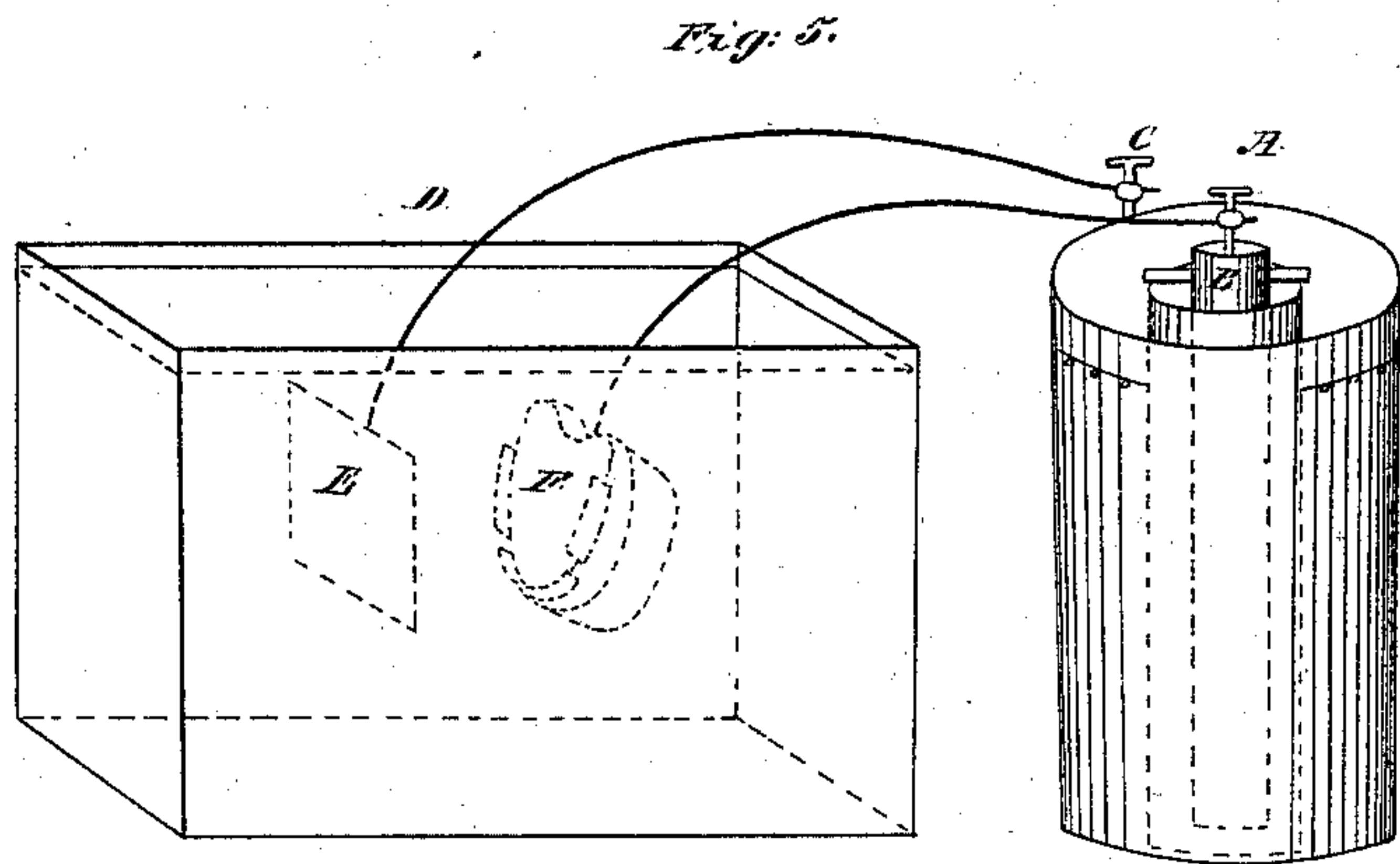
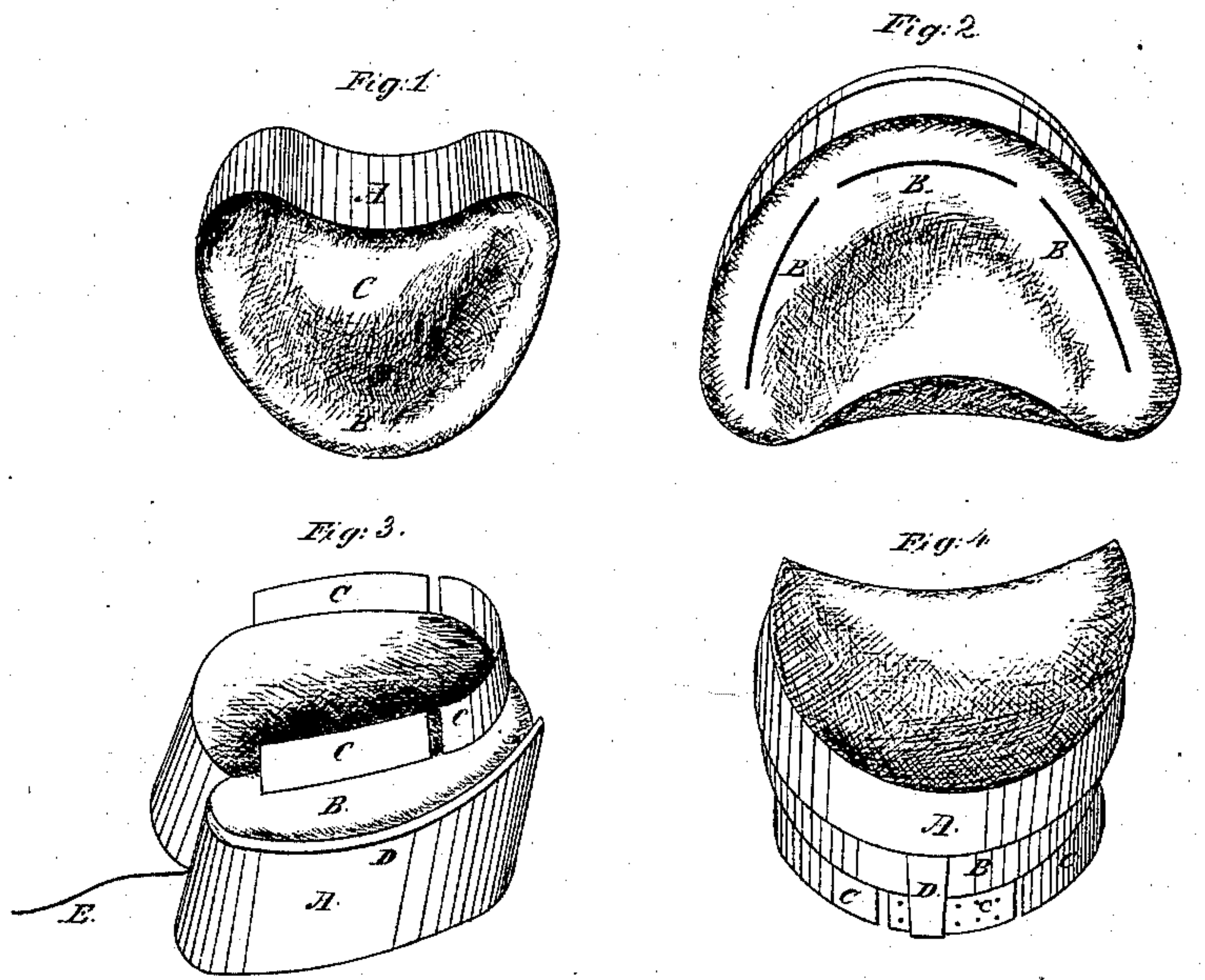


*J. L. Merrell,*  
*Mounting Artificial Teeth.*  
*No 15,706.* *Patented Sep. 9, 1856.*



*Witnesses:*

*Matthew Watson,*  
*John Lloyd.*

*Inventor:*

*John L. Merrell*



# UNITED STATES PATENT OFFICE.

JOHN L. NEWELL, OF BINGHAMTON, NEW YORK.

## CASTING ARTIFICIAL-TOOTH PLATES BY THE ELECTROTYPE PROCESS.

Specification of Letters Patent No. 15,706, dated September 9, 1856.

*To all whom it may concern:*

Be it known that I, JOHN L. NEWELL, of Binghamton, Broome county, in the State of New York, have invented a certain new and useful Mode of Mounting Artificial Teeth by the Electrotpe Process; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 (Plate I) represents a top view of a set of teeth finished; Fig. 2 (Plate I) a bottom view of the same. Figs. 1, 2, 3 and 4 (Plate II) represent different phases of the process and Fig. 5 (Plate II) a "Daniel's" battery.

The object of this invention is to construct a plate of teeth with the linings attached by the agency of electricity instead of the common mode of swaging and heating up the plate, teeth and linings which is liable to spring the plate and check or break the teeth by their unequal expansion and contraction:—and also to obviate the necessity of using solders which always have to be alloyed more than the work to be soldered.

This invention consists in forming the plate and linings in one piece of metal by the electrotpe process upon a mold or cast of the mouth made in the ordinary manner. Fusible metal composed of 8 parts of bismuth, 5 of tin and 3 of lead seems to be best adapted for making casts as it is a conductor of electricity whereas plaster, wax, &c., have to be rendered conductors by gilding their surfaces.

Figs. 1, 2, 3, 4, Plate II, represent the cast of the mouth in its different phases of progression.

Fig. 5, Plate II, represents a Daniel's battery A and precipitating trough D.

Fig. 1, Plate II, represents a cast of the mouth, A is that part of the cast which has nothing to do with the shape of the mouth but which makes it substantial. It is painted red to distinguish that part from the true cast or impression. C is the roof of the mouth and B the alveolar ridge. Teeth are then placed upon the alveolar ridge temporarily in order to mark the cast so as to know precisely where to place the linings. The cast being marked incisions are made in the alveolar ridge about a  $\frac{1}{16}$  in. deep with a penknife as in Fig. 2, Plate II,

B, B, B. Slips of gold or silver foil about the thickness of ordinary tin foil are then cut into the required size to suit the dimensions of the teeth, and inserted in the incisions B, B, B, Fig. 2, Plate II, and the metallic cast pressed on on each side of the foil to render them secure and evenly inserted see Fig. 3, A, Plate II, the cast, B the alveolar ridge C, C, C, the foil inserted. The object of these slips of foil are that they may receive a deposit of metal at the same time the plate is being deposited thereby rendering the linings and plate one mass of metal.

The place for the rim on the outer edge of the plate see D, Fig. 3, Plate II, is made by cutting the outer edges of the cast into a suitable shape to suit the ultimate design of the operator whether he wants it to be round, square or otherwise. The cast at this stage as represented in Fig. 3, Plate II, is then attached to a copper wire E by heating one end of the wire in the flame of a lamp and pressing it against the cast, is buried and becomes firmly attached when cold, all parts of the cast which are painted red on the drawings must be varnished in order to prevent deposition. The cast is then immersed in the trough D Fig. 5, Plate II, which contains a solution of the metal wished to deposit if it be of silver a saturated solution of the cyanid is best. If of gold a saturated solution of the cyanid is also best. If of copper a saturated solution of the sulfate of copper.

Fig. 5, Plate II, F is the cast in the solution connected by a copper wire to the zinc or positive pole B of a Daniel's battery A.

E, is a plate of metal of the same kind as the solution to supply the solution with metal as fast as the deposition goes on to the cast F. The plate E is connected with the copper C or negative pole of Daniel's battery A.

When a sufficient thickness of metal is deposited upon the cast and linings as to render the plate and linings half the desired thickness it is taken out of the trough D.

Holes are drilled in the linings for the platina points of the teeth to come through as in Fig. 4, c, Plate II. The teeth are then mounted upon the plate as in D and the platina points slightly riveted to keep them in their place. The plate with its



complement of teeth is now plunged in boiling water when the cast being of fusible metal which melts before the boiling point of water now leaves the plate and teeth.  
5 The linings at this stage of procedure being only half the required thickness the teeth can be articulated (as the linings will yield to pressure) to assume the desired position. The plate with its complement of teeth is  
10 then taken and all the unnecessary interstices therein are filled with a metallic precipitate which may be prepared as follows for silver: Take nitrate of silver in water and add pieces of copper when the nitric  
15 acid will leave the silver and take up the copper, and the silver is thrown down in a finely divided metallic state which being washed is fit for use by moistening with water and used like a paste. Gold, platina,  
20 copper, &c., can be obtained in minute metallic division by precipitating them from their respective solutions with substances which have a stronger affinity for oxygen. The plate is then immersed in the  
25 trough D, Fig. 5, and connected with the battery (the same as heretofore mentioned) until the plate has acquired its full thickness and the cement has become solidified

that is to say the cement being composed of small particles of metal and being a conductor, metal from the solution is deposited 30 around these particles until solidity ensues as a natural consequence, and is accomplished at the same time and under the same circumstances as the plate when receiving its additional deposit of metal. The 35 plate being removed from the vat is finished by polishing in the usual manner.

I do not claim as my invention the electrototype art of depositing metals on to casts 40 or molds; neither do I claim as my invention the making of the cast or mold. But

What I claim as my invention and desire to secure by Letters Patent is—

1. Constructing the linings in one piece 45 and simultaneously with the plate by the electrototype process as set forth.

2. I also claim filling the interstices of artificial teeth when attached to a metallic plate, with a metallic precipitate, solidified 50 in the manner described and for the purpose specified.

JOHN L. NEWELL.

Witnesses:

G. W. GREGORY, Jr.,  
J. C. ROBIN.