United States Patent

Roberts

[15] **3,641,671**

[45] **Feb. 15, 1972**

[54] ENDOSSEOUS RAMUS IMPLANT AND DENTURE SUPPORT FRAME

[72] Inventor: **Harold D. Roberts**, 272 N. Knott St., Portland, Oreg. 97212

[22] Filed: **Sept. 10, 1970**

[21] Appl. No.: **71,001**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 843,579, July 22, 1969, Pat. No. 3,377,853.

[52] **U.S. Cl.** ..... **32/10 A**

[51] **Int. Cl.** **A61c 13/00**

[58] **Field of Search** ..... 32/10 A

[56] **References Cited**

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1,140,538 5/1915 Skinner ..... 32/10 A

Primary Examiner—Robert Peshock
Attorney—L. R. Geisler

[57] **ABSTRACT**

A permanent frame for removably supporting an artificial denture for the entire lower jaw. The frame comprises a rigid bar sized and shaped to correspond to the mandible and the denture. The bar terminates at each end in a ramus implant and has an integral intraosseous blade at the central portion providing a holding implant in the front of the mandible. The bar is spaced above the epithelium between the ramus implants and the mandible implant. The denture is firmly but removably set down over the bar with the foundation material for the denture barely contacting the epithelium.

2 Claims, 7 Drawing Figures

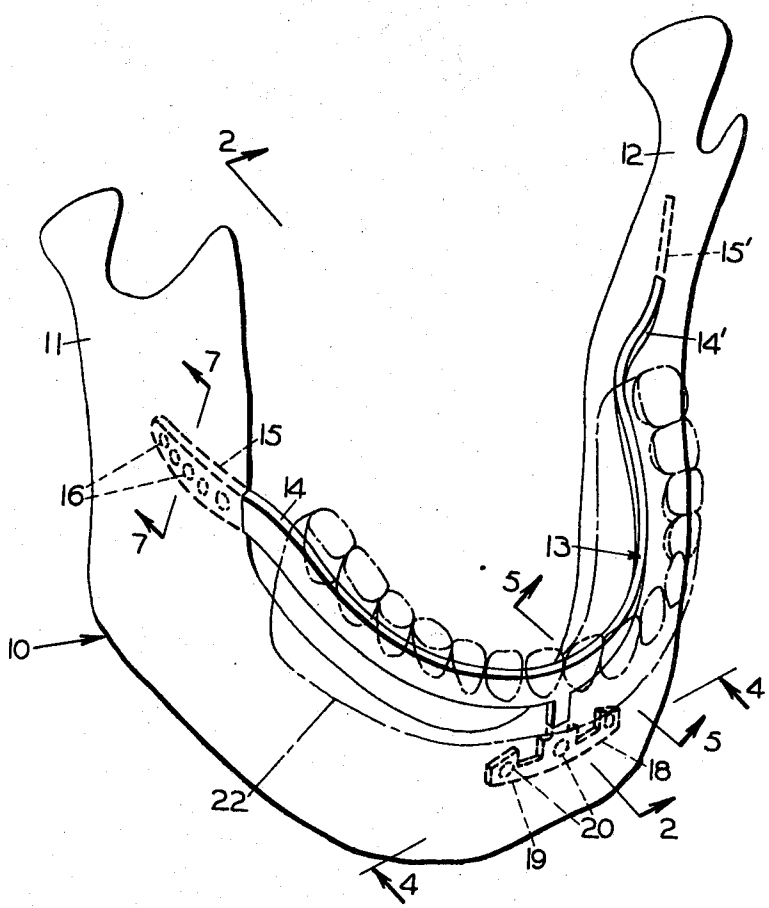


FIG. 1

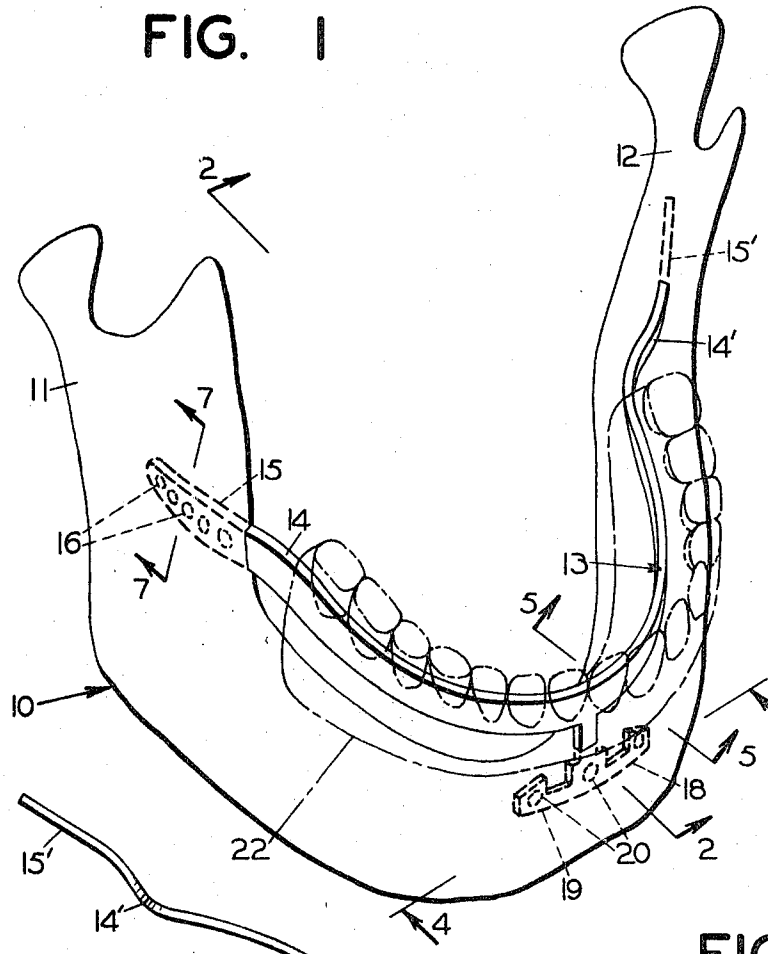


FIG. 4

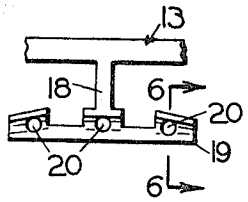
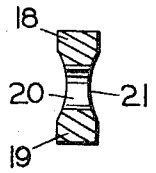


FIG. 6



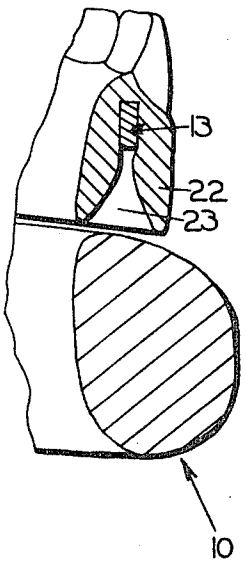


FIG. 5

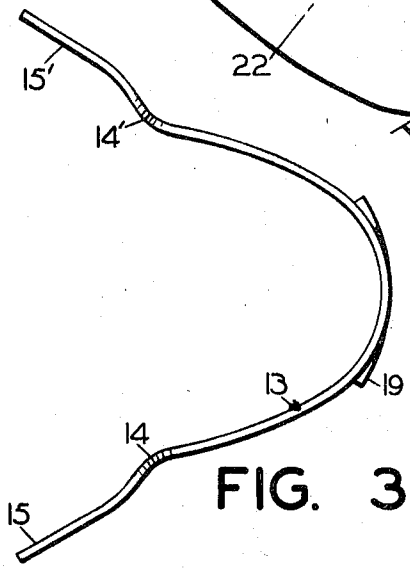


FIG. 3

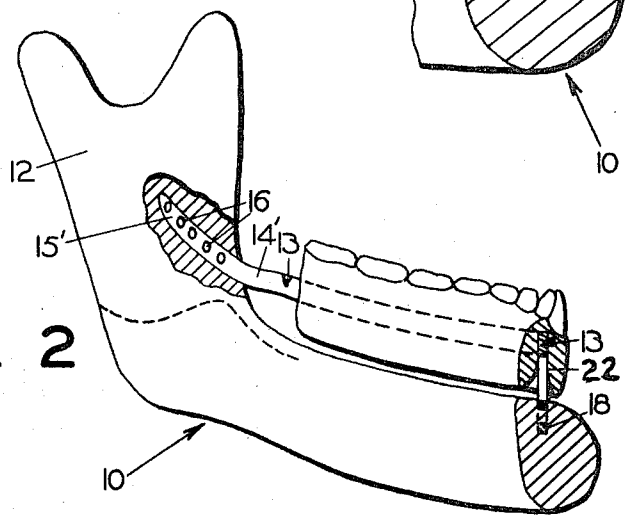


FIG. 2

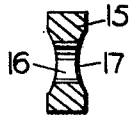


FIG. 7

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ENDOSSEOUS RAMUS IMPLANT AND DENTURE SUPPORT FRAME

CROSS-REFERENCE TO RELATED APPLICATION

This application is a continuation-in-part of the application Ser. No. 843,579, filed July 22, 1969 and now U.S. Pat. No. 3,377,853 issued Apr. 20, 1971, entitled "Dental Ramus Implant and Method of Mounting the Same," filed by the same applicant.

BACKGROUND OF THE INVENTION

Various means have been tried for satisfactorily securing artificial dentures in place in the lower jaw. Subperiosteal skeleton saddles secured to or on the mandible, other types of implants, and bridges have been used, including bridges having one end secured on an implant. Often intraosseous implants and implants for bridge support cannot be reliably employed in the bicuspid and molar portion of the mandible, particularly if atrophy of the bone has set in, and, until recently implants in the ramus portion of the mandible for bridge supports have not proved entirely capable of withstanding removing stresses imposed in mastication due to the fact that such ramus implants consisted of posts which were limited in depth by the location of the alveator nerve and artery. The improved ramus implant described in the above-mentioned pending application Ser. No. 843,579, however, describes how a novel ramus implant may be very satisfactorily employed and securely held by the ramus portion of the mandible regardless of the condition of other portions of the mandible.

The present invention is concerned not with artificial dentures limited in extend to only a portion of the lower jaw, but with dentures which take the place entirely of the lower jaw teeth, thus dentures used when the real teeth have all been removed from the jaw and are replaced by a set of false teeth. With such dentures it is important that they be held in place with sufficient firmness to enable normal mastication to accomplished by the wearer but also that they may be removed from the mouth without difficulty from time to time for proper sanitation. Accordingly, the object of the invention is to provide a rigid, permanent and entirely sanitary support frame on which such a denture or set of false teeth can be firmly but removably secured in place.

OUTLINE OF THE INVENTION

An integral frame assembly, serving as a denture support, consists of a rigid bar, made of metal suitable for dental implants, and formed into the proper shape and size to correspond to the particular mandible on which it is to be permanently set. Each end of the bar terminates in a special ramus implant, such as that described in pending application, Ser. No. 843,579, previously mentioned. The intermediate portion of the bar is provided with an integral downwardly extending blade suitable for an implant in the front of the mandible. When the two ramus implants and the intermediate mesial implant are set in place the bar extends around over the jaw, spaced a fraction of an inch above the epithelium on the mandible, thus enabling thorough cleansing to take place beneath the bar when the artificial denture is not mounted thereon. The denture to be used has the foundation material, in which the teeth are secured, so formed that it can be firmly but removably pressed down over the bar and into comfortable contact with or in very close proximity to the gum surface or epithelium.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a perspective view of a mandible bone showing the denture support frame permanently mounted in the same, the integral ramus implants and mandible mesial implant being shown in broken lines, and the denture supported entirely by the permanent frame being indicated by dotted lines;

FIG. 2 is a fragmentary elevation taken on the line indicated at 2—2 in FIG. 1, with part of the ramus broken away to show the corresponding implant in the same;

FIG. 3 is a top plan view of the entire support frame itself;

FIG. 4 is an elevation of the mandible mesial implant portion of the support frame taken on the line indicated at 4—4 in FIG. 1;

FIG. 5 is a cross section of the mandible bone, frame bar, and the denture, taken on the line indicated at 5—5 in FIG. 1 but drawn to a larger scale;

FIG. 6 is an enlarged cross section of the base of the mesial implant taken on line 6—6 of FIG. 4 but drawn to a larger scale; and

FIG. 7 is a cross of one of the ramus implant end portions of the frame taken on line 7—7 of FIG. 1, drawn to a larger scale.

In FIG. 1 the mandible bone is indicated in general by the reference 10 and the two ramus portions of the mandible are indicated by 11 and 12 respectively. The denture support frame comprises a rigid bar 13 having its main portion curved to conform to the shape and size of that portion of the mandible on which the denture is to extend. Near its ends the bar 13 curves slightly downwardly, as indicated at 14, 14' (see also FIG. 2) and then slopes slightly upwardly to form the ramus implants, 15, 15', similar to the ramus implant described in the above-mentioned application, Ser. No. 843,579. The exact shaping of these portions of the denture support frame is determined by the dentist with regard to the particular mandible on which the denture is to be mounted.

Each of the ramus implants 15, 15' is similar to the ramus implant described in pending application, Ser. No. 843,579, and each ramus implant is driven in between the lingual and buccal cortical plates of the mandible at a selected angularity and at a carefully chosen point, taking into consideration such matters as the condition of the bone, the angle of the anterior border of the ramus, and the amount of bone above the alvealor nerve. Each implant is formed with a plurality of holes 16 to permit the bone growth to enter these holes and to cause the implant to remain more rigidly anchored in the bone. Also, the side faces of the implants are preferably concave, as shown at 16 in FIG. 7.

The bar 13 is provided with an integral downwardly extending branch at the central or forward portion, which is so arranged as to constitute an intraosseous blade 18 suitable for an implant in the front of the mandible. The form and shape of this forward implant may be varied but a preferred form is shown in the drawings, thus with the implant including a bottom crossbar member 19 (FIG. 4) containing a plurality of holes 20 to permit bone growth therethrough, and also preferably having concave sides 21, as shown in FIG. 6. The purpose of the forward integral intraosseous blade or implant 18 is to aid in steadying that portion of the rigid bar 13 against any tendancy to move slightly up or down under certain circumstances, as for example, when the front teeth of the mounted denture are used for biting. However, the main anchorage of the bar 13 is, of course, the ramus implant at each of its two ends.

Each ramus implant, as has been found to be the case with the ramus implant described in pending application, Ser. No. 843,579, previously referred to, supplies the necessary rigid foundation to withstand permanently the various moving stresses imposed at the adjacent molar and bicuspid areas of the mounted denture when the denture engages in the performance of mastication. The arrangement and anchoring of the two terminal ramus implants, the size, shape and setting of the implant in the front of the mandible, and the shape and size of the entire rigid bar 13 are so arranged that there will be a spacing of a fraction of an inch between the lower edge of the bar 13 and the top surface of the gum or epithelium in between the implants.

Thus, as far as the permanent support frame itself is concerned, no problem of proper sanitation ever arises since thorough cleansing of the permanent frame is a very simple matter whenever the mounted denture is removed. Nor can

the support frame itself cause any irritation to the epithelium or discomfort to the wearer of the mounted denture.

The artificial denture, removably mounted on the permanent support frame, will include the usual base foundation of acrylic compound or other suitable denture material, indicated at **22** in FIGS. **1**, **2** and **5**, in which foundation material the artificial teeth are secured as usual. In forming and shaping this base foundation **22**, the dentist provides it with an upwardly extending central slot **23** so arranged that the base foundation can be pushed down over the bar **13**, as indicated in FIG. **5**, until the bottom edges of the denture foundation come into desired proximity with the epithelium. This will cause the denture to be held satisfactorily and firmly in place on the permanent support frame for all practical use, but also makes it possible to lift the denture from the permanent support frame without difficulty when temporary removal of the denture is desired for any reason. The forming and shaping of the denture and its proper mounting on the permanent support frame obviously present no problem to the dentist.

Thus the artificial denture is firmly but removably mounted, and the rigid permanent support frame enables the denture to be used fully and freely, with ordinary care, and without worry or discomfiture on the part of the wearer.

I claim:

1. A lower jaw denture assembly comprising a rigid bar

forming a permanent support frame and an artificial denture removably mounted thereon, said bar sized and shaped to correspond to the mandible, each end of said bar formed into an implant and driven rearwardly into the corresponding ramus portion of the jawbone in between the lingual and buccal cortical plates of the ramus at a desired distance above the alvealor nerve, each of said end implants having a flat body portion with a plurality of holes extending laterally therethrough, each of said implants having a width of approximately 2 mm., a depth not exceeding 6 mm., and an overall length of at least 30 mm., each of said end implants also having an upwardly curved bottom edge with the bottom and top edges of the implant converging at the end tip facilitating the driving of the implant into the ramus, said artificial denture of the assembly comprising a foundation of suitable denture material with the artificial teeth held therein, said foundation extending over said bar down to the epithelium on the mandible and firmly but removably held by said bar.

2. The denture assembly of claim **1** with the bottom edge of said bar spaced a fraction of an inch above the epithelium on the major portion of the mandible and with the addition of an integral intraosseous blade on the forward central portion of said bar constituting an implant in the front portion of the mandible.

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