

(No Model.)

D. R. WILDER.
TEETH REGULATOR.

No. 473,040.

Patented Apr. 19, 1892.

Fig. 1.

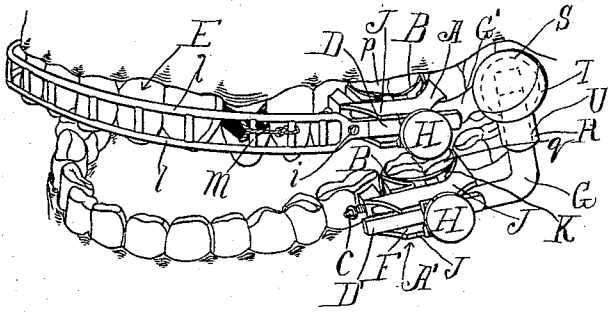


Fig. 5.

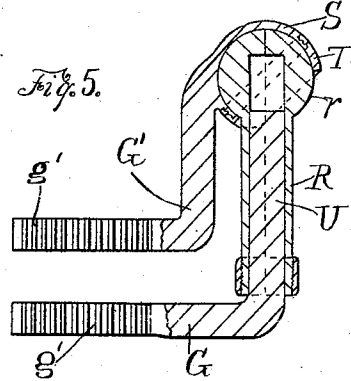


Fig. 2.

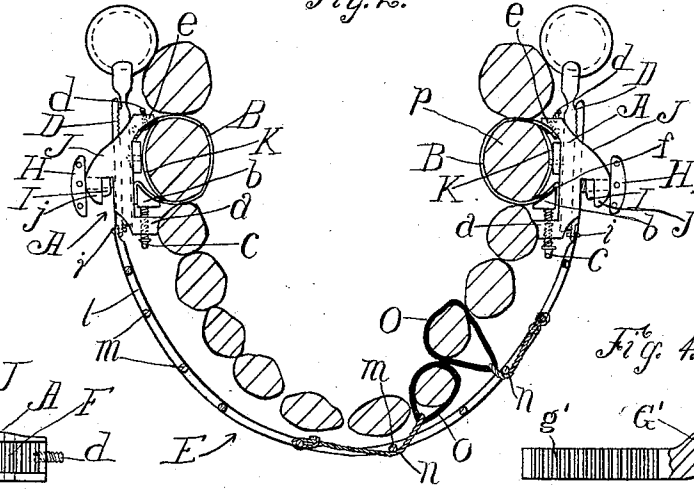


Fig. 3.

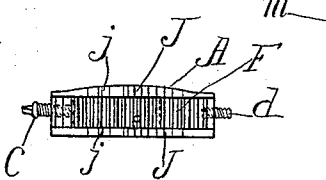


Fig. 4.

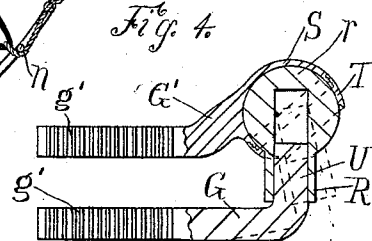


Fig. 7.

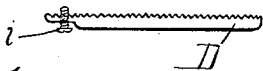


Fig. 8.

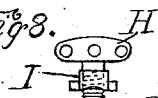
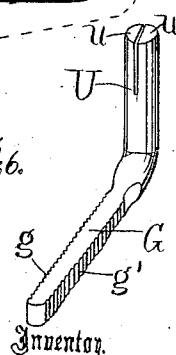


Fig. 9.



Fig. 6.



Witnesses.

O. W. Harbison.
F. M. Townsend

Deed R. Wilder
Hazard Townsend
his atty.

UNITED STATES PATENT OFFICE.

DEEL R. WILDER, OF LOS ANGELES, CALIFORNIA.

TEETH-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 473,040, dated April 19, 1892.

Application filed February 2, 1892. Serial No. 420,061. (No model.)

To all whom it may concern:

Be it known that I, DEEL R. WILDER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Improvement in Teeth-Regulators, of which the following is a specification.

One object of my invention is to provide more convenient and more secure and stable means for attaching the regulator to the teeth, whereby the same can with ease be attached to and removed from the teeth and can be used repeatedly and on different patients, and whereby the regulator is so firmly supported when in place that it will not displace the teeth to which it is attached.

A further object of my invention is to afford means whereby the tooth can be drawn closer to the regulator-bar than it is possible with the devices of this class now in use.

The accompanying drawings illustrate my invention.

Figure 1 is a side perspective view of my invention in position for use as it appears when secured to the teeth. The upper and lower sets of teeth are both indicated in this view; but it is to be understood that the attachment to the lower set, as shown in this figure, or to the upper set, as the case may be, can be omitted in cases where the strain will not be great enough to displace the anchor-teeth of one set alone. It is to be understood that the other end of the bar is provided with fastening devices which are the duplicates of those shown in this figure. This is indicated in Fig. 2. The several anchor-blocks are reversed in position when placed on the opposite sides of the jaw; but such blocks are the same at top and bottom and can be used interchangeably upon both sides of the mouth by simply turning them over. Fig. 2 is a plan view of my improved regulator in position attached to a set of teeth, which are shown in horizontal transverse section. Fig. 3 is a view of the outside of the anchor-block. Fig. 4 is a vertical longitudinal mid-section of the joint which connects the upper and lower anchor-blocks. The shanks G G' are shown intact at their corrugated portions. Fig. 5 is a view similar to Fig. 4, showing a joint arranged to allow greater movement of the jaws than the form shown in Fig. 4. Fig. 6 is a

perspective view of the sliding pintle and its clamp-shank. Fig. 7 is a side view of the rack-bar by which the regulator-bar is adjustably attached to the clamp-block. Fig. 8 is a plan elevation of the clamp-screw and its cross-head for securing the rack-bars and shanks in place. Fig. 9 is a plan of such cross-head. Fig. 10 shows the several parts of the ball-and-socket joint in detail.

With relation to the regulator-bar-attaching device my invention consists, essentially, of the combination of an anchor-block A, a clamp-band B, secured at one end to such block and adapted to partially encircle the anchor-tooth, a band-tightening jack arranged in connection with the anchor-block to draw the tooth-band tight to clamp the anchor-tooth, and means for securing the regulator-bar to the anchor-block. The clamp-band is preferably secured by a screw *d* to the anchor-block through the medium of a lug *e*, projecting from such block. The band-tightening jack consists of the combination of the anchor-block to which the band is secured by one end, a cramp-block operating jack-screw *c*, arranged to screw through a suitable lug *a*, projecting from the inner face of such block, and a movable cramp-block *b*, mounted upon the jack-screw and arranged with sufficient space between it and the anchor-block to chamber the end of the clamp-band, which is bent at an angle with the main body of the band in order to be inserted in such space and fitted therein, as shown—that is to say, the end of the band is bent outward from the curve of its main body, so that when the band is in place about the tooth and is passed between the tooth and the movable block the bent end can be made to enter the space between the movable cramp-block *b* and the anchor-block, and will thereby be so connected with the cramp-block that when the block is advanced by the screw it will operate to tighten the band upon the tooth. The cramp-block *b* is pointed at *f* to fit into the angular bend of the band. By this means it is made possible to easily fasten the clamp-band to the tightening-jack after the appliance has been placed in the mouth.

The anchor-blocks A are channeled in their outer faces to seat the corrugated shanks of the joint, and also the rack-bar D, to which

the regulator-bar E is attached. In the drawings the screw *i* suggests the means for attachment. The bottom of the channel F in the anchor-block is corrugated to seat the corrugations of the shanks of the joint and prevent slipping. The channel is of sufficient depth to seat both the rack-bar D and the corrugated portion of the shank G G' of the joint. Such shanks are provided with two corrugated sides *g g'*, so that contact with the bottom of the channel will prevent the shank from slipping and contact with the corrugated face of the rack-bar will prevent such bar from slipping when the parts are clamped together, as shown.

The means for clamping the shank and rack-bar in the channel consist of a clamp-screw H and a suitable cross-head I, through which the clamp-screw H screws to engage the rack-bar. The cross-head is secured to the side walls J J of the anchor-block, which form the channel F, by suitable means, such as the cross-head-retaining hooks or lugs *j j*, under which the cross-head is placed when the several other parts are in position, as shown in Figs. 1 and 2, and as hereinafter described. A curved spring-plate K is fixed to the inner face of the clamp-block to fit upon the outer face of the tooth and sustain the pressure of the tooth-band.

The teeth-regulator bar E is formed of two side rails *ll* and a series of cross-bars *m*, extending across between the side rails like the rungs of a ladder to form attachments for the cords or bands *n o*, which are used in drawing the teeth into proper position.

In regulating teeth it is frequently found that the strain upon the regulator-bar is so great that the anchor-teeth—*i. e.*, the teeth to which the bar is secured to retain it in place—yield under the pressure and become forced out of place. I provide against this by the means indicated in Fig. 1, which means comprise the combination of upper and lower anchoring devices comprising the anchor-blocks A A' and suitable means for securing such anchor-blocks, respectively, to anchor-teeth *p q* of the upper and lower jaws, two suitable hinge-shanks adapted to be secured, respectively, to the upper and lower anchor-blocks, and a combined ball-and-socket and extensible joint arranged to connect such shanks. The combined ball-and-socket and extensible joint consists of the combination of a telescoping tube R, provided at one end with the ball *r*, a semi-spherical socket S, fixed to one of the shanks and adapted to seat such ball, a perforated screw-cap T, arranged to encircle the tube screwed upon such socket and adapted to retain the ball therein and allow free movement of the ball within the socket, and a telescoping pintle U, fixed to the other shank and arranged to slide in the telescoping tube. I prefer to split the pintle at its free end, as shown in Fig. 6, so that the two limbs *u u* may be spread apart slightly and given sufficient spring to cause them to

fit snugly in the tube, so that the pintle will not move with too great freedom.

In practice, when it is desired to attach the device to the teeth the jack is set with the movable block *b* retracted toward lug *a*, and the tooth-band B is secured to the lug *e* by screw *d*. Then the band is placed in position about the tooth and its bent portion is inserted into the space between the movable block *b* and the main body of the anchor-block, and the screw *c* is then turned to force the movable block toward the tooth into the position shown in Fig. 2 to draw the band tight upon the tooth. Each anchor-block is set in place in this way, and then the shank G of the joint or hinge is placed in the channel F of the anchor-block, the rack-bar D is set in position on the shank in the channel, the cross-head I is set in position beneath the hooks *j*, and the clamp-screw H is screwed to press against the rack-bar and clamp it and the shank firmly in place. The bottom of the channel is corrugated, as indicated in Fig. 3, and the shank is corrugated on two sides to fit thereon and to form a corrugated seat for the rack-bar, so that when the clamp-screw is screwed into place the shank and clamp-bar are both firmly secured.

When the double anchorage is employed—that is, when attachment is made to both the upper and lower teeth—the several anchor-blocks are first set in position and one of the shanks is clamped to its anchor-block, and then after adjusting the parts of the joint into the position desired the other shank is clamped to its block.

The extensible ball-and-socket joint shown allows the patient to move the lower jaw with perfect freedom; but the connection between the upper and lower anchor-blocks is such that both blocks mutually bear the strain exerted by the regulator-bar when the teeth are being regulated.

When the several anchor-blocks are clamped in place, the regulator-bar is adjusted in proper position with relation to the teeth and the rack-bars D are placed in the channels with their corrugated faces in engagement, respectively, with the outer corrugated faces of the shanks, the cross-heads are inserted beneath the hooks or lugs *j*, and the clamp-screws are screwed firmly against the rack-bars, thus clamping them and the shanks in place in the channels. When the regulator-bar is finally adjusted and firmly clamped in place, the rubber bands *o* are applied in the ordinary manner to the teeth to be regulated, and the cords *n*, by which they are to be drawn toward the regulator-bar, are drawn over the rungs *m* and secured thereto. The bands can be stretched to any extent desired, even when stretched so as to pass between the rungs, for the end of the cord *n* can be carried to another rung and the rubber band drawn over the rung so far as may be necessary, so that the tooth can be drawn snug against the regulator-bar, if desired.

Now, having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a teeth-regulator, the combination set forth of an anchor-block, a clamp-band adapted to only partially encircle the anchor-tooth, and having one end attached to such anchor-block and having its other end adapted to be attached to a suitable cramp-block, such cramp-block and a cramp-block operating-screw arranged in connection with the anchor-block to operate the cramp-block to tighten the clamp-band upon the anchor-tooth.

2. The combination set forth of the upper and lower anchor-blocks, suitable means for clamping such anchor-blocks, respectively, to anchor-teeth in the upper and lower jaws, two hinge-shanks adapted to be secured, respectively, to the upper and lower anchor-blocks, and the ball-and-socket and extensible joint arranged to connect such shanks.

3. In a teeth-regulator, the combination of the upper and lower anchoring devices, a hinge-shank provided at one end with a semi-spherical socket and adapted for attachment to one of such anchoring devices, a hinge-shank provided at one end with a telescoping pintle and adapted for attachment to the other anchoring device, a telescoping tube arranged to receive the pintle and provided at one end with a ball arranged to fit the socket, and means for securing the shanks to the anchoring devices.

4. The combination of the anchor-block channeled in its outer face and provided with the cross-head retaining-lugs, the regulator-bar, the rack-bar attached to the regulator-bar and adapted to fit in such channel, the cross-head adapted to fit over the rack-bar and beneath the lugs of the anchor-block, and the clamp-screw arranged to screw through the cross-head and clamp the bar.

5. In a teeth-regulator, the teeth-regulator bar set forth, formed of two side rails and a series of cross-bars extending across between the side rails.

6. The combination set forth of the channeled upper and lower anchor-blocks having the hooks and having the bottoms of the channels corrugated, means for clamping such blocks, respectively, to teeth in the upper and lower jaws, the hinge-shanks having the corrugated faces and arranged, respectively, in the said channels, the regulator-bar, the rack-bars secured thereto and arranged in said channels with their corrugated faces in engagement, respectively, with the outer corrugated faces of the shanks, the cross-heads inserted beneath the hooks, and the clamp-screws screwed through the cross-heads and against the rack-bars.

DEEL R. WILDER.

Witnesses:

JAMES R. TOWNSEND,
ALFRED I. TOWNSEND.