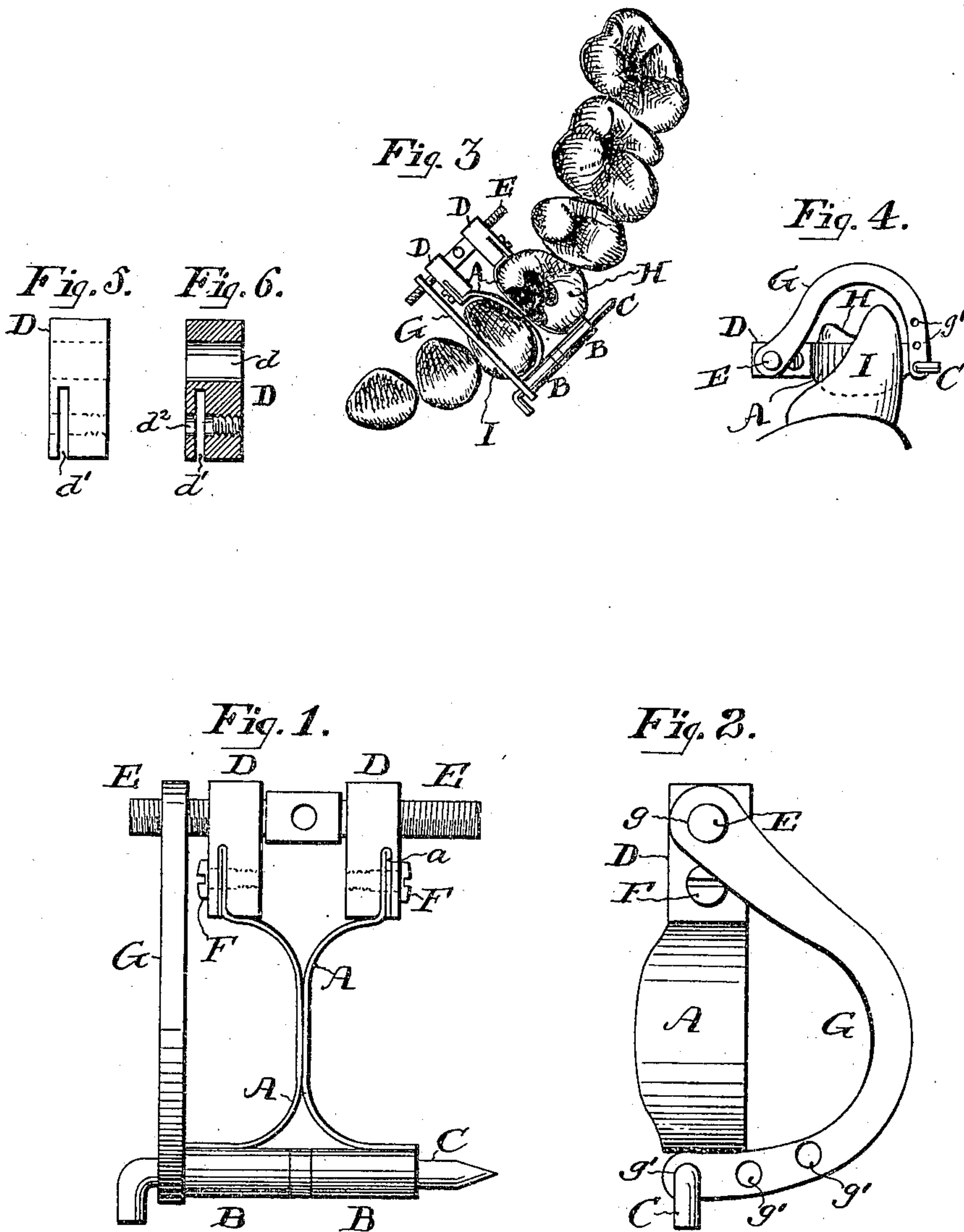


No. 812,328.

PATENTED FEB. 13, 1906.

W. CRENSHAW.
DENTAL MATRIX.
APPLICATION FILED NOV. 10, 1905.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM CRENSHAW, OF ATLANTA, GEORGIA.

DENTAL MATRIX.

No. 812,328.

Specification of Letters Patent.

Patented Feb. 13, 1906.

Application filed November 10, 1905. Serial No. 286,691.

To all whom it may concern:

Be it known that I, WILLIAM CRENSHAW, a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented certain new and useful Improvements in Dental Matrices; 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 dental matrices of the class employed by dentists in filling ap- proximal cavities in teeth.

The object of my present invention is to improve the matrix for which Letters Patent No. 701,799 were granted to me June 3, 1902. It is my purpose to improve said matrix in two respects—first, by providing a superior connection between the flexible bands and the nuts to which said bands are secured, and, second, by providing means for rendering the matrix more rigid under certain conditions, whereby the range of usefulness of the matrix is increased.

The invention consists in the improvements hereinafter fully described and claimed.

In the accompanying drawings, illustrating a suitable embodiment of my invention, Figure 1 is a plan view of my improved matrix, on a greatly-enlarged scale. Fig. 2 is a side view thereof. Fig. 3 is a plan view, on a smaller scale, showing my improved matrix as applied to a first bicuspid tooth, the matrix being inserted between said bicuspid and the adjoining canine tooth. Fig. 4 is a side view of the matrix as applied in Fig. 3. Fig. 5 is a top view of one of the matrix-nuts detached. Fig. 6 is a central longitudinal sectional view of said nut.

The matrix claimed in my patent before alluded to comprises a pair of flexible members adapted to be placed between two adjoining teeth, suitably connected at their opposite ends and provided with means for placing the members under tension, whereby they will be caused to partly surround and closely conform to the teeth. As shown in said patent, each member consists of a flexible metal band or thin strip A, provided at one end with a socket or tube B and at its other end with a nut D. A removable pin C, passing through the sockets or tubes B B, and an oppositely-threaded screw-bar E, passing through threaded openings d of the nuts D D, unite the members, the screw-bar

affording means for applying tension to said members.

The manner of applying the matrix will be understood from Fig. 3. The bands, which are curved or bowed or adapted to be curved or bowed toward each other, are placed between the tooth H to be filled and the next adjoining tooth I. This may be done while the nuts D D are close together, and after the matrix is properly seated tension is applied to the bands by means of the screw-bar E, this tension forcing the bands apart and causing them to partly surround and closely conform to the teeth. In this way one of the bands is tightly stretched around the ap- proximal cavity and constitutes a temporary artificial outer wall, against which the filling may be packed.

In the preferred form of matrix the sockets B B and the nuts D D are made separate from the bands A A. The connection between the bands and nuts should be readily detach- able for the purpose of employing bands of different widths and sizes and also to re- place broken or worn-out bands without dis- carding the nuts. At the same time this con- nection should be as rigid as possible in order to properly hold the matrix in position when applied to teeth. Various forms of connec- tions have been tried and have proved more or less faulty. In some of them in the effort to secure rigidity between the band and nut the band was not permitted sufficient flexi- bility immediately near the nut, and as a consequence the band was too abruptly bent and broken or else pulled away from the nut when tension was applied. My improved connection is as follows: A threaded open- ing d^2 extends transversely through the slot- ted portion of the nut at a right angle to the slot. The slot is just wide enough to receive the end a of the band, which is doubled or turned over upon itself, as shown. The end a of the band is perforated for the passage of a screw F, adapted to fit in the opening d^2 , thus securely and rigidly uniting the band to the nut, yet allowing them to be easily sepa- rated by removing the screw. The inner corner d^3 of the nut, against which the band bears, may be rounded to prevent too abrupt bending of the band. While the opening d^2 may be threaded from end to end, the appli- cation of the screw F will be facilitated by leaving said opening smooth and unthreaded for a portion of its length at and near the outer or entrance end, as indicated at d^4 .

When the matrix is applied between two molar teeth, between a molar and a bicuspid, or between two bicuspids in the manner above described, it has equal or balanced bearing-points—*i. e.*, the bands curve around to the central buccal surface on the one side and to the central lingual on the other—resulting in equal or balanced bearing against the teeth, which secures steadiness and fixedness of the matrix when under tension and prevents it riding or slipping out of position. When, however, it is applied between a canine tooth and a first bicuspid, there is a tendency for the matrix to ride out of position, owing to the peculiar inclined lingual surface of the canine tooth, as illustrated in Figs. 3 and 4. This formation of the canine tooth leaves the matrix without balanced bearing, and hence there is a lack of stability of the matrix when applied under tension between these particular teeth. To overcome this difficulty, I have provided means for equalizing or balancing the bearing of the matrix against the canine, which means I will designate a "bow-brace." This consists simply of a rigid metal bar or brace G, curved or bowed, as shown. At one end this brace is formed with an eye *g*, adapted to slip over or fit upon one of the projecting ends of the screw-bar E, while at its other end it is formed with one or more holes *g'* to receive the pin C. The object in curving or bowing the brace is to allow it to pass over the teeth and at the same time span the matrix, rigidly holding the same in place. The brace may be adjusted vertically to suit teeth of varying heights by using one or the other of the holes *g'*.

It will of course be understood that my improvements are applicable to matrices the details of construction of which are not precisely the same as those herein shown and described. For instance, these improvements may be used upon matrices comprehended in the claims of my aforesaid patent; but in which the connections instead of being rigid are designedly flexible, and also upon others in which two tensioning-screws are employed instead of but one.

I claim as my invention—

1. A dental matrix comprising flexible members, means connecting and coöperating with said members for placing them under tension, and a rigid bow-brace having detachable connection with said matrix for imparting rigidity to the same.

2. A dental matrix comprising a pair of flexible members, means connecting said members at their opposite ends, means for placing said members under tension, and a rigid bow-brace connecting the opposite ends of one of said members.

3. A dental matrix comprising a pair of flexible members connected at their opposite ends, each member consisting of a nut formed with a slot extending from the front and parallel with the sides thereof and a flexible band, one end of which is adapted to fit in the slot of said nut, and means, such as a screw, for detachably connecting the band and nut.

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

WILLIAM CRENSHAW.

Witnesses:

J. A. CLOPPLE,

PERCY T. DASHWOOD.

It is hereby certified that in Letters Patent No. 812,328, granted February 13, 1906, upon the application of William Crenshaw, of Atlanta, Georgia, for an improvement in "Dental Matrices," errors appear in the printed specifications and drawings requiring correction, as follows: In line 94, page 1, after the word "follows" the sentence *Each nut D is formed with a slot d' extending from the front end of the nut parallel with the sides thereof and located preferably near its outer side.* should be inserted; and, in the drawings, in Figure 1, the letters *a* to indicate the end of the band, and d^3 d^3 the corners of the nuts should be inserted, and in Fig. 6 d^2 should be inserted to indicate the threaded opening, and " d^2 " which now indicates the unthreaded portion of such opening should read d^4 ; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 13th day of March, A. D., 1906.

[SEAL.]

E. P. MOORE,
Acting Commissioner of Patents.