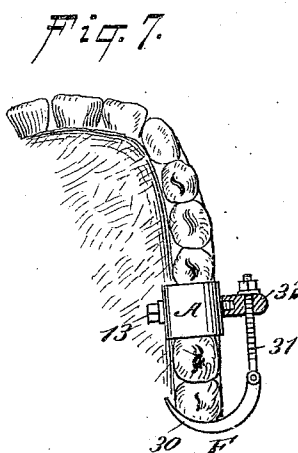
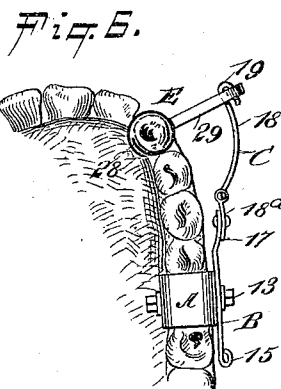
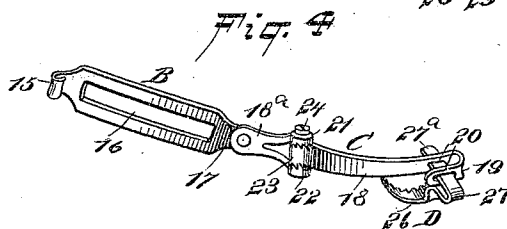
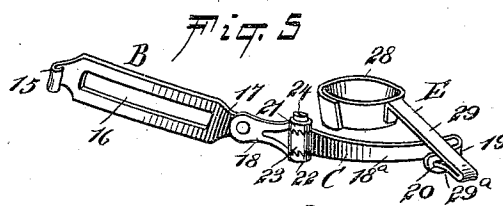
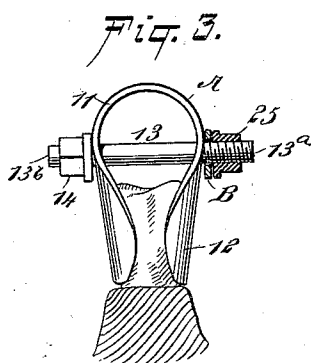
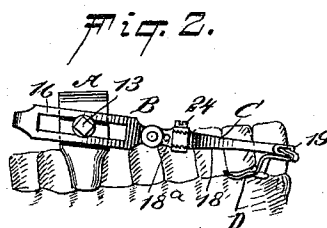
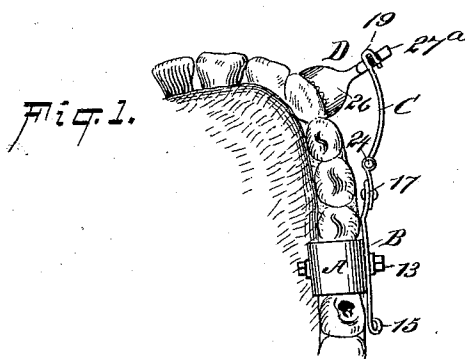


(No Model.)

J. M. STROUT.
DENTAL CLAMP.

No. 544,135.

Patented Aug. 6, 1895.



WITNESSES:

William Gaebel.
Fred A. Ken

INVENTOR
J. M. Strout
BY Munn & Co
ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOSEPH M. STROUT, OF PORTLAND, MAINE.

DENTAL CLAMP.

SPECIFICATION forming part of Letters Patent No. 544,135, dated August 6, 1895.

Application filed December 27, 1894. Serial No. 533,120. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH M. STROUT, of Portland, in the county of Cumberland and State of Maine, have invented a new and useful Improvement in Dental Clamps, of which the following is a full, clear, and exact description.

My invention relates to an improvement in dental clamps, and it has for its object to provide a clamp which will be an improvement upon that for which Letters Patent were granted to me February 6, 1894, No. 514,289, the object being to obtain practically a perfect adaptability of the retaining-arm of the device to irregular surfaces of teeth, and to secure any desired tension upon said arm.

Another object of the invention is to provide a means whereby the gum at the neck of the tooth will be protected while the root is being trimmed preparatory to applying a crown thereto.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a partial outer plan view of an upper set of teeth, illustrating the application of the invention thereto. Fig. 2 is an outer side elevation of a portion of a lower set of teeth, illustrating the application of the invention thereto. Fig. 3 is a side elevation of a tooth, illustrating the body of the clamp applied thereto, the slide carrying the retaining-arm being shown in section. Fig. 4 is a perspective view of the slide and retaining-arm of the clamp. Fig. 5 illustrates the application to the retaining-arm of a guard for the gum. Fig. 6 is a view similar to Fig. 1, illustrating the application of both the clamp and the said guard; and Fig. 7 is a view similar to Fig. 6, illustrating the application to the body of the clamp of a device adapted for engagement with the outer surface of a wisdom-tooth, serving as a rubber-dam holder, gum-depressor, and matrix.

In carrying out the invention the clamp is primarily intended to hold a rubber dam in

engagement with a tooth that is to be operated upon, the clamp being removed to any suitable distance from the said tooth that is to be filled or otherwise treated.

The device consists mainly of a clamping section or member A, a slide B carried by the body, and a retaining-arm C, which is connected with the slide. The body-section A of the clamp, or that part which is to engage with the tooth, is bowed to a greater or less extent at the top, and is contracted at the bottom. The upper or bow portion 11 of the body may be designated as the "head" member, and the lower or contracted portion as the "neck" member 12.

The contracted or neck member of the body of the clamp is curved inward at its sides, so that it will accommodate itself to the exterior side surfaces of the tooth, and the bow or head portion 11 is above the crown of the tooth a predetermined distance, or sufficiently high to enable a bolt or pin 13 to be passed through the head portion without engaging with the crown of the tooth, as shown in Fig. 3. This bolt or pin is secured by solder or otherwise to one side of the body of the clamp, and the opposite end of the bolt or pin is made to pass freely through an opening in the opposite side of the body. Both extremities of this pin or bolt are exteriorly threaded, and the attached end of the bolt is designated as 13^b, while the end which has movement in the body is designated as 13^a. When the body is placed upon a tooth, the neck portion is forced downward around the tooth as far as may be desirable, and then a nut 14, located on the threaded extremity 13^b of the bolt 13, is screwed up until the neck portion shall be in firm and positive engagement with the tooth. The exterior of the body of the clamp is more or less convexed in cross-section.

The slide B consists of a plate provided at one end with a handle 15 and a longitudinal slot 16. The opposite end of this plate is pressed outward, whereby it is carried beyond the plane of the outer surface of the body of the plate, and this laterally-projecting extremity of the slide is designated in the drawings by the reference-numeral 17.

The retaining-arm C is made in two sections—a body-section 18 and a shank-section 18^a. The body-section is curved longitudi-

nally to a greater or less extent, the concaved side being that which is to be presented to the gums when the clamp is in use, as shown in Figs. 1 and 6, and the outer extremity of this body portion of the retaining-arm is bent outwardly upon itself to form substantially a hook-shaped terminal 19, the bend being gradual, so that a cylindrical and smooth surface will be presented to the tooth to be operated upon, since this terminal is adapted to carry a foot-piece D and a matrix E or equivalent article, being to that end provided with registering openings 20.

The shank-section 18^a of the retaining-arm is loosely pivoted to the laterally-projecting portion 17 of the slide, and by this connection the retaining-arm may be moved vertically upward or downward, as occasion may demand. The connection between the shank and the body portions of the retaining-arm is effected through the medium of a clutch-joint, and to that end the shank-section is provided with an upper knuckle 21 and a lower knuckle 22, and between these two knuckles a single knuckle 23, formed upon the body of the retaining-arm, is introduced. The opposing faces of these knuckles are provided with clutch-teeth, and a screw 24 is passed through all the knuckles in such a manner that it may contract the upper and lower knuckles or cause the same to expand, thus permitting the body portion of the arm to be set to any desired position and held in such a position.

The slide B has movement upon the movable end 13^a of the said bolt 13 of the body, and is held in any position desired by means of a lock-nut 25 located upon this end of the bolt, as is best shown in Fig. 3. Therefore it will be observed that when the clamp has been fixed upon one tooth and the retaining-arm is carried to an engagement with the other, or practically so, the tension of the arm upon the tooth to be operated upon may be adjusted at the clutch-joint in the arm.

The foot-piece D, which is to engage with the gum to depress the same, and is likewise adapted to hold the rubber dam, napkin, or other equivalent article in engagement with the tooth, is shown best in Fig. 4, and it comprises a body-section 26, which is concaved upon its under side and is provided with a concaved inner edge, which edge is ordinarily toothed or serrated, but may be plain if desired, and a shank 27, which is carried upward from the outer end of the body, preferably at the center, and is then bent outward and returned upon itself, forming a tongue 27^a, adapted to be passed through the openings 20 in the arm C of the device.

In connection with the clamp I likewise employ a matrix or guard device E, heretofore referred to. This guard device consists of a body 28, which is shaped substantially as the frustum of a cone, being open at the top and bottom, and the said body is made of a spring material of suitable thinness, and is bent upon itself so that its ends will overlap, as shown

in Fig. 5. In addition to the body a shank 29 is employed, attached to the body, and this shank at its outer end is returned upon itself to form a tongue 29^a, which when the guard is used is passed through the apertures 20 in the arm C, being securely held in place by the said tongue, which has a spring action. The object of this guard is to protect the gums around the root of a tooth while the tooth is being prepared to receive a crown, for example.

By placing the guard in the retaining-arm and carrying said guard so that it may pass over the root to be operated upon, the guard is placed around the root, as shown in Fig. 6, its contracted end downward, and is forced under the gum to a certain degree. The upper surface of the root proper may now be operated upon without danger of the root becoming moistened by saliva, and the gum is protected from possible laceration by the instrument brought in use, and this guard may be retained around the root until it has been crowned. When the guard D is to be removed from said root it is simply drawn outward by means of its shank, the band comprising the body parting and passing from the root at opposite sides.

In Fig. 7 I have illustrated a combined dam-holder, gum-depressor, and matrix F, especially adapted for use in connection with the posterior surface of a wisdom-tooth. This device consists of a substantially hook-shaped matrix-band 30, which is pivotally connected to a screw 31, and this screw is adjustably held in a nut 32, the said nut being secured upon one end of the pin or bolt 13, connected with the body-clamp A. In the operation of this latter device the matrix is made to engage with the rear surface of the wisdom-tooth and is used when the arm C and the slide B are omitted, although it may be employed as an auxiliary thereto if in practice it is found desirable.

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

1. The combination, with a clamp to engage with one tooth, of an arm extending laterally from the clamp to engage with its free end a tooth other than the one engaged by the said clamp, the said arm being constructed in pivotally connected sections and provided with means for holding the sections in predetermined positions with relation to each other, as and for the purpose specified.

2. The combination, with a clamp to engage with one tooth, of an arm extending laterally from the clamp to engage with its free end a tooth other than the one engaged by the said clamp, the said arm being constructed in pivotally connected sections, the sections having clutch faces at their points of intersection, and means for drawing said faces together, substantially as and for the purpose set forth.

3. A retaining arm for a dental clamp, constructed in sections, the said sections being

united by a clutch joint, and a support for said arm, as and for the purpose set forth.

4. In a dental clamp, the combination, with the clamping section, of a retaining arm carried thereby, the said retaining arm being provided with a socket terminal adapted to receive a foot piece, guard or like article, as and for the purpose specified.

5. In a dental clamp, the combination, with the body thereof, of an arm in adjustable connection therewith and provided with an adjustable matrix section adapted for engagement with a wisdom tooth, as and for the purpose set forth.

6. A dental clamp, comprising a body having a neck adapted to engage a tooth, and having a perforation and a screw fitting in the perforation and adapted to secure the clamp to the tooth, a retaining arm held on said screw, and a nut on said screw adapted to hold the retaining arm in position, substantially as set forth.

7. A dental clamp comprising a support adapted to be secured to a tooth, a retaining arm, and means for securing said arm on either side of said support, substantially as set forth.

8. A dental clamp comprising a body having

a neck to engage a tooth, a head above the neck, a screw extending across said head, nuts screwing on opposite sides of the screw, and a retaining arm adapted for attachment under each of said nuts, substantially as set forth.

9. In a dental clamp, the combination of a body adapted to be secured to one tooth, and a retaining arm connected to said body and composed of sections adjustably connected together, substantially as set forth.

10. A dental matrix or dam holder having a shank extending from its body portion in combination with a retaining arm, having a support and means for holding said matrix or dam holder in position on said support, substantially as set forth.

11. The combination of a support, a retaining arm mounted thereon and having a perforation, and a matrix or dam holder having a shank bent to a hook shape with the point of its hook adapted to pass through the said perforation in the retaining arm, substantially as set forth.

JOSEPH M. STROUT.

Witnesses:

GEORGE LIBBY,
CARROLL W. MORRILL.