Sept. 6, 1927. 1,641,626

B. H. EISENSTEIN

ARTIFICIAL DENTURE

Filed Sept. 2, 1924

Fig. 1.

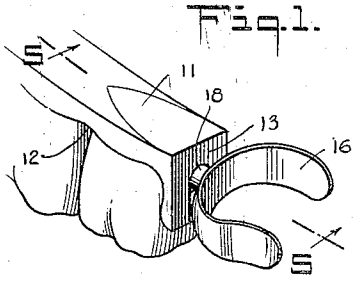


Fig. 2.

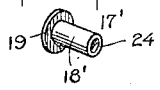
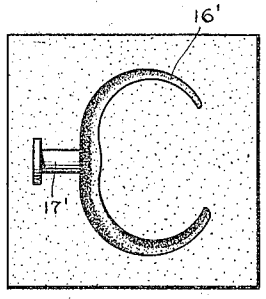


Fig. 3.



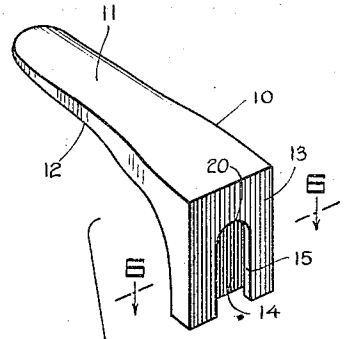


Fig. 6.

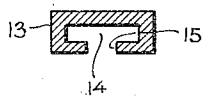


Fig. 4.

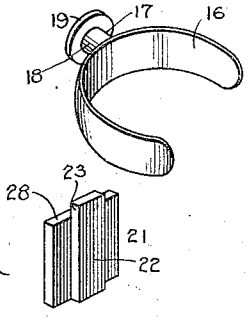


Fig. 5.

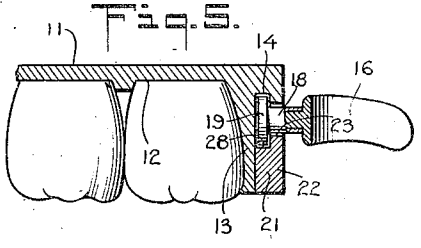
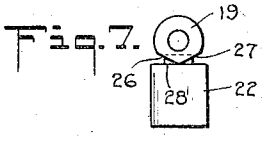


Fig. 7.



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UNITED STATES PATENT OFFICE.

BERNARD H. EISENSTEIN, OF NEW YORK, N. Y.

ARTIFICIAL DENTURE.

Application filed September 2, 1924. Serial No. 735,361.

This invention relates to orthodentia surgery and more particularly to what is known as artificial dental bridges and plates and further involves a novel process for producing the same.

Further, this invention relates to dental plates and bridges of the nature which involve the attachment of such plates and bridges to teeth of the wearer as by clasps. In denture construction of the above kind, it has been found expedient to make the attachment of the denture clasp to the denture body such as to permit of relative movement between the denture and the permanent teeth from which the denture is to be carried. This invention has for one of its objects the provision of a novel support by the denture plate from the permanent teeth and the denture clasp and of a process for making the same.

For the attainment of these objects and such other objects as may hereinafter appear or be pointed out, I make reference to the accompanying drawing forming a part thereof, in which—

Fig. 1 is a perspective view of one end of an assembled artificial denture and its attaching clasp.

Fig. 2 is a perspective view of one of the elements employed by me.

Fig. 3 shows a step in the method of forming the integral clasp and button.

Fig. 4 is a disassembled view showing the several parts which make up the artificial denture.

Fig. 5 is a section taken on a line 5—5 of Fig. 1.

Fig. 6 is a section taken on a line 6—6 of Fig. 4.

Fig. 7 shows a modified form of one of the elements.

Before proceeding to describe my invention, I premise that a denture plate of the character with which my invention is employed, comprises a jaw pressure face 11, a tooth reception socket 12 and side walls 13 forming one end of the artificial denture of bridge or plate work. Where the bridge is made of material such as rubber, the side wall is generally made of the desired metal and is then associated with the rubber bridge piece in which event the pressure face is relatively short. Whereas when the bridge work is made all of metal, the face plate 11 is generally made integral with the bridge itself.

Formed in the side wall 13 is the downwardly directed channel or socket 14, which is closed at the top and open at the bottom. As will be observed upon viewing Fig. 6, the wall 13 is further cut away to provide the outwardly opening slot 15 leading to the socket or channel 14.

A clasp 16 having attached thereto the button 17 comprising the neck portion 18 and the enlarged head 19 is adapted to be associated with the denture member 10. This button 17 is formed integrally with the clasp 16 in the manner which will be hereinafter described.

The head 19 of the button 17 is of a size which will readily slide within the socket 14 so as to permit of a relatively free rotary movement as well as of a slight bodily angular movement. The neck portion 18 of the button 17 is of such a size with relation to the slot 15 as to permit the neck 18 to move similarly with reference to the walls of the slot.

For connecting the clasp 16 to the denture body member 10, the head 19 of the button is first inserted into the open mouth of the socket 14 and moved therealong and the neck of the button slides along the constricted opening 15 and into substantial abutment with the rounded end 20 of the U-shaped opening formed by the walls of the slot 15. For retaining the button 17 in its position in the socket 14, I preferably employ a plug 21 having substantially the same configuration as the socket 14 and adapted to be received therein.

Upon viewing Fig. 4 of the drawings, it will be observed that this plug 21 is provided with the ridges or extension member 22. The plug 21 is preferably provided with an extended lip 23 formed as an extension of the part 22. When, therefore, the plug 21 is inserted in the socket 14, the ridge member 22 will be received in the slot or opening 15, and with the button 17 in position as described, the top wall 28 of the plug proper will position itself immediately below the head 19, and the top face of the extension 23 will position itself immediately below the neck portion 18, all as shown in Fig. 5 of the drawings. The plug 21 is fixed in position in the socket 14 by soldering or swaging, or by any other suitable means.

To cause the clasp 16 to be integrally associated with the button 17, I resort to the

following method which I have found preferable.

A blank 17′ is employed and as shown in Fig. 2, this blank combines a hollow neck or sleeve 18′, which may be tapered somewhat to form a narrower mouth 24 and an enlarged portion or head 19 formed on the opposite end of the sleeve. This blank is preferably made of a hard wear resisting platinum composition though other alloys may be used to obtain substantially efficient products.

The button blank 17′ is attached to a wax form of the clasp which is made of a modelling wax well known to those in the art. The wax from such form is forced into the sleeve 18 of the button to fill the same. (See Fig. 3).

The button blank 17′ and the wax form of the clasp 16′ is invested in investment plaster composition used for this purpose in the usual way and the wax 16′ removed by heating prior to pouring of the clasp. The metal is preferably a platinum composition which will insure the proper springiness and stiffness for such parts.

Fig. 3 shows a section across the mold with the button blank 17′ and the modelled wax clasp 16′ embedded in the investment composition prior to removal of the wax to permit the pouring of the molten metal.

With a button having a tapered mouth as above described, difficultly fusible metals may be used and an efficient bond between the clasp and button effected. Pressure molding, as by steam formation air and vacuum may be used with metals which only reach the plastic state or good results may be obtained even if the metal has not been heated sufficiently, because the metal will engage and be locked within the tapered sleeve and prevented from displacement.

In Fig. 7 a button is shown having its head 19 flattened so as to present the flat portions 26, 27 adapted to engage the top face or shoulder 28 of the plug 22 to permit only limited rotation of the clasp 16 within the socket 14.

The base 10 for the artificial denture with its socket 14 can be molded or cast in a similar manner as above described in making the clasp or if desired such base may be partially cast and machined to form the socket 14.

I prefer to form the socket member in the base 10 by impressing the plug 22 into the model of the base 10 of the artificial denture. The removal of the plug will leave a form which will give the proper contour to the finished base of the socket to receive the head 19 of the button.

It will be observed that by the construction described, the necessary casting or molding operation simultaneously forms the connecting parts between the clasp and the artificial denture body. In this way the denture body may be made separately from the clasp and involves comparatively simple procedure in molding as will be evident to those skilled in the art.

To assemble the parts, all that is necessary is to insert the head of the button 19 into the socket 14. Thereafter the plug 21 is inserted and soldered or otherwise affixed into position. The extended member 23 will serve as an added abutment and aid to prevent ingress of food into the socket chamber. In this way the metallic wall of the denture can also be reduced to the minimum and still retain the necessary strength of the connection which this portion forms.

By the construction and association of the parts as shown and described, it will be understood that the plug 22 must be retained in position on the wall 13 only against a movement downwardly in the socket 14, and therefore the provisions necessary for this purpose are accordingly more easily provided for. Furthermore, the formation of the parts is such as to require no additional holding means to prevent lateral separation.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In an artificial denture, a denture body formed with a jaw base and side wall portions, a socket with a constricted opening in said side wall, said socket being formed so as to permit slidable insertion of a clasp head and a locking plug adapted to be slidably inserted in said socket for retaining said clasp head in the socket.

2. In an artificial denture, a denture body formed with a side wall portion, a socket with a constricted opening in said side wall, said socket being formed so as to permit slidable insertion of a clasp head and a locking plug adapted to be slidably inserted in said socket for retaining said clasp head in the socket.

3. In an artificial denture, a denture body formed with a side wall portion, a socket with a constricted opening in said side wall, said socket being formed so as to permit slidable insertion of a clasp head, said clasp head shaped substantially as said socket and formed to loosely engage said socket and a locking plug adapted to be slidably inserted in said socket for retaining said clasp head in the socket.

4. In combination an artificial denture, a denture body formed with a side wall, a socket with a constricted opening in said side wall, a tooth clasp formed with an attaching member having an enlarged head adapted to be received in said socket and said attaching member extending through said constricted opening and a locking plug adapted to be slidably inserted in said socket for retaining said clasp head in the socket.

5. In combination an artificial denture, a denture body formed with a side wall, a socket with a constricted opening in said side wall, a tooth clasp formed with an attaching member having an enlarged head adapted to be received in said socket and said attaching member extending through said constricted opening, said clasp head formed so as to loosely engage said denture body, a plug of substantially the same configuration as said socket slidable into said socket for holding said clasp head from displacement from said socket.

6. In an artificial denture, in combination, a denture body, a clasp adapted to engage about a natural tooth, and means for securing the clasp to the side wall of the denture to permit of relative movement of the two, said means including a member formed integrally with the clasp and adapted to engage a socket in the denture body and a locking plug adapted to be slidably inserted in said socket for retaining said integral member in the socket.

7. In an artificial denture, in combination, a denture body, a clasp adapted to engage about a natural tooth, and means for securing the clasp to the side wall of the denture to permit of relative movement of the two, said means including a member cast integrally with the clasp and adapted to engage a socket in the denture body and a locking plug adapted to be slidably inserted in said socket for retaining said integral member in the socket.

8. In an artificial denture, in combination, a denture body, a slot in said body open at one end and having overhanging side walls, and a plug received in said slot beneath said side walls for forming a closure for the open end.

9. In an artificial denture, in combination, a denture body, a slot in said body open at one end and having overhanging side walls and a headed member adapted to be received in said slot and beneath said overhanging side walls and a plug received in said slot beneath said side walls for forming a closure for the open end.

10. In an artificial denture, in combination, a denture body having a groove therein in which the head of a pin is adapted to be received and a plug to close said groove, said plug having an extension adapted to contact with the neck of the pin.

11. In combination, an artificial denture, a body formed with a side wall, a socket with a constricted opening in said side wall, a tooth clasp formed with an attaching member having an enlarged head having a flattened portion on one side adapted to be received in said socket and said attaching member extending through said constricted opening, said clasp head formed so as to loosely engage said denture body, a plug of substantially the same configuration as said socket slidable into said socket for holding said clasp head from displacement from said socket, said plug formed with a shoulder within said socket as an abutment for said head to prevent undue rotation of the clasp.

In testimony whereof I have hereunto signed my name.

BERNARD H. EISENSTEIN.