(No Model.)

J. M. STROUT.

DENTAL MATRIX RETAINER.

No. 601,178. Patented Mar. 22, 1898.

FIG. 1.

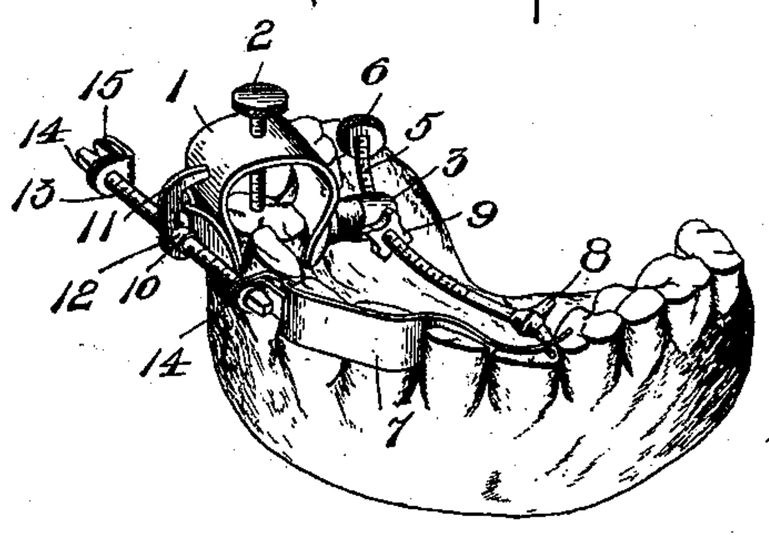


FIG. 2.

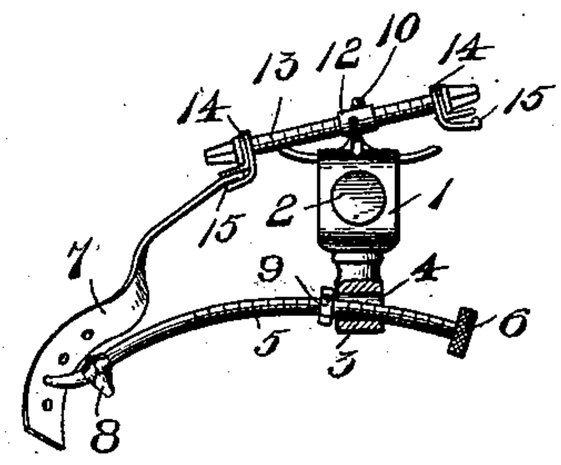


FIG. 3.

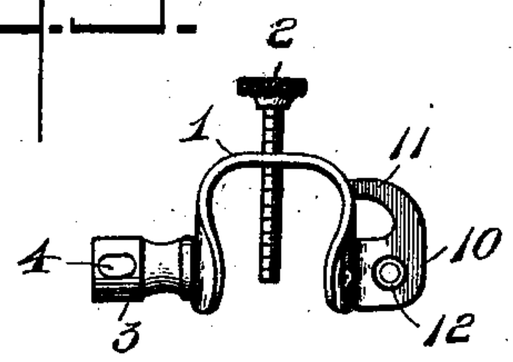


FIG. 4.

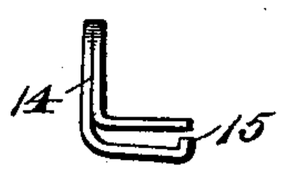


FIG. 5.

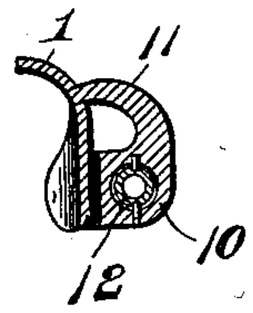
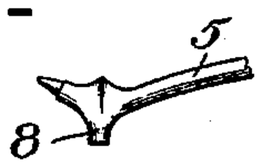


FIG. 6.



Inventor

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Witnesses

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UNITED STATES PATENT OFFICE.

JOSEPH M. STROUT, OF PORTLAND, MAINE.

DENTAL-MATRIX RETAINER.

SPECIFICATION forming part of Letters Patent No. 601,178, dated March 22, 1898.

Application filed February 26, 1897. Serial No. 625,160. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH M. STROUT, a citizen of the United States, residing at Portland, in the county of Cumberland and State of Maine, have invented a new and useful Matrix-Retainer, of which the following is a specification.

This invention relates to mechanical appliances for strengthening frail walls of teeth when filling cavities therein, and bears more particularly on that class of devices using a matrix and provided with means for securing the matrix in position.

The invention is especially designed to facilitate the filling of the approximate surfaces of incisors, the matrix being passed between the teeth and having its end portions deflected in opposite directions and secured by means hereinafter to be more particularly described and which form the basis of this invention.

For a full understanding of the merits and advantages of the invention reference is to be had to the accompanying drawings and the following description.

The improvement is susceptible of various changes in the form, proportion, and the minor details of construction without departing from the principle or sacrificing any of the advantages thereof, and to a full disclosure of the invention an adaptation thereof is shown in the accompanying drawings, in which—

Figure 1 is a perspective view showing the invention applied to an upper set of teeth. Fig. 2 is a top plan view of the matrix and securing means, parts being broken away. Fig. 3 is a detail view in elevation of the clamp and parts having direct connection therewith. Fig. 4 is a detail view of a clip for attaching the matrix to the threaded rod, by means of which it is tightened. Fig. 5 is a detail section of the outer side of the clamp and plate applied thereto, showing the rocking nut. Fig. 6 is a detail view of the engaging end portion of the curved rod.

Corresponding and like parts are referred to in the following description and indicated in the several views of the drawings by the same reference characters.

The clamp 1 is of U form and is constructed of a strip of sheet metal of suitable length and width doubled upon itself and having the edge portions of the bent ends curved inwardly to conform to the sides of a tooth, so as to automatically grip the same firmly and with sufficient force to retain the clamp in place. A set-screw 2 is mounted in a threaded opening formed in the closed end of the clamp and is adapted to engage with the end of a tooth, so as to limit the movement of the clamp thereon and prevent it engaging with the gum and causing pain. A post 3 is applied to the inner side of the clamp and has an elongated opening 4, through which passes loosely a curved rod 5, exteriorly threaded and having a button or head 6 at one end and a reduced portion at its opposite end to engage positively with the inner end of the matrix 7. The shoulder formed at the base of the reduced end of the rod 5 limits the movement of the rod with respect to the matrix, and an extension 8, near the engaging end of the rod, enables the extremity thereof to be readily engaged with an opening formed in the matrix and provides a means for holding the rod while turning the nut 9 placed thereon. This nut bears against the post 3 and moves the rod 5 positively, so as to tighten the inner end of the matrix and secure the same in an adjusted position, the opening 4 in the post admitting of the rod moving freely therethrough without injuring the thread thereof.

A plate 10 is secured to the outer side of the clamp 1, and its end portions extend in opposite directions, forming wings which are adapted to engage with the teeth adjacent to the tooth to which the clamp is applied so as to prevent the clamp from rocking or tilting when tightening the matrix. The plate 10 is a narrow strip doubled upon itself and having the folded part extending about at right angles to the clamp and having a beak 11, extending therefrom and joined to the clamp near its closed end and forming a means to receive a bill of a pair of forceps when fitting the clamp to or removing it from a tooth.

A nut 12 is mounted in an opening formed in the outwardly-extending part of the plate 10 so as to rock, whereby it can adapt itself to the direction of the strain imposed upon the threaded rod 13 mounted therein. By mounting the nut 12 in the manner described the clamp is relieved of strain which would

otherwise tend to turn it upon the tooth, or else cause a binding between the threaded rod 13 and the nut, which would preclude the free turning of the rod when tightening the matrix. The ends of the rod 13 are similarly formed, being headed and terminating in angular portions to receive a key, wrench, or suitable tool by means of which the rod may be easily turned within the nut. By having the rod double-ended the appliance can be used with equal facility on either side of the mouth, and for a like reason the curved rod 5 has the button or head 6 made removable, so as to admit of the rod being relatively changed end for end with reference to the clamp.

The clip 14 is of L form and is loosely mounted upon the threaded rod 13, and its outer portion comprises parallel members, between which is formed a space to receive the outer end portion of the matrix 7. A terminal of one of the parallel members is bent inward, as shown at 15, to make positive engagement with the outer bent end of the matrix, thereby retaining the latter in place upon moving the rod longitudinally to subject the matrix to linear tension, which is essential in order to secure a support for a frail wall. A clip is mounted upon each end of the threaded rod to enable the device to be applied to either side of the mouth or to the upper or lower set of teeth.

Having thus described the invention, what is claimed as new is--

1. The combination with a clamp for gripping the opposite sides of a tooth, of an adjustable stop applied vertically to the closed end of the clamp to engage with the end of a tooth and limit the movement of the clamp thereon and adapt it for long and short teeth, substantially as and for the purpose set forth.

2. In a dental appliance, an approximately U-shaped clamp for gripping the opposite sides of a tooth, in combination with a set-screw inserted vertically in the closed end of the clamp, substantially as and for the purpose set forth.

3. In a dental appliance, the combination of a clamp to be fitted to a tooth, a matrix, means for connecting the matrix at one end with the clamp, a rod having engagement with the opposite end of the matrix and with the clamp, and means for moving the said rod with reference to the clamp, whereby the matrix is subjected to tension and held in place, substantially as set forth.

4. In a dental appliance, the combination of a clamp to be fitted to a tooth, a matrix, means for connecting the matrix at one end with the clamp, a rod exteriorly threaded and having engagement with the other end of the matrix and with an extension of the clamp, and a nut mounted upon the rod for moving it longitudinally with reference to the clamp, whereby the matrix is subjected to tension and held in place, substantially as set forth.

5. In a dental appliance, the combination of a clamp to be fitted to a tooth and having a projecting portion formed with an opening, an exteriorly-threaded rod loosely fitted in the said opening, a matrix engaged at one end by the said rod, means for connecting the opposite end of the matrix with the clamp, and a nut mounted upon the threaded rod and adapted to obtain a purchase against the said projection of the clamp to move the rod longitudinally, whereby the matrix is subjected to tension and held in place, substantially as set forth.

6. In a dental appliance, the combination of a clamp to be fitted to a tooth, a rod having its terminal reduced and provided with a shoulder at the base of the reduced terminal, a matrix having an opening at one end to receive the reduced end of the rod, means for connecting the opposite end of the matrix with the clamp and means for moving the rod longitudinally with reference to the clamp, whereby the matrix is subjected to tension and held in place, substantially as set forth.

7. In a dental appliance, the combination of a clamp to be fitted to a tooth, a matrix having an opening at one end, means for connecting the opposite end of the matrix with the clamp, a rod having engagement with the clamp and having its end reduced to enter the aforesaid opening of the matrix, and provided with a lateral extension at its reduced end for the purpose specified, and means for moving the rod longitudinally with reference to the clamp, substantially as and for the purpose set forth.

8. In a dental appliance, the combination with a clamp to be fitted to a tooth, of a plate applied to a side member of the clamp and having its end portions projecting and forming oppositely-extending wings, a matrix, and means for connecting the ends of the matrix with the clamp and subjecting it to tension, substantially as shown for the purpose specified.

9. In a dental appliance, the combination of a clamp to be fitted to a tooth, a matrix, a threaded rod having screw-thread connection with the clamp and adapted to be turned to impart a longitudinal movement thereto, a matrix having loose connection at one end with the said rod to admit of the latter turning to subject the matrix to linear tension without causing torsional strain, and means for connecting the opposite end of the matrix with the clamp, substantially as set forth.

10. In a dental appliance, the combination of a matrix, a clamp to be fitted to a tooth, means for connecting one end of the matrix with the clamp, a nut having loose connection with the clamp so as to adapt itself to the direction of strain, and a threaded rod mounted in the nut and adapted to make connection with the other end of the matrix, substantially as set forth.

11. In a dental appliance, the combination of a clamp to be fitted to a tooth, a matrix, means for connecting one end of the matrix with the clamp, a nut having loose connection

with the clamp, a threaded rod mounted in the nut, and clips at the ends of the said rod to receive and hold the opposite end of the matrix, substantially as set forth.

12. In a dental appliance, the combination of a clamp, a rod movable longitudinally with reference to the clamp, a clip having loose connection with the said rod and comprising parallel members, one of the said members having an inwardly-extending portion, a matrix having an extremity bent to pass between the parallel members of the clip and engage with the inwardly-bent portion of one of the members and means for connecting the opposite end of the matrix with the clamp, substantially as set forth.

13. In a dental appliance, a clamp to be fitted to a tooth and having oppositely-extending portions, a matrix to be passed between the teeth to be treated and having its end portions bent in opposite directions, rods having connection with the end portions of the matrix and with the oppositely-extending portions of the clamp, and means for positively moving the rods longitudinally with reference to the clamp for subjecting the matrix to linear tension and retaining it in place, substantially as set forth.

14. The herein-described dental appliance for the purposes set forth, comprising a tooth-clamp having an adjustable stop to engage with the end of the tooth and limit the movement of the clamp thereon, a matrix, a post secured to a side of the clamp and having an elongated opening, an exteriorly-threaded curved rod loosely mounted in the opening of the said post and having an end reduced to enter an opening of the matrix, and provided with a lateral extension at the reduced end, a nut mounted upon the curved rod and adapted to bear against the post, a plate applied to the opposite side of the clamp and providing a beak and oppositely-extending wings, a nut loosely mounted in the outwardly-extending portion of the plate, a threaded rod mounted in the said nut, and clips at the ends of the threaded rod, substantially as shown for the purpose specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOSEPH M. STROUT.

Witnesses:
CARROLL W. MORRILL,
GEO. F. NOYES.