attached detachably to the opposite ends of the elastic plate 22 with screws, clips and the like.

[0041] Referring to Table 1, elastic plates 22 having three thicknesses were prepared including 0.6 millimeters (mm), 0.8 mm, and 1.0 mm. Further, elastic plates 22 having seven lengths were prepared including 300 mm, 400 mm, 500 mm, 600 mm, 700 mm, 800 mm, and 1000 mm. Thus, 21 types of elastic plates 22 were prepared in total. Further, weights having five weights were prepared including 6.0 grams (g), 11.5 g, 23.5 g, 48.0 g, and 92.0 g. These weights were attached to the opposite ends of the aforementioned 21 types of elastic plates 22 to prepare 105 types of samples 120 (see Fig. 20B). As shown in Fig. 20B, the protruding portion 223 of the elastic plate 22 was held by a vibration tester 103 of Matsudaira type, available from Itoh Seiki Co., Ltd., and vibration of amplitude of 20 mm was applied in various ways in a vertical direction to the sample 120. Table 1 shows the frequency of vibration applied per second when the largest amplitude was generated at each of the right and left arms of the elastic plate 22. The value of the frequency of the applied vibration causing resonance vibration was given according to indication on a display portion (not shown) of the vibration tester 103. The presence or absence of resonance vibration was determined by visual check.

[0042] Then, each of the aforementioned various types of samples 120 was removed from the vibration tester 103 and a mouthpiece 41 was attached to the protruding portion 223 of the elastic plate 22. The mouthpiece 41 had a size and hardness comparable to those of the orally held portion 24 and corresponded to the orally held portion 24. These samples 120 were tested by 10 test subjects using their feelings. As shown in Table 2, results thereof were graded into four ranks. These four ranks are based on results of the following determinations made by six or more test subjects: being unable to generate resonance vibration (rank 4); generating resonance vibration is not easy (rank 3); generating resonance vibration is easy (rank 2); and generating resonance vibration is particularly easy (rank 1). "Being unable to generate resonance vibration" means that generating resonance vibration of the arms 31 is determined to be impossible. "Generating resonance vibration is not easy" means that generating resonance vibration is determined to be possible while requiring proficiency. "UNMEASURABLE" shown in Table 1 means that a frequency generating resonance vibration could not be found for reason of being out of a measurable range of a measuring unit. Thus, it was found that, in some cases, even at a vibration frequency of 1.17 Hz or less per second, the arms of the elastic plate 22 vibrated in resonance.

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[Table 1]

RESONANCE FREQUENCY (Hz)																		
TOTAL LENGTH (mm)	THICKNESS (mm)		0.6 mm					0.8 mm					1.0 mm					
	WEIGHT (g)		6.0	11.5	23.5	48.0	92.0	6.0	11.5	23.5	48.0	92.0	6.0	11.5	23.5	48.0	92.0	
300			U.M.	U.M.	U.M.	6.50	5.00	U.M.	U.M.	U.M.	U.M.	6.50	U.M.	U.M.	U.M.	U.M.	U.M.	
400			U.M.	U.M.	5.83	5.00	3.50	U.M.	U.M.	U.M.	U.M.	6.67	5.17	U.M.	U.M.	U.M.	6.67	4.67
500			6.00	5.33	4.33	3.33	2.42	U.M.	U.M.	U.M.	5.67	5.17	3.67	U.M.	U.M.	U.M.	6.50	4.50
600			4.50	4.00	3.33	2.33	1.83	5.83	5.17	4.67	4.00	3.50	U.M.	6.33	5.50	5.00	3.67	
700			3.33	3.00	2.50	2.00	1.50	5.17	3.83	3.50	2.83	2.00	5.67	5.17	4.50	3.67	3.50	
800			3.00	2.67	1.92	1.50	1.25	3.83	3.50	2.67	1.92	1.58	4.33	4.00	3.50	2.92	2.17	
1000			1.67	1.58	1.33	1.17	U.M.	2.33	2.08	1.75	1.50	1.17	3.00	2.67	2.33	2.00	1.58	
U.M.: unmeasurable																		

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[Table 2]

EASE OF RESONANCE VIBRATION RANKED IN TERMS OF RESONANCE FREQUENCY (Hz)	
5	RANK
	4
	6.67
	6.50
10	3
	6.33
	6.00
	5.83
	5.67
15	5.50
	5.33
	5.17
20	5.0
	2
	4.67
	4.50
	4.33
25	4.00
	3.83
	3.67
30	3.50
	1
	3.33
	3.00
	2.92
35	2.83
	2.67
	2.50
40	2.42
	2.33
	2.17
	2.08
45	2.00
	1.92
	1.83
50	1.75
	1.67
	1.58
	1.50
55	1.33
	1.25

(continued)

EASE OF RESONANCE VIBRATION RANKED IN TERMS OF RESONANCE FREQUENCY (Hz)	
RANK	
	1.17

[0043] As clearly understood from Tables 1 and 2, in the case of a sample 120 where the mouthpiece 41 vibrates at a frequency of less than 6.50 hertz (Hz), the user can vibrate the arms of the elastic plate 22 in resonance although generating this resonance vibration is not easy. Thus, this sample 120 is usable for training facial muscles.

[0044] In the case of a sample 120 in which the mouthpiece 41 vibrates at a frequency of less than 5.00 Hz, the user can vibrate the arms in resonance easily. Thus, this sample 120 is preferable. In the case of a sample 120 in which the mouthpiece 41 vibrates at a frequency of less than 3.50 Hz, the user can vibrate the arms in resonance more easily. Thus, this sample 120 is particularly preferable.

[0045] In the case of a sample 120 in which the mouthpiece 41 vibrates at a frequency exceeding 4.67 Hz under the aforementioned conditions, the user can vibrate the arms in resonance although generating this resonance vibration is not easy. Thus, this sample 120 is usable for training facial muscles.

[0046] In the case of a sample 120 in which the mouthpiece 41 vibrates at a frequency exceeding 3.33 Hz, the user can vibrate the arms in resonance easily. Thus, this sample 120 is usable for training facial muscles. In the case of a sample 120 in which the mouthpiece 41 vibrates at a frequency of 1.17 Hz or more, the user can vibrate the arms particularly easily. Thus, this sample 120 is particularly preferable. Even at a frequency of less than 1.17 Hz, the arms can still vibrate in resonance. However, such a frequency is not preferable since the arms do not vibrate at a high frequency per second, and beneficial effect of exercise cannot be achieved.

[0047] In the case of a sample 120 in which the mouthpiece 41 vibrates at a frequency of 6.33 Hz or less, the user can vibrate the arms in resonance although generating this resonance vibration is not easy. Thus, this sample 120 is usable for training facial muscles.

[0048] It is preferable that a sample 120 have arms that vibrate in resonance with the vibration of the mouthpiece 41 at a frequency of 3.50 Hz or more and 4.67 Hz or less. It is particularly preferable that a sample 120 have arms that vibrate in resonance with the vibration of the mouthpiece 41 at a frequency of 1.17 Hz or more and 3.33 Hz or less.

[0049] It is also preferable that a sample 120 have arms that vibrate in resonance with the vibration of the mouthpiece 41 at a frequency of 1.17 Hz or more and 3.40 Hz or less. A sample 120 may have arms that vibrate in resonance with the vibration of the mouthpiece 41 at a frequency of 1.17 Hz or more and 4.80 Hz or less. If a sample 120 has arms that vibrate in resonance with the vibration of the mouthpiece 41 at a frequency of 1.17 Hz or more and 6.40 Hz or less, this sample 120 is usable for training.

[0050] From a different viewpoint, if a sample 120 has arms that vibrate in resonance with vibration of the mouthpiece 41 at a frequency in a range from 1.17 to 6.33 Hz, this sample 120 is usable for training. The arms vibrate in resonance with the vibration of the mouthpiece 41 at a frequency in a range from 5.0 to 6.33 Hz.

[0051] It is also preferable that a sample 120 have arms that vibrate in resonance with the vibration of the mouthpiece 41 at a frequency in a range from 3.50 to 6.33 Hz. It is further preferable that a sample 120 have arms that vibrate in resonance with the vibration of the mouthpiece 41 at a frequency in a range from 1.17 to 4.67 Hz.

[0052] Referring to Table 3, elastic plates 22 having three thicknesses, namely 0.6 mm, 0.8 mm, and 1.0 mm, were prepared. Further, the elastic plates 22 were prepared that had six total lengths, namely 400 mm, 500 mm, 600 mm, 700 mm, 800 mm, and 1000 mm. Thus, 18 types of elastic plates 22 were prepared in total. Further, weights having five weights, namely 6.0 g, 11.5 g, 23.5 g, 48.0 g, and 92.0 g, were prepared. Thus, 90 types of samples 120 resulting from combinations of the elastic plates 22 and the weights were prepared. Then, as shown in Fig. 18, the amount of warpage **a** of each of the right and left arms of the elastic plate 22 in a natural state was measured in millimeter units. A numeric value of this amount is given in Table 3 as a rate relative to the length **b** of each arm of the elastic plate 22, that is, as a warpage rate. Like the aforementioned samples 120, these samples 120 were tested by 10 test subjects using their feelings. Like in Table 2, results thereof are graded into four ranks in Table 4.

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[Table 3]

5	TOTAL LENGT H (mm)	LENGTH b IN DRAWIN G (mm)	THICK -NESS (mm)	0.6						0.8						1.0					
			WEIGH T (g)	0	6	11. 5	23. 5	48	92	0	6	11. 5	23. 5	48. 0	92. 0	0	6	11. 5	23. 5	48	92
10	400	200		3.0	3.0	4.0	5.0	8.1	14. 7	0.0	0.0	1.0	2.8	4.8	6.5	0.0	0.0	0.0	3.5	3.6	4.8
	500	250		7.5	7.8	8.1	14. 0	18. 8	25. 6	3.0	3.4	4.8	7.2	8.1	13. 6	2.0	2.0	2.8	3.6	4.0	8.4
	600	300		12. 7	13. 0	14. 7	18. 3	22. 7	33. 0	5.7	6.3	7.3	8.7	10. 2	15. 0	4.5	4.5	6.7	7.3	8.0	9.7
15	700	350		15. 4	16. 6	18. 6	22. 3	28. 9	40. 6	6.5	6.8	10. 3	12. 6	16. 3	24. 6	5.7	6.3	6.6	8.3	9.7	14. 3
	800	400		15. 8	17. 3	19. 8	24. 5	33. 5	48. 8	9.0	9.3	10. 8	15. 2	18. 3	25. 5	8.1	8.3	8.7	9.3	15. 2	16. 0
	1000	500		24. 8	25. 6	29. 2	37. 4	39. 8	60. 8	18. 0	18. 6	20. 8	22. 8	29. 8	41. 0	15. 0	15. 2	16. 5	19. 8	23. 0	27. 0
20																					

[Table 4]

25	EASE OF RESONANCE VIBRATION RANKED IN TERMS OF WARPAGE RATE IN NATURAL STATE	
	RANK	
30	4	0.0
		1.0
		2.0
		2.8
		3.0
		3.4
		3.5
		3.6
		4.0
		4.5
		4.8
45	3	5.0
		5.7
		6.3
		6.5
		6.6
		6.7
		6.8
		7.2
		7.3
		7.5
		7.8

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(continued)

EASE OF RESONANCE VIBRATION RANKED IN TERMS OF WARPAGE RATE IN NATURAL STATE	
RANK	
5	8.0
	8.1
10	8.3
	8.4
	8.7
	9.0
15	9.3
	9.7
	10.2
	10.3
20	10.8
	12.6
	12.7
	13.0
25	13.6
	14.0
	14.3
	14.7
30	15.0
	15.2
	15.4
	15.8
35	16.0
	16.3
	16.5
	16.6
40	17.3
	18.0
	18.3
	18.6
45	18.8
	19.8
	20.8
	22.3
50	22.7
	22.8
	23.0
55	

(continued)

EASE OF RESONANCE VIBRATION RANKED IN TERMS OF WARPAGE RATE IN NATURAL STATE	
RANK	
1	24.5
	24.6
	24.8
	25.5
	25.6
	27.0
	28.9
	29.2
	29.8
	33.0
	33.5
	37.4
	39.8
	40.6
	41.0
	48.8
2	60.8

[0053] In the case of a sample 120 of which the warpage rate of the arms in a resting state exceeds 4.8%, the user can vibrate the arms in resonance. In the case of a sample 120 of which the warpage rate exceeds 8.1%, the user can vibrate the arms in resonance easily. Thus, this sample 120 is preferable. In the case of a sample 120 of which the warpage rate exceeds 15.0%, the user can vibrate the arms in resonance particularly easily. Thus, this sample 120 is even more preferable. In the case of a sample 120 of which the warpage rate is less than 8.3%, resonance vibration is hard to generate but can still be generated. In the case of a sample 120 of which the warpage rate is less than 15.2%, resonance vibration can be generated more easily. Thus, this sample 120 is preferable. In the case of a sample 120 of which the warpage rate is less than 60.8%, resonance vibration can be generated particularly easily. Thus, this sample 120 is even more preferable.

[0054] From a different viewpoint, the aforementioned results show that resonance vibration can be generated if the warpage rate is from 5.0 to 60.8%. More specifically, resonance vibration can be generated if the warpage rate is from 5.0 to 8.1%. Resonance vibration can be generated easily if the warpage rate is from 8.3 to 60.8%. Resonance vibration can be generated easily if the warpage rate is from 8.3 to 15.0% and 60.8%. Resonance vibration can be generated particularly easily if the warpage rate is from 15.2 to 48.8%. As described above, resonance vibration can be generated easily if the warpage rate is 60.8%. However, if the warpage rate largely exceeds this numerical value of 60.8%, the motion of the mouthpiece 41 is difficult to transmit to the elastic plate 22. In this case, generating resonance vibration is assumed to be difficult.

[0055] Referring to Table 5, like in the aforementioned tests, elastic plates 22 having three thicknesses, namely 0.6 mm, 0.8 mm, and 1.0 mm, were prepared. Further, the elastic plates 22 were prepared that had six total lengths, namely 400 mm, 500 mm, 600 mm, 700 mm, 800 mm, and 1000 mm. Thus, 18 types of elastic plates 22 were prepared in total. Further, weights having five weights, namely 6.0 g, 11.5 g, 23.5 g, 48.0 g, and 92.0 g, were prepared. Thus, 90 types of samples 120 resulting from combinations of the elastic plates 22 and the weights were prepared. Then, as shown in Fig. 20B, the protruding portion 223 of the elastic plate 22 was held from above and below by the vibration tester 103, and the elastic plate 22 was vibrated up and down by the vibration tester 103 under the same conditions as those applied in Table 1. At this time, a maximum load acting on the sample 120 was detected using a strain gauge 104. The employed strain gauge is a gauge of a product name "Strain Gauges Type: FLA-5-11-3L," available from Tokyo Sokki Kenkyujo Co., Ltd. A load acting on the sample 120 depends on the load of the elastic plate 22 and that of the weight, the repulsive

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of the elastic plate 22, and an acceleration applied by vibration. In the tester 103, an output from the strain gauge 104 in a resting state was set at zero as a reference value. Based on the amount of strain of the elastic plate 22 detected by the strain gauge 104, a load acting on the protruding portion 223 of the elastic plate 22 was measured. Force of gravitation acting on the elastic plate 22 was added to the measured load. Table 5 shows a maximum of the load calculated in this way. Like in the aforementioned tests, these samples 120 were tested by 10 test subjects using their feelings. Results thereof are graded into the following three ranks: being unable to generate resonance vibration (rank 3); generating resonance vibration is possible but not easy (rank 2); and generating resonance vibration is easy (rank 1). Table 6 shows this ranking.

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[Table 5]

LOAD (N)																	
TOTAL LENGTH (mm)		THICKNESS (mm)	0.6					0.8					1.0				
			6	11.5	23.5	48	92	6	11.5	23.5	48.0	92.0	6	11.5	23.5	48.0	92.0
400		WEIGHT (g)	U.M.	U.M.	4.6	4.6	-	U.M.	U.M.	U.M.	-	-	U.M.	U.M.	U.M.	-	-
500			1.6	1.7	2.7	2.6	-	U.M.	U.M.	3.9	3.9	-	U.M.	U.M.	U.M.	7.4	-
600			1.9	1.7	1.9	2.3	-	4.9	4.2	3.2	3.2	-	U.M.	7.1	4.5	4.9	-
700			1.8	1.7	1.9	2.3	-	4.2	3.2	2.6	3.0	-	7.0	4.8	2.5	3.6	-
800			1.6	1.5	1.7	2.2	-	3.8	2.9	2.7	3.1	-	3.8	3.6	3.6	3.7	-
1000			1.6	1.6	1.8	2.2	U.M.	3.0	2.9	2.7	3.0	-	3.8	3.5	3.8	-	
U.M.: UNMEASURABLE; being out of a measurement range of a measuring unit. Specifically, a resonance frequency was out of a measurement range, so that a load acting during resonance vibration could not be measured.																	
"-": No data. Data was not collected.																	

[Table 6]

EASE OF SHAKING RANKED IN TERMS OF LOAD (N)	
RANK	
3	7.4
2	7.1
	7.0
	4.9
	4.8
	4.6
	4.5
	4.2
	3.9
1	3.8
	3.7
	3.6
	3.5
	3.2
	3.1
	3.0
	2.9
	2.7
	2.6
	2.5
	2.3
	2.2
	1.9
	1.8
	1.7
	1.6
	1.5

[0056] As a result, in the case of a sample 120 of which the load is less than 7.4 N, the user can vibrate the arms in resonance. In the case of a sample 120 of which the load is less than 3.9 N, the user can vibrate the arms in resonance particularly easily. In the case of a sample 120 of which the load is less than 1.5 N, it is also assumed that the arms can be vibrated in resonance easily.

[0057] From a different viewpoint, in the case of a sample 120 of which the load acting on the mouthpiece 41 is in a range from 3.9 to 7.1 N, the user can vibrate the arms in resonance. In the case of a sample 120 of which this load is in a range from 1.5 to 3.8 N, the user can vibrate the arms in resonance particularly easily. In the case of a sample 120 of which this load is in a range from 1.5 to 3.85 N, the user can also vibrate the arms in resonance. When this load is less than 1.5 N, the user can still vibrate the arms in resonance. However, such a low load does not produce beneficial effect of exercise.

[0058] Therefore, by setting various conditions at will including the length of the arms 31, the weight of the weight 30 and the like of the facial muscle training tool 21, the facial muscle training tool 21 exhibiting the various behaviors shown

in Tables 1 to 6 is embodied. The resultant facial muscle training tool 21 can achieve working effect comparable to that of the aforementioned results of examinations.

[0059] Table 7 shows the spring constants (g/mm) of the elastic plates 22 of 21 types in total used in the aforementioned various tests. These elastic plates 22 have three thicknesses, namely 0.6 mm, 0.8 mm, and 1.0 mm.

Further, these elastic plates 22 have seven total lengths, namely 300 mm, 400 mm, 500 mm, 600 mm, 700 mm, 800 mm, and 1000 mm. As clearly understood from Table 7, the lowest spring constant is 0.23 g/mm and the highest spring constant is 39.35 g/mm. The spring constant is not limited to the given constants but can be set at will. A facial muscle training tool can be embodied using the elastic plate 22 of any spring constant in Table 7 or an optional spring constant. The optional spring constant has a numerical value that interpolates between the numerical values of the spring constants shown in Table 7. Alternatively, the optional spring constant has a value exceeding that of the highest spring constant shown in Table 7, or a value less than that of the lowest spring constant shown in Table 7.

[Table 7]

SPRING CONSTANT (g/mm) OF ELASTIC PLATE USED IN TEST							
PLATE THICKNESS (mm)	TOTAL LENGTH (mm)						
	300	400	500	600	700	800	1000
0.6	8.50	3.59	1.84	1.06	0.67	0.45	0.23
0.8	20.15	8.50	4.35	2.52	1.59	1.06	0.54
1.0	39.35	16.60	8.50	4.92	3.10	2.08	1.06

[0060] The facial muscle training tool 21 of the present embodiment was used by 67 men and women in their twenties to seventies continuously for eight weeks, twice a day and for 30 seconds per use. Then, the effect achieved by the use was examined. Figs. 21 to 26 show the conditions for and the results of the examination. The facial muscle training tool 21 used for the examination was configured with the body of the facial muscle training tool 21 excluding the weight 30, specifically formed of the elastic plate 22, the covering 23, the core 27, and the mouthpiece 28. The body had a weight of 120 g and a total length of 540 mm. The elastic plate 22 had a length of 380 mm and a thickness of 0.6 mm. The covering 23, which was made of thermoplastic polyurethane, had a thickness of 6 mm on average. The weight of the weight 30 was any of 18 g, 23 g, and 28 g. Photographs of the faces of the test subjects were taken before the examination test, that is, before use of the facial muscle training tool 21, and after the examination test, that is, after use of the facial muscle training tool 21. These photographic images were examined using the software "Mirror" for two-dimensional skin surface analysis, which is a trademark of Canfield Scientific Inc., U.S.A., to measure the changes between before and after the examination test. Results of the measurement are shown graphically.

[0061] Figs. 21A, 21B, and 22 show examination on the lift of the corners of mouths of the test subjects. A distance 106 between the corner of the mouth and the corner of an eye of each of the 67 test subjects was measured in a photograph taken before use and a photograph taken after use. Then, change in the distance 106 between before and after use was calculated. Calculation results of the 67 test subjects obtained before use and those obtained after use were averaged and are shown graphically in Fig. 22. As clearly understood from Fig. 22, after use, the distances 106 were reduced about 0.6 mm on average compared to the distances 106 before use, which shows lift of the corners of mouths. Thus, the training effect was recognized.

[0062] Figs. 23A, 23B, and 24 show examination on the lift of cheeks. In profile photographs of each of the 67 test subjects taken before and after use, a horizontal line 107 passing through the intertragic notch of the ear and a horizontal line 108 passing through the corner of the mouth were set. Then, a longest length point 110 on the contour at the cheek, measured from the intertragic notch as the origin 109, was determined between the horizontal lines 107 and 108. The distance between the origin 109 and the longest length point 110 was measured in a state before use and in a state after use. Nine test subjects whose intertragic notches or contours at cheeks could not be identified clearly were excluded from the examination. Data pieces about the 58 test subjects were averaged. In this case, as a result of training, the position of the longest length point 110 moves upward. Changes observed in the 67 test subjects between before and after use were calculated and are shown graphically in Fig. 23. As clearly understood from Fig. 23, after use, the aforementioned distances are reduced about 0.7 mm on average compared to the corresponding distances before use. Thus, training effect was recognized.

[0063] Figs. 25A, 25B, and 26 show examination on face line firming effect. In photographs of the face of each of the 67 test subjects taken from the front before and after use, a horizontal line 111 passing through the base of the wings of the nose was set, and a contour 112 of the face below the horizontal line 111 was set. Then, the area between the horizontal line 111 and the contour 112 was calculated in a state before use and a state after use. Changes between

before and after use were calculated are graphically shown in Fig. 26. Photographs of 11 test subjects whose face contours 112 could not be identified clearly were excluded from the examination. Data pieces of the 56 test subjects were averaged. As clearly understood from Fig. 26, after use, these areas were reduced about 0.7 square centimeters on average compared to the corresponding areas before use.

[0064] As described above, using the facial muscle training tool 21 reduces dimensions of every part of a face, so that it is assumed to achieve rejuvenating effects.

Second Embodiment

[0065] The following describes a second embodiment of the present invention while focusing on differences from the first embodiment.

[0066] As shown in Fig. 19, in the present embodiment, the weight 30 of the first embodiment is omitted. A large-area portion 122 is formed at each of the opposite end portions of the elastic plate 22. The large-area portion 122 functions to apply a load instead of the weight 30. While not shown in Fig. 19, this structure preferably includes a through hole 222 and a bushing 26, and the bushing 26 is preferably provided at the tip of the large-area portion 122.

[0067] In the present embodiment, the parts count is reduced to achieve a simplified structure.

Third Embodiment

[0068] The following describes a third embodiment of the present invention with reference to Figs. 21 to 26 while focusing on differences from each of the aforementioned embodiments.

[0069] As shown in Figs. 21 and 22, a large-area portion 122 made of the covering 23 is formed at each of the opposite end portions of the covering 23. The elastic plate 22 is formed into such a length that the elastic plate 22 reaches a central portion of the large-area portion 122. The elastic plate 22 is formed such that its dimensions in thickness and width are gradually reduced from the central portion toward the tip of the elastic plate 22 in its longitudinal direction.

[0070] As shown in Figs. 22 and 23, a weight piece 330 made of a metal plate is embedded in each of the opposite ends of the facial muscle training tool at the large-area portion 122. The weight piece 330 has one first passage hole 331 and a pair of second passage holes 332. The second passage holes 332 are located in the covering 23. The synthetic plastic forming the covering 23 enters the second passage holes 332 to ensure strength of coupling between the weight piece 330 and the covering 23. The weight piece 330 has a notch 333 formed in both the front and back surfaces thereof and at each of the opposite ends of the covering 23. The first passage hole 331 is located in the notch 333.

[0071] An ornamental clip 334 made of synthetic plastic is fitted in the notch 333. The ornamental clip 334 is tinted in a color different from the color of the covering 23. Further, the outer surface of the ornamental clip 334 is continuous with the outer surface of the covering 23. As shown in Figs. 24 to 26, in the ornamental clip 334, a pair of clipping pieces 335 is connected via a connection portion 338 and the clipping pieces 335 as a whole are formed into an acute angle shape in a side view. Clipping protrusions 336 are formed at the respective base portions of the clipping pieces 335. The weight piece 330 is clipped with the clipping protrusions 336. A fitting protrusion 337 is formed at the inner surface of the tip of each clipping piece 335. The fitting protrusion 337 is fitted in the first passage hole 331 of the weight piece 330. As a result of this fit, the ornamental clip 334 is fixed to the weight piece 330.

[0072] The facial muscle training tool 21 of the aforementioned structure is used in the same way as the facial muscle training tool 21 of the first embodiment.

[0073] The third embodiment achieves the following advantages.

(1) Unlike in the first embodiment, a weight separate from a body is not provided. This reduces the parts count to allow reduction in manufacturing cost.

(2) The weight pieces 330 are embedded in the respective ends of the arms 21. Thus, the respective end portions of the arms 21 can be vibrated largely using the weights of the weight pieces 330, so that training can be done effectively.

(3) A gap is provided between each of the respective ends of the arms 21 and the weight piece 330. This makes the synthetic plastic existing in the area of this gap warp easily. The respective end portions of the arms 21 can vibrate easily using this warpage and such characteristics can be used for effective training. As a result of the gap between each of the respective ends of the arms 21 and the weight piece 330, even if motion of the weight piece 330 generates small vibration not contributing much to the training in the weight piece 330 or in the covering 23 around the weight piece 330, this vibration is absorbed partially or mostly by the covering 23 in the area of the gap. This realizes supple warping motion of the arms 21 to achieve easy use.

(4) The elastic plate 22 is formed such that its dimensions in thickness and width are gradually reduced from the central portion toward the tip of the elastic plate 22 in its longitudinal direction. This makes the opposite end portions of the elastic plate 22 warp easily. Thus, the respective end portions of the arms 21 can be vibrated largely, so that

the elasticity of the elastic plate 22 at the opposite end portions thereof can be used effectively for training.

(5) Regarding molding of the covering 23, the weight piece 330 is clipped in midair with a core clip in a molding die (not shown). As the molding finishes, the covering 23 is demolded to form the notch 333 at each of the opposite ends of the covering 22 where the weight piece 330 is exposed. By using the notch 333, the ornamental clip 334 functioning as a design accent can be installed easily.

Modifications

[0074] The above described embodiment may be modified as follows.

[0075] The covering 23 to cover the elastic plate 22 may be omitted to expose the elastic plate 22. Further, the weight 30 forming the weight portion 25 may be fixed directly to the elastic plate 22. In this case, the weight 30 may be fixed with a screw or by fitting a protrusion provided to the weight 30 in a hole of the elastic plate 22. To give an intended weight to the end portion of the elastic plate 22, the weight 30 may be wound or bent, or may be formed into a large area.

[0076] The elastic plate 22 may be made of a material different from a steel plate such as carbon fiber or fiber-glass reinforced plastic (FRP).

[0077] In addition to this change in the material for the elastic plate 22 from a steel plate to a different material such as carbon fiber or fiber-glass reinforced plastic (FRP), the covering 23 may be omitted.

[0078] The covering 23 may be omitted from the elastic plate 22.

[0079] As indicated by long dashed double-short dashed lines in Fig. 1, a relaxing member 32 may be provided at a position at each of the opposite ends of the elastic plate 22 near the holding hole 29. The relaxing member 32 is made of synthetic plastic having higher hardness than the covering 23 and embedded in the covering 23 such that a surface of the relaxing member 32 is continuous with a surface of the covering 23. A pin (not shown) protruding to the inner side surface of the relaxing member 32 is fitted in the small holes 224 at each of the opposite ends of the elastic plate 22 to fix the relaxing member 32. The relaxing member 32 relaxes concentrated stress acting on each of the opposite ends of the elastic plate 22 to prevent cracks and the like in the covering 23.

[0080] The covering 23 of the elastic plate 22 may be a synthetic plastic plate affixed to one or each of the front and back surfaces of the elastic plate 22, a sheet of synthetic plastic injected on one or each of these front and back surfaces, or tape wound around the elastic plate 22.

DESCRIPTION OF THE REFERENCE NUMERALS

[0081]

- 21 Facial muscle training tool
- 22 Elastic plate
- 24 Orally held portion
- 25 Weight portion
- 31 Arm

Claims

1. A facial muscle training tool comprising:

an elastically deformable portion; and
an orally held portion to be held with lips, wherein the orally held portion is provided at a middle position of the elastically deformable portion in a longitudinal direction of the elastically deformable portion,
wherein the elastically deformable portion vibrates in resonance with vibration of the orally held portion in a vertical direction at a frequency of less than 6.50 hertz.

2. The facial muscle training tool according to claim 1, wherein the elastically deformable portion has a weight portion provided at each of opposite end portions of the elastically deformable portion.

3. The facial muscle training tool according to claim 1, wherein a weight piece is embedded in each of opposite ends of the elastically deformable portion.

4. The facial muscle training tool according to claim 3, wherein the weight piece and the elastic plate are separated from each other.

Fig.1

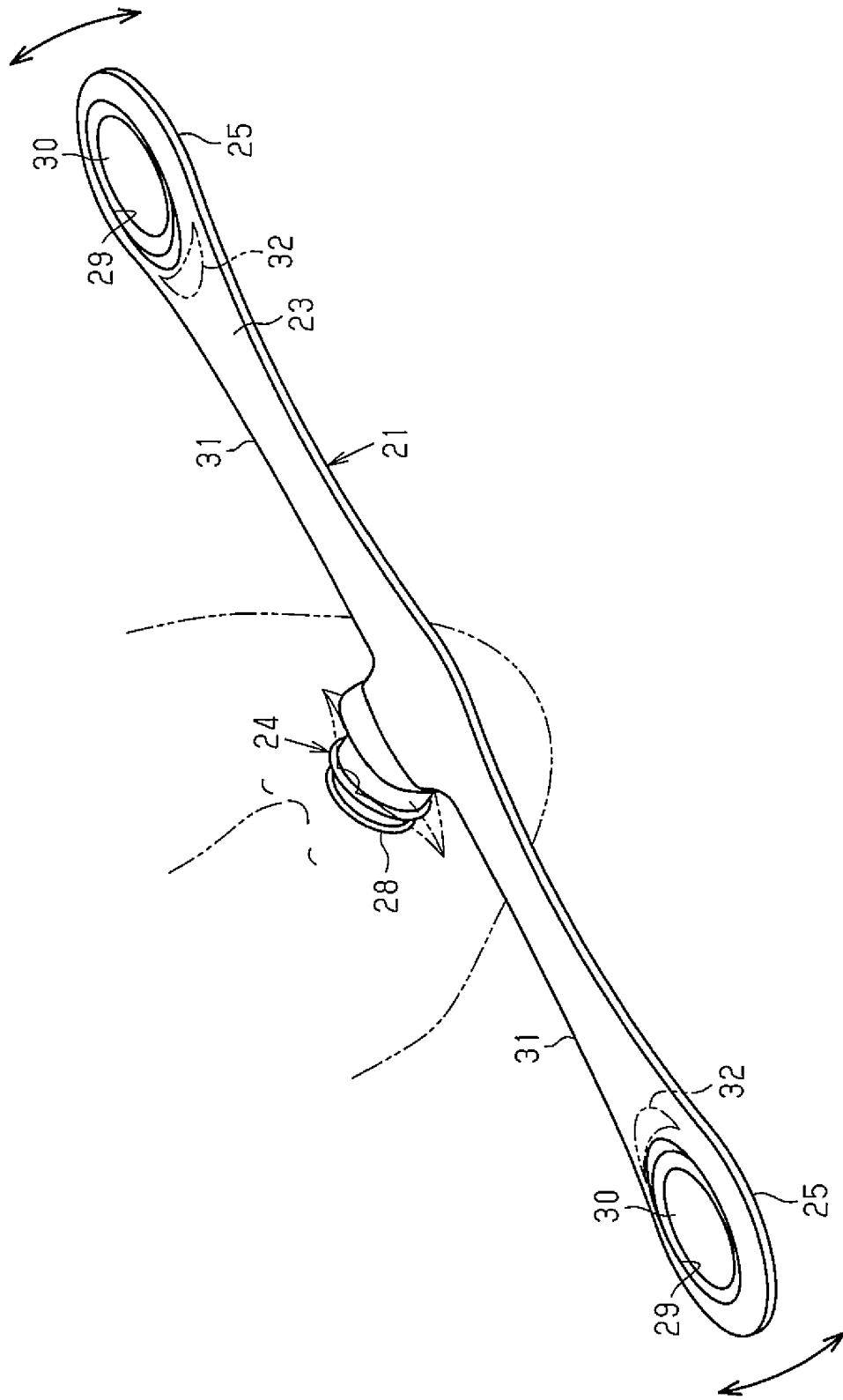


Fig. 1

Fig.2

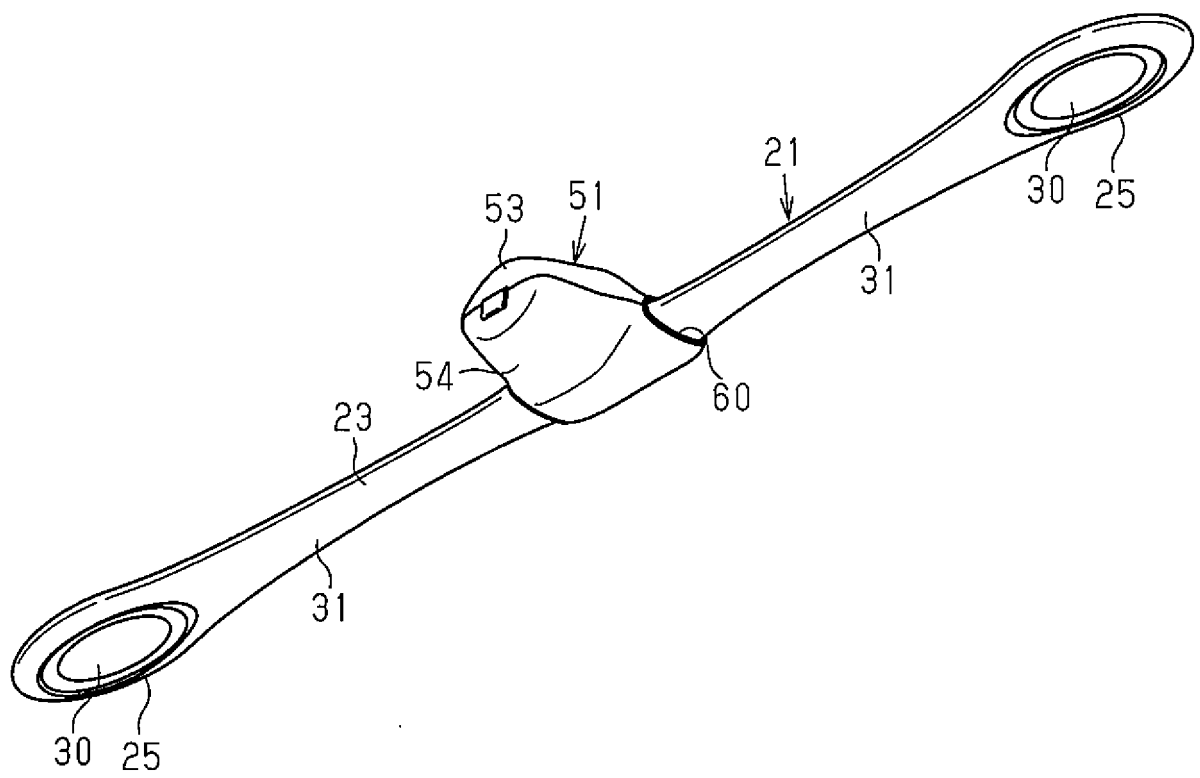


Fig.3

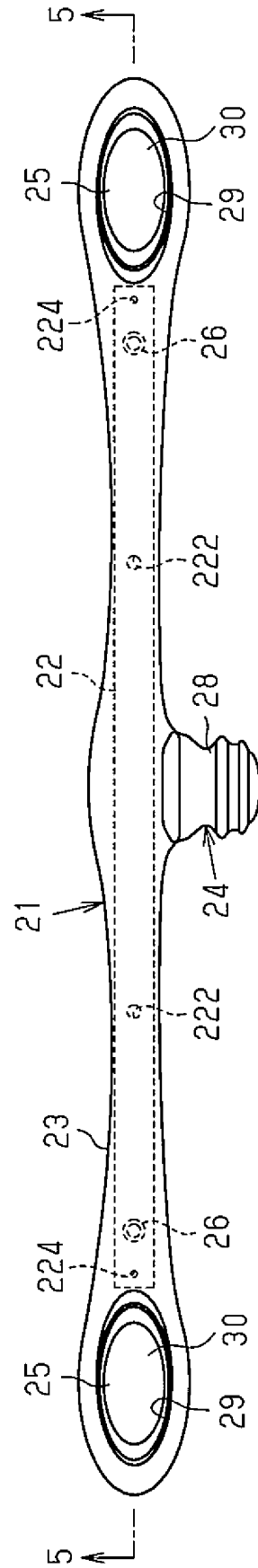


Fig.4

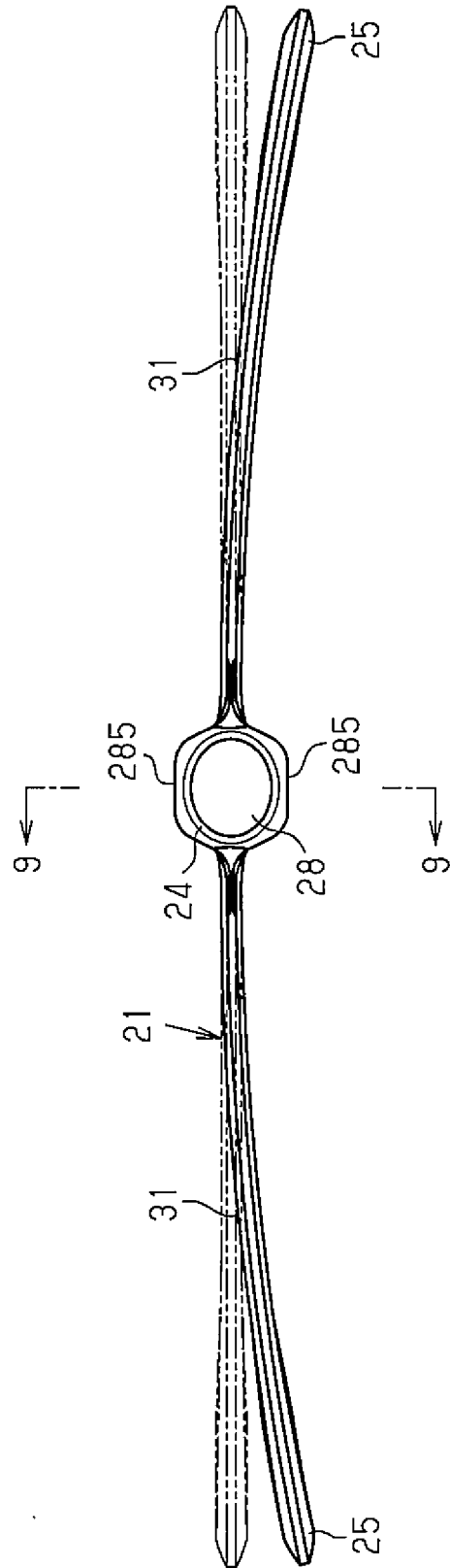


Fig.5

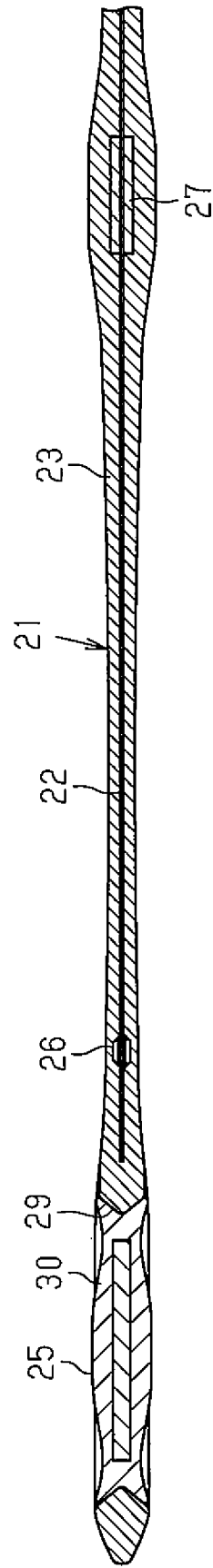


Fig.6

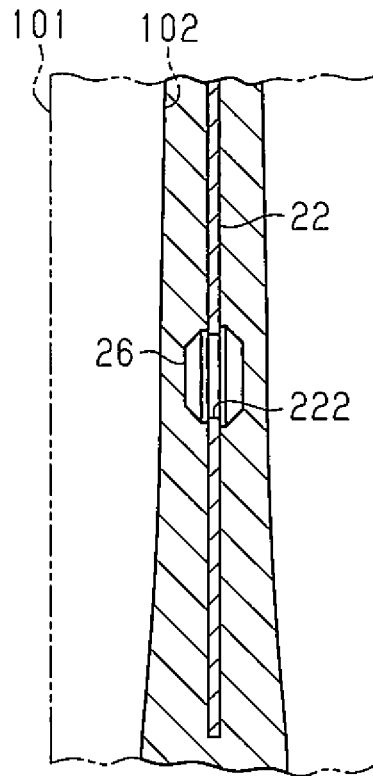


Fig.7

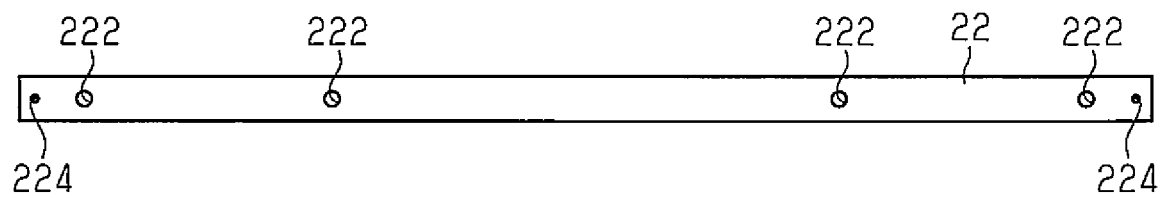


Fig.8



Fig.9

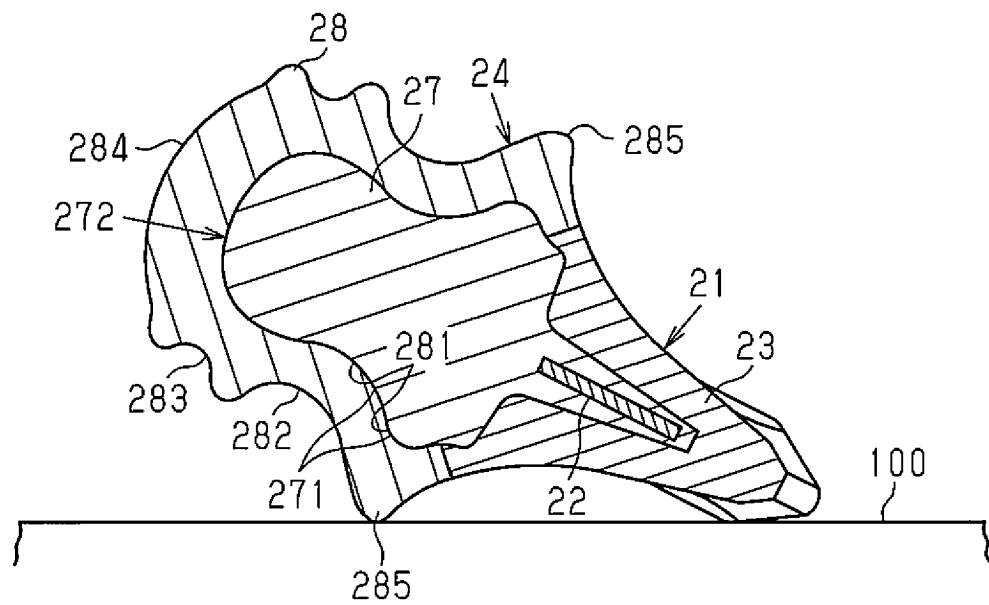


Fig.10

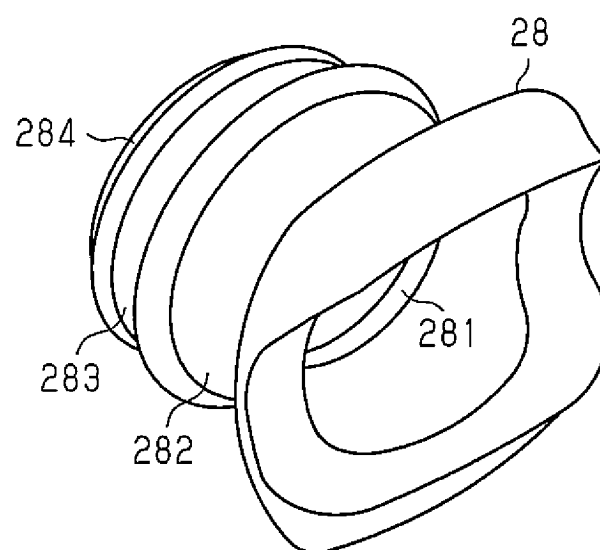


Fig.11

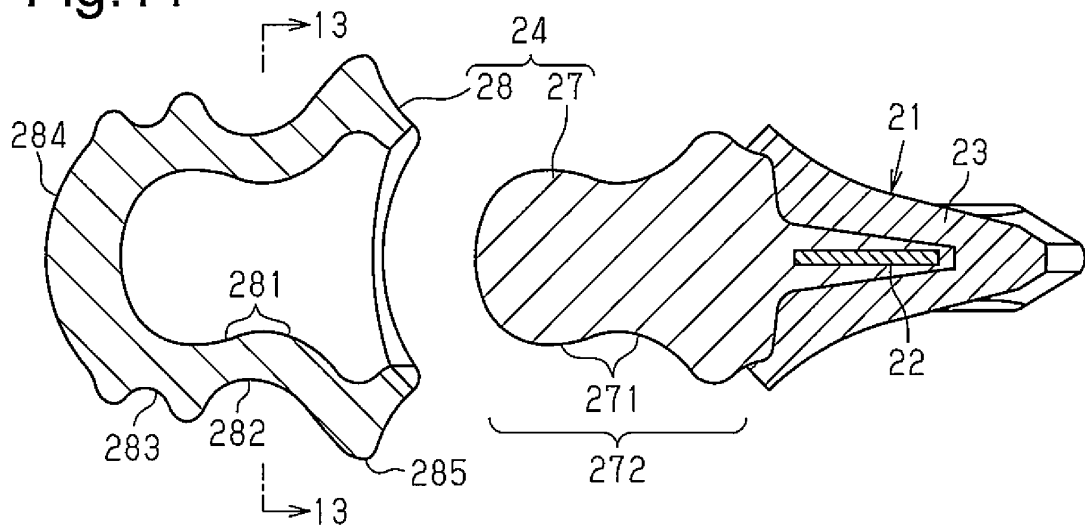


Fig.12

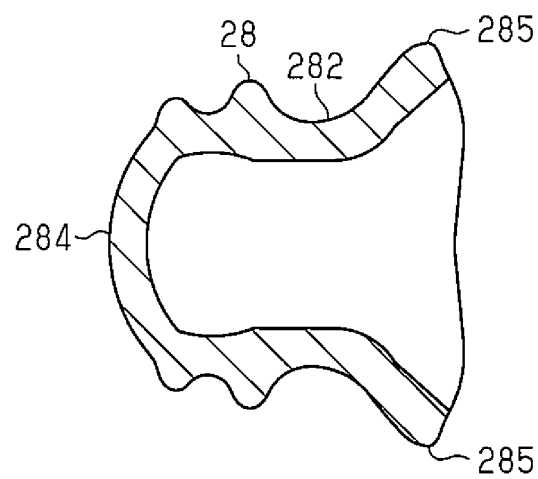


Fig.13

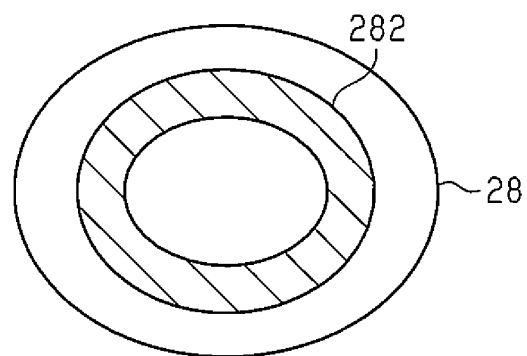


Fig.14

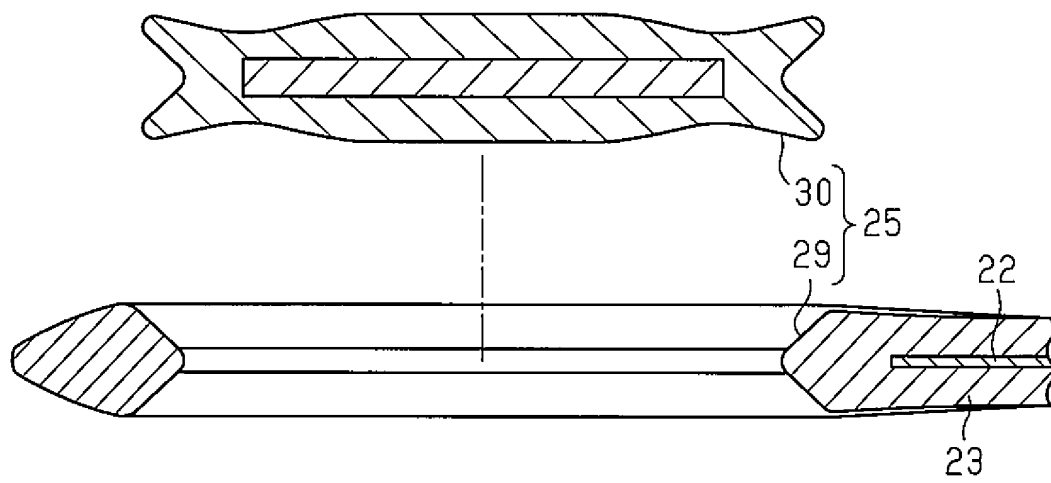


Fig.15

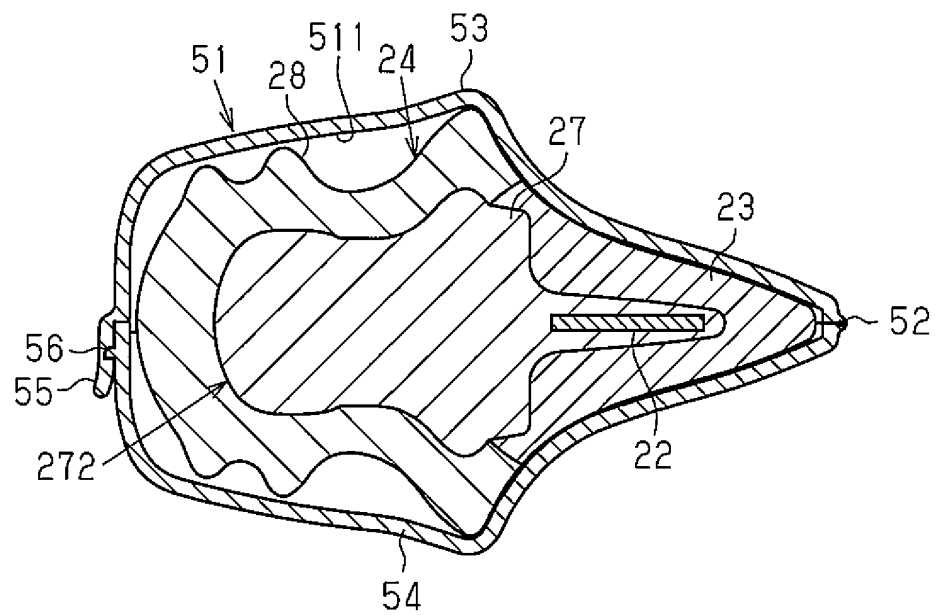


Fig.16

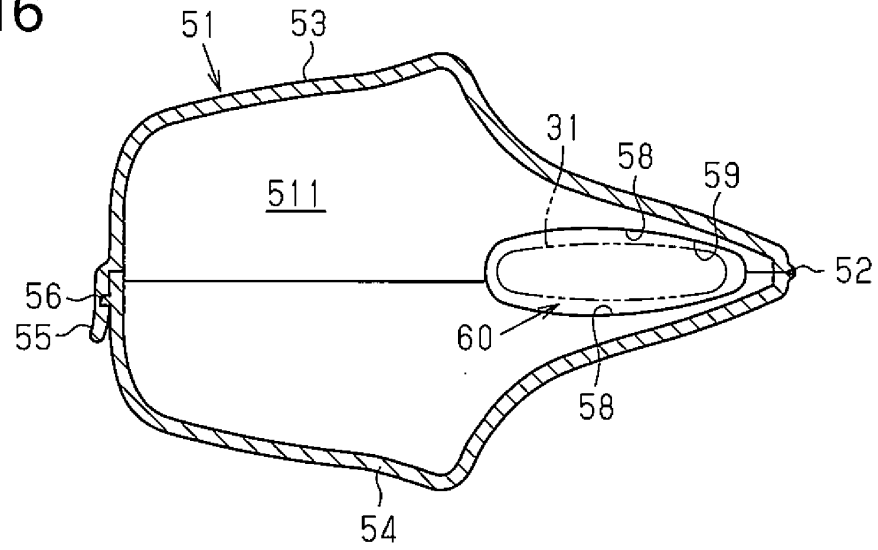


Fig.17

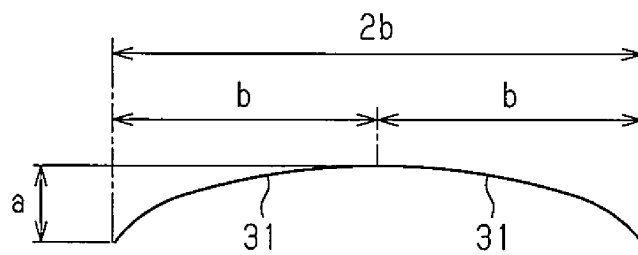


Fig.18

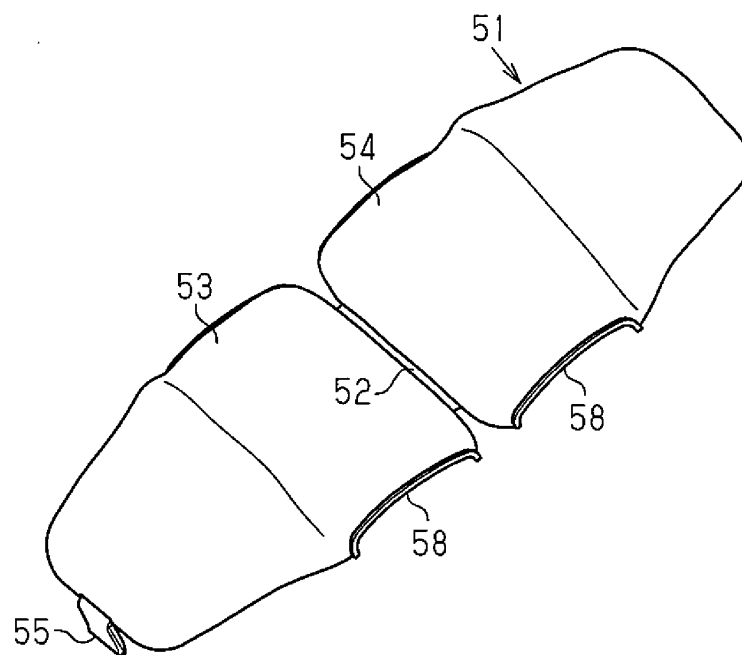


Fig.19

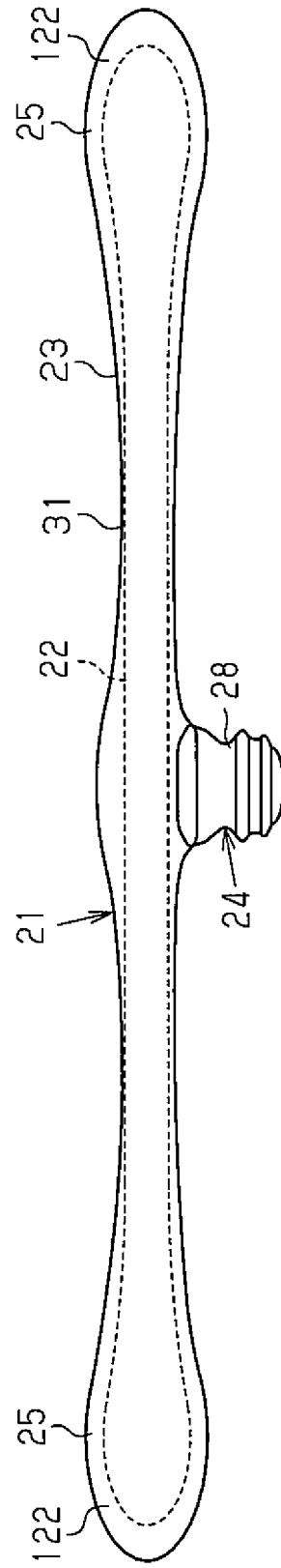


Fig.20A

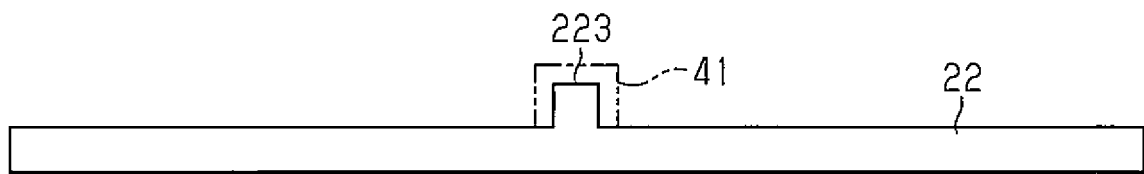


Fig.20B

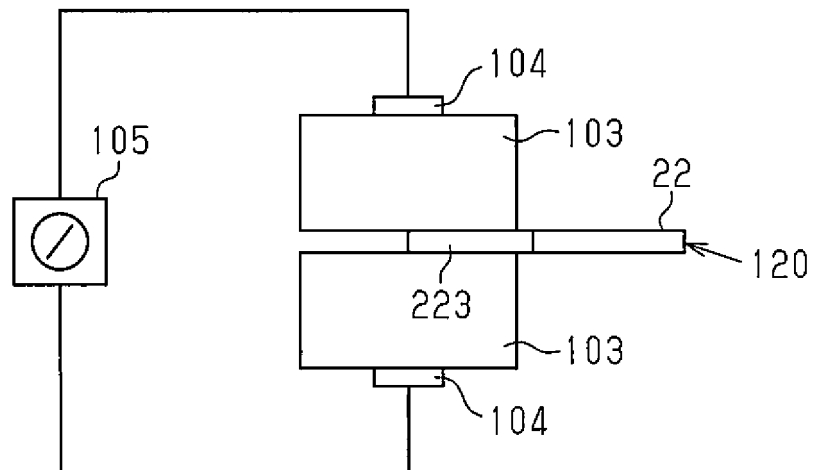


Fig.21

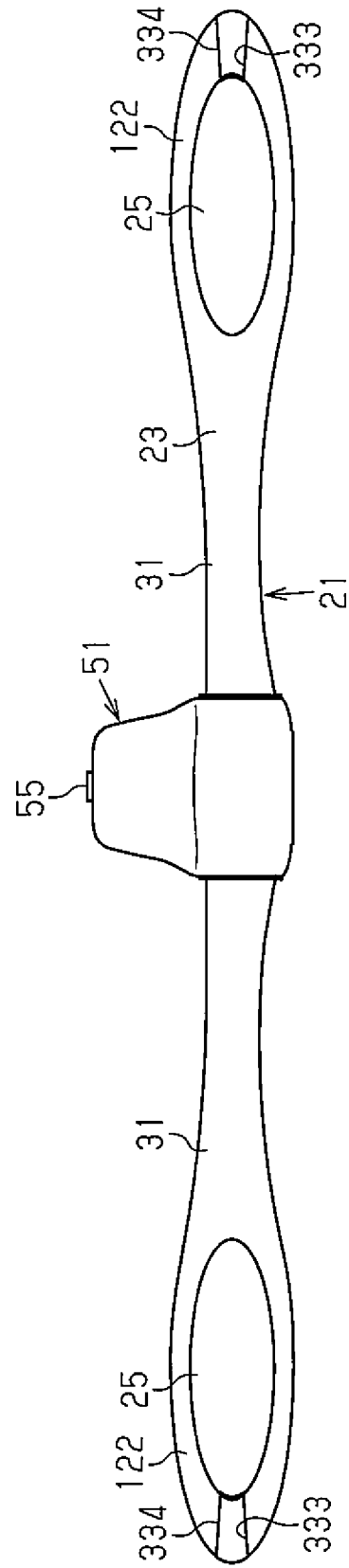


Fig. 22

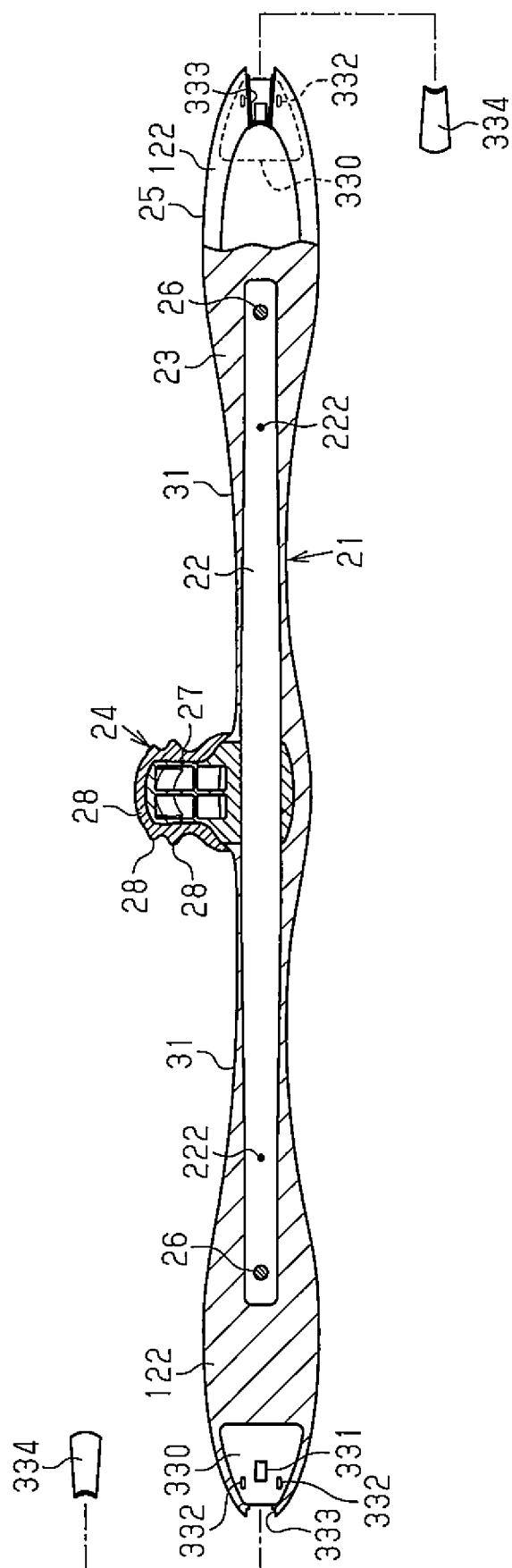


Fig.23

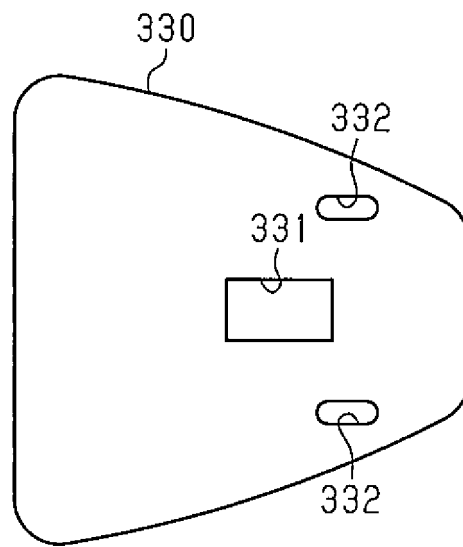


Fig.24

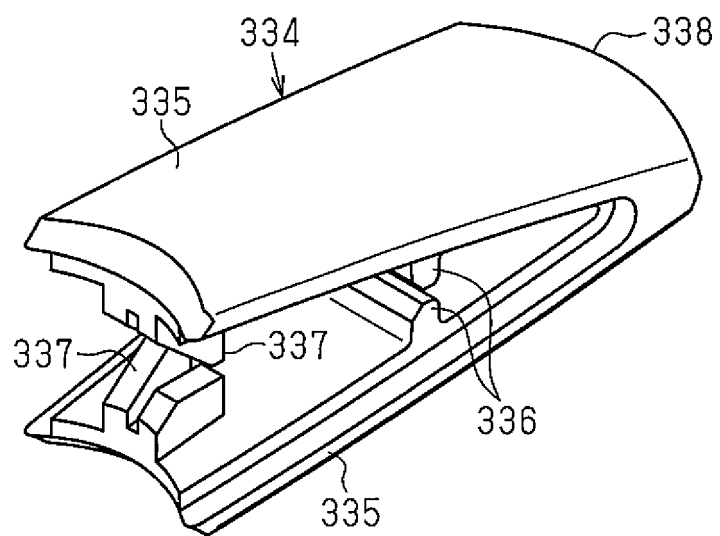


Fig.25

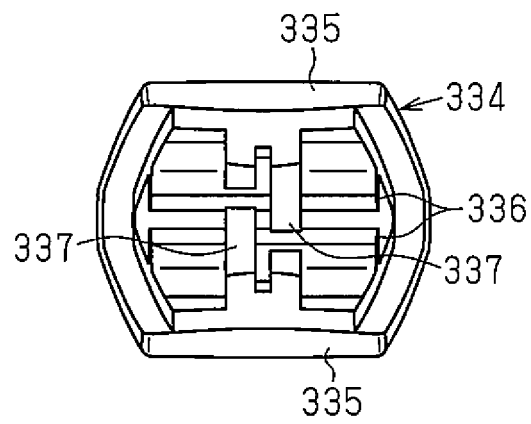


Fig.26

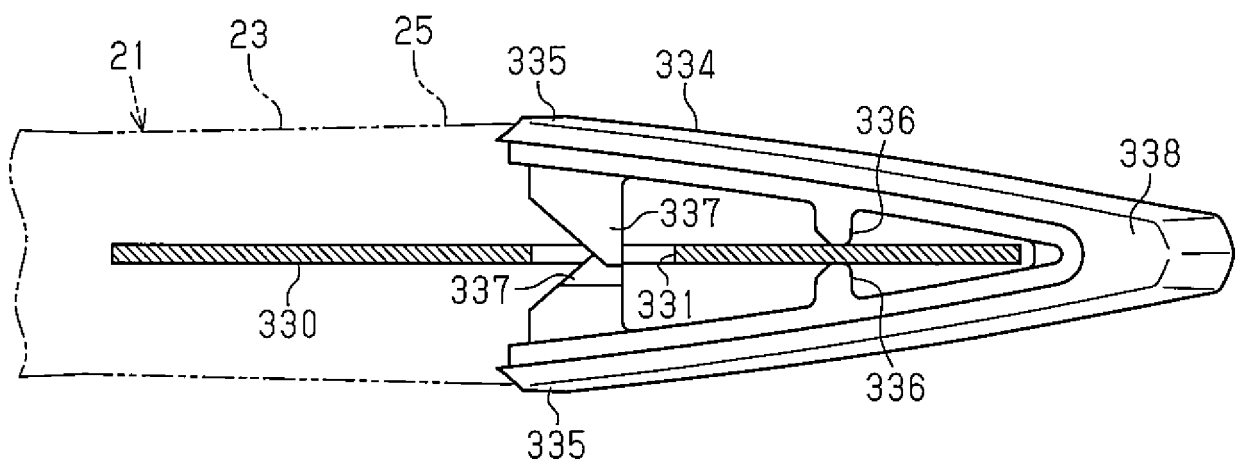


Fig.27A

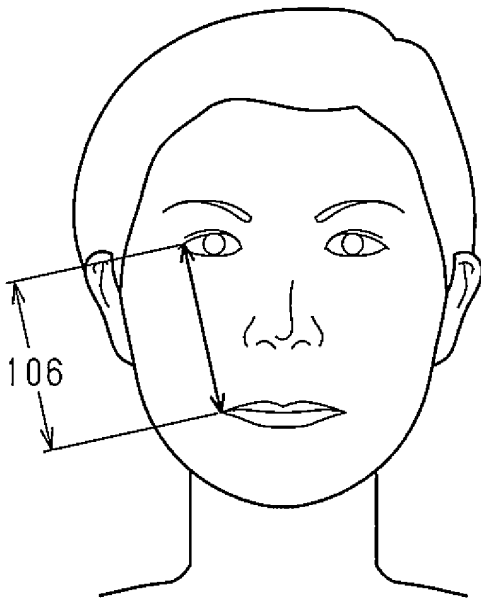


Fig.27B

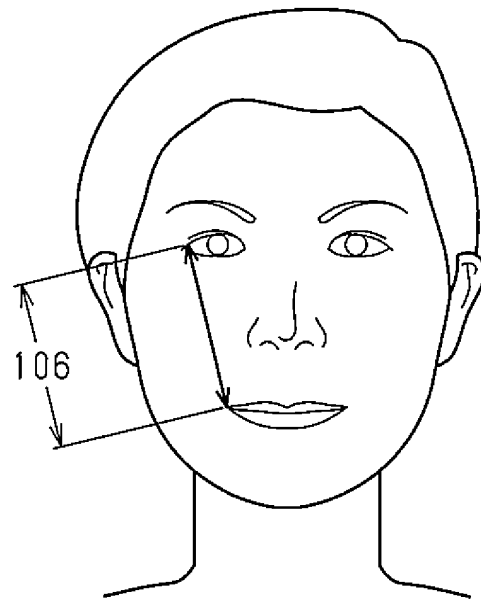


Fig.28

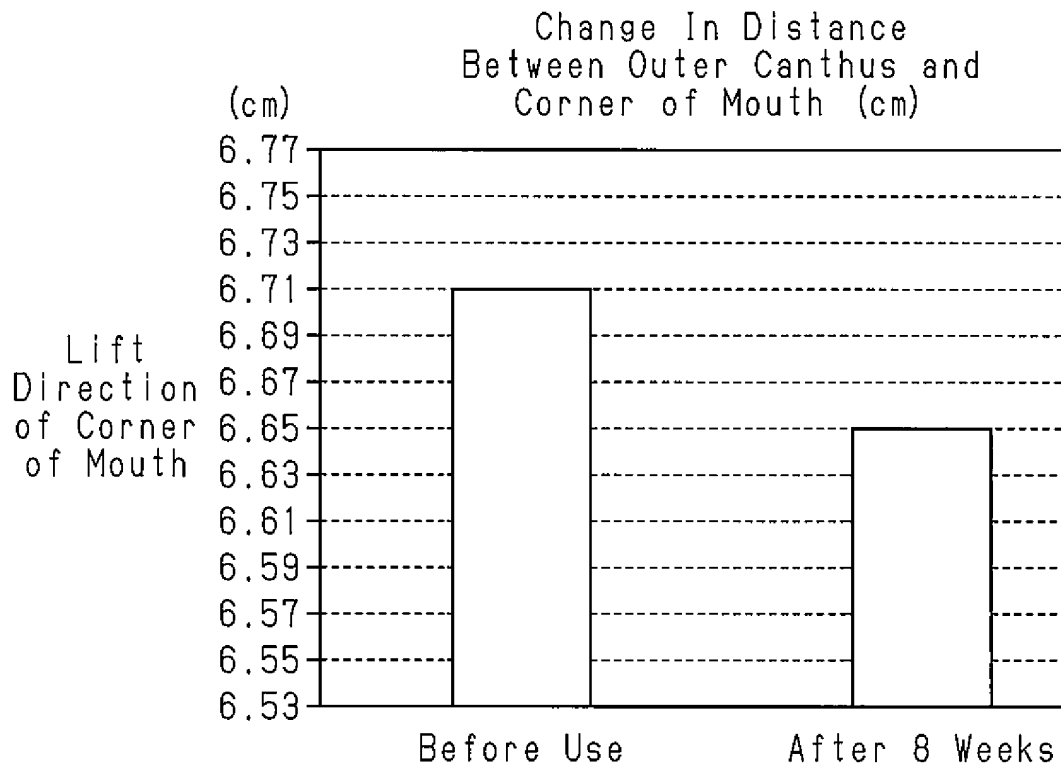


Fig.29A

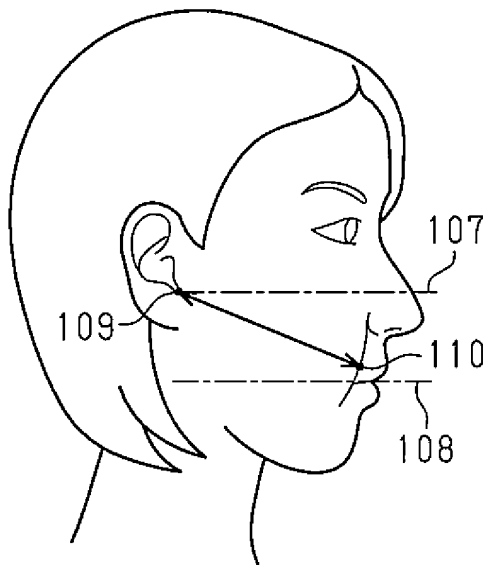


Fig.29B

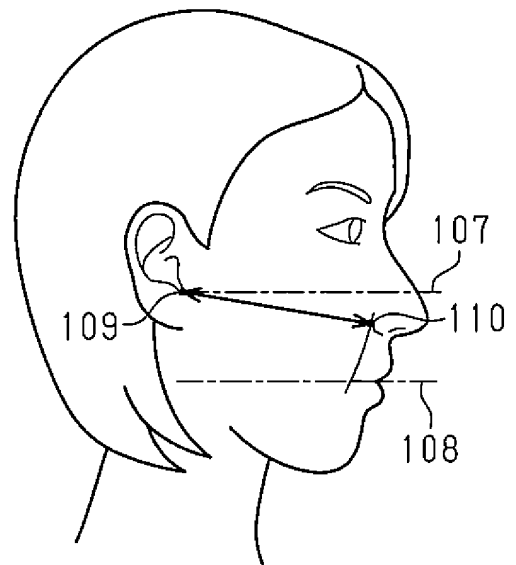


Fig.30

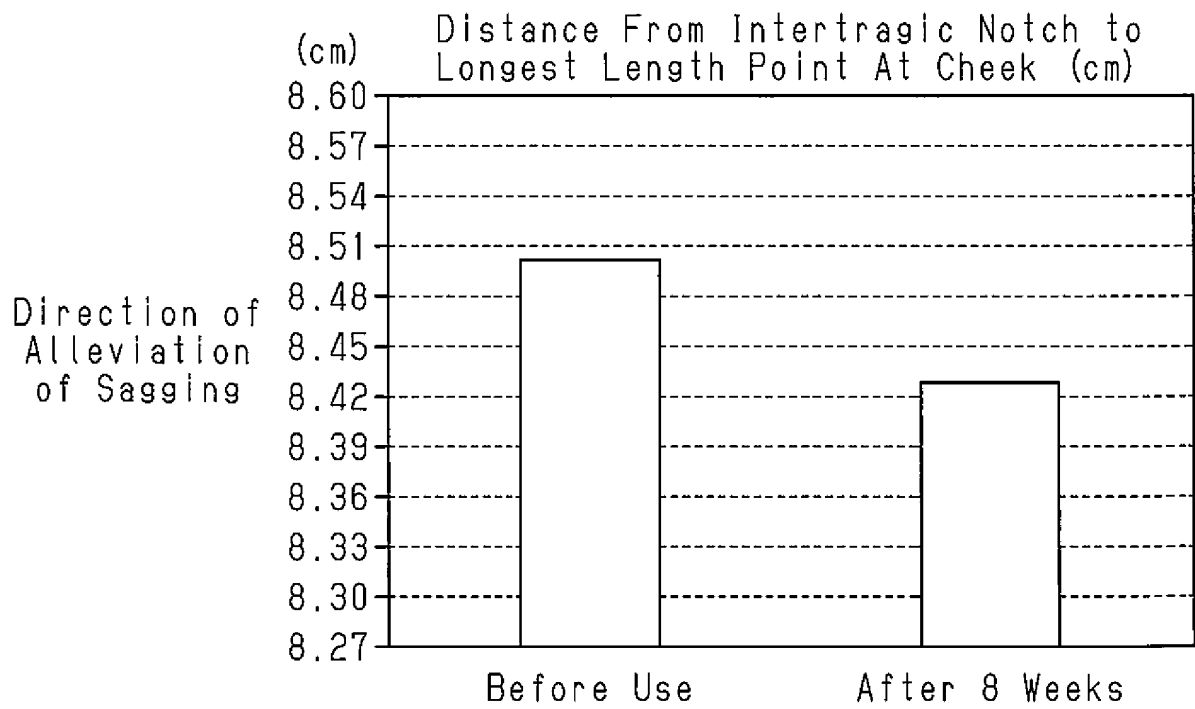


Fig.31A

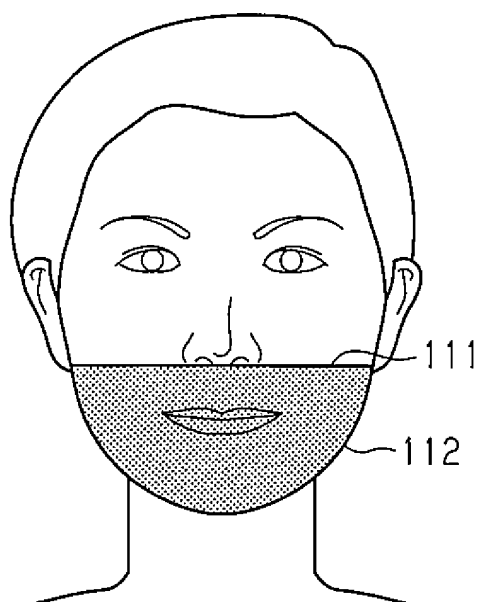


Fig.31B

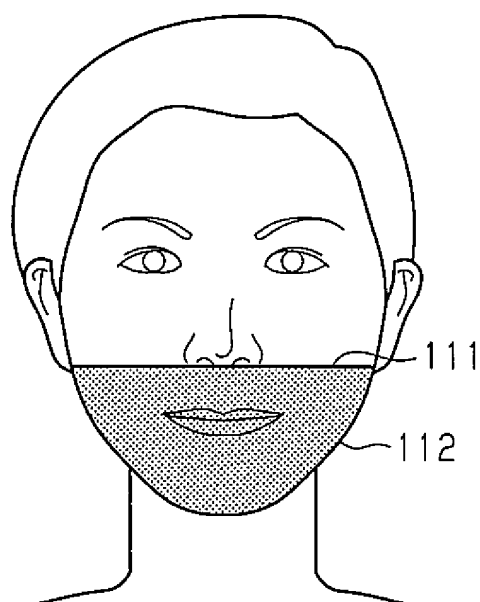
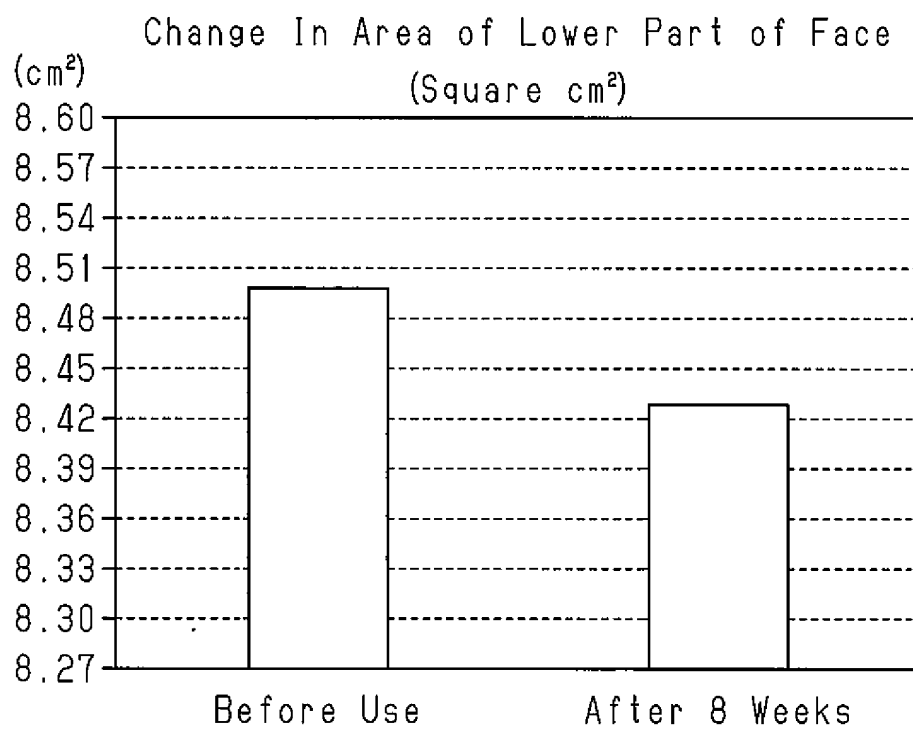


Fig.32



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2014/081512

A. CLASSIFICATION OF SUBJECT MATTER

A63B23/03(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)

A63B23/03

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	1996-2015
Kokai Jitsuyo Shinan Koho	1971-2015	Toroku Jitsuyo Shinan Koho	1994-2015

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.
Y	JP 1223289 S (Dream, Inc.), 22 November 2004 (22.11.2004), entire text; all drawings (Family: none)	1-4
Y	JP 3075856 U (Body Blade Inc.), 06 March 2001 (06.03.2001), entire text; all drawings (particularly, claims 11 to 14; paragraphs [0029], [0034], [0036]; fig. 2) (Family: none)	1-4
A	FR 1111489 A (KELLER), 27 February 1956 (27.02.1956), entire text; all drawings & CH 303454 A	1-4

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 ☐ See patent family annex.

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Date of the actual completion of the international search
07 January 2015 (07.01.15)Date of mailing of the international search report
27 January 2015 (27.01.15)Name and mailing address of the ISA/
Japan Patent Office

Authorized officer

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Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2014/081512

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 3805771 A (John R. WRIGHT), 23 April 1974 (23.04.1974), entire text; all drawings (Family: none)	1-4
A	US 2003/0073542 A1 (Julie L. PATTON), 17 April 2003 (17.04.2003), entire text; all drawings (Family: none)	1-4
A	JP 2010-264132 A (Nobuhiro KUBO), 25 November 2010 (25.11.2010), entire text; all drawings (Family: none)	1-4

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 1223289 A [0003]