E. H. ANGLE AND S. R. ATKINSON.

ORTHODONTIC APPLIANCE.

APPLICATION FILED JUNE 15, 1921.

1,398,761. Patented Nov. 29, 1921.

FIG. 1.

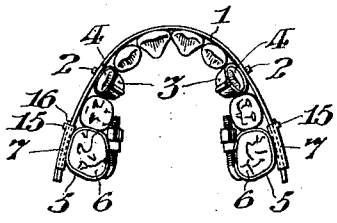


FIG. 2.

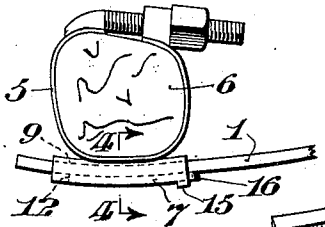


FIG. 4.

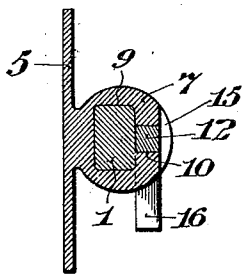


FIG. 5.

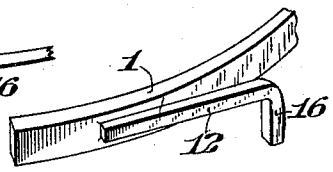


FIG. 3.

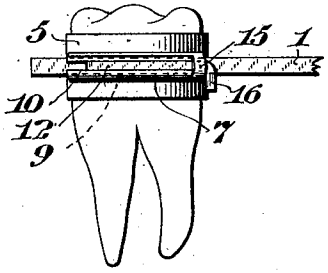


FIG. 8.

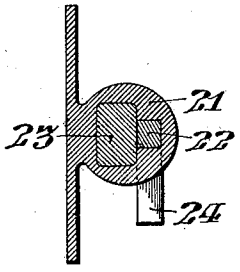


FIG. 9.

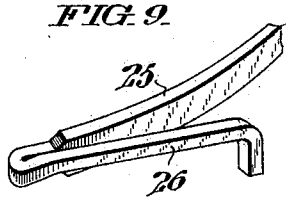


FIG. 6.

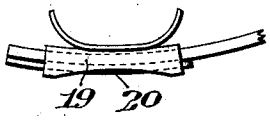
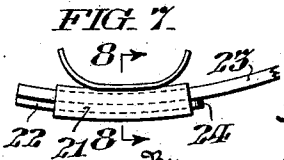


FIG. 7.



Witness

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UNITED STATES PATENT OFFICE.

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ORTHODONTIC APPLIANCE.

1,398,761. Specification of Letters Patent. Patented Nov. 29, 1921.

Application filed June 15, 1921. Serial No. 477,824.

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 is applicable to the art of correcting the position of malposed teeth of the dental arch, and particularly relates to that class of devices in which an arch-bar is adjustably supported at its opposite ends, and detachably connected intermediate of its ends with selected teeth of the dental arch, and is especially directed to the connection between the arch-bar and the terminal anchorages.

The principal objects of our invention are to provide means for connecting the arch-bar with the terminal anchorages, so constructed and arranged as to facilitate the longitudinal adjustment of said arch-bar with respect to said anchorages.

Other objects of our invention are to provide improved terminal anchorages having means coöperative with means integral with said arch-bar, arranged to not only prevent rotation of said arch bar in said anchorage, but to lock it in its longitudinally adjusted position with respect thereto.

Our invention comprehends such a curtailment of the necessary parts and consequent reduction of the space required to effect the desired firm attachment, that the teeth adjacent to the anchor teeth may as readily be attached to the arch-bar as any other of the intermediate teeth of the dental arch.

Further objects of our invention are to so simplify the structures connecting the terminal anchorages and the arch-bar as to greatly facilitate the work of the operator as well as minimize the discomfort of the wearer.

Specifically stated, the form of our invention as hereinafter described comprises an anchor-band provided with an arch-bar sheath, having a bore through which an arch-bar may extend, and having a key-way arranged to receive a key or spline integral with said arch-bar and having a portion extending free thereof, the end of said sheath affording an abutment against which said spline may be turned or deflected and drawn tight to effect the adjustment of said arch-bar and to lock it in different adjusted positions.

Our invention also includes all 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 a convenient embodiment of our invention attached to selected teeth thereof; Fig. 2 is an enlarged plan view of one of the molar teeth shown in Fig. 1, and the anchorage attachment applied thereto; Fig. 3 is a side elevational view of the structure shown in Fig. 2 applied to said molar tooth; Fig. 4 is an enlarged transverse sectional view taken on the line 4—4 in Fig. 2; Fig. 5 is a fragmentary perspective view of one free end of the arch-bar having a key or spline integrally secured thereto; Fig. 6, is a fragmentary plan view showing a portion of an anchor-band provided with a modified form of an arch-bar sheath; Fig. 7 is a fragmentary plan view showing a fragment of the anchor-band, and another modification of the arch-bar sheath; Fig. 8 is a transverse sectional view of the structure shown in Fig. 7, taken on the line 8—8 in said figure; and Fig. 9 is a fragmentary perspective view of one free end of an arch-bar having a spline formed in unitary relation therewith.

The tooth regulating appliance to which this invention is particularly applicable is indicated in a general way in Fig. 1, and includes together with the associate parts an arch-bar 1, preferably consisting of a flattened wire having its intermediate portion 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 engage with the anchor bands 5 on selected posterior teeth.

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 is connected therewith by having its ends each extended into a suitably formed sheath 7 on the respective anchor bands, which sheath as best

shown in Figs. 2, 3 and 4, has the bore 9 of suitable configuration to receive said arch-bar 1 slidably fitted therein.

The sheath 7 as shown in Figs. 1 to 4 inclusive is provided with the slot 10 opening into the bore 9 and forming a key-way for the key or spline 12 which is formed integrally with the arch-bar 1, being rigidly engaged therewith 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 as best shown in Fig. 5.

As best shown in Figs. 2 and 3, the open portion of the slot 10 is interrupted by the abutment 15 against which the spline 12 may be drawn to effect the movement longitudinally of the arch-bar 1, and bent into close contact therewith to form the stop hook 16 arranged to retain said arch-bar 1 in any adjusted position.

As shown in Fig. 5 the spline 12 on the arch-bar 1 terminates at its connected end, short of the end of the arch-bar 1, and affords an abutment against which the nose of a pair of pliers or other suitable implement may be engaged to force the arch-bar forward, it being understood, however, that said spline may extend to the end of the arch-bar as is shown on the left hand side of Fig. 1.

The advantage of stopping said spline 12 short of the end of the arch-bar is that it brings the end of the spline within the groove or slot in the sheath 7, so that when engaged as an abutment by the end of the pliers or other suitable implement, the walls of the groove or slot 10 afford a guide which prevents said pliers or implement from slipping off the abutment laterally. Under ordinary conditions the use of the pliers or implement may be unnecessary and the forward movement of the arch-bar 1, effected by simply drawing the spline tightly over the abutment 15, which affords sufficient power to effect the required tension necessary to force the malposed teeth into their proper relation to the perfect dental arch.

The structure shown in Fig. 6 differs from the structure shown in Figs. 1, 2 and 3 only in that the open portion of the slot corresponding to the slot 10 terminates short of both ends of the sheath 19 and is formed from a tubular sheath by making a crescent shaped cut 20, into its medial portion.

Although the sheath shown in Figs. 1, 2, 3, and 6 provide an open slot, it is obvious that the sheath may be tubular throughout its entire extent, as shown in Fig. 7, wherein the anchor-band is provided with a tubular sheath 21. In this form of our invention the end of the tubular sheath affords the abutment, over which the spline 22 may be drawn to effect a longitudinal adjustment of the arch-bar 23 and against which it may be bent laterally to form the stop hook 24 against said abutment.

In the form of our invention shown in Fig. 9, the arch-bar 25 has its end portion reduced and returned upon itself to form the spline 26 in unitary relation therewith, which spline may be used with the same force and effect as the spline which is separately formed and secured to the arch-bar as shown in Fig. 5.

Our invention is advantageous in that longitudinal adjustment of the arch-bar may be conveniently effected by power produced by pulling the spline over the end of the sheath, which forms an abutment against which the power to force the arch-bar longitudinally is effected.

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 orthodontic appliance comprising an anchorage device provided with an arch-bar sheath having a bore for the arch-bar and a key-way for a spline integrally carried by said arch-bar.

2. An orthodontic appliance comprising an anchorage device provided with an arch-bar sheath having a bore into which said arch-bar having an integral spline may be fitted, and having an abutment against which the free portion of said spline may be turned to lock said arch-bar in different longitudinal positions.

3. An orthodontic appliance comprising an anchorage device provided with an arch-bar sheath having a slotted bore into which an arch-bar having an integral spline may extend, and having an abutment against which a free portion of said spline may be turned to lock said arch-bar in different longitudinal positions.

4. An orthodontic appliance comprising an anchorage device provided with an arch-bar sheath, having a longitudinally extending bore and an open slot extending parallel with said bore and terminating short of the end thereof.

5. An orthodontic appliance comprising an anchorage device provided with means for holding an arch-bar, and affording an abutment against which the free end of a longitudinally extending spline on said arch-bar may be turned to adjustably lock said arch-bar in different positions.

6. An orthodontic appliance comprising an arch-bar having a spline integrally engaged therewith toward the end of said

arch-bar, and having a free portion extended toward the medial portion of said arch-bar.

7. An orthodontic appliance comprising an arch-bar having a spline formed in unitary relation therewith and arranged to be turned back against the body of said arch-bar, said spline being of less width than the body of said arch-bar.

In witness whereof, we have hereunto set our hands the 27th day of May, A. D., 1921.

EDWARD H. ANGLE.
SPENCER R. ATKINSON.

Witnesses:
WILLIAM J. RUSSELL,
CLIFTON C. HALLOWELL.