

[54] **WEDGE FOR DENTAL MATRIX BANDS**

[76] Inventor: **Wilmer B. Eames**, 3898 Sable Dr.,
Stone Mountain, Ga. 30083

[22] Filed: **June 18, 1973**

[21] Appl. No.: **370,778**

[52] U.S. Cl. **32/63**

[51] Int. Cl. **A61g 5/12**

[58] Field of Search **32/64, 63**

[56] **References Cited**

UNITED STATES PATENTS

1,806,718	5/1931	Spanier.....	32/64
2,150,005	3/1939	McNinch.....	32/64
2,782,503	2/1957	Thompson.....	32/63
2,891,313	6/1959	Crowley.....	32/63
3,193,094	7/1965	Schulsted.....	32/64

Primary Examiner—Robert Peshock

Attorney, Agent, or Firm—McDougall, Hersh & Scott

[57]

ABSTRACT

A wedge structure adapted to be used in association with dental matrix bands of the type utilized when inserting filling material in tooth cavities. The wedge structure is adapted to be inserted between a tooth carrying a band and an adjacent tooth whereby the wedge will serve to tightly hold the band against the tooth. The wedge preferably defines a triangular cross section and a serrated fin appendage on the stem whereby the wedge is particularly suited for insertion at the base of adjacent teeth in the area where undesirable movement of filling material is most prevalent.

1 Claim, 7 Drawing Figures

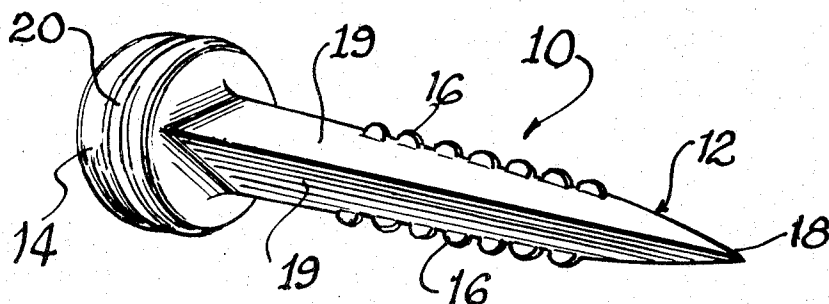


FIG. 1

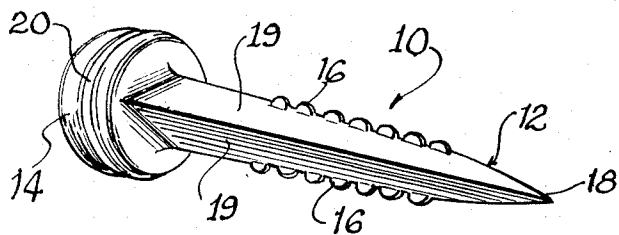


FIG. 2

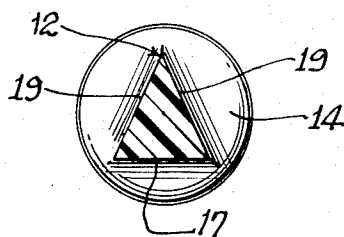


FIG. 4

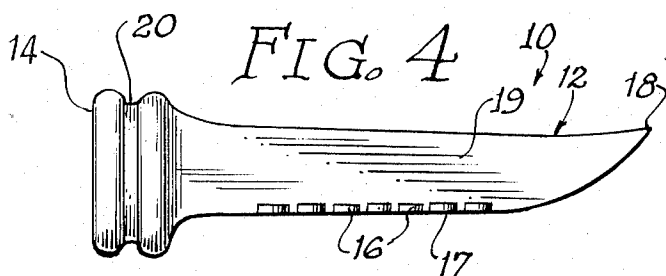


FIG. 3

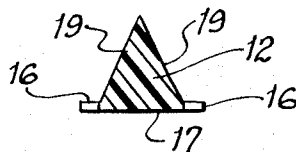


FIG. 5

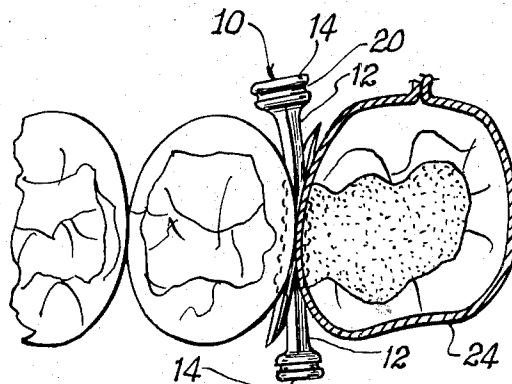
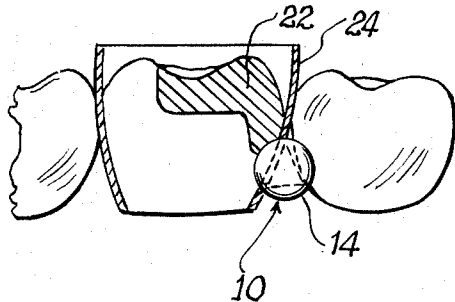
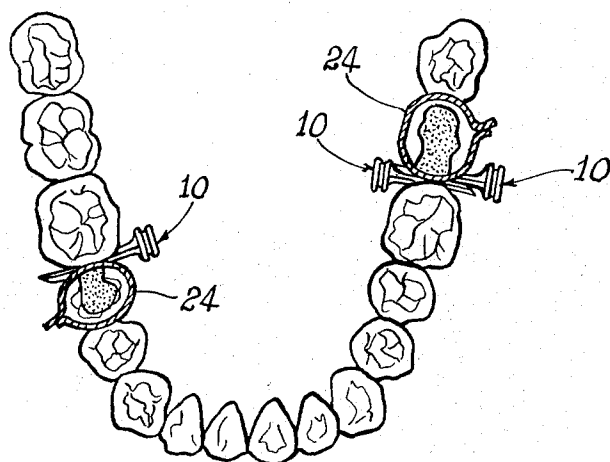


FIG. 6

FIG. 7



WEDGE FOR DENTAL MATRIX BANDS

This invention relates to the filling of teeth and, in particular, the invention concerns means for securely positioning a dental matrix band around a tooth during the insertion of filling material into a tooth cavity.

Dental matrix bands, for example, of the type disclosed in copending application Ser. No. 334,004, filed Feb. 20, 1973 and entitled "Pre-Formed Dental Matrix Band" are widely used during the filling of teeth. These bands are typically formed from a flexible metal strip, for example a stainless steel strip having reasonably high tensile strength and good ductility. By utilizing a suitable retainer, the bands can be secured relative to a tooth with the band surfaces conforming to the shape of the tooth. Under these conditions, a cavity which has been prepared by the dentist can be filled, and the filling material is prevented by the band from moving outwardly beyond the cavity area.

Problems develop with prior matrix bands from the standpoint of achieving proper contour of the tooth surfaces after the cavity has been filled. Thus, it is desirable to achieve a natural shape for the tooth with the filling in place, and the band position during filling is not always suitable for achieving this purpose. This leads to fillings of inferior quality which may require additional work on the part of the dentist, and discomfort for the patient.

Contact of excess filling material with the gingiva can lead to problems for the patient, and the matrix bands are preferably designed so that they will prevent passage of the filling material beyond the gingival border. With prior band designs, this cannot be readily achieved and, therefore, additional problems result for the dentist and patient.

In the aforementioned copending application, there is described a dental matrix band structure which is particularly suitable for overcoming problems of the type referred to. The matrix band is specifically designed so that a desirable shape for a tooth filling can be achieved, and so that any spreading of filling material beyond the desired area can be minimized.

It is a general object of this invention to provide further improvements in the use of dental matrix bands, particularly from the standpoint of securing the bands in position during a cavity-filling operation.

It is a still further object of this invention to provide a wedge structure for use in association with a dental matrix band construction, the wedge structure being uniquely suitable for holding a band in place during use.

These and other objects of this invention will appear hereinafter and for purposes of illustration but not of limitation, specific embodiments of the invention are shown in the accompanying drawings in which:

FIG. 1 is a perspective view of a wedge structure characterized by the features of the invention;

FIG. 2 is a cross-sectional view of the wedge structure taken adjacent the head portion thereof;

FIG. 3 is a cross-sectional view of the wedge structure taken closer to the tip portion thereof;

FIG. 4 is a side elevational view of the wedge structure;

FIG. 5 is a fragmentary side elevational view illustrating the wedge structure in association with a dental matrix band located around a tooth;

FIG. 6 is a plan view, partly in section, illustrating a pair of wedge structures positioned between adjacent teeth for holding a matrix band in position relative to one tooth; and,

FIG. 7 is a plan view illustrating association of wedge structures with two separate teeth.

This invention is generally concerned with the application of dental matrix bands and with the securing of the bands in place during insertion of filling material in a cavity of the tooth which the band surrounds. The specific improvement of the invention involves a wedge structure which is adapted to be inserted between the tooth carrying the band and an adjacent tooth whereby the band is held tightly in position against the tooth. The wedge is designed so that it will conveniently fit in the area of the tooth base whereby the wedge is particularly effective for purposes of preventing any passage of filling material beyond the gingival border.

The wedge structure contemplated by this invention is preferably formed of a soft plastic material so that the wedge will be deformed when pressed between teeth thereby insuring a good hold of the wedge relative to the teeth. Furthermore, serrations are preferably located on a stem portion defined by the wedge to also increase the holding capability. An enlarged head is provided for the wedge to facilitate insertion of the wedge between teeth. In order to accommodate the wedge to the space between teeth, it has been found that a triangular cross section for the wedge stem will provide the most efficient insertion capability.

A preferred form of the invention is illustrated in the accompanying drawings wherein the particular wedge structure is best shown in FIGS. 1 through 4. Specifically, the wedge 10 illustrated includes a tapered stem portion 12 and an enlarged head portion 14. As best shown in FIGS. 2 and 3, the stem portion 12 is of triangular cross section.

Serrations 16 are defined by fins protruding from the stem at least in the central area thereof. As illustrated, these fins extend outwardly on both sides of a base wall 17 of the triangular stem. The pointed end 18 of the stem is provided to facilitate entry of the wedge between teeth. The serrated fins 16 then serve to hold the wedge in place between the teeth after insertion and during a filling operation.

The enlarged end 14 defines an annular recess 20 which facilitates placement and removal of the wedge. That is, the head can be gripped more easily with the fingers or with small forceps by providing this recess. The large surface area of the head also facilitates insertion of the wedge between teeth, and this insertion can be accomplished by pressing inwardly on the head with a finger or through the use of an appropriate tool.

FIGS. 5 through 7 illustrate association of the wedges with a band located in surrounding relationship relative to a tooth. In each instance, the tooth defines a cavity having filling material 22 located within the cavity. In accordance with dental practice, this filling material is located in the cavity after a matrix band has been located in position. As explained in the aforementioned application, any appropriate tool may be utilized for gripping the opposite ends of a band once the band is located in surrounding relationship relative to a tooth.

The wedges 10 are shown inserted in the area of base portions of adjacent teeth. In particular, the wedges are introduced so that one side wall 19 of the triangular

3

surface of a wedge presses against a matrix band 24 while the opposite surface side wall 19 presses against the adjacent tooth. The base 17 of the wedge then rests on the gingival tissues and for this reason, the triangular configuration of the wedge represents an important aspect of its structure. Thus, this configuration provides an ideal arrangement for tightly holding the band material against the tooth being filled so that any migration of filling material toward the gingival border is substantially eliminated. The fins 16 hold the wedge securely in position by pressing against the band and tooth.

As illustrated in FIGS. 6 and 7, a pair of wedges may be associated with one band by inserting the wedges in opposite directions. This arrangement is particularly useful where the filling material might tend to migrate on both sides of a tooth. The wedge may be formed from any suitable plastic material, preferably any non-toxic thermoplastic resin such as a polyvinyl chloride resin. By utilizing a soft plastic material, a more secure fit of a wedge relative to a band is achieved. Furthermore, the plastic wedges can be produced on a highly efficient basis so that the inexpensive wedges can be disposed of after each use thereby providing an ideal arrangement from a sanitation standpoint.

It will be understood that various changes and modifications may be made in the above described construction which provide the characteristics of the invention

4

without departing from the spirit thereof particularly as defined in the following claims.

That which is claimed is:

1. In the application of a dental matrix band for use in the filling of a tooth wherein the band is positioned around the tooth during insertion of filling material, the improvement in means for holding the band tightly in position around the tooth comprising at least one wedge inserted between said tooth and an adjacent tooth, said wedge being formed of a soft plastic material whereby the wedge is deformed when pressed between teeth, said wedge comprising an elongated tapered stem portion, said stem portion having a triangular cross section including a base spanning the gap between the teeth and positioned in contact with the gingival, said base including outwardly extending serrated fins formed along both side edges thereof assisting in holding the wedge in position, the top edge of the stem comprising a substantially straight edge and wherein the base tapers sharply toward the top edge adjacent the end of the wedge, and an enlarged head portion for facilitating insertion of the wedge between the teeth, the wedge thereby holding the band tightly around the tooth, said head portion including an annular recess defined at approximately the midsection of the head portion for facilitating gripping of the head.

* * * * *

30

35

40

45

50

55

60

65