

(No Model.)

J. E. NICHOLS.
DENTAL APPLIANCE.

No. 594,486.

Patented Nov. 30, 1897.

Fig. 1.

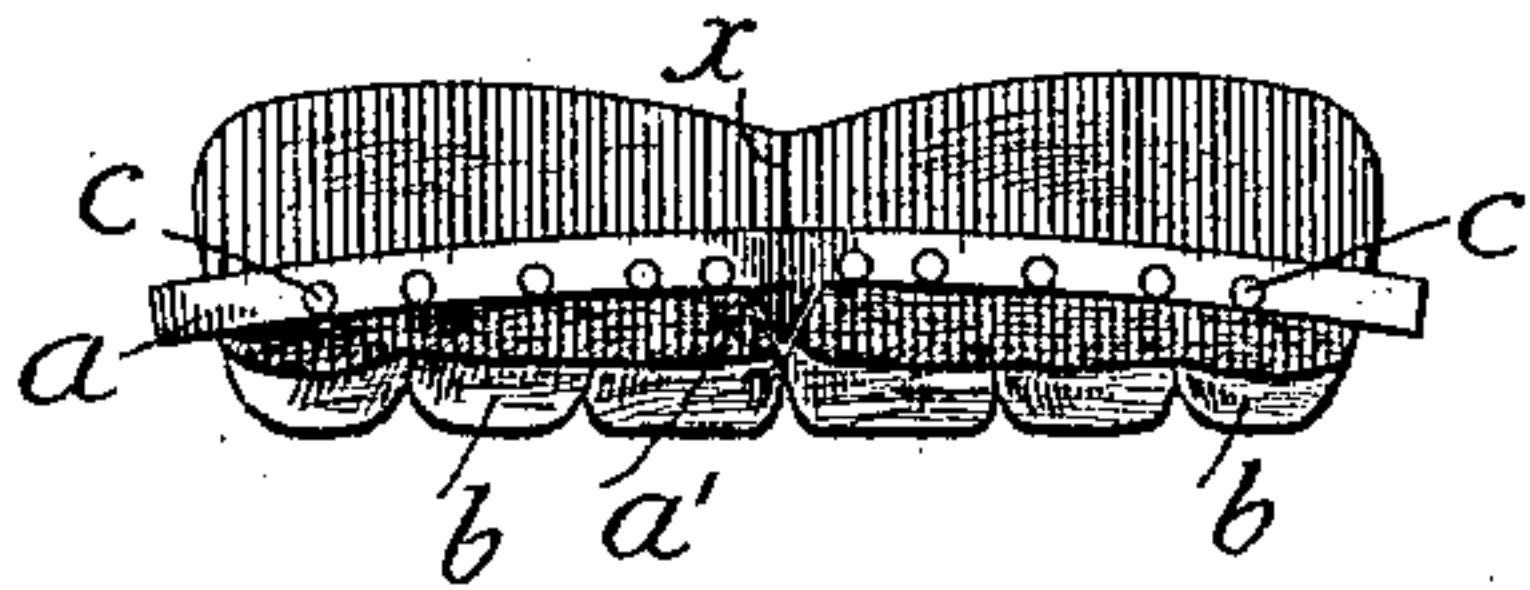


Fig. 2.

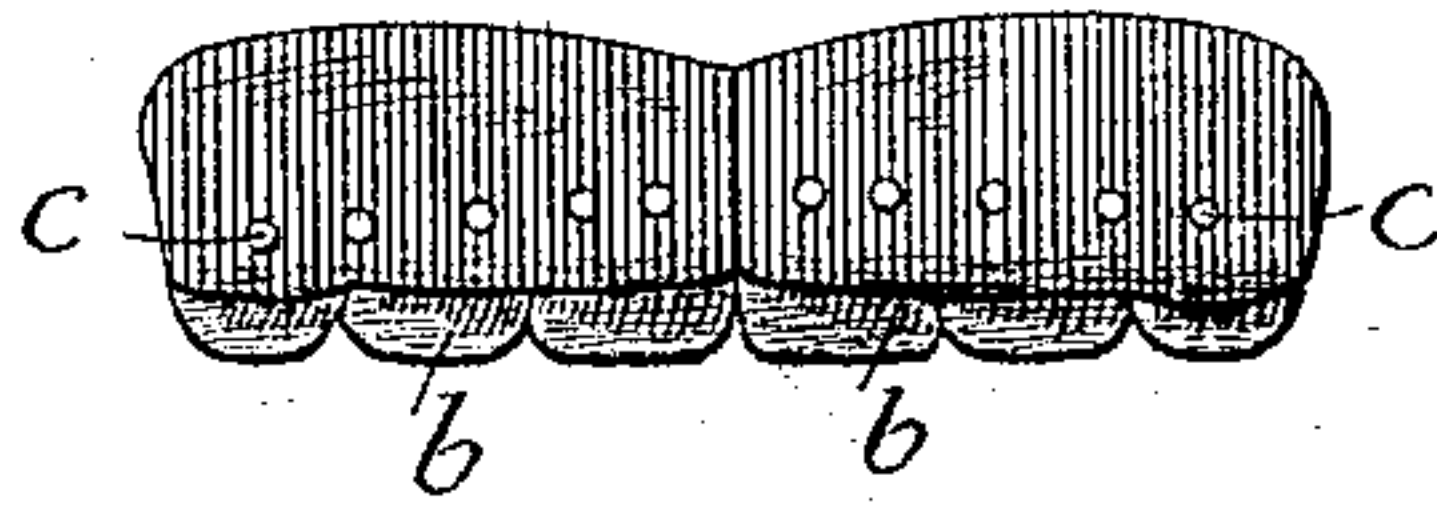


Fig. 3.



Fig. 4.

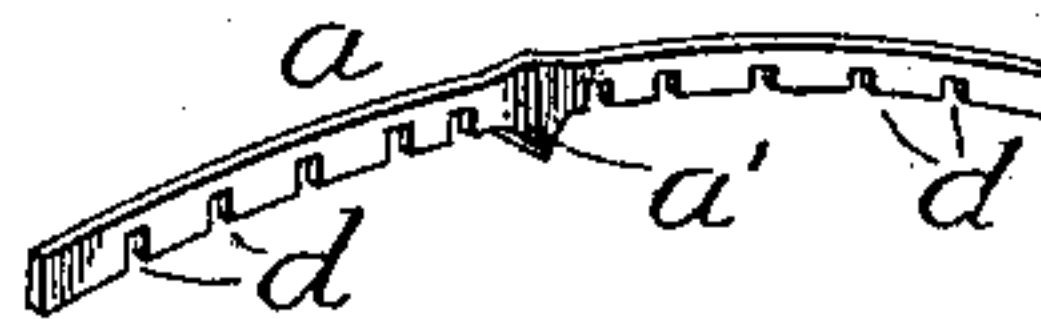


Fig. 5.

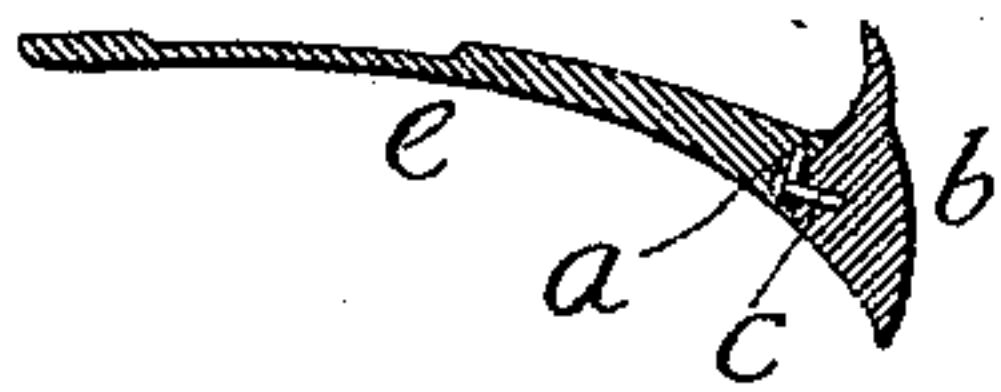


Fig. 6.

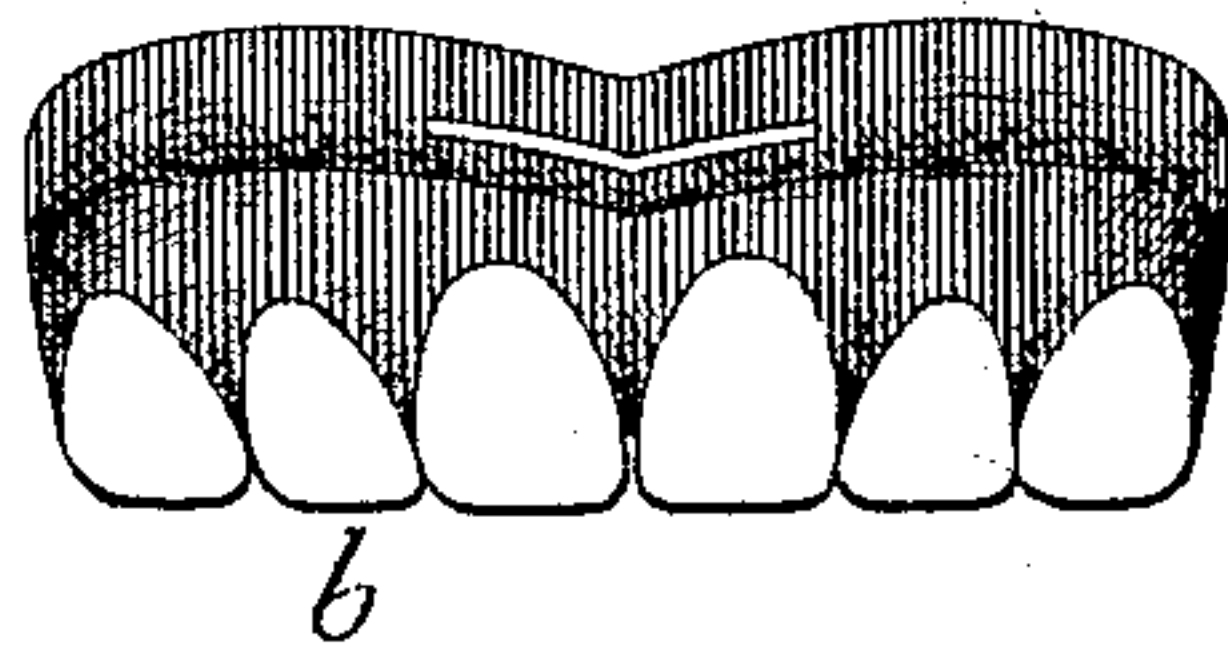


Fig. 7.

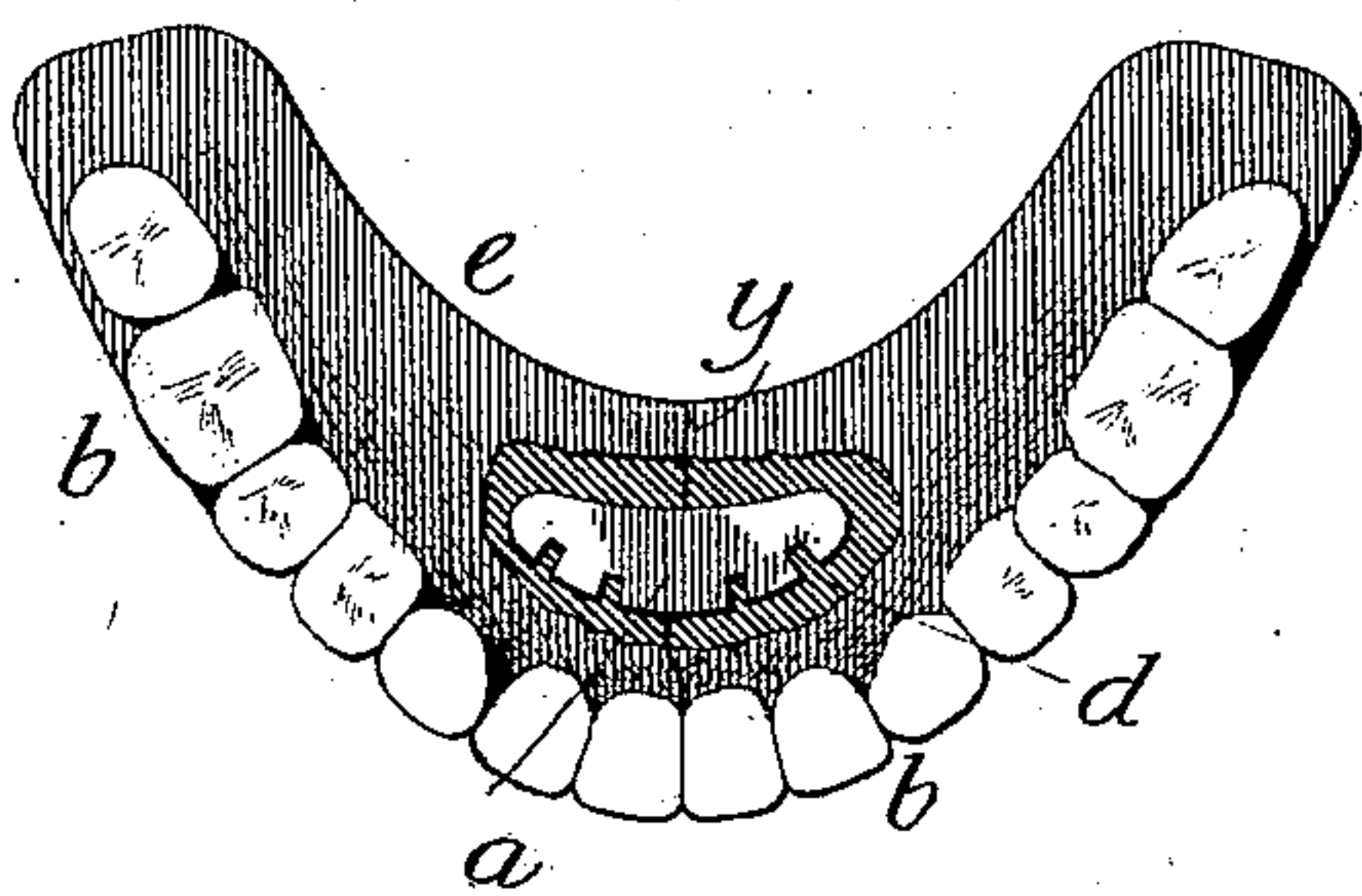
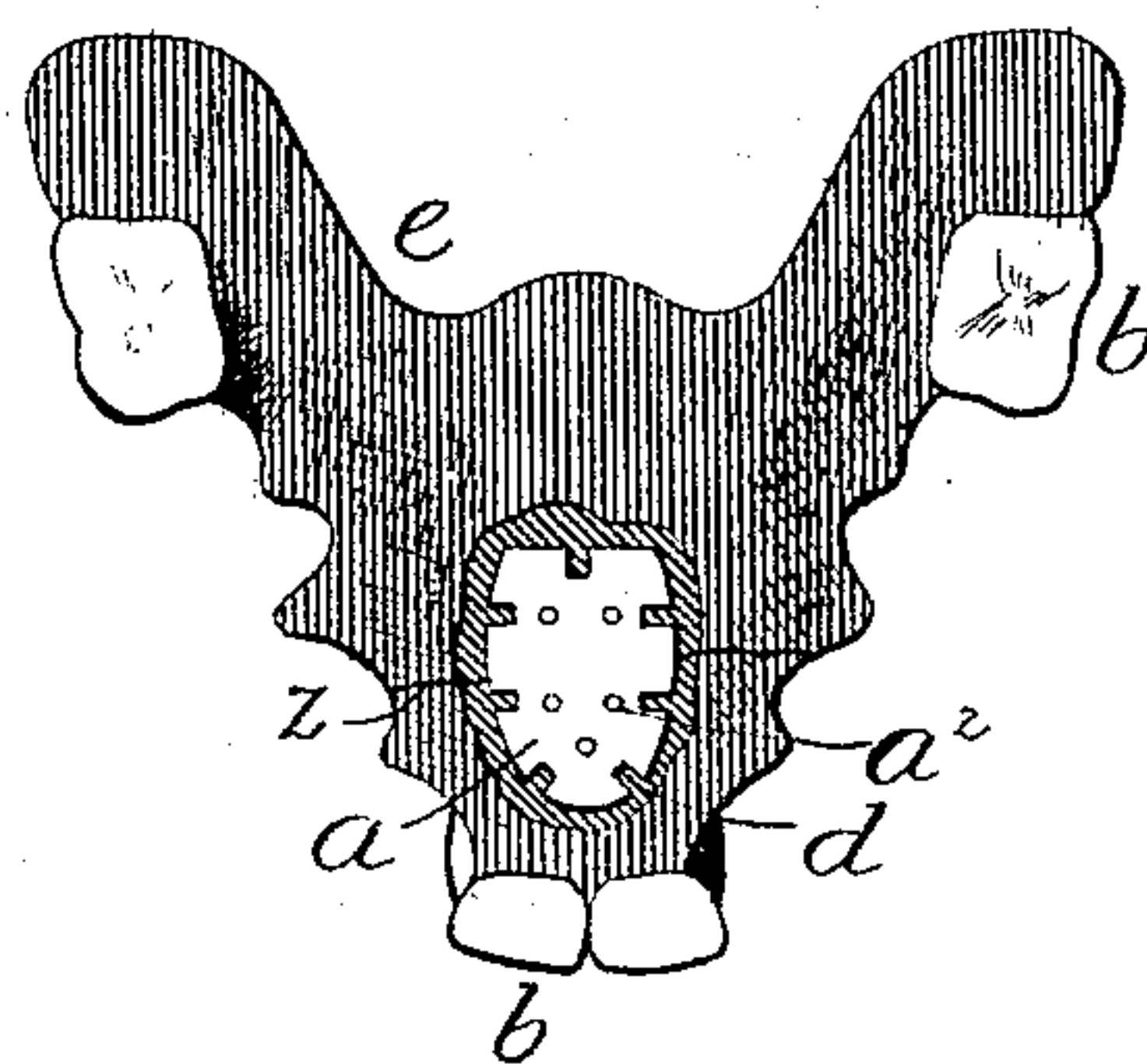


Fig. 8.



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UNITED STATES PATENT OFFICE.

JOSEPH E. NICHOLS, OF ROCHESTER, NEW HAMPSHIRE.

DENTAL APPLIANCE.

SPECIFICATION forming part of Letters Patent No. 594,486, dated November 30, 1897.

Application filed July 21, 1897. Serial No. 645,400. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH E. NICHOLS, a citizen of the United States, residing at Rochester, in the county of Strafford and State of New Hampshire, have invented certain new and useful Improvements in Dental Appliances; 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.

This invention relates to dental appliances, and is particularly directed to improvements in or pertaining to artificial dentures, the object of the invention being the production of an improved denture, more especially of that type involving a vulcanite rubber base, which will in practice closely conform to the mouth of the wearer and insure comfort and the unimpaired exercise of the usual natural functions and which possesses strength and durability.

Heretofore artificial dentures of the class referred to have been constructed with a view to strength at the expense of conformity or to conformity with the sacrifice of strength. Where strength is the essential, the base is constructed to have considerable thickness, and such a denture is worn without comfort and interferes with articulation and the other natural functions. If conformity is the desideratum, the base is made to be thin as possible, and the denture hence does not possess the strength necessary for mastication, and extraordinary care is required on the part of the wearer to prevent fracture.

My invention combines in a denture the advantages of conformity, lightness, and strength, as it enables the base portion to be made comparatively thin, and yet sufficiently strong to preclude fracture with ordinary usage.

The nature of my invention is disclosed in the following detailed description, which is to be read in connection with the accompanying drawings, in which—

Figure 1 is a rear elevation of two blocks of porcelain teeth, showing the application of my invention. Fig. 2 is a similar view of the blocks of teeth previous to the application of the invention. Fig. 3 is a perspective view of my strengthening-strip before being notched

or recessed. Fig. 4 is a perspective view of the recessed strip in condition for its application. Fig. 5 is a sectional view of a completed denture. Fig. 6 is a front elevation of a partial denture. Fig. 7 is a plan view of a lower denture, showing the application of my invention for repairing purposes. Fig. 8 is a plan view of a partial denture, showing a modification of the application of my invention for repairing purposes.

In carrying out my invention I may employ the methods usually resorted to in constructing dentures—such, for instance, as setting the blocks of teeth waxed flaked, boiling out the wax, and after the embodiment of my invention packing the rubber and subjecting the same to the process of vulcanization.

The application of my invention forms one of the steps in the construction of the denture, and to readily comprehend its structure, manner of attachment, and functions it is necessary to know that the porcelain teeth, whether single or in blocks, are commonly provided with headed pins which project slightly beyond the inner side of the tooth-body, the pins being employed as the means for effecting a firm connection between the teeth and the rubber base. Previous to my invention the connection between the teeth and base was made by packing the rubber while soft between and around these pins, and if the precaution was taken to build up a comparatively thick base the necessary strength was often present; but, as previously stated, heavy bases are very objectionable, and to overcome the necessity for their employment I have devised a means for strengthening the denture at the weakest point—namely, at the connection between the teeth and the body, but more especially at the joint between two teeth, or between two blocks of teeth, such as is shown at *x* in Fig. 1. By the means employed and the manner of its application I secure at what was before the weakest point a degree of strength sufficient to resist all strain and liability of fracture from ordinary and in some cases extraordinary usage. For imparting this strength I employ a strip *a* of gold or other suitable metal or material, and while the teeth *b b* are in place in the flask and the wax has been boiled out I bend the strip to

conform in shape to the inner side of the body of the teeth at the line of the headed pins *c c*. When the strip has been made to conform exactly to the line of teeth, and while it is in position, I mark thereon by a scratch or otherwise the positions which the pins occupy relative thereto, and then, removing the strip, I form, by filing, punching, or any other suitable method, notches or recesses *d d* in one edge, with a depth equal to one-half the width of the strip or thereabout. The notched or recessed strip is then returned to its position in the denture, and by reason of the registration of the pins with the notches or recesses the strip can be and is pressed downward until the depth of the notches or recesses is reached. The width of the notches or recesses is sufficient only to accommodate the bodies of the pins, and hence the pin-heads operate in conjunction with the strip to hold the teeth or blocks of teeth firmly in position. The strip may be of the same width and thickness throughout, but I prefer to provide a reinforcement *a'* at the joint *x*, as shown. The strip after being forced in position firmly unites the teeth or blocks of teeth, and being disposed vertically and at right angles to the greatest breaking strain the strip effectually precludes fracture at what was previously the weakest point. After the strip has been positioned the rubber, while in a soft state, is packed around and over the strip, the exposed portions of the notches or recesses, and the pin-heads in a manner to conceal the same and augment the connection; and after the formation of the base *e* the denture is completed and ready for vulcanization.

My invention is susceptible of employment in the construction of partial as well as full dentures, the methods employed being similar in each instance. I also utilize the strip for repairs of fractured dentures constructed by the usual methods, instances of such utilization being shown in Figs. 7 and 8. In Fig. 7 the fracture is shown at *y*, and in repairing the same the parts are brought together and portions of the vulcanized rubber of the base adjacent to the fracture are removed to expose the body of the teeth and a notched or recessed strip inserted, after which soft rubber is packed around and over the strip and vulcanized. In Fig. 8 is shown a partial upper denture with a line of fracture indicated at *z*. In this instance the rubber is cut away, as in Fig. 7, but a notched or serrated strip

of different form is inserted and the rubber applied. In some instances I perforate the strips, as at *a'*, for the purpose of anchoring the rubber, and, if desired, perforations may be formed in the strip first described.

It is within the scope of my invention to cut or otherwise form strips of various shapes and sizes to suit the work in hand and to notch or recess the strips as may be found to best serve the purpose.

In constructing dentures according to my invention the greatest possible strength is obtained at a heretofore very weak point, and as a result the denture may be made with a thin and very light and conformable base, which of itself need possess little strength, but which has the advantage of insuring comfort to the wearer and of restoring to him all of the natural functions of the mouth.

By my invention, also, a single tooth cannot become detached, owing to the fact that the teeth are, as it were, interlocked by the coöperation of the headed pins with the strip, and such a construction also serves to hold a tooth in position, even though it may have, through some cause, become loosened or partly detached.

I claim as my invention—

1. In combination with the teeth of an artificial denture provided with headed pins, of a strip of metal or other material positioned edgewise against the body of the teeth and provided with notches conforming in size with the diameter of the pin-shanks and engaging therewith in the manner and for the purpose described.

2. A strengthening device for artificial dentures, consisting of a metallic or other plate provided at its edge with a plurality of notches or recesses to receive the material of the denture in the manner and for the purpose described.

3. The combination with the teeth of an artificial denture provided with headed pins or the like, of a strip of metal or other material having notches or recesses engaging said pins, said strip being reinforced at the joint of the teeth, substantially as and for the purpose set forth.

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

JOSEPH E. NICHOLS.

Witnesses:

CHAS. S. BUCK,
E. L. HUTCHINS.