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H. FREEDMAN

1,921,613

DENTAL BRIDGE

Filed April 28, 1930

Fig. 1.

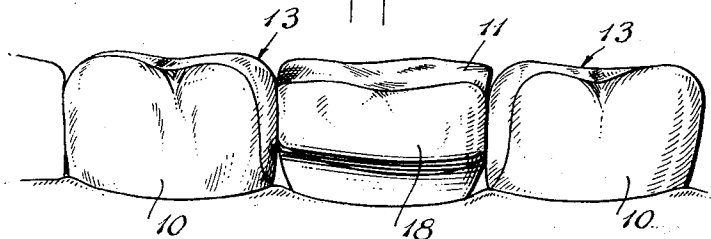


Fig. 2.

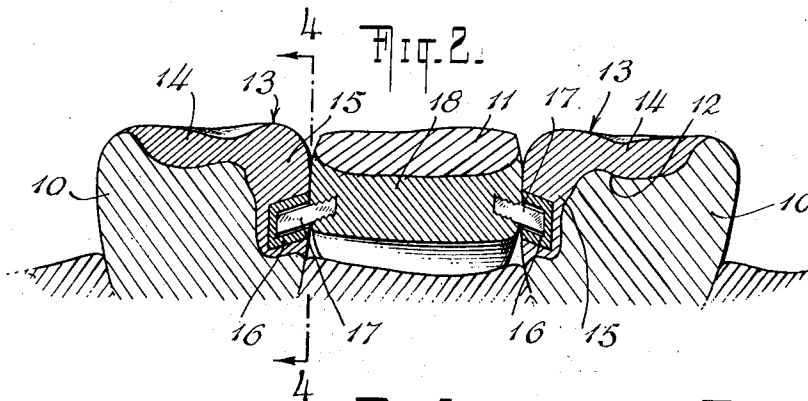


Fig. 3.

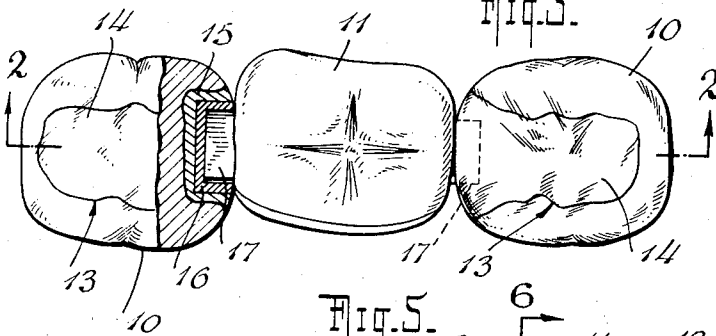


Fig. 4.

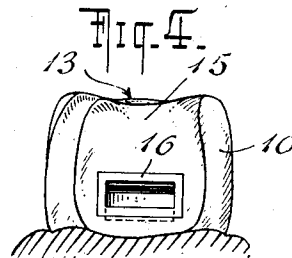


Fig. 5.

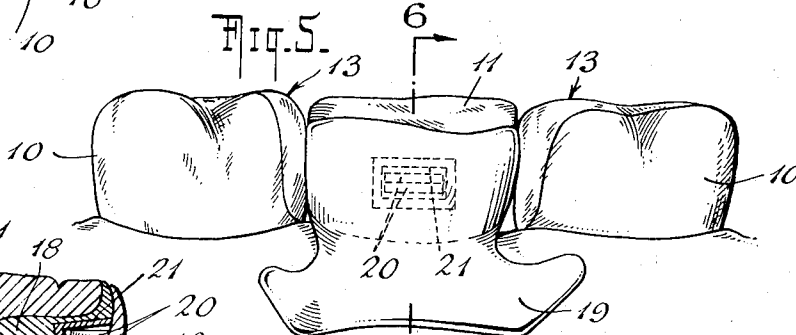
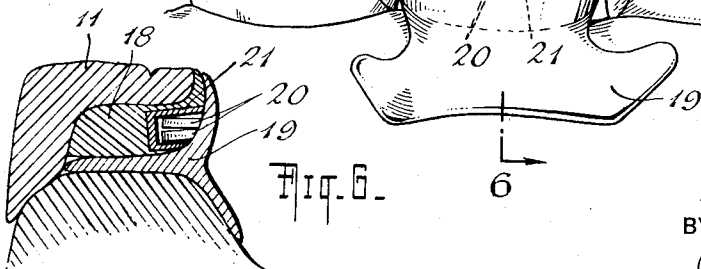


Fig. 6.



INVENTOR  
HYMAN FREEDMAN  
BY *Richard & Co.*  
ATTORNEYS

## UNITED STATES PATENT OFFICE

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## DENTAL BRIDGE

Hyman Freedman, Brooklyn, N. Y.

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2 Claims. (Cl. 32—12)

This invention relates to improvements in dental bridge work and has particular reference to a permanent bridge construction.

It is well known that in the process of masticating food the bite is such that when the upper and lower sets of teeth are brought together the strain thereon actually creates a minute rocking movement of the teeth laterally relative to the cheek, that is, toward and away from the tongue. The application of greatest stress of the bite is on the biting edge or crown of the tooth which is at the point farthest removed from the cingulum forming the foundation thereof. When a natural tooth is not employed to support a next adjacent artificial tooth, the former is capable, under ordinary circumstances, of withstanding the strain applied thereto without becoming dislodged. However, when the natural tooth is utilized as a support for an artificial one, as is customary in bridge work, it is desirable to minimize the effect of the additional stress upon said natural tooth created by the pressure against the one which it is supporting.

In accordance with the present invention, it is proposed to so mount an artificial tooth that the pressure exerted thereon during mastication is transmitted to the natural tooth supporting the same at a point as near as possible to the foundation of the latter, that is in the region of the invested part or cingulum of the tooth where the supporting structure is better able to withstand the stress applied thereto than at the crown of said tooth.

There is further contemplated a bridge construction which, in addition to concentrating the strain on the supporting tooth in the region of the strongest part thereof, will also prevent what is known as "drifting" of the natural teeth used to support the bridge work.

It is also proposed to provide a permanent bridge with a supporting saddle for the artificial teeth thereof which may be removed when it is desired to cleanse said teeth and which is effectively held in operative position in a novel manner.

The inventive idea involved is capable of receiving a variety of mechanical expressions, some of which, for purposes of illustration, are shown in the accompanying drawing, wherein:—

Fig. 1 is an enlarged elevation taken from the inside of the mouth, of a bridge constructed in accordance with the invention.

Fig. 2 is a longitudinal section on the line 2—2 of Fig. 3.

Fig. 3 is a plan view, partly broken away and shown in section.

Fig. 4 is a section on the line 4—4 of Fig. 2.

Fig. 5 is a view similar to Fig. 1 showing a removable saddle employed in conjunction with the bridge, and

Fig. 6 is a section on the line 6—6 of Fig. 5.

The present invention is designed primarily as a permanent bridge construction but the principle involved can be applied to removable bridges without departing from the spirit or scope of the invention as expressed in the appended claims.

Preparatory to mounting the bridge in position, the two natural teeth 10 on opposite sides of the opening in which the artificial tooth or teeth 11 are to be positioned, are each drilled to provide a cavity 12, adapted to receive, and have permanently affixed therein by cement, an inlay 13 made of suitable material and formed in the customary manner, as from wax patterns. In conformity with the shape of each cavity 12, the associated inlay 13 is provided with crown and side portions 14 and 15, respectively, and in the latter portion of each inlay and adjacent the inner end thereof, that is nearest the gum, there is inset a box 16 made of platinum or other highly fusible metal or alloy. This box 16 is of a depth closely approximating the thickness of the portion 15 of the inlay so that only a small strip of the latter will appear between the wall of the cavity 12 and the bottom of said box. The purpose of thus mounting the box 16, which forms a portion of the bridge support, is to position the same as near as possible to the strongest part of the natural tooth, that is the foundation thereof, so that the additional strain to which said tooth is subjected can be more readily withstood than if the strain were applied to the outer end of the tooth. The bottom of the recess formed by the box is substantially parallel to the vertical wall of the cavity 12 and from said bottom the walls of said recess extend obliquely outward in the direction of the biting surface of the tooth, there being preferably an inclination of approximately 15° to a horizontal line running through the tooth.

The supporting means for the artificial tooth 11 is shown as comprising a detent or stud 17 projecting from each side thereof and preferably made of the same material as the boxes 16. Each stud has its inner end roughened as indicated, and securely embedded in the inlay 18 of the artificial tooth and the projecting

portion of said stud is of substantially the same dimensions as the recess in the box into which it extends so as to provide a snug fit which will, at the same time, permit of the desired slight movement of the artificial tooth during mastication. In order to fit into the box 16, the stud extends diagonally from the tooth 11 at an inclination of about 15° to the horizontal and has its outer end beveled so that it will engage flush against the vertical bottom of the recess in its box. By supporting the tooth 11, or a number of such teeth, in this manner a two-fold advantage is obtained. Firstly, the strain upon the natural tooth is concentrated toward the foundation thereof where it can better withstand the pressure applied to the artificial tooth, and secondly, the inclination of the studs 17 and their engagement with the similarly inclined walls of the boxes 16 prevent any possible "drifting" of the natural teeth by reason of the pressure thereagainst.

The casting 18 surrounding the artificial tooth has its under surface sloped, as best indicated in Fig. 6, so that only the front portion of the tooth engages the gum, this being known as a sanitary slope and enabling the passage of a tooth brush for cleansing purposes. The slope of said casting provides a space between it and the gum and when more than one artificial tooth is employed in a bridge, it may be desirable to support said teeth by means of a saddle inserted into said space. Such a construction is shown in Figs. 5 and 6, wherein, for purposes of simplicity in illustration, only one artificial tooth is shown. It will be understood, however, that the saddle 19 employed is made sufficiently wide to extend beneath and support all of the artificial teeth in any bridge.

In the present construction the saddle is removable while the bridge work proper is permanent and in order to detachably mount said saddle the same is provided with the resilient projecting prongs 20 which are adapted to be engaged in a box 21, similar to the box 16, and recessed within the casting 18. Said prongs frictionally engage opposed walls of said box 21 and thus assist in retaining the saddle in proper position relative to the teeth 11.

What is claimed is:—

1. A movable permanent dental bridge, comprising an inlay attached to a natural tooth and having a recess in its pulpal wall which is inclined in a direction toward the foundation of said tooth, an artificial tooth, and a support for the latter tooth which extends therefrom in an inclined direction coincident with the inclination of said recess and which projects into the same, there being a relative movement between said support and the walls of said recess to enable the artificial tooth to move during mastication.

2. A movable permanent dental bridge, comprising an inlay attached to a natural tooth, a box embedded in the pulpal wall of said inlay and having its walls inclined in the direction of the foundation of said tooth and its bottom parallel with the vertical axis thereof, an artificial tooth, an inlay for the latter tooth, and a support having one end secured in the last-named inlay and its other end extending in an inclined direction into said box for engagement with the bottom thereof, there being a relative movement between said support and the walls of said box to enable the artificial tooth to move during mastication.

HYMAN FREEDMAN.