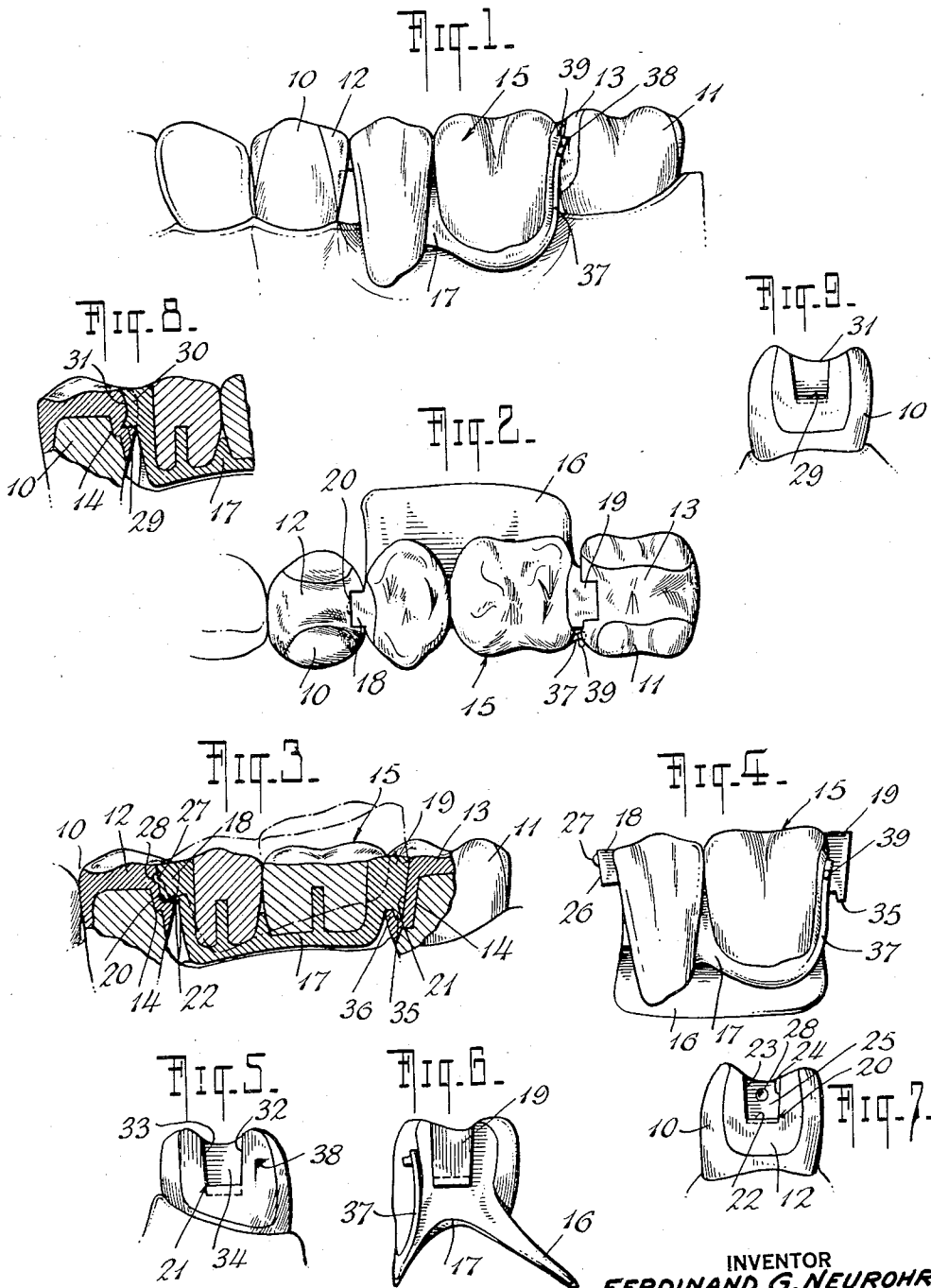


Oct. 9, 1934.

F. G. NEUROHR
DENTAL RESTORATION
Filed Dec. 6, 1930

1,976,085



INVENTOR
FERDINAND G. NEUROHR
BY *Fritz Ziegler*
ATTORNEY

UNITED STATES PATENT OFFICE

1,976,085

DENTAL RESTORATION

Ferdinand G. Neurohr, Hollis, N. Y.

Application December 6, 1930, Serial No. 500,463

4 Claims. (Cl. 32-12)

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

Two general types of removable appliances are in common use at the present time, one of which utilizes clasps for securing the bridge-work in position, while the other depends upon frictional contact between the male and female rests of the bridge-work and the inlays on the abutment teeth. Both have many advantages which, on the whole, have made them quite effective in their application to restoration cases that have indicated their adaptability. For example, the clasp type is easily removed and inserted; and it does not necessitate a great amount of pretreatment of the abutment teeth as no high degree of precision in the paralleling of the attachments is required, with the result that it offers the requisite pulp protection to the abutment teeth and eliminates friction as a retentive factor in the designing of the appliance. However, to accomplish these satisfactory results, clasps are required, and it is a well recognized fact that, although their use at times makes it possible to incorporate vital features in the construction of a restoration, they do not otherwise add to the desirability of the appliance.

The undesirable features of clasps have been eliminated in the friction type of appliances but the latter, on the other hand, do not possess the same ease of removal and insertion and do not give as much freedom to the abutment teeth. Furthermore, with the friction appliance, there exists the absolute necessity of precision paralleling of the walls of the rests and more extensive abutment preparations due to the demand for greater retention and space, made necessary by the friction factor and other features in the design of these appliances.

It is an object of the present invention to provide an improved restoration which will incorporate the desirable features of the above mentioned types and, at the same time, avoid the objections thereto by eliminating the use of clasps, and the need of absolute paralleling. In so doing, the present appliance secures maximum pulp and periodontal protection; is easy to remove and insert; and offers complete resistance to displacement during the process of mastication.

The inventive idea is capable of receiving a variety of mechanical expressions, some of which are shown in the accompanying drawing, where: Fig. 1 is a front elevation of a restoration constructed in accordance with the invention and showing the same in position.

Fig. 2 is a plan view thereof.

Fig. 3 is a longitudinal section, the dotted line position of the bridge-work showing the manner of inserting and removing the same.

Fig. 4 is a front elevation of the bridge-work.

Fig. 5 is a side view of the posterior inlay and abutment tooth.

Fig. 6 is an elevation of the posterior end of the bridge-work.

Fig. 7 is a side view of the anterior inlay and abutment tooth.

Fig. 8 is a fragmentary longitudinal section of a slightly different form of the anterior portion of the restoration, and

Fig. 9 is a side elevation of the anterior inlay and abutment tooth shown in Fig. 8.

In carrying out the invention, the anterior and posterior abutment teeth 10 and 11, respectively, are prepared in the usual manner for the reception of inlays 12 and 13, it being noted that in the preparation of said teeth, the interproximal boxes 14 thereof need be only of a very slight depth due to the elimination of friction as a retentive factor in holding the bridge-work in position. In this manner, there is insured a maximum pulp protection of the abutment teeth.

The bridge-work generally indicated by the numeral 15 comprises the usual saddle 16, and strut 17 upon which the teeth thereof are mounted in the customary manner. At the ends of the strut are provided the male rests 18 and 19 which are adapted to loosely fit, as distinguished from frictional engagement, into the anterior and posterior inlays 12 and 13 which have the female rests 20 and 21, respectively, to receive said male rests.

In the formation of the female rest 20, the base 22 thereof may be made horizontal or, preferably, this surface is slightly inclined downwardly in a pulpal direction relative to the tooth 10 as shown in Figs. 3 and 8. The base of the male rest 18, which engages the surface 22, is correspondingly inclined so that when the bridge-work is in position, the pressure exerted thereupon by the action of mastication will not have a tendency to dislodge the bridge-work from its support on said base 22. Further, the facial and lingual walls 23 and 24 (Fig. 7) of the female rest 20 and the corresponding walls of the rest 18, converge toward the bases of the rests, and the pulpal wall of said rest 20, together with the adjacent wall 26 of the rest 18, are inclined from the bases of the respective rests in a pulpal direction. Thus, the male and female rests are of substantially the same configuration and, by reason of the fact that

no dependence is placed upon friction to hold the male rest in place and precision paralleling of the walls of said rests is consequently unnecessary, said walls may be inclined as described to permit of the easy insertion of the rest 18 into the rest 20. In order to provide interlocking engagement between the anterior rest 18 and its associated inlay, the former is provided on the wall 26 adjacent the occlusal surface thereof, with a locking extension 27 which fits into a recess or depression 28 in the pulpal wall 25 of the female rest. This interlocking engagement is effected when the bridge-work 15 is being mounted in place, as indicated in dotted lines in Fig. 3, and thereafter prevents accidental displacement of the anterior end of the bridge-work.

Figs. 8 and 9 illustrate a slightly different construction of anterior lock but, as in the form shown in Fig. 3, the base 29 of the female rest and that of the male rest 30 are inclined downwardly in a pulpal direction. The abutting pulpal walls 31 of the rests are of concavo-convex formation, in a vertical direction so that the wall of the female rest will act as a guide for the pivotal movement of the bridge-work when being inserted into position and said walls will combine to lock the anterior end of said bridge-work against accidental displacement.

At the posterior end of the restoration, the facial, lingual and pulpal walls 32, 33 and 34, respectively, of the female rest 21 are all inclined in substantially the same manner as described in connection with the anterior rest 20, and the male rest 19, which engages in the female rest, has its walls correspondingly inclined. Thus, the pulpal walls of the rests in the anterior and posterior inlays diverge relative to each other from the bases of the rests and thereby afford sufficient clearance for the bridge-work as it is swung into position.

In addition to the formation of the walls of the rests at the distal end of the restoration, just described, there is provided an interlocking engagement between said rests which is designed to prevent any distal pressure upon the abutment tooth 11 from causing a drifting movement of said tooth which would result in the displacement of the female rest of the inlay 13. To this end, the bases of the rests 19 and 21 are provided, respectively, with the flanges 35 and 36 which interengage as shown in Fig. 3 when the bridge-work is in position. In this manner, any tendency of the tooth 11 to drift away from the bridge-work is prevented by the engagement of the flange 36 with the flange 35.

As a means for locking the bridge-work in its position between the abutment teeth, which means at the same time will be easy to manipulate in order to release said bridge-work, there is preferably employed a spring detent 37 made of any suitable material. One end of this detent is secured, as by soldering, to the strut 17 on the facial side thereof and extends occlusally and in such relation to the adjacent tooth of the bridge-work that when the latter is in position said detent will be interproximately located with respect to said tooth and the inlay 13 of the abutment tooth. The free end of the detent is so disposed that as the bridge-work is being inserted and approaches its proper position, said end will engage and ride over the adjacent portion of the inlay 13 and be thus placed under a slight tension. Then, as the bridge-work becomes properly

seated, said end of the detent will snap into engagement with a shoulder 38 formed on the interproximal surface of said inlay, as best illustrated in Fig. 1. In this position, the detent locks the bridge-work in place and reduces to a minimum any possibility of it becoming accidentally detached during the process of mastication. In order to facilitate removal of the bridge-work, the detent, adjacent its free end, is provided with a small lateral extension 39 which may be engaged by a finger or thumb to exert a slight pressure upon the detent in a mesial direction so as to disengage the detent from said shoulder, whereupon the bridge-work may be withdrawn.

Without departing from the spirit or scope of the invention, it will be understood that, although the bridge-work has been shown and described in the position wherein the detent 37 thereof is associated with the posterior abutment tooth, the restoration including the abutment teeth, inlays therefor and the bridge-work may be prepared so as to accomplish a reversal of the position of the bridge-work, or, in other words, so that the detent will engage with the inlay of the anterior abutment tooth rather than the posterior inlay.

What is claimed is:

1. In a dental restoration, anterior and posterior inlays having female rests in which the pulpal walls diverge relative to each other from the bases of said rests, the pulpal wall of one of said rests having a depression therein, a bridge-work having male rests insertable into said female rests, one of said male rests being provided with a projection engageable in said depression, and a spring detent carried by said bridge-work and engaging the inlay adjacent the other of said male rests in an interproximal position relative to the latter inlay and the next adjacent tooth of said bridge-work.

2. In a dental restoration, anterior and posterior inlays having female rests, a bridge-work insertable between said inlays and having male rests extending into the first named rests, said bridge-work and the pulpal wall of the rest of said anterior inlay having co-operating means constituting an anterior lock for the bridge-work, and a spring detent extending occlusally from said bridge-work and engageable with said posterior inlay.

3. In a dental restoration, anterior and posterior inlays having female rests, a bridge-work engageable between said inlays and having male rests extending into said female rests, the posterior male rest and the base of the adjacent female rest having interlocking extensions, and the pulpal wall of the anterior female rest and associated male rest having co-operating means constituting an anterior lock for the bridge-work, and a spring detent extending occlusally from said bridge-work and engageable with said posterior inlay.

4. In a dental restoration, inlays having female rests, a bridge-work insertable between said inlays and having male rests extending into the first-named rests, said bridge-work and the pulpal wall of the rest of one of said inlays having cooperating means constituting a lock for one end of the bridge-work, and a spring detent carried by said bridge-work and engageable with the other of said inlays to form a lock for the other end of said bridge-work.

FERDINAND G. NEUROHR.