

Feb. 14, 1967

G. V. NEWMAN
ORTHODONTIC BRACKETS
Filed April 9, 1964

3,303,565

FIG. 1

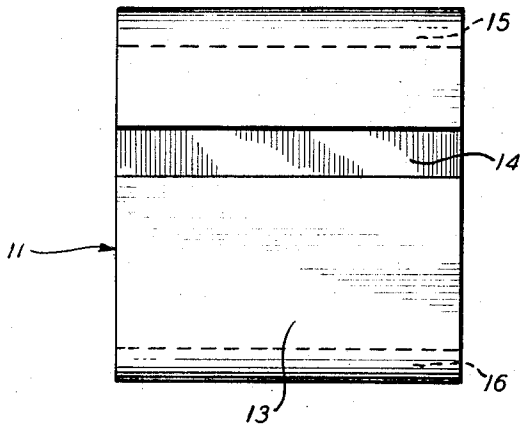


FIG. 2

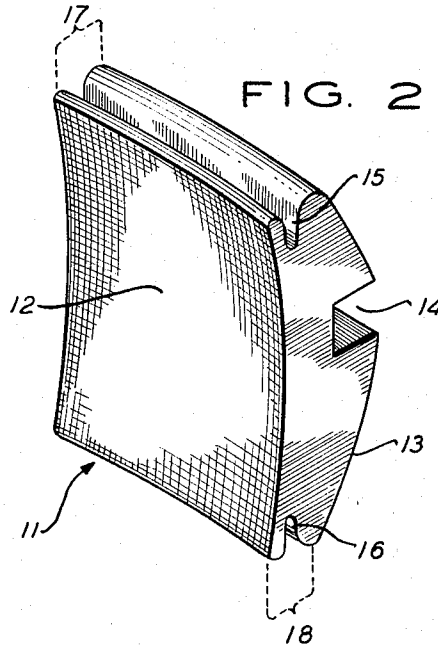


FIG. 3

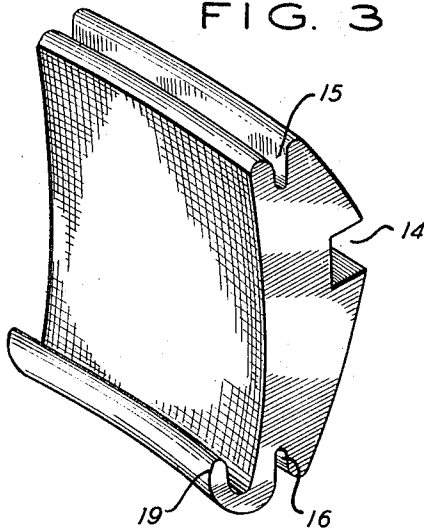
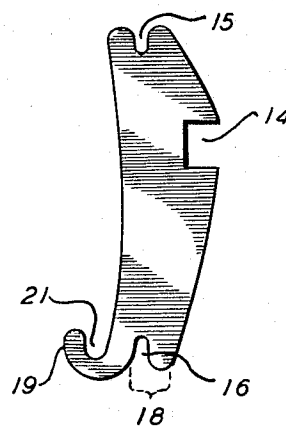


FIG. 4



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3,303,565

ORTHODONTIC BRACKETS

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1 Claim. (Cl. 32-14)

My invention relates generally to orthodontic brackets, and particularly to a bracket of this character which may be cemented or adhered directly to the tooth.

It is an object of this invention to provide an orthodontic bracket which may be cemented or adhered directly to the tooth, and which need not be reapplied during subsequent corrective applications of an arch wire. It will eliminate the use of a band and bracket which embraces the tooth on all sides, which is usually cemented to the tooth.

It is another object of my invention to provide for the application of force to a tooth in a gentle manner.

Another object of my invention is to provide an orthodontic bracket which is relatively cheap, easy to apply, durable, esthetically pleasing, easy to use, unobtrusive and least likely to entrap food particles.

Orthodontic correction is usually attained by exerting pressure on teeth by the application of bands or wires to tooth brackets attached to the teeth. Metal bands containing brackets may be uncomfortable, unsightly, collectors of food particles, or irritating to the mouth tissues. Metal bands containing brackets may be easily detached, or may move from place, so that the orthodontic correction is not efficiently attained. I have found that an orthodontic bracket can be made of a material that blends unobtrusively with the teeth. This bracket can be attached by cement or an adhesive, and will enable the application of an arch wire or band. The form of the bracket is such as to minimize the collection of food particles, permit the application of the requisite pressure to the teeth to accomplish the orthodontic purpose, remain rigidly fixed in place, and have a more esthetic appearance. The arch wire can be quickly and easily applied, can be removed for re-adjustment without great inconvenience or discomfort to the wearer; and the orthodontist can perform the necessary adjustment with speed and ease. An even more important advantage is that the corrective force is applied over a much greater area of the tooth, without any contact of the arch wire with the tooth itself, thereby preventing damage to the tooth structure that may take place through contact of the arch band or wire, as is sometimes the case with the use of other orthodontic brackets. By carefully adjusting the position of the orthodontic bracket, the orthodontic forces may be controlled as to direction, so as to attain the maximum of corrective results. In addition, the orthodontic bracket is so dimensioned as to present a minimum interference with mastication of food and dislodgment.

These objects and advantages, as well as other objects and advantages may be attained by a plastic bracket having a generally rectangular shape, concave at the back to generally conform to the anterior configuration of a tooth. There is a frontal arch wire channel extending from side to side in a generally horizontal direction, and top and bottom ligature channels. The arch band or wire is disposed in the frontal arch channel, and a ligature engaged with the top and bottom channels will hold it in place.

FIGURE 1 is a front elevational view of an orthodontic bracket, illustrative of my invention.

FIGURE 2 is a rear perspective view of the bracket shown in FIGURE 1.

FIGURE 3 is a rear perspective view of another species of the invention in which a curled bottom lip is provided to overlay the incisal edge of the tooth.

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FIGURE 4 is a side elevational view of the species shown in FIGURE 3. It is to be understood that the brackets shown are merely illustrative of the invention, for they are subject to variation in curvature, dimension, and shape to conform to the almost infinite variety of tooth structure encountered in the human race. Thus for central incisors, the bracket may be almost square. For lateral incisors and posteriors, the bracket will be narrower in width than in height. For acute protrusion or malocclusion, the species with the curled bottom lip may be utilized, and instead of being generally rectangular, it may be somewhat ellipsoidal so as to cover the entire labial surface.

Referring now to the drawings in detail, a plastic material is selected which has the requisite strength, inertness, resistance to deterioration through contact with saliva and foods which are normally ingested, and which is free from undesirable taste, texture, or odor, and has a low coefficient of thermal expansion. Numerous materials of this character are known, of which the thermoplastic such as acrylics, cellulose nitrate and vinyls, and the thermosetting such as epoxies, phenolics, polyurethanes, and polyesters are examples.

Other qualities entitled to consideration in the selection of a suitable plastic material is a coefficient of thermal expansion which is compatible with the tooth structure as well as the attaching cement; resistance to fluid absorption, resistance to abrasive deterioration, impact strength, flexibility, ease of shaping and manufacture, capability of being tinted to match tooth color, toxicity, brittleness.

Polymethylmethacrylate, cellulose acetate, nylon, polyvinyl chloride and copolymers, urea and melamine formaldehyde resins are among the vast variety that may be used.

The plastic material selected is formed into a bracket 11 which is generally rectangular, as shown in FIGURES 1 and 2. The posterior portion 12 is vertically and horizontally concave so as to conform to the anterior portion of the tooth to which it is to be adhered or cemented to. The anterior portion 13 of the bracket is preferably vertically convex, and may also be slightly convex horizontally, although neither anterior convexity is essential, and is merely suggested for the purpose of minimizing bulk, and to make the bracket more esthetically pleasing and less obtrusive not only to the wearer, but to those who may see it.

The bracket is provided with a generally horizontal front channel 14. There is also a generally horizontal top ligature channel 15, and also a generally horizontal bottom ligature channel 16. The top channel 15 and the bottom channel 16 are located in a generally flattened top surface 17, and a generally flattened bottom surface 18, respectively. Since the bracket 11 is generally arcuate from side to side as herein before referred to, the top and bottom channels 15, 16 are also arcuate in correspondence with the posterior portion 12.

The species shown in FIGURE 3 is substantially identical with the species shown in FIGURES 1 and 2 except for a rearwardly curled transverse lip 19 defined at the back 20 of the flat bottom 18. The lip 19 defines a channel 21 dimensioned to overlay the incisal edge of a tooth.

In use, brackets 11, etc. are selected which are dimensioned to correspond with the tooth. A compatible material such as a cyanoacrylate ester, vinyl or acrylic monomers, polyurethane or epoxy adhesives, or a cement, is used to attach them to the teeth. The arch wire is then placed in the front channels 14. Ligatures are then tied around the brackets 11, etc. passing through the top and bottom channels 15, 16, thereby securing the arch

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wire in place in the front channel 14. Without detaching the brackets 11, etc., the arch wire in channel 14 may be reshaped when the ligatures in the top and bottom channels 15, 16 are removed.

The foregoing description is merely intended to illustrate an embodiment of the invention. The component parts have been shown and described. They each may have substitutes which may perform a substantially similar function; such substitutes may be known as proper substitutes for the said components and may have actually been known or invented before the present invention; these substitutes are contemplated as being within the scope of the appended claim, although they are not specifically catalogued herein.

What is claimed:

An orthodontic bracket comprising:

- (a) a plate having curved posterior surface adapted to register with the anterior surface of a tooth,

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- (b) a transverse, generally medial, anterior channel for an arch wire on the plate,
- (c) transverse, horizontally arcuate top and bottom channels for a ligature on the plate, and
- (d) a bottom enlargement on the plate extending rearwardly and upwardly to define a seat for the incisal edge of the tooth.

References Cited by the Examiner

UNITED STATES PATENTS

1,976,141	10/1934	Richardson	32—14
2,713,720	7/1955	Johnson	32—14
3,052,027	9/1962	Wallsheire	32—14
3,193,930	7/1965	Bien	32—14
3,250,003	5/1966	Collito	32—14

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