

Dec. 18, 1956

W. T. QUINN

2,774,141

PONTICS FOR DENTAL BRIDGES

Filed March 23, 1953

2 Sheets-Sheet 1

FIG. 1

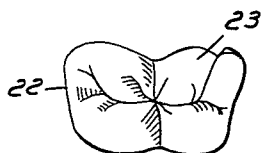


FIG. 2

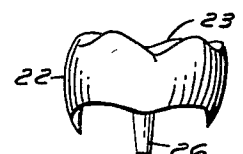


FIG. 3

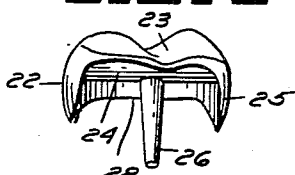


FIG. 4

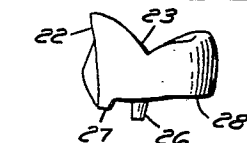


FIG. 5

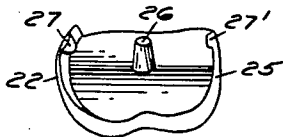


FIG. 6

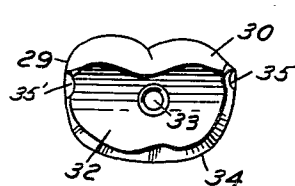


FIG. 7

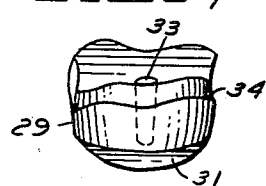


FIG. 8

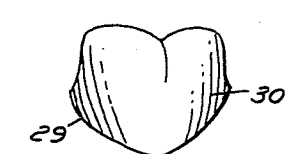


FIG. 9



FIG. 10

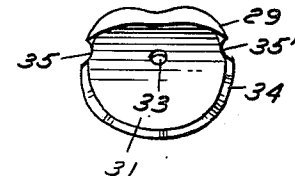


FIG. 11

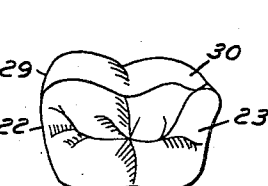


FIG. 12

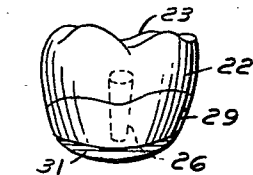


FIG. 13

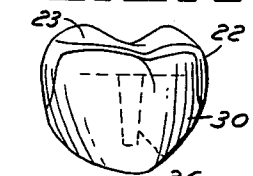


FIG. 14

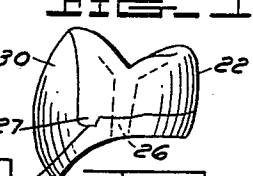
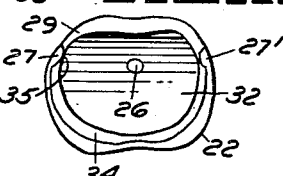


FIG. 15



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PONTICS FOR DENTAL BRIDGES

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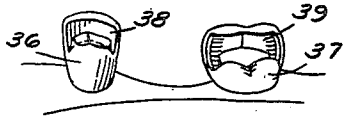


FIG. 16

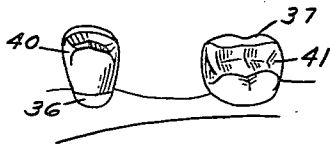


FIG. 17

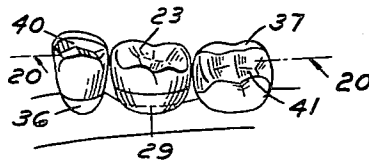


FIG. 18

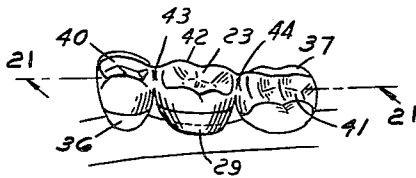


FIG. 19

FIG. 20

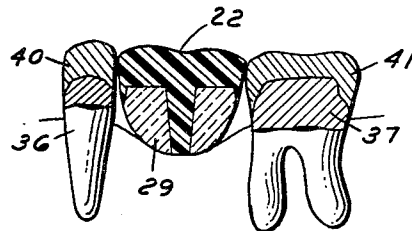
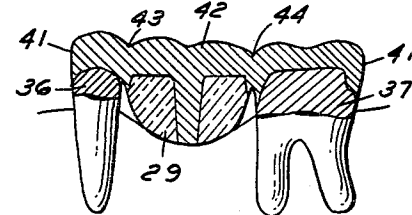


FIG. 21



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PONTICS FOR DENTAL BRIDGES

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8 Claims. (Cl. 32—6)

This invention relates to pontic making for fixed dental bridges, wherein one or more posterior pontics are desired for the replacement of extracted teeth.

It is an object of this invention to provide a ready made pontic having a tooth color portion and a casting pattern portion in which the latter portion is easily removable from the other portion and in which the tooth color portion and casting pattern portion are already designed for a properly made union of the tooth color portion with cast metal formed from the pattern portion.

It is also an object of my invention, in the fabrication of my pontic, to provide suitable preformed composite pontics consisting of a permanent inner or gingival tooth color portion and a separable interfitting perishable outer or occlusion portion of a material such as plastic, for which latter portion I expeditiously and efficiently substitute metal therefor so that when joined with the permanent portion the finished pontic will be of the precise overall dimensions of the initial composite pontic.

It is also an object of my invention to provide a method of making posterior pontics whereby expensive and time consuming labor and material costs are greatly minimized due to the elimination of all-wax pattern fabrications and the hand carving of same.

It is very well known that with the use of any type of pontic now made, either commercially or in the dental laboratory, extensive wax manipulation is necessary to form either the casting pattern or the pattern for the tooth color portion of the pontic. Such pattern-making entails time consuming application of both skill and care by the bridge technician. The wax used is subject to distortion or breakage upon comparatively slight finger pressure, atmospheric temperature changes, as well as by being damaged by dropping on hard surfaces. Furthermore such wax is not amenable to the use of articulating paper for fine occlusal adjustments. In short, in such pattern making, the factor of human error is prominent in the quality attained in the finished pontic.

In carrying out my invention I eliminate or greatly reduce the laborious tasks aforementioned of making the casting patterns and tooth color portion patterns of the pontics. Instead, I provide preformed pontics which consist of two very closely fitted parts, hereinafter described more fully, one comprising the tooth color or gingival-buccal portion and the other a ready made plastic casting pattern of the occlusal, mesial, distal and lingual portion of the pontic. These pontics are produced and made available in quantity and of sizes to meet the anatomical requirements at hand, thus affording the dental profession the advantage of having at hand at ample supply of preformed pontics upon which a minimum of adjustments are needed to be performed for the proper fitting of the pontic in the patient's mouth.

The tooth color portion of my pontic, with possible minor adjustments for proper fitting, remains unchanged and is the retained or permanent part of the finished pontic. This part may be made of porcelain, acrylic or of a material otherwise acceptable to the dental profession.

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The casting pattern portion aforesaid of my pontic, while closely and precisely fitted to the tooth color portion of the pontic, is easily removable therefrom. Being the pattern portion of the pontic, it serves but a temporary purpose, as it is eventually supplanted by metal in accordance with conventional casting methods. This casting pattern is acrylic, or of such material that (a) it is stiff enough to resist distortion or breakage from ordinary finger manipulation, atmospheric temperature changes or by being dropped upon hard surfaces, (b) it will burn out in a casting mold without any residue whatsoever at pre-heating or casting temperatures now ordinarily used, (c) being suitably colored, as for instance pink, it supplies color contrast with the tooth color portion for ready demarcation and with articulating paper for convenient use of the latter in checking occlusion, and (d) its slight translucency may be utilized in detecting any areas made thin by grinding.

As previously referred to, the tooth color and casting pattern portion or section of my pontic, having been preformed as a unitary composite structure, completion of the finished pontic is effected merely by placing the casting pattern section in a mold, completely burning the pattern therefrom and then utilizing the space vacated by the pattern for forming a metal casting of the precise dimensions of the dissipated pattern. The fit of the metal casting to the tooth color portion is then checked, after which the metallic portion of my pontic is, in accordance with established practice, rigidly united to anchoring metallic inlays or jackets to be fixed in or upon the adjacent abutment teeth. The tooth color portion is then cemented to the metallic portion of the pontic and the whole assembly is secured in place relative to the abutting teeth.

A full understanding of the manner of accomplishing the objects of this invention may be had from the following more detailed description and with reference to the accompanying drawings, in which:

Fig. 1 is a perspective occlusal view of the plastic pattern portion of the pontic,

Fig. 2 is a side elevation or lingual view of the plastic pattern portion of the pontic,

Fig. 3 is a side elevation or buccal view of the plastic pattern portion of said pontic,

Fig. 4 is an end elevation of the plastic pattern portion of said pontic,

Fig. 5 is a perspective view of the underside of the plastic pattern portion aforesaid,

Fig. 6 is a perspective occlusal view of the tooth colored portion of the pontic,

Fig. 7 is a side elevation or lingual view of the tooth colored portion of the pontic,

Fig. 8 is a side elevation or buccal view of the tooth colored portion of the pontic,

Fig. 9 is an end elevation of the tooth colored portion of the pontic,

Fig. 10 is a perspective view of the saddle or under side of the pontic,

Fig. 11 is a perspective occlusal view of the pattern and tooth colored portions of Figs. 1 and 6 fitted together,

Fig. 12 is a perspective lingual view of the pattern and tooth colored portions of Figs. 2 and 7 fitted together,

Fig. 13 is a side elevation or buccal view of the pattern and tooth colored portions of Figs. 3 and 8 fitted together,

Fig. 14 is an end elevation of the pattern and tooth colored portions of Figs. 4 and 9 fitted together,

Fig. 15 is a perspective view of the saddle or under side of the pattern and tooth colored portions of Figs. 5 and 10 fitted together,

Fig. 16 is a perspective view of the bridge space abutting teeth prepared for the reception of inlays or jackets thereon,

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Fig. 17 is a perspective view showing the inlays or jackets in position on the teeth of Fig. 16,

Fig. 18 is a perspective view showing one of my pontics in position intermediate the abutting teeth in one of the preliminary steps in the formation of my bridge,

Fig. 19 is a perspective view of the completed bridge in final assembled position,

Fig. 20 is an enlarged vertical cross sectional view taken on the line 20—20 of Fig. 18, and

Fig. 21 is an enlarged vertical cross sectional view taken on the line 21—21 of Fig. 19.

Referring to the drawings (Figs. 1 to 5 inclusive) numeral 22 designates the integrally formed acrylic casting pattern portion of my pontic, and 23 the occlusal surface thereof. A deep recess 24 is formed in the underside of the pattern portion, as shown in Fig. 3, which recess is surrounded on three sides by the U-shaped wall 25, thus leaving an open space at one side, as clearly shown in Figs. 3 and 5. Depending from the underside of surface 23 is an anchor post 26. The wall 25 is provided interiorly of its lowermost ends, adjacent the aforementioned open side, with a pair of projections 27—27' in spaced facing relationship to each other, and the lower peripheral edge 28 of said wall is slightly flattened for seating engagement on the tooth color portion 29 presently to be described. As above indicated the portion 22 is the pattern or impermanent portion of my pontic while the portion 29 is the permanent part thereof.

The permanent tooth color portion 29 (Figs. 6 to 10 inclusive) is preferably made of porcelain or plastic or other material acceptable to the dental profession. This portion is formed to provide the buccal side 30, the saddle 31, seat 32 and anchor post hole 33 of my pontic. The seat 32 is provided at its upper outer peripheral edge with a recessed seat 34 (Figs. 6, 9 and 10) and anchoring grooves or slots 35—35' are formed in spaced opposed facing relationship to each other at the extreme ends of said seat 34 adjacent the side 30.

As previously stated, the pattern of Figs. 1 to 5 inclusive and the tooth color portion, Figs. 6 to 10 inclusive, are preformed in quantity the one to snugly fit the other, and in producing such pontics they are made of various sizes mesio-distally and gingivo-occlusally to fit within the various sized spaces in patients' mouths to be bridged. In Figs. 11 to 15 inclusive I have shown the aforesaid pattern 22 and tooth color portion 29 in seated engagement one upon the other and it will be understood that in the preforming of such parts or sections that each part thereof is so formed that it will nest in snug fitting engagement with its mating component. Thus it will be seen, with particular reference to Figs. 4, 9 and 14, when the pattern 22 is fitted to the permanent portion 29, that the post 26 will engage in the anchoring hole 33, that the underside of surface 23 will rest upon seat 32, that the peripheral edge 28 will engage and seat upon the seat 34, and that the projections 27—27' will engage in snug seating and fitting engagement in the respective slots 35—35', thereby presenting a ready made or precisely tailored fitting, one with the other.

In all dental bridge work it is customary to prepare the space abutting teeth 36 and 37 by grinding away portions, generally indicated at 38 and 39 thereof, to receive cast inlays or jackets 41, which serve as anchoring means for the space filling pontic or pontics. Thereafter in the completion of the bridge work with my pontics, as hereinabove described, it is to be understood that one or more of such pontics may be required to fill the space between the adjacent abutment teeth in the patient's mouth. But irrespective of the number of pontics required the procedure of fitting, adjusting and anchoring the teeth is substantially the same and can be accomplished in accordance with established practice. Thus, after the usual working models of stone or plaster are made for the area to be bridged (including the inlay or jacket areas of the abutment teeth) as well as of the occluding teeth

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opposite the to be bridged area, the models are suitably placed in the usual articulator and one or more of my pontics (Figs. 11 to 15 inclusive) is selected to fit the space to be bridged. Obviously in such selection the closest size possible mesio-distally and gingivo-occlusally is of paramount importance, but some grinding of the pattern 22 and tooth color portion 29 may be required, as well as some wax additions to the pattern 22 may be desirable, for a proper fitting.

In Figs. 16 to 21 inclusive I show for illustrative purposes the employment of but one pontic interposed in the space between the abutment teeth 36 and 37; but, as previously stated two or more of such pontics can be employed where required. After determination of the matter of a properly positioned and fitted pontic in relation to the abutting teeth 36 and 37 and their respective cast inlays 40 and jackets 41, the precise relationship of my pontic or pontics to each other and to the adjacent abutment teeth 36 and 37 can be insured by pouring a plaster matrix over their respective occlusal surfaces. If more than one pontic is required to fill the bridge area their pattern portions 22 can be suitably stuck together in place by sticky wax before the pouring of the matrix. Upon hardening of the matrix the permanent portion 29 of the pontic is removed from the pattern portion 22. The latter is then lifted from the matrix and fitted with a sprue which is then suitably connected to a sprue holder, after which the pattern 22 is placed in a casting ring and covered with suitable casting investment material. After the latter is sufficiently set the aforesaid invested pattern is placed in an oven wherein the temperature is then raised to 850 degrees F. or more. The casting ring is then subjected, for ten minutes or more, to the above mentioned temperature in which time the pattern is completely burned out leaving absolutely no residue whatsoever in the space theretofore occupied by it. Following this, the area previously occupied by the pattern is cast with bridge gold and upon cooling and the cutting off of the sprue from the casting, the latter (now shown in Fig. 20 in metallic form) is now indicated by the numeral 42 as it has wholly and entirely supplanted pattern 22, the precise shape of which it has assumed. In consequence the latter is readily adaptable to be fitted to the tooth color portion 29, after which the abutment castings 40 and 41 are suitably united with casting 42, as shown at 43 and 44 (Fig. 21) by means of gold solder, or by other suitable locking arrangement. The portion 29 is then cemented in place and the entire assembly is likewise cemented in its place.

While this specification sets forth in detail the present and preferred construction of the device, it is to be understood that in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

I claim:

1. The method of constructing a dental bridge for anchorage to metallic holding means in space abutting teeth comprising as steps, the utilization of a preformed two piece pontic comprising a lower permanent tooth colored portion and an upper mating impermanent portion in interlocked engagement therewith, removing the latter and casting therefrom a metallic duplicate thereof, soldering said duplicate to the metallic holding means, and cementing the duplicate and permanent portions together.

2. The method of constructing a dental bridge for anchorage to metallic holding means in space abutting teeth comprising as steps, the utilization of preformed two piece space filling pontics each of said pontics comprising a lower permanent tooth colored portion and an upper mating impermanent pattern portion in interlocked engagement with its lower portion, removing said upper portions and casting therefrom a unitary rigid metallic duplicate of said pattern portions, soldering said duplicate

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to the metallic holding means, and cementing the duplicate and permanent portions together.

3. The method of constructing a dental bridge for anchorage to metallic holding means in space abutting teeth comprising as steps, the utilization of a preformed two piece pontic comprising a permanent gingival-buccal portion and a mating impermanent occlusal-lingual-approximal pattern portion in interlocked engagement with the first named portion, removing the pattern portion and casting therefrom a metallic duplicate thereof, soldering said duplicate to the metallic holding means, and cementing the duplicate and permanent portions together.

4. The method of constructing a dental bridge for anchorage to metallic holding means in space abutting teeth comprising as steps, the utilization of preformed two piece space filling pontics each of said pontics comprising a permanent gingival-buccal portion and a mating impermanent occlusal-lingual-approximal pattern portion in interlocked engagement with the first named portion removing the pattern portions and casting therefrom a unitary metallic duplicate of said pattern portions, soldering the duplicate to the metallic holding means of the space abutting teeth, and cementing the duplicate and permanent portions together.

5. An article of manufacture for use in constructing dental bridges for rigid jointure with anchoring means carried by space abutting teeth comprising, a preformed pontic having a permanent portion and an impermanent pattern portion interfitting therewith, cooperating means formed in said portions for holding them in interlocking non-rotational relationship with each other, said pattern portion being removable from the first mentioned portion for casting a metallic duplicate thereof.

6. An article of manufacture for use in constructing dental bridges for rigid jointure with anchoring means carried by space abutting teeth comprising, a preformed pontic having a permanent gingival-buccal portion and

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an occlusal-lingual-approximal impermanent pattern portion interfitting therewith, cooperating means formed in said portions for holding them in interlocking non-rotational relationship with each other, said pattern portion being removable from the first mentioned portion for casting a metallic duplicate thereof.

7. An article of manufacture for use in constructing dental bridges for rigid jointure with anchoring means carried by space abutting teeth comprising, a plurality of preformed pontics each having a gingival-buccal portion and an occlusal-lingual-approximal pattern portion interfitting therewith, and cooperating means formed in each pontic for holding the respective portions thereof in interlocking non-rotational relationship with each other, said pattern portions being removable from the first mentioned portions for casting a metallic duplicate of said pattern portions.

8. An article of manufacture for use in constructing dental bridges for rigid jointure with anchoring means carried by space abutting teeth comprising, a plurality of preformed pontics each having a permanent gingival-buccal portion and an impermanent occlusal-lingual-approximal pattern portion, seats formed on each gingival-buccal portion, means formed on each pattern portion for interfitting relationship respectively in said seats, and cooperating means formed in each pontic for holding the respective portions thereof in interlocking non-rotational relationship with each other, said pattern portions being removable from the first mentioned portions for casting a metallic duplicate of said pattern portions for permanently replacing the latter.

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