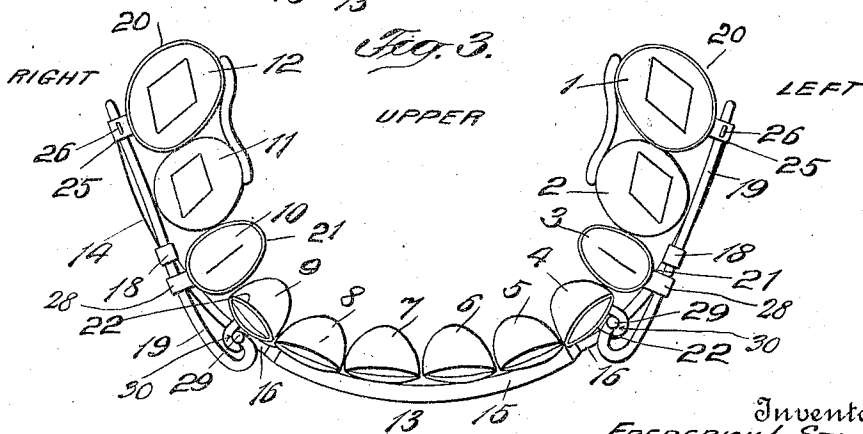
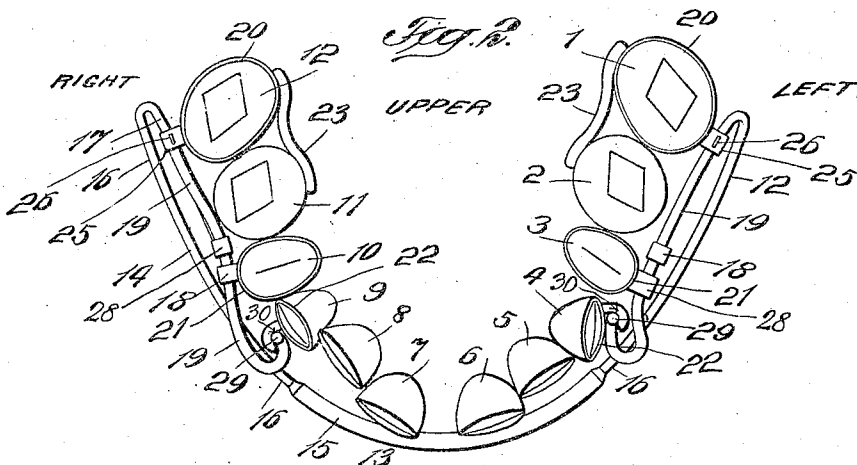
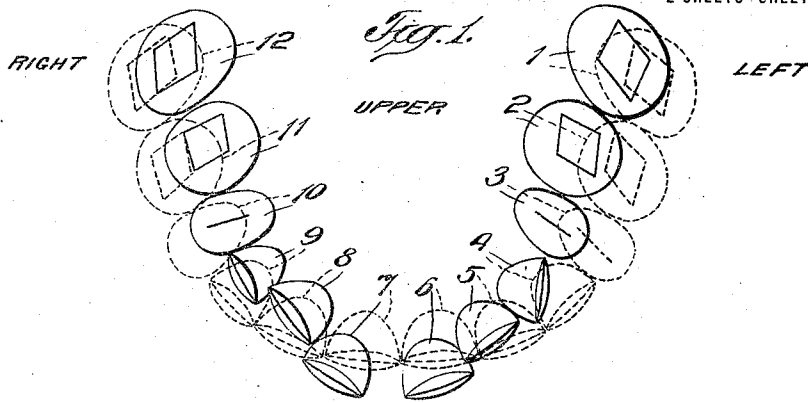


F. L. STANTON AND G. D. FISH.
 MEANS FOR PLACING TEETH IN CORRECT POSITIONS.
 APPLICATION FILED JAN. 15, 1917.

1,307,382.

Patented June 24, 1919.

2 SHEETS—SHEET 1.

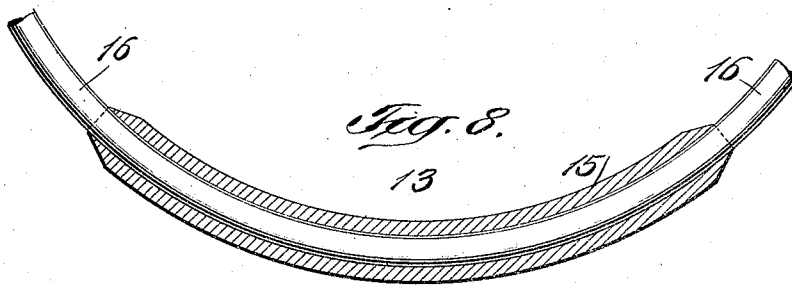
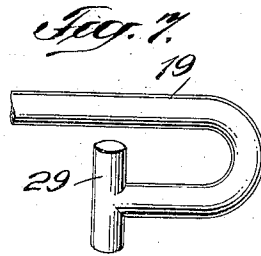
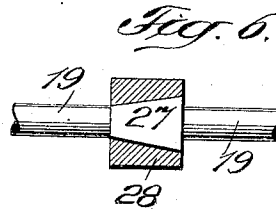
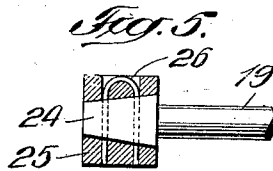
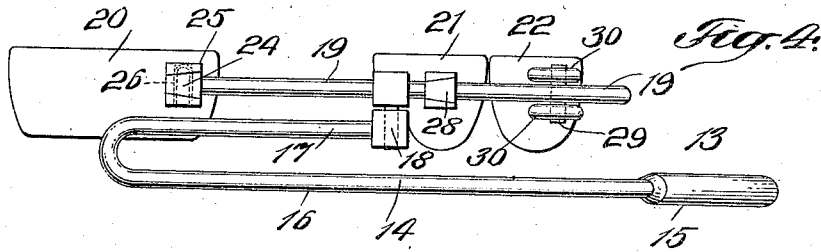


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 By their Attorney
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UNITED STATES PATENT OFFICE.

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ASSIGNOR TO SAID STANTON.

MEANS FOR PLACING TEETH IN CORRECT POSITIONS.

1,307,382.

Specification of Letters Patent.

Patented June 24, 1919.

Application filed January 15, 1917. Serial No. 142,341.

To all whom it may concern:

Be it known that we, FREDERICK L. STANTON and GILBERT D. FISH, citizens of the United States, and residents of the city, county, and State of New York, have invented a new and useful Improvement in Means for Placing Teeth in Correct Positions, of which the following is a specification.

10 The object of our invention is to provide a means for placing teeth in proper occlusal positions in the respective jaws of a patient without making any unnecessary movements of these teeth. A further object is to secure
15 this result with a minimum of pain to the patient and time required for the transformation. These said objects are accomplished by our invention, some embodiments of which are hereinafter more particularly
20 set forth.

For a more particular description of our invention, reference is to be had to the accompanying drawings, forming part hereof, in which

25 Figure 1 is a diagrammatic inverted plan view of the upper teeth of a child (taken from life) with some temporary and some permanent teeth wherein the malocclusal positions of the teeth are shown in full lines and the occlusal positions in dotted lines.

30 Fig. 2 shows these teeth in malocclusal positions with the shifting means in place and before it has begun to act.

35 Fig. 3 shows such teeth after the said means has brought them into their proper occlusal positions.

Fig. 4 is a side elevation of our improved shifting means.

40 Figs. 5 to 8 inclusive show details of construction; Figs. 5 and 6 show two forms of rigid locks; Fig. 7 a portion of a hinge and Fig. 8 a stiffened arch wire or expander.

45 Throughout the various views of the drawings, similar reference characters designate similar parts.

The problem presented by Fig. 1 is to shift these teeth with a minimum of trouble, expense and time, and without pain or discomfort and also to shift them correctly.

50 For convenience, these teeth are designated as follows: the first permanent molars 1 and 12; the second temporary molars 2 and 11; the first temporary molars 3 and 10;

the cuspids 4 and 9; lateral incisors 5 and 8 and the central incisors, 6 and 7.

55 Heretofore when teeth have been shifted, it has been customary to connect all or nearly all of them to the shifting means. With our improved device this is not the case, as it has been found by experience that if the side
60 teeth, say from the cuspids to the first permanent molars, are properly shifted, the tongue and lips will properly shift the incisors. In rare and exceptional cases, it is necessary to attach the incisors or some of
65 them.

Our improved shifting means 13, is composed of an arch bar 14, which is mounted at its ends and free in between. This arch 14 is preferably made of metal, such as gold or
70 platinum and is generally but not always in the form of a wire with a tubing 15, secured at its center, as shown in Fig. 8, before it is bent, so that under all circumstances it will reinforce the front of the arch, and thus
75 prevent undue deformation of this portion, and the ends, which are not reinforced, will spring and produce the necessary movements of the teeth to be shifted. If desired, the
80 tube 15 may be dispensed with if a heavy wire is used and drawn down to a reduced diameter at each end.

These ends 16 may be made in any suitable way, but are preferably taken near the first molars and are then brought forward as
85 shown at 17 so that they may be secured to suitable devices which connect them with the teeth.

In Figs. 2, 3 and 4 one form of connection is shown in which each end 17 is provided with a hinge 18 which connects its
90 end with a yoke 19, which is connected in turn to the teeth through bands or crowns 20, 21 and 22, as desired, the purpose being to have these connections so that the parts
95 19, 17 and 16 will be held without turning or twisting and an even and proper pull may be placed upon the teeth to be shifted.

To insure this, certain forms of locks and hinges are used which will be described below.

100 In one embodiment of our invention herein shown a crown or band 20 is placed upon each first molar, in the conventional manner, and from this extends a rigidly secured
105 lingual extension 23 which presses against

the lingual surface of the adjacent second temporary molar. The crown 20 is rigidly connected to the yoke 19, by means of a lock consisting of a tapering head 24 which fits the corresponding socket 25 as shown in Fig. 5, with a snug fit and is held in place by a U wire 26, as shown. This socket 25 is rigidly secured to the crown 20, so that twisting, turning or shifting of the yoke 19 with regard to this band 20 is prevented. It is also obvious that the socket 25 and its attached parts will move as a unit.

The crown or band 21 is also secured to the yoke 19 by means of a lock consisting of a tapering head and socket connection of a slightly modified form. Here the head 27 is fixed at a convenient place on the bar 19 and is secured to the socket 28 by means of solder. The socket 28 is rigidly secured to the crown 21 in the manner indicated.

It will be noted that in the present embodiment of our invention, the socket 28 is placed beyond the hinge 18 at a different distance from the socket 25. The location of the hinge 18 is such that the proper force will be brought to bear on both the crown 20 and the crown 21 more being placed on the crown 21 because of its closer proximity to the hinge. This may be varied by shifting the hinge, as is obvious.

The forward end of each yoke 19 is brought around to form a hook with an end 29 which is adapted to engage corresponding hooks 30 which extend from crown 22. This end of the yoke 19 is bent so as to bring the desired force on the crown 22, and its inclined tooth, so that this tooth 22 will receive its proper tension. The hooks 30 and the end 29 which engages therewith produce a strong and flexible joint which tends to draw the attached cuspid into its true position. The location of this joint with regard to the cuspid will determine the rotation or non-rotation of this tooth during its translation. Any suitable form of vertical hinged joint may be employed.

Once the shifting means is placed as shown in Fig. 2, the shifting commences and continues gently and firmly along correct lines until the teeth assume the occlusal positions shown in Fig. 3, or approach such positions so that only a slight change of the apparatus is necessary to obtain the desired results. As appears from the drawing, these results are obtained without securing the incisors to the expanding arch, and this arch is not allowed to touch the anterior teeth or gum.

It is obvious that as no two sets of teeth are exactly alike, our shifting means made in accordance with our invention, must be made and shaped according to the needs of each patient, and that in all embodiments of our invention, the expanding arch is made so that it has resilient ends and connections therewith which act on the teeth and act in

such a way as to bring them true, as above specified. For example: Where there is local irregularity of the side teeth, these teeth may be brought into proper alignment by means of elastic deformation in the yoke 19, deliberately planned and designed to produce this alinement while all teeth are being shifted to their true occlusal positions. Furthermore, if an arch is too wide, it may be narrowed by bending the expander so that its ends are nearer together than the initial positions of the hinges 18, the reverse of the usual use of the apparatus. It is also obvious that where a tooth is to be rotated while being shifted, a vertical hinge is employed, its position depending upon the amount and direction of rotation and when no such rotation is required, a lock is employed; and that either a hinge or a lock may be used at any part of the yoke 19. Unless a tooth is to be tipped as well as rotated, a vertical hinge must be employed, and all such hinges and the hinges 18 must be parallel. If it is desired to tip a tooth as well as to rotate it, the hinge must be inclined or even horizontal, the amount of this inclination depending upon the amount and direction of the tipping required. If desired, the yokes and expander may be placed on the lingual instead of the buccal side of the arch and this applies to either the upper or the lower jaw. It is also obvious that our improved means may be used with deciduous, mixed and permanent dentures and to lower jaws as well as upper.

Some advantages of our improved means for shifting teeth are:—

First. For each case the appliance carries out predetermined movements of the teeth to change them from malocclusion to occlusion.

Second. These teeth are translated in straight lines from start to finish, and hence with the least movement.

Third. The expansion of the sides of the dental arch is controlled accurately by means of the expanding arch which exerts force only on two hinges which connect it to the yokes, and this force is exerted in the direction of the line joining these hinges and all undesirable tipping of the teeth is prevented by these vertical and parallel lines.

Fourth. That any desired horizontal rotation of either side of the dental arch can be effected by a proper selection of the point of attachment of main hinge 18.

Fifth. There are no attachments to the front teeth.

Sixth. As the front of the expanding arch is thicker than the ends, and as the ends are formed into long and flexible extensions, the expansion occurs almost exclusively in the sides or ends of the arch so that the arch does not shorten materially

from front to back during expansion, and hence the expanding arch at its front does not press into the gum or against the front teeth, and so the appliance will operate
5 without attention, over a much longer period than would otherwise be possible.

Seventh. The required movements are effected in much shorter time than has heretofore been possible and without the exertion of any greater force.
10

Eighth. In case a patient must be dismissed for several months and so be without professional attention, the expanding arch may be so designed as to have the correct
15 distance between the hinges 18 when it is at rest, and then when the expansion is completed, it stops, and the appliance becomes a retainer for holding the teeth in place.

Ninth. As the distance between the hinges
20 18 in their final positions is precisely known in advance, only a small amount of skill is required to adapt a stock appliance to a special case.

While we have shown and described some
25 embodiments of our invention, it is obvious that it is not restricted thereto, but is broad enough to cover all structures that come within the scope of the annexed claims.

Having thus described our invention, what we claim is:—

1. In a device of the class described, a free arch with parallel pivots, yokes connected to said pivots and connections holding said yokes to adjacent rear teeth so that adjacent rear teeth may be shifted as a unit
30 to their true occlusal positions, and the front teeth may be left to the lips and tongue of the patient.

2. In a device of the class described, a free reinforced arch with parallel pivots, yokes connected to said pivots and connections holding said yokes to adjacent rear
40 teeth so that adjacent rear teeth may be shifted as a unit to their true occlusal positions, and the front teeth may be left to the lips and tongue of the patient.

3. In a device of the class described, a free arch with parallel pivots, yokes connected to said pivots and connections holding said yokes to adjacent rear teeth,
45 one of said connections consisting, in part, of a hook and loops placed so as to twist a tooth to its true occlusal position.

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GILBERT D. FISH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."