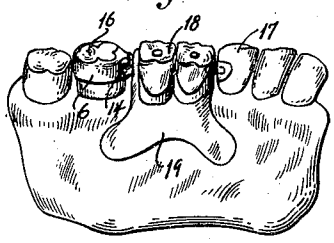
I. BROWN.

FLEXIBLE DENTAL BRIDGE ATTACHMENT.

APPLICATION FILED DEC. 21, 1921.

1,438,167. Patented Dec. 12, 1922.

Fig. 1.



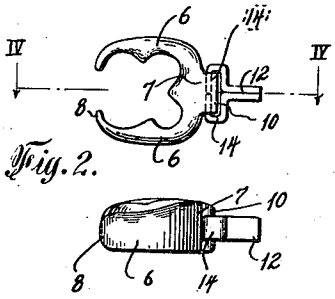


Fig. 2.

Fig. 3.

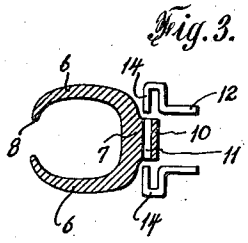


Fig. 4.

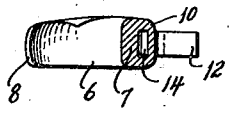
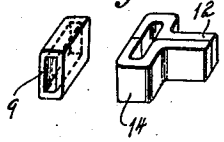


Fig. 5.



Inventor

Isaac Brown

By James C. Ledbetter

Attorney

Patented Dec. 12, 1922. 1,438,167

UNITED STATES PATENT OFFICE.

ISAAC BROWN, OF NEW YORK, N. Y.

FLEXIBLE DENTAL BRIDGE ATTACHMENT.

Application filed December 21, 1921. Serial No. 523,992.

To all whom it may concern:

Be it known that I, ISAAC BROWN, a citizen of the United States, residing at city of New York, borough of Manhattan, in the county of New York and State of New York, have invented certain new and useful Improvements in Flexible Dental Bridge Attachments, of which the following is a specification.

This invention relates to dental bridge work, and more particularly, the invention relates to improvements in flexible or movable dental bridge attachments.

The clasp removable bridge attachments are used for some type of removable bridge work, and consists of a two-armed clasp anchorage which fits with pressure and frictional engagement over the top portion of a tooth or around the body of the tooth; and to this clasp there is secured the bridge or artificial teeth employed to fill the vacant space in the patient's mouth. The clasp type of anchorage produces a partially satisfactory support to carry a bridge between two pier teeth, but however, the clasp and bridge as used at the present time produces a rigid anchorage between the two pier teeth, which establishes the bridge and pier teeth as an immobile and rigid structure, there being absent the slight degree of relative movement between the bridge and pier teeth which is so necessary if the bridge is to be relied upon as a permanent and satisfactory installation.

Teeth move in function, as will be understood by those conversant in the art, which means that the pier teeth, or any teeth relied upon to support a bridge, undergo slight relative motion within the gum, due to masticating process and the general functioning of the gum and tooth processes. It is, therefore technically wrong to rigidly join two pier teeth with a bridge anchored therebetween; and this class of bridge work, will in time either break loose one point of anchorage or exerts an injurious strain upon one or both of the pier teeth; either this, or else the clasp attachment becomes mobile and flexible upon the pier teeth which causes wear and erosion of the tooth enamel, thus scratching and injuring the enamel, so that, after long service, the clasp anchorage may likely injure an otherwise sound tooth.

It is fitting, therefore, that the primary object of my invention is to so improve clasp bridge attachments that this type of anchorage will permit a desirable degree of mobility and flexibliity between the bridge and the pier tooth carrying the clasp so that the enamel of the pier tooth will remain uninjured, and so that no strain is unduly imposed on the pier teeth carrying the bridge.

The accompanying drawings illustrate the principle and show an embodiment of my invention, and though there is shown a preferred form of design and construction, I claim a right of protection against such changes as may properly come within the scope of my invention.

In the drawings, Figure 1 illustrates a portion of the gum with several teeth shown in position, there being a bridge carried by two spaced pier teeth, and a clasp type of anchorage is shown fitted over one pier tooth.

Figure 2 shows a plan view and side projection respectively of the clasp with the movable attachment applied thereto.

Figure 3 illustrates a horizontal sectional view taken through the central portion of the clasp and flexible attachment with the attachment disassembled and spaced from the clasp to illustrate the manner in which the parts are fitted together.

Figure 4 illustrates a cross sectional view as developed on the line IV—IV in Figure 2.

Figure 5 shows a group view of the three principal parts of the attachment as manufactured for the trade.

Referring now more particularly to the drawings for a detailed description of the invention, there is shown a clasp anchorage comprising symmetrically outspread arcuate arms 6 which extend from a relatively heavy body center 7. The arms 6 taper outwardly from the body 7 to relatively small flexible and thin points 8. This clasp is constructed of thin metal, but in the drawings, the size of parts is exaggerated to make a more comprehensive disclosure. The top portion of the arms 6 may be flared, curved, or slightly arched over towards the center of the clasp in order to form a partial biting surface on the occlusal face of the tooth.

On the back side of the broad or thick central body 7, there is integrally cast or made a box or an extension part or protuberance 10; and a hole or opening 11 is made through this extension. A pair of

hook links or extension bracket parts are movably confined in the hole 11 which brings the outer link ends 12 together to be fused or joined by solder, and brings the inner hook ends 14 together with the adjacent end edges thereof in abutting relation so as to leave slight yet perceptible clearance between the inner region of the hooks 14 and the edges of the protuberance 10. After the movable hook links 12—14 are properly assembled upon the bridge clasp 7, there exists a very slight lateral and vertical movement between the movable attachment part and the bridge clasp. Both outer link ends 12 are permanently soldered together to produce a unitary structure, and though there exists slight relative motion between the clasp 7 and flexible link joint 12—14, there is established a firm connection between the clasp and the link. The end parts 12 are made comparatively long on the U-shaped hooks 14 so the denture part may be conveniently held during assembly thereof, and the ends 12 are afterward cut off. This assembly of the three parts constitute the improved flexible dental bridge attachment and may be satisfactorily used with the variety of bridges employed in present day dental practice.

In assembling and fitting the two parts 12—14 into the opening 11, the dentist carefully files and works down the end edges of the hook ends 14 so that these ends abut before the region of the hook itself bears against the outer edges of the protuberance. This workmanship assembly provides enough clearance between the protuberance and link as to allow relative motion between them. The link and hook attachments are preferably made square or rectangular in cross section and fractionally smaller than the cross section size of the opening 11 so that the part may move laterally, and vertically in respect to the clasp 7 or other form of device to which this attachment may be adapted.

Figure 1 shows the practical use of this improved flexible attachment with removable bridge work of the clasp type. The pier teeth 16 and 17 carry the bridge 18 therebetween, the clasp anchor 6 being tightly clasped and clamped down upon the pier tooth 16. The metal saddle or keeper 19 holds the bridge teeth 18 and provides a metal face to which the link ends 12 are soldered so as to fasten the clasp and bridge together, and the saddle rest upon the gum to help support the bridge. The outer end pieces 12 are manufactured with considerable length so the dental mechanic necessarily must cut it down and fit it to the saddle 19 and solder it to the gold saddle, or vulcanize it into the structure if the bridge is made of rubber. In this type of connection or joint, there exists limited relative motion between the clasp and the bridge thus providing and allowing a degree of mobility and flexibility between the sound pier teeth and the artificial structure to the extent that a natural simulation and functioning of all the parts and teeth are obtained.

In addition to the use of my improved extension bracket parts with clasps, I have to point out that the invention may similarly be used in connection with crowns and inlays, for on both of these anchorages there may be constructed a side protuberance or extension with an opening to receive the hook ends 14 and extension links 12. And it is to be understood that my removable bridge work, in any of its uses, is not novel in that it is removable, but is novel in that it provides a movable joint in the structure. Furthermore it is pointed out that this movable joint is itself a permanent fixture and once installed cannot be taken apart by the patient. And furthermore this movable joint may be used to the same advantage in fixed bridge work as used in removable bridge work. It is a fact that fixed bridge work, the kind not removable from the mouth, has fallen into disfavor because it makes a rigid structure in the mouth. But with the introduction of this movable joint, either for fixed or removable bridges, the old fixed type of bridge work is rendered more satisfactory and really becomes more useful to the profession.

It is also to be noted that the invention consists in the movable link interposed between the pier teeth and bridge, and that this link may be reversed in arrangement and solidly secured or soldered to the clasp, a crown, or inlay, and then in turn loosely and movably mounted in an opening made in the bridge itself so as to secure the same function as that shown in the drawings.

In the use of the clasp anchor part, it is the usual practice to employ a clasp at one end of the bridge and a simple pin joint support at the other end of the bridge such as is shown in the drawings, but it is of course understood that this flexible anchorage may be used wherever it is adaptable and with a variety of different styles of bridges; and this flexible joint so improves the clasp anchorage as to greatly extend the use of the clasp and make it more acceptable and desirable to the profession.

Figure 5 shows the parts, greatly enlarged, as manufactured for the trade and for use by the dental profession. A tube 9 open at each end is usually manufactured and supplied with the links 14 to the profession and dental mechanics for use in constructing this type of bridge work. The tube 9 being small in size is either soldered to the bridge itself, or soldered to the fixture anchored in or on the tooth; and the

mechanic builds up solder around the tube until it is an integral part with a bridge or clasp.

As is known to those skilled in the art, it is necessary to use a carbon rod, or a carbon filler, to plug up the hole in the tube until the mechanic has completely soldered in the tube or box. After the construction work is finished, the carbon plug is removed from the tube which leaves a clear unobstructed receptacle for the link 14. The completed work then appears as shown in the detail views, in that the identity of the tube is not apparent because the solder, the tube itself, and the part upon which the tube is mounted, has all been merged into a single integral structure.

This bridge has the advantage over many other types of bridges because it has a degree of flexibility and mobility which relieves the pier teeth from strain. This bridge may be removed for repair and cleaning, and is comfortable in the mouth, and it particularly overcomes the disadvantages of presently used clasp dental anchor parts.

Having described the invention, what I claim is:—

1. A dental bridge attachment comprising a clasp anchor having an opening, and a pair of movable parts confined in the opening and soldered together to make a unitary structure by which the clasp is secured to a bridge.

2. Bridge work attachments comprising in combination with a clasp having an opening therein, of a link movably confined in the opening, and an extension piece made on the link by which the link is secured to a bridge.

3. Bridge work comprising a device carried by a pier tooth, a bridge, a link interposed between the device and bridge whereby mobility and flexibility is allowed between the said bridge and pier tooth, said link comprising a pair of U-shaped parts which are movably confined in an opening made in the bridge or device and soldered together to produce a unitary structure, and the link being rigidly secured to the device or bridge whereby the bridge is supported thru the link upon the pier tooth.

4. A denture comprising U-shaped parts, an extension end made on the parts for convenience in the manufacture and assembly thereof, a tube, the parts being so manufactured that they may be soldered together in the tube to form a closed loose link which is used by dental mechanics in bridge work structure between the pier teeth and the bridge to produce a mobile bridge structure.

In testimony whereof I have hereunto affixed my hand and seal this 15th day of December, 1921, in the city, county and State of New York.

ISAAC BROWN. [L. S.]