No. 625,888. Patented May 30, 1899.

L. P. LEONARD.

DENTAL MATRIX CLAMP.

(Application filed Feb. 9, 1898.)

(No Model.)

Fig. 1.

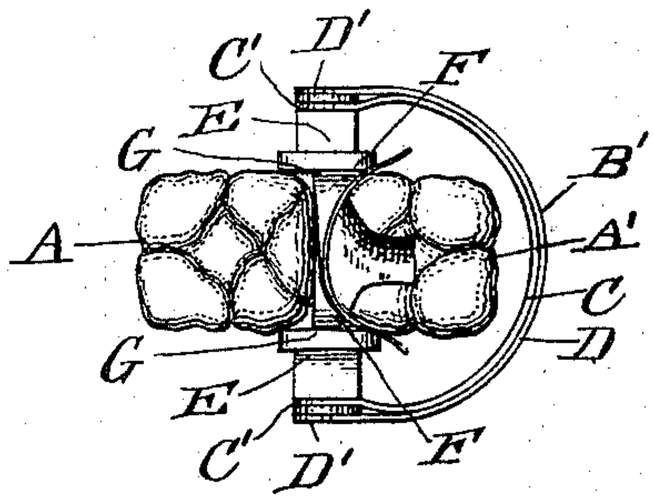

Fig. 3.

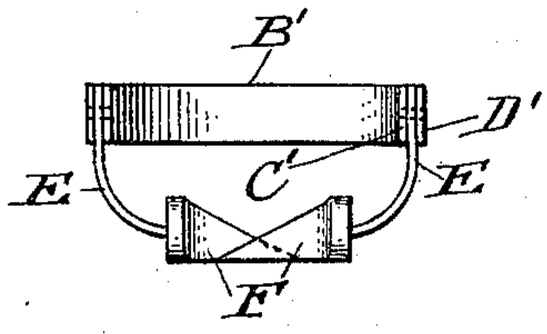

Fig. 2.

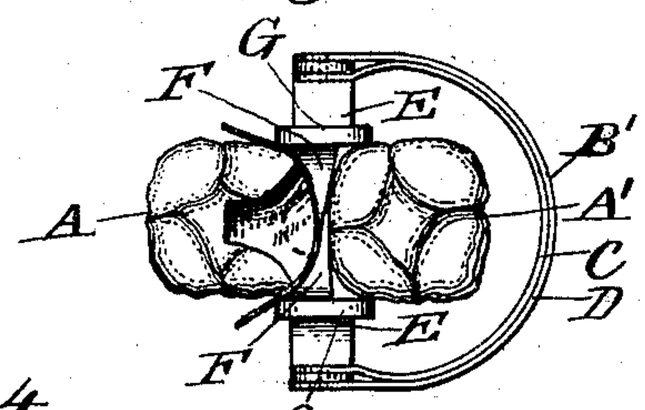

Fig. 4.

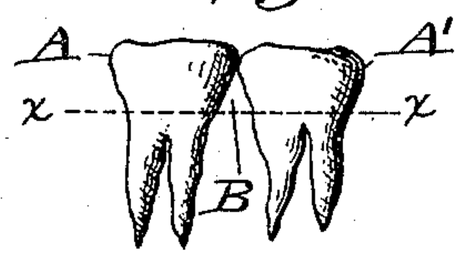

Fig. 6.

Fig. 5.

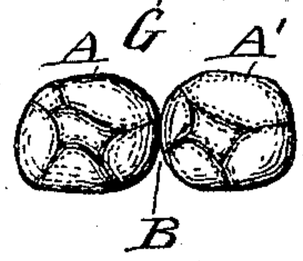

Fig. 8.

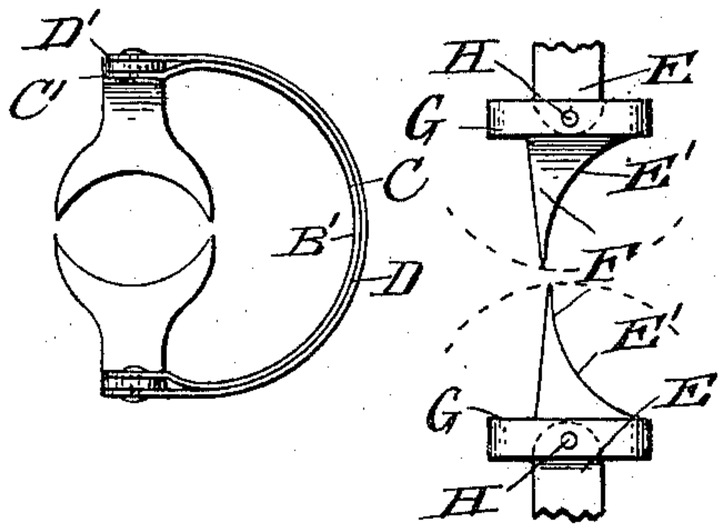

Fig. 9.

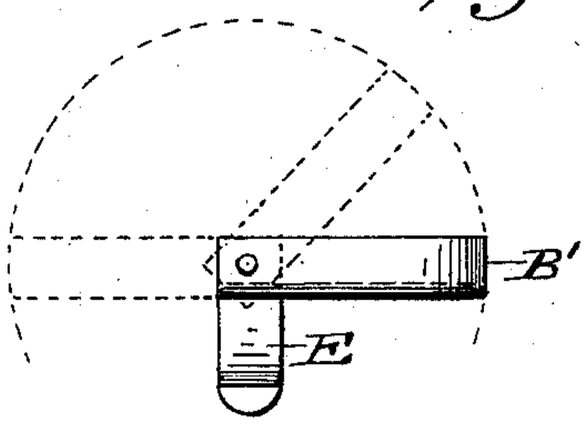

Fig. 7.

Witnesses
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UNITED STATES PATENT OFFICE.

LAURENCE P. LEONARD, OF WASECA, MINNESOTA.

DENTAL MATRIX-CLAMP.

SPECIFICATION forming part of Letters Patent No. 625,888, dated May 30, 1899.

Application filed February 9, 1898. Serial No. 669,665. (No model.)

To all whom it may concern:

Be it known that I, LAURENCE P. LEONARD, a citizen of the United States, residing at Waseca, in the county of Waseca and State of Minnesota, have invented certain new and useful Improvements in Dental Matrix-Clamps; 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 an improvement in dental matrix-clamps employed by dentists to hold the matrix in place while filling approximal cavities in the teeth, and has for its object to provide a clamp which is accurate and complete in function, simple and inexpensive in construction, and easy to manipulate.

My invention consists in a clamp having a double-spring clamping-arm, one of the springs of which is adapted to reinforce the action of the other, and jaws secured between the ends of said springs having wide shoulders which fit the rotundity of the teeth and overlapping double wedge-shaped points; and it also further consists in the construction, combination, and arrangement of the several parts, as more fully hereinafter described and specifically claimed.

Referring to the drawings, Figure 1 is a top plan view of the clamp applied to a tooth ready for use; Fig. 2, a similar view showing the clamp applied to a tooth opposite to that shown in Fig. 1; Fig. 3, a front view in elevation of the clamp; Fig. 4, a side view of two teeth, showing the V or wedge shaped interproximal space above the line *x x* of the gum; Fig. 5, a plan view of same; Fig. 6, a cross-section of one of the double wedge-shaped points which is adapted to fit into the interproximal space; Fig. 7, a detail of the two double wedge-shaped points of the clamp; Fig. 8, a plan view of modification of the clamp as it is constructed when used as a rubber-dam clamp; Fig. 9, a detail view showing the spring clamping-arm pivoted so as to turn on the jaws.

Cavities are now cut wider and larger by the dental profession than they used to be, (see dotted lines, Fig. 2, showing old manner of cutting a cavity,) making it necessary to have lateral support to the matrix-strip. (See Figs. 1 and 2.) Fillings are also better contoured, making it necessary to have the wedge between the teeth very thin near the adjacent surfaces of the teeth, so that the matrix and filling can be forced well against the approximal tooth, thus preserving the natural shape of the tooth and the interproximal space between the teeth. Hence the advantage of the broad shoulders and the double wedge-shaped points.

In the drawings, in which like letters of reference denote like parts throughout the several views, A A′ represent two teeth of the usual contour, being constricted or narrow at the gum-line and expanded or enlarged at the crown or grinding-surface. Consequently when the teeth come together a conical or wedge-shaped interproximal space or cavity B is formed, the base or larger portion of which is toward the gum and the point toward the crown or grinding-surface of the teeth.

B′ represents the clamping-arm, composed of two semicircular springs C D, overlapping or situated one within the other, which together constitute a double-spring clamping-arm; C′ D′, the free ends of said springs, respectively; E, clamping-jaws secured between the ends C′ D′ of the springs by soldering or riveting, or, if desired, they may be pivoted, as shown in Fig. 9, so as to turn; F, double wedge-shaped points on the inner ends of said clamping-jaws adapted to overlap and their sides to wedge against each other by the action of the spring clamping-arms, by which means the matrix strip or plate will be pressed tightly against the center of the cavity in the tooth; G G, shoulders on the jaws E, situated about midway the length of the same, adapted to press the matrix strip or plate against the outside of the tooth on each side of the cavity therein. The double wedge-shaped points of the clamping-jaws are approximately straight on one side, while their opposite sides are concaved, as at E′, to fit the general contour of the tooth and also the V or wedge shaped interproximal space or cavity, and thereby give a better contact or clamping surface, first, on the center of the cavity, where the points pass each other; second, at the walls or edges of the

cavity, and, third, on the lateral surfaces of the tooth, where the shoulders G G hold the matrix doubly secure while the filling is being packed into place.

It will readily be seen that by constructing the clamping-arm, as herein described, of thin double overlapping springs a far greater amount of strength and elasticity is obtained than would be the case with a single spring of the same amount of metal, and that as the clamping-jaws are attached to the ends of this spring-arm their range of action is greatly facilitated.

By means of the pivoted clamping-arm shown in Fig. 9 the matrix-clamp can be adjusted to fit a front or posterior cavity by simply rotating the clamping-arm on the pivot and inverting the same, thus keeping the clamping-arm toward the back of the mouth and out of the way of the operator, or the matrix-clamp can be made all in one piece without a joint, having one for each class of these cavities.

In applying the device to the cavity of the tooth the matrix strip or plate is bent to the shape of the tooth and is inserted between the decayed tooth and the one adjacent thereto and clasped tightly around the decayed tooth by means of the clamp, as herein described.

The clamping-jaws may consist of two parts, being pivoted, as at H H, Fig. 7, to allow better adaptation of the parts F F and G G to the teeth in irregular positions.

Having thus described my invention, what I claim is—

1. A dental matrix-clamp comprising a spring clamping-arm, and jaws carried by the ends thereof provided with wedge-shaped overlapping points, substantially as described.

2. A dental matrix-clamp comprising a spring clamping-arm, a pair of clamping-jaws provided with shoulders and double wedge-shaped overlapping points, one of the sides of said points being approximately straight and the opposite side concaved, substantially as described.

3. A dental matrix-clamp comprising a pair of clamping-jaws with overlapping wedge-shaped points, and a clamping-arm pivoted to said jaws adapted to turn longitudinally of the teeth, substantially as described.

4. A dental clamp comprising clamping-jaws, and a spring clamping-arm, adapted to turn longitudinally of the teeth, substantially as described.

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

LAURENCE P. LEONARD.

Witnesses:

JOHN T. HECH,

FRANK MCLIN.