J. A. MAKER.

MATRIX DEVICE.

APPLICATION FILED OCT. 29, 1912.

1,072,015. Patented Sept. 2, 1913.

Fig. 1.

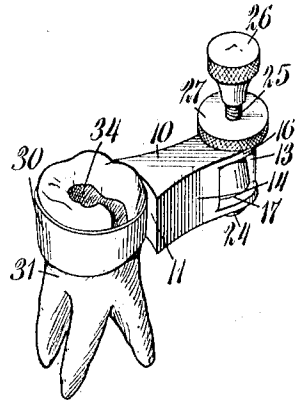


Fig. 2.

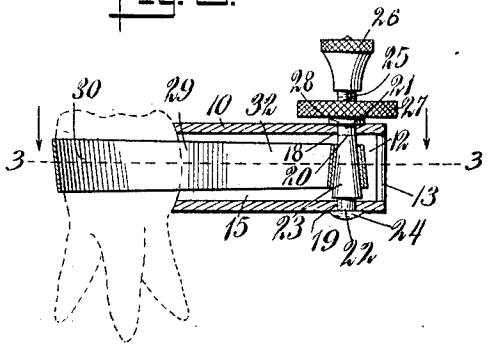
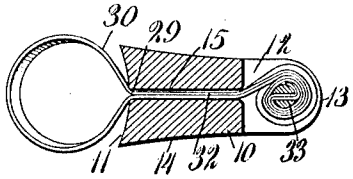


Fig. 3.



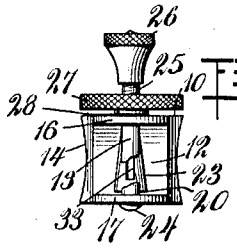


Fig. 4.

WITNESSES

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MATRIX DEVICE.

1,072,015. Specification of Letters Patent. Patented Sept. 2, 1913.

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To all whom it may concern:

Be it known that I, JOHN A. MAKER, a citizen of the United States, and a resident of Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Matrix Devices, of which the following is a full, clear, and exact description.

This invention relates to matrix devices for use in dentistry, and has reference more particularly to a device of this class which comprises a body, a matrix associated with the same, means for adjusting the matrix, and means for holding the matrix in different adjusted positions.

The invention also relates to the provision in a matrix device of means for so adjusting the matrix that it will accommodate itself and conform closely to the shape of the tooth.

An object of the invention is to provide a simple, inexpensive and efficient device of the class described, by means of which a flexible matrix band can be disposed about a tooth which is partly cut away and is intended to be filled with a suitable plastic and subsequently hardening material, by means of which the matrix can be easily and expeditiously adjusted to fit snugly about the tooth, which permits the matrix to be so adjusted that it will conform to the shape of the tooth, and by means of which the matrix can be secured in any one of a number of adjusted positions, and which allows for a wide range of adjustments.

A further object of the invention is to provide a matrix device which permits the insertion of plastic fillings such as amalgam, cement, gutta percha or the like, which can also be used for obtaining impressions of inlays, which can be used in different portions of the mouth, for example, the upper or lower jaw, and at either side, and on all angles of a tooth.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

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

Figure 1 is a perspective view of an embodiment of my invention showing the same applied to a tooth, the tooth being illustrated, for simplicity, as removed from the mouth; Fig. 2 is an enlarged longitudinal cross section of the device; Fig. 3 is a horizontal cross section on the line 3—3 of Fig. 2; and Fig. 4 is an end elevation of the matrix device, showing a part broken away.

Before proceeding to a more detailed explanation of my device it should be clearly understood that the device can be fashioned from metal or any other material adapted for the purpose, and that the matrix, while preferably consisting of 35-gage platinoid plate, cut to the desired size, may also be fashioned from any other material capable of that use.

The device is so constructed that it can be used with practically all of the teeth, at different angles, and in different positions. Ordinary teeth such as bicuspids and molars, which, when necessary, are commonly filled with amalgam, are about three millimeters larger in circumference, at the occlusal or biting surface, than at the neck or gingival. Consequently, it is extremely desirable that the matrix disposed about the tooth during the filling operation conforms as closely to the tooth, as possible.

My device is so designed that the pull upon the banding material is so directed that the band is wound tighter at the neck of the tooth than at the biting surface, so that it conforms to the natural contour of the tooth, embracing the tooth closely and forming a most efficient matrix for the filling operation. This is also highly desirable in that it prevents the filling material from being pushed too far down at the gum, thereby causing irritation of the gum tissue and giving rise to different dental disturbances, including possibly pyorrhea, and the entire loss of the tooth. It also prevents the filling from overhanging.

Referring more particularly to the drawings I have shown for example, a matrix device having an elongated body or casing 10 of somewhat tapered form and having a face 11 at the wider end, slightly concave. At the opposite end the body 10 has a cut-away part 12, and is provided at the extremity with a vertical post or bar 13. This end of the body is preferably rounded, as is clearly shown in Figs. 1 and 3. If so desired, the side faces 14 of the body are also slightly concave, to facilitate the handling of the device. A substantially central slot 15 extends longitudinally through the body,

from the face 11 to the cutaway part 12. At the cutaway part of the body the top and bottom of the same form walls 16 and 17 in which are provided superposed, registering bearing openings 18 and 19. Rotatably mounted in these openings is a spindle 20 having parts 21 and 22 of reduced thickness to fit within the bearing openings. Intermediate the parts 21 and 22, the spindle has a tapered portion 23 for a purpose which will appear hereinafter. At the lower end the spindle has a head 24, which assists in holding it rotatably in place. The upper end 25 of the spindle is threaded and is provided at the extremity with a burred or roughened manipulating head 26. A threaded clamping nut 27 is mounted upon the threaded part of the spindle and has a collar 28 adapted to contact with the upper wall 16.

The matrix strip or band 29 is formed into the usual loop 30 adapted to encompass a tooth 31, and has the ends 32 inserted in the slot 15, and extending through the same to the spindle, where the extremities are introduced into a vertical slot 33 of the tapered part of the spindle. Consequently, when the spindle is turned, the ends of the band will be wound upon it and the band tightened to contract the loop about the tooth as shown in Fig. 1. The cavity 34 in the tooth can then be filled, the matrix forming a wall for the plastic substance placed in the cavity. Owing to the fact that the spindle part 23 is tapered, the lower part of the band, *i. e.*, that wound upon the wider part of the spindle, will be drawn tighter than the upper part, as is clearly shown in Fig. 2, thus causing the band to conform closely to the contour of the tooth. When the band has been sufficiently tightened, the clamping nut 27 is screwed down upon the spindle and jammed against the body, thereby serving to secure the spindle in position, and thus to hold the matrix in its adjusted position. Needless to say, the clamping nut is effective to secure the band in any one of its possible adjustments.

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

1. A device of the class described, comprising a casing having a slot therethrough at one end and a cutaway part at the opposite end, a spindle rotatably mounted in said cutaway part of said casing and having a tapered portion, a matrix band having a loop and having the ends passing through said slot, and wound upon said tapered portion of said spindle, and means for operating said spindle.

2. A device of the class described, comprising a casing having a slot therethrough at one end and a cutaway part at the opposite end, a spindle rotatably mounted in said cutaway part of said casing and having a tapered portion, a matrix band having a loop and having the ends passing through said slot and wound upon said tapered portion of said spindle, means for operating said spindle, said spindle having a threaded part, and a clamping nut upon said threaded part for securing said spindle in any one of a plurality of adjustments.

In witness whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN A. MAKER.

Witnesses:
S. L. Smith,
H. A. Franchere.

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