June 24, 1930. S. RICHARDSON 1,765,851

ADJUSTABLE ATTACHMENT FOR DENTURES

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FIG. 1.

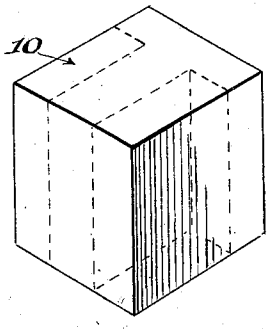


FIG. 2.

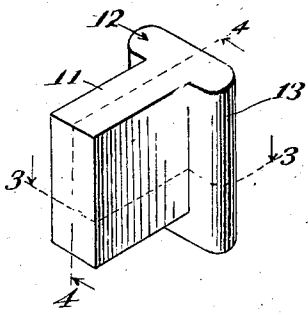


FIG. 3.

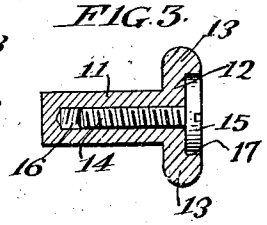


FIG. 5.

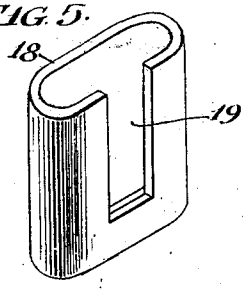


FIG. 6.

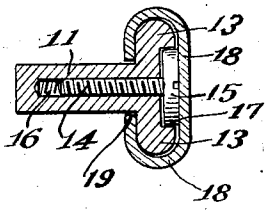


FIG. 4.

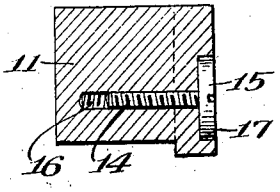


FIG. 7.

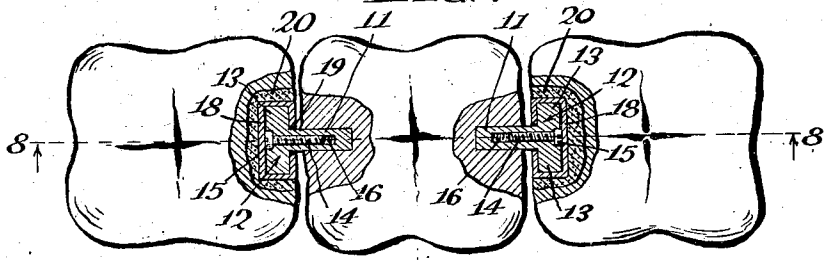
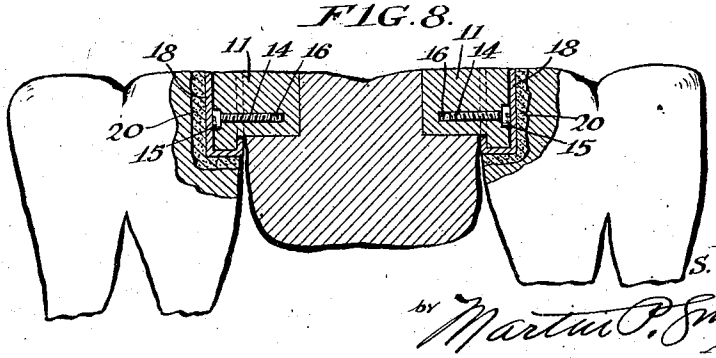


FIG. 8.



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FIG. 9.

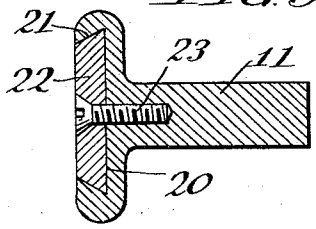


FIG. 11.

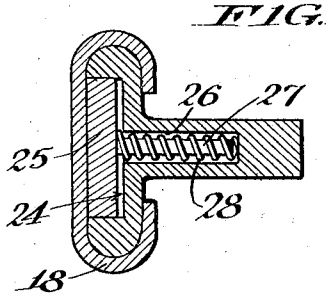


FIG. 10.

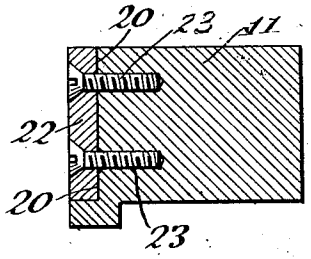


FIG. 12.

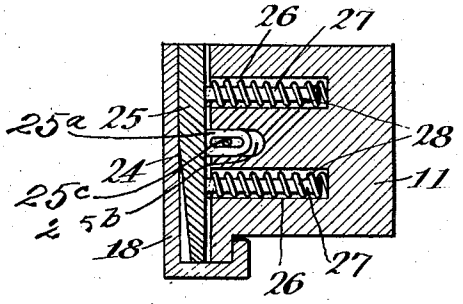


FIG. 13.

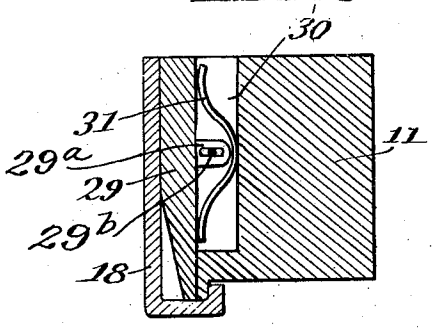
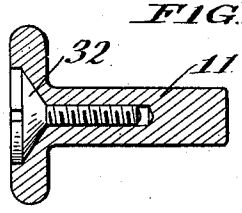


FIG. 14.



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UNITED STATES PATENT OFFICE

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ADJUSTABLE ATTACHMENT FOR DENTURES

Application filed August 16, 1928. Serial No. 299,975.

My invention relates to dental appliances and more specifically to an adjustable anchoring device or attachment for dentures, removable bridgework and the like, and the structure herein disclosed is an improvement on the attachment for dentures forming the subject-matter of my copending application for U. S. Letters Patent filed March 3, 1927, Serial Number 172,414.

The principal objects of my present invention are to generally improve upon and simplify the construction of the device disclosed in my aforesaid copending application as well as other existing forms of similar devices, and to provide a denture attachment with relatively simple means for effecting an adjustment between the two parts of the attachment, thus enabling any wear or lost motion to be taken up between the parts and insuring a firm and substantial engagement and snug fit between said parts when the same are interengaged to provide attachments for dentures and the like.

It will be understood that attachments of the character to which my invention relates are relatively small in size, and that they are subject to considerable stress while in service, and it is one of the purposes of my invention to construct the parts of the attachment, and particularly the male member thereof, so that the strength of the metal to which the parts are formed is utilized to the maximum degree in resisting the strains and stresses that may be developed while the attachments are in service.

With the foregoing and other objects in view, my invention consists in certain novel features of construction and arrangement of parts that will hereinafter be more fully described and claimed and illustrated in the accompanying drawing, in which:

Fig. 1 is a perspective view of a block of metal from which the male member of the attachment is formed, with dotted lines showing the portions of the block that are removed to produce said male member.

Fig. 2 is a perspective view of the block after the same has been cut or milled to produce the male member of the attachment.

Fig. 3 is a horizontal section taken approximately on the line 3—3 of Fig. 2.

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

Fig. 5 is a perspective view of the tube or cup that receives the head or body portion of the male member of the attachment.

Fig. 6 is a horizontal section taken through the attachment and showing the adjusting screw that is utilized for maintaining a snug or tight fit between the parts.

Fig. 7 is a plan view partly in section of a denture that is provided with my improved attaching devices and showing the cup members of the attachment anchored in abutment inlays.

Fig. 8 is a vertical section taken approximately on the line 8—8 of Fig. 7.

Figs. 9 to 14, inclusive, are sectional views of different modified forms of the denture attachment.

In the production of the male member of my improved attaching device I utilize a substantially square block 10 of alloy or platinized metal that is very tough and hard, and by suitable machining operations portions of the sides of said body are removed so as to form a substantially T-shaped member comprising the central body or shank 11 and the head 12 at one end of said body, portions of which head project laterally beyond the sides of said body to form flanges 13. The upper face of the body 10 is in the same plane and flush with the upper face of the head 12 and the flanges 13 thereof, but at the bottom of this member of the device a portion of the body 11 is cut away so that it is slightly shorter than the head 12 and its flanges.

Inasmuch as the male member of the attachment is formed from a solid block of metal, the molecules and fibers of the metal in all parts of the member retain their original relative positions. In other words, there is no bending or distortion of any of the molecules or fibers of metal, and thus the maximum strength of the metal in the member is utilized for resisting strains and stresses that are impressed on said member while the same is in service.

In some instances it may be found desirable to form the male member of the device as described in my above mentioned copending application and to equip the same with the adjusting means hereinafter described.

The adjusting means contemplated by my present invention comprises a small screw 14 having a disk-shaped head 15, the outer face of which is flat, and said screw being seated in a threaded aperture 16 that is formed in the head 12 and shank 11 in a horizontal plane intermediate the upper and lower ends of said head and shank, and formed in the outer portion of the head 12 is a circular recess 17 that accommodates the screw head 15. When the adjusting screw is screwed into the block to the limit of its travel the outer flat face of the screw head 15 is flush with or a very slight distance below the flat outer face of the head 12.

The tube or socket member that receives the head 12 of the attachment, and which is illustrated in Fig. 5, is preferably formed of sheet metal such as platinum, and said tube or socket comprises a cup-shaped member 18 open at its top, and the chamber within which member being of sufficient size to snugly receive the head 12 and the flanges 13 of the attachment. For the accommodation of the projecting shank 11 of the male member a vertically disposed slot or opening 19 is formed in the central portion of one of the side walls of the tube or socket and the lower end of said opening being closed to serve as a bearing for the corresponding portions of the lower edge of the shank 11 when the two parts of the attachment are assembled.

If desired the tube or socket member 18 may be reinforced around the slot or opening 19 as disclosed in my above-mentioned copending application.

When my improved attachment is applied for use the tube or socket 18 is permanently imbedded in an inlay such as 20, the latter being seated in the side face of a tooth to which the denture or removable bridgework is to be attached, and the shank 11 of the attachment is firmly anchored in the side face of the body of the denture or removable bridgework D with the head comprising the parts 12 and 13 projecting beyond the side face of the denture.

Thus when the parts of the device have been properly anchored to the tooth and denture or removable bridgework, the heads comprising the parts 12 and 13 may be readily inserted with a downward movement into the anchored tubes or sockets 18, thus providing a very firm and substantial connection or anchorage between the denture or removable bridgework and the teeth to which the same is attached.

In the event that there is any play or lost motion between the inserted head of the attachment and the receiving tube or socket, such play may be very readily taken up and a firm, tight connection may be made between the parts by adjustment of the screw 14, for by unscrewing the same a very slight degree the surface of the screw head may be moved into a plane slightly beyond the plane occupied by the outer face of the head 12 and when the male member of the device is again inserted in the socket a firm tight joint may be provided.

In the modified construction illustrated in Figs. 9 and 10 the face of the head portion of the male member of the attachment is provided with a recess 20 having undercut side edges 21, and removably positioned in this recess is a filler block or plate 22 that is secured to the body or shank of the male member by one or more screws 23.

By utilizing filler blocks or plates of different thicknesses any lost motion or wear between the parts of the attachment may be taken up and a perfectly tight joint produced.

In the modified construction illustrated in Figs. 11 and 12 the face of the head portion of the male member of the attachment is provided with a vertically disposed recess 24 within which is positioned a filler block or plate 25, and projecting rearwardly therefrom into apertures 26 that are formed in the body of the male member, are pins 27 upon which are arranged expansive coil springs 28, and which latter exert yielding pressure upon the filler plate 25 to maintain the same in engagement with the socket or cup in which the male member is positioned.

In order to prevent the filler block 25 from becoming detached from the member 11 before the latter is applied to the socket, a slotted lug 25^a projects rearwardly from block 25 into a recess 25^b that is formed in the member 11 and seated in the member 11 to the side of said recess 25^b is a pin 25^c that passes through the slot in lug 25^a.

In the modified construction illustrated in Fig. 13 a filler block 29 is arranged in a recess 30 in the face of the male member, and arranged behind this filler block is a bow spring 31 that exerts outward yielding pressure upon the filler block to maintain the same in engagement with the socket.

In order to retain the filler block 29 on the block 11, a slotted ear 29^a projects rearwardly from block 29 and receives a pin 29^b, the ends of which are seated in the block 11.

The pin and slot connections in the forms of devices illustrated in Figs. 12 and 13 permit the filler blocks 24 and 29 to move to limited distances toward and away from the face of the block 11 and thus provide a tight joint between the head of block 11 and the socket in which the same is positioned.

In the modified construction illustrated in Fig. 14, I have shown a wear or lost motion take-up screw with a head of relatively large

diameter, and in order to overcome the necessity for cutting entirely through the head of the male member for the accommodation of this large screw head, the under face of the head is beveled or made conical, as designated by 32.

It will be understood that minor changes in the size, form and construction of the various parts of my improved adjustable attachment for dentures may be made and substituted for those herein shown and described without departing from the spirit of my invention, the scope of which is set forth in the appended claims.

I claim as my invention:

1. In an attachment for dentures, a substantially T-shaped member, a socket adapted to receive the head portion of said T-shaped member, and an adjusting screw seated in the body of said T-shaped member, the outer face of the head of which screw is adapted to frictionally engage the inner face of the socket in which said head is seated.

2. In an attachment for dentures, a substantially T-shaped member, a socket adapted to receive the head portion of said T-shaped member, an adjusting screw seated in said T-shaped member the outer face of the head of which screw is adapted to frictionally engage the inner face of the socket in which the head is positioned and there being a recess formed in the outer face of the head of said T-shaped member for the accommodation of the head of said screw.

In testimony whereof I affix my signature.

SIDNEY RICHARDSON.