

UNITED STATES PATENT OFFICE.

JAMES W. IVORY, OF PHILADELPHIA, PENNSYLVANIA.

MATRIX-RETAINER.

943,353.

Specification of Letters Patent. Patented Dec. 14, 1909.

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To all whom it may concern:

Be it known that I, JAMES W. IVORY, a subject of the King of Great Britain, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Matrix-Retainer, of which the following is a specification.

The purpose of my invention is to retain a dental matrix to a tooth by a retainer having a definite limiting action upon the points of the retainer.

The further purpose of my invention is to retain a dental matrix in conformity with the surface of the tooth.

A further purpose of my invention is to draw the surfaces of the dental matrix close about the body of the tooth.

A further purpose of my invention is to press the dental matrix inwardly at its outer surface.

It further consists of other novel features of construction, as limiting the distance of where the points engage the band by the length of the extending jaws as it bears upon the crown of the tooth, as will be hereinafter fully set forth.

For the purpose of illustrating my invention, I have shown in the accompanying drawings several illustrations of applications thereof which are at present preferred by me, since the same have been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

Figure 1 represents a structure embodying my invention in perspective. Fig. 2 represents the structure of Fig. 1 in top plan view. Fig. 3 represents the structure shown in Fig. 2 in transverse section along line *a-a* thereof, looking in the direction of the arrows. Figs. 4 and 5 represent in perspective applications of my invention to other forms of clamp.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings: in Fig. 1 I have applied my invention to the general form of clamp illustrated in my Patent No. 124,790 of April 1, 1890, and for that purpose make use of a spring bow 1 terminating

in arms 2, 2 and attaching points 3, 3. The center of the bow is apertured at 4 to permit passage of a rod 5 threaded at 6 and controlled by a thumb nut 7. The rod 5 is pivoted at 8 to links 9 which are connected at 10 and 11 to ears 12, 13 upon any suitable part of the arms, the structure being arranged in such manner that movement of the rod 5 in one direction will draw the terminal points 3, 3 toward each other, while movement in the opposite direction will permit the bow to separate them.

The matrix band 14 is preferably provided with apertures with which the points 3, 3 engage and the matrix is thus drawn about the tooth by these points. Difficulty has been met with, however, in the fact that the tension upon the band is exerted at a single point only upon each side and that point preferably near the edge of the band closest to the root of the tooth with the result that there has been a tendency, often marked, to bulge or flare the edge of the band nearest to the crown of the tooth with resultant failure to properly contour to the shape of the tooth, besides a tendency for the points 3, 3 of the retainer to slip down on the neck of the tooth. In my invention I overcome this objection by providing transversely directed jaws or clamps 15 preferably curved in form as at 16 and so positioned as to exert an inward pressure upon the surface of the matrix band between the point at which the tension is applied and the edge toward the crown of the tooth, the curved portion preferably overlapping the crown thus holding the points 3, 3 at a relative distance from the crown, and being made longer or shorter to conform to length of the tooth or contour of the same. My invention is in no way restricted to the exact location or shape of the supplemental jaws 15 illustrated herein. I extend the supplemental jaws 15 slightly below the points or jaws 3, 3 as at 15' in line with jaws 15 assisting to form the matrix to the curve of the tooth and limiting the depth of engagement of the points or jaws 3, 3 with the matrix.

In Fig. 4 I have applied my invention to a clamp of the type shown in patent to Minch No. 792,438 of June 13, 1905, owned by me, in which the jaws 17 are pivoted but not crossed to provide extensions 18 within which the nut 19 operates as a wedge screwing upon the thread 20 and forcing the jaws

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17 together against spring 21 or permitting
them to be separated by said spring. I have
chosen to illustrate the same form of sup-
plemental jaws 15 in connection with the
5 terminal points 3 as in Figs. 1, 2 and 3.

In Fig. 5 I have shown my invention as
applied to a form of clamp comprising a
simple spring adapted to be separated by
special pliers when being applied to the ma-
10 trix. In this illustration the spring band 22
terminates in points 3 beside which supple-
mental jaws 15 are placed.

Having thus described my invention, what

I claim as new and desire to secure by Let-
ters Patent, is:

15 In a matrix clamp, arms, means for mov-
ing them toward and from each other, ter-
minals upon said arms to bring tension upon
the matrix, and supplemental jaws extend-
ing transversely to the plane of movement of 20
the jaws and adapted to press against the
matrix.

JAMES W. IVORY.

Witnesses:

W. S. JACKSON,

JOHN A. WIEDERSHEIM.