J. E. CANNING.

DOUBLE BAR ARCH BAND.

APPLICATION FILED FEB. 4, 1919.

1,385,775. Patented July 26, 1921.

2 SHEETS—SHEET 1.

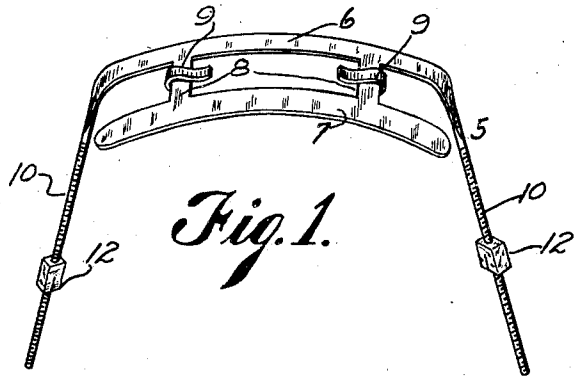


Fig. 1.

Fig. 2.

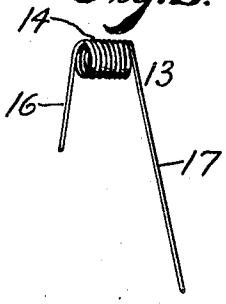
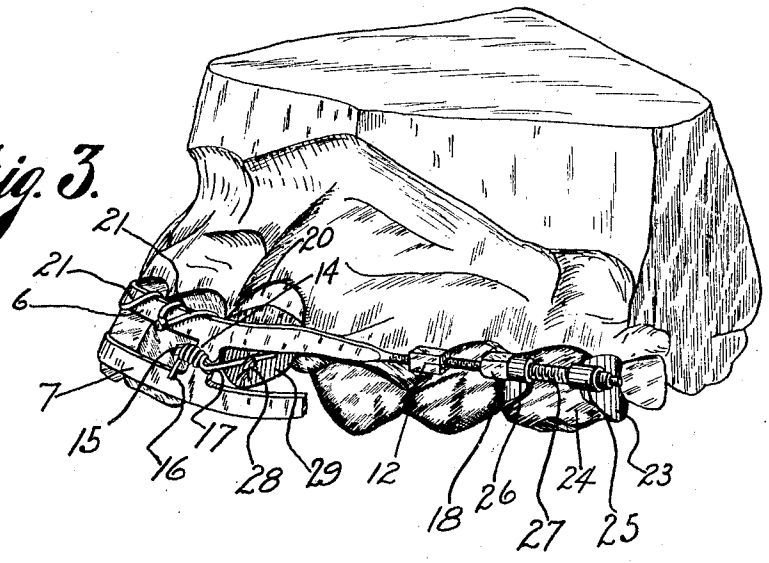


Fig. 3.



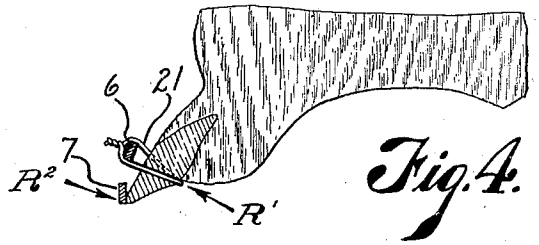


Fig. 4.

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2 SHEETS—SHEET 2.

Fig. 5

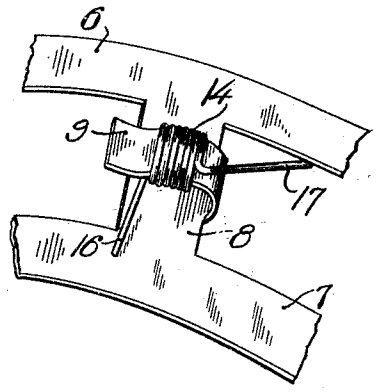
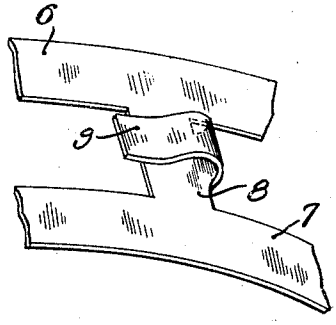


Fig. 6.



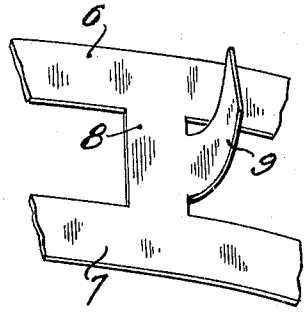


Fig. 7.

J. E. Canning. INVENTOR.

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UNITED STATES PATENT OFFICE.

JOHN E. CANNING, OF DENVER, COLORADO.

DOUBLE-BAR ARCH-BAND.

1,385,775. Specification of Letters Patent. Patented July 26, 1921.

Application filed February 4, 1919. Serial No. 274,833.

To all whom it may concern:

Be it known that I, JOHN E. CANNING, a citizen of the United States, residing at the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Double-Bar Arch-Bands; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention relates generally to tooth-straightening devices in the practice of orthodontia, and more specifically to a special construction of arch, or arch band, the peculiar feature of which is that in addition to the regular front portion or bar of the arch, a second, or auxiliary floating bar is employed, being suitably spaced from the main bar and connected therewith by vertically disposed cross pieces or standards, which are equipped intermediate their extremities with hooks for a purpose hereinafter described. The arch is anchored in the usual way, being provided with rearwardly-extending threaded parts or stems, each of which enters an anchorage connected with one of the back teeth or molars.

As illustrated in the drawing, each threaded extension of the arch band is slidable in a tube anchored on the rearmost molar, a nut being threaded on each stem forward of the tube and readily movable into engagement with the anchorage, as circumstances may require.

The auxiliary arch bar or member is adapted to act upon the teeth near their points or outer extremities; while ligatures are connected with the same teeth at or near the gums and connected with the main bar of the arch, the said ligatures having a tendency to tip the apex of the root forward, whereby the reaction is placed on the lower bar, which holds the lower portion of the tooth from advancing—the term "lower" in this connection being used with special reference to the employment of the arch band on the teeth of the upper jaw. The hooks with which the cross standards are provided, as hereinbefore indicated, may be utilized for supporting springs adapted for use in elongating certain of the teeth, as the cuspids, these springs being employed in connection with caps, which are cemented to the teeth to be elongated and are provided with projections adapted to be engaged by the springs.

Having briefly outlined my improvement, I will proceed to describe the same in detail, reference being made to the accompanying drawing, in which is illustrated an embodiment thereof. In this drawing:

Figure 1 is a perspective view of my improved double bar arch band, shown on an enlarged scale, for purposes of clearer illustration.

Fig. 2 is a perspective view of one of the springs employed in connection with my improved band, the spring being shown on a greatly enlarged scale.

Fig. 3 is a perspective view on an enlarged scale, illustrating my improved device applied to the teeth of the upper jaw.

Fig. 4 is a sectional view, illustrating the device employed in tipping or straightening one of the incisors.

Fig. 5 is an enlarged detail showing one of the springs in position.

Fig. 6 is a similar detail omitting the spring.

Fig. 7 is a detail showing the integral construction of the hook before the hook is bent entirely into operative position.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate my improved arch band, considered in its entirety and composed of a main front bar, 6, and an auxiliary bar, 7, connected with the main bar by standards, 8, upon which are mounted hooks, 9, the main bar having rearwardly-extending threaded parts, 10, carrying nuts, 12, which are adapted to be screwed against a suitable anchorage illustrated in Fig. 3, and including a band, 23, passed around one of the molars, 24, the band having sleeves, 25 and 26, with which a tube, 27, is connected, a nut, 18, being employed and shown in contact with the sleeve 26. It will be understood that any suitable anchorage for the extremities of the threaded extensions, 10, of the device may be employed. The auxiliary bar, 7, is free at its extremities, and therefore adapted to have freedom of movement, as may be required for tooth-straightening purposes.

In Fig. 3 a spring, 13, is mounted on one of the hooks, 9, the spring having a convoluted member, 14, which is slipped over the hook, the end of which is bent at right angles to its body portion, as shown at 15 in Fig. 3, which prevents the spring from slipping off the hook. The short end, 16, of this spring bears against the bar 7, while its longer extremity or portion 17, engages a projection 28 on a cap, 29, which, as shown in the drawing, is cemented on one of the cuspid teeth, 20. This spring, when employed as shown in Fig. 3, is utilized for lengthening a cuspid tooth. This operation may be carried on simultaneously with the use of the double bar feature for straightening the incisor teeth also, as illustrated in Fig. 3. Ligatures, 21, are passed around the incisors close to the gums, and then around the main bar, 6, of the arch band, which exerts a tension on the ligatures to tip the apex of the root forward, while the bar 7 of the band acts upon the incisors near their points and has a tendency to move them inwardly to their normal or approximately vertical position. By virtue of this construction and arrangement, the function of the double-bar feature of the band is apparent, since the member 7 is pressing the points or free extremities of the teeth inwardly, while the ligatures are acting to tip the roots forwardly, or in the opposite direction, the conjoint action of the two bars serving to restore the teeth to their normal position.

With this arch, the roots of the incisors, for instance, are not only easily tipped forward into a perpendicular plane, but can be moved forward any distance in an upright position by turning the bar nut, 12, back against the anchorage or the nut, 18, thereof. When the arch is adjusted, the bar, 7, comes in contact with the incisal edges, while the bar 6 stands away from the gingival, as shown in Fig. 4. With the arch in this position, the bar 6 is sprung lingually by twisting the extremities of the wire ligature, 21. The ligature wires should go under the free margin of the gums, or around the necks of the incisors. This prevents the wire from working down the lingual incline of the tooth and becoming loose.

The bar 6 being ligated, as shown in Fig. 3, the apex of the root of an incisor is tipped forward and the reaction is on the auxiliary bar 7, which holds the lower portion of the tooth from advancing. It is easy to understand that if the upper bar 6, as shown in Fig. 3, is sprung toward the teeth and the resistance is on the incisal edges, the root must be tipped forward while the point is moved in the opposite direction, thus tending to correct the malformation. After the teeth are tipped into a perpendicular plane, they can be carried forward in an upright position any distance by turning the nut 12 against the anchorage, after which the stems 10 can no longer move rearwardly through the anchorage tube, and any desired tension may be obtained through the medium of the bar 6 for carrying the teeth forwardly, as will be readily understood.

Greater tipping movement in the arch can be secured at any time by grasping the arch with a pair of pliers at the junction of the cross standards, 8, and the bar 6, and bending the lower bar, 7, in a lingual direction. This, of course, must be done with the arch out of the mouth. By the employment of the spring attachments, 13, which are made rights and lefts, cuspids can be elongated simultaneously with the alining of the incisors, as heretofore indicated. The springs may be adjusted to the hooks while the device is in the mouth, but it is more convenient to do this before placing it on the teeth.

Having thus described my invention, what I claim is:

1. An arch band, whose front portion is composed of two spaced integral parts, one part having rearwardly-extending threaded stems adapted to coöperate with suitable anchorage.

2. An arch band, having an auxiliary front bar spaced from and connected with the main part of the band by transversely arranged parts, and springs mounted on the last named parts and coöperating with the band for the purpose set forth.

3. An arch band, having an auxiliary front bar spaced from and connected with the main part of the band by transversely arranged parts, provided with hooks and springs mounted on the hooks and coöperating with the band for the purpose set forth.

4. An arch band comprising a main bar having a front portion, an auxiliary front bar shorter than the main bar spaced therefrom and having free ends and transverse parts connecting the auxiliary bar with the main bar at intermediate points.

In testimony whereof I affix my signature.

JOHN E. CANNING.