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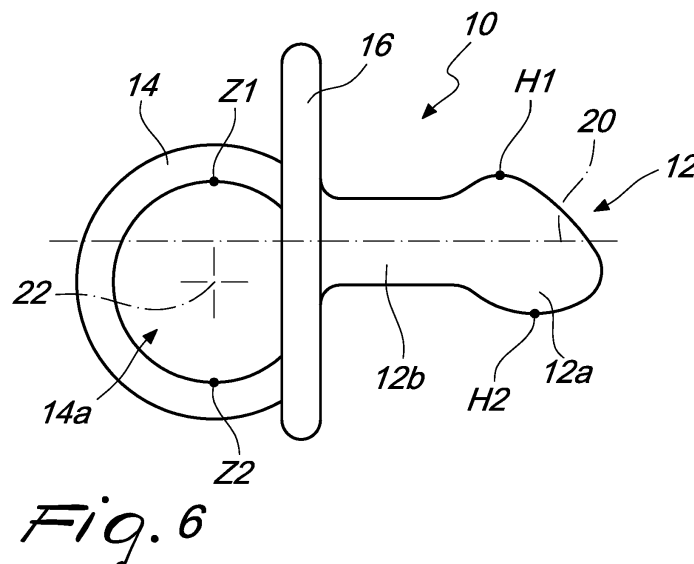
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(54) **PACIFIER WITH ANNULAR HANDLE**

(57) A pacifier (12), comprising an elongated anatomical profile adapted to sucking which is symmetrical with respect to a longitudinally extended vertical plane (P1) and is asymmetrical with respect to a horizontal plane (P2). A handle (14) is connected to the teat (12) with the interposition of a shield (16). The teat (12) has a contoured terminal portion (12a) which has an anatomical profile which is symmetrical with respect to the vertical plane (P1) and asymmetrical with respect to the horizontal plane (P2) and extends along a longitudinal axis

(20) which is substantially equidistant, in a vertical direction, from two opposite extreme points (H1, H2) of the terminal portion (12a). The handle (14) comprises an annular body which, in a configuration for use, extends parallel to the longitudinal axis (20). The handle (14) internally defines a passageway (14a) configured to allow the insertion of at least one little finger of an infant's hand, and extends along a horizontal axis (22) which, in the configuration for use, is perpendicular to the vertical plane (P1).



Description

[0001] The present invention relates to a pacifier with annular handle.

[0002] As is known, a generic pacifier (also termed "soother" or "dummy") for newborns and toddlers (henceforth also generally defined as "infants") comprises a body made of rubber-like material, such as natural rubber or silicone, known as teat, which has an elongated shape suitable to be sucked by the infant in order to stimulate the natural sucking reflex, with a soothing and sleep-inducing effect.

[0003] As a rule, the teat is connected to a handle through an interposed shield which prevents swallowing by the infant and consequent risk of suffocation.

[0004] A pacifier can be of the composite type, i.e., provided with a teat made of a rubber-like material and with a shield with a handle made of rigid material, typically plastic, or of the monolithic type, i.e., constituted by a single molded body made of a rubber-like material.

[0005] Several studies have shown that pacifier use reduces the risk of sudden death syndrome and increases physiological and nutritional stability in premature infants.

[0006] Moreover, in pacifiers of the so-called "orthodontic" type, the teat has an elongated anatomical profile designed to facilitate breathing, as well as to promote proper mouth development, correct tongue positioning, correct jaw movement and other similar purposes, including preventing the development of malocclusions.

[0007] In contrast, the use of so-called "non-orthodontic" pacifiers (i.e., fitted with a teat having a non-anatomical shape, for example cylindrical or cherry-shaped) can be a risk factor for early weaning, for otitis media, as well as for the development of malocclusion and, in particular, of anterior open bite, both symmetrical and asymmetrical types, and of posterior crossbite, with a risk factor that is sometimes even greater than the one found in the case of finger or thumb sucking.

[0008] Figures 1, 2, 3, 4, and 5 show a pacifier C of the orthodontic type according to the prior art, by means of a lateral elevation view, a plan view, a front elevation view, and a first and second perspective view, respectively.

[0009] The teat T generally has a profile which is symmetrical with respect to a vertical plane PV (Figure 4) and extends longitudinally with respect to the elongated profile of the teat T, to separate ideally the right side of the oral cavity from the left side, and asymmetrical with respect to a horizontal plane PO (Figure 5) that is ideally interposed between the tongue and the palate.

[0010] In greater detail, in the example of Figures 1-5, the teat T has a cylindrical portion Ta that connects to the shield S and extends along a longitudinal axis x, and a contoured terminal portion Tb that is symmetrical with respect to the vertical plane PV and asymmetrical with respect to the horizontal plane PO.

[0011] Hereinafter, the vertical direction and the hori-

zontal direction will be defined relative to the horizontal plane.

[0012] For greater clarity of illustration, the line of intersection between the pacifier and the vertical plane PV, in Figure 4, and the horizontal plane PO, in Figure 5, is highlighted with a thick line.

[0013] The handle I consists of an annular body that extends at right angles to the vertical plane PV about a second axis Y which lies on the vertical plane, and connects to the shield S along the line of intersection of the horizontal plane PO with the shield S. In the example of Figures 1-5, the annular handle I is rigidly connected to the shield S, with the second axis Y extending vertically, but in other known solutions the annular handle I can be hinged to the shield S about a horizontal axis.

[0014] Known annular handles, such as the one shown in Figures 1-5, have the drawback of being inconvenient and awkward to handle both for the caregiver, who is usually seated beside the infant or holds the infant in his or her arms, and for the infant who wishes to independently hold the pacifier in his or her mouth.

[0015] Moreover, known annular handles have no influence with respect to the above-cited beneficial orthodontic functions of the pacifier but on the contrary, by virtue of their weight and shape, may constitute a disturbance factor.

[0016] The aim of the present invention is to provide a pacifier which is equipped with an annular handle that is easier and more comfortable to handle for the caregiver and/or infant who wishes to hold the pacifier independently, and which also has a beneficial effect in relation to the orthodontic functions of the pacifier.

[0017] A further object of the invention is to provide a pacifier which, while complying with all safety criteria regarding the risks of swallowing and consequent suffocation, promotes a more natural and more ergonomic sucking motion such as to produce at least some of the beneficial effects normally attributed to breastfeeding.

[0018] This aim and these and other objects that will become better apparent from the following description, are achieved by a pacifier with an annular handle having the characteristics presented in claim 1, while the dependent claims define other advantageous characteristics of the invention.

[0019] The invention will now be described in greater detail with reference to a preferred but not exclusive embodiment thereof, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a lateral elevation view of a pacifier according to the prior art;

Figure 2 is a plan view of the pacifier of Figure 1;

Figure 3 is a front elevation view of the pacifier of Figure 1;

Figure 4 is a perspective view of the pacifier of Figure 1, which also shows a first plane adapted to highlight some shape characteristics of the pacifier;

Figure 5 is a perspective view, similar to Figure 4,

which shows a second plane adapted to highlight some shape characteristics of the pacifier according to the prior art;

Figure 6 is a lateral elevation view of a pacifier according to the present invention;

Figure 7 is a plan view of the pacifier of Figure 6;

Figure 8 is a front elevation view of the pacifier of Figure 6;

Figure 9 is a perspective view of the pacifier of Figure 6, which also shows a first plane adapted to highlight some shape characteristics of the pacifier;

Figure 10 is a perspective view, similar to Figure 9, which shows a second plane adapted to highlight some shape characteristics of the pacifier;

Figure 11 is a lateral elevation view of a pacifier in a first alternative embodiment of the invention;

Figure 12 is a front elevation view of the pacifier of Figure 11;

Figure 13 is a front elevation view of the pacifier of Figure 6 during use;

Figure 14 is a perspective view of a pacifier in a second alternative embodiment of the invention;

Figure 15 is a perspective view of the pacifier of Figure 14 from a different angle;

Figure 16 is a plan view of the pacifier of Figure 14;

Figure 17 is a sectional view of Figure 16 along the plane XVII-XVII;

Figure 18 is a view, similar to Figure 14, showing a first plane adapted to highlight some geometric characteristics of the pacifier;

Figure 19 is a view, similar to Figure 14, showing a second plane adapted to highlight some geometric characteristics of the pacifier;

Figure 20 is a view, similar to Figure 14, showing a third plane adapted to highlight some geometric characteristics of the pacifier;

Figure 21 is a view, similar to Figure 14, showing a pacifier in a third alternative embodiment of the invention;

Figure 22 is a view of the alternative embodiment of Figure 21 in a view similar to Figure 17.

[0020] With reference to Figures 6-10, a pacifier 10 comprises a teat 12 made of a rubber-like material, such as natural rubber or silicone, connected to a handle 14 with the interposition of a shield 16 adapted to prevent swallowing by the infant.

[0021] In the example shown in Figures 6-10, the shield 16 and the handle 14 are made of rigid plastic material.

[0022] In a per se conventional manner, the teat 12 has an elongated anatomical profile adapted to sucking, which is symmetrical with respect to a vertical plane P1 (Figure 9) which extends longitudinally with respect to the elongated profile of the teat 12, ideally separating the right side of the oral cavity from the left side, and asymmetrical with respect to a horizontal plane P2 (Figure 10) ideally interposed between the tongue and the palate.

[0023] For greater clarity of illustration, the line of in-

tersection between the pacifier and the vertical plane P1, in Figure 9, and the horizontal plane P2, in Figure 10, is highlighted with a thick line.

[0024] Hereinafter, in the description and in the claims, the vertical direction and the horizontal direction are defined in relation to the horizontal plane P2.

[0025] In a per se conventional manner, the teat 12 has a contoured terminal portion 12a that has an anatomical profile which is symmetrical with respect to the vertical plane P1 and asymmetrical with respect to the horizontal plane P2 and extends along a longitudinal axis 20 that is substantially equidistant, in a vertical direction, from the two opposite extreme points H1, H2 of the terminal portion 12a (Figure 6).

[0026] Preferably, the terminal portion 12a connects to the shield 16 by means of a connecting portion 12b. In this embodiment, the connecting portion 12b has a cylindrical profile whose axis coincides with the longitudinal axis 20.

[0027] In a per se known manner, the handle 14 comprises an annular body which, in a configuration for use, extends parallel to the longitudinal axis 20. In the present description and in the claims, "configuration for use" means the configuration in which the handle 14 is adapted to be gripped while the pacifier is in use.

[0028] In the embodiment of Figures 6-10, the handle 14 is rigidly connected to the shield 16 (for example, the annular handle 14 can be welded, glued, or molded monolithically together with the shield 16), so that it is always in the above-mentioned configuration for use.

[0029] The handle 14 of the pacifier according to the invention

- internally forms a passageway 14a configured to allow the insertion of at least one little finger of an infant's hand, and
- extends along a horizontal axis 22 which, in said configuration for use, is perpendicular to the vertical plane P1.

[0030] Advantageously, the handle 14 connects to shield 16 along the line of intersection of the vertical plane P1 with the shield 16.

[0031] Preferably, the handle 14 extends in a planar manner along the horizontal axis 22.

[0032] In the embodiment described here, the handle 14 has a toroidal profile, and the horizontal axis 22 therefore coincides with the axis of revolution of said toroidal profile.

[0033] By way of example, the diameter of revolution of the toroidal profile may be approximately 30 mm while the diameter of the generating circumference may be approximately 5 mm, the passageway 14a therefore having a circular profile with a diameter of 25 mm, such as to allow the passage of an adult's index or middle finger.

[0034] According to an advantageous characteristic of the invention, the point that is equidistant from the upper end Z1 and from the lower end Z2 of the passageway

14a, which in the example described herein, in which the handle 14 has a toroidal profile, is contained within the horizontal axis 22, is offset vertically downward with respect to the longitudinal axis 20.

[0035] In this embodiment, the shield 16 has a circular profile and the teat 12 connects to the center of the shield 16.

[0036] As shown in Figure 13, the vertical arrangement of the annular handle 14, as opposed to the horizontal arrangement of conventional pacifiers such as the one shown in Figures 1-5, allows a caregiver sitting next to the infant B, or located behind the infant B while holding him in his arms, to comfortably insert a finger of his own hand M into the annular handle 14, the index finger in Figure 13, so as to help the infant B hold the pacifier 10 in his mouth in the correct way.

[0037] The vertical arrangement of the handle also facilitates the infant's possible independent use of the pacifier; the infant can insert one or more fingers of his own hand laterally into the handle while holding the pacifier in his mouth.

[0038] Moreover, the vertically downward offset position of the handle 14 with respect to the longitudinal axis 20, associated with the slight axial pressure that is normally exerted by the caregiver to hold the pacifier in the infant's mouth, generates a moment about a horizontal axis that stimulates the infant to make a beneficial anteroposterior mandibular movement during sucking in the effort to hold the pacifier 10 in his mouth.

[0039] Figures 11 and 12 show an alternative embodiment of the invention, in which the parts that correspond to the previous embodiment are designated by the same reference numerals increased by 100 and the planes are identified by the same reference with the addition of a prime.

[0040] The alternative embodiment of Figures 11 and 12 differs from the previous embodiment only in that the annular handle 114 is hinged to the shield 116 about a vertical axis 124 which lies on the vertical plane P1', so that it can be folded into a more compact configuration which is substantially parallel to the shield 116 when not in use (i.e., when it is not in the configuration for use).

[0041] Figures 14-20 show a pacifier 210 according to a further embodiment of the invention. The pacifier 210 according to this embodiment is of the monolithic type and can advantageously be molded monolithically as a single piece of a rubber-like material, such as natural rubber or silicone, in a per se known manner.

[0042] In accordance with the previous embodiments, the pacifier 210 comprises:

- a teat 212 having an elongated anatomical profile adapted to sucking, with a contoured outer surface that is symmetrical with respect to a vertical plane HP1 (Figure 18) that extends longitudinally with respect to the elongated profile of the teat 212 and ideally separates the right side of the oral cavity from the left side, and is asymmetrical with respect to a

first horizontal plane HP2 that is ideally interposed between the tongue and the palate,

- a shield 214 adapted to prevent swallowing by the infant, and
- a handle 216, which extends from the shield 214 in the opposite direction with respect to the teat 212.

[0043] In this embodiment, the shield 214 extends along a shield axis A1 that extends longitudinally, is contained in the vertical plane HP1, and is substantially equidistant from the two vertically opposite extreme points of the cross-section of the shield E1', E2' with respect to the vertical plane HP1 (Figure 17). The shield 214 is longitudinally delimited between a front surface 214a, to which the outer surface of teat 212 joins, and a rear surface 214b, which joins the front surface 214a along a perimeter edge 214c (Figure 17).

[0044] The wording "extends along" referring to the shield 214 with respect to the longitudinal axis A1 refers to the fact that said axis, at each of its points, passes through said surface or body in a position that is substantially intermediate between the two opposite points where the outer profile of the surface or body intersects each of the planes containing said axis, as in the case of the opposite extreme points of the shield E1', E2'.

[0045] Of course, in defining the position of the shield axis A1 as "substantially equidistant from the two vertically opposite extreme points of shield E1', E2'", reference is made to the main body of shield 214. Therefore, any protrusions or projections of small size, incidentally affected by the cross-section along the vertical plane HP1 but not linked to the main function of the shield 214, are excluded.

[0046] The perimeter edge 214c is advantageously rounded.

[0047] Moreover, in accordance with the definition of the wording "extends along" given earlier, the front surface 214a and the rear surface 214b are also symmetrical with respect to the vertical plane HP1 (Figure 18).

[0048] Advantageously, in this embodiment of the invention, the front surface 214a of the shield 214 has a convex profile and the rear surface 214b has a concave profile.

[0049] This shape of the shield, in contrast to conventional shapes which are generally flat (as in the previous embodiments) or slightly concave on the side of the teat to adhere to the infant's cheeks and lips, has the advantage of facilitating the natural sucking motion that would be performed by the infant during breastfeeding.

[0050] In fact, in this regard, several studies have pointed out that breastfeeding has a protective effect on the endocrine, immune and gastroenterological systems as well as for early cognitive functions. Breastfeeding between zero and six months is also recommended by the World Health Organization (WHO), since it reduces the risk of aerodigestive infections and facilitates proper maxillofacial growth by promoting proper lip seal, jaw function and correct tongue position against the palate.

It is also widely believed that breastfeeding for six months or more reduces the risk of posterior crossbite and at least of Class II malocclusion in primary and mixed dentition.

[0051] Preferably, the front surface 214a and the rear surface 214b are continuous, i.e., they are not crossed by through holes and, even more advantageously, are substantially smooth.

[0052] Advantageously, the shield 214 has a thickness that gradually decreases toward the perimeter edge 214c.

[0053] Moreover, with reference to Figure 17, considering the cross-section with respect to the vertical plane HP1, the convex profile of the front surface 214a is advantageously delimited between two first generatrices having an inclination γ , measured with reference to the line extending between its opposite ends, comprised between 10° and 50°, more advantageously, approximately 30°, with respect to the shield axis A1.

[0054] Moreover, again considering the cross-section with respect to the vertical plane HP1, the concave profile of the rear surface 214b is advantageously delimited between two second generatrices having an inclination δ , measured with reference to the straight line extending between its opposite ends, comprised between 50° and 80°, more advantageously, approximately 65°, with respect to the shield axis A1.

[0055] In the preceding paragraphs, reference was made to the straight line extending between its two opposite ends to define the inclination of the generatrix because, as will be seen immediately hereinafter, in the preferred embodiment described and illustrated here the convex profiles of the front surface 214a and of the rear surface 214b are not straight but rounded with variable radii of curvature.

[0056] As mentioned above, the two first generatrices that delimit the convex profile of the front surface 214a with respect to the vertical plane HP1 advantageously have at least one slightly curved portion, with their respective concavities facing each other.

[0057] Preferably, said first generatrices have a radius of curvature that progressively decreases toward the perimeter edge 214c.

[0058] The two second generatrices that delimit the concave profile of the rear surface 214b with respect to the vertical plane HP1 also advantageously have at least one slightly curved portion with their respective concavities facing each other.

[0059] Preferably, the second generatrices have a radius of curvature that gradually increases toward the perimeter edge 214c, until they become substantially straight in an outermost portion.

[0060] According to an advantageous characteristic of the invention, and again with reference to Figure 17, the contoured outer surface of the teat 212 has a narrowing of its cross-section 217 that is delimited between an upper recess G1 of the section of the teat 212 with respect to the vertical plane HP1, which defines the central profile

of an upper seat adapted to be engaged by a user's upper lip, and a lower recess G2 of the cross-section of the teat 212 with respect to the vertical plane HP1, which is longitudinally offset with respect to the upper recess G1 in the direction of the shield 214 and defines the central profile of a lower seat adapted to be engaged by the lower lip of the user; the narrowing in cross-section 217 extends with continuity on the contoured outer surface of the teat 212 between the upper recess G1 and the lower recess G2.

[0061] In the present description and in the claims, the expression "with continuity" referring to the extension of a surface means that said surface has a continuous profile that has no edges or steps. Similarly, the expression "with continuity" referring to two interconnected surfaces means that said two surfaces connect smoothly, that is, without forming edges or steps: in other words, said two surfaces are tangent to each other along their joining line.

[0062] Moreover, hereinafter, in the present description and in the claims, terms such as "upward" or "downward," "upper" or "lower," "above" or "below," and so on, shall henceforth be understood in relation to the position of the upper recess G1 and of the lower recess G2 that define the proper orientation of the pacifier 10 in use.

[0063] The pacifier 210 is preferably sized so that its center of gravity is offset on the side of the handle 216 relative to the lower recess G2.

[0064] The teat 212 has a contoured terminal portion 212a extending in a direction substantially parallel to the shield axis A1, and a connecting portion 218 which connects the terminal portion 212a to the shield 214.

[0065] As in the previous embodiments, and with reference now to Figures 17, 18 and 20, the terminal portion 212a of the teat 212 has an anatomical profile which is symmetrical with respect to the vertical plane HP1 and asymmetrical with respect to the first horizontal plane HP2, and extends along a longitudinal axis A2 that is contained in the vertical plane HP1 and in the first horizontal plane HP2 and, considering the cross-section with respect to the vertical plane HP1, is substantially equidistant, in a vertical direction, from the two opposite extreme points of the terminal portion E1", E2".

[0066] In this case also, in defining the position of the longitudinal axis A2 as "substantially equidistant, in a vertical direction, from the two opposite extreme points of the terminal portion E1", E2'", reference is made to the main body of the terminal portion 212b, thus excluding any minor protrusions or projections.

[0067] The profile of the terminal portion 212b of the teat 212 will not be further elaborated since it is beyond the aim and objects of the present invention, and can be provided on the basis of known anatomical criteria in orthodontic pacifiers according to known knowledge in the field.

[0068] In the embodiment described here, the upper recess G1 is formed in the terminal portion 212b, the lower recess G2 is formed in the connecting portion 218, and the longitudinal axis A2 is advantageously spaced

downward with respect to the shield axis A1.

[0069] Moreover, advantageously, the shield axis A1 does not intersect the terminal portion 212b of the teat 212 at any point.

[0070] The connecting portion 218 advantageously has an intermediate sector 218a extending along an oblique axis A3 which intersects the shield axis A1.

[0071] For the sake of simplicity, in Figure 17 the different portions and different sectors of the pacifier 210 are shown separated by dashed lines. The verticality and obliqueness of said lines is defined in relation to the direction of the longitudinal axes A1 and A2, which are considered horizontal.

[0072] Advantageously, the intermediate sector 18a of the connecting portion 218 (comprised between a first oblique line L1 and a second oblique line L2 in Figure 17) connects to the terminal portion 212b of the teat 212 by means of a first end sector 218b (comprised between the second oblique line L2 and a first vertical line L3 in Figure 17), whose outer surface extends with continuity with the outer surface of the terminal portion 212b of the teat 212; similarly, the intermediate sector 218a of the connecting portion 218 connects to the shield 214 by means of a second end sector 218c (comprised between the first oblique line L1 and a second vertical line L4 in Figure 17), whose outer surface extends with continuity with the front surface 214a of the shield 214.

[0073] The oblique axis A3 is inclined with respect to the shield axis A1 by an angle α that is preferably comprised between 20° and 60°, more preferably approximately 40°.

[0074] With reference now to Figures 17 and 19, a second horizontal plane HP3, perpendicular to the vertical plane HP1 and containing the shield axis A1, is defined in the shield 214. In accordance with the definition of the wording "extends along" given earlier in relation to the front surface 214a and the rear surface 214b with respect to the axis A1, if one excludes the presence of the handle 216, the front surface 214a and the rear surface 214b of the shield 214 are substantially symmetrical with respect to the second horizontal plane HP3.

[0075] For greater clarity of illustration, the intersection lines between the pacifier and the planes shown in Figures 18, 19, and 20 are highlighted with a thick line.

[0076] In the preferred embodiment described here, the shield 214 has a maximum height, measured on the cross-section with respect to the vertical plane HP1, that is greater than the maximum width measured on the cross-section with respect to the second horizontal plane HP3.

[0077] As in the previous embodiments, the handle 216 comprises an annular body which forms internally a passage 216a configured to allow the insertion of at least one little finger of an infant's hand and, in a configuration for use, extends parallel to the longitudinal axis A2 and extends along a horizontal axis A4 which is perpendicular to the vertical plane HP1.

[0078] According to a preferred characteristic of the

invention, the handle 216 has a toroidal profile, preferably with a circular cross-section, extending along the horizontal axis A4 (Figure 16).

[0079] Advantageously, as in the previous embodiment, the point that is equidistant from the upper end X1 and from the lower end X2 of the passage way 216a, which in the example described here, where the handle 14 has a toroidal profile, is contained in the horizontal axis A4, is offset vertically downward with respect to the longitudinal axis A2 (Figure 17).

[0080] Advantageously, the horizontal axis A4 is also offset downward with respect to the shield axis A1.

[0081] In this embodiment, the handle 216 intersects both the front surface 214a and the rear surface 214b of the shield 214 below the shield axis A1.

[0082] With reference now to Figures 15 and 17, in this embodiment at least the terminal portion 212b of the teat 212 is hollow with thin walls and communicates with the atmosphere through a venting channel 220 which, in this embodiment, leads into an opening 222 on the rear surface 214b of the shield 214 above the shield axis A1.

[0083] In the preferred embodiment shown here, advantageously the first end sector 218b and part of the intermediate sector 218a are also hollow with thin walls, and the venting channel 220 extends through the shield 214, the second end sector 218c and part of the intermediate sector 218a.

[0084] In use, it has been found that the profile of the shield 214, with a convex front surface 214a and a concave rear surface 214b, has the effect of stimulating a natural and ergonomic sucking motion similar to the one performed during breastfeeding. This effect is further enhanced if the shield 214 is provided with a thickness that progressively decreases outward, as in the example described and illustrated here.

[0085] Moreover, the specific shape of the cross-section narrowing 217, with the seat for the upper lip (outlined by the upper recess G1) that is offset longitudinally with respect to the seat for the lower lip (outlined by the lower recess G2), even more so when combined with the center of gravity shifted to the side of the handle 216 with respect to the lower recess G2, stimulates the infant to perform a beneficial anteroposterior mandibular movement during sucking in order to hold the pacifier 210 in his mouth.

[0086] As in the previous embodiments, the vertical arrangement of the handle 216 allows a caregiver who is positioned beside the infant or child, or who is holding him on his arms, to comfortably insert a finger in the handle and assist the infant in properly holding the pacifier 210 in his mouth, possibly pressing lightly in the direction of the longitudinal axis A2.

[0087] In this regard, as in the previous embodiments, the slight downward offset of the handle with respect to the longitudinal axis A2, associated with the slight axial pressure that is normally exerted by the caregiver to hold the pacifier in the infant's mouth, gives the pacifier 210 a proper balance in use that can stimulate the correct anteroposterior movement of the infant's jaw.

[0088] The vertical offset between the shield axis A1 and the longitudinal axis A2, in combination with the displaced center of gravity on the handle side, also contributes to causing the resultant of the forces to make the pacifier "tip over," inducing the user to activate the perioral muscles in order to retrieve it, so as to reinforce it.

[0089] In general terms, the above highlighted shape aspects of the pacifier have the effect of inducing the user to correctly reproduce many of the movements that are naturally performed during breastfeeding, and in particular the antero-posterior displacements of the mandible, which are known to stimulate its sagittal extension.

[0090] Figures 21 and 22 show a further alternative embodiment of the invention, which differs from the previous one only in that the pacifier 310, instead of having the terminal portion 312b of the teat 312 that is hollow with thin walls and communicates with the atmosphere through a venting channel, is solid.

[0091] This solution gives greater rigidity to the pacifier 310.

[0092] Some preferred embodiments of the invention have been described herein, but of course the person skilled in the art may make various modifications and variations within the scope of the claims.

[0093] For example, in the first two embodiments described here, the teat is made of a different material than the shield and annular handle. However, the invention would be equally applicable to a pacifier made entirely of a rubber-like material such as silicone or natural rubber.

[0094] In the last two embodiments described, the front surface and/or the rear surface of the shield may have straight generatrices instead of curved or partially curved ones as in the embodiment described and illustrated by way of example herein.

[0095] Again, the shape of the teat may be widely varied from those described and illustrated here, as long as it has a profile that is symmetrical with respect to the vertical plane and asymmetrical with respect to the horizontal plane.

[0096] Moreover, it is implied that the term "annular" referred to the handle generally identifies a profile that internally forms a passageway, regardless of the specific geometric characteristics of the handle. For example, the passageway could have an elliptical profile rather than a circular one, and/or could be configured and/or sized to accommodate two or more fingers of a hand of an adult or an infant, as long as, regardless of the shape, the passageway has a minimum diameter such as to allow the insertion of at least one little finger of an infant's hand, typically, a minimum diameter of at least 7 mm. However, preferably, to fully benefit from the advantages of the invention, the minimum diameter of the passageway should allow the insertion of at least one little finger of an adult, typically, a minimum diameter of at least 12 mm.

[0097] The handle could also have a non-circular cross-section, for example elliptical, rectangular, square, and so on.

[0098] Moreover, although silicone and natural rubber have been referenced as preferred materials in the present description since, to date, these are conventionally used materials for the manufacture of pacifiers, of course any other rubber-like material of natural or synthetic origin that has suitable characteristics in terms of both ergonomics and safety may be used.

[0099] Not least, the term "monolithic" should not be understood in a restrictive sense. In particular, although the pacifier according to the invention can be provided in a single rubber-like material, the possibility of making, for example, the teat and shield of two distinct rubber-like materials non-detachably interconnected (for example welded or glued) is not ruled out.

[0100] It has been found in practice as well that the pacifier according to the invention fully achieves the intended aim and objects.

[0101] The disclosures in Italian Patent Applications No. 102023000013245 and No. 102023000013248 from which this application claims priority are incorporated herein by reference.

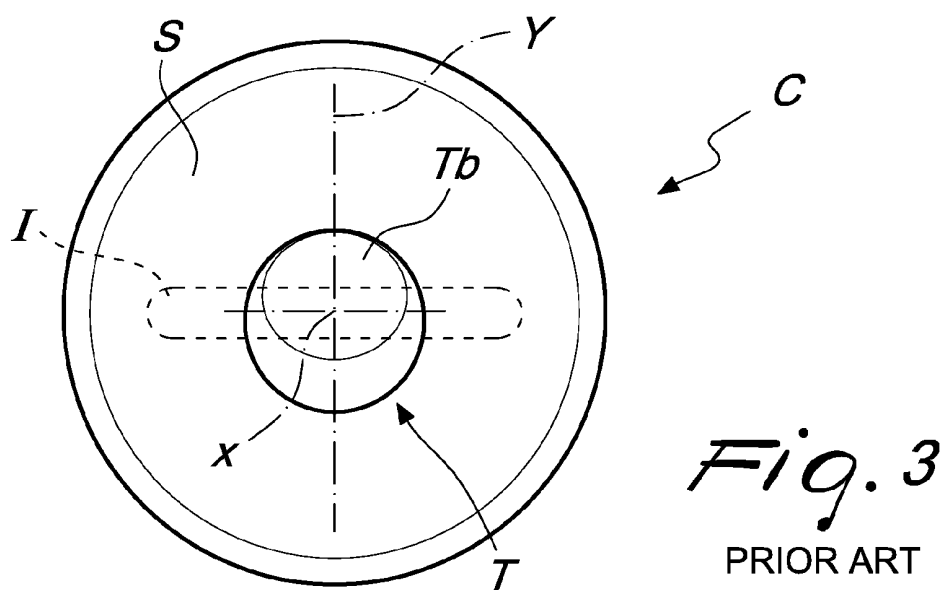
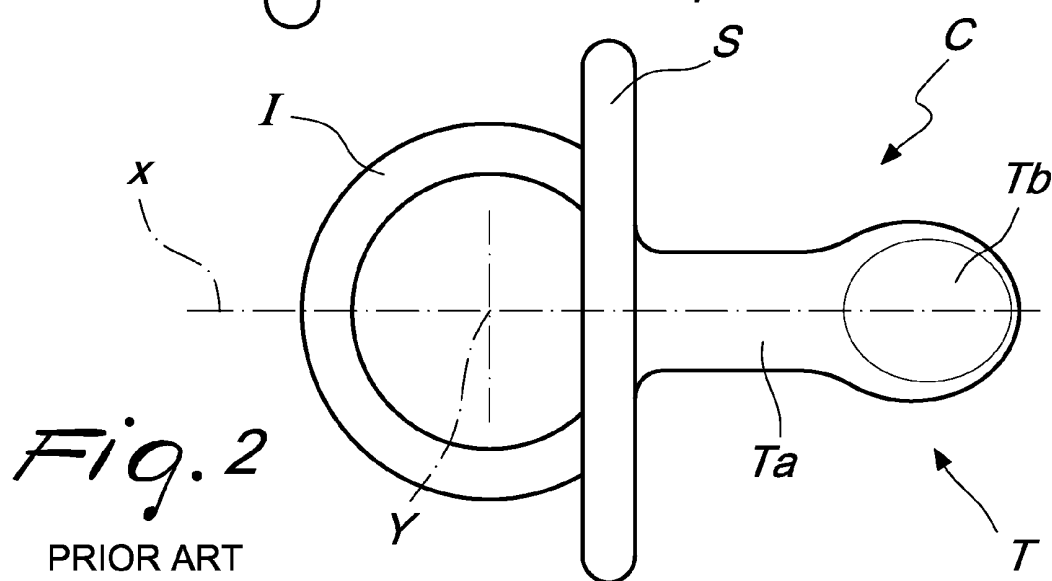
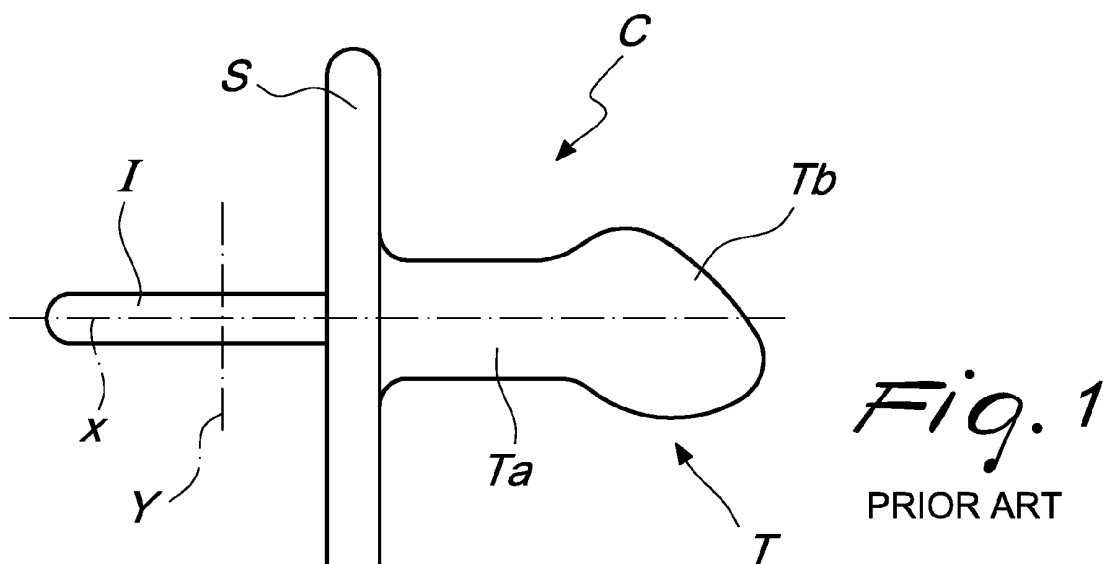
[0102] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A pacifier, comprising a teat (12) having an elongated anatomical profile adapted to sucking which is symmetrical with respect to a vertical plane (P1) extending longitudinally with respect to said elongated profile of the teat (12) and is asymmetrical with respect to a horizontal plane (P2), and a handle (14) which is connected to the teat (12) with the interposition of a shield (16) adapted to prevent swallowing by the infant, said teat (12) having a contoured terminal portion (12a) which has an anatomical profile which is symmetrical with respect to said vertical plane (P1) and asymmetrical with respect to said horizontal plane (P2) and extends along a longitudinal axis (20) which is substantially equidistant, in a vertical direction, from two opposite extreme points (H1, H2) of the terminal portion (12a), said handle (14) comprising an annular body which, in a configuration for use, extends parallel to said longitudinal axis (20), **characterized in that** said handle (14)

- internally defines a passageway (14a) configured to allow the insertion of at least one little finger of an infant's hand, and
- extends along a horizontal axis (22) which, in said configuration for use, is perpendicular to said vertical plane (P1).

2. The pacifier according to claim 1, **characterized in that** said handle (14) is connected to said shield (16) along the line of intersection of said vertical plane (P1) with said shield (16). 5
 3. The pacifier according to claim 1 or 2, **characterized in that** said handle (14) extends in a planar manner along said horizontal axis (22). 10
 4. The pacifier according to one or more of claims 1-3, **characterized in that** the point that is equidistant from an upper end (Z1) and a lower end (Z2) of said passageway (14a) is offset vertically downward with respect to said longitudinal axis (20). 15
 5. The pacifier according to one of claims 1-4, **characterized in that** said handle (14) has a toroidal profile. 20
 6. The pacifier according to one or more of claims 1-5, **characterized in that** said handle (14) is rigidly connected to said shield (16). 25
 7. The pacifier according to one or more of claims 1-5, **characterized in that** said handle (114) is hinged to said shield (116) about a vertical axis (124) that lies on said vertical plane (P1'), so that it can be folded into a more compact configuration which is substantially parallel to said shield (14) when not in use. 30
 8. The pacifier according to one or more of claims 1-7, **characterized in that** said shield (214) extends along a shield axis (A1) which extends longitudinally, is contained in said vertical plane (HP1), and is substantially equidistant from two opposite extreme points, in a vertical direction, of the cross-section of the shield (E1', E2') with respect to said vertical plane (HP1), said shield (14) being longitudinally delimited between a front surface (214a) having a convex profile, to which the outer surface of the teat (212) is joined, and a rear surface (214b) having a concave profile, which is joined to said front surface (214a) along a perimeter edge (214c). 35 40
 9. The pacifier according to claim 8, **characterized in that** said shield (214) has a thickness that progressively decreases toward said perimeter edge (214c). 45
 10. The pacifier according to one or more of claims 1-9, **characterized in that** the contoured outer surface of the teat (12) has a narrowing of its cross-section (217) which is delimited between an upper recess (G1) of the cross-section of said teat (12) with respect to said vertical plane (HP1), which defines the central profile of an upper seat adapted to be engaged by the upper lip of a user, and a lower recess (G2) of the cross-section of said teat (12) with respect to said vertical plane (HP1), which is longitudinally off- 50 55
- set with respect to said upper recess (G1) in the direction of said shield (14) and defines the central profile of a lower seat adapted to be engaged by the lower lip of the user; said cross-section narrowing (17) being extended with continuity on said contoured outer surface of the teat (12) between said upper recess (G1) and said lower recess (G2).
11. The pacifier according to claim 10, **characterized in that** it is sized so that its center of gravity is shifted toward the side of said handle (16) with respect to said lower recess (G2).
 12. The pacifier according to claim 10 or 11, **characterized in that** said upper recess (G1) is formed in said terminal portion (12a) of said teat (12), said lower recess (G2) is formed in a connecting portion (18) of said teat (12) which connects said terminal portion (12b) to said shield (14), and said longitudinal axis (A2) is spaced downward with respect to said shield axis (A1).
 13. The pacifier according to claim 12, **characterized in that** said connecting portion (218) has an intermediate sector (218a) which extends along an oblique axis (A3) intersecting said shield axis (A1) and is connected to said terminal portion (212b) of the teat (212) by means of a first end sector (218b), the outer surface of which extends in continuity with the outer surface of said terminal portion (212a), and to said shield (214) by means of a second end sector (218c), the outer surface of which extends in continuity with said front surface (214a) of said shield (214).
 14. The pacifier according to claim 13, **characterized in that** said oblique axis (A3) is inclined with respect to said shield axis (A1) by an angle (α) which is comprised between 20° and 60°, preferably approximately 40°.
 15. The pacifier according to one or more of claims 1-14, **characterized in that** said front surface (214a) and said rear surface (214b) of said shield (214) are substantially symmetrical with respect to a second horizontal plane (HP3) which is perpendicular to said vertical plane (HP1) and contains said shield axis (A1).



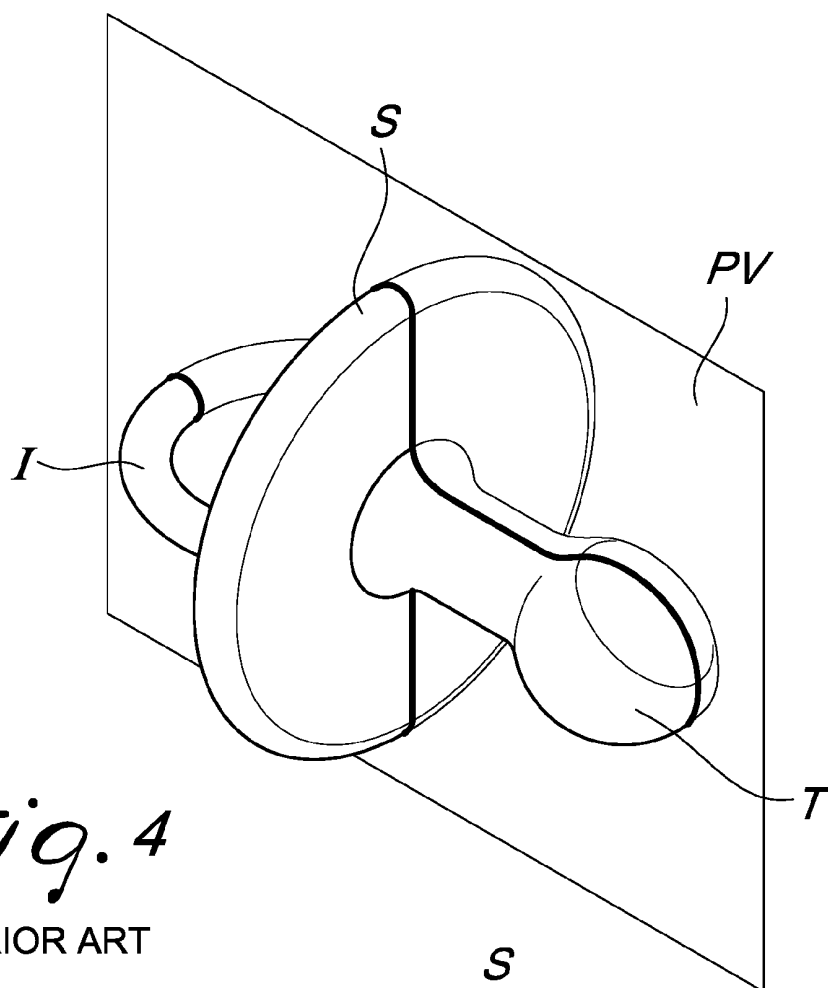


Fig. 4

PRIOR ART

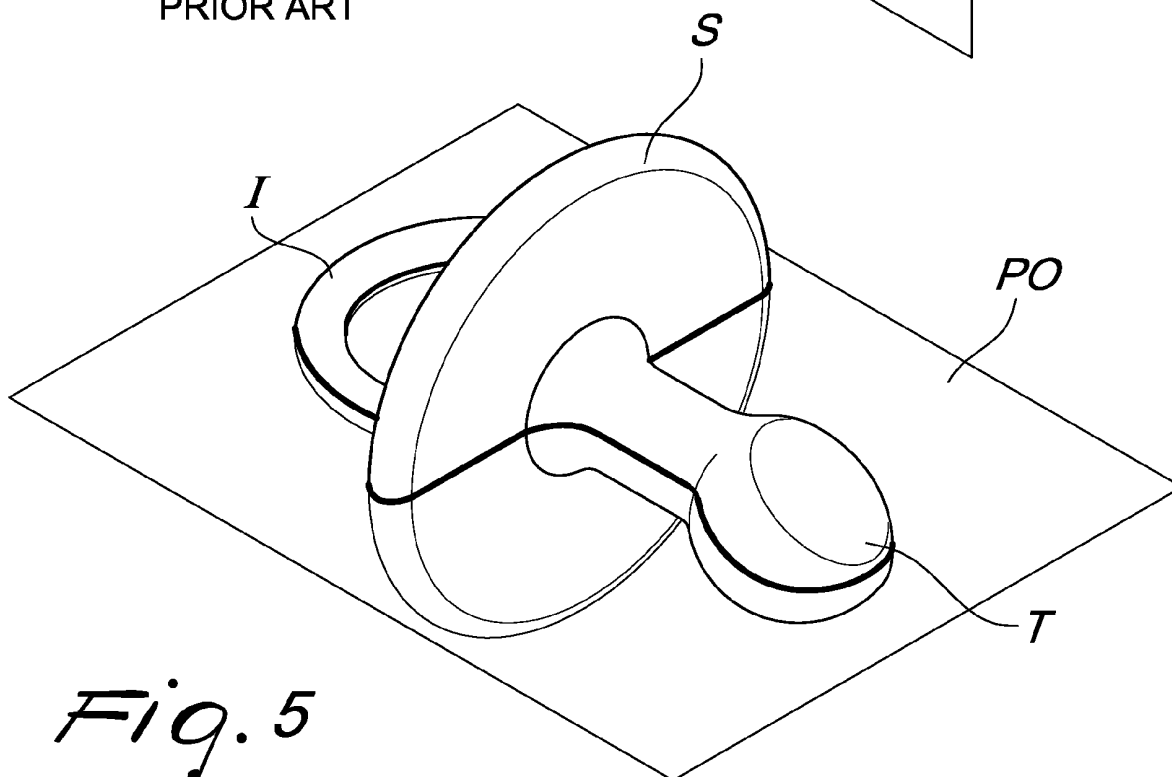


Fig. 5

PRIOR ART

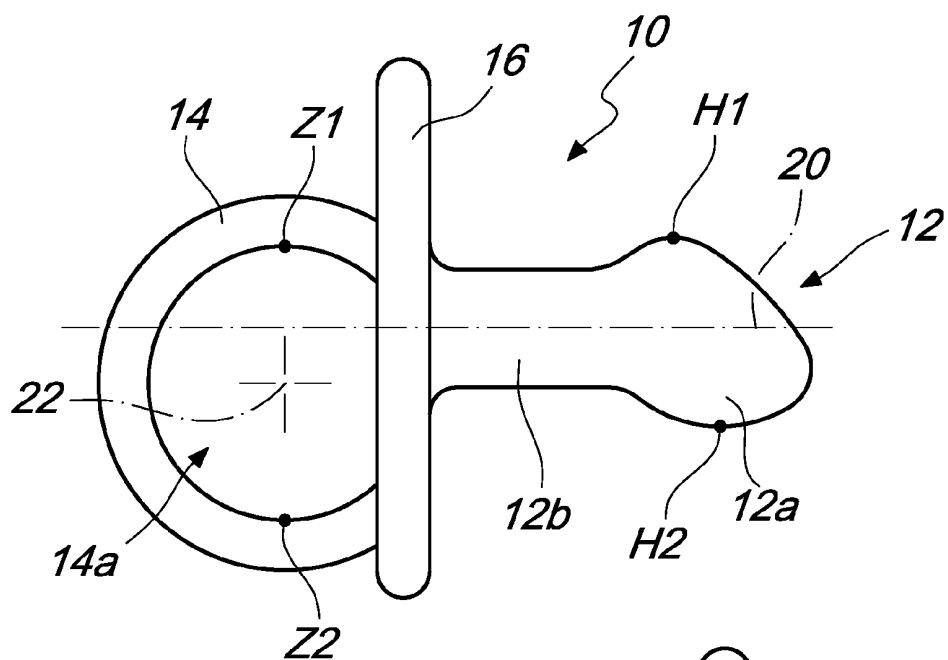


Fig. 6

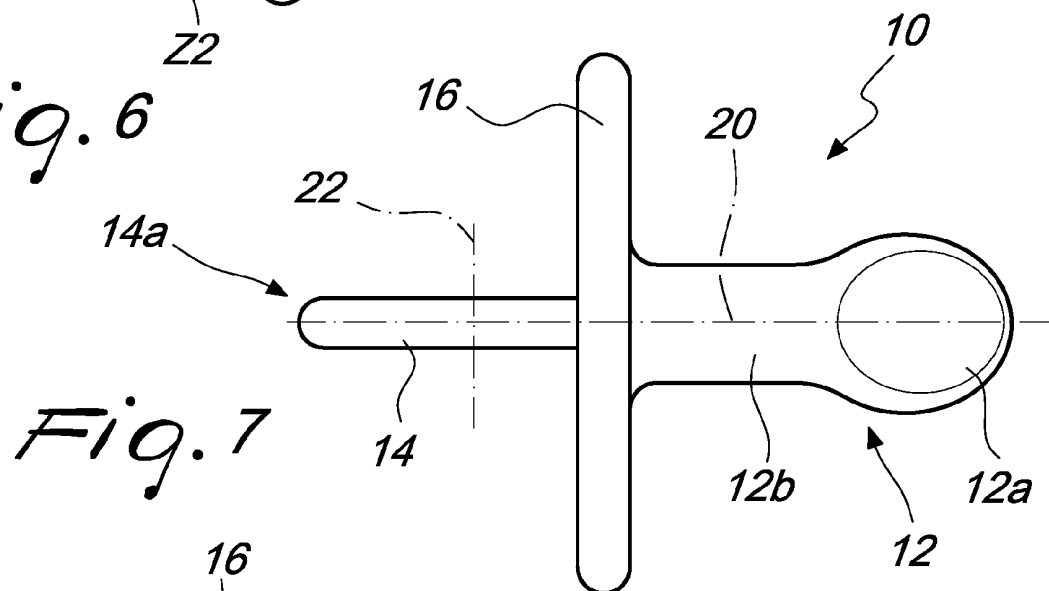


Fig. 7

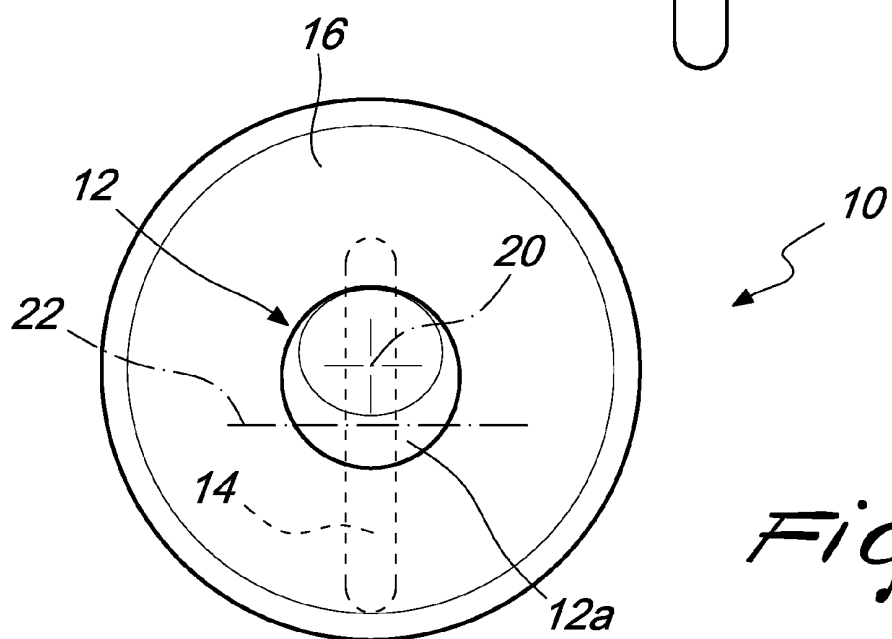


Fig. 8

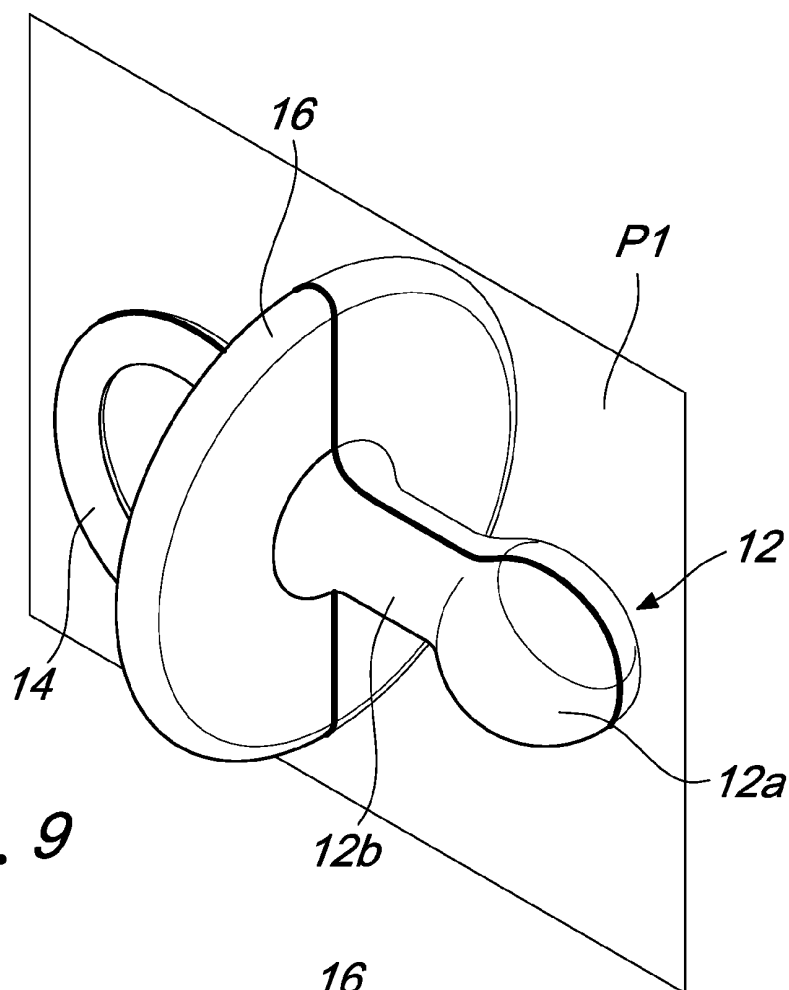


Fig. 9

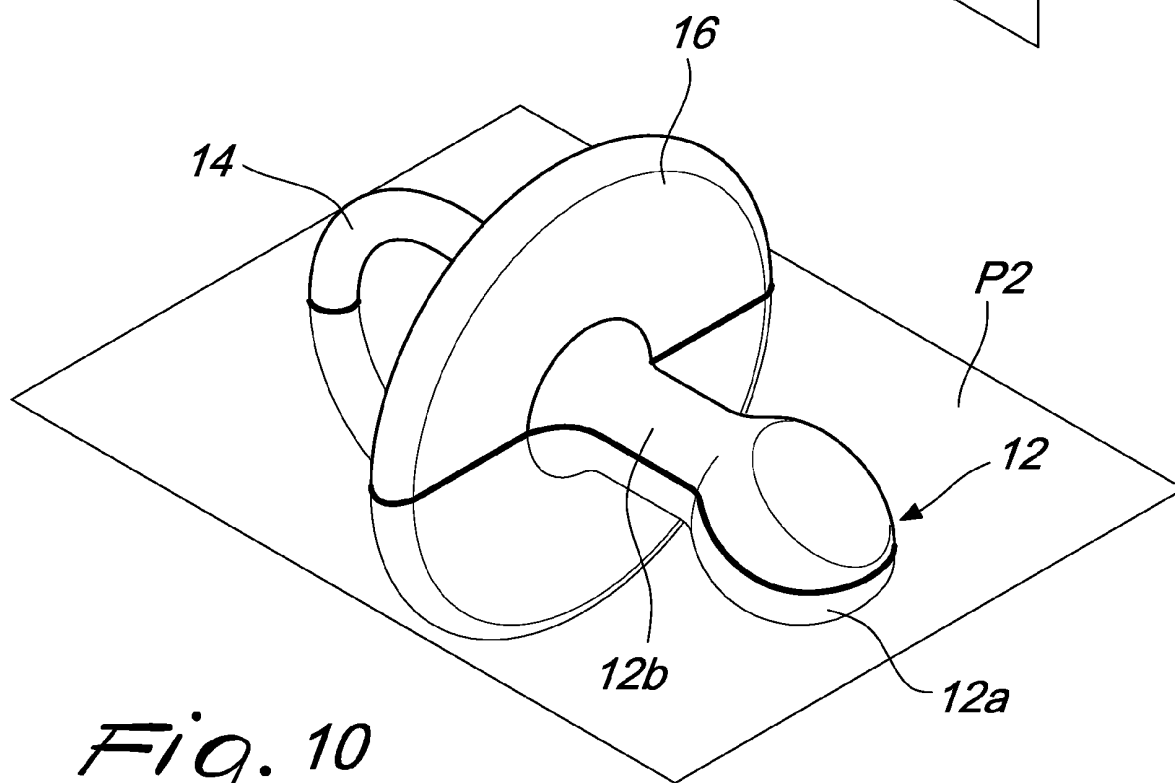


Fig. 10

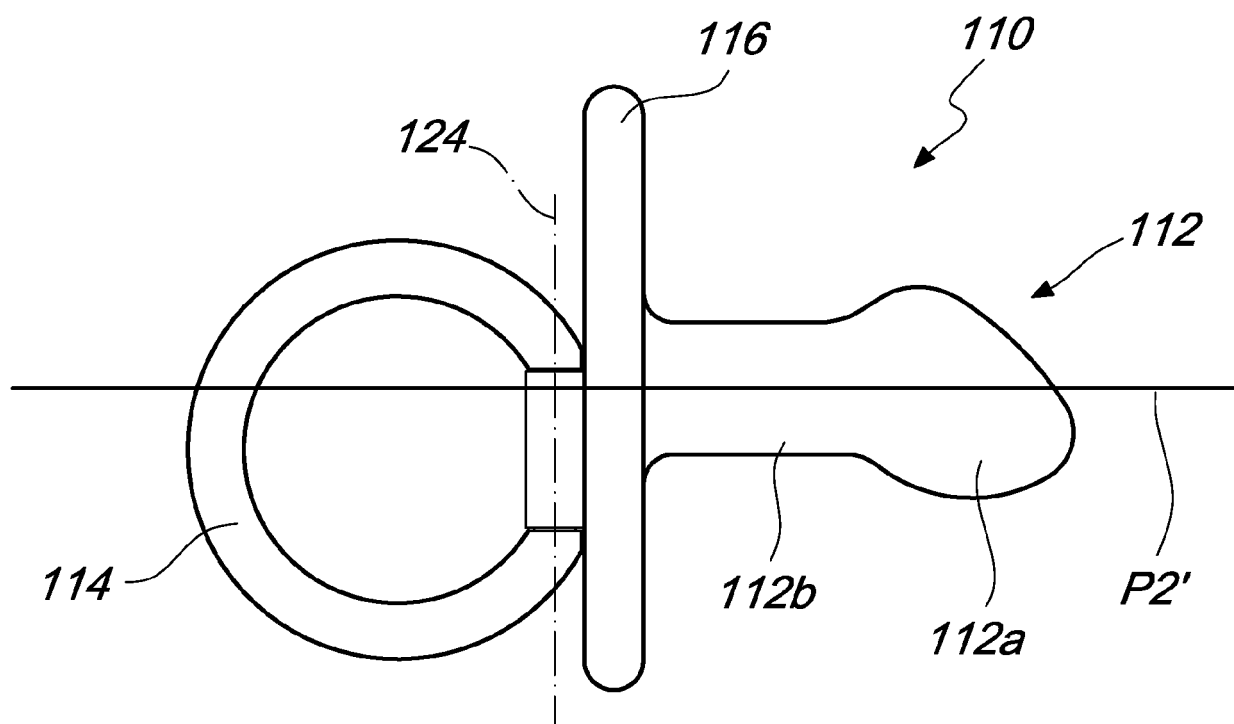


Fig. 11

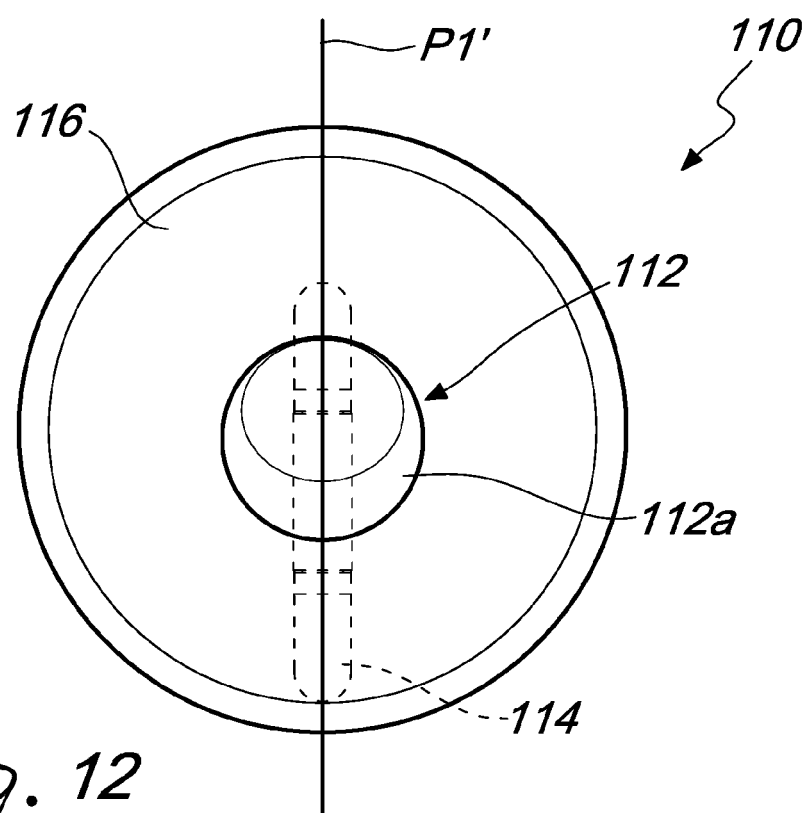


Fig. 12

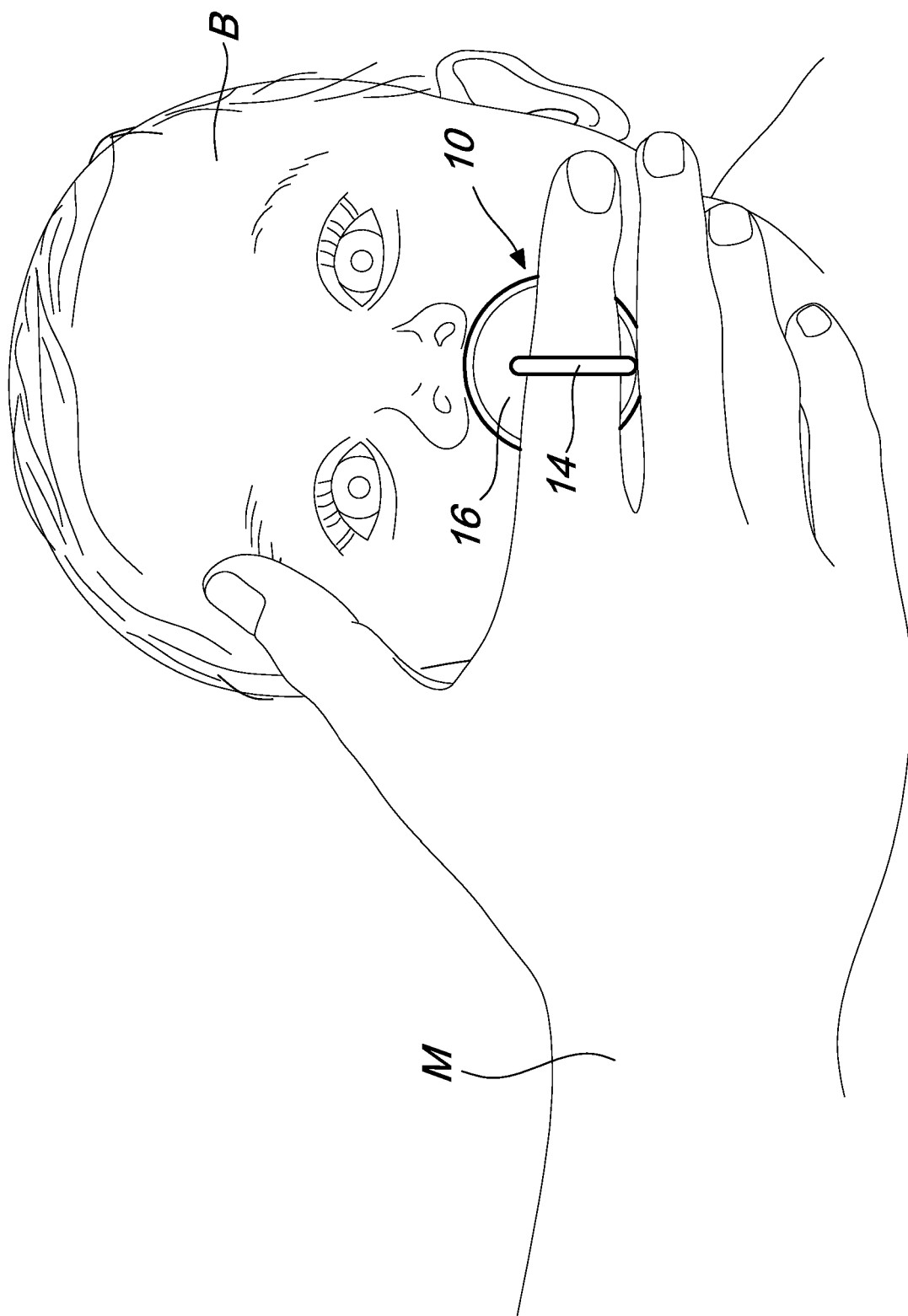
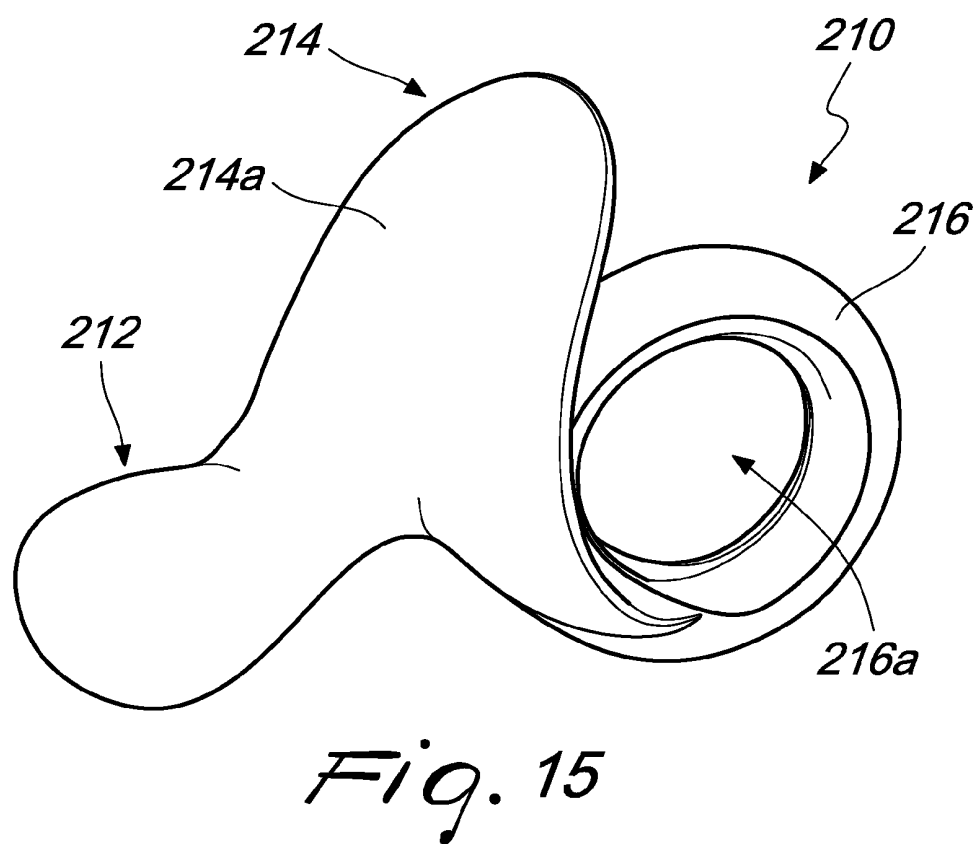
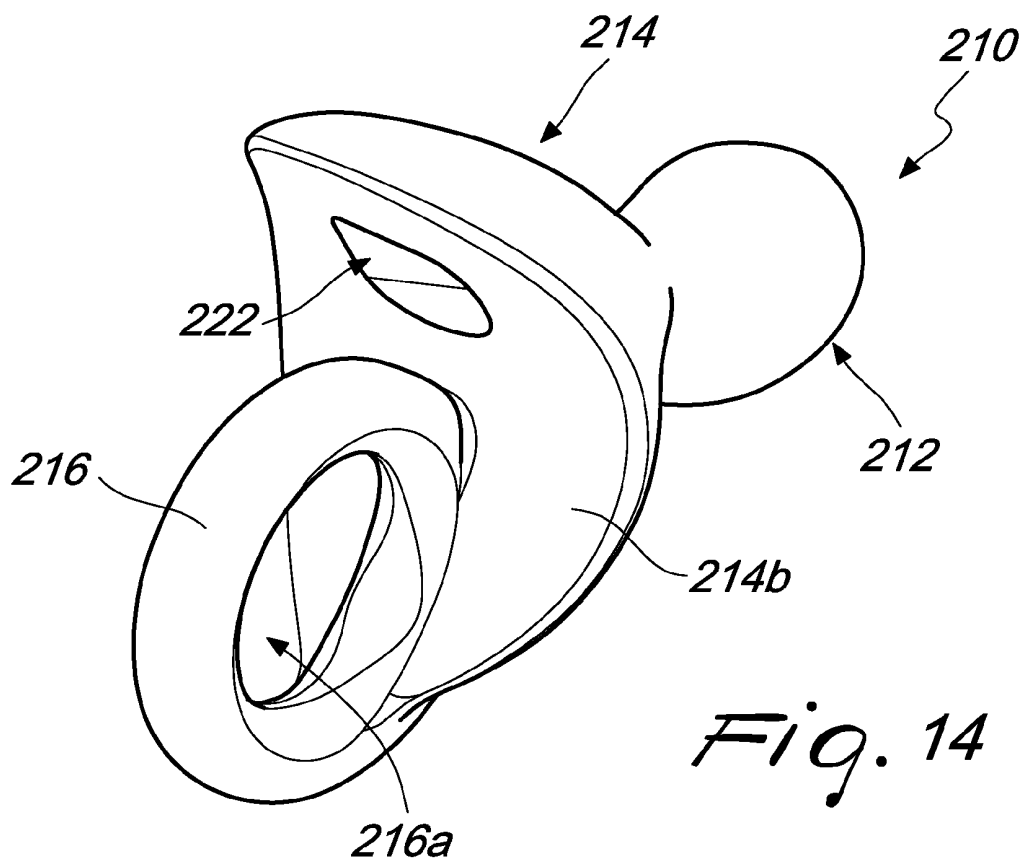


Fig. 13



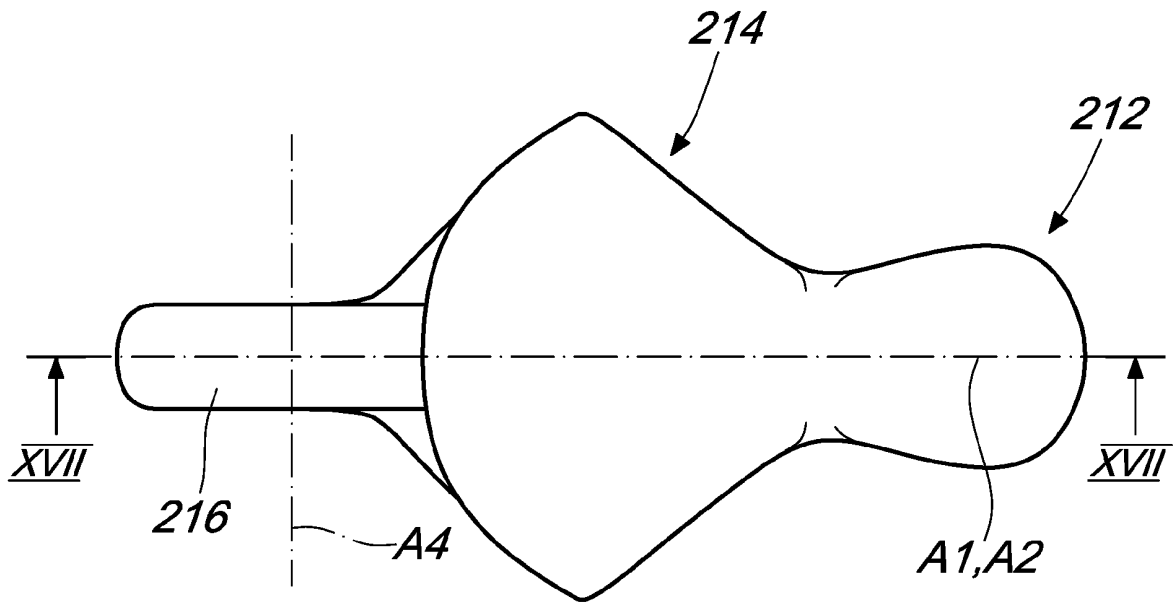
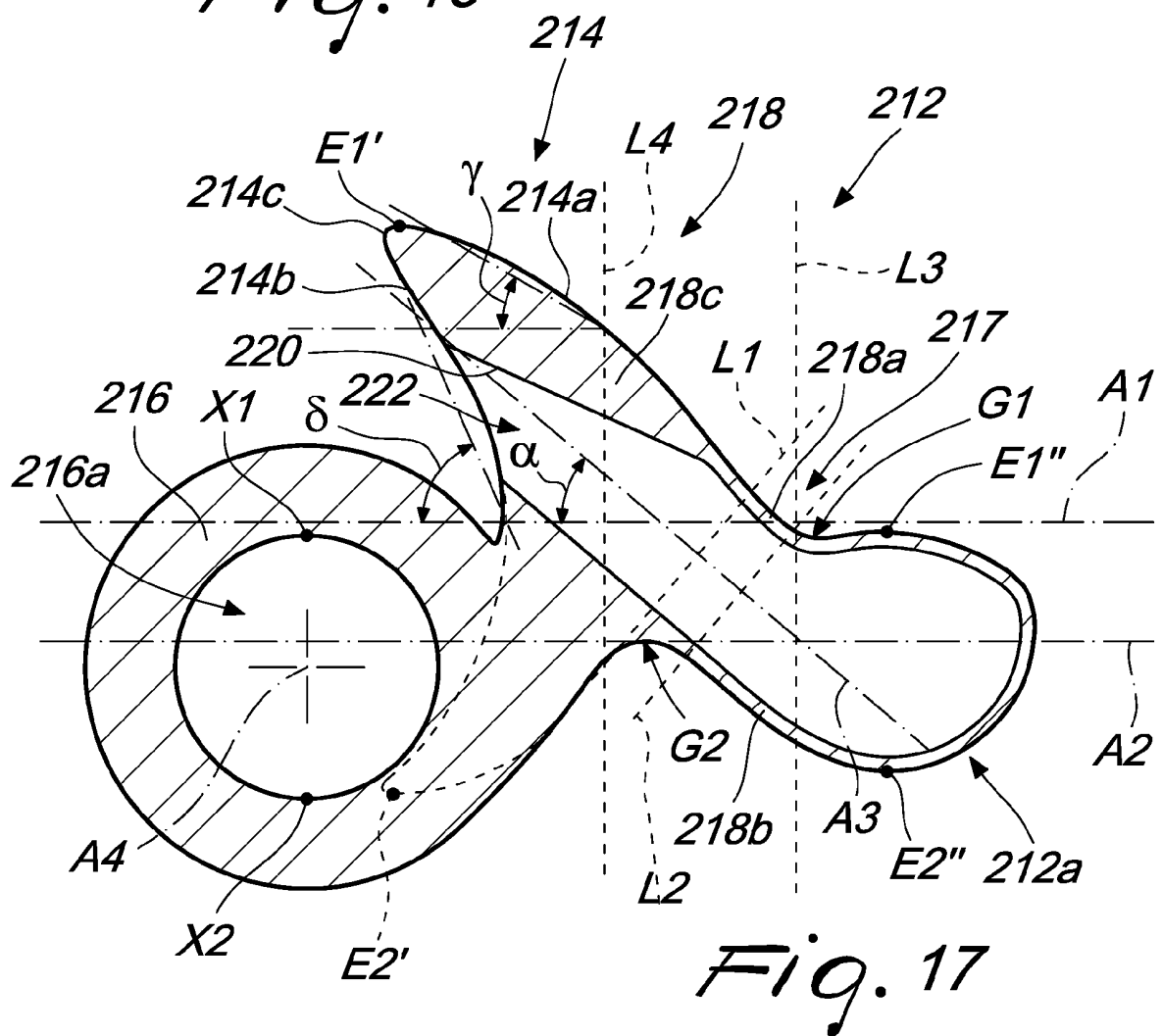
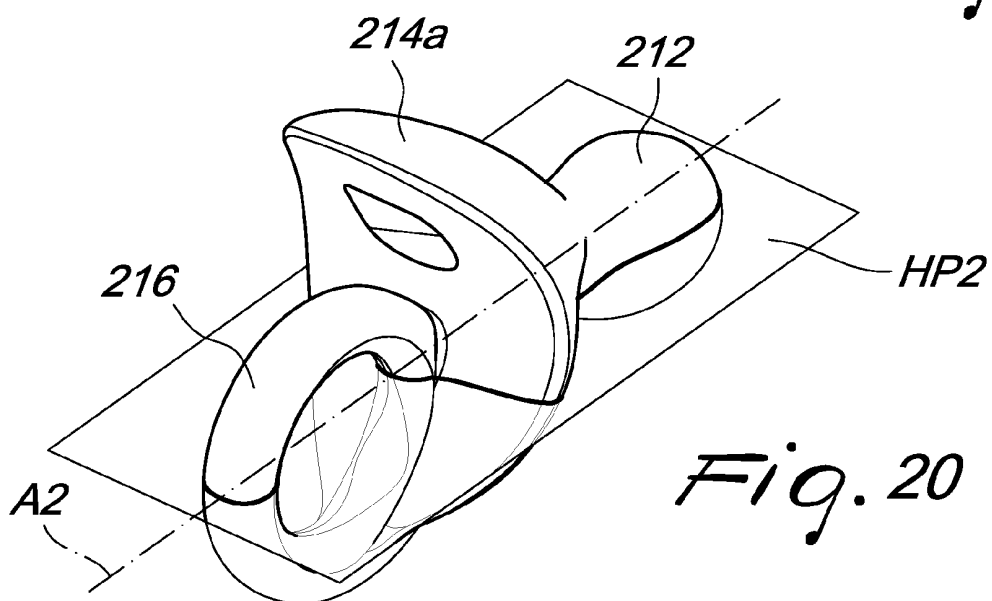
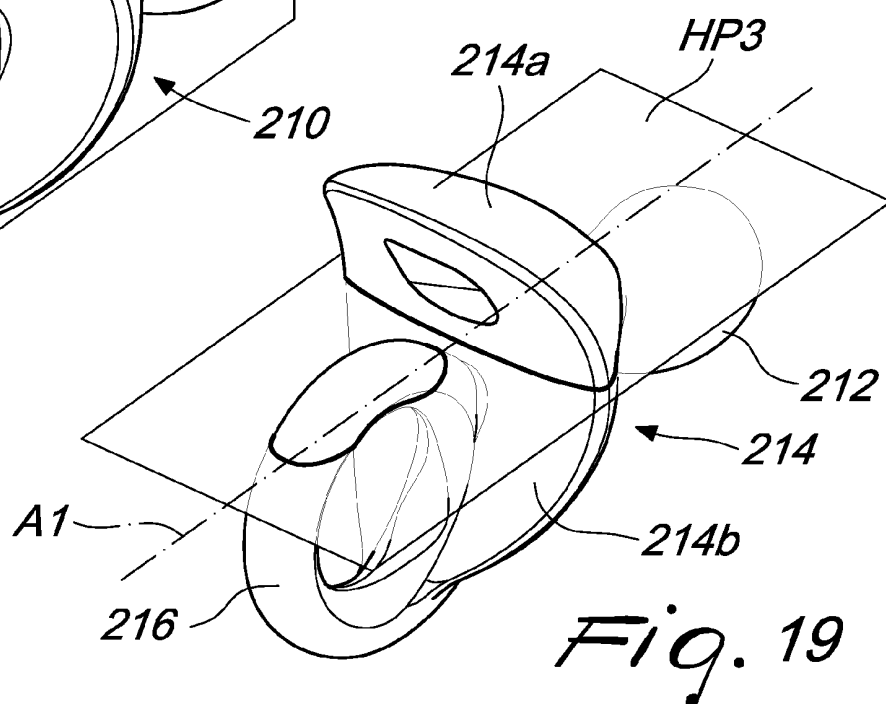
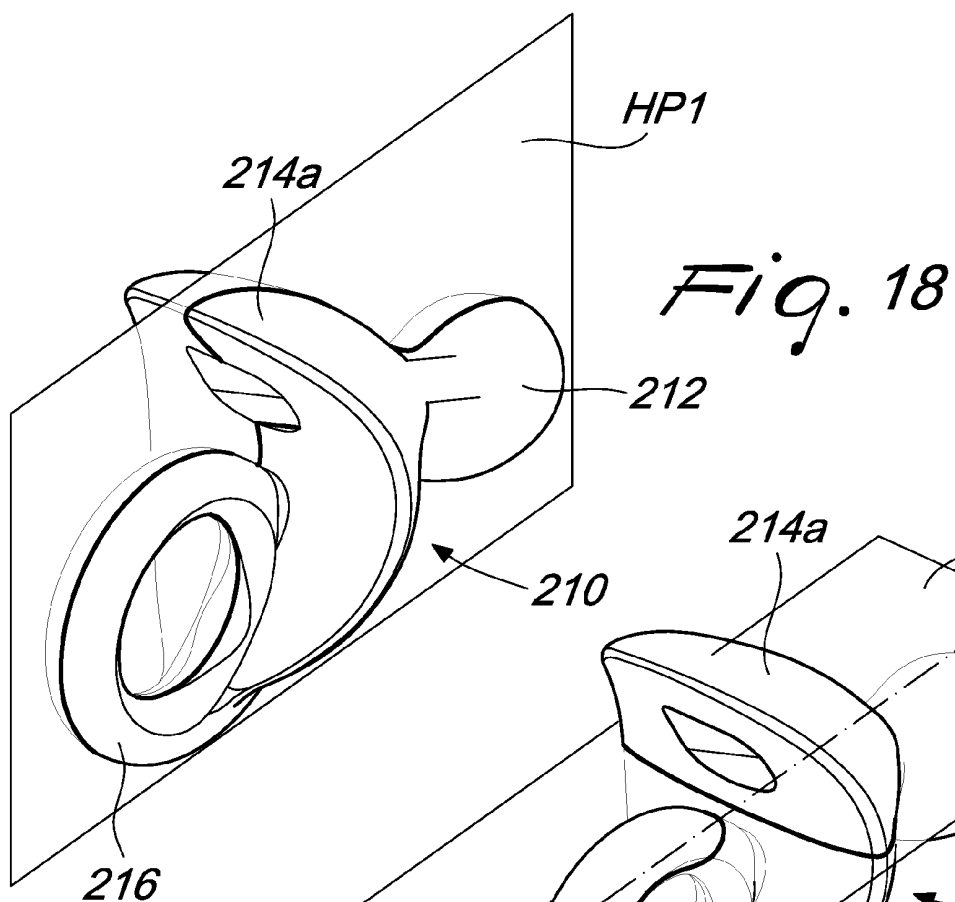
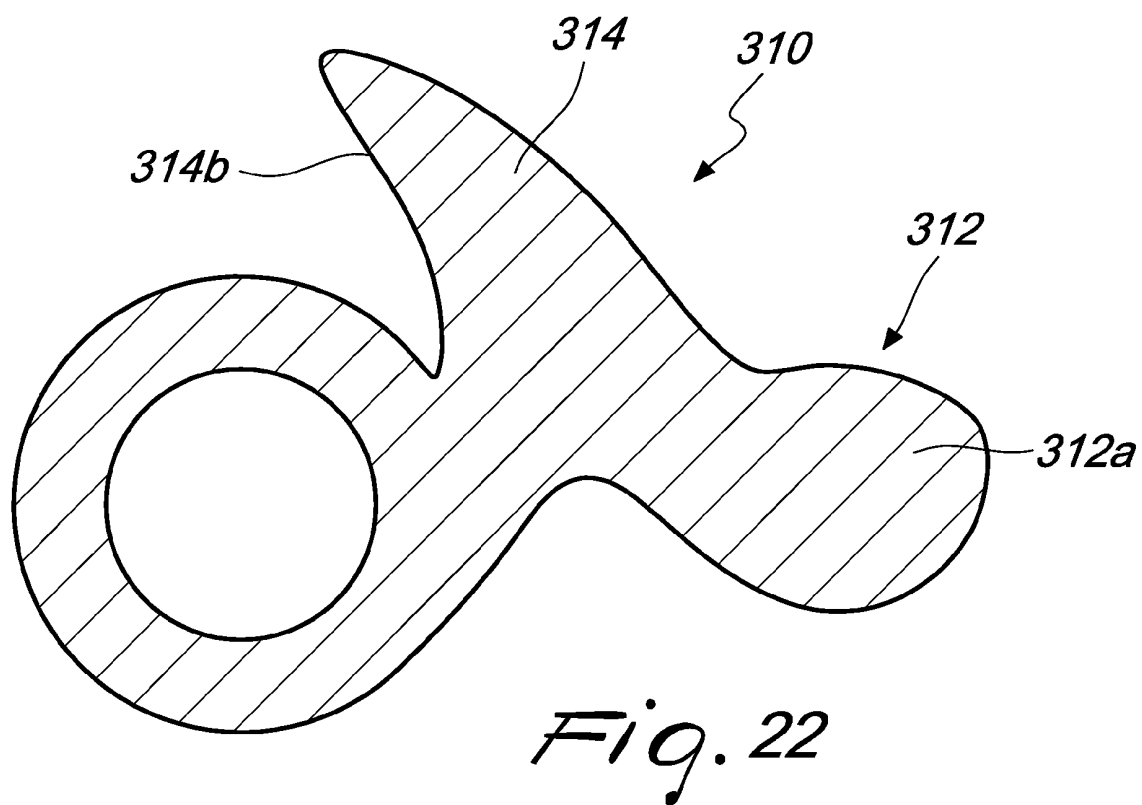
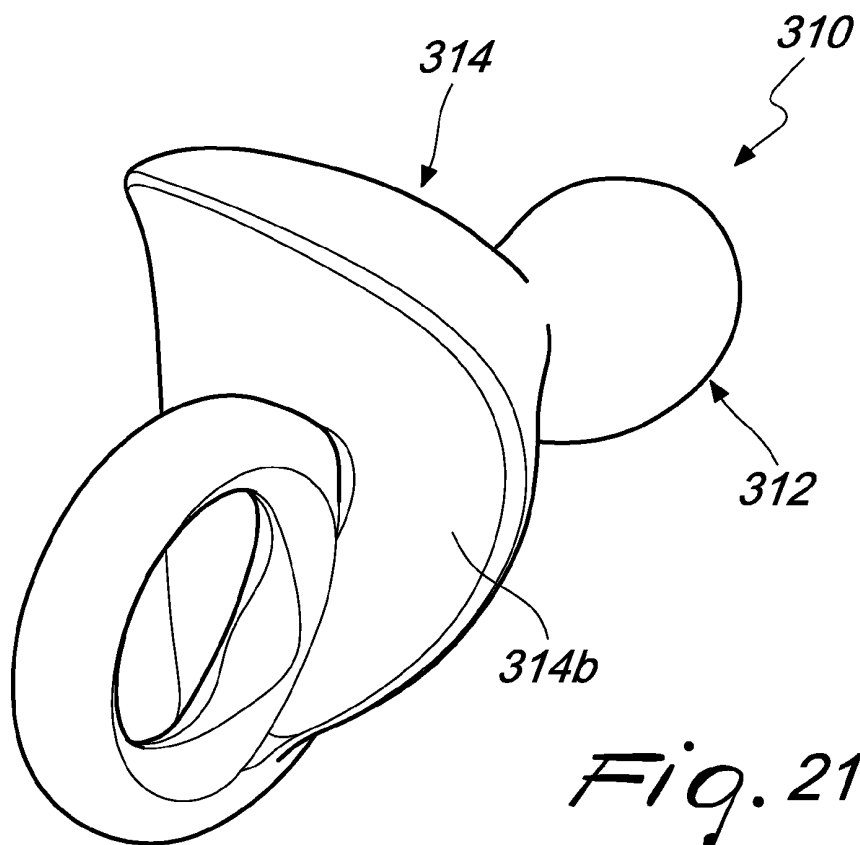


Fig. 16









EUROPEAN SEARCH REPORT

Application Number

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			A61J
Place of search		Date of completion of the search	Examiner
The Hague		8 November 2024	Gkama, Alexandra
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