

(No Model.)

M. A. KNAPP.
TEETH REGULATOR.

No. 597,582.

Patented Jan. 18, 1898.

Fig. 1.

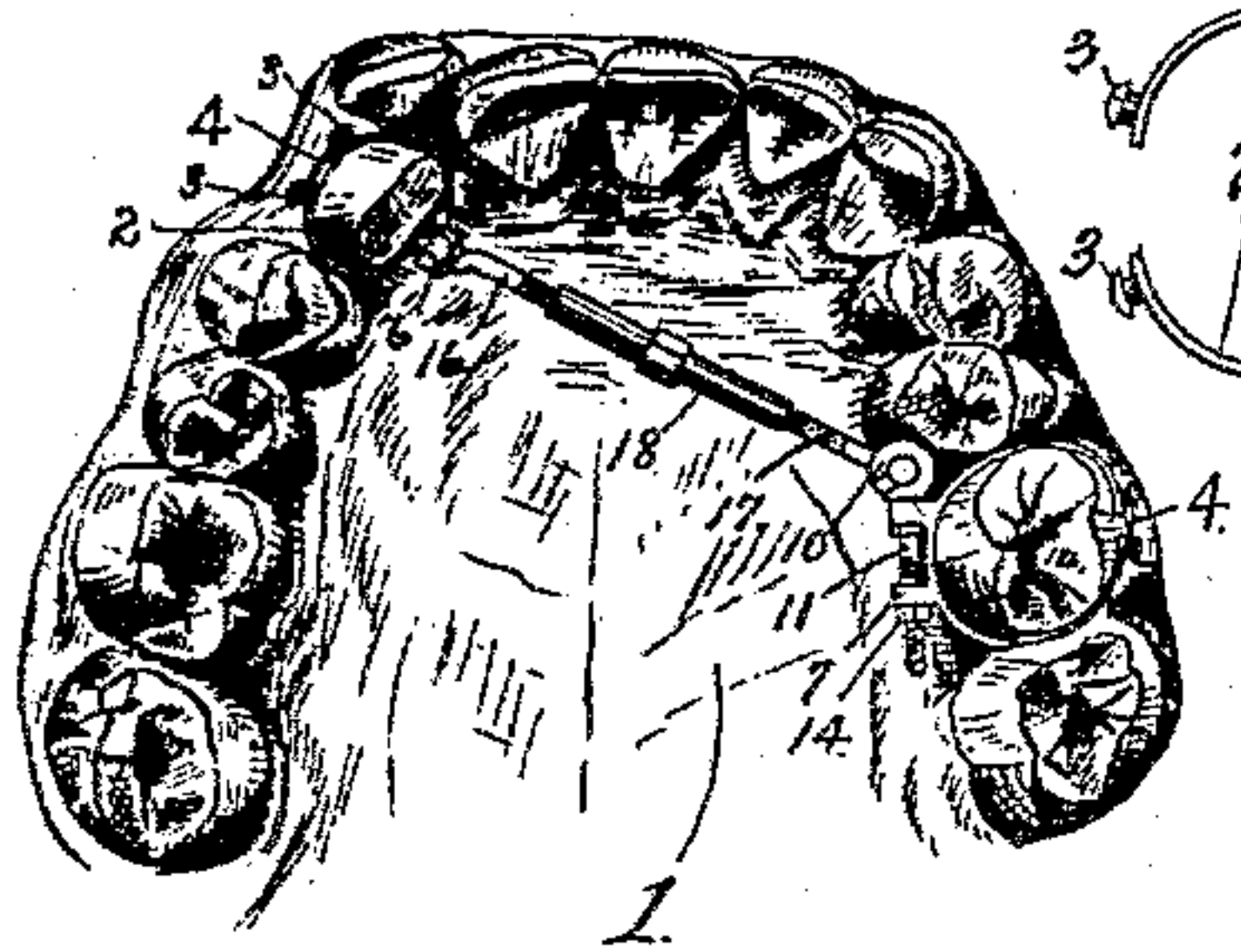


Fig. 2.

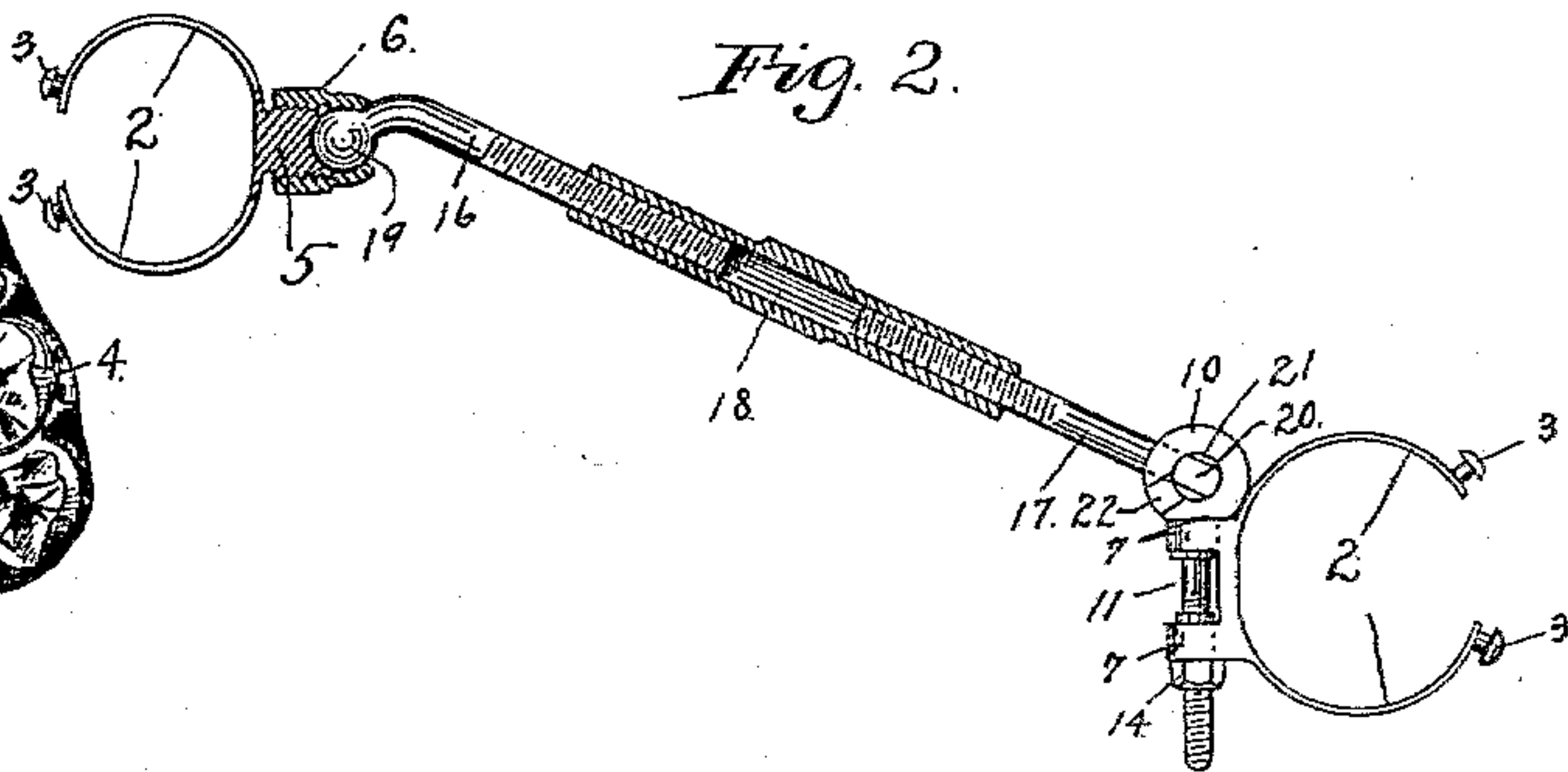


Fig. 3.

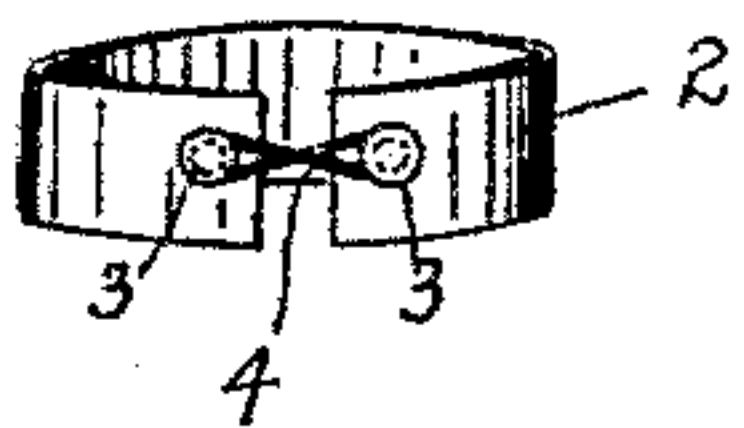


Fig. 4.

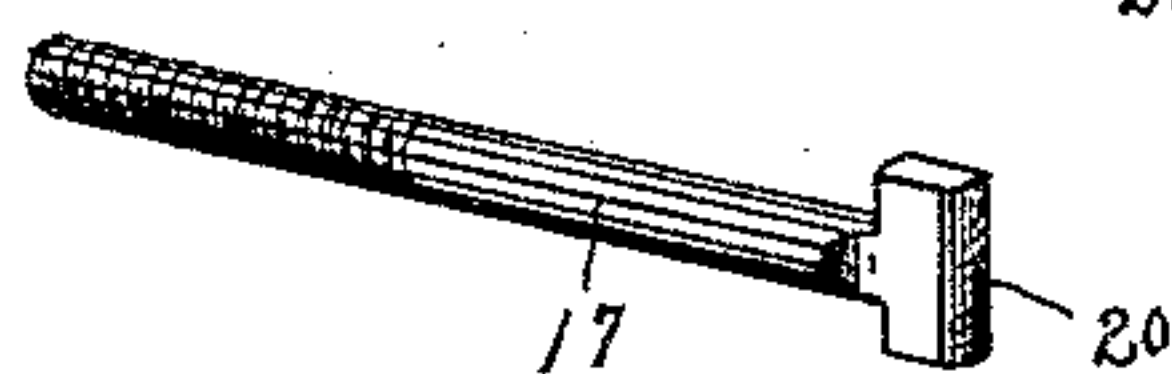


Fig. 5.

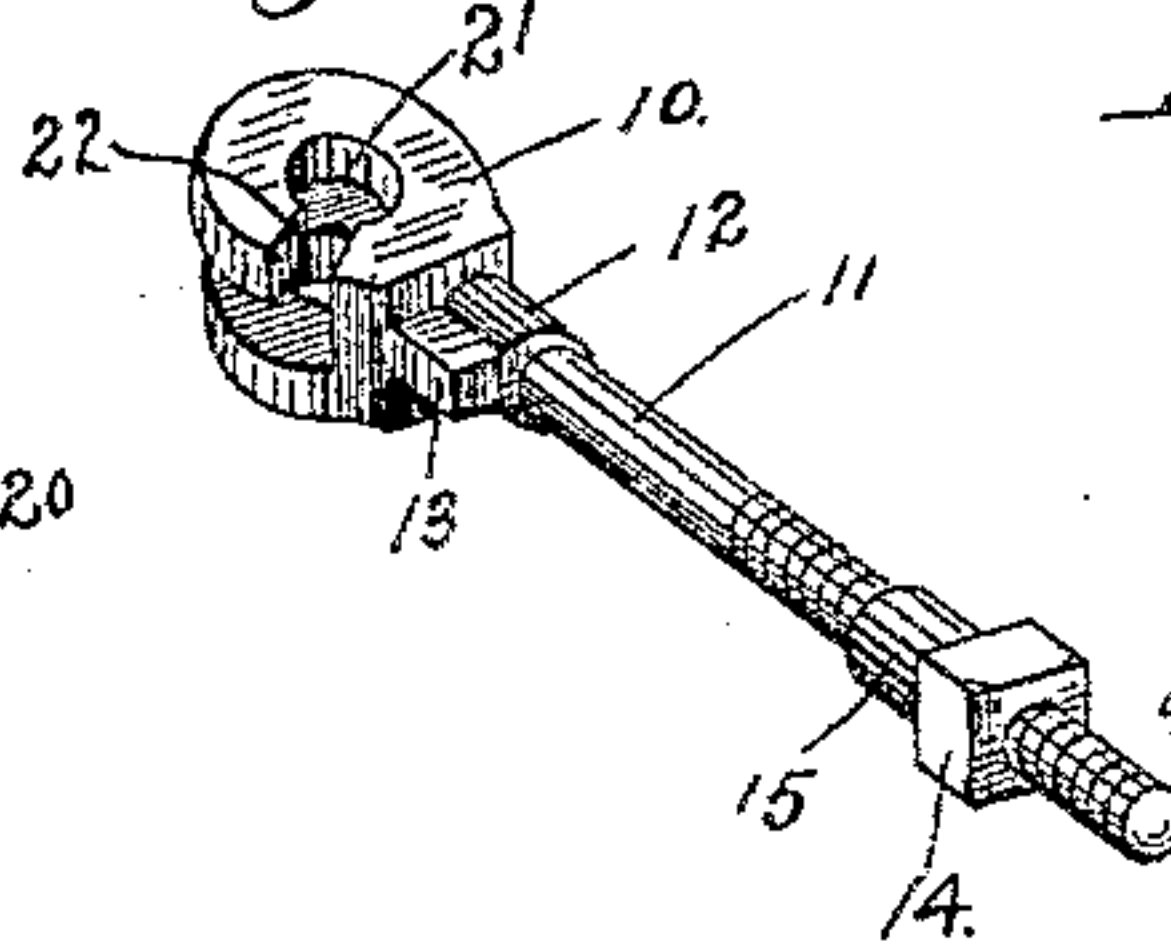
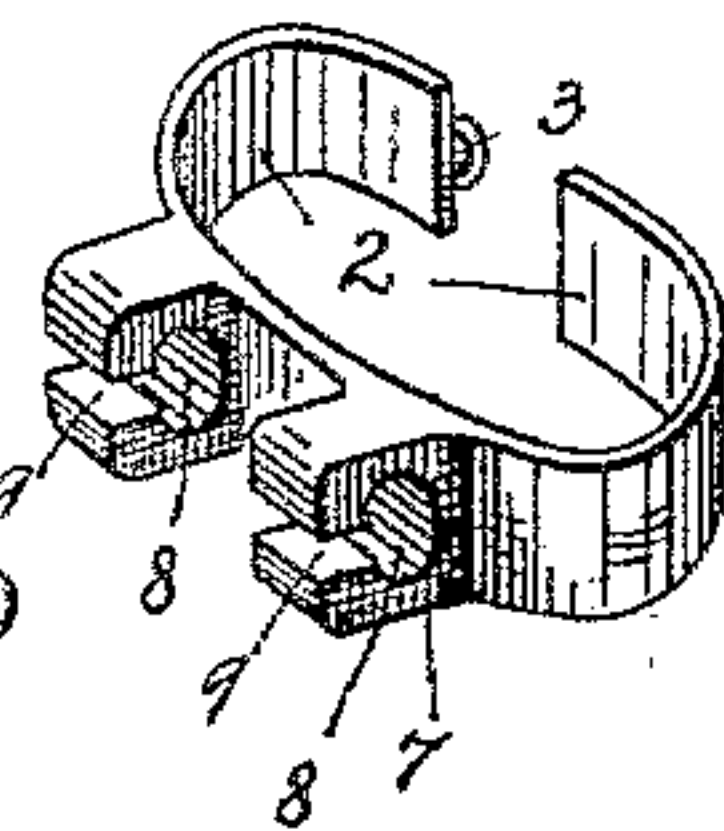


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

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TEETH-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 597,582, dated January 18, 1898.

Application filed June 1, 1897. Serial No. 638,836. (No model.)

To all whom it may concern:

Be it known that I, MILAND A. KNAPP, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Devices for Regulating Teeth; and I do hereby 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.

My invention relates to dentistry, and has for its object to provide an efficient device for regulating or alining the teeth which shall at the same time be simple in construction, easy of application and manipulation, capable of a wide range of use, and cause a minimum of discomfort to the patient.

To these ends my invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

My invention is illustrated in the accompanying drawings, wherein, like numerals indicating like parts throughout the several views—

Figure 1 is a plan view of a part of the human jaw, showing one of my devices applied in working position to accomplish one class of movements or adjustments of the teeth. Fig. 2 is an enlarged view, partly in plan and partly in horizontal section, showing the regulating device illustrated in Fig. 1 removed from working position. Figs. 3, 4, 5, and 6 are detail views in perspective, showing the parts of the regulating device illustrated in Figs. 1 and 2 separated from each other.

1 indicates the human jaw.

2 indicates teeth-bands, which are made of different sizes to fit different teeth and are cut or split, so that they may be readily placed in working position on the teeth. At their sectioned ends the teeth-bands 2 are provided with small outwardly-projecting buttons or headed studs 3. When the bands 2 are placed around the teeth, the buttons 3 will project outward, and the bands may be very firmly secured to the teeth by means of a fine wire or metallic thread 4, which is wound over said buttons 3 in such a manner as to draw the

sectioned ends of the bands together or toward each other. One of the bands 2 is provided at a point diametrically opposite to its split ends with an inwardly-projecting stud 5, on which a removable ball-socket or cap 6 works with screw-threaded engagement. The other member of the bands used in this form of the device is provided on its inner portion with a pair of inwardly-projecting keeper-lugs 7, which are spaced apart from each other and provided with sleeve-sockets 8. The sockets 8 extend in axial line with each other and are provided with side openings 9, through which one of the rod portions of the device may be laterally inserted and removed, as will be hereinafter fully explained.

10 indicates a bifurcated head which is provided with a projecting rod or stem 11 and with a fixed sleeve or collar 12, surrounding said rod 11 at its junction with said head. From the sleeve or collar 12 a flange 13 projects in a radial direction. The end of the rod 11 is screw-threaded, and on this screw-threaded end a nut 14, which is provided with a sleeve extension 15, works with screw-threaded engagement.

16 and 17 indicate a pair of tension-rods which are adapted to be connected together and extended or contracted by means of a sheath or tube 18, which engages said rods, one with a left-hand and the other with a right-hand screw. The rod 16 is provided at its outer ends with a spherical head or ball 19, which is adapted to fit the seat or socket formed by the cap 6 and stud 5. The rod 17 is provided at its outer end with a T-shaped head 20, which is preferably slightly flattened. The ears or prongs of the bifurcated head 10 are perforated by seats 21, one of which seats is open at one side through a slot 22.

When the device just described is applied in working position, as illustrated in Fig. 1, the pair of bands 2 must first be secured to the teeth in the manner illustrated and already described. The parts 16, 17, and 18 should be screwed together, and the ball end 19 of the rod 16 should be secured by the socket or cap 6. The T-shaped head 20 of the rod 17 should also be placed in working position within the seats or perforations 21

of the bifurcated head 10. This may be done when the rod 17 is turned in radial line with the slot 22 simply by placing said head 20 in the upper seat or perforation 21, then pressing said rod 17 laterally through said slot 22, and then turning the said rod between the ears of said head 10. The head 10 and rod 11 may be secured to the lugs 7 of the other tooth-band simply by passing the rod 11 laterally through the slots 9, then by a slight endwise movement of the parts inserting the sleeve or shoulder 12 and flange 13 into the socket 8 and notch 9, and then after this is done by screwing the nut 14 inward, so that its sleeve 15 is forced into the adjacent seat or socket 8.

With this device as applied in Fig. 1 a tooth may be either pushed or pulled into proper position simply by turning the screw-threaded sleeve or sheath 18 in one direction or the other. If it is desired to rotate the tooth at the same time that it is drawn or pushed into alinement, this may be done by locating the ball-joint 6 19 to one side of the tooth, so that the pushing or drawing strain will produce a twist or torsion on the said tooth.

The device is practically universal in its action—that is, may be applied at practically any angle to a tooth and between any two teeth which stand on opposite sides of the arc. This is due to the fact that the T-head 20 of the rod 17 is pivotally connected to the bifurcated head 10, and that the rod 16 is also pivotally connected to the adjacent band 2.

To remove the teeth-bands 2, it is only necessary to cut or unwind the wire or thread 4. The expression, as herein used, that the split ends of the teeth-bands are drawn together or held together by the wire thread is not intended to convey the idea that the said ends are drawn or held in contact with each other, but simply that the tension of the said wire tends to draw the said ends together and to there hold the same. In virtue of this form of connection any given band or any size of band is capable of a large range or variation in its use, or, in other words, may be applied to teeth which vary considerably in size.

From the above description it will be seen that my improved regulating devices may be set up or the parts put together for use without the use of solder and without being heated. This is important, inasmuch as heating will tarnish or remove the gold or other plating with which the parts of the device are usually covered. Again, all of the parts of my improved devices may be disconnected and removed from the patient without cutting or in any wise distorting the parts of the regulating devices proper. Hence the said devices may be used over and over indefinitely.

Where one tooth is to be used as an anchorage and another is to be drawn or pushed into alinement, it is of the utmost importance that the joints of the regulating device should

be such that the anchor-tooth cannot tilt, while the tooth which is to be moved may freely tilt. From the foregoing it is obvious that I accomplish these actions. For instance, in the device illustrated the ball-and-socket joint 6 19 will permit the tooth which is to be alined to tilt, while the engagement of the T-head 20 with the bifurcated head 10 will prevent the anchor-tooth from tilting or tipping sidewise.

The small buttons 3 are the only projections which engage the lips of the patient, and hence do not perceptibly encumber or disfigure the mouth. The great importance of these points will be readily understood and appreciated by all practical dentists.

It will of course be understood that various alterations in the specific details of construction above described may be made without departing from the spirit of my invention.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. In a device for regulating teeth, a split tooth-band provided at its ends with means for applying a thread thereto, in combination with a thread applied to said ends of the tooth-band, to secure the same to the tooth, substantially as described.

2. In a device for regulating teeth, a split tooth-band provided at its ends with buttons or headed projections, in combination with a wire thread wrapped over said buttons or headed projections, to secure said band to the tooth, substantially as described.

3. In a device for regulating teeth, a joint or connection between two parts of the device, consisting of a bifurcated head on one of said parts, provided with perforations or seats, and a slot opening into one of said seats, and the T-shaped head on the other of said parts to be coupled, for cooperation with said seats and slot, substantially as described.

4. The combination with a tooth-band provided with a pair of lugs 7 with seats or socket 8 and slot 9, of a rod adapted to be inserted laterally through said slot 9, a pair of sleeve or shoulder portions on said rod adapted to be inserted into said seats 8 by endwise movement, at least one of which sleeves or shoulders is mounted for endwise movement on said rod, and means for securing one end of said rod directly or indirectly to the teeth or tooth, substantially as described.

5. In a device for regulating teeth, a ball-and-socket joint connecting two parts of the device, substantially as and for the purposes set forth.

6. In a device for regulating teeth, the combination with a tooth-band provided with a projecting screw-threaded stud 5, of the socket 6 screw threaded on said stud, and a rod provided with the ball-head 19 held by said socket 6, substantially as and for the purposes set forth.

7. In a device for regulating teeth, a joint between two parts of the device, consisting

of a head or lug on one of the parts to be
coupled, provided with a perforation or seat
with lateral entrance thereto, and a head or
lateral projection on the other part to be
5 coupled adapted to be inserted into said per-
foration or seat by a lateral movement, sub-
stantially as described.

In testimony whereof I affix my signature
in presence of two witnesses.

MILAND A. KNAPP.

Witnesses:

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