C. W. LOKEY.

FASTENING FOR REMOVABLE DENTAL BRIDGES AND BRIDGE PLATES.

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1,299,364. Patented Apr. 1, 1919.

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

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By
Attorney
To all whom it may concern:

Be it known that I, CHARLES W. LOKEY, a citizen of the United States of America, residing at Birmingham, in the county of Jefferson and State of Alabama, have invented certain new and useful Improvements in Fastenings for Removable Dental Bridges and Bridge-Plates, of which the following is a specification.

My invention relates to fastenings for removable dental bridges and bridge plates which will permit the abutment tooth to which the bridge or plate is fastened, to have a free normal movement during mastication without straining or breaking the joint between the fastening elements or their respective connections to the abutment and bridge or bridge plate.

My present invention is more especially intended as an improvement on the type of dental fastening described in Letters Patent of the United States No. 1,193,094, issued to me on the 16th day of August, 1916, and which comprises a keeper, formed of hard metal shaped to provide side grooves and preferably a top groove alining with the side grooves, and an anchor attachment for the removable bridge or bridge plate, which is formed of bent wire (preferably drawn wire of hard metal such as iridio platinum) that is shaped to fit snugly into the grooves of the keeper and to interlock firmly therewith so that the fastening resists with much strength any relative movement between the keeper and anchor except in the direction in which the bridge or bridge plate is moved to detach it from the abutment.

According to my present invention the web of the keeper and the sides of the anchor which engage it are so shaped as to permit a limited rocking play to take care of the normal movement between keeper and anchor in a transverse plane through the joint. Provision for this play can be made by mak-
a keeper which is formed of a block of hard metal having a flat front face which is connected by an integral shank or web with a back face which is preferably thinner than the front face and adapted to be soldered to the abutment. The web, which is formed by the side grooves in the keeper, is preferably cut away below the top or outer end edge of the keeper so as to form a top groove or seat for the anchor. The web as shown in Figs. 1 to 5, is made thicker at or slightly below its center (see Fig. 5) and it is tapered or made thinner toward its top and bottom ends so as to give it in vertical cross section what may be termed generally an elliptic shape. The inner end of the keeper adjacent to the gum is beveled away from the abutment and gum as indicated by the outwardly sloping face.

The bridge plate 6 has firmly embedded therein an anchor, preferably formed of drawn wire or hard metal. It comprises ends 7 which are rigidly embedded in the rubber saddle of the bridge plate or they may be rigidly attached in any other suitable manner to a metal saddle or to the bridge or bridge plate. The wire is bent upwardly to form a loop portion 8, the bases of the sides of which are bent outwardly and horizontally at 9 to join the ends 7 which lie in a plane at right angles to that of the loop. The sides of the loop, as shown in Fig. 2, are straight and correspond to the construction shown in Fig. 8 of my Letters Patent hereinafore referred to, as such form can be used with my improved keeper, but I prefer to contract the neck of the anchor loop by drawing in its sides as at 10 (Figs. 4 and 5). It is preferable that both sides of the loop be thus drawn in but not essential as a snap lock could be obtained by contracting the neck of the loop in any manner.

From a consideration of Fig. 5 it will be apparent that when the keeper and anchor loop are interlocked, the keeper is free to rock in the anchor within predetermined limits in either direction, as indicated by the arrow, and thus allow for the normal play or movement of the abutment tooth during mastication, and it is conversely true that the bridge plate itself can have a like limited play by the rocking of the anchor loop about the keeper web which is sufficient to prevent an unnatural strain on the abutment during hard biting. It is desirable that the keeper web be adapted to have only that limited relative rocking movement which will take care of the natural relative movements between the bridge and the abutment in chewing, as a joint which would permit too much relative play between the keeper and the anchor would prove an unsatisfactory fastening for a bridge or bridge plate. By contracting the neck of the loop it will snap into place about the keeper web and can only be disengaged by a strong pull upwardly or downwardly according to whether the bridge is carried by the upper or lower jaw. In Fig. 6 I show the keeper web 11 formed with parallel sides and the top 13 of the anchor loop is struck on an arc from the center of the web and made as wide as is necessary to provide for the rocking play desired. The sides of the loop are bent in at 13 to engage the sides of the web and are then bent out away from the sides thus forming side bearings which will permit the keeper and anchor to rock relatively.

The essential feature of my invention is that the keeper and anchor be designed to permit only sufficient relative rocking movements to avoid undue strains on the fastenings or abutments that would otherwise result from normal tooth movements during mastication.

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

1. In a dental fastening, in combination, a keeper having a head and a vertically elongated shank which tapers in width toward one end, and an anchor having sides which straddle the shank behind the head and clamp between them the widest portion thereof, clearance being left between the sides and narrow end of the shank to permit only a limited rocking movement of the shank in the anchor and of the anchor on the shank.

2. In a dental fastening, in combination, a keeper having side grooves, and an anchor adapted to straddle the keeper and engage it to prevent both downward and lateral play in the joint, there being a clearance provided above and below the points of contact between the sides of the keeper and the anchor to permit only a predetermined relative rocking movement in the joint between the anchor and keeper, as and for the purposes described.

3. In a dental fastening, in combination, a keeper having opposite side grooves which leave between them a substantially elliptical shaped web disposed with its long axis vertical, and an anchor formed of bent wire having closely spaced side members adapted to be received in said grooves and in normal position to yieldingly engage the said web only opposite its short axis.

4. In a dental fastening, a keeper formed of an elongated body of hard metal having in its opposite side faces longitudinal grooves which shape the body into front and back walls connected by a longitudinal and relatively narrow central web which tapers toward both end edges of the keeper.
5. In a dental fastening, an anchor formed of hard metal wire having a portion thereof adapted for attachment to the bridge or bridge plate, and having portions thereof spaced from said attachment portion and bent at an angle thereto into closely spaced parallelism to form a clasp eye for engagement with a keeper, one of the sides of said eye being bent to contract its end adjacent to the bridge or bridge plate.

In testimony whereof I affix my signature.

CHARLES W. LOKEY.

Witness:

NOMIE WELSH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D.C."