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E. H. BOHLMANN
ORTHODONTIC MULTIPURPOSE REPOSITIONER
AND ORAL HABIT CONDITIONER
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3,478,742

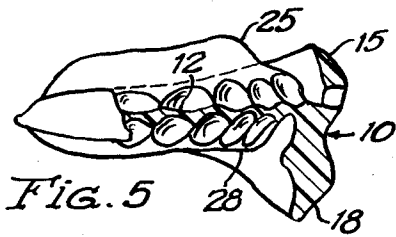


FIG. 5

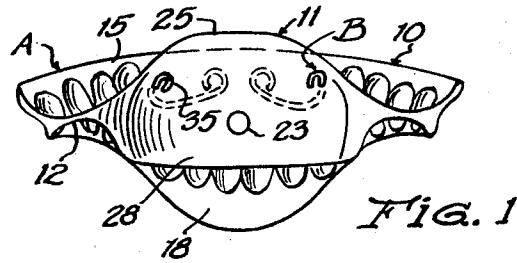


FIG. 1

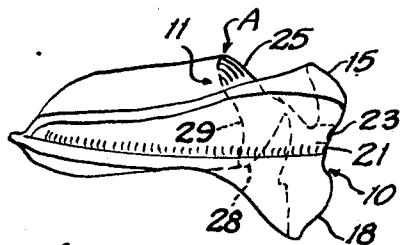


FIG. 6

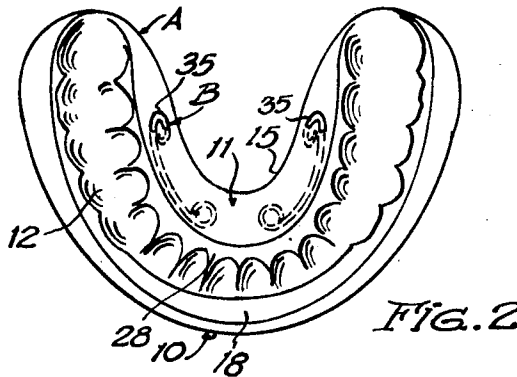


FIG. 2

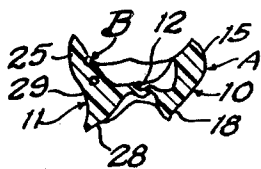


FIG. 7

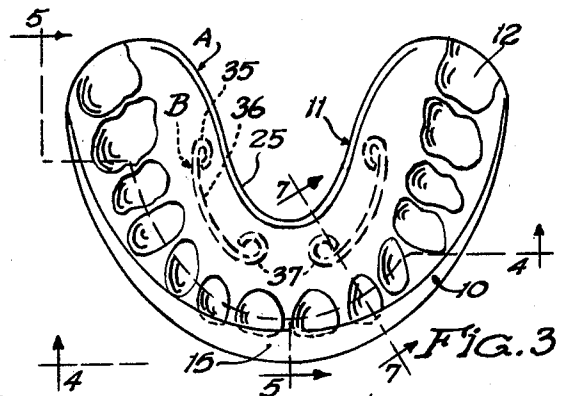


FIG. 3

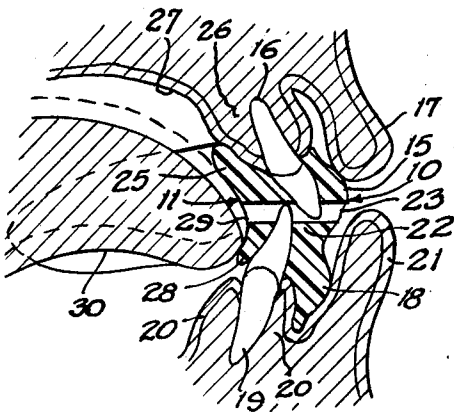


FIG. 8

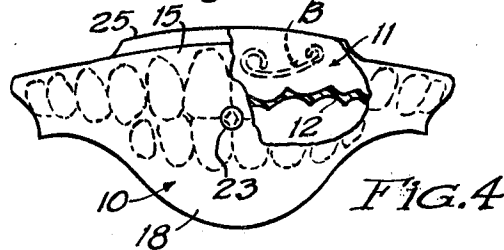


FIG. 4

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ORTHODONTIC MULTIPURPOSE REPOSITIONER AND ORAL HABIT CONDITIONER

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5 Claims

ABSTRACT OF THE DISCLOSURE

Disclosed herein is a molded plastic support, guard and barrier device which is fitted between the teeth of a patient for tooth, lip and tongue positioning, the device having sockets to receive the upper and lower teeth, extension parts for lip positioning, a barrier to prevent insertion of a thumb into the mouth and/or protrusion of the tongue between the teeth; and a tongue guide extending upwardly along the roof of the mouth and carrying electrodes to repel the tongue downwardly by galvanic action which stimulates reflex tongue movement.

The object of the invention is to provide a device which can be used to:

(1) Position and hold teeth in place after removal of orthodontic braces;

(2) Condition and position the tongue in a normal downwardly curved position;

(3) Prevent malocclusion or "open bite" (caused by insertion of the tongue between anterior teeth or laterally between posterior teeth);

(4) Condition tongue, by galvanic action, for normal forward motion inhibiting exaggerated forward tongue thrust, sometimes referred to as "reverse swallowing";

(5) Prevent or retard lower lip biting, utilizing a lip guard incorporated in the device;

(6) Promote a more forward and relaxed position of upper lip;

(7) Prevent inserting of thumb or finger between teeth;

(8) Prevent "bruxism" (gnashing, grinding, gritting of teeth).

In the appended drawing:

FIG. 1 is a rear elevational view of a device embodying my invention;

FIG. 2 is an inverted plan view of the same;

FIG. 3 is a top plan view of the same;

FIG. 4 is a front elevational view thereof with a portion broken away and shown in section on line 4—4 of FIG. 3;

FIG. 5 is a side elevational view with a portion thereof broken away and shown in section on line 5—5 of FIG. 3;

FIG. 6 is a side elevational view;

FIG. 7 is a sectional view on line 7—7 of FIG. 3; and

FIG. 8 is a sectional view of the same taken in the vertical medial longitudinal plane thereof and of a patient's mouth in which it is shown installed.

The exemplary form of the invention shown comprises a molded body A of plastic material and a pair of galvanic electrodes B mounted therein. The appliance is fabricated from an impression and stone model of the individual patient's teeth when such teeth have been rearranged (by conventional orthodontic techniques) to more ideal and normal positions for proper occlusion and articulation. Plastic body A thus fits the tooth and jaw contours of the patient to reposition the lips and tongue, said body, in plan, being of arcuate or crescent form corresponding to the curvature of the jaw arch of the patient to which it is fitted, the upper portion of the body conforming to the upper jaw curvature and the lower portion conforming to the lower jaw curvature.

In general, the molded body comprises a labial portion 10 adapted to be received between the labial sides of the patient's teeth and the lips; a lingual portion 11 adapted to lie between the tongue and the lingual surfaces of the teeth; and a thin web 12 bridging between and integrally joining the labial and lingual portions 10 and 11 and adapted to extend between the teeth when the jaws are substantially closed. The body portions 10 and 11 and the web 12 all extend arcuately around the jaw arch curve of the body A.

Labial portion 10 is composed of an upwardly-extending lip support 15 which is receivable between the patient's upper teeth 16 and his upper lip 17; and a downwardly projecting lower lip bumper 18 which is receivable between the labial sides of the lower teeth 19 and lower jaw 20, and the lower lip 21. The bumper 18 is formed as a downward extension of bridging web 12, and lip support 15 is joined to lower lip bumper 18 by an intermediate portion 22 which defines a series of pockets in which the upper teeth are received and fitted.

Extending through the body A on the medial fore-aft axis thereof, and passing through the centers of the labial and lingual portions 10 and 11, is an air hole 23 for draining saliva posteriorly from the patient's buccal vestibule into the mouth.

The lingual portion 11 of body A comprises a tongue guide 25 extending upwardly along the patient's upper jaw 26 and against the roof 27 of the mouth; and a skirt 28 extending downwardly along the lingual surfaces of the patient's lower teeth 19.

Lip support 15 is arched upwardly from its rear ends to its forward center at a low angle of inclination. Similarly, the lower lip bumper 18 is arched downwardly, but at an increasingly steep angle, its rear extremities being quite shallow and its front center being relatively deep. Thus the functions of these elements are accentuated at the front-center of the device where the problems of lip and tongue control are accentuated.

Tongue guide 25 is higher in its forward area, tapering downwardly only slightly from front center to points about two-thirds back, where it drops off steeply to the level of bridging web 12.

Tongue guide 25 and skirt 28 are joined by a concave rear surface 29 which is approximately tangent to the roof and lower jaw surfaces.

Surface 29 presents a barrier to the tongue 30, preventing it from being inserted forwardly between the anterior teeth or laterally between the posterior teeth. It guides the tip of the tongue in a normal range of movements between a position extending downwardly to a normal rest position opposite the lower teeth, and a higher position engaging the upper teeth approximately as shown in full lines and in phantom respectively in FIG. 8.

Lower lip bumper 18 constitutes a barrier which prevents lower lip biting.

Lip support 15 promotes a more forward and relaxed position of the upper lip and prevents the lip being drawn into the mouth.

Labial portion 10 prevents insertion of a thumb or finger into the mouth.

The body A as a whole encases the teeth and holds them in their proper positions (e.g., as released from orthodontic braces, preventing retrogression toward former misalignment). The body A is molded to closely fit the teeth and jaws of the patient in a normal, closed position of the jaws, and thus it is operative to hold the teeth snugly against any movement, either a gradual shifting between teeth or a momentary relative movement between the jaws (e.g., bruxism).

Since the impression for molding body A is taken with the jaws closed, the web 12 is quite thin, and in some areas it may be only a few thousandths of an inch in

thickness. Between these areas of maximum thinness, it has thicker portions where openings between teeth occur, and such thicker portions effectively reinforce the bridge between the portions 10 and 11.

Tongue guide 25 carries the galvanic electrodes B which are of dissimilar metals (e.g., silver and bronze) such as to generate a weak galvanic action when bridged by the moist surface of the tongue, the surface moisture becoming an electrolyte. The galvanic action produces an unpleasant taste at the area of contact between the tongue and the electrodes, resulting in a reflex action of the tongue in which it is repelled downwardly away from the electrodes. Thus the tongue is conditioned for normal forward motion, and the exaggerated forward motion or tongue thrust known as "reverse swallowing" in which the tongue is doubled, the central portion of the tongue being arched forwardly against the upper jaw, is inhibited.

The electrodes B are of wire, each formed to provide a loop 35 at its rear end, and a bar 36 extending forwardly in the tongue guide 25 generally parallel to the upper margin thereof. A second loop 37 may be formed on the forward end of each electrode. The loops 35 are exposed in the lingual surface of guide 25, so as to contact the sides of the tongue in the event the tongue is drawn upwardly in a "reverse swallowing" action. Thus this habit is inhibited. At their forward ends, and along bars 36, the electrodes may be completely enclosed in the body of guide 25, so that the tip of the tongue can follow guide 25 without galvanic response.

I claim:

1. In an oral habit conditioning and repositioning device, a body of molded plastic material fitted between the teeth of a patient and comprising:

a labial portion fitted to the labial faces of the teeth, said labial portion having an upper margin extending along the upper margins of the exposed areas of said labial faces of the upper teeth, and lower side margins extending along the lower margins of the exposed areas of said labial faces of the lower side teeth; and

including a lip bumper projecting downwardly below said lower side margins in its frontal area, below the exposed areas of said labial faces of the lower front teeth and behind the lower lip and effective to prevent lip biting;

said labial portion, in front vertical cross-section, including separate convex frontal curvatures in both the upper and lower portions thereof, and a reverse concave curvature bridging between said convex curvatures as the front surface of said web;

said body further including a lingual portion fitted to the lingual faces of the teeth and having a lower margin extending along the lower margins of the exposed areas of said lingual faces of the lower teeth;

a web bridging between and integrally joining said labial and lingual portions and extending between opposed faces of upper and lower teeth, said web including a forward portion disposed on a downward and forward incline;

said labial and lingual portions and said web all extending horizontally arcuately, conforming to the jaw arch of the patient, and cooperatively constituting

a barrier operative to prevent insertion of the tongue between the teeth and to prevent insertion of a thumb or finger into the mouth.

2. The device defined in claim 1, wherein said bumper is formed as a tangent continuation of said bridging web and wherein said labial portion further includes a lip support joined to said bumper by a looped web and extending upwardly between the upper teeth and upper lip to promote a forward, relaxed position of the upper lip.

3. The device defined in claim 1, wherein said lingual portion includes a tongue guide extending upwardly along the lingual surfaces of the upper teeth, including a skirt extending downwardly along the lingual faces of the lower teeth, and having a concavely curved lingual surface for guiding the tip of the tongue in a normal range of movements upwardly and downwardly.

4. In an oral habit conditioning and repositioning device, a body of molded plastic material fitted between the teeth of a patient and comprising:

a labial portion fitted to the labial faces of the teeth; said body further including a lingual portion fitted to the lingual faces of the teeth and having a lower margin extending along the lower margins of the exposed areas of said lingual faces of the lower teeth; a web bridging between and integrally joining said labial and lingual portions and extending between opposed faces of upper and lower teeth;

said labial and lingual portions and said web all extending arcuately, conforming to the jaw arch of the patient, and cooperatively constituting a barrier operative to prevent insertion of the tongue between the teeth and to prevent insertion of a thumb or finger into the mouth;

said lingual portion including a tongue guide in its frontal portion extending upwardly above the lingual surfaces of the upper teeth and above its side areas; a pair of electrodes of dissimilar metals such as to self-generate a galvanic action in the presence of mouth moisture, embedded in an intermediate area of said tongue guide and exposed in the lingual surface thereof for contact with the tongue, whereby to induce, by said galvanic action, a reflex movement of the tongue tip away from said electrodes.

5. The device defined in claim 4, wherein said electrodes are almost wholly embedded in said tongue guide, with their exposed surfaces substantially flush with surrounding lingual surface of said guide.

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ROBERT PESHOCK, Primary Examiner

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