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(54) Apparatus for training, correcting and/or facilitating proper combined use of masticatory and neck muscles.

(57) The present invention relates to an apparatus to be inserted between the dental arches to help them maintain their correct position, particularly during mastication, thereby facilitating a proper combined use of masticatory and neck muscles, to correct or prevent the development of postural changes that might cause mastication problems and possible pathologic states deriving therefrom, such as headache, cervical pain, backache, etc.

More particularly, the apparatus of the invention comprises two supports to be placed at both sides of the mouth, between the teeth and the cheeks, with plate-like elements projecting therefrom to be inserted between the teeth, wherein said supports are separate and independent.

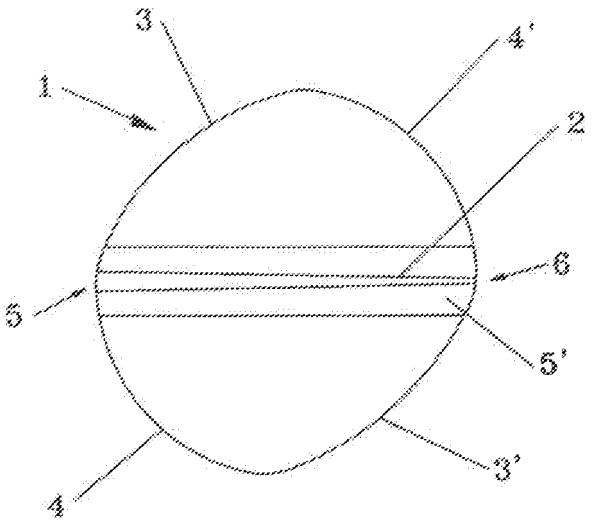

Fig. 1

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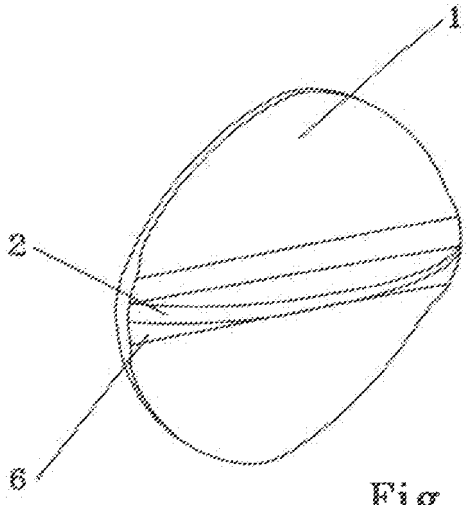


Fig. 2

Description

[0001] The present invention relates to an apparatus to be inserted between the dental arches to help them maintain their correct position, particularly during mastication, thereby facilitating a proper combined use of masticatory and neck muscles, to correct or prevent the development of postural changes that might cause mastication problems and possible pathologic states deriving therefrom, such as headache, cervical pain, backache, etc.

[0002] More particularly, the apparatus of the invention comprises two supports to be placed at both sides of the mouth, between the teeth and the cheeks, with plate-like elements projecting therefrom to be inserted between the teeth, wherein said supports are separate and independent.

[0003] Teeth conformation of an individual is known to undergo many changes with time. In certain cases, this occurs naturally, due to growth, development of permanent teeth and ageing-related changes, and in other cases external causes are relevant, such as extractions, obturations, use of dental prostheses or orthodontic devices, traumas, habits, etc.

[0004] As a result, involuntary postural adjustments occur (with faulty occlusion of the teeth) and these postural adjustments may often cause problems, such as muscle pain, cervical pain and even intense neck- or back-ache. It often occurs that intense backaches of unknown origin disappear when dental care causes adequate mutual alignment of dental arches.

[0005] For this reason, there are appliances of the "bite", "orthoptic", "positioner" types, which constrain the jaw in a predetermined position, or appliances formed of a pair of plate-like silicone elements with right and left occlusal planes, to be inserted between the teeth on each side of the arches, which are interconnected by parts that extend in the front side, and thus hinder the movements of the lips that hold them still.

[0006] Correct operation of masticatory and neck muscles is also required to achieve the desired result, and proper training thereof may be of help therefor.

[0007] Due to the presence of parts for connecting the right and left sides or for "constraining" the jaw in a given position, prior art appliances are not suitable for physiologically training muscles and allowing free spontaneous mandibular motion, without dental interference with the masticatory function, and this limits their application range.

[0008] The present invention finds application in this field, and provides an apparatus for correcting and/or facilitating proper combined use of masticatory and neck muscles, which not only improves balance but also trains masticatory and neck muscles to proper motion, thereby remedying any postural error.

[0009] The present invention will be now described in detail by way of non limiting example with reference to the accompanying figures, in which:

- Figure 1 is a front view of the apparatus of the invention;
- Figure 2 is a perspective view of the apparatus;
- Figures 3 and 4 are a top view and a side view respectively of the apparatus of the invention;
- Figures 5 to 8 are views of a second embodiment of the invention, corresponding to those of Figures 1 to 4;
- Figures 9 to 12 are views of a third embodiment of the invention, corresponding to those of Figures 1 to 4;
- Figures 13 to 16 are views of a fourth embodiment of the invention, corresponding to those of Figures 1 to 4;
- Figures 17 to 20 are views of a further embodiment of the invention, corresponding to those of Figures 1 to 4.

[0010] Referring to the accompanying figures, the apparatus of the invention is composed of a 2-dimensional support or external tab 1, which is designed to be positioned between the teeth and the cheeks and a plate-like element 2 or occlusal splint, which forms one piece with the tab and is designed to be clamped between the teeth. The tab 1 has a foursided plan shape, with slightly curved sides, and a pair of long sides 3 and 3' connecting to the short sides 4 and 4' still with curved profiles.

[0011] The tab is chamfered at a pair of opposite corners 5 and 5', to obtain a shape that can be more easily held in the mouth and prevent any contact with jaw bones.

[0012] The tab 1 may either have a substantially uniform thickness, as shown in Figures 9 to 16, or be as shown in Figures 1 to 8, with a thicker central bead 6.

[0013] The bead 6 connects the two chamfered corners 5 and 5' and also the occlusal splint 2 that projects from the tab 1 extends between the opposite corners.

[0014] The projecting element or occlusal splint 2 may have a uniform thickness, as shown in Figures 5 to 8 and 13 to 20, or change in thickness from one of two opposite ends to the other, as shown in Figures 1 to 4 and 9 to 12, depending on the applications for which the apparatus is designed.

[0015] Thus, for example, a constant-thickness occlusal splint may be provided for diagnostic procedures, whereas a variable-thickness or wedge-shaped occlusal will be preferred in case of orthodontic treatment or training requirements.

[0016] The tab 1 may be also selected of uniform thickness when orthodontic appliances are present or with the thickened central portion 6, when no orthodontic appliance is present.

[0017] The chamfered corners 5 and 5' are in opposite positions, for the apparatus to be turned with the thicker portion of the occlusal splint either at the front or at the back of the dental arches.

[0018] The apparatus is made of a soft, preferably silicone-based material, to provide sufficient flexibility for adaptation thereof to the shape of the mouth and allow

natural jaw motion.

[0019] The apparatus is freely movable in the mouth, allowing wide jaw motion, and will automatically find its position between the arches and be held in position during mastication, while remaining free to move during mastication, like a bolus.

[0020] Finally, an additional embodiment, as shown in Figures 17 to 20, is provided for diagnostic purposes, with a more rounded support 1.

[0021] In operation, two apparatus, one for each side, will be simply inserted between the teeth. Since the apparatus are independent and have no influence upon each other, they may be comfortably positioned by the patient in a quasi-customized manner.

[0022] The apparatus of the invention provides a number of features, namely:

- Training of muscles up to the neck to improve muscle metabolism by gymnastics;
- Physiological stabilization of joints due to reinforcement of muscles;
- Balancing of muscles by customized support for greater comfort;
- Diagnosis ex juvantibus of mastication-related problems (if changes occur after a given time of use, the problem will be referred to the dentist, otherwise it will not - any posture professional will promptly find the correlation degree, if any, and refer the case to the most appropriate professional, indicating which changes he/she has observed);
- Better grip of impression wax for a prosthesis (starting about one week before, and asking the patient to carry it for about 15 minutes before taking impressions;
- Prevention of any muscle problem that might occur due to a new prosthesis or new obturations;
- Possibility of detecting any relevant problem before carrying out any complex reconstruction procedure;
- Facilitated orthodontic treatment (closure of open bites), it improves orthodontic appliance results by removing the influence of occlusion as an anchor element when this is not desired.

[0023] The skilled persons may also envisage changes and variants to the above, which shall be intended to be included in the scope of the invention.

Claims

1. An apparatus for training, correcting and/or facilitating proper combined use of masticatory and neck muscles, of the type comprising two supports (1) to be placed at both sides of the mouth, between the teeth and the cheeks, with plate-like elements (2) projecting therefrom to be inserted between the teeth, **characterized in that** said supports (1) are separate and independent.

2. An apparatus as claimed in claim 1, **characterized in that** said supports (1) have a foursided plan shape, with rounded corners and slightly curved sides, having a pair of long sides (3, 3') connecting to the short sides (4, 4') still with curved profiles, said plate-like element (2) extending between opposite corners (5, 5').

3. An apparatus as claimed in claim 2, **characterized in that** it has a raised portion (6) at the centre of said support (1), with said plate-like element (2) projecting therefrom.

4. An apparatus as claimed in claim 2, **characterized in that** said support (1) is flat and has a constant thickness.

5. An apparatus as claimed in any preceding claim, **characterized in that** said plate-like element (2) to be inserted between the teeth has a constant thickness.

6. An apparatus as claimed in any preceding claim from 1 to 4, **characterized in that** said plate-like element (2) to be inserted between the teeth has a thickness that gradually changes from one end to the other.

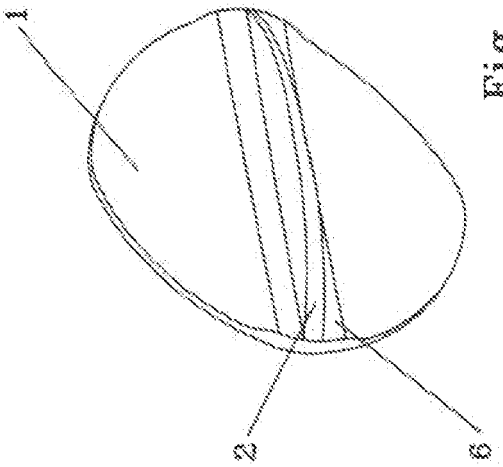


Fig. 2

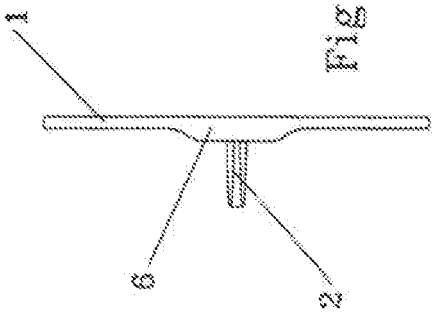


Fig. 4

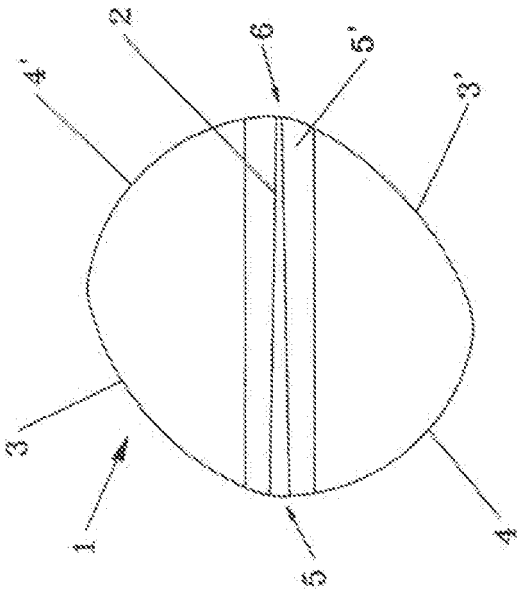


Fig. 1

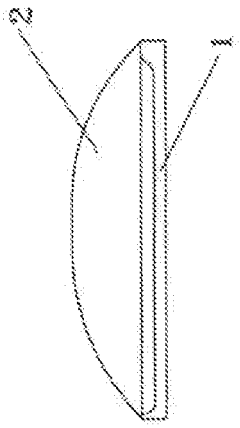


Fig. 3

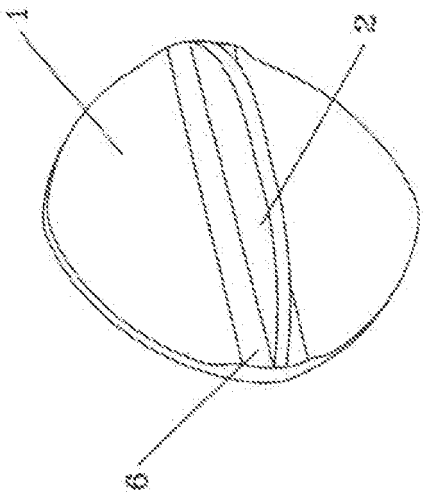


Fig. 6

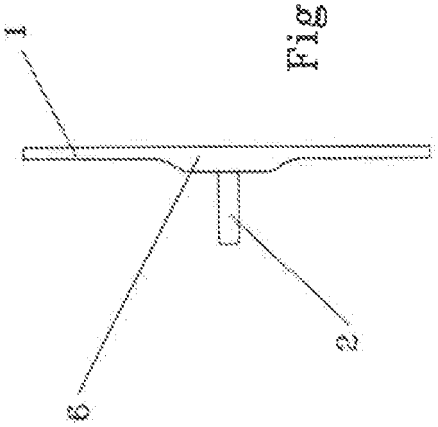


Fig. 8

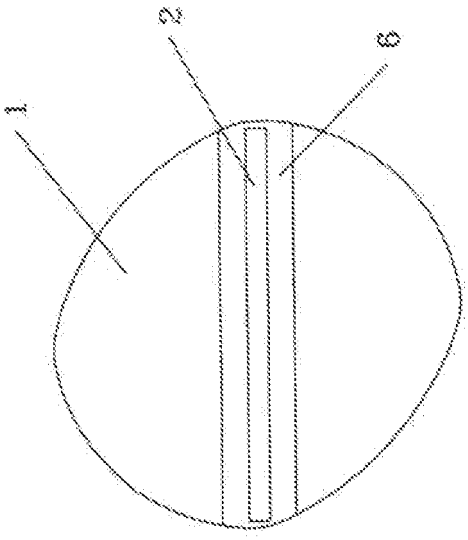
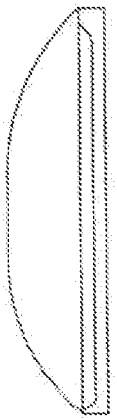


Fig. 5

Fig. 7



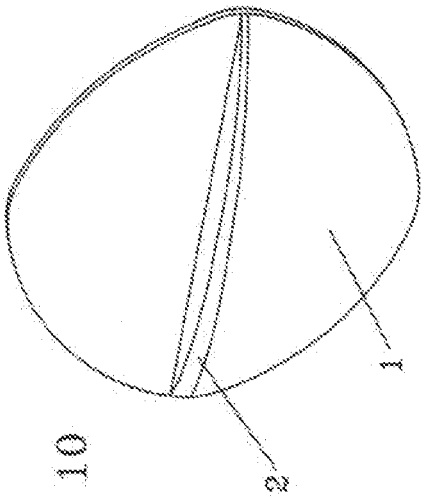


Fig. 10

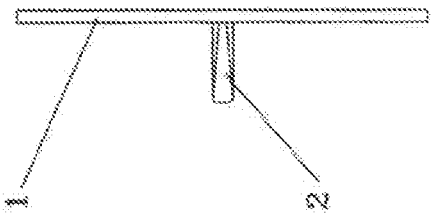


Fig. 12

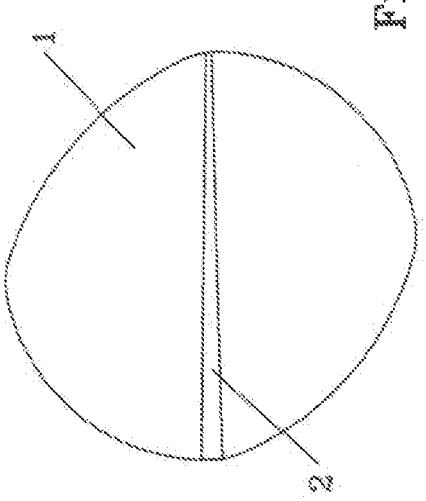


Fig. 9

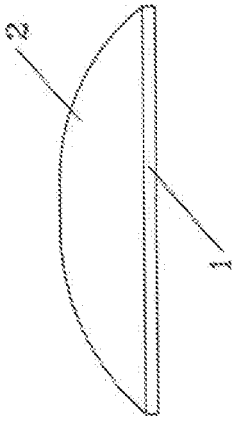


Fig. 11

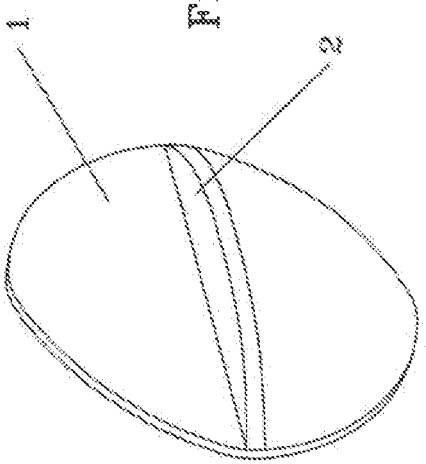


Fig. 14

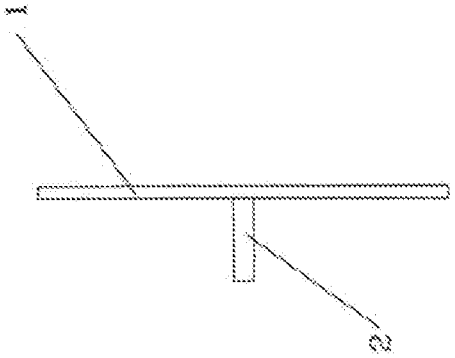


Fig. 16

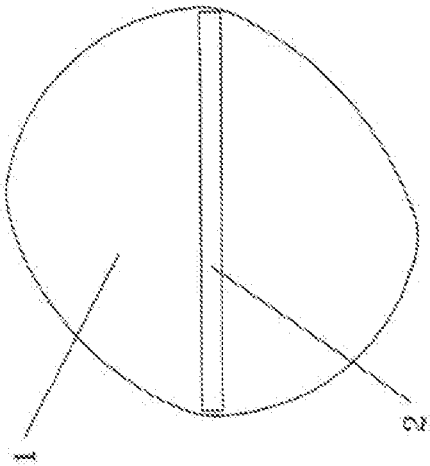


Fig. 13

Fig. 15

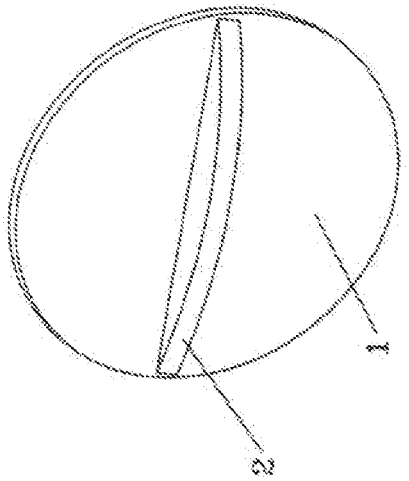


Fig. 18

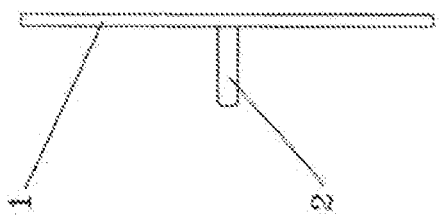


Fig. 20

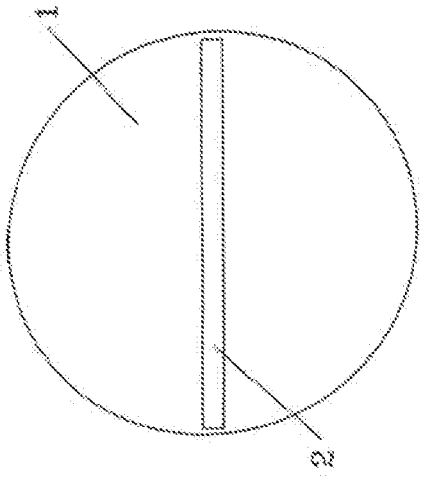


Fig. 17

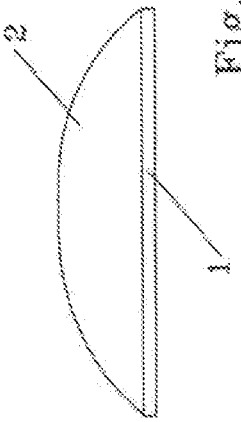


Fig. 19

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EUROPEAN SEARCH REPORT

Application Number
EP 09 15 7449

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 295 09 294 U1 (RIXECKER HERBERT DR DR [DE]) 24 August 1995 (1995-08-24) * page 3, line 1 - page 5, line 15; figure 1 * -----	1,5,6	INV. A63B23/03
A	US 6 012 919 A (CROSS III HENRY D [US] ET AL) 11 January 2000 (2000-01-11) * column 5, line 5 - column 10, line 41; figures 1-20 * -----	1-6	
A	DE 198 31 741 C1 (DREVE DENTAMID GMBH [DE]; BERNDSEN SABINE [DE]) 13 January 2000 (2000-01-13) * column 1, line 3 - column 3, line 32; figures 1-3 * -----	1-6	

TECHNICAL FIELDS SEARCHED (IPC)

A63B
A61H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	17 September 2009	Jekabsons, Armands

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 09 15 7449

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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17-09-2009

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 29509294 U1	24-08-1995	NONE	
US 6012919 A	11-01-2000	NONE	
DE 19831741 C1	13-01-2000	NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82