

[54] **ORTHODONTIC APPLICATOR TOOL**

[72] Inventor: **Robert E. Sutter**, 95 Greenway Circle, Sacramento, Calif. 95831

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[56] **References Cited**

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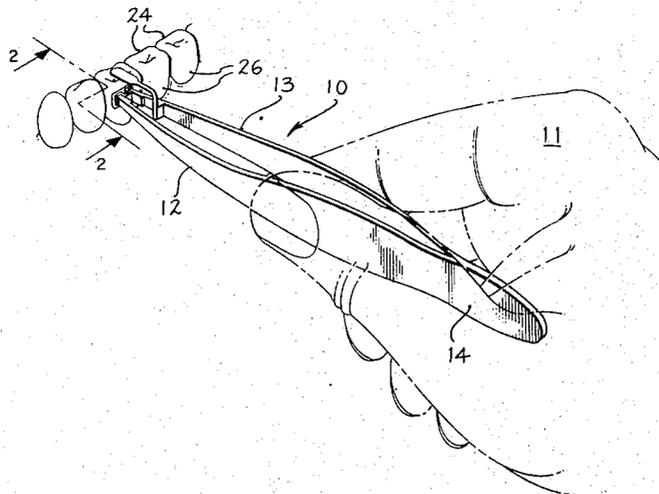
Primary Examiner—Robert Peshock

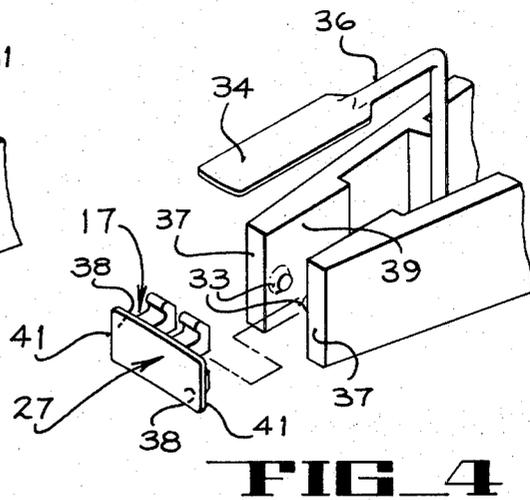
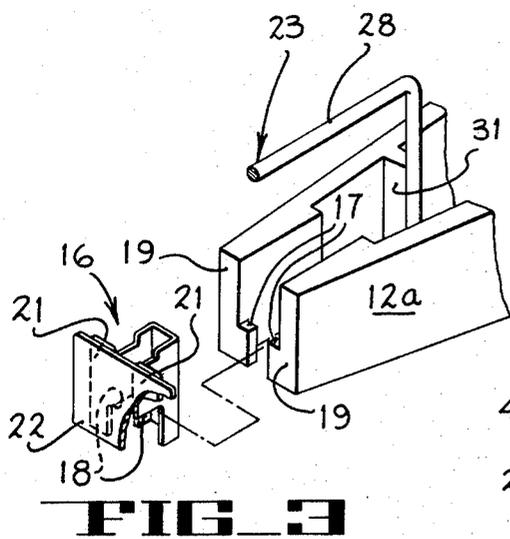
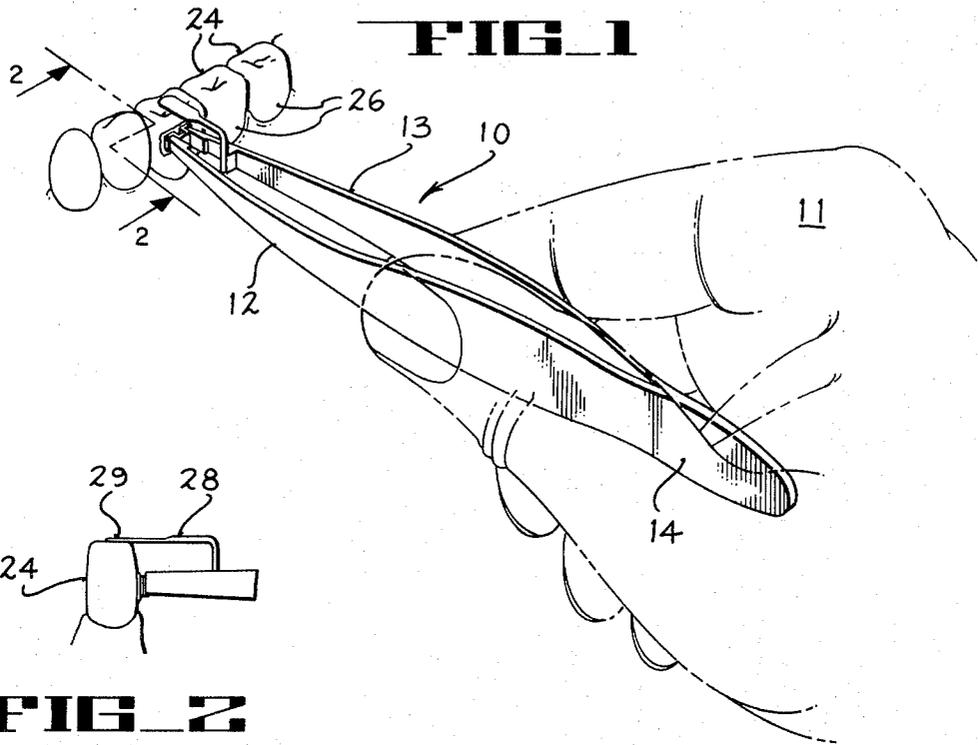
Attorney—Flehr, Hohbach, Test, Albritton & Herbert

[57] **ABSTRACT**

An orthodontic applicator device for disposing orthodontic elements upon teeth at a predetermined displacement from the plane of the biting surface of each tooth serves to permit the ready alignment of orthodontic brackets as they are glued directly to the teeth. The device includes a forceps having a pair of elongated leaves terminating in confronting tip ends. The tips of the leaves include confronting registration detents for engaging an opening in the orthodontic element, such as a bracket. A registration feeler member is carried by the forceps in a manner to extend above and beyond the end of the leaves for engaging the biting surface of a tooth. The spacing between the feeler member and the detents defines the disposition upon a tooth of the element when carried by the forceps.

4 Claims, 4 Drawing Figures





INVENTOR.
ROBERT E. SUTTER

BY *Fleher, Hohbach, Test
Albritton & Herbert*
ATTORNEYS

ORTHODONTIC APPLICATOR TOOL

BACKGROUND OF THE INVENTION

This invention pertains to an orthodontic tool and more particularly to a forceps style tool for engaging and aligning an orthodontic bracket being attached directly to a tooth.

Heretofore, metal bands of a type which encircle a tooth have been employed for purposes of straightening the teeth. On the band a so-called control bracket has been attached through which wires are strung and, in general, it is desired to align the wire openings in a common plane so that the wires will lead a relatively straight path around the mouth. This requires the bands to be carefully placed around each tooth relative to the others.

Where the brackets are directly cemented to the teeth by means of suitable cement, it has been quite difficult to handle and align the tiny brackets in view of their relatively small size. A tool is disclosed for the purpose of aligning the brackets in a common plane measured down from the top biting surface of the tooth to which the bracket is to be attached and thereby to facilitate proper alignment of the wire openings of the brackets carried on the teeth of the wearer.

SUMMARY OF THE INVENTION AND OBJECTS

It is an object of the present invention to provide a tool which readily facilitates the handling and aligning of orthodontic elements such as control brackets being attached directly to the teeth.

The foregoing and other objects of the invention will be more readily apparent from the following detailed description of a preferred embodiment when considered in conjunction with the drawing.

In general, there has been provided an applicator device for disposing orthodontic elements such as bracket upon teeth at a predetermined displacement from the plane of biting surface of each tooth. The device comprises a forceps having a pair of elongated leaves each terminating in a tip end. The tip end of the leaves include registration means for engaging portions of the orthodontic elements. A registration feeler member is also carried by the forceps to extend above and beyond the registration means so as to engage the biting surface of a tooth. The spacing between the feeler member and the position of the registration means serves to define the disposition upon the tooth of the element carried by the forceps.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view showing an orthodontic applicator device in use applying an orthodontic bracket element to a tooth;

FIG. 2 is a side elevation view taken along the view line number 2 shown in FIG. 1;

FIG. 3 shows an exploded, enlarged detail view, partially in section, showing the tips of an applicator device adapted for use in conjunction with a so-called Begg bracket;

FIG. 4 is an exploded, enlarged detail view, showing the tips of an orthodontic applicator device according to the invention adapted for use with a standard edgewise bracket.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

An orthodontic applicator device 10 is shown in FIG. 1 as held in the hand 11 of an orthodontist. Device 10 generally comprises a pair of sprung leaves 12, 13 joined at their upper ends 14 whereby the two leaves 12, 13 can be pinched together by the thumb and forefinger of the hand 11.

The distal ends 12a, 13a of leaves 12, 13 are designed for positively engaging an orthodontic bracket such as the Begg bracket 16 or standard edgewise bracket 27. Thus, the tip ends 12a, 13a of the leaves include spaced confronting registration detents 17 for engaging a wire slot or opening 18 formed in bracket 16. Detents 17 are arranged in confronting relation to be inserted into openings 18 in a manner whereby the front surfaces 19 can firmly engage and be pressed solidly against the flanged surfaces 21 of bracket 16 when applying bracket 16 to a tooth.

A backing plate 22 is carried by bracket 16 and is formed with a relatively compliant surface material adapted to conform to and be glued to the surface of a tooth by suitable known glues now in use.

Finally, a registration feeler member 23 is mounted to be carried by forceps 10 to extend above and beyond the detents 17 for engaging the biting surface 24 of a tooth 26 when applying a bracket. The spacing between feeler member 23 and detents 17 serves to define the disposition upon the tooth of the bracket element and hence opening 18.

Thus, it is readily evident that feeler member 23 serves to register the slot openings 18 at a predetermined level spaced from the biting surface of the teeth 26 as each bracket is applied.

Feler member 23 preferably comprises an elongated resilient rod portion 28 and a broad, flattened tongue portion 29 carried at the end of the rod portion for engaging the biting surface of a tooth. Rod portion 28 is mounted by suitable means such as soldering or other means to an elongated rib 31 so as to dispose tongue portion 29 substantially in a plane centrally between the tip ends 12a, 13a of leaves 12, 13.

By providing a relatively broad, flat tongue 29, the registration feeler member 23 obtains substantially universal utility with respect to disposing a bracket element on all of the teeth in one's mouth. Thus, where a tooth is relatively flat on top, as with a molar, the feeler member could conceivably consist substantially of the rod-like portion alone. However, where the teeth are relatively sharp, such as the canine teeth, it then becomes somewhat difficult to properly support the feeler member upon the top surfaces of the tooth while pressing the bracket against the tooth during the gluing operation.

In operation, the device 10 is first employed to pick up and engage the slot openings 18 of a bracket element by means of detents 17 and thereafter glue is applied to the back of backing plate 22. Subsequently, when desired to mount the bracket element 16 upon a given tooth, the tongue portion 29 of feeler member 23 is rested upon the biting surface of the tooth and the front surfaces 19 of device 10 are then employed to press against the tooth firmly in order to properly distribute the glue carried on backing plate 22.

As shown in FIG. 4, a standard edgewise bracket 27 is formed with a slot opening 32 through which a wire will later be disposed in making the orthodontic corrections.

Detents 33 engage openings 32 at a predetermined displacement from tongue 34 of a feeler member 36. The surfaces of detents 33 are slightly tapered so as to cause the detents to wedge themselves snugly into the openings 32 while permitting the side faces 39 to engage the ends 41 of bracket 27. Detents 33 are recessed slightly from the front surfaces 37 whereby surfaces 37 can readily act upon the flange portions 38 of bracket element 27.

Thus, the tips of the leaves include end surfaces 37 or 19 for confronting and firmly pressing the bracket elements against a tooth while the detents 33 or 17 engage and register with openings in the bracket element.

It is not particularly intended that an orthodontist employ the same single applicator device 10 in applying the brackets to all of the teeth of a patient. It is preferable that, in order to accommodate the different sizes and shapes of the teeth in a patient's mouth, a set of applicator devices of the type described should be provided with their feeler members located at different displacements from their respective detents and, in this manner, the wire openings 18 or 32 can all be disposed substantially in a common plane. On the other hand, where the orthodontist can simply observe that a bracket being applied will be located at a position a little too high or low on a tooth, some adjustment is permitted by urging the tip ends of the device 10 downwardly (as shown in FIG. 1) against the resilience of rod portion 28 in order to increase the spacing or displacement between member 23 and the wire opening position of a bracket.

I claim:

1. An applicator device for disposing orthodontic elements upon teeth at a predetermined displacement

from the plane of the biting surface of each tooth, said device comprising a forceps having a pair of elongated leaves each terminating in a tip end, the tips of said leaves including spaced confronting registration detents for engaging an opening in said elements, and a registration feeler member carried by said forceps to extend beyond and spaced from said detents for engaging the biting surface of a tooth, the spacing between said feeler member and said detents serving to define the disposition upon the tooth of the element carried by the forceps.

2. An applicator device for disposing orthodontic elements according to claim 1 wherein said feeler member comprises an elongated resilient rod portion and a broad tongue portion carried at the end of said rod portion for engaging the biting surface of a tooth.

3. An applicator device for disposing orthodontic elements according to claim 1 wherein said feeler member comprises an elongated resilient rod portion and a broad tongue portion carried at the end of said rod for engaging the biting surface of a tooth, the tips of said leaves including end surfaces for confronting and firmly pressing said elements against a tooth while said detents engage openings in the element.

4. An applicator device for disposing orthodontic elements upon teeth at a predetermined displacement from the plane of the biting surface of each tooth, said device comprising a forceps having a pair of elongated leaves each terminating in a tip end, the tips of said leaves including registration means for engaging portions of said elements at a predetermined position, and a registration feeler member carried by said forceps to extend above and beyond said registration means for engaging the biting surface of a tooth, the spacing between said feeler member and the position of said registration means serving to define the vertical disposition upon the tooth of the element carried by the forceps.

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