

Bogotá, julio 7 de 2008

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



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Señores

Superintendencia de Industria y Comercio

Alix Céspedes de Vergel

Jefe de División de Nuevas Creaciones

Cordial saludo

Dando cumplimiento a los requerimientos hechos por su despacho el 08 de febrero de 2008, correspondiente al oficio N° 2659, referentes al capítulo descriptivo y al capítulo de reivindicaciones de la patente de invención de la PINZA PARA ORTODONCIA DE DOBLE EXTREMO PORTABRACKETS Y/O POSICIONADOR, con radicado N° 04-30987 me permito presentar la documentación anexa.

Gracias.

Juan Carlos Toro P.
Att. Juan Carlos Toro Pérez
C.C. 15.352.710

DESCRIPCION

EN LA ACTUALIDAD PARA LLEVAR LOS BRACKETS DE ORTODONCIA DESDE LA MESA DE TRABAJO HASTA LOS DIENTES EN QUE VAN A SER CEMENTADOS, SE UTILIZA UNA PINZA DE UN SOLO EXTREMO, EN LA QUE AL EJERCER PRESIÓN DIGITAL SOBRE SUS DOS SUPERFICIES LATERALES, ABRE LA PARTE ACTIVA EN LA QUE DEBE UBICARSE EL BRACKET PARA QUE AL SUPRIMIR LA PRESIÓN LO AGARRE Y PUEDA ASÍ SER LLEVADO A POSICIÓN, ESTO IMPLICA QUE DEBEN USARSE POR LO MENOS DOS PINZAS EN CASO DE TRABAJAR CON AUXILIAR PARA QUE EL TRABAJO SEA FLUIDO, O PUEDE UTILIZARSE UNA PINZA SI SE TRABAJA SOLO, PERO COMO YA SE DIJO SE REQUIERE PRESICIÓN PARA AGARRAR EL BRACKET Y CUIDADO DE NO PRESIONAR LOS BORDES LATERALES DE LA PINZA CUANDO ÉSTA LLEVE EL BRACKET PORQUE PUEDE SOLTARSE ANTES DE SER COLOCADO EN EL DIENTE.

LAS VENTAJAS DE LA NUEVA PINZA PORTABRACKETS SE RESUMEN EN QUE ÉSTA PERMITE CARGAR DOS BRACKETS A LA VEZ, LO QUE DISMINUYE EL TIEMPO DE TRABAJO Y EL NÚMERO DE INSTRUMENTOS REQUERIDOS PARA ESTE FIN, ADEMÁS CON ESTA PINZA PUEDEN TOMARSE LOS BRACKETS DE LA MESA DE TRABAJO CON SOLO POSICIONAR EL INSTRUMENTO SOBRE EL BRACKET Y EJERCER PRESIÓN SOBRE ÉSTE. PARA SOLTAR EL BRACKET DE LA PINZA, SE PRESIONA EL OBTURADOR, EL CUAL REQUIERE DE MENOS FUERZA YA QUE ÉSTA SE REALIZA EN UN SOLO SENTIDO; A DIFERENCIA QUE LAS PINZAS RADICIONALES POR TENER UN PUNTO OBTURADOR ES MENOS POSIBLE QUE ACCIDENTALMENTE SE PRESIONE ÉSTE Y SE SUELTE EL BRACKET ANTES DE TIEMPO POR PRESIONAR ACCIDENTALMENTE. EL AGARRE QUE DA EL EXTREMO PORTABRACKETS ES COMPARATIVAMENTE SUPERIOR AL QUE BRINDAN LAS PINZAS TRADICIONALES, PUES LAS PINZAS PROPUESTAS SUJETAN EL BRACKET DE SU CANAL CENTRAL POR MEDIO DE UNA GUÍA Y DE SUS ALETAS POR MEDIO DE UNA GARRA, A DIFERENCIA DEL AGARRE DESDE LOS BORDES DEL BRACKET, QUE BRINDAN LAS PINZAS TRADICIONALES. LA FORMA DE LA PINZA PORTABRACKETS FACILITA IDENTIFICAR LOS EXTREMOS GINGIVAL E INCISAL DEL BRACKET TENIENDO EN CUENTA QUE SE RECOMIENDA COMO NORMA GENERAL, PARA ESTA PINZA, COLOCAR LA GARRA HACIA EL LADO DE LAS ALETAS INCISALES, PUES ÉSTAS NO TIENEN EXTENCIONES (HOOK) EN NINGUNA DE LAS TÉCNICAS DE ORTODONCIA. ESTE INSTRUMENTO ES MAS LIVIANO Y ANATÓMICO QUE LAS PINZAS TRADICIONALES.

ESTA PINZA PUEDE SER COMO SE DESCRIBIÓ ANTERIORMENTE; DE DOBLE EXTREMO PORTABRACKETS O UN EXTREMO PORTABRACKETS Y EL OTRO POSICIONADOR, INTERCAMBIABLES MEDIANTE UN SISTEMA DE ROSCADO EN LOS MANGOS DE LOS INSTRUMENTOS.

EL SISTEMA POSICIONADOR DE BRACKETS DE LA INVENCION PROPUESTA TIENE LA FACULTAD, A DIFERENCIA DE LOS EXISTENTES, DE SER ECUALIZABLE PERMITIENDO VARIAR LAS MEDIDAS DE CEMENTACIÓN DE LOS BRACKETS, CON SOLO DESLIZAR UNOS TOPES INCISALES MOVILES QUE POSEE EL INSTRUMENTO.

PARA ACLARAR MAS LA INVENCION Y SUS VENTAJAS COMPARADA CON LA TÉCNICA CONOCIDA, SE DESCRIBEN A CONTINUACIÓN CON LA AYUDA DE DIBUJOS ANEXOS, LAS DIFERENTES CARACTERÍSTICAS DEL INSTRUMENTO Y LA FORMA COMO FUNCIONA.

FIG. 1 PLANO EXPLOSIVO DE LA PINZA PARA ORTODONCIA DE DOBLE EXTREMO PORTABRACKETS Y/O POSICIONADOR, QUE MUESTRA DOS CUERPOS, UNO PORTABRACKETS Y OTRO POSICIONADOR, AMBOS CON SUS PARTES NUMERADAS.

FIG.2 PLANO EXPLOSIVO DEL *CUERPO PORTABRACKETS* *INTERCAMBIABLE* CON PROLONGACIÓN COAXIAL.

FIG. 3 REPRESENTACIÓN ESQUEMÁTICA DE UN BRACKET Y SUS PARTES.

FIG. 4 VISTA LATERAL DE LA PINZA PARA ORTODONCIA DE DOBLE EXTREMO PORTABRACKETS Y/O POSICIONADOR CON LOS DOS CUERPOS PORTABRACKETS.

FIG. 5 VISTA LATERAL DE LA PINZA PARA ORTODONCIA DE DOBLE EXTREMO PORTABRACKETS Y/O POSICIONADOR CON UN CUERPO PORTABRACKETS Y OTRO CUERPO POSICIONADOR.

FIG. 6 VISTA CORONAL DE LA PINZA PARA ORTODONCIA DE DOBLE EXTREMO PORTABRACKETS Y/O POSICIONADOR CON UN CUERPO PORTABRACKETS Y OTRO CUERPO POSICIONADOR.

FIG. 7,8 Y 9 REPRESENTACIÓN ESQUEMÁTICA DEL PROCEDIMIENTO REQUERIDO PARA LA TOMA DE UN BRACKET.

FIG. 10 Y 11 MUESTRA ESQUEMÁTICAMENTE UNA VISTA LATERAL DE LA PARTE ACTIVA DEL CUERPO POSICIONADOR, CON LOS TOPE INCISALES MÓVILES EN SUS DIFERENTES POSICIONES.

FIG. 12 MUESTRA UN CORTE FRONTAL DEL CUERPO POSICIONADOR, EN AUSENCIA DE LOS TOPE INCISALES MÓVILES, A NIVEL DE LAS GUIAS DEL POSICIONADOR.

FIG. 13 MUESTRA UN CORTE FRONTAL DEL CUERPO POSICIONADOR, EN AUSENCIA DE LOS TOPE INCISALES MÓVILES, A NIVEL DE LA ENTRADA A LAS RIELERAS.

FIG. 14 MUESTRA UN CORTE FRONTAL DEL CUERPO POSICIONADOR A NIVEL DE LAS RIELERAS, CON PRESENCIA DE LOS TOPE INCISALES MÓVILES.

FIG. 1 EN EL PLANO EXPLOSIVO DE PINZA PARA ORTODONCIA DE DOBLE EXTREMO PORTABRACKETS Y/O POSICIONADOR QUE LA INVENCION PROPONE, PUEDE OBSERVARSE LAS PARTES QUE LA CONFORMAN; ESTA CONSTITUIDA POR UN *CUERPO PORTABRACKETS* (1) Y OTRO *CUERPO POSICIONADOR* (2) ; A SU VEZ CADA CUERPO CONSTA DE VARIAS PARTES CARACTERISTICAS QUE SE DESCRIBEN ASI: EL *CUERPO PORTABRACKETS* (1) CONFORMADO POR LA *GUIA DEL PORTABRACKETS* (3) QUE ES UNA SUPERFICIE DELGADA Y PLANA DISEÑADA PARA QUE PUEDA ALBERGARSE EN EL *CANAL CENTRAL* (26) DEL *BRACKET* (25); CONTIGUO A LA *GUIA DEL PORTABRACKETS* (3) SE ENCUENTRA UN *CANAL ESTABILIZADOR* (4) CON DOS *ORIFICIOS* (5) QUE AL ALINEARLOS CON EL *ORIFICIO* (6) Y HACER PASAR A TRAVEZ DE ELLOS EL *EJE* (7) QUEDA FIJADA OTRA PARTE DE LA PINZA

CORRESPONDIENTE A UNA LAMINA FLEXIBLE (8) DONDE SE ENCUENTRA UNA GARRA (9) ENCARGADA DE SOPORTAR EL BRACKET (25), TOMANDOLO POR DEBAJO DE LAS ALETAS (27) Y EJERCiendo PRESION CONTRA LA GUIA DEL PORTABRACKETS (3) QUE SE UBICA EN EL CANAL CENTRAL (26) DEL BRACKET (25).

TAMBIEN PUEDE OBSERVARSE EL ARCO ORTURADOR (10) EL CUAL AL SER PRESIONADO CONTRA EL CUERPO PORTABRACKETS (1), POR REACCION ELEVA LA GARRA (9) PERMITIENDO ASI DISPONERSE PARA AGARRAR EL BRACKET (25) O SOLTARLO EN CASO QUE EL BRACKET (25) ESTE SUJETO EN LA PINZA.

LA LAMINA FLEXIBLE (8) PRESENTA EN UN EXTREMO UNA CURVA (11) LA CUAL SE ALBERGA EN UNA CAJUELA (12) DEL CUERPO PORTABRACKETS (1) LA QUE JUNTO CON EL CANAL ESTABILIZADOR (4) BRINDA ESTABILIDAD AL ARCO ORTURADOR (10) EN ESTADO DE REPOSO Y CUANDO ES FLEXADO.

EN EL CUERPO PORTABRACKETS (1) SE PUEDE OBSERVAR UN AGUJERO (13) CON ROSCA (14).

EL CUERPO POSICIONADOR (2) INCORPORA UNA PROLONGACION COAXIAL (15) CON ROSCA (16) QUE SE ACOPLA CON LA ROSCA (14) DEL AGUJERO (13) DEL CUERPO PORTABRACKETS (1).

EN DIRECCION OPUESTA A LA PROLONGACION COAXIAL (15) SE PUEDEN OBSERVAR UNOS ENSANCHAMIENTOS (17) EN DOS PLANOS PARALELOS QUE TERMINAN EN LAS GUIAS DEL POSICIONADOR (18); ESTAS SON UNAS SUPERFICIES DELGADAS Y PLANAS DISEÑADAS PARA QUE PUEDAN ALBERGARSE EN EL CANAL CENTRAL (26) DEL BRACKET (25).

SIGUIENDO EL EJE LONGITUDINAL DEL CUERPO POSICIONADOR (2) SE ENCUENTRA EL TOPE INCISAL FIJO (19) QUE ES UNA PROLONGACION COAXIAL CON SUPERFICIES PLANAS PARALELAS ENTRE SI Y PARALELAS TAMBIEN CON EL PLANO DE LAS GUIAS DEL POSICIONADOR (18).

PARALELAS TAMBIEN AL TOPE INCISAL FIJO (19) UNA ARRIBA Y OTRA ABAJO PUEDEN OBSERVARSE DOS RIELERAS (20) QUE PERMITEN ALBERGAR LOS TOPES INCISALES MOVILES (21) QUE SON LAMINAS PLANAS DEL ANCHO DEL TOPE INCISAL FIJO (19), CADA TOPE INCISAL MOVIL (21) LLEVA EN UN EXTREMO DOS PALANCAS DE GRADUACION (22) UNA A CADA LADO.

LOS TOPES INCISALES MOVILES (21) SE DESLIZAN A DELANTE O ATRAS, POR LAS RIELERAS (20).

AL DESPLAZAR LOS TOPES MOVILES (21) HACIA EL EXTREMO DISTAL DEL INSTRUMENTO SE HACE DISMINUIR LA DISTANCIA ENTRE LOS PLANOS DE LAS GUIAS DEL POSICIONADOR (18) Y EL TOPE INCISAL FIJO (19), ESTAS VARIACIONES EN LAS MEDIDAS PERMITEN DAR LAS DIFERENTES ALTURAS DE CEMENTACION DEL BRACKET (25).

LAS PALANCAS DE GRADUACION (22) PERMITEN SUJETAR LOS TOPES INCISALES MOVILES (21) PARA MOVERLOS ATRAS O ADELANTE, GUIADOS POR LAS RIELERAS (20), ADEMAS LAS PALANCAS DE GRADUACION (22) DAN ESTABILIDAD LATERAL A LOS TOPES INCISALES MOVILES (21).

PUEDEN OBSERVARSE CUATRO TOPES DE CONTENCIÓN (23) QUE SE ALBERGAN EN SENDOS ORIFICIOS LATERALES (24) DEL CUERPO POSICIONADOR (2), ESTOS TOPES DE CONTENCIÓN (23) AL CHOCAR CON

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LAS PALANCAS DE GRADUACION (22) EVITAN QUE LOS TOPE INCISALES MOVILES (21) SE SALGAN, LIMITANDO ASI SU MOVIMIENTO.

FIG. 2 PRESENTA EL PLANO EXPLOSIVO DEL CUERPO PORTABRACKETS INTERCAMBIABLE (32) SE APRECIA LAS MISMAS CARACTERISTICAS QUE SE DESCRIBIERON DEL CUERPO PORTABRACKETS (1), CON LA DIFERENCIA QUE ESTE CUERPO PORTABRACKETS INTERCAMBIABLE (32) EN VEZ DEL AGJERO (13) CON ROSCA (14) TIENE UNA PROLONGACION COAXIAL (28) CON ROSCA (29).

FIG. 3 ES UNA REPRESENTACION ESQUEMATICA DE UN BRACKET (25) CON LAS PARTES QUE SON DE INTERES PARA LA DESCRIPCION DEL FUNCIONAMIENTO DE LA INVENCIÓN, COMO SON: LA RANURA CENTRAL (26) Y LAS ALETAS (27).

FIG. 4 PRESENTA UNA VISTA LATERAL DE LA PINZA PARA ORTODONCIA DE DOBLE EXTREMO PORTABRACKETS Y/O POSICIONADOR CON EL CUERPO PORTABRACKETS (1) Y OTRO CUERPO PORTABRACKETS INTERCAMBIABLE (32) ENSAMBLADOS, Y ACOPLADOS EN LA UNION (30) POR MEDIO DEL ROSCA (29) DE LA PROLONGACION COAXIAL (28).

FIG. 5 PRESENTA UNA VISTA LATERAL DE LA PINZA PARA ORTODONCIA DE DOBLE EXTREMO PORTABRACKETS Y/O POSICIONADOR CON UN CUERPO PORTABRACKETS (1) Y OTRO CUERPO POSICIONADOR (2) ENSAMBLADOS, Y ACOPLADOS EN LA UNION (31) POR MEDIO DEL ROSCA (14) DEL AGJERO (13) Y LA ROSCA (16) DE LA PROLONGACION COAXIAL (15).

FIG. 6 EN LA VISTA CORONAL DE LA PINZA PARA ORTODONCIA DE DOBLE EXTREMO PORTABRACKETS Y/O POSICIONADOR CON UN CUERPO PORTABRACKETS (1) Y OTRO CUERPO POSICIONADOR (2), PUEDE APRECIARSE CON MAS DETALLE LA CAJUELA (12), EL CANAL ESTABILIZADOR (4), LA LAMINA FLEXIBLE (8) Y EL EJE (7) DEL CUERPO PORTABRACKETS (1), COMO TAMBIEN LAS PALANCAS DE GRADUACION (22), LOS TOPE DE CONTENCIÓN (23) Y EL TOPE INCISAL FIJO (19) DEL CUERPO POSICIONADOR (2).

FIG. 7, 8 Y 9 ES UNA REPRESENTACION ESQUEMATICA DEL PROCEDIMIENTO REQUERIDO PARA LA TOMA DE UN BRACKET (25) CON EL CUERPO PORTABRACKETS (1), DONDE EN LA FIG. 7 SE APRECIA COMO SE ALINEA LA GUIA DEL PORTABRACKETS (3) CON LA RANURA CENTRAL (26) A MEDIDA QUE LA GARRA (9) SE VA ABRRIENDO PARA SOBREPASAR LAS ALETAS (27) Y ALOJARSE POR DEBAJO DE ESTAS, DANDO ASI AGARRAR AL BRACKET (25) POR MEDIO DE LA PRESION EJERCIDA ENTRE LA GUIA DEL PORTABRACKETS (3) Y LA GARRA (9) COMO LO MUESTRA LA FIG. 9

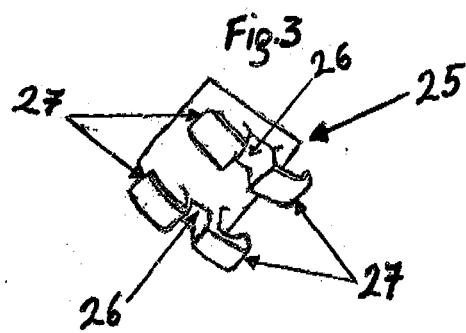
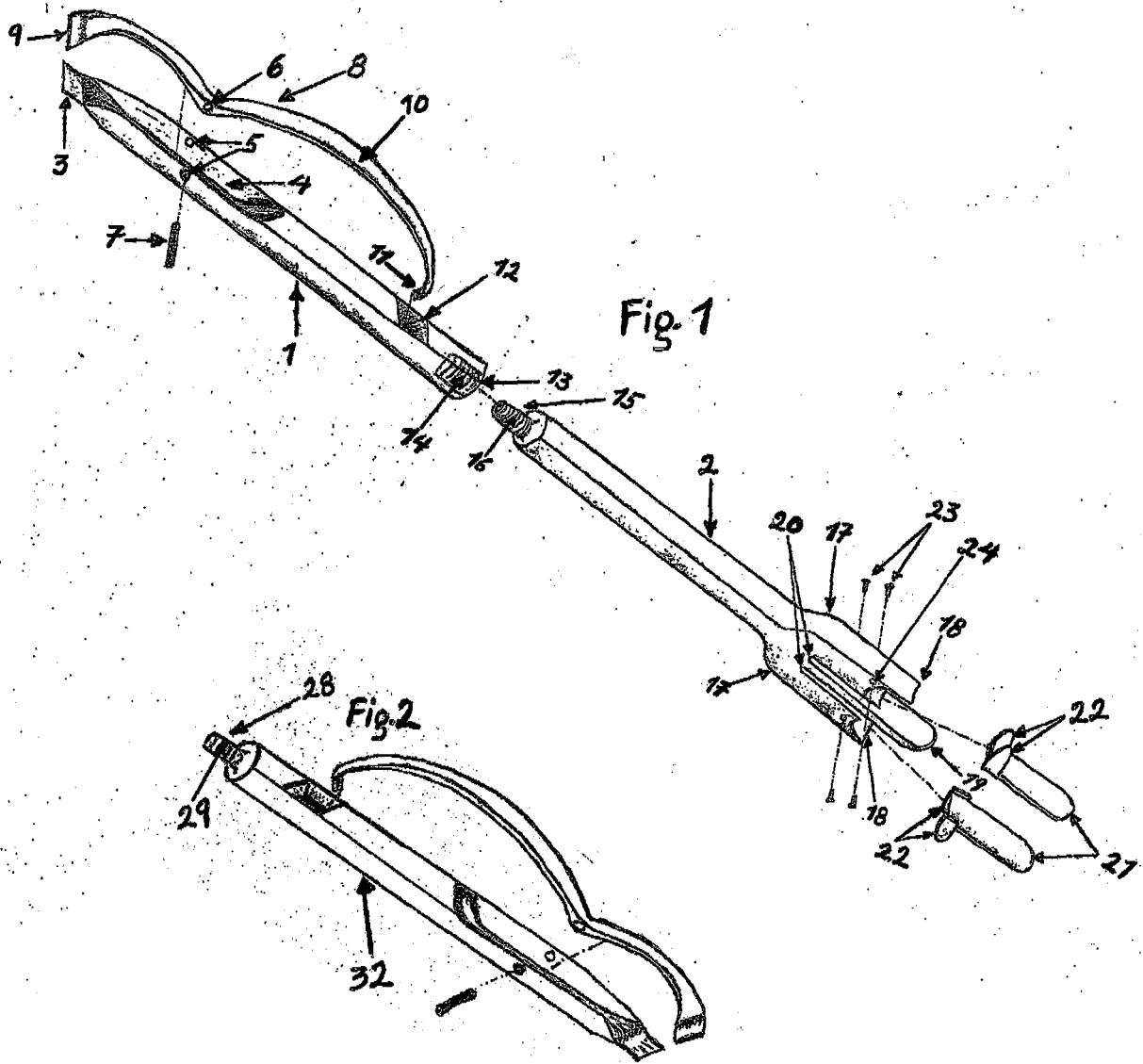
FIG. 10 Y 11 SE APRECIA ESQUEMÁTICAMENTE UNA VISTA LATERAL DE LA PARTE ACTIVA DEL **CUERPO POSICIONADOR (2)**, CON LOS **TOPE INCISALES MÓVILES (21)** EN SUS DIFERENTES POSICIONES, ASÍ EN LA FIG. 10 SE VE EN LA PARTE SUPERIOR COMO EL **TOPE INCISAL MÓVIL (21)** ESTÁ UBICADO HACIA EL CENTRO DEL **CUERPO POSICIONADOR (2)** Y EL **TOPE INCISAL MÓVIL (21)** DE LA PARTE INFERIOR ESTÁ UBICADO HACIA EL EXTREMO DISTAL DEL **CUERPO POSICIONADOR (2)**. EN LA FIG. 11 ENCONTRAMOS QUE LOS **TOPE INCISALES MÓVILES (21)** FUERON DESPLAZADOS A POSICIONES CONTRARIAS DE LAS PRESENTADAS EN LA FIG. 10. ESTOS MOVIMIENTOS DE LOS **TOPE INCISALES MÓVILES (21)** ES LO QUE PERMITE TENER CUATRO MEDIDAS DIFERENTES NECESARIAS PARA DETERMINAR LA ALTURA EN QUE SERAN CEMENTADOS LOS **BRACKETS (25)** SEGÚN LAS DIFERENTES TÉCNICAS ORTODÓNTICAS, LAS MEDIDAS MAS COMUNES PARA LA ALTURA DE CEMENTACION SON 3.5mm, 4.0mm, 4.5mm Y 5.0mm.

FIG. 12 SE APRECIA UN CORTE FRONTAL DEL **CUERPO POSICIONADOR (2)**, EN AUSENCIA DE LOS **TOPE INCISALES MÓVILES (21)**, A NIVEL DE LAS **GUILAS DEL POSICIONADOR (18)** QUE SE ILUSTRAN EN EL DIBUJO AL IGUAL QUE EL CORTE DEL **TOPE INCISAL FIJO (19)**.

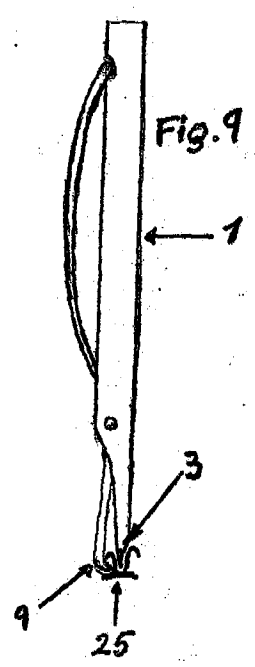
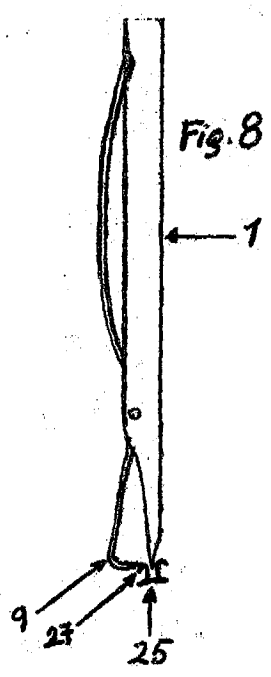
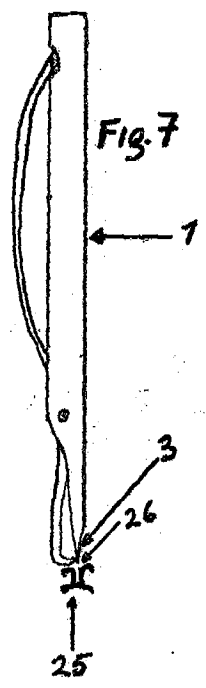
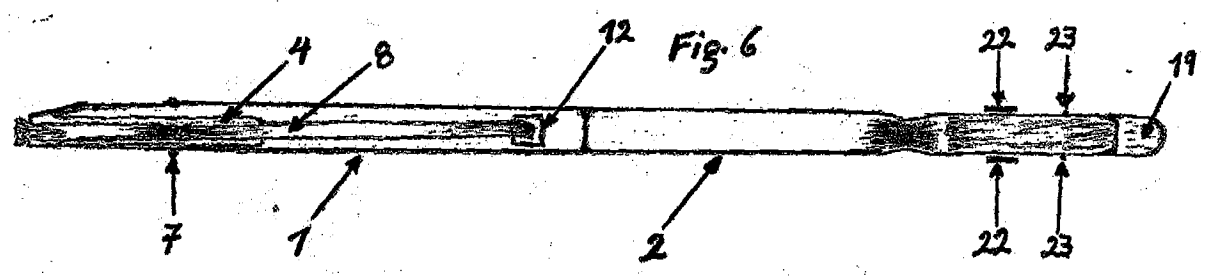
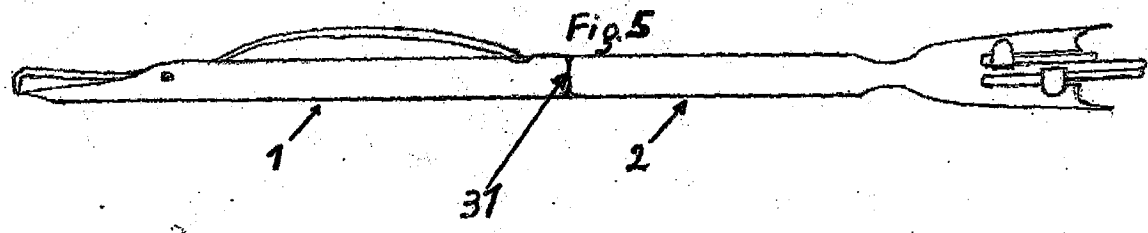
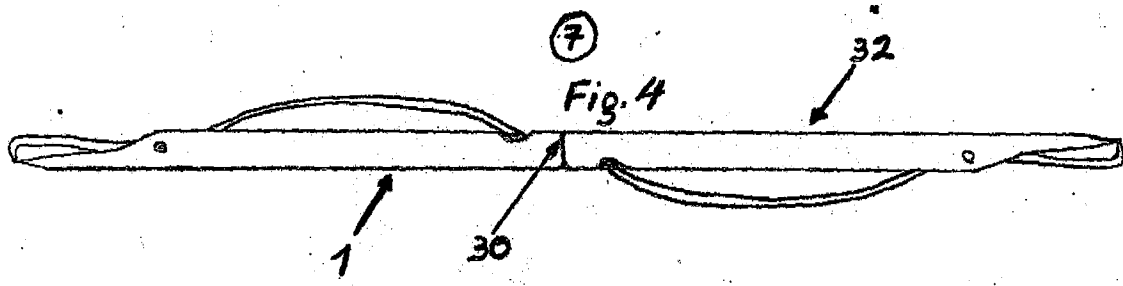
FIG. 13 SE APRECIA UN CORTE FRONTAL DEL **CUERPO POSICIONADOR (2)**, EN AUSENCIA DE LOS **TOPE INCISALES MÓVILES (21)**, A NIVEL DE LA ENTRADA A LAS **RIELERAS (20)** DONDE SE OBSERVAN LOS ESPACIOS DE LAS **RIELERAS (20)** Y CORTE DEL **TOPE INCISAL FIJO (19)**.

FIG. 14 SE APRECIA UN CORTE FRONTAL DEL **CUERPO POSICIONADOR (2)** A NIVEL DE LAS **RIELERAS (20)**, CON PRESENCIA DE LOS **TOPE INCISALES MÓVILES (21)** DONDE SE OBSERVAN CORTES DE LOS **TOPE INCISALES MÓVILES (21)** DENTRO DE LAS **RIELERAS (20)** Y CORTE DEL **TOPE INCISAL FIJO (19)**.

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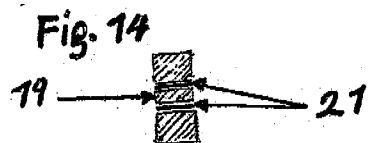
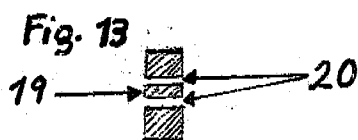
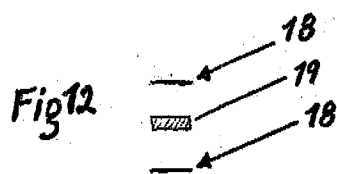
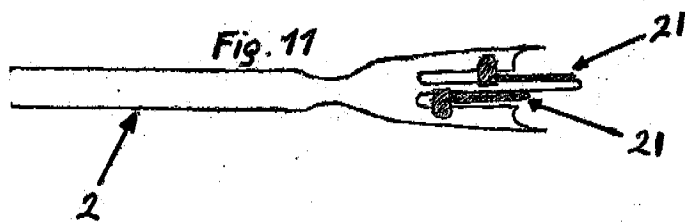
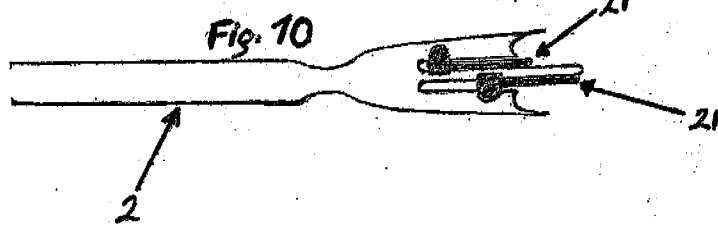


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REIVINDICACIONES

1. PIZA PARA ORTODONCIA DE DOBLE EXTREMO PORTABRACKETS Y/O POSICIONADOR ESPECIALMENTE CONCEBIDA PARA SER USADA EN EL PORTE DE BRACKETS Y PARA LA DETERMINACIÓN DE LA ALTURA DE CEMENTACIÓN DE LOS MISMOS EN LOS PROCEDIMIENTOS DE ORTODONCIA, CARACTERIZADA POR TENER EXTREMOS O CUERPOS INTERCAMBIABLES QUE SE AJUSTAN MEDIANTE ROSCADO DE SUS MANGOS. EL INSTRUMENTO CONSTA DE DOS CUERPOS PORTABRACKETS Y OTRO POSICIONADOR; LOS CUERPOS PORTABRACKETS ESTAN CONFORMADOS POR UN LÁMINA FLEXIBLE DE LA QUE HACEN PARTE UN ARCO OBTURADOR Y UNA GARRA, EL ARCO OBTURADOR CUANDO SE PRESIONA, ACCIONA LA GARRA, LA QUE CONJUNTAMENTE CON LA GUÍA DEL PORTABRACKETS, QUE ES UN SUPERFICIE APLANADA EN EL EXTREMO DISTAL DEL INSTRUMENTO DISEÑADA PARA ALBERGARSE EN LAS RANURAS CENTRALES DE LOS BRACKETS, SOSTIENE LOS BRACKETS PARA SER TRANSPORTADOS. EL SISTEMA ARCO OBTURADOR Y GARRA ES SUJETADO AL CUERPO DEL INSTRUMENTO POR UN EJE, Y ES ESTABILIZADO LATERAL Y LONGITUDINALMENTE POR UN CANAL ESTABILIZADOR Y POR UNA CAJUELA QUE VAN LABRADOS EN EL CUERPO DEL PORTABRACKETS. EL OTRO CUERPO POSICIONADOR CON QUE CUENTA LA PINZA DE LA INVENCION ESTÁ FORMADO POR UN ENSANCHAMIENTO BILATERAL EN EL MANGO DEL INSTRUMENTO, CON DOS SUPERFICIES PARALELAS QUE TERMINAN EN UNAS GUIAS DISEÑADAS PARA ALBERGARSE EN LAS RANURAS CENTRALES DE LOS BRACKETS, EN EL ENSANCHAMIENTO SE ENCUENTRA UNA PROLONGACIÓN COAXIAL QUE CONSTITUYE EL TOPE INCISAL FIJO, SOBRE EL CUAL SE DESLIZAN UNOS TOPE INCISALES MÓVILES, MOVIMIENTO QUE ES PERMITIDO Y GUIADO POR DOS RIELERAS QUE CORREN PARALELAS AL TOPE INCISAL FIJO, UNA ARRIBA Y OTRA ABAJO. CADA TOPE INCISAL MÓVIL CUENTA CON DOS PALANCAS DE GRADUACIÓN, UNA A CADA LADO, LAS QUE SIRVEN COMO PUNTO DE SUJECCIÓN PARA MOVERLOS, TAMBIEN DAN ESTABILIDAD LATERAL Y LIMITAN EL MOVIMIENTO HACIA EL EXTREMO DISTAL DEL INSTRUMENTO CUANDO CHOCAN CON UNOS TOPE DE CONTENCIÓN QUE VAN FIJADOS EN LAS PAREDES LATERALES DEL ENSANCHAMIENTO, POR ENCIMA DEL NIVEL DE LAS RIELERAS.
2. PIZA PARA ORTODONCIA DE DOBLE EXTREMO PORTABRACKETS Y/O POSICIONADOR SEGÚN REIVINDICACIÓN 1, CARACTERIZADA POR TENER UNOS TOPE INCISALES MÓVILES QUE MOVIENDOLOS ADELANTE O ATRÁS, PERMITEN CAMBIAR LA DISTANCIA EXISTENTE ENTRE LAS GUIAS DEL POSICIONADOR Y LA SUPERFICIE DEL TOPE INCISAL FIJO QUE SE ENCUENTRA PARALELA Y PROXIMA A DICHA GUÍA. ESTOS TOPE INCISALES MÓVILES PUEDEN TENER DIFERENTES

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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



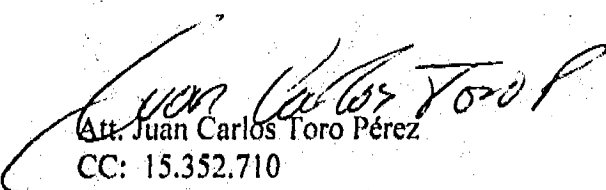
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Fecha: 2008-05-19 13:28:40 Dep: 2020 NULCRLACION
Tra: 2 PALENILS Lvs: 1 RLGLDLP08110
Act: 497 SOLICITUD PRORROGA Folios: 2

Bogotá, D.C. 19 de Mayo de 2008

Señores Super Intendencia de Industria y Comercio
Cordial Saludo.

Con referencia a los requerimientos del 21 de Febrero de 2008 radicado 2659, realizados por su despacho a la solicitud de patente de invención presentada por Juan Carlos Toro Pérez radicada con número 04-30987 me permito solicitar un prorroga para hacer los descargos, para lo cual adjunto recibo de pago por valor de \$75.000,00 hecho en la cuenta corriente 062754387 del Banco de Bogotá a nombre de la Superintendencia de Industria y Comercio.


Att. Juan Carlos Toro Pérez

CC: 15.352.710

DRAWINGS ATTACHED



1 329 540

- (21) Application No. 35876/72 (22) Filed 1 Aug. 1972
(31) Convention Application No. 167 905 (32) Filed 2 Aug. 1971 in
(33) United States of America (US)
(44) Complete Specification published 12 Sept. 1973
(51) International Classification A61C 7/00
B25B 9/02
(52) Index at acceptance
A5R 49 75E

(54) ORTHODONTIC APPLICATOR TOOL

(71) I, ROBERT EUGENE SUTTER, a citizen of the United States of America, of 95 Greenway Circle, Sacramento, State of California 95831, United States of America, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:

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

15 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.

20 Where the brackets are directly cemented to the teeth by means of a 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.

25 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.

30 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.
35 [Price 25p]

In general, there has been provided an applicator device for disposing orthodontic elements such as brackets upon teeth at a predetermined displacement from a plane through the biting surface of each tooth. The device comprises a forceps having a pair of elongated leaves each terminating in a tip end. The tip ends 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 beyond and, depending on the orientation of the forceps, above or below (i.e., spaced vertically from) 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.

An applicator device according to the invention will now be described by way of example only, with reference to the accompanying drawings, in which:—
50 Figure 1 is a perspective view showing an orthodontic applicator device in use applying an orthodontic bracket element to a tooth;
55 Figure 2 is a side elevation view taken along the view line number 2 shown in Figure 1;
60 Figure 3 shows an exploded, enlarged detail view, partially in section, showing the tips of an applicator device adapted for use in conjunction with a Begg bracket, but with the tongue portion of the feeler member not shown for clarity.
65 Figure 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 edge-wise bracket.

An orthodontic applicator device 10 is 90

shown in Figure 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.

Feeler member 23 preferably comprises an elongated resilient rod portion 28 and a broad, flattened tongue portion 29 (the tongue portion 29 for reasons of clarity is not shown in Figure 3) carried at the end of the rod portion 28 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 it is 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 Figure 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 to 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 surface 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 as 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 Figure 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.

WHAT I CLAIM IS:—

1. An applicator device for disposing orthodontic elements upon teeth at a predetermined displacement from a plane through the biting surface of each tooth, said

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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 and extending beyond and spaced vertically 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

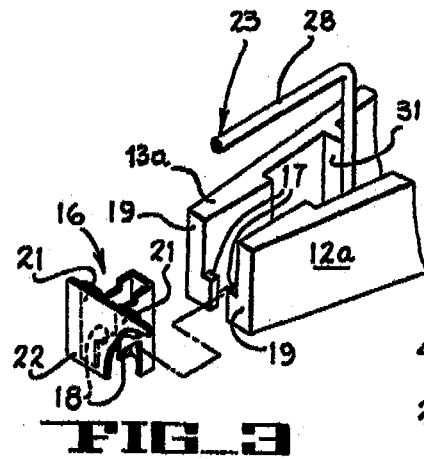
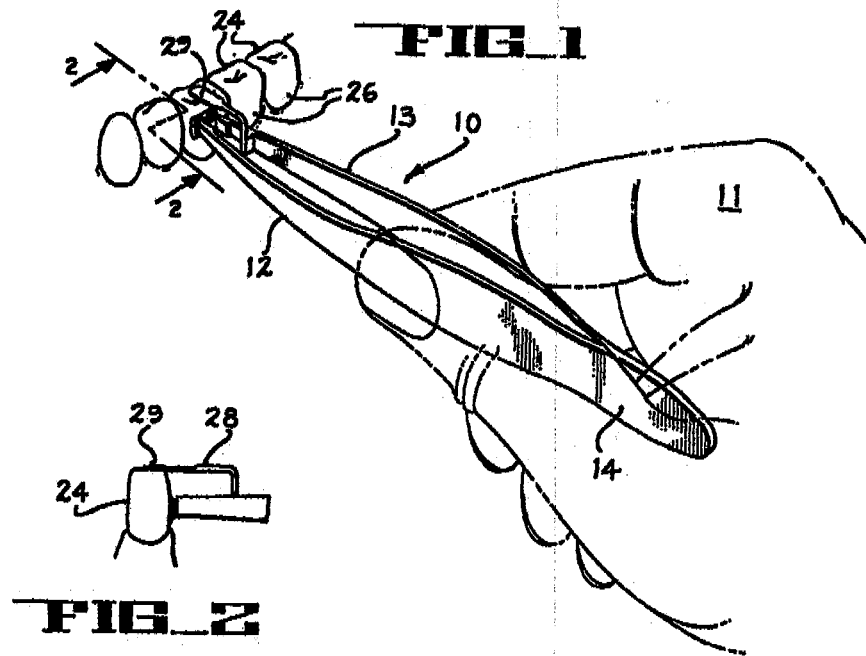
said elements against a tooth while said detents engage openings in the element.

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 and extending beyond and spaced vertically from 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.

5. An orthodontic applicator device substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

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United States Patent [19]

Cusato

[11]

4,035,919

[45]

July 19, 1977

[54] DIRECT BONDING BRACKET POSITIONING AND MOUNTING TOOL

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[73] Assignee: Dentronix, Inc., Trevose, Pa.

[21] Appl. No.: 693,008

[22] Filed: June 4, 1976

[51] Int. Cl.² A61C 7/00

[52] U.S. Cl. 32/66

[58] Field of Search 32/14 A, 14 B, 14 C,
32/14 D, 14 E, 66, 40 R

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Primary Examiner—Robert Peshock

Attorney, Agent, or Firm—Ralph R. Roberts

ABSTRACT

[57]

This invention pertains to a direct bonding bracket positioning tool for orthodontists. A tweezer-type tool has the end of an outer jaw and an intermediate jaw configured and sized to receive and retain a cement-attached bracket as the bracket is directly bonded to the face of the tooth of the patient. For precise positioning of the bracket on the tooth there is provided a screw which is adjusted to position an extending jaw end, which is a third jaw, at a selected distance above the intermediate bracket retaining ends of the three jaw tweezer. This arrangement of jaw ends is depicted in two versions for the two most popular brackets in use. The adjustable top jaw is used to hold the gripped bracket in the selected position as and during the hardening of the bonding agent.

10 Claims, 6 Drawing Figures

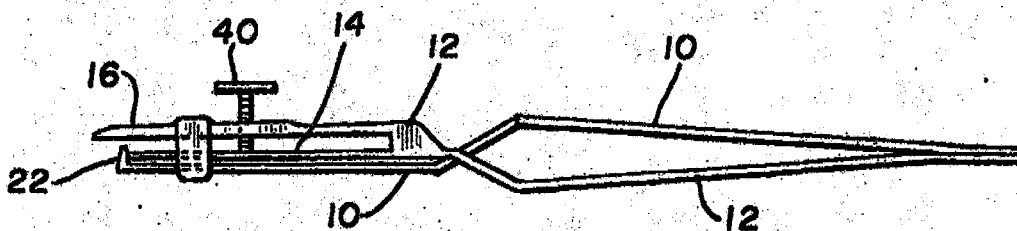




FIG. 1

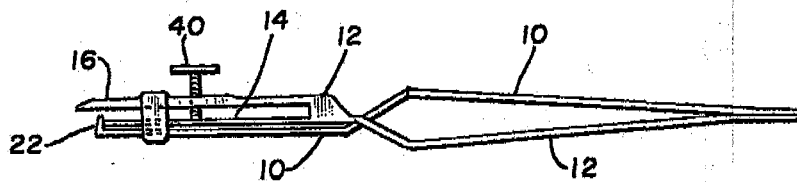


FIG. 2

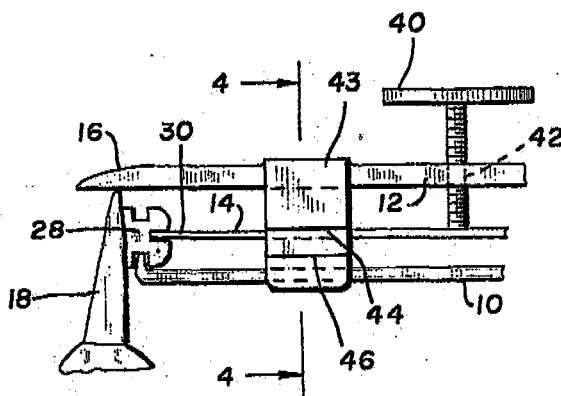


FIG. 3

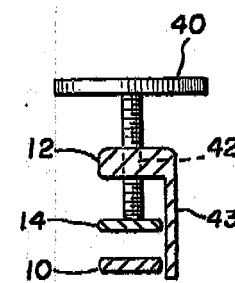


FIG. 4

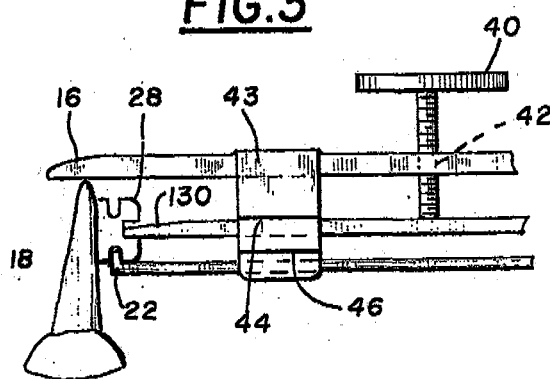


FIG. 5

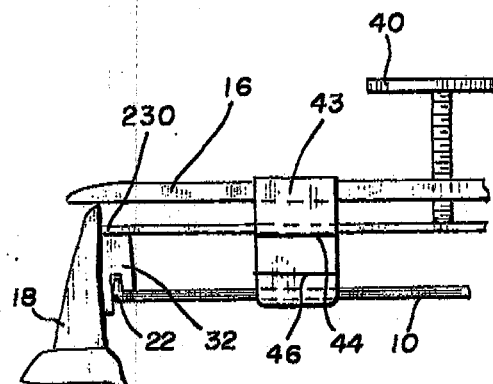


FIG. 6

DIRECT BONDING BRACKET POSITIONING AND MOUNTING TOOL

BACKGROUND OF THE INVENTION

1. Field of the Invention

With reference to the classification of art as established in the United States Patent & Trademark Office the present invention pertains to the Class generally identified as "Dentistry" (class 33) and more particularly to the subclass of "instruments- orthodontic" (subclass 66).

2. Description of the Prior Art

The widespread use of direct bonded brackets by orthodontists to hold wire to and on the teeth of a patient is a rather recent development. Plastic and/or metal brackets are attached to the tooth of the patient by an appropriate cement. This cement must harden when and while the bracket is held fixedly in place against the tooth. Tweezers of all shapes and description are known and employed by orthodontists in the pursuit of their treatments but, insofar as is known, it is new and novel to provide a bracket placing and holding tool whereat a direct bonding bracket is gripped by the front portion of two jaws and with adjustable means a third jaw end is positioned so as to work in a determined relationship to the two holding ends of the tweezer. This third jaw end is adjusted as to its distance from the middle jaw and in bracket placing position rests upon the top of the tooth to precisely position the bracket as it is directly bonded to the tooth.

Tweezers and pliers having small jaw ends are well known. These may and have been used to grasp the direct bonding bracket as they are held in position for the hardening of the cement by which the bracket is secured to the tooth. Because of the difficulty of placing and holding the to be, bonded bracket without involuntary hand movement as well as alignment during the initial application, unsatisfactory placement and bonding often occurs. In combination with the adjustable setting means there is also provided a scale by which the desired positioning may be pre-established. This setting precisely positions the bracket in relation to the top of the tooth to which the bracket is secured. During the cement hardening period the extending jaw rests lightly on top of the tooth to which the bracket is mounted.

SUMMARY OF THE INVENTION

This invention may be summarized at least in part with reference to its objects.

It is an object of this invention to provide, and it does provide a bracket holding tool or instrument which retains a direct bonding bracket on the tip end of two jaws carried by the same leg of a tweezer-type tool. The other leg has an extending jaw portion which is adapted to rest on the top of a tooth as the direct bonded bracket is attached to the face of the tooth. A screw is adjustably carried in the top leg of the tweezer to selectively position the gripped bracket in relation to the extending jaw end.

This tool or instrument is generally a tweezer having two legs joined at one end and by the construction of the legs they are urged toward one another. To one of the legs which for the purposes of identification is called the upper leg, there is attached to the inside of this leg a third leg member which is of a short length and is constructed so as to lay adjacent the inside or top surface of the lower leg. The outer end of the lower jaw

is L-shaped with the short leg adapted to slidably enter and be retained in a lower groove for wire as provided and formed in the bracket. This L-shaped end cooperates with a short blade-like jaw carried by and on the inside of the upper jaw or leg. This short jaw is sufficiently thin at least at its outer end so as to easily enter a wire retaining groove formed on the front of the bracket. A residual bias is provided so that when a bracket is positioned between the L-shaped lower jaw and the middle blade-like member the bracket is gripped in a determined and precise relationship.

The top leg of the tool has its tip end extending sufficiently so that at least one-eighth inch or more extends beyond the rear face of the bracket to be mounted when this bracket is gripped by the L-shaped lower jaw and intermediate blade end. An adjusting screw is carried by the upper jaw and is rotated so as to precisely space the upper jaw from the middle blade. A scale may be provided by which the upper jaw is precisely positioned in relation to the middle blade.

In addition to the above summary the following disclosure is detailed to insure adequacy and aid in understanding of the invention. This disclosure, however, is not intended to cover each new inventive concept no matter how it may later be disguised by variations in form or additions of further improvements. For this reason there has been chosen specific embodiments of the direct bonding bracket positioning tool as adopted for use with plastic and metal brackets attached by direct bonding and showing a preferred means for construction and use. These specific embodiments have been chosen for the purposes of illustration and description as shown in the accompanying drawing wherein:

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 represents a plan view of the tweezer-type direct bonding bracket holding and positioning tool of this invention and shown substantially full scale;

FIG. 2 represents a side view of the tool or instrument of FIG. 1;

FIG. 3 represents a fragmentary side view in an enlarged scale of the jaw end of the tool as in FIG. 2 and particularly showing the construction wherein the middle jaw is a thin blade-like member;

FIG. 4 represents a sectional view taken on the line 4-4 of FIG. 3 and looking in the direction of the arrows;

FIG. 5 is a fragmentary side view of the tool as in FIG. 3 but in which the middle jaw member is made of a thicker material and the outer end is reduced in thickness to provide an easy entry and withdrawal from the midwire groove or slot in the bracket, and

FIG. 6 represents the jaw ends of the tool as in FIG. 3 but with the middle jaw made slightly longer to rest upon and grasp the upper surface of an edgewise bracket.

In the following description and in the claims various details will be identified by specific names for convenience; these names, however, are intended to be generic in their application. Corresponding reference characters refer to like members throughout the six figures of the drawing.

This drawing accompanying, and forming part of, this specification discloses certain details of construction for the purpose of explanation but it should be understood that these details may be modified without departure from the concept of the invention and that

the invention may be incorporated in other structural forms than shown.

DESCRIPTION OF THE GENERAL ARRANGEMENT OF FIGS. 1 AND 2

Referring to the drawing and in particular to FIGS. 1 and 2, there is depicted a tweezer having very similar leg portions 10 and 12. These leg portions are fastened at their left ends in a common joint. The tweezer legs are formed so that as assembled the jaw ends move toward and to each other. A cut-out portion near mid-length permits the jaw members to pass by each other in an X-type pattern. For the sake of identification the lower leg portion at the left end of FIG. 2 is called the lower leg. To the upper leg and at about one and a quarter inches from the left end of the jaw end is secured an intermediate jaw member identified as 14. The intermediate jaw, as shown, is attached to the upper jaw. For manufacturing convenience this intermediate jaw is made as a part of the jaw member. The intermediate jaw, as depicted, is a part of the upper jaw stamping and is bent to the configuration shown. When the jaws 10 and 12 are released the intermediate jaw lays or reposes next to the inside surface of the lower jaw 10. The intermediate member 14 is rather thin and its left end has a thickness which is a sliding fit in a center slot in a bracket.

The upper jaw 12 is made the same or similar in all models, to be hereinafter discussed. The extending end 16 of the upper jaw is intended to extend beyond the lower jaw portions and in use this extending portion rests upon the top of a tooth 18, as seen in FIGS. 3 and 5. For aesthetic reasons and so that the end of this extending end 16 does not cut or scratch the patient's mouth, sharp edges on this extending jaw portion are removed. The lower jaw 10 has its outer end formed with an L-shape 22. The upwardly turned end is made sufficiently thin and of a length which is adaptable for easy entry into and withdrawal from the lower groove of a bracket.

DESCRIPTION OF THE SPECIFIC JAW ENDS AS SEEN IN FIGS. 3 THROUGH 6

Referring to the drawing and to the specific embodiments shown in FIGS. 3 through 6, it is noted that in FIGS. 3, 5 and 6 the upper jaw end 16 is shown substantially identical in all embodiments. The lower jaw end and its L-shape 22 are also contemplated to be substantially identical in all embodiments. The upturned end is toward the extended end of the upper jaw. The upturned end has its end surface parallel to the support surface 24 provided by the inside surface of the jaw. Two forms of brackets are depicted. A very popular bracket is the edgewise bracket of FIGS. 3 and 5 which has grooves both at the top and bottom and also mid-way of the front. This bracket is identified as 28. A narrow blade end 30 of the intermediate jaw or leg 14 enters the mid-groove on the bracket 28 and with the natural spring or bias provided by the deliberately formed lower and intermediate jaw members causes a movement of the intermediate jaw member toward the lower leg between which the bracket 28 is retained by the L-shaped end 22 and the blade end 30 as they are positioned in appropriate grooves. It is to be noted in FIGS. 3 and 5 that the end 30 of the intermediate jaw does not extend beyond the inside of the L-shape 22.

In FIG. 5 the intermediate jaw, instead of the conventionally thin member of FIGS. 3 and 4, is made a little

heavier and the outer end is tapered so that the entering end easily enters the groove in the bracket 28. For the purpose of identification this intermediate blade of FIG. 5 is noted as 114 and the tapered end is noted as 130.

In FIG. 6 the thin blade 14 may be the same length as in FIG. 3 but if desired may be as long as the end of the upwardly extending L-shape 22 on the lower leg. The bracket illustrated in this FIG. 6 is called the light wire bracket (Begg) and for identification is numbered 32. This extended middle jaw end in FIG. 6 is identified as 230. The L-shaped lower jaw retaining end 22 acts as in the above-noted embodiments while the longer middle jaw end identified as 230 in bracket retaining condition rests on the top flat surface of the light wire bracket 32.

ADJUSTABLE PRECISION SETTING OF BRACKET

Whether the bracket 28 of FIGS. 3 and 5 or the bracket 32 of FIG. 6 is to be mounted on the tooth 18 of a patient it is contemplated that a precision setting means will be provided. This setting means is adapted for setting before insertion of the bracket into the jaw ends of the tool. The precision setting means includes a thumb wheel 40 which has a large diameter head portion and a threaded stem. The threaded stem is carried by a threaded aperture 42 in the upper leg member 12. In combination with this screw adjustment there is carried on the top jaw member a setting scale 43 which preferably has setting or indicating lines 44 and 46. These lines indicate usual settings for the top or bottom edge of the intermediate jaw member. As seen in FIGS. 3 and 5, the top indicating line 44 is more-or-less in coincidence with the top surface of the intermediate jaw. In FIG. 6 the top line 44 is more-or-less in coincidence with the bottom surface of the jaw member 230. As the intermediate jaw is carried and is movable with the upper jaw the screw setting can be made and left in the adjusted position during all the mounting actions of the bracket into the jaw ends, as depicted.

USE AND OPERATION

As constructed the tweezer legs 10 and 12 of this invention are configured to be assembled at their right ends, as seen in FIGS. 1 and 2. When brought together and assembled the left jaw ends are naturally biased toward each other. Grasping the midportions of the legs and moving them toward each other separates the jaw ends from each other. In order to insert a bracket the midportion of the legs 10 and 12 are grasped and moved toward one another. The lower jaw end 22 moves away from the intermediate jaw as carried by the upper leg and in the manipulated space derived by spacing the legs 10 and 12 the bracket is moved between the L-shaped end 22 to move or be positioned in the lower groove of the bracket 28. The intermediate jaw end 30 or 130 is then moved into the mid-groove of the bracket and the legs 10 and 12 are then released for gripping the bracket. The bias for gripping the bracket is made rather low so that undue pressure on the bracket is not provided in the tweezers. Once the bracket is retained in position on the jaw ends of the tool the orthodontist manipulates the screw 40 to cause the upper extending jaw portion 16 to be brought to a desired position. This may be set or preset by using the indicating lines 44 and 46 upon the gauge or scale member 43 to preposition the end of the intermediate jaw as far as its relationship to the upper extending jaw 16.

Where the light wire bracket of FIG. 6 is to be used, the thin jaw member 230 is brought to the top of and positioned on the top surface of the bracket 32 and the L-shaped jaw end 22 of the lower jaw is brought into the groove of this bracket. Between these two jaw end portions the bracket is retained by the residual spring or bias in the two leg members 10 and 12. The screw 40 is manipulated to cause the jaw resting extending portion 16 to be brought to the desired relationship with the bracket so that when positioned on the tooth 18 a precise setting will be obtained.

When and as the brackets 28 and 32 are to be applied to the tooth 18, the bonding cement is applied either to the tooth or to the bracket in a conventional manner and then with the bracket mounted in the tool the extending jaw portion 16 is brought to the top of the tooth 18. The bracket is now pressed against the face of the tooth and held in this position with the jaw 16 resting upon the top of the tooth until the setting of the cement has been achieved. When this has been accomplished and the bracket has been adhered to the tooth, the tool is removed by grasping the midportion of the legs 10 and 12 and moving the jaw ends apart. The L-shaped end moves from the lower groove and by a withdrawing or sideways movement the end of the intermediate jaw is removed from the midgroove of the bracket 28. With a bracket 32 the same procedure is followed but the intermediate jaw is not in a groove.

The orthodontist may check the positioning of the bracket before the applying of the cement to the tooth. If he wishes, he can compare the setting of the to be mounted bracket with a bracket mounted upon an adjacent tooth and by manipulating the screw 40 may position the gripped bracket to be moved up and down in relation to the supporting jaw 16.

The tool to hold and position the bracket for direct bonding employs a simple tweezer construction with the free ends normally urged toward each other. A cross-over construction of the legs at their midlength enables the user of the tool to grasp the legs at a convenient position and press the midportions toward each other to open the jaw ends. The lower L-shaped end 22 is moved from a gripping condition with the intermediate leg and jaw end by the squeezing manipulation of the legs 10 and 12. Other arrangements may provide the same basic concept and requirement but as long as a direct bonding bracket is engaged by a jaw end which enters a lower groove and an intermediate jaw end which cooperates with the lower jaw to grip the bracket the essential releasable holding of the bracket is accomplished. An extending upper jaw end rests upon the top of the tooth during positioning and setting of the cement. This setting is accomplished by the screw means of this invention but other forms of setting employing other than a rotating screw may be provided. Such alternates include a tapered wedge-type slide, ratchet wheels and the like.

Terms such as "left", "right", "up", "down", "bottom", "top", "front", "back", "in", "out", and the like are applicable to the embodiments shown and described in conjunction with the drawing. These terms are merely for the purposes of description and do not necessarily apply to the position in which the orthodontic tool for positioning and holding a direct bonded bracket may be constructed or used.

While particular embodiments of the tweezer-type tool and alternate embodiments have been shown and described it is to be understood the invention is not

limited thereto since modifications may be made within the scope of the accompanying claims and protection is sought to the broadest extent the prior art allows.

What is claimed is:

1. An orthodontic tool particularly for positioning and holding a direct bonding bracket as it is positioned while permitting adhering cement applied thereto to harden to secure the bracket to a tooth of a patient, said tool including: (a) a tweezer-type tool having upper and lower leg members attached at one end and as assembled there is a constructed bias so that the unconnected leg ends are movable toward and to each other; (b) an intermediate leg member carried between the upper and lower leg members and as constructed and assembled a bias is provided to urge the lower leg toward the intermediate leg, the ends of the lower leg and the intermediate leg disposed to cooperatively retain a direct bonded bracket positioned therebetween; (c) an extending jaw portion provided on the upper leg member and providing therewith a means for supporting the tool on the top of a patient's tooth as the bracket is positioned and the applied cement hardens securing the bonded bracket to the tooth; (d) a lower jaw end carried by and formed on the free end of the lower leg member, this jaw end being L-shaped and with the short portion of the L-shape extending toward the extending upper jaw, this short leg sufficient to slidably engage and enter a lower slot formed on the direct bonded bracket, and (e) adjusting means cooperatively carried by the upper and intermediate leg members whereby the intermediate leg end is positioned a selected distance from the underside of the extending upper jaw, whereby the upper and lower legs are moved by manual manipulation from each other and to open condition whereby the lower and intermediate jaw ends are sufficiently opened to place a direct bonding bracket therebetween and in a holding position whereat the legs are released to grip the bracket by the ends of the lower and intermediate legs and while gripped the adjustment means is moved as required to being the bracket to the desired position below the upper jaw.

2. An orthodontic tool for positioning and holding a direct bonded bracket as in claim 1 in which the tweezer legs are formed and are assembled to provide an X-type cross-over assembly.

3. An orthodontic tool for positioning and holding a direct bonded bracket as in claim 1 in which the intermediate leg is carried by and is movable with the upper leg.

4. An orthodontic tool for positioning and holding a direct bonded bracket as in claim 3 in which the intermediate leg is a thin blade whose end as it extends toward the free end is less than the inside extent of the short leg of the L-shaped lower leg.

5. An orthodontic tool for positioning and holding a direct bonded bracket as in claim 3 in which the intermediate leg is blade-like with the outer end thinned so as to easily enter a wire slot as formed in the midportion of a direct bonded bracket.

6. An orthodontic tool for positioning and holding a direct bonded bracket as in claim 5 in which the intermediate leg has its free end of an extent which is less than the inside extent of the short leg of the L-shaped lower leg.

7. An orthodontic tool for positioning and holding a direct bonded bracket as in claim 3 in which the intermediate leg is a thin blade whose free end extends at least to the inside edge of the upturned jaw end of the

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L-shaped lower leg so that and when this intermediate jaw is placed on the top surface of a light wire bracket it provides a full pressing action on the bracket.

8. An orthodontic tool for positioning and holding a direct bonded bracket as in claim 3 in which the adjusting means includes a thumb screw carried in a threaded aperture in the top leg and with the end of the screw extending into the space between the top and intermediate legs to engage the top surface of the intermediate leg and by the manipulation of the screw to move the intermediate leg against the residual bias to bring the inter-

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mediate leg into a selected position with respect to the undersurface of the extending top leg.

9. An orthodontic tool for positioning and holding a direct bonded bracket as in claim 2 in which there is provided a setting scale which is cooperatively carried so that indicia on said scale indicates the positioning of one of the surfaces of the intermediate member in relation to the position of the undersurface of the extending jaw of the upper leg.

10. An orthodontic tool for positioning and holding a direct bonded bracket as in claim 9 in which the setting scale is attached to and is movable with the upper leg.

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United States Patent [19]
Hannula et al.

[11] **Patent Number:** 4,776,791
[45] **Date of Patent:** Oct. 11, 1988

[54] **SHIELD FOR A PAIR OF ORTHODONTIC PLIERS FOR USE IN REMOVING DENTAL BRACKETS**

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[73] **Assignee:** Johnson & Johnson Consumer
Products, Inc., Brunswick, N.J.

[21] **Appl. No.:** 142,988

[22] **Filed:** Jan. 12, 1988

[51] **Int. Cl.⁴** A61C 7/00
[52] **U.S. Cl.** 433/4
[58] **Field of Search** 433/159, 4

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Primary Examiner—Robert Peshock
Attorney, Agent, or Firm—Donal B. Tobin

[57] **ABSTRACT**

A shield for use with a pair of orthodontic pliers in removing an orthodontic bracket. The shield fits snugly onto one jaw of the pliers and provides side walls adjacent the plier jaws. The jaws have a recess near their distal end such that the confronting surfaces of the jaw recesses and the confronting surfaces of the side walls provide an enclosure about a bracket while it is being removed so that if it fractures the enclosure will contain any pieces that may break off the bracket.

11 Claims, 3 Drawing Sheets

