(No Model.)

T. W. BROPHY.

DENTAL MATRIX.

No. 346,082. Patented July 20, 1886.

FIG. 1.

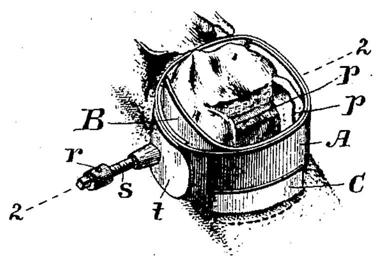
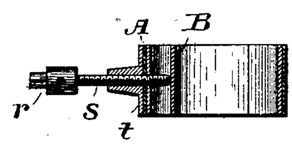


FIG. 2.



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UNITED STATES PATENT OFFICE.

TRUMAN W. BROPHY, OF CHICAGO, ILLINOIS.

DENTAL MATRIX.

SPECIFICATION forming part of Letters Patent No. 346,082, dated July 20, 1886.

Application filed March 1, 1886. Serial No. 193,561. (No model.)

To all whom it may concern:

Be it known that I, TRUMAN W. BROPHY, a citizen of the United States, residing at Chicago, in the county of Cook, in the State of Illinois, have invented a certain new and Improved Dental Matrix; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to a matrix to be used in the filling of teeth, particularly in cases where the cavity is approximal or where it extends to a point below the margin of the gum.

The object of my invention is threefold: First, to provide a means for converting the approximal cavity into a simple one, for convenience in filling; second, to provide a means for preserving the proper outline of the cavity thus formed; and, finally, to provide a ready means for adjusting and retaining the rubber dam in position, particularly in case where the cervical margin of the cavity is below the gum.

To the above ends my invention consists, first, in a matrix comprising a thin ring or band, preferably of spring-steel, which surrounds the tooth, and is held in place by means of a screw, which may project upon the buccal aspect of the jaw, the ring being by preference made thicker at the point of inserting the screw for convenience of its adjustment.

My invention further consists in a matrix comprising a ring and screw, as above described, with a loose interior band or broken ring of similar metal, which surrounds the tooth within the outer ring and receives the inner end of the screw, whereby the tightening of the screw will cause the surface of the inner ring to impinge against the edges of the approximal cavity without danger of being flattened in its contour between such edges.

My invention further consists in a matrix of either of the above characters, which is provided, either in the course of manufacture or otherwise, with a downward-projecting extension, which may extend below the surface of the gum to a point under the cervical margin of the cavity, where the latter is below the gum, thereby permitting the adjustment and retention of the rubber dam in a position beneath the cavity, to keep out moisture and permit the operation of filling to be performed more perfectly and with greater ease.

My invention further consists in the particular construction which I prefer to employ, all as hereinafter more fully set forth.

In the drawings, Figure 1 is an enlarged perspective view of my device applied to a molar tooth with an approximal cavity extending below the margin of the same. Fig. 2 is a vertical transverse section of my device, on the line 2 2, Fig. 1, the matrix being detached from the tooth.

A is the outer band or ring, made, preferably, of spring-tempered steel sufficiently thin to permit its insertion between the teeth. It is increased in thickness on the buccal aspect, as shown at *t*, and is penetrated in such thicker portion by the screw *s*, which is provided with means for turning it by a key or lever, or both, as shown at *r*. The ring is placed in position around the tooth to be operated upon, over which the usual rubber dam and ligature has first been placed, and the screw applied, which holds the ring and dam firmly in position and causes the inner surface of the ring to impinge against the edges *p p* of the cavity, leaving a convex contour, and thus materially assisting the operation of plugging. The ring serves, furthermore, to strengthen the walls of the tooth during the operation.

In many cases where a considerable portion of the ligual or buccal wall of bicuspid or molar teeth has been lost or broken down, the single band or ring above described may be found inadequate to the requirements, inasmuch as the setting of the screw will draw the band into the cavity, thus destroying the convex outline, and largely defeating the object for which it is intended. To avoid this I have provided an interior band or broken ring, B, also of thin metal, which is placed around the tooth, and is surrounded by the outer ring, A. The purpose of the interior ring is simply that of a strengthener of the outer ring at the point where it covers the cavity, and it is evident, therefore, that it need be of no greater size than barely sufficient to cover the cavity. Instead of a separate band, B, the ring A may be thickened or strengthened at the proper point in the course of manufacture, as will readily be apparent. The application of the

screw *s* in tightening the bands serves to impinge the inner surface of the inner band against the lateral edges of the cavity, however large, without being drawn into the same or flattened between the points of impingement.

In applying the rubber dam and ligature, particularly in the case of bicuspids and molars, and in all cases where the cavity extends below the gum, much difficulty has heretofore been experienced in adjusting the dam and retaining it in position. This I have largely avoided by providing the band-matrix, as above described, with a lip or downward projection, C, about equal in width to the cavity, which extends below the cervical margin of the cavity into the gum, and serves to hold the dam in position at the proper point, and entirely prevents the access of moisture during the operation. The lip C may be provided either upon the band A or the band B, or it may be in the form of a separate attachment. Where it is provided upon the band B, a convenient arrangement is shown in Fig. 1, in which the projection is doubled backward to provide a guide, into which the band A may fit, thus holding the two firmly together and strengthening them still more. It is obvious that the same arrangement may be adopted when the lip is provided on the outer band, in which case the lip may serve the purpose for which the inner band is provided.

The device above described is well adapted for use in connection with either the incising or masticating teeth; but it will be found of particular benefit where the bicuspids or molars with approximal cavities are to be operated upon. Where desired, the lip C (shown in Fig. 1) may be duplicated and different lips of varying sizes be employed. The size of the matrix will vary with the size and character of the tooth to be operated upon; but ordinarily two sizes for biscuspids and three or four for molars will be found sufficient.

What I claim as new, and desire to secure by Letters Patent, is—

1. A matrix to be used in filling teeth, comprising a thin metal band embracing the tooth, and an adjusting-screw passing through the end of the same, whereby the inner end of the screw will impinge against the tooth, substantially as described, and for the purpose set forth.

2. A matrix to be used in filling teeth, comprising a thin metal band and re-enforcing piece and an adjusting device, substantially as described.

3. A matrix to be used in filling teeth, comprising a thin metal band provided with a downward-projecting lip, substantially as described.

4. A dental matrix comprising the bands A and B and lip C, depending from one of said bands, as set forth.

5. A dental matrix comprising the bands A and B, adjusting device *s*, and lip C, as set forth.

TRUMAN W. BROPHY.

In presence of—
HENRY HUDSON,
J. W. DYRENFORTH.