

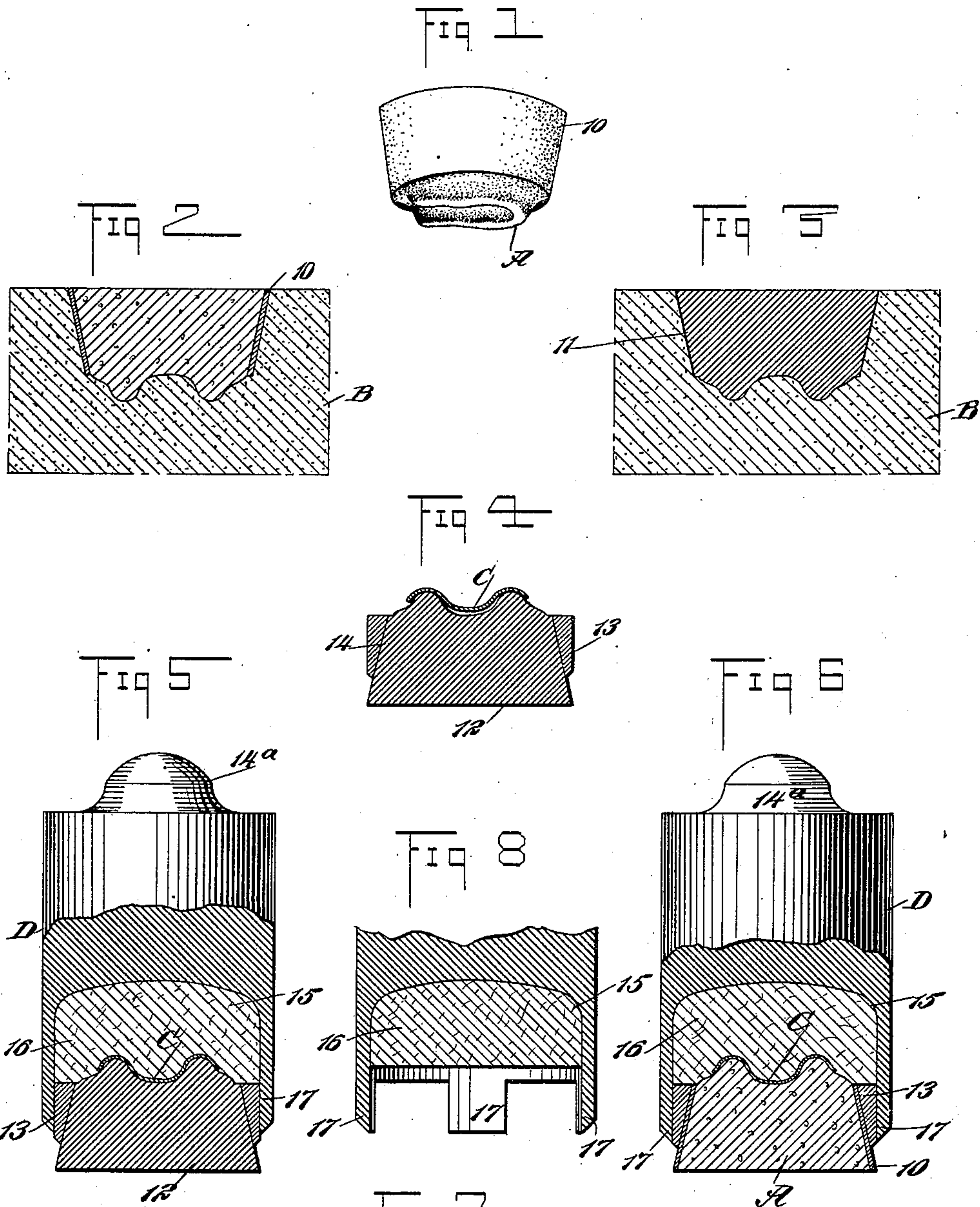
No. 674,581.

Patented May 21, 1901.

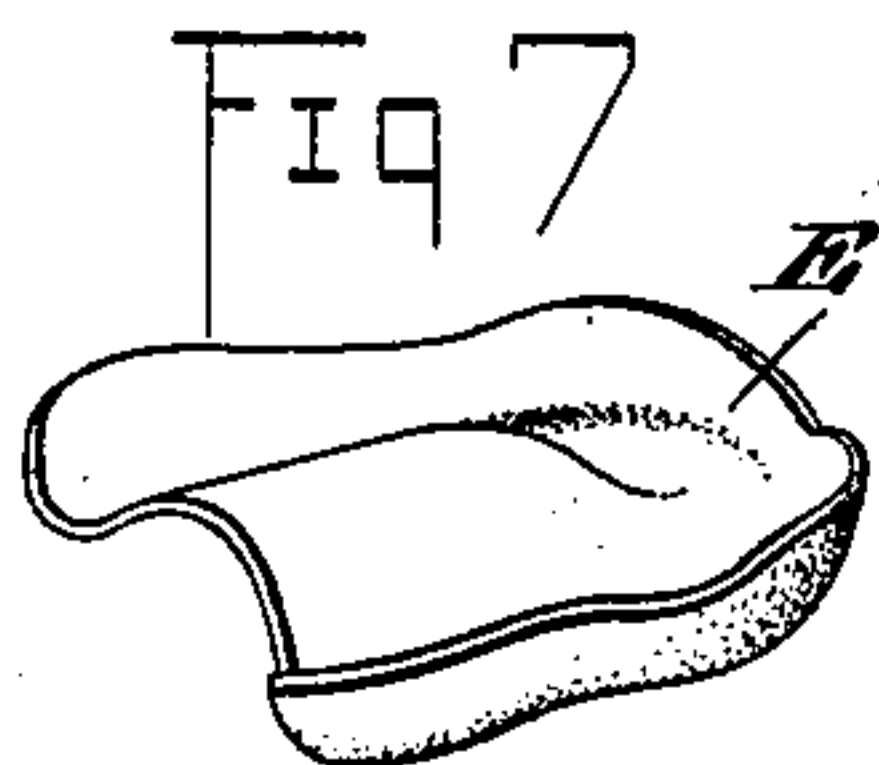
N. C. LEONARD.
MEANS FOR SWAGING METAL DENTAL PLATES.

(Application filed July 7, 1900.)

(No Model.)



WITNESSES:
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NORRIS CLAYTON LEONARD, OF McMINNVILLE, TENNESSEE.

MEANS FOR SWAGING METAL DENTAL PLATES.

SPECIFICATION forming part of Letters Patent No. 674,581, dated May 21, 1901.

Application filed July 7, 1900. Serial No. 22,821. (No model.)

To all whom it may concern:

Be it known that I, NORRIS CLAYTON LEONARD, a citizen of the United States, and a resident of McMinnville, in the county of Warren and State of Tennessee, have invented a new and Improved Means for Swaging Metal Dental Plates, of which the following is a full, clear, and exact description.

The purpose of the invention is to provide devices which furnish simple and effective mediums for swaging metal dental plates directly on a plaster model, thus producing a more accurately fitting plate than ordinarily and which obviates the necessity of making counter-dies, thus saving much time and labor and likewise preventing the plate from being scarred.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of the plaster model and its casing. Fig. 2 is a vertical section through a plastic block and through the model shown in Fig. 1 introduced into said block. Fig. 3 is a vertical section through a matrix formed as shown in Fig. 2. Fig. 4 is a vertical section through a metal model formed in the said matrix and through a binding-ring which extends around the metal model, which ring is removable from the model. Fig. 5 is a partial side elevation and partial vertical sectional view of an upper die adapted for use in connection with either the metal or the plaster model, the metal model being shown in connection with the die in this figure. Fig. 6 is a view similar to Fig. 5, illustrating the plaster model in operative connection with the upper die. Fig. 7 is a perspective view of a swaged upper dental plate, and Fig. 8 is a vertical section through the lower portion of the upper die.

A cast A is taken of that portion of the mouth to which the plate is to be fitted. This cast is of plaster, and the plaster cast A, which may be termed a "model," is fitted in a casing-ring 10, whose sides taper outward in direction of the bottom. This plaster model

and its casing-ring are placed in a block or bed B, of a plastic material, as shown in Fig. 2, and when the plaster model is removed from the plastic material which serves as a mold a matrix 11 is formed, as shown in Fig. 3, in which matrix a metal model 12 is cast, which is the duplicate of the plaster model and its casing-ring. While the block or bed B, which forms the mold, is shown as being of plastic material, yet it may be of sand, if desired. This metal model is shown clearly in Fig. 4, and a ring 13, having an inner tapering surface 14, is fitted to the outer circumferential surface of the metal model just below the shaping-face thereof, which shaping-face is adapted to receive the plate C to be swaged. The ring 13 fits in like manner upon the casing-ring 10 of the plaster model A.

An upper die D is employed in connection with both the plaster and the metal model. This upper die D is cylindrical and is solid except at its lower portion, in which portion a cavity 15 is produced adapted to receive a plastic material—such as wax, for example. At the lower edge of the upper die D downwardly-extending guide-fingers 17 are formed which serve to direct the employed model and its ring 13 evenly to the wax or plastic filling 16 of the said upper die, as shown in Figs. 5 and 6. The upper die D is preferably provided with an enlargement or a knob 14^a at its top adapted to be struck by a hammer or other suitable tool. A completed or swaged upper plate E is shown in Fig. 7.

The operation is substantially as follows: After securing a plaster model of the mouth to which the plate is to be fitted, as has been stated, the model is set in the casing-ring 10, and this casing-ring 10 is made tapering, so that it may be readily withdrawn from the sand mold or plastic mold in which the metal model is to be cast. The metal model 12 is used in the beginning of the swaging process, as after this die or model is made the plate which is placed on the shaping-face of the metal model is worked with a mallet or a like tool until said plate conforms to the shaping-face of the model which represents the gums. The ring 13 is now placed over the metal model, and this model is used as a lower die to mate the upper die D. The cavity 15 in

the upper die D is now filled with soft wax or some other plastic material, and the under face of this wax 16 is made to engage with the upper surface of the ring 13, the plate C, and the exposed upper face of the metal model. The upper die is now driven down over the metal model 12 or lower die, and as the ring 13, which surrounds the metal model, passes up between the guides 17 and approaches the lower edge of the cavity 15 in the upper die the wax is confined in said cavity, offering sufficient resistance to adapt the plate perfectly to the shaping-surfaces of the metal model. This operation obviates the necessity of making a counter-die for each case and does the work perfectly. When the plate C has been adapted to the metal die, said metal die is removed and the plate is transferred to the plaster die or model A, and the ring 13 is placed around the casing 10 of the plaster die or model. This plaster die or model A is then placed in the same relation to the upper die D as the metal die or model 12, and the same swaging process is repeated. In this latter process—that of swaging the plate directly on the plaster model—lies the principal advantage of the device. The plastic material 16, confined between the plate C and the solid surface of the upper die D, adapts itself so perfectly to the plate and model or lower die and the pressure as the upper die advances is so equalized that there is no tendency to fracture the model, the pressure being the same in all directions.

Among the advantages that may be claimed for this means of swaging dental plates may be mentioned the following: First, it furnishes a simple and effective way of swaging a metal plate directly on a plaster model, thus making a more accurately-fitting plate; second, it obviates the necessity of making counter-dies, thus saving much time and labor, and, third, the plastic material adapting itself perfectly to the irregularities of the plate and the die or model the force is always at the right point, thus adapting the plate more accurately to the die than under the usual process of swaging. Furthermore, the swaging process above mentioned does not scar the plate.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. Means for swaging dental plates, comprising an upper and a lower die, the lower die being a tapering model and having a ring

surrounding it and the upper die having a cavity into which the lower die projects, and a plastic material located within the cavity of the upper die, the plastic material being in contact with the working face of the lower die and confined therein by the said lower die or model, as set forth.

2. Means for swaging dental plates, consisting of an upper die having a cavity therein and guide-fingers extending from the lower edge of said cavity, the cavity being adapted to receive a plastic material, and a lower die or model upon which the plate to be swaged is placed adapted to extend into the cavity with its working face in contact with the plastic material, the upper exterior surface portion of which model below its shaping-face fits snugly to the inner wall of the cavity in the upper die, the upper die being movable to and from the lower die or model, as described.

3. Means for swaging dental plates, comprising an upper die having a cavity in its lower portion adapted to receive wax, and a lower die or model, upon the shaping-face of which the plate to be swaged is placed, which model is of plaster fitted in a ring-like casing and is adapted to enter and fit into the lower portion of said cavity in the upper die, with its working face in contact with the wax.

4. Means for swaging dental plates, consisting of an upper die having a cavity in its bottom portion, and guide-fingers extending downward from the lower edge of said cavity, the cavity in the upper die being adapted to receive a plastic material and a lower die or model of plaster, the plate to be swaged being adapted to lie on or over the shaping-surface of the said lower plaster die or model, and a ring of harder material surrounding the plaster die or model at a point adjacent to its shaping-face, which ring is adapted to engage with the inner wall of the said cavity, whereby when the upper die is forced in direction of the lower die or model, the plastic material in the said cavity of the upper die is confined by the model and its attached ring and forced into contact with the working face of the lower die, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

NORRIS CLAYTON LEONARD.

Witnesses:

T. A. LEONARD,
FRANK COLVILLE.