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DENTAL APPLICATION OF SPECIAL POLYMER OF TETRAFLUORETHYLENE
TUBING FOR MASKING AND CUSHIONING METAL CLASPS
AND ORTHODONTIC WIRES
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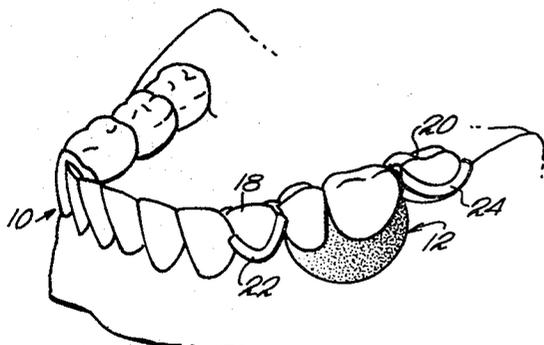


Fig. 1

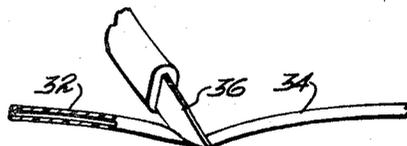


Fig. 2

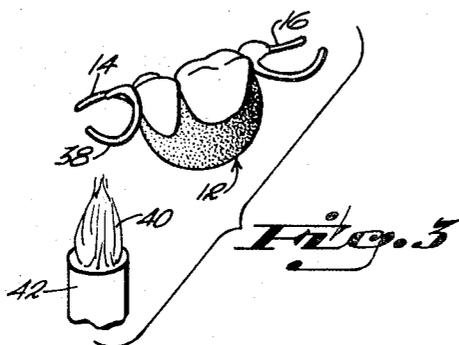


Fig. 3

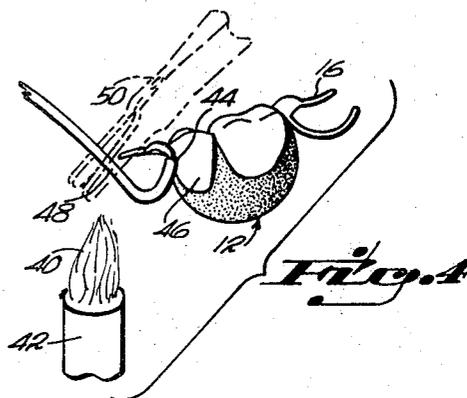


Fig. 4



Fig. 5

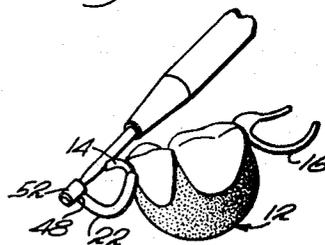


Fig. 6

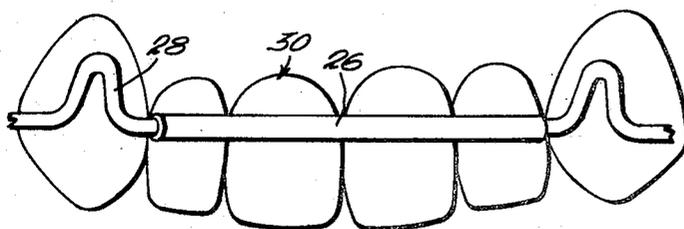


Fig. 7

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1

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7 Claims

ABSTRACT OF THE DISCLOSURE

A plastic sheath is applied to various types of clasps and wires for removable partial dentures and orthodontic appliances, said sheath being of a specific color that matches the teeth for the primary purpose of aesthetics by masking the metal and a further purpose of preventing galvanic shock and providing a cushion between the clasps or wires and the teeth. The plastic sheath is applied in the form of pre-sized tubing which is slid over the clasps and wires, after they have been pre-heated to facilitate application and provide a tight fit of said tubing thereon. The sheathing is applied after the removable partial denture is fully constructed and forms no part of the vital construction thereof.

The present invention pertains to a plastic sheath or covering for the metal clasps and wires of various removable partial dentures and removable orthodontic appliances and is provided in the form of Teflon tubing, which is, uniformly color pigmented to match various shades of teeth associated therewith in each application. Plastic tubing of other types have been used previously to form an integral part of the vital construction and exert force of orthodontic appliances, however, as used in the present invention, the pre-sized tubing is applied to the various types of clasps of partial dentures and after the removable partials are fully constructed and is intended to improve aesthetics by masking the metal clasp, and to protect the teeth against galvanic shock and wear which is caused by the direct contact of the metal against the teeth. The tubing is applied to labial arch wires of orthodontic appliances just before the labial wire is joined to the plastic part of the appliance, during final assembly.

The principal object of the present invention is, therefore, to provide a plastic sheath for clasp arms of removable partial dentures and wires of various orthodontic appliances to improve aesthetics by color keying said sheath to the color of the teeth of the wearer.

A further object of the present invention is to provide the teeth against galvanic shock and wear by means of the insulating effect of the plastic sheath.

A still further object of the present invention is to provide a very inexpensive means to greatly improve the aesthetics for a person who must wear removable dental and orthodontic appliances which normally include visibly exposed metal clasps and wires.

Various other objects and advantages of the present invention will become more fully apparent from the following detailed description when read in connection with the various views of the drawings in which:

FIG. 1 is a perspective view of the lower teeth of the mouth illustrating plastic sheaths on the metal clasps of a removable bridge in accordance with the present invention.

FIG. 2 is a perspective view of a length of the Teflon tubing illustrating the manner in which a short length of said tubing is cut therefrom.

FIG. 3 is a perspective view illustrating the manner in

2

which the metal clasps of a removable bridge are heated to expedite the application of the plastic tubing.

FIG. 4 is a perspective view similar to FIG. 3 illustrating the plastic tubing on the metal clasp with the tubing being heated just beyond the end of said clasp and being squeezed together to obtain a seal.

FIG. 5 is a perspective view similar to FIG. 4 illustrating the tubing cut at a point where the tubing is sealed beyond the end of the clasp.

FIG. 6 is a perspective view similar to FIG. 5 illustrating the final step of trimming and rounding off the squeezed end of the tubing.

FIG. 7 is an elevational view illustrating the finished application of the plastic tubing sheath to the labial arch wire of an orthodontic appliance, said tubing being adapted just before the wire is connected to the plastic part of the appliance.

Referring to the drawings in which like reference numerals designate like or similar parts throughout the various views, the numeral 10 generally indicates a set of lower teeth including a two-tooth removable bridge 12 which is held in place by conventional metal clasps 14 and 16 in engagement with the natural adjacent teeth on either side 18 and 20. As indicated at 22 and 24 the clasps 14 and 16 are sheathed in specially colored plastic in accordance with the present invention for an aesthetic purpose and to prevent galvanic shock and wear. It is to be noted that the plastic coating is applied to the clasps 14 and 16 in the form of pre-sized Teflon tubing to hide or mask the metal and forms no structural part of the removable bridge but is applied thereto after the bridge 12 has been fully constructed.

The plastic tubing will be carefully and accurately produced in special shadings, lines and color tones which will be keyed to the shades, lines and color tones of the natural teeth of persons utilizing removable partial dentures or orthodontic appliances incorporating the sheathed clasps or wires of the present invention.

Referring to FIG. 7, which illustrates generally the application of a plastic sheath 26 to an orthodontic wire during construction before the wire is joined to the plastic portion of the orthodontic appliance 28, in spanning relation to a set of upper front teeth 30. It is contemplated that the aesthetics of the present invention will be of great value in the application of many types of removable dental and orthodontic appliances on which metal clasp, wires or the like would normally be visible. Additionally, the plastic sheathing provides a cushioning and insulating effect to protect the teeth from wear, pressure, and galvanic action.

With reference to FIGS. 2 through 6, the method of applying the plastic tubing to a metal clasp of a removable bridge is illustrated, however, the steps as illustrated are equally applicable to various other dental and orthodontic appliances.

FIG. 2 illustrates the cutting of a desired length 32 of plastic tubing from a long length 34 thereof. As illustrated, the cut is preferably on a bias and is accomplished by using a sharp instrument or blade, 36. In the second step, as shown in FIG. 3, the clasp 38 selected for covering is gently heated over a low open flame 40 of a Bunsen burner 42. In FIG. 4, the cut end 44 of tubing is slid over the heated clasp into snug engagement until it abuts the artificial tooth 46. As shown in FIG. 4, the plastic tubing is then heated just beyond the end of the clasp as at 48 over the open flame 40 and then pressed or squeezed together firmly using flat posed pliers 50 to obtain a seal over the end of the clasp. In the next operation as shown in FIG. 5, the tubing is cut beyond the clasp at a point where the tubing is sealed and the squeezed end of the tubing is trimmed and smoothed by the use of a rotating fine stone 52.

3

The above steps are repeated for each clasp that it is desired to sheath with the Teflon. In the application of a plastic sheathing to other types of removable dental or orthodontic appliances slight variations in the method as described may be made. For instance, a square cut may be more desirable instead of the bias cut, FIG. 7, when an orthodontic wire 28 is being sheathed, and the step illustrated in FIG. 4 in which the plastic tubing is heated and squeezed together to obtain a seal is obviously unnecessary and the plastic tubing is simply cut to a desired length and any sharp edges formed by the cutting may be removed in the same manner as illustrated in FIG. 6.

Pre-sized Teflon tubing is used to provide a tight seal between the clasps and wires and the inner wall of the tubing.

Teflon is the only acceptable plastic tubing desirable, of those experimented with, because of its resistance to mouth fluids, its toughness, its non-toxic properties, its ease in manipulation, its ability to withstand temperatures, its stability, and its ability to be extruded into tubular form.

Teflon is a fluorocarbon resin, first synthesized by Du Pont Laboratories in 1938. It was originally produced as a polymer of tetrafluorethylene (fluorinated ethylene propylene) "TFE" previously approved by the Federal Drug Administration, Oct. 8, 1962 as published in the Federal Register Sec. 409(c)(1) 72 Stat. 1786 21 U.S.C. 348(c)(1).

I claim:

1. In a dental appliance, a combination of a plastic tubing and visibly exposed metal clasp arms of various removable partial dentures and labial arch wires of orthodontic appliances comprising a length of plastic tubing having a specific inner and outer diameter sized to easily slide over the metal clasp arms to form a tight seal between said metal clasp arms and said plastic tubing, said plastic tubing being specifically color keyed to the natural various colors of the teeth of the wearer, to improve aesthetics, yet forming no integral part of the vital structure of the device.

2. A dental appliance as set forth in claim 1 in which said plastic tubing is Teflon.

4

3. A dental appliance as set forth in claim 2 in which said metal clasp arms engage natural teeth, said plastic tubing providing an insulation between said metal clasp and the natural teeth of the wearer when the appliance is correctly positioned in the wearer's mouth, said insulation aesthetically masking the outer metal clasp, and providing protection from galvanic shock and wear, where metal fillings are contacted.

4. A plastic tubing as set forth in claim 2 in which said length of plastic tubing has the leading end cut on a bias, said bias cut end being slid over said clasp, in a manner to ease adaptation and provide a snug engagement with said removable dental bridge at the point of attachment to said clasp.

5. A dental appliance as set forth in claim 4 in which the trailing end of said plastic tubing is cut and trimmed just beyond the end of said clasp arms to provide an aesthetic appearing and comfortable appliance for the wearer.

6. A plastic tubing as set forth in claim 2 in which said metal portion comprises an orthodontic labial arch wire.

7. The method of applying a plastic sheath to exposed metal portions of various types of dental and orthodontic appliances comprising:

- (A) cutting a predetermined length of pre-sized Teflon tubing from a long length thereof,
- (B) sliding the plastic tubing over said metal clasp arm, and,
- (C) trimming and smoothing the exposed sharp edges from the trailing end of said plastic tubing.

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