Feb. 28, 1967 B. F. TOFFLEMIRE 3,305,928

DENTAL MATRIX BAND

Original Filed Dec. 16, 1963

FIG. 1.

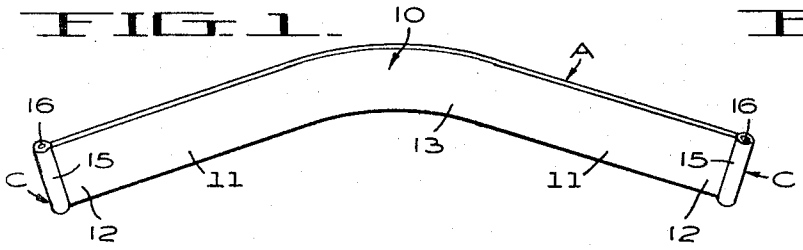


FIG. 2.

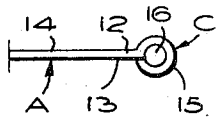


FIG. 3.

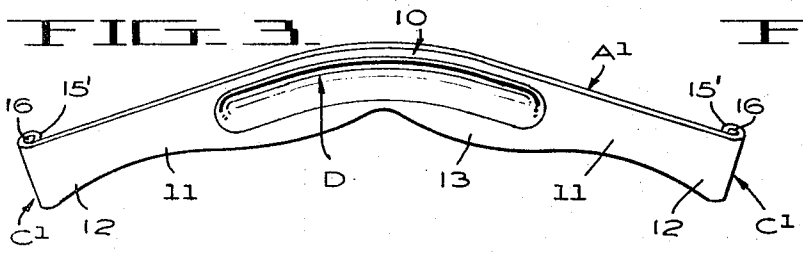
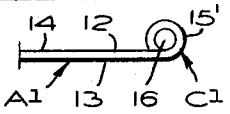


FIG. 4.



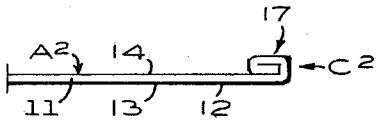


FIG. 5.

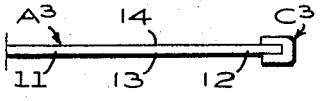


FIG. 6.

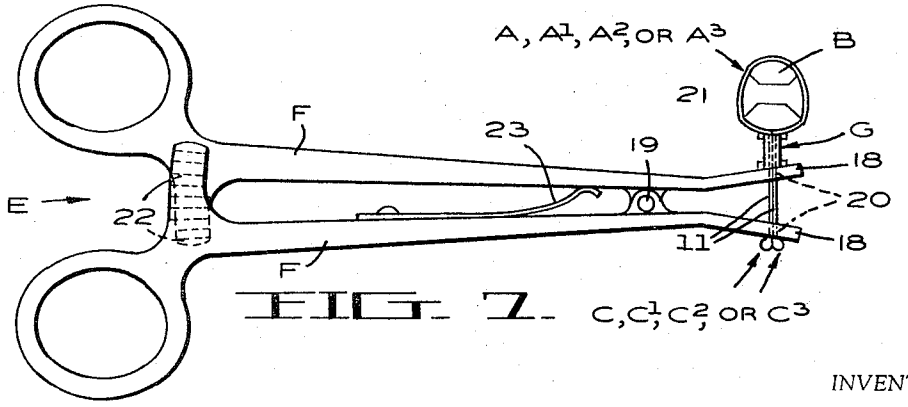


FIG. 7. C, C1, C2, OR C3

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DENTAL MATRIX BAND

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Original applications Dec. 16, 1963, Ser. No. 330,756, now Patent No. 3,237,307, dated Mar. 1, 1966, and Oct. 26, 1964, Ser. No. 406,371. Divided and this application Nov. 20, 1964, Ser. No. 412,817
1 Claim. (Cl. 32—63)

This application involves divisional subject matter of my copending applications identified as follows: (1) Serial No. 330,756, now U.S. Patent No. 3,237,307, issued March 1, 1966, filed December 16, 1963, entitled, "Traction Instrument for a Dental Matrix Band" (amended title), and (2) Serial No. 406,371, filed October 26, 1964, entitled, "Traction Instrument for Dental Matrix Band," and continuation-in-part of these copending applications.

An object of the present invention is to provide a dental matrix band that may be looped and constricted around a patient's tooth, the band defining a pair of arms extending from an arcuate central portion, and the terminal outer ends of the arms being provided with traction instrument-engaging abutments or stops that are made to coact with slotted heads of a traction instrument for exerting a straight pull on the arms of the band when constricting the latter.

Another object of the invention is to provide abutments that will not be sheared off when traction force is exerted thereon.

A still further object of the invention is to provide a dental matrix band that is simple in construction, durable and efficient for the purpose intended.

Other objects and advantages will appear as the specification proceeds, and the novel features of the invention will be pointed out in the appended claims.

Drawing

For a better understanding of the invention, reference should be had to the accompanying drawing, forming part of this specification, in which:

FIGURE 1 is a perspective view of one embodiment of my dental matrix band;

FIGURE 2 is an enlarged top plan view of the right-hand end of the band shown in FIGURE 1, both ends of the band being identical;

FIGURE 3 is a perspective view of a second embodiment of my dental matrix band;

FIGURE 4 is an enlarged top plan view of the right-hand end of the band shown in FIGURE 3, both ends of the band being identical;

FIGURES 5 and 6 are enlarged top plan views of the ends of further embodiments of my dental matrix band; and

FIGURE 7 is a top plan view of a traction instrument for constricting any of the foregoing dental matrix bands around a patient's tooth.

While I have shown only the preferred embodiments of my invention, it should be understood that various changes, or modifications, may be made within the scope of the appended claims without departing from the spirit thereof.

Detailed description

Referring now to the dental matrix band A shown in FIGURES 1 and 2, this embodiment of the band has been divided out of my copending application, Serial No. 330,756, filed December 16, 1963, entitled, "Traction Instrument for a Dental Matrix Band" (amended title). It has an arcuate central portion **10** and a pair of arms **11** extending from the ends of the arcuate central portion, each arm defining a terminal tip **12** at its outer end. The

band is made of a strip of pliable material and has an inner face **13** disposed to embrace the surface morphology of a patent's tooth B (see FIGURE 7), when the strip is looped and constricted around the tooth. Moreover, the strip has an outer face **14** extending the length of the strip.

It will be noted that a pair of traction instrument-engaging abutments C, or stops, are provided on the terminal tips **12** of the arms **11** so extend substantially at right angles relative to the lengths of their respective arms. These abutments are defined by tubular ends **15** that surround and embrace rods **16**, the tubes being fixed by any suitable means to their respective rods. These abutments project in lateral directions beyond the inner and outer faces **13** and **14**, respectively, and they are reinforced so that the abutments will not be sheared off when traction force is exerted thereon.

The modified dental matrix band A^1 shown in FIGURES 3 and 4 have abutments C^1, the latter having been divided out of my copending application, Serial No. 406,371, filed October 26, 1964, entitled, "Traction Instrument for Dental Matrix Band." The band A^1 is similar in many respects with the band A, and like reference numerals have been applied to corresponding parts. However, the tubular ends **15'** that surround and embrace the rods **16** project from only one face of the strip, for instance, outer face **14**. The abutments C^1 are reinforced so as to prevent them from being sheared off when traction force is applied thereto.

As an added feature, the band A^1 may be pre-contoured with a preformed isthmus groove D in its tooth-embracing or inner face **13** in the same manner and purpose set forth in my United States Patent No. 3,145,472, entitled, "Pre-contoured Dental Matrix Band."

In the further modification shown in FIGURE 5, the matrix band A^2 has an abutment C^2 defined by crimping the outer end of the strip back upon itself, with the crimped portion **17** projecting from a face of the strip, for example, the outer face **14**. Of course, an abutment C^2 will be provided on each outer terminal end **12** of the band A^2, and will be reinforced by the crimped portion **17** so as to prevent shearing when traction force is exerted thereon.

Referring to the fragmentary showing of a modified form of a dental matrix band A^3 shown in FIGURE 6 the abutment C^3 is defined by a channel-shaped member being suitably secured to the outer terminal tip **12** of the strip, with this member projecting laterally beyond the inner and outer faces **13** and **14**, respectively. Again, it will be understood that an abutment C^3 will be provided on each outer terminal tip **12** of the strip, and it provides reinforcement that will prevent the abutment from being sheared off when traction force is exerted thereon.

The traction instrument E disclosed in FIGURE 7 is more fully illustrated in my copending application, Serial No. 406,371. It will be briefly described so as to bring out the functions of the several abutments previously mentioned. This instrument has a pair of operating handles F, each being provided with a retainer head **18** at its forward end. A hinge connection **19** secures intermediate portions of the handles together, with the hinge being located so as to spread the heads **18** apart and thus constrict the selected matrix band around the tooth B, when the rear ends of the handles are moved toward one another.

Each retainer head **18** has a slot **20** extending thereinto and dimensioned to frictionally receive the overlapped arms **11** of the looped matrix band (A, A^1, A^2 or A^3) edgewise. A retainer clamp G may be lightly applied to the overlapped arms **11** and interposed between the loop **21** of the selected band and the adjacent head **18**.

Such a clamp is shown in my United States Patent No. 3,046,659, dated July 31, 1962. The abutments on the selected band will bear against the remote head **18**. Ratchet lugs **22** are formed on the handles F for locking the latter in closed position, and a spring **23** yieldingly urges the rear ends of the handles apart, and at the same time urging the heads **18** toward one another. After the clamp G is crimped on the arms **11**, the traction instrument may be withdrawn from the patient's mouth.

It will be apparent that when the abutments C or C^3 project from both the inner face **13** and outer face **14**, as in FIGURES 1–2 and 6, and the strip is made flat, either face may be placed next to the banded tooth B. However, when the band is pre-contoured, as in FIGURE 3, it is advisable that the abutments C^1 or C^2 should project from the outer face of the strip, as shown in FIGURES 3–4 and 5, since the inner face **13** must be placed next to the banded tooth B. In any event, the abutments will permit a straight-line pull to be exerted on the outer terminal tips **12** of the dental bands by the retainer heads **18** of the traction instrument E.

The material constituting the abutments may be spot-welded, soldered, crimped, or otherwise secured together, so as to prevent the abutments from unravelling during the application of the traction force.

I claim:

A dental matrix band comprising:

(a) a strip of pliable material having an arcuate central portion and a pair of arms extending from the ends of the arcuate central portion, each arm defining a terminal tip at its outer end;

(b) the strip having inner and outer faces;

(c) a pair of traction instrument-engaging abutments provided on the terminal tips of the arms to extend at substantially right angles relative to the lengths of their respective arms;

(d) the abutments projecting laterally beyond at least one face of the strip, and being reinforced so that they will not be sheared off when traction force is exerted thereon;

(e) the terminal tip and abutment on one arm being independent and unsecured to the terminal tip and abutment of the other arm, whereby the arms may be selectively moved into parallel contacting relation with one another or the arms freely separated relative to each other;

(f) the abutments being defined by independent tubular ends on the tips of the strip that surround and embrace separate rods, the tubes being fixed to their respective rods.

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