

No. 744,291.

PATENTED NOV. 17, 1903.

C. M. CARR.
ANCHORED DENTURE.
APPLICATION FILED AUG. 24, 1897.

NO MODEL.

Fig. 1.

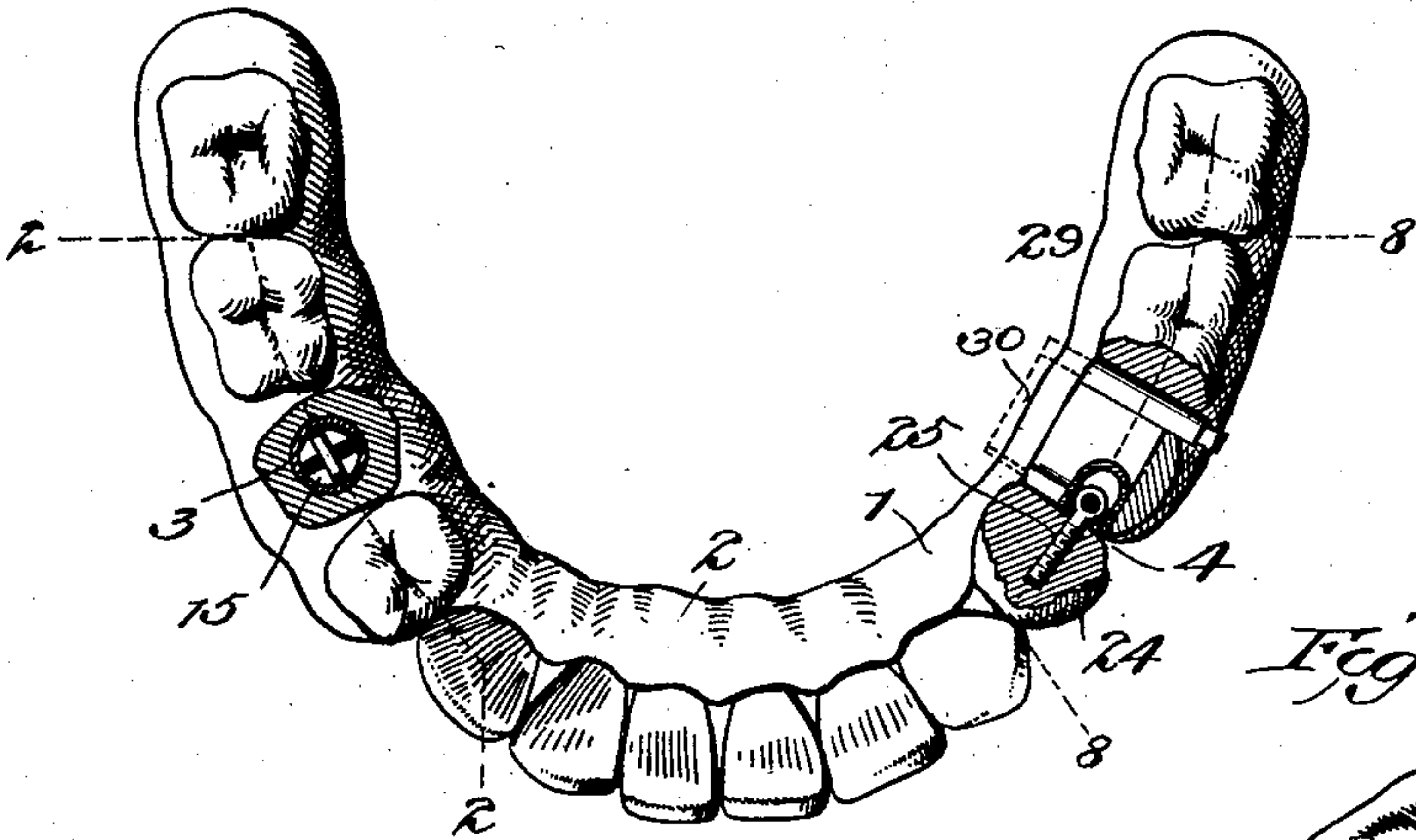


Fig. 7.

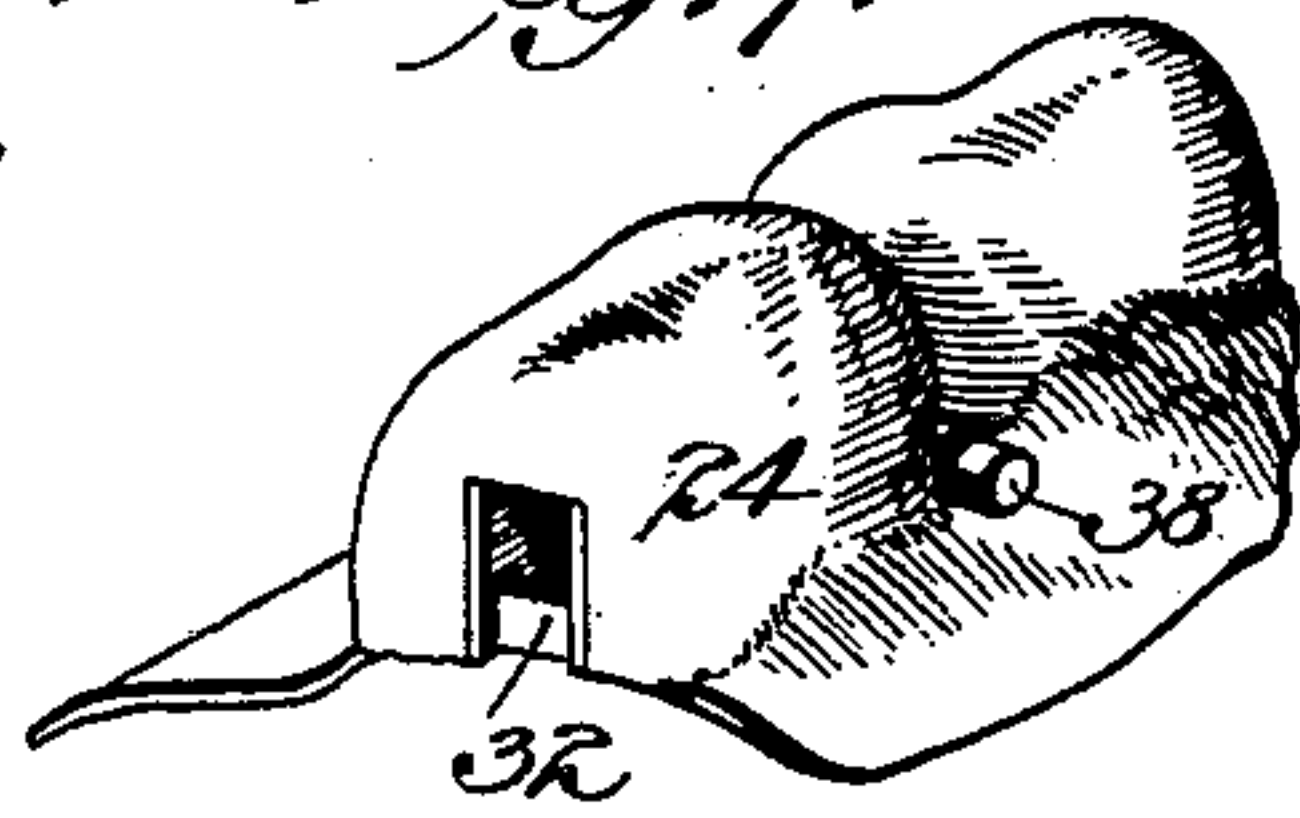


Fig. 2.

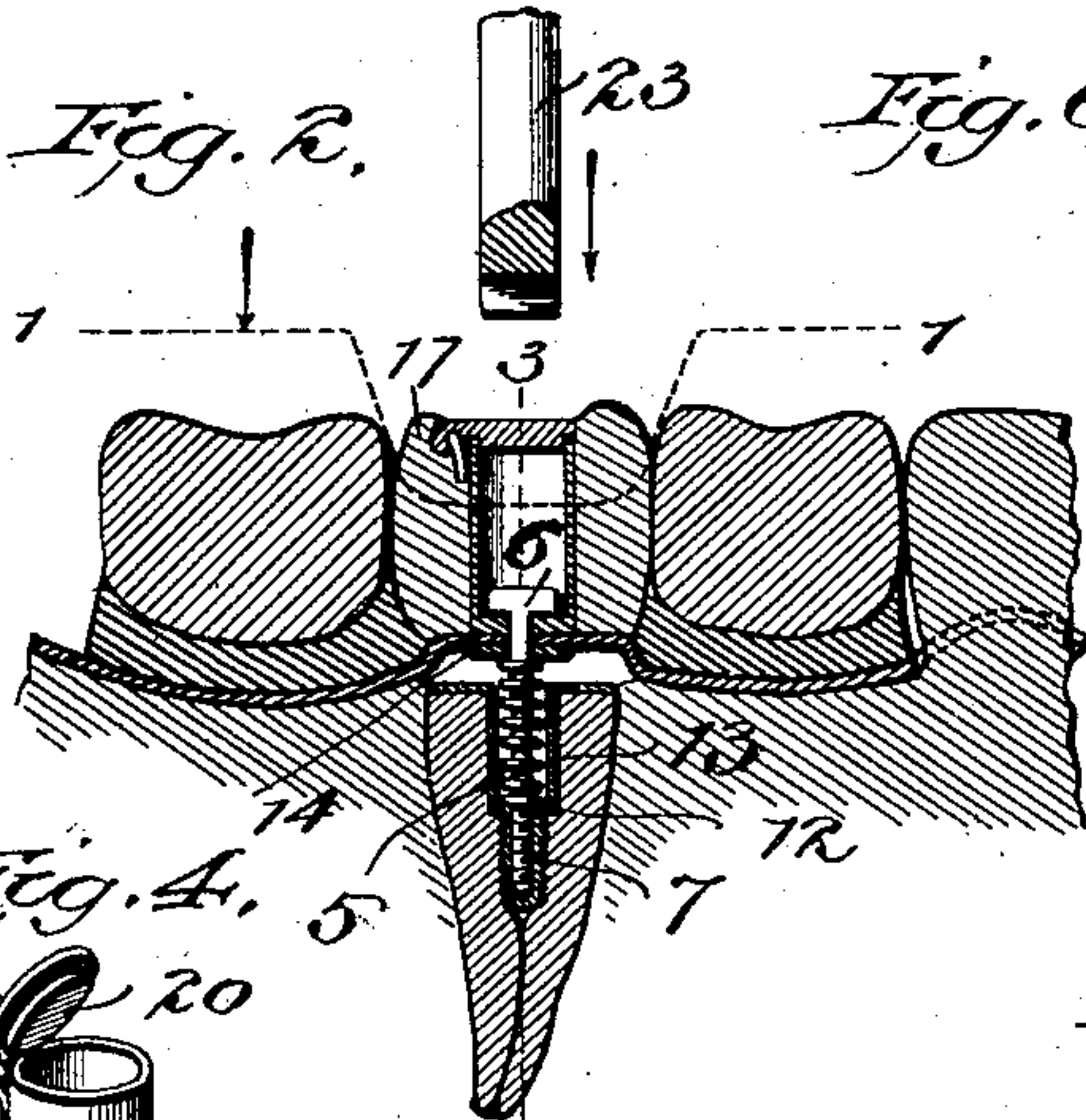


Fig. 6.

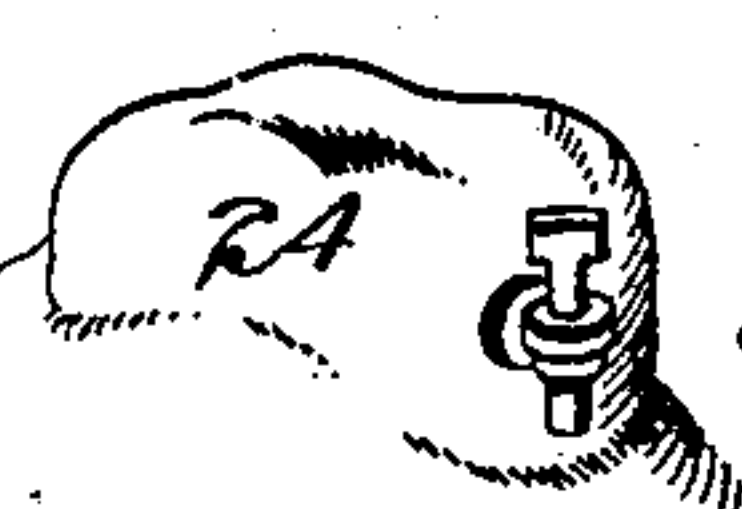


Fig. 8.

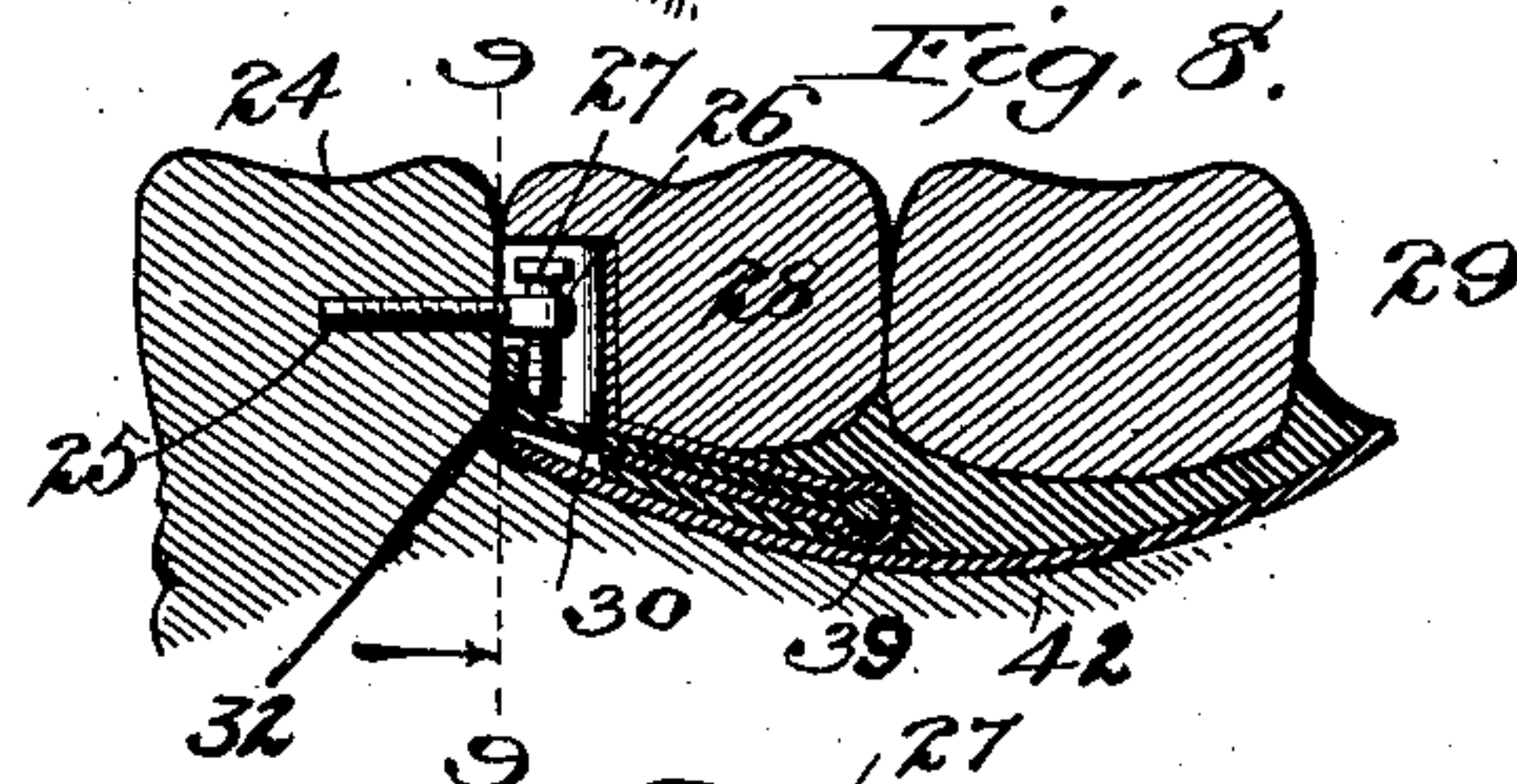


Fig. 4, 5.

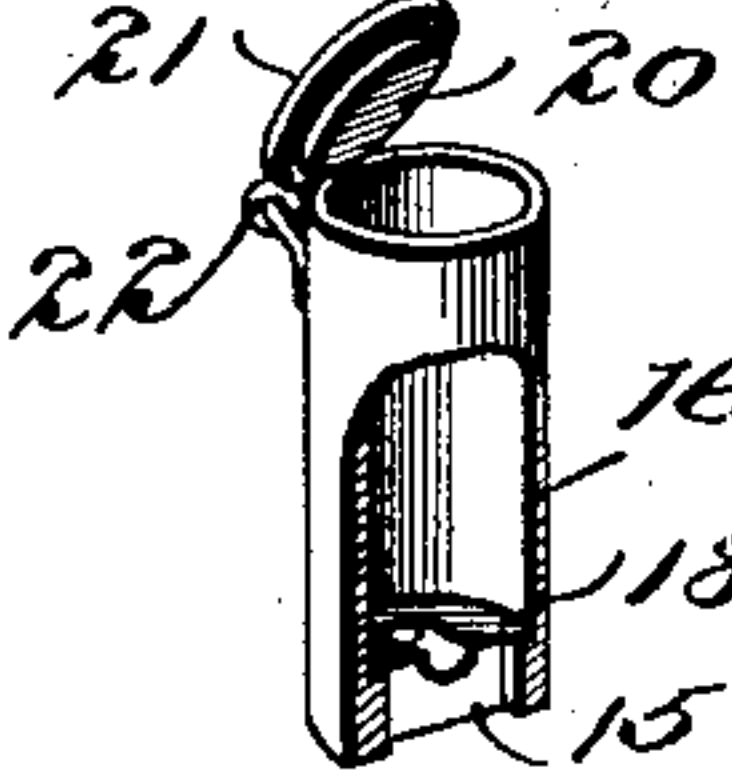


Fig. 3.

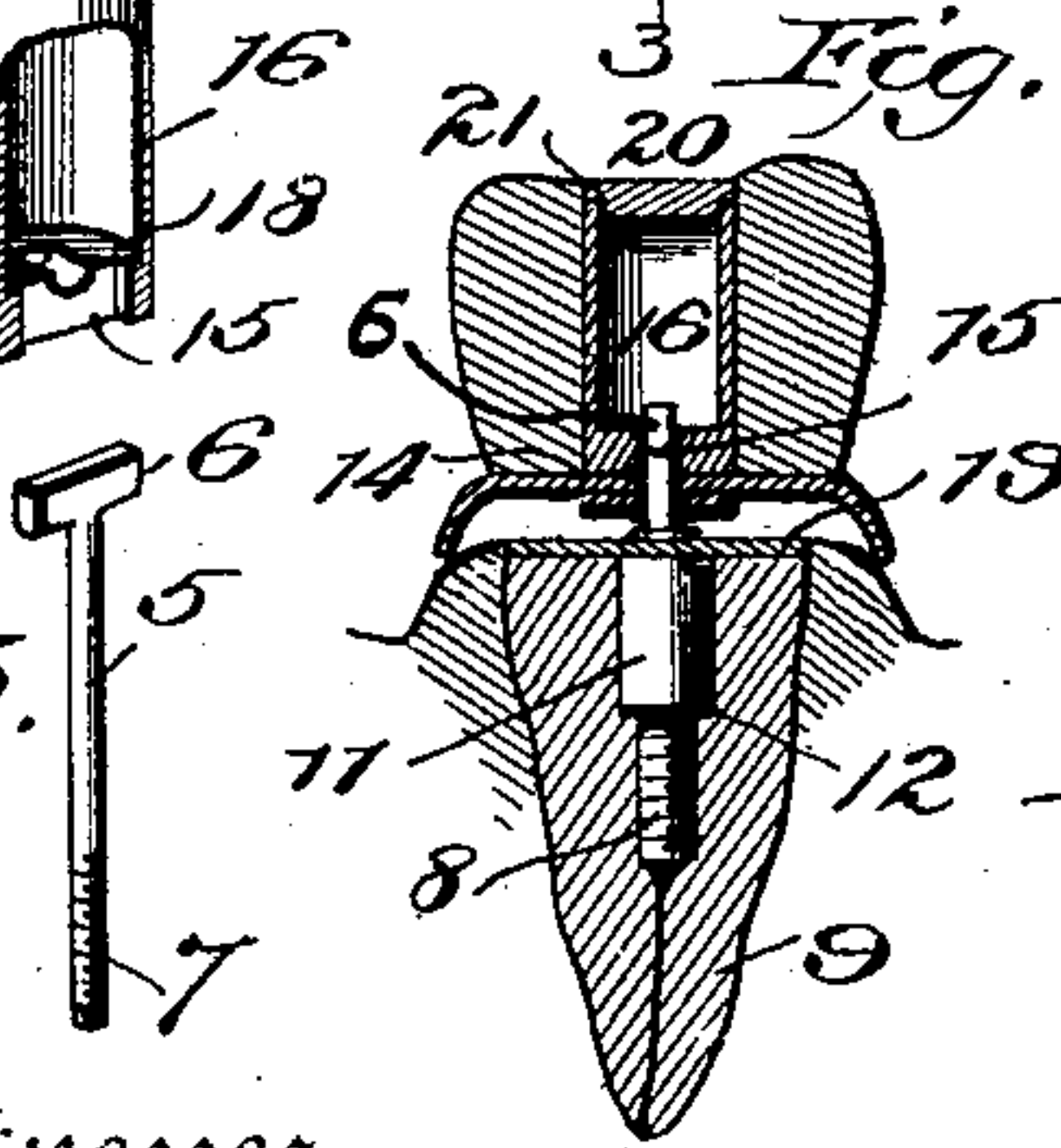


Fig. 9.

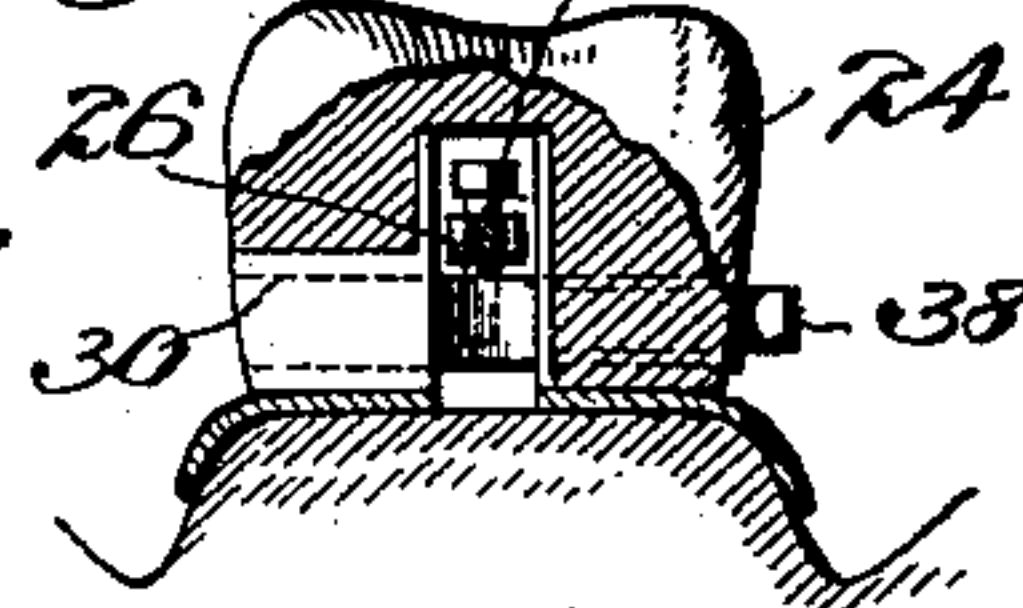


Fig. 11.

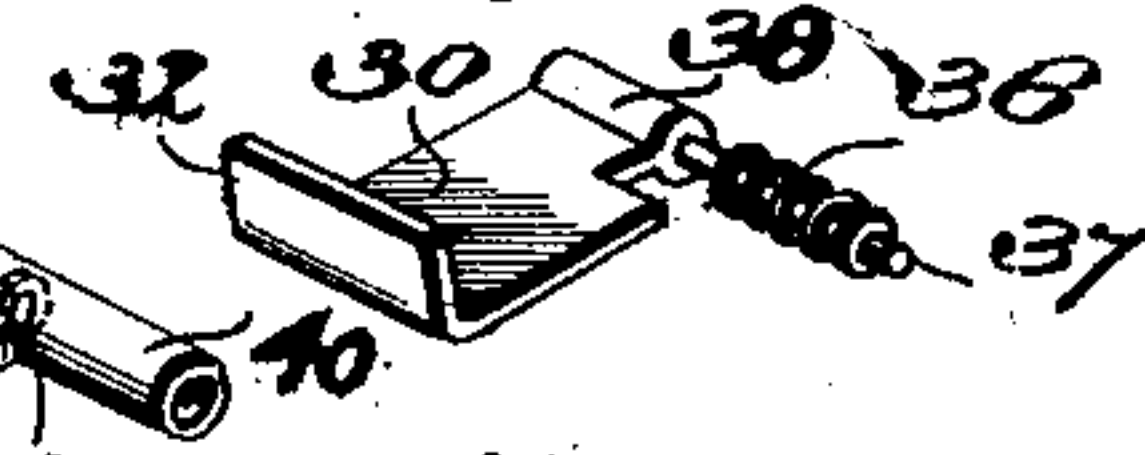


Fig. 10.

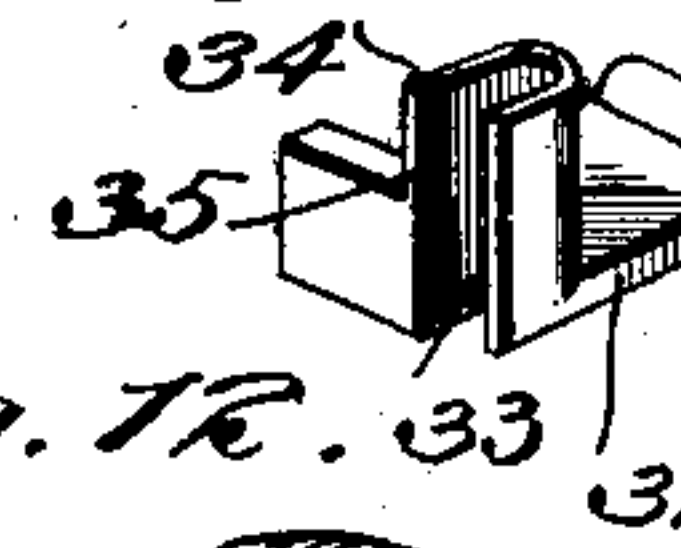


Fig. 12.



Fig. 13.



Witnesses

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UNITED STATES PATENT OFFICE.

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ANCHORED DENTURE.

SPECIFICATION forming part of Letters Patent No. 744,291, dated November 17, 1903.

Application filed August 24, 1897. Serial No. 649,354. (No model.)

To all whom it may concern:

Be it known that I, CASSIUS M. CARR, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Anchored Dentures; 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 figures of reference marked thereon, which form a part of this specification.

This invention relates to certain improvements on the devices shown in my Patents Nos. 581,335 and 583,565 upon what will hereinafter be termed an "anchored" denture. My former device consisted of a denture secured to the root of an amputated tooth by means of a longitudinal pin provided with a head and arranged to pass through a hole in the bottom of a cavity in the denture and thence into the bottom of a tubular shell embedded in the center of the root. The spring is interposed between the denture and the root, so that when pressure is brought to bear on the denture the spring will be compressed and a gentle force exerted on the root. There are many cases in which it is not desirable to amputate the crown of the tooth to which the denture is anchored, because the denture can be more conveniently and properly attached to the side of the anchorage-crown. To meet such cases, I have provided what will for convenience be called a "crown-anchorage" in contradistinction to a root-anchorage.

My improvements further consists in means for preventing the pin from unscrewing, for closing the denture-cavity in which the head of the pin lies, and certain other peculiar features and combination of parts more fully described hereinafter and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a lower jaw provided with my improvements; Fig. 2, a vertical section through 2 2 of the preceding figure, a key for turning and unlocking the pin being shown in the act of entering the cavity of the denture; Fig. 3, a detail view through the line 3 3 of

Fig. 2, showing a vertical transverse section of the root and crown, the end of the T-head of the anchorage-pin being seen and the head being sunk in the countersink or locking-cavity in the bottom of the tube. Fig. 4 is a detail perspective view, partly in section, of the denture-tube, showing a hinged lid at the top and a cross-cavity at the bottom swaged at right angles or crosswise of the slot through which the T-head passes. Fig. 5 shows a detail perspective view of the pin; Fig. 6, a perspective view of a portion of the crown-anchorage; Fig. 7, the opposite portion of said anchorage; Fig. 8, a longitudinal vertical section through the line 8 8 of Fig. 1; Fig. 9, a transverse vertical section through the line 9 9 of Fig. 8. Fig. 10 is a detail perspective view of a casing to be embedded in the material used for attaching the teeth to the saddle or plate, a slide being adapted to operate in the casing. Fig. 11 represents the slide in perspective and shows a spiral spring encircling the smaller portion of the shaft of the slide; and Figs. 12 and 13 are perspective views of modifications of the crown-anchorage shown in Figs. 6, 8, and 9, whereby a right-angled pin or a straight pin are used as substitutes for the eyebolt and set-screw.

The denture 1 is applied to an occluding surface and is anchored by a root-anchorage 3 on the right and a crown-anchorage 4 on the left side of the jaw. This denture contains four artificial teeth on the right and three on the left. The two sides of the saddle to which the teeth are attached are connected by a narrow portion 2, extending along the lingual side of seven natural front teeth. The root-anchorage 3 on the right side is applied to the second bicuspid root by a T-fastening, which consists of a stud 5, provided with a T-head 6. The shank of this stud is provided with screw-threads 7 and is screwed into a tubular socket 8, inserted longitudinally into the root 9. The lower portion of the socket is reduced, and its exterior and interior are provided with screw-threads adapted to be engaged by the cement used to hold the socket in the tooth to prevent it from pulling out. The upper portion 11 of the socket being

larger than the lower portion provides a shoulder 12, on which the lower end of a cushioning-spring 13 is seated. This cushioning-spring encircles the stud, and its upper end 5 engages the washer 14 on the bottom of the denture. The T-head 6 of the stud or pin passes through a T-slot 15, formed in the bottom of a metallic tube 16, and the washer 14 closes the bottom of this slot. The stud 5 is 10 prevented from turning and releasing the denture during mastication by a concaved cross-recess 18, into which it drops upon being turned one-quarter round at right angles to the slot. This operation is performed 15 by a key 23, as seen in Figs. 2 and 3. The top of the root is covered by a plate 19, and the top of the tube is closed by a lid 20, adapted to fit down neatly upon the tube. A surrounding flange 21 on this lid overlaps the top 20 of the tube and forms a smooth surface flush with the top of the tooth. The lid is attached by means of a hinge 22. All of the foregoing mechanism, excepting the lid 20, the locking-recesses 18, and the external 25 threads 8 of the socket, is shown in my earlier patents hereinbefore mentioned.

The novel features of the root-anchorage having been described the crown-anchorage which coöperates with it and which forms the 30 principal part of my present improvements will now be explained. The right-hand portion 29 of the whole denture is securely anchored by means of the crown-anchorage, which anchorage consists of an eyebolt 25 35 and a locking-latch 30. This crown-anchorage is shown applied to the posterior surface of the first bicuspid 24. The eyebolt 25 is threaded and inserted horizontally in the natural crown, so that the eye 26 projects from 40 the tooth a sufficient distance to receive a vertical set-screw 27, engaging internal threads in the eye. This set-screw extends at right angles to the eyebolt and is located so as to leave a space between it and the crown 45 for the reception of a lip 32 on the locking-slide 30. The crown of the artificial tooth 28 contains a shell 34, adapted to receive the projecting eye 26 of the bolt and the set-screw 27. This locking-slide consists of a 50 thin flat metal plate adapted to move laterally or horizontally in a casing 31, embedded in the attaching material of the denture 2. The left-hand end of the slide is provided with an upturned lip 32, adapted to pass behind the set-screw 27 to attach the denture 55 to the crown. The casing 31 for the slide is provided with an upwardly-extending shell 34, closed at the top and open at the side to form the chamber 35, and the casing also 60 contains a seat 33 for the reception of the slide.

A closing-spring 36 encircles a stem 37, provided with a cap 38. This stem 37 is rigidly attached to a cylindrical guide 39, which 65 guide, together with the encircling spiral spring 36 and stem 37, is inclosed within a tubular extension 40 of the casing 31. In

this tubular extension is a rigid annular seat 41, against which the inner end of the spring 70 bears. The outer end of the spring bears against the cap 38 and is thus confined between these two parts. When pressure is exerted upon the cap or nut 38, it will be resisted by the spring 36, which in turn is resisted by the rigid seat 41 in the tube 40. 75 When this pressure is removed, the spring returns the latch to locking position. The nut 38 fits within the end of the tube 40 and projects out a sufficient distance to allow 80 enough play to move the latch 30, and hence the lip 32, back clear of the set-screw 27, thereby unlocking the crown-anchorage side of the denture. It will be seen that the lip 32 of the locking-slide extends across the 85 lower front of the chamber 35, the upper portion being left open. It will also be seen that the locking-slide when in closed position covers the bottom of the chamber 35. The pressure of the denture 29 on the gums 42 90 can be regulated by the pressure of the set-screw 27 on the locking-plate 30.

When pressure is exerted by mastication upon the artificial denture above described, the latter will bear down collectively upon the cushioning-spring 13 and the gums. No 95 artificial pressure whatever is exerted on the crown-anchorage pier, both anchoring devices allowing the denture an independent movement. The pressure on the root-anchorage is imparted only through the medium of 100 the cushioning-spring. The power of mastication on the side of the denture attached by means of the crown-anchorage has no effect whatever upon the tooth to which the anchorage is applied as the pressure falls 105 on the gums alone, it being unnecessary in this case to transmit any artificial pressure in order to sustain a healthy circulation. This pressure is furnished by the occluding 110 mate in the opposite jaw, whereas in the case of the root-anchorage the crown is amputated flush with the gum and the denture countersunk to leave a space between said denture and root in order that the pressure of mastication shall fall on the gum. 115 This root would receive no natural pressure from an occluding mate. Therefore in order to sustain a healthy circulation it becomes necessary to transmit an artificial intermittent pressure, which is accomplished by the 120 interposition of the spiral spring.

The manner of attaching and detaching the denture may be briefly described as follows: The head 6 of the stud 5 is turned into position to pass through the T-slot 15 in the tube 125 16, and the locking-slide 30 is pushed back, as seen in dotted lines in Fig. 1. Now the denture should be placed upon the gums. In doing so the T-head 6 of the stud 5 passes up through the slot 15 and the set-screw 27 into the 130 chamber 35 in the crown-anchorage portion. Upon releasing the pressure upon the cap 38 of the stem 37 of the slide 30 the latter will be snapped back by the force of the spring 36,

thereby moving the lip 32 edgewise in the casing 31, across the chamber 35, behind the set-screw 27, and beneath the eye of the bolt, as seen in Figs. 1, 7, 8, and 9. Having thus fastened the crown-anchorage, the opposite side of the denture should be pressed down slightly to permit the T-head 6 to be given a quarter-turn crosswise of the T-slot 15, so that it will drop into the concaved recesses 18. The lid 20 being now closed the denture will be completely fastened and ready for use. A reversal of this operation will enable the denture to be removed when desired. This form of denture is especially applicable to a mouth having an isolated root and a tooth standing at the end of a series wherein it is not desirable to amputate the crown.

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

1. In an anchored denture, a stud inserted in the side of a tooth, and provided with a rectangularly-arranged projecting portion, in combination with a locking-slide, substantially as described.

2. In an anchored denture, a stud inserted in the side of a tooth, and provided with a rectangularly-arranged projecting portion, in combination with a spring-retracted locking-slide, substantially as described.

3. In an anchored denture, an eyebolt provided with an eye having internal threads, in combination with a set-screw, a denture provided with a chamber in its side to receive the eye and screw, and a locking-slide, substantially as described.

4. The combination in an anchored denture, with a locking-slide, of a stationary fastening device, the slide engaging the fasten-

ing device to removably retain the denture in position.

5. In an anchored denture, the combination with a denture provided with a tubular chamber having a hinged lid, substantially as described.

6. An anchored denture provided with a slot, in combination with a stud having a T-head adapted to pass through the slot, and a cross-recess for locking the head, substantially as described.

7. In an anchored denture, the combination with a stationary depending member, of a denture, a hollow casing embedded therein, an angular slide received in the casing adapted to engage the depending member, means for automatically and normally retaining the slide in engagement with the depending member, and a cap secured to the slide and extending outside the denture to cause the disengagement of the slide and the depending member.

8. The combination with a stationary pier, of a denture, a chambered casing carried thereby, the casing also provided with a seat, a tube secured to the casing, the tube provided with a stop therein, a slide fitting and received in the seat, the slide provided with a guide received within the tube, a spring carried by the slide and received in the tube, the spring adapted to normally retain the slide and pier in engagement and means for disengaging the slide and pier.

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

CASSIUS M. CARR.

Witnesses:

R. G. DUBOIS,
ARTHUR L. BRYANT.