March 31, 1925. 1,531,898

E. H. ANGLE ET AL

ORTHODONTIC APPLIANCE

Filed March 11, 1922

FIG. 1.

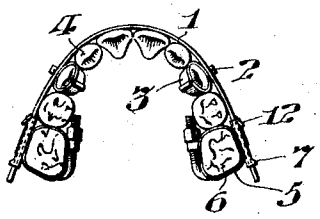


FIG. 2.

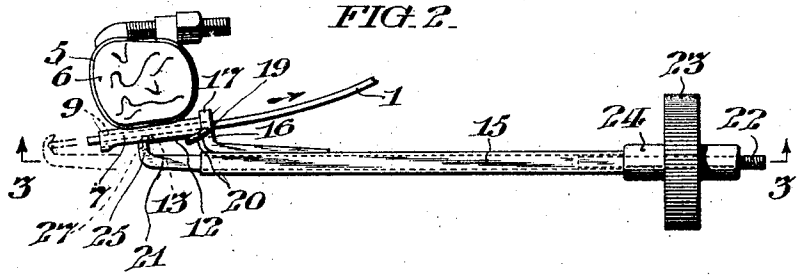


FIG. 3.

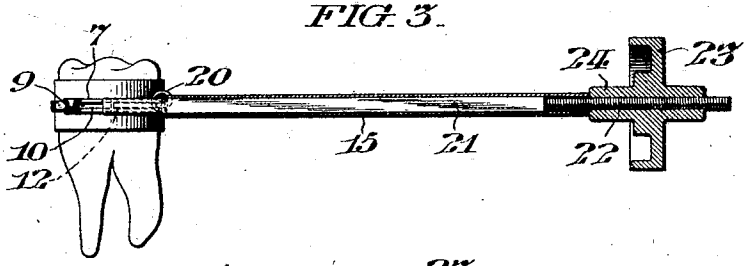
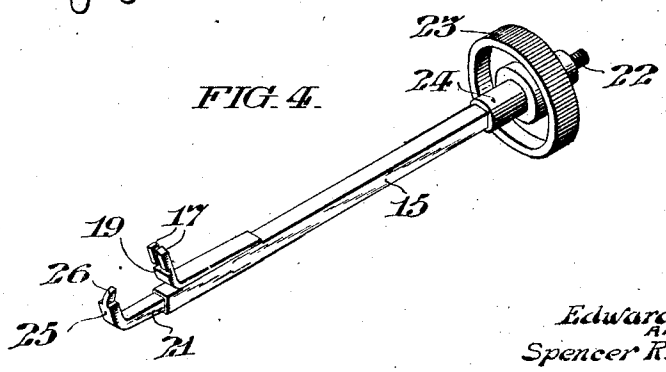


FIG. 4.



Inventor
Edward H. Angle,
AND
Spencer R. Atkinson,

By Clifton C. Gallowell

Attorney

Patented Mar. 31, 1925. 1,531,898

UNITED STATES PATENT OFFICE.

EDWARD H. ANGLE, OF PASADENA, CALIFORNIA, AND SPENCER R. ATKINSON, OF ATLANTA, GEORGIA.

ORTHODONTIC APPLIANCE.

Application filed March 11, 1922. Serial No. 542,871.

To all whom it may concern:

Be it known that we, EDWARD H. ANGLE, a citizen of the United States, and a resident of Pasadena, in the county of Los Angeles, State of California, and SPENCER R. ATKINSON, a citizen of the United States, and a resident of Atlanta, in the county of Fulton, State of Georgia, have invented certain new and useful Improvements in Orthodontic Appliances, of which the following is a specification, reference being had to the accompanying drawings.

Our invention relates particularly to that class of orthodontic implements that are adapted to effect the adjustment of an arch-bar with respect to its terminal anchorages, and is especially designed for use in connection with the form of arch-bar and terminal anchorages disclosed in our Letters Patent of the United States Number 1,398,761, dated November 29, 1921.

The principal objects of our invention are to provide an adjusting implement of simple construction that may be readily applied to effect the adjustment of the arch-bar, with such delicacy as to afford minimum discomfort to the patient, yet with such power and evenness of action as to attain the desired stress in a positive manner upon the malposed teeth of the dental arch, which may be attached to said arch-bar for correction of position.

Other objects of our invention are to provide an adjusting implement that will effect the locking of said arch-bar with respect to its anchor in such a manner that it will be retained in adjusted position when said implement is removed therefrom.

Our invention comprehends an implement having relatively movable members that may be inserted into the mouth of the patient, and respectively engage the arch-bar and its anchor, and having means disposed exterior to the mouth of the patient, which may be actuated to effect the relative movement of said members, and thereby effect the desired adjustment of the arch-bar with respect to its anchor, and contemporaneously so lock the arch-bar in its adjusted position that it will be retained in its adjusted position after said implement is withdrawn from the mouth of the patient.

Specifically stated, the form of our invention as hereinafter described comprises an implement having relatively movable members, one forming an abutment arranged to bear against the end of the sheath of the anchor, and being bifurcated to permit the arch-bar to pass therethrough, and having a transverse groove arranged to guide the retaining tang of the arch-bar into its locking position, while the other member is provided with a projecting finger or prong forming a hook arranged to engage the arch-bar, so that when said members are actuated to cause the hook and abutment to approach each other, the arch-bar will be adjusted with relation to the anchor sheath, and the locking tang will be curled over against the end of the anchor sheath to retain the arch-bar in its adjusted position. In the preferred embodiment of our invention one of said members is threaded and provided with a thumb-nut cooperative with the other member to effect their relative movement.

Our invention also includes all of the various novel features of construction and arrangement as hereinafter more definitely specified.

In the accompanying drawings, Figure 1 is a plan view of a human dental arch showing the type of orthodontic device, including an arch-bar and its anchorages, for which our orthodontic implement is particularly designed to adjust; Fig. 2 is an enlarged plan view, showing a convenient embodiment of our invention as applied to the arch-bar and its anchor, and in position to adjust the same; Fig. 3 is a sectional, elevational view, taken on the line 3—3 in Fig. 2; and Fig. 4 is a perspective view of the orthodontic implement shown in Figs. 2 and 3.

The tooth regulating appliance to which this invention is particularly applicable is indicated in a general way in Fig. 1, and includes, together with associate parts, an arch-bar 1, preferably consisting of a flattened wire having its intermediate portions arranged to be engaged with brackets 2 on suitably formed tooth bands 3 on selected anterior teeth 4 of the dental arch, and its terminals engaged with the anchor bands 5 on selected posterior or molar teeth 6.

As shown in Fig. 1 the anchor bands 5 are attached to selected posterior or molar teeth 6 in a well known manner as clearly illustrated, and the arch-bar being connected

therewith by having its ends each extended into a suitably formed sheath 7 on the respective anchor bands. Said sheath, as best shown in Figs. 2 and 3, has the bore 9 of suitable configuration to receive said arch-bar 1 suitably fitted therein.

The sheath 7, as best shown in Fig. 3, is provided with the slot 10, opening into the bore 9, and providing a keyway for the key or spline forming a tang 12, which is formed integrally with the arch-bar 1, being rigidly attached thereto toward the end of said arch-bar, and having the portion extended toward the medial region of said arch-bar, free to be moved relatively thereto and bent, curled or otherwise disposed, as best shown in Figs. 2 and 3, to afford a retaining lock for the arch-bar.

As best shown in Figs 2 and 3, the spline forming the tang 12 on the arch-bar 1, terminates at its connected end, short of the end of the arch-bar, and affords a shoulder 13 which may be engaged to effect the adjustment of said arch-bar 1 with respect to the anchor sheath 7.

The preferred embodiment of our orthodontic implement is illustrated in Figs. 2, 3 and 4, and comprises the frame or casing 15 having the laterally projecting abutment 16 arranged to engage the mesial end of the anchor sheath 7, and providing bifurcations 17 between which the arch-bar 1 may extend, and having the transverse groove 19, which forms a guide for the tang 12, as shown in Figs. 2 and 3, which is caused to form a curl 20 by movement of the arch-bar 1, in the direction of arrow indicated thereon in Fig. 2.

The movement of the arch-bar 1 is conveniently effected by the rod or shaft 21, extended through the casing 15, and having the threaded shank 22 provided with the thumb-nut 23, whose hub 24 bears against the end of the casing 15, it being obvious that the thumb-nut 23 may be rotated to effect the gradual and positive longitudinal movement of said rod or shaft 21 in said casing 15.

Said rod or shaft 21 is provided at its distal end with an upturned projection 25, terminating at its free end in a prong or finger 26, forming a hook arranged to project into the slot 10 in the anchor sheath 7, and engage the shoulder 13 on the arch-bar provided by the spline forming the tang 12.

The upturned projection 25, as shown in Fig. 2 is provided in its mesial surface with the depression or pocket 27, arranged to engage the end of the arch-bar 1, as shown in dot and dash lines in Fig. 2, to effect the initial movement of said arch-bar until the shoulder provided by the spline forming the tang 12, is progressed sufficiently to be engaged by the prong or finger 26 extended into the slot 10.

It will be obvious that when the desired adjustment on the arch-bar 1 is effected by rotation of thumb-nut 23, said thumb-nut may be reversely rotated, to back off the bar of shaft 21, and thereby release the prong or finger 26, so that the adjusting implement be removed, leaving the arch-bar 1 in its adjusted position, and locked by the curled tang 12, which may be trimmed off if desired, until further adjustment of said arch-bar is required.

Our invention is advantageous in that the means of adjustment of the arch-bar 1, with respect to its anchor is not carried on the device which remains within the mouth of the patient, and therefore said arch-bar is not readily tampered with, without the knowledge of the operator, the adjusting implement being retained by the operator, may be inserted in the mouth of the patient when desired, and engaged with the parts to be adjusted, such adjustment being effected by means actuated wholly exterior to the mouth of the patient.

We do not desire to limit our invention to the precise details of construction and arrangement as herein set forth, as it is obvious that various modifications may be made therein without departing from the essential features of our invention as defined in the appended claims.

Having thus described our invention, we claim:

1. An implement of the class described, comprising relatively movable members arranged to adjust an arch-bar with respect to its anchor, one of said members having a transverse groove affording a guide, and the other having an opposed prong, and threaded means arranged to effect the relative movement of said members.

2. An implement of the class described, comprising a frame having a bifurcated abutment provided with a transverse groove, a cooperating member having a prong merging into a pocket, and cooperative means arranged to effect the relative movement of said frame and its cooperating member.

3. An implement of the class described, comprising opposed relatively movable members respectively having an abutment provided with a guide arranged to direct an arch-bar provided with a tang longitudinally therethrough, and having means arranged to relatively deflect its tang laterally from said arch-bar, and means slidable thereon arranged to effect the longitudinal movement of said arch-bar with respect to said guide.

4. An implement of the class described, comprising opposed relatively movable members respectively having an abutment providing a guide arranged to longitudinally direct an arch-bar having a tang, and having means arranged to relatively deflect said

tang laterally from said arch-bar, and an opposed projection movable lineally with respect to said abutment and including a prong and a pocket arranged to engage and progress said arch-bar with respect to said guide.

5. An implement of the class described, comprising a sleeve having a laterally extending abutment provided with a longitudinal and transverse slot respectively arranged to guide an arch-bar longitudinally and its tang laterally, a plunger mounted to reciprocate in said sleeve and extended laterally to engage said arch-bar, and a thumb nut in threaded engagement with said plunger and cooperative with said sleeve to effect the relative longitudinal movement of said sleeve and plunger and a consequent movement of said arch-bar and its tang with respect to said abutment.

In witness whereof, we have hereunto set our hands the 11th day of January, A. D. 1922, and the 4th day of March, A. D. 1922, respectively.

EDWARD H. ANGLE.

Witnesses as to signature of Edward H. Angle:

E. H. WHITEHOUSE,
H. H. LEHMAN.

SPENCER R. ATKINSON.

Witnesses as to signature of Spencer R. Atkinson:

L. J. SAPERSTEIN,
JOHNSON TATELY.