

[54] **DETACHABLE MOUNT FOR A DENTAL
CAP AND PROSTHODONTIC PROCEDURE
UTILIZING THE SAME**

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[22] Filed: **Sept. 21, 1972**

[21] Appl. No.: **290,858**

[52] U.S. Cl. **32/12**

[51] Int. Cl. **A61c 5/08**

[58] Field of Search..... **32/12, 9, 13**

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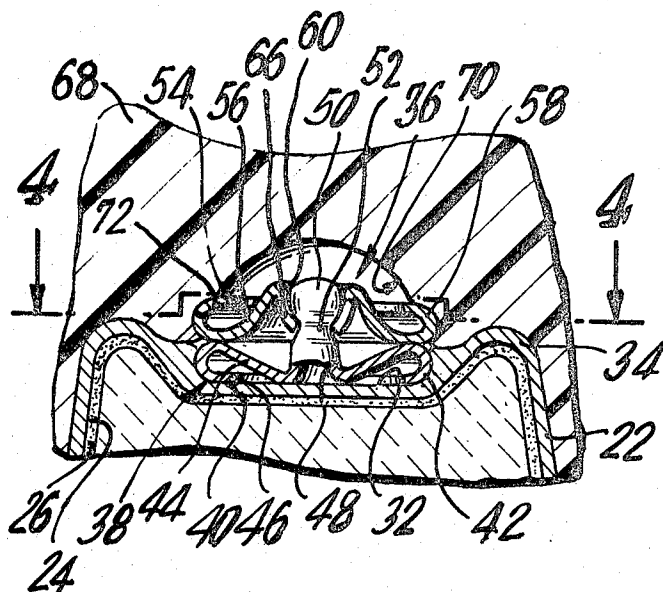
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[57]

ABSTRACT

A dental cap, which may be an individual cap, or an end or intermediate cap of a bridge, is detachably secured by a fastener to a coping cemented on a prepared tooth. The fastener has one-half thereof mounted on the undersurface of the cap and the other half, through the medium of the coping, on the upper surface of the prepared tooth. A "prepared" tooth constitutes that part of a tooth which, in accordance with conventional dental practices, has had some or all of the enamel removed but which has a substantial residual bulk extending for a considerable distance above the gingival margin. A prepared tooth usually is vital, that is to say, alive, so that the present invention maintains a large part of the integrity of a tooth structure and does not tend, as has been the case with previous detachable caps, to leave only the root of a tooth which is highly susceptible to various forms of attack and stress damage and is not as inherently strong as a prepared tooth.

8 Claims, 5 Drawing Figures



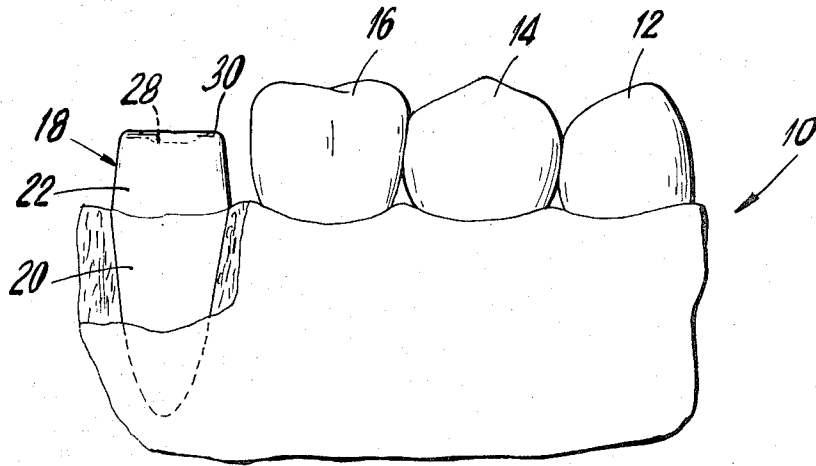


FIG. 1

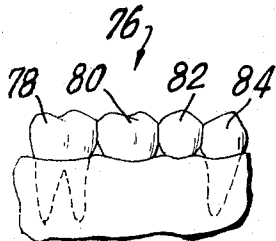


FIG. 5

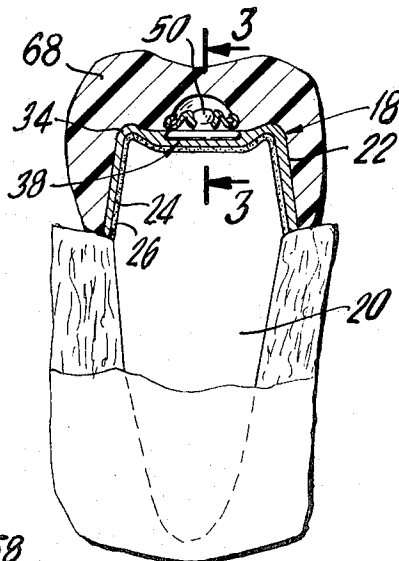


FIG. 2

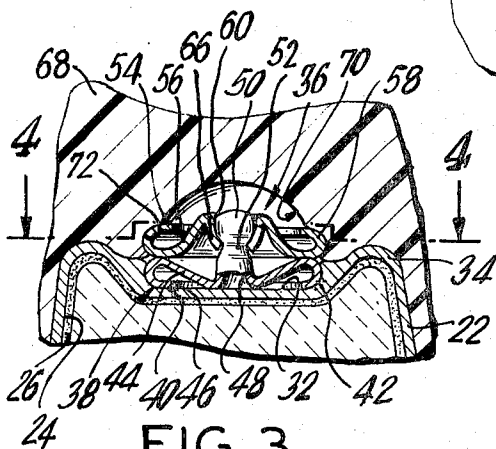


FIG. 3

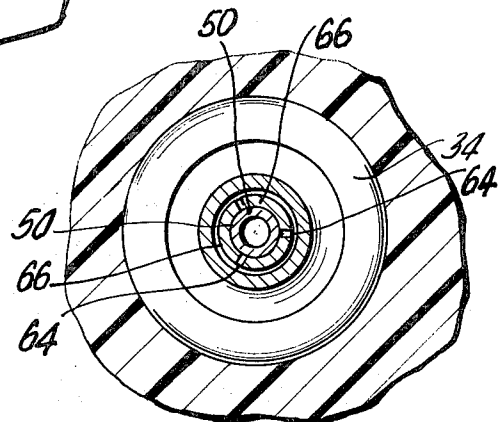


FIG. 4

DETACHABLE MOUNT FOR A DENTAL CAP AND PROSTHODONTIC PROCEDURE UTILIZING THE SAME

BACKGROUND OF THE INVENTION

1. Field of the Invention

A cap detachably secured to a coping affixed, as by cementing, to a prepared tooth.

2. Description of the Prior Art

There are two types of dental prostheses with which the present invention is concerned. One of these is the provision of an individual cap and the other the provision of a bridge.

Heretofore, a common practice for the capping of an individual tooth was first to prepare the tooth and then to cement a crown on the prepared tooth. A prepared tooth is one which has had some or all of the enamel thereof removed, the removal, however being such that a large bulk of the tooth above the gingival margin remains. Conventionally, in a prepared tooth the side walls of the tooth during the removal of enamel are tapered inwardly and upwardly for a lower tooth or downwardly for an upper tooth so as to facilitate the coupling, i.e., telescoping, thereon of the interior surface, i.e., socket, of the cap onto the portion of the prepared tooth extending upwardly from slightly below the gingival margin. After the preparation, after a determination of the configuration of the prepared part of the tooth and after the formation of a cap with a socket to match the prepared part of the tooth, the cap is first temporarily and then permanently cemented in place.

This procedure has been followed for many years, but has certain drawbacks. Thus, once the cap is permanently emplaced it is not easy to replace it if a defect, e.g., a chip, appears therein, nor can the surfaces of the cap be easily modified, e.g., to correct a bite or engagement with a mating tooth, that is to say, there is no easy way to modify or correct an occlusion. Moreover, once a cap has been permanently installed it is most difficult to remove it without damaging either the cap or the prepared part of the tooth beneath it, so that if a tooth next to a capped tooth is extracted and it is desired to use the capped tooth as an anchor tooth for a bridge, it is necessary to subject the patient to the ordeal of removal of the cap so as to substitute for that individual cap an anchor cap as an end cap of a bridge. Moreover, where an individual tooth is capped permanently in the foregoing fashion, it is not possible to thoroughly clean and keep healthy the gingival tissues surrounding the base of the cap. In addition, where a cap is fitted to a prepared tooth the mating interengagement between the two is not always perfect because it depends upon the skill and technique of an individual dental technician who prepares the cap, so that complete seating of the cap is not always obtained.

Where bridges are made, various procedures have been adopted. One procedure that has been used successfully for many years is to prepare teeth at the ends of a gap caused by extraction of one or more teeth. Then these prepared teeth are capped with the caps being permanently joined by one or more artificial teeth that overlay the gap and have their bases at the gingival margin. Such procedure is subject to the same defects as the permanent emplacement of single caps

with the further complication that the problem with defects extends to all of the other teeth of the bridge, and food particles can intrude into the space between the bottoms of the intermediate artificial teeth and gums where they are most difficult to remove, encouraging the formation of diseased tissue and a foul odor. Obviously, because of the permanent emplacement of the bridge, thorough massaging and cleaning of the gum tissues is not possible except as an elaborate procedure effected in a dentist's office.

To overcome some of these drawbacks encountered in connection with bridges, removable bridges have been made. One of the oldest of these constituted a bridge formed only to replace the extracted tooth or teeth and included at its ends clips (clasps) which engaged the external surfaces of the patient's teeth adjacent the ends of the gap to be closed by the bridge. These clasps placed an undue stress upon the end teeth of the patient's aforesaid teeth, which were known as anchor teeth, eventually causing these teeth to become decayed and necessitating their removal and extension of the bridge. Although the clasps conventionally were made of a metal such as chrome-cobalt so as to minimize corrosion and to enhance wear after extended use the clasps become thin and have to be replaced.

It also has been proposed to use detachable connections both for single teeth and for anchor caps. For example, where a single tooth had to be replaced, one method of attachment was to form a vertical dovetail mortise in a tooth adjacent a gap and to mount a vertical dovetail tenon on a single artificial tooth which would then be held in the gap by a mortise-and-tenon connection.

The same arrangement has been proposed for bridge work, that is to say, where one or more adjacent teeth have been extracted, the artificial teeth are provided in the configuration of a bridge of teeth, the endmost ones of which have dovetail mortises in a patient's teeth adjoining the gap. This type of arrangement is unsatisfactory for various reasons such, for instance, as the necessity for removal of very substantial portions of a good tooth, the difficulty of proper interfitting of each mortise and tenon and the difficulty in fully socketing each mortise in its mating tenon so that the artificial tooth or bridge can be at the proper level on the patient's jaw.

Still another method used for dental restoration where bridges were concerned is that in which the bridge is made removable by virtue of detachable attachment of the end teeth of the bridge to the roots of teeth in a patient's mouth. Where this procedure is adopted, the patient's teeth adjacent the gap to be filled have the entire portion thereof down to the gingival margin, and sometimes below, ground off leaving only the root embedded in the gums and jawbone. This constitutes a very radical procedure which is a shock to the patient's physiological system and leaves very little tooth bulk on which to mount one-half of a fastening means that is to be coupled to the mating half of a fastening means carried by an end artificial tooth of a bridge. It should be understood that the root of a tooth is considerably more slender than the portion of the tooth above the gingival margin and, moreover, tapers considerably and is not always straight. Furthermore, the hard skin of a root is not as thick or as hard as the enamel of a patient's crown, so that when one-half of a fastening means is mechanically integrated with a pa-

tient's tooth there is a considerable danger of fracturing the root during the mounting or the preparation for mounting of this fastener half. Obviously, once this root is damaged it is incumbent upon the dentist to extract the root, frequently with considerable suffering to the patient, and to proceed to the adjacent tooth to perform the same mutilation of a tooth, hopefully with better results.

In some procedures, to avoid this problem, it has been proposed to secure the gum half of the fastening means in the jawbone itself. This imparts an even greater physiological shock to the patient's system and if the jawbone structure is weak, can cause immeasurable damage. It will be appreciated that whether the half of the fastening means is attached to the root or to the jawbone, during use of the bridge, stress that might be incurred by biting or chewing, e.g., upon a hard object, is transmitted either to the root or to the jawbone causing pain or possibly even damaging the root or jawbone.

SUMMARY OF THE INVENTION

PURPOSES OF THE INVENTION

It is an object of the invention to provide a detachable mount for a dental cap which overcomes all of the foregoing drawbacks.

It is another object of the invention to provide a mount of the character described which constitutes relatively few and simple parts, is easy and inexpensive to make and fit in a patient's mouth, lends itself to accurate fitting, enables individual caps or bridges to be removed very quickly, and with no pain to the patient, if the cap or tooth must be reworked for any reason or be replaced with a fresh cap or bridge and, withal, enables a dentist to perform prosthodontic work with excellent results.

It is another object of the invention to provide a mount of the character described which cooperates with a prepared tooth, i.e., a tooth which has a substantial bulk above the gingival margin, and which permits this prepared tooth to be used while the same still is vital.

It is another object of the invention to provide a mount of the character described which is attached to a tooth portion that extends above, and preferably substantially above, the gingival margin so as to enable the remnant tooth portion to assimilate stresses which may be imparted thereto after the mount is emplaced and an individual cap or anchor cap of a bridge has been detachable secured thereto.

It is another object of the invention to provide a method of dental prosthodontics which through the use of the aforesaid mount creates a removable, securely attached cap or bridge that is indistinguishable from a patient's natural teeth.

Other objects of the invention in part will be obvious and in part will be pointed out hereinafter.

BRIEF DESCRIPTION OF THE INVENTION

Where an individual tooth is to be capped, the tooth first is prepared by removing the crown enamel, usually to slightly below the gingival margin, so as to leave a large residual bulk of the tooth extending substantially above the gingival margin, this being a procedure for preparation of a tooth which is commonly employed for attaching a cap to a prepared tooth permanently, as by the use of a dental cement. To this prepared tooth,

pursuant to the invention, a coping is fitted and permanently attached as by the use of a dental cement, e.g., a zinc phosphate cement or epoxy resin cement. The coping is fashioned so as to have secured to an upper portion thereof one-half of a fastening means. A typical fastening means is one-half of a snap fastener, for example, the male half of a snap fastener, the same constituting a squat post with a bulbous head. The prepared tooth and the coping include a recess at their tops to receive said half. A conventional cap is fashioned, exemplificatively a cap made from plastic, e.g., an acrylic plastic such as a polyacrylate, the undersurface of which has been socketed to match the external surface of the coping and the base of the socket being provided with a recessed mating half of the fastener which, if the half of the fastener attached to the coping is the male half of a snap fastener, will constitute the female half of a snap fastener. When the cap is secured to the coping by intercoupling of the two halves of the fastener means, the cap will be in its proper to-be-used position, with the under half of the socket mating with the external surface of the coping except where the two fastener halves are interengaged. The lower rim of the cap will be at or slightly below the gingival margin as is conventional for an individual cap.

A similar procedure is followed where a bridge is to be emplaced except, in this case, two teeth are prepared in the foregoing manner, one tooth being located at one side of the gap formed by extracted teeth and the other at the other side of such gap. A bridge then is fashioned which differs from a conventional bridge only in that the endmost teeth will have their undersurfaces formed with fastener halves designed to be coupled to the fastener halves on the copings that have been cemented to the prepared anchor teeth alongside the gap. With the foregoing arrangement the endmost caps of the bridge are supported by teeth, the bulks of which have not been very greatly reduced, indeed not reduced, as has been the case heretofore with detachable bridges, to the roots of the teeth.

Thus, the prepared tooth (or teeth) forms a very substantial anchor for a cap and is not readily seriously damaged in the normal course of a patient's activities. The stress imparted by forces applied to such a cap during ordinary eating are far more readily assimilable by the prepared tooth than it would be by a root or jawbone and, because the tooth can remain vital, if it was vital before preparation, the support for the cap will have a much longer life.

The invention accordingly consists in the features of construction, combinations of elements, arrangements of parts and series of steps which will be exemplified in the devices and method hereinafter described and of which the scope of application will be indicated in the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings in which are shown various possible embodiments of the present invention:

FIG. 1 is a fragmentary elevational view of a person's mouth showing the labial portions of several adjoining teeth and the adjacent gum, the leftmost one of the teeth illustrated having been prepared to receive a prosthodontic attachment pursuant to the present invention, and the gum around the prepared tooth being partially cut away to show the root of this tooth;

FIG. 2 is an enlarged vertical central cross-sectional view along the leftmost tooth shown in FIG. 1 after the mount, i.e., prosthodontic attachment, of the present invention has been applied, the section being taken along the line of the teeth;

FIG. 3 is an enlarged fragmentary sectional view taken substantially along the line 3—3 of FIG. 2;

FIG. 4 is a further enlarged fragmentary sectional view taken substantially along the line 4—4 of FIG. 3; and

FIG. 5 is a thumbnail view similar to FIG. 1 of the present invention used for detachable attachment of a bridge.

PREFERRED EMBODIMENTS OF THE INVENTION

Referring now in detail to the drawings, and more particularly to FIGS. 1-4, the reference numeral 10 denotes a person's gum. The jawbone covered by the gums has not been illustrated as it is not pertinent to the present invention. However, the jawbone is in the usual physiological relationship to the gum. Shown in the gum are four teeth 12, 14, 16, 18. The teeth 12, 14, and 16 are normal, sound teeth, the crowns of which are in good enough condition not to require capping. By this, it is not meant that the crowns are perfect; they may include fillings (not shown), the teeth may be out of line or discolored or turned or in need of minor dental repair. However, these teeth 12, 14 and 16 have not reached a state where they require radical prosthodontic repair as, for example, if the tooth were so badly decayed that it could no longer accept fillings or were so badly discolored that the patient required an artificial crown (cap) for cosmetic purposes, or if the patient wanted to fill a space between teeth.

However, the tooth 18, which is not shown here as a complete tooth but which, before the practice of the present invention, was a complete tooth, i.e., a tooth with a root and a crown, was in such condition as to cause the patient to request capping or to have the dentist suggest and the patient acquiesce in capping. This tooth 18 is adjacent another tooth (not shown) further to the rear of the mouth which, like the teeth 12, 14 and 16, does not require capping; that is to say, the tooth 18 is, so to speak, an isolated tooth requiring capping but to both sides of which the adjacent or abutment teeth are not to be capped. This, then, is the tooth upon which the present invention is practiced.

The first step in capping the tooth 18 pursuant to the instant invention is to "prepare" the tooth. As used herein, the term "prepare" and the adjective form thereof are used as a transitive verb and as an adjectival participle to indicate a treatment of a tooth pursuant to which, in accordance with conventional dental practice, some or all of the enamel of the crown has been removed, usually to slightly below the gingival margin (so that the rim of a cap can extend into the tooth socket below the gingival margin whereby the cap, when installed, looks like a natural tooth), but in which a substantial residual bulk of the portion of the tooth that formerly underlaid the removed crown enamel is left intact in order to leave a considerable mass of the tooth protruding above the gum. A prepared tooth is commonly used for attachment thereto with cement of a permanently installed cap. However, although the method of preparation of a prepared tooth in accordance with the present invention is identical to that of

a prepared tooth having a cap permanently affixed thereto, the resemblance of the present invention to the prior art ceases at this point.

For convenience, the root of the prepared tooth is denoted by the reference numeral 20 and the "prepared" segment, i.e., the upper portion of the tooth, to wit, the portion extending from slightly below to well above the gingival margin and from which the crown enamel has been removed, is denoted by the reference numeral 22.

A metal, e.g., gold alloy, coping 24 is fabricated, usually by a dental technician, and for this purpose the dentist takes a mold impression of the prepared segment 22 and supplies it to a technician who then casts the thin coping 24 by known techniques such, for example, as investment molding, so that the inner surface of the coping will match the outer surface of the prepared segment 22. The dentist installs the coping on the prepared segment 22, the installation being a permanent one. The permanent attachment is effected by the use of a permanent adhesive layer 26, dental adhesive materials being well known in the dental art and a typical such one being zinc phosphate cement or epoxy resin cement.

Attention is called to the fact that the sides of the coping slope inwardly and upwardly on the lower jaw of a person and inwardly and downwardly on the upper jaw so that, in effect, the coping which follows the shape of the prepared segment 22 tapers away from the associated root 20.

It particularly should be noted that the prepared segment 22 is not entirely conventional inasmuch as in an ordinary prepared tooth used directly to receive a cap which is permanently attached thereto the tip of the segment 22 is convex or flat. It is not usual to make this tip concave. Nevertheless, pursuant to the present invention, it is highly desirable to have tip of the segment 22 depressed as best can be seen in FIGS. 2 and 3. In other words, the tip of the segment 22 is formed with a shallow well, i.e., depression, 28 surrounded by a squat upstanding rim 30. The coping 24 is correspondingly shaped so that it, too, has a depression 32 at its top surrounding a rim 34. The depression of the segment 22 and of the coping are quite shallow, being only deep enough to receive a structural component which is the base of a fastener half next to be described.

In order detachably to secure a dental prosthesis to the coping 24, said coping has permanently attached thereto one-half of a detachable fastening means. The present invention is not limited to any particular structure of detachable fastening means, it only is necessary that said detachable fastening means includes two halves, one of which is permanently affixed, as by direct, mechanical retention, dental cement or soldering, to the coping in the depression 32 or by or by setting into the coping during casting of the latter. Various types of detachable fasteners can be employed provided that the two halves thereof can be interengaged by simple relative linear motion toward each other. Phrased differently, the invention does not contemplate the use of any detachable fastening means which involves a combination of reciprocal and rotary motion for interengagement, such, for instance, as screws, mutilated screws (screws with splines and keys) and bayonet locks. Generally speaking, the detachable fastening means used pursuant to the present invention is a male/female combination and, as just noted, has cou-

pling thereof effected by simple translatory movement of the male into the female part. Typical of this type of means is a snap-type fastener in which the male part constitutes a post with a bulbous head and the female part constitutes a resilient gripping means such, for instance, as a set of constrictive fingers defining a resilient ring or a spring wire having opposed, generally parallel, reaches, the entire combination being such that when the bulbous head is inserted into the female part, the female part will expand to receive it and then contract in back of the head and onto the post in order to obtain an effective coupling. Another simple form of longitudinal interengageable fastener halves is one in which the male part has a recess or pocket and the female part has a transversely disposed socket into the bore of which a protuberance is transversely spring biased, the protuberance engaging the recess in the male part when the male part is thrust into the female part. Another suitable form of fastener halves which are interengageable by simple relative longitudinal movement is one in which the male part constitutes a protuberance at the end of a resilient post and the female part constitutes a protuberance which may be at the end of another post. Preferably, the male and female parts cooperate with piloting means to ensure that the two parts will be constrained for relative linear movement. When the two parts move into engagement the protuberances lie in each other's paths so that one or the other or both of the protuberances will force the opposite protuberance away from its unstressed position. When the protuberances move past each other they snap back into unstressed position, thus locking the two parts together against accidental disengagement.

The detachable fastening means illustrated in the drawings and which presently constitutes the preferred construction employed in the practice of the invention is a snap fastener 36 of the type sometimes known as a "gripper." The half of the snap fastener which is permanently attached to the coping can either be the male half or the female half and, as shown, is the male half 38. This half preferably is made of sheet metal and desirably is fabricated from a material which will not be eroded by the action of saliva. Such material may, for instance, be a chrome-cobalt alloy, a gold alloy or stainless steel. As illustrated, the male half includes a base 40, the outer edge of which is retroverted as at 42 to be turned back and provide an upper disc 44 having a central opening 46. The base 40 is formed at its center with an upwardly extending post 48 that projects through the opening 46. The post is rather short and is stiff. The tip of the post constitutes a bulbous head 50 below which is provided a circumferential groove 52. Although this is not critical, the groove is at approximately the level of the rim 34 of the coping. The specific height of the groove will, in each instance, depend upon the height of the cooperating gripping means on the female half 54. The base 40 is inset into the coping during casting of the latter.

The female half 54 includes a base 56 made of resilient sheet metal which desirably is not eroded by the action of saliva, e.g., chrome-cobalt, the circular circumferential edge 58 thereof being rolled under as shown in FIGS. 2 and 3. An opening 60 is provided at the center of the base, said opening being defined by radially inwardly extending cantilevered leaves 66 separated by grooves 64. The tips of the cantilevered

leaves are only slightly spaced from one another. The leaves are turned downwardly as best shown in FIGS. 2 and 3 and their tips turned inwardly. The configuration of the leaves is such that they conjointly define an open-ended split tube of rather squat height. Due to the fact that the base, and therefore the leaves, are of a springy material, the split tube is resiliently constrictive in nature, i.e., will perform a gripping function if there is thrust into the same a post, such as the post 48, the external diameter of which somewhat exceeds the internal diameter of the tube. Thereby the tips of the leaves of the split tube act as a gripping means when the post 48 is forced into the tube.

The tips of the leaves 66 that define the split tube will be nicely received within the groove 52, snapping into said groove when they reach it as the female half moves axially down the post from the head 50. After the tip of the leaves are received in the groove 52, they can be disengaged therefrom simply by applying sufficient force to the female half to overcome the retention force of the resilient leaves when it is desired to disengage said half from the male half.

The two halves are so dimensioned that when the post is inserted into the split tube, the head 50 will first spread apart said tube until the groove 52 is at the plane of the tips of the leaves 66 whereupon the tips snap into the groove bearing against the same beneath the head 50 so that the two halves of the snap fastener are firmly coupled to each other.

Furthermore, a cap 68 having an external configuration matching that of the patient's natural tooth crown is included in connection with the practice of the invention. The cap may be made in accordance with any suitable technique. For instance, it can constitute an inner lining of metal such as a gold alloy over which there is permanently cemented a covering in the shape and appearance of a natural tooth. This covering may be porcelain or, if for some reason the patient desires the same, the covering may be a gold alloy or stainless steel. In the form of the invention illustrated the cap 68 is fashioned from a plastic, for example, an acrylic plastic such as a polyacrylate resin, the dimensions, configuration and coloration of which will resemble the patient's natural teeth and will match the remaining natural teeth. The undersurface of the cap is formed with a socket 70 which matches the exterior surface of the coping 24. Standard dental casting techniques are employed to secure this match, a good technique being that which is employed to match a cap to a prepared tooth and the inclusion of which in this description would unduly lengthen the same. However, instead of permanently securing the cap to the prepared tooth as has been an accepted practice heretofore, and instead of permanently securing the cap to the exterior surface of the coping, the center of the socket is shaped to provide a depression 72 that will accept the female fastener half which is permanently connected thereto by cementing or inseting into the same during casting of the cap whereby this female fastener half thereupon becomes functionally unitary with the cap.

Now the cap is ready to be mounted in a patient's mouth. To do this, after the previous steps recited, is quite simple. The cap merely is placed over the male fastener half with the two fastener halves aligned and with the cap correctly angularly oriented. Then the cap is pressed down to couple the two fastener halves whereupon the cap is now ready for use. There is essen-

tially no vertical play between the two halves of the fastener so that the cap is tight in the mouth and the wearer will notice no movement of the cap which, so far as he is concerned, acts the same as a natural tooth. However, the cap can be readily pulled off by the wearer or by a dentist, for instance, if it is desired to clean the coping or the socket or either one of the two fastener halves. They can be flushed or brushed with the usual implements and maintained in a scrupulous condition of cleanliness. It will be observed that the rim of the cap extends slightly below the gingival margin as is usual for caps, so that the cap, to all outward appearances, resembles a natural tooth extending from the gums.

The coping and matching socket of the cap are aspherical; hence once the cap is emplaced, it cannot rotate on the coping and will remain in its designed orientation.

A cap such as described can be employed other than as an individual cap in the manner shown in FIGS. 1-4. Thus, as illustrated in FIG. 5, a bridge 76 is fabricated with the assistance of the present invention. The bridge includes teeth 78, 80, 82 and 84. All of these teeth are artificial. The four artificial teeth are joined to one another as a unit, as is conventional in bridges. However, only the teeth 80 and 82 replace extracted teeth.

The artificial teeth 78 and 84 constitute anchor teeth for the bridge. Each of these is detachably attached to an underlying prepared natural tooth having thereon a coping and a permanently mounted half of a snap fastener as described in detail with respect to FIGS. 1-3, and each of the individual artificial bridge end teeth 78 and 84 is in the form of a cap the undersurface of which is socketed and has permanently secured therein the matching half of a detachable fastener which will cooperate with the half of the detachable fastener that is permanently emplaced on the coping of the associated prepared natural tooth. Thereby the bridge 76 can be detached and replaced as a unit.

The bases of the artificial teeth 80 and 82 are, of course, not socketed and they lie immediately adjacent the gum so as to have the appearance of natural teeth, this being customary in dental bridges. However, the bridge 76, by virtue of its easy removal and replacement, enables the crevice between the artificial teeth 80 and 82 and the gum line to be thoroughly cleaned so that no particulate matter can accumulate and create a disagreeable odor or tend to initiate deterioration of the underlying gum tissue. In addition, by this easy removal, the patient will be encouraged to remove the bridge and massage the gums in the gap between the prepared natural teeth under the caps 78 and 84.

It thus will be seen that there are provided devices and methods which achieve the various objects of the invention and which are well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiments above set forth, it is to be understood that all matter herein described or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described the invention there is claimed as new and desired to be secured by Letters Patent:

1. In combination, a coping for permanent cemented attachment to an underlying prepared natural tooth the crown enamel of which is removed and the upper sur-

face of which is matched by the undersurface of the coping, a dental cap having a socket at its undersurface which matches the upper surface of the coping, a detachable fastener having two cooperable halves which can be readily coupled to or uncoupled from each other, means permanently securing one of the coupling halves to the cap in the socket and means permanently securing the mating coupling half to the coping with the coupling halves being in alignment when the cap is in registry with the coping, the portions of the cap and coping on which the coupling halves are secured being recessed to receive said detachable fastener, a rim around the recess in the coping, said coping and socket being aspherical to prevent relative rotation thereof.

2. A combination as set forth in claim 1 wherein the detachable fastener is a snap fastener including a male half and a female half.

3. A combination as set forth in claim 2 wherein the male snap fastener half is permanently attached to the coping and the female snap fastener half is permanently attached to the cap.

4. A combination as set forth in claim 2 wherein two copings are provided which are cemented to two spaced prepared natural teeth, wherein two caps are included, one associated with one coping and the other with the other coping, wherein two detachable fastener halves are associated, one with one coping and cap and the other with the other coping and cap, and wherein artificial teeth are provided between the two caps to constitute therewith a removable prosthodontic bridge.

5. In combination, a prepared natural tooth having the root thereof embedded in a patient's gum, said tooth having a prepared portion with the crown enamel removed and having a large residual bulk extending substantially above the gingival margin, a coping the undersurface of which is matched to the upper surface of the prepared tooth, cement permanently attaching the coping to the prepared tooth, said coping having an upper recess, a rim around the recess in the coping, said prepared tooth having a matching recess, a dental cap having a socket at its undersurface and recess in the socket, said cap, except at the recess therein, having an undersurface which matches the upper surface of the coping, a detachable fastener having two cooperable halves which can be readily coupled to or uncoupled from each other, means permanently securing one of the coupling halves in the recess in the socket and means permanently securing the mating coupling half in the recess in the coping with the coupling halves being in alignment when the cap is in registry with the coping, said coping and socket being aspherical to prevent relative rotation thereof.

6. A combination as set forth in claim 5 wherein the detachable fastener is a snap fastener including a male half and a female half.

7. A combination as set forth in claim 6 wherein the male snap fastener half is permanently attached to the coping and the female snap fastener half is permanently attached to the cap.

8. A combination as set forth in claim 7 wherein two copings are provided which are cemented to two spaced prepared natural teeth, wherein two caps are included, one associated with one coping and the other with the other coping, wherein two detachable fastener halves are associated, one with one coping and cap and the other with the other coping and cap, and wherein artificial teeth are provided between the two caps to constitute therewith a removable prosthodontic bridge.

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