United States Patent

[11] 3,536,069

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[54] **DOUBLE TRAY DENTAL APPARATUS**
6 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** **128/136,** 32/14
[51] **Int. Cl.** **A61f 5/56**
[50] **Field of Search** 32/14, 17; 128/136, 134, 260

[56] **References Cited**
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ABSTRACT: Apparatus is provided to encase both upper and lower dentition of a human mouth. A pair of trays are resiliently hinged together to apply forces operating in a divergent manner to aid in retention of the apparatus in the mouth during use which may be as a mouthguard and as a medication applicator.

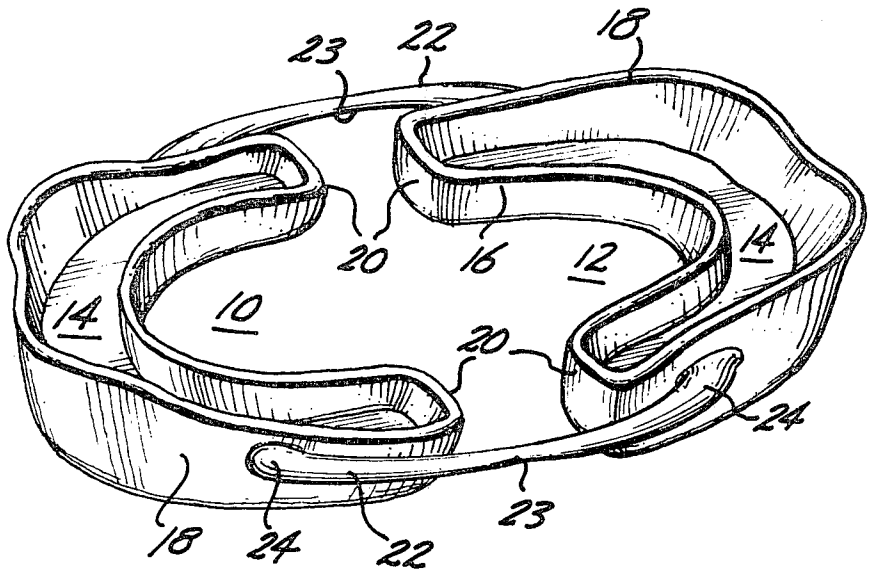


Fig. 1.

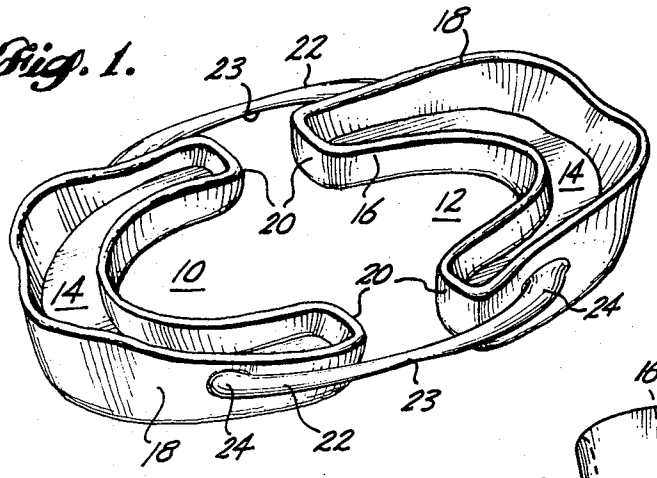


Fig. 2.

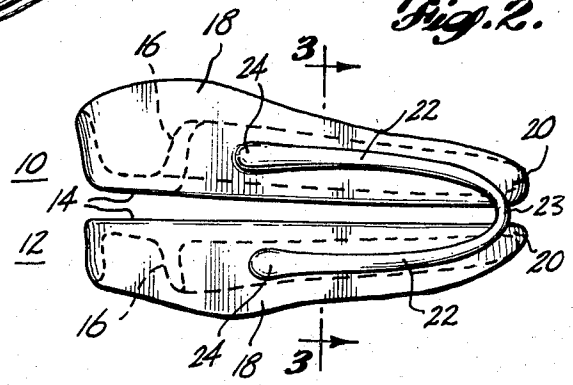


Fig. 3.

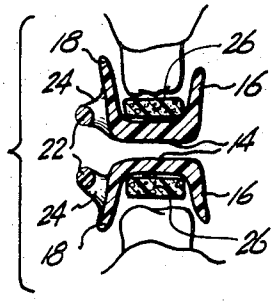
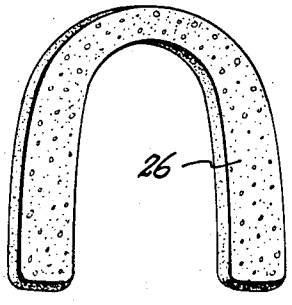


Fig. 4.



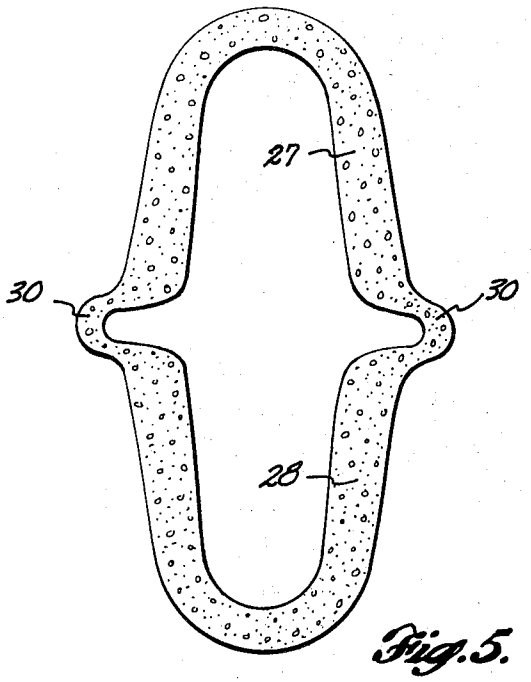


Fig. 5.

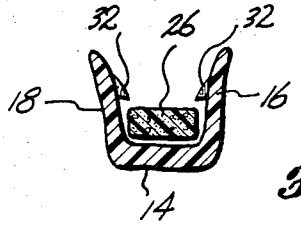


Fig. 6.

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DOUBLE TRAY DENTAL APPARATUS

SUMMARY OF THE INVENTION

A feature of this invention has been the provision of two U-shaped trays shaped to encase upper and lower dentition in the human mouth. Normally the two trays are disposed coplanar in mirrorlike relation. They are joined at the sides by flexible and resilient hinge means permitting the troughs to be disposed to embrace upper and lower dentition. The hinge means operate to insure seating and retention of the trays in place in the mouth. Spongelike material placed in the tray bottoms provide cushioning and also may serve as a carrier and applicator for oral medication.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the double-tray dental apparatus as it normally appears in coplanar mirrorlike disposition;

FIG. 2 is a side view of the apparatus disposed to embrace upper and lower dentition;

FIG. 3 is a cross section on line 3–3 of FIG. 2;

FIG. 4 is a perspective view of a resilient, spongelike single tray insert;

FIG. 5 is a plan view of a double-tray insert; and

FIG. 6 is a cross section of a tray showing insert retention means.

DETAILED DESCRIPTION

Two trays **10** and **12** are arranged in mirrorlike relation to each other as shown in FIG. 1 in which the trays are shown in their normal, coplanar disposition. Each tray is U-shaped and comprises a bottom **14**, the inner or lingual wall **16**, the outer or buccal wall **18** and rear or end walls **20**. In the preferred arrangement of trays **10** and **12** the open ends of their U-shapes face each other, as shown.

Hinge members **22,22** span between the trays, being anchored at **24** at their ends to like buccal walls **18** of the two trays, an appreciable distance forward of the end walls **20**.

Desirably the trays **10,12** and hinge members are produced by plastic molding techniques from pliant materials of which polyvinyl chloride, polyethylene and similar plastic materials are suitable. For the sake of comfort to the user, the trays should not be hard and inflexible.

The channel cavity in each tray is configured and sized and shaped to loosely fit either the upper or lower dentition of a user when the apparatus is folded as in FIG. 2. In such situation the flexible hinge members **22** are bent or bowed so that their natural resilience functions to exert divergent forces tending to press and hold the trays into contact with the user's teeth.

The elongate form of hinge members **22** permits the trays to conform to the user's jaws with respect to anterior-posterior as well as lateral malrelationship. In other words, a tray may shift forward and rearward as well as laterally with respect to the other tray to obtain the desired conformance.

While this apparatus may be used as a mouthguard by athletes engaging in body contact sports, it has another valuable use in the application of medicinal compounds. An insert **26** formed of spongelike resilient material may be disposed in the cavity of either or both trays. A particular such use is concerned with applying fluoride compounds which are available in liquid and gel form. Such compound may be introduced to the insert or inserts in place in the apparatus. When the two trays are placed in the mouth, the user bites down and compresses the insert material causing the medication to be forced into all interproximal spaces and around and about the teeth. Relief of such pressure causes a sucking back. The result is a thorough and complete bathing treatment of the user's dentition.

In FIG. 5 the double insert comprising portions **27,28** are connected by lateral extending bridges **30,30** which also permit lateral and anterior-posterior adjusting movements to accommodate malocclusion.

The bridge members **22** may be medially thinned as at **23** to some degree less than their cross section adjacent their anchored ends to facilitate the lateral and anterior-posterior shifting required where malocclusion is encountered.

In FIG. 6 instanding horns **32** are shown on the inner surfaces of the walls **16,18** to overlie the insert **26** to loosely hold it in the channel as the device is being readied or placed in the mouth.

The apparatus here disclosed is the preferred form. It will be apparent to those skilled in the art that alternatives may be employed to accomplish the same results. Also materials may be substituted to obtain equivalent structure and performance.

I claim:

1. Dental apparatus, comprising:

a pair of upper and lower dentition encasing troughs;

a hairpin-shaped resilient bridge member disposed adjacent the buccal exteriors of said paired troughs at each side;

said resilient members each having a U-end between a pair of outwardly biased legs; and

said legs being joined to said trough sides forward of the posterior portions thereof.

2. Apparatus according to claim **1** in which the U-ends of said resilient members are disposed adjacent the posterior portions of said pair troughs and said legs are attached forward thereof.

3. Apparatus according to claim **1** in which the troughs and resilient members are formed of pliant material and said resilient members are integrally joined thereto.

4. Apparatus according to claim **3** in which said troughs are closed at their posterior portions.

5. Apparatus according to claim **1** in which porous, spongelike inserts are disposed in said troughs.

6. Apparatus according to claim **5** in which said troughs include instanding means upon their inner surfaces to partially overlie and retain said inserts in said troughs.