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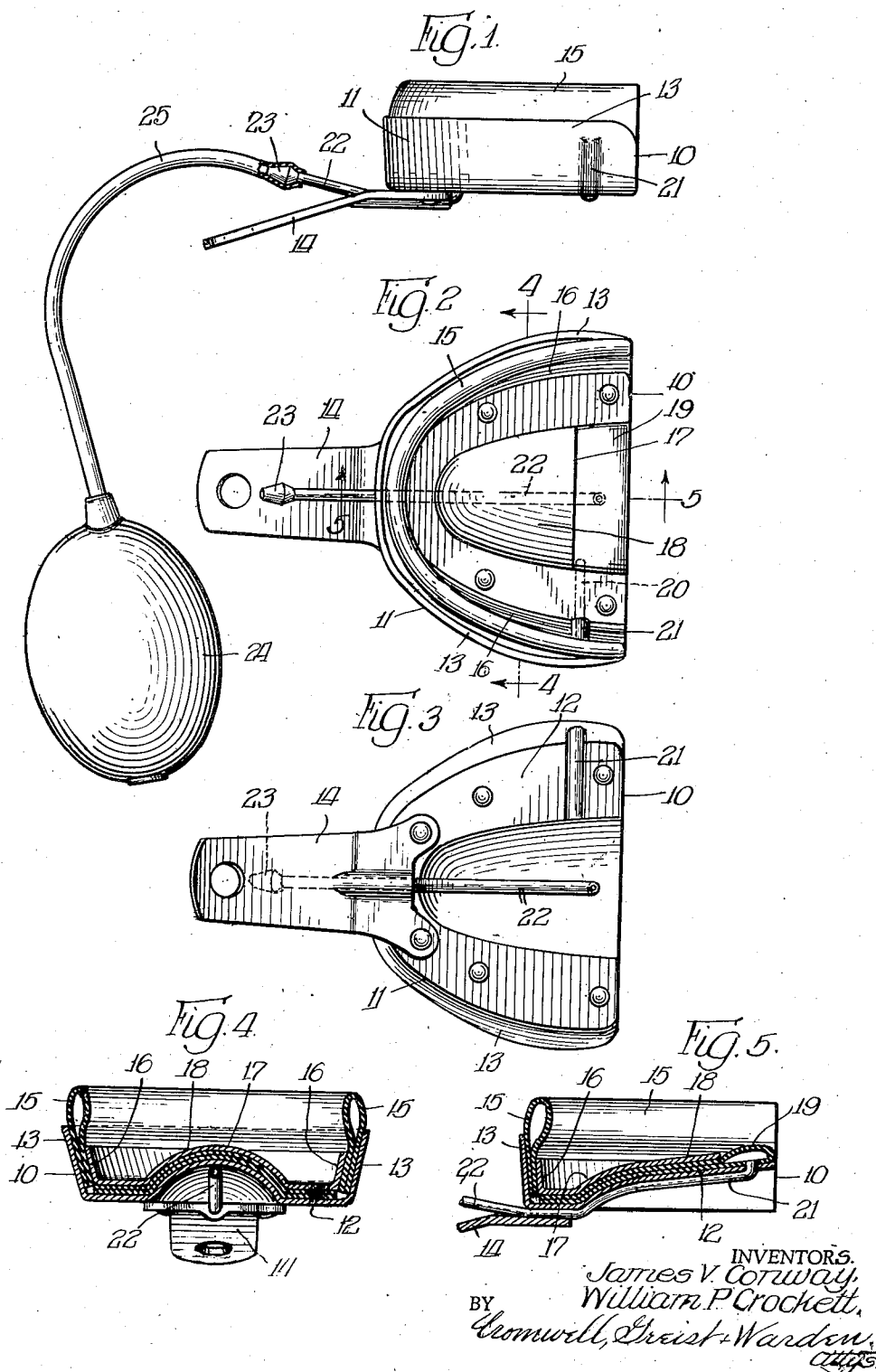
J. V. CONWAY ET AL

2,311,158

METHOD AND MEANS FOR MAKING DENTURES

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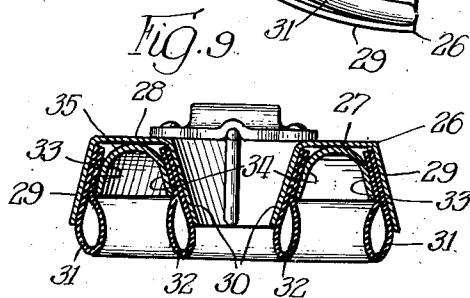
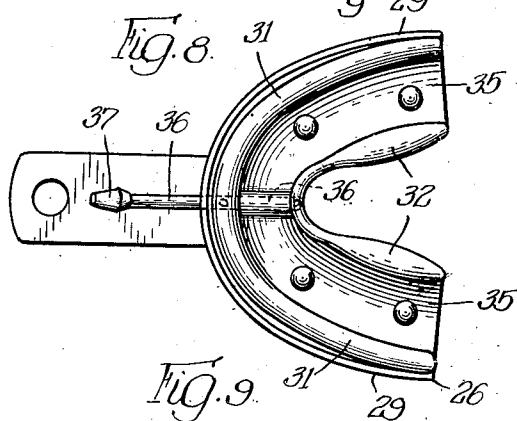
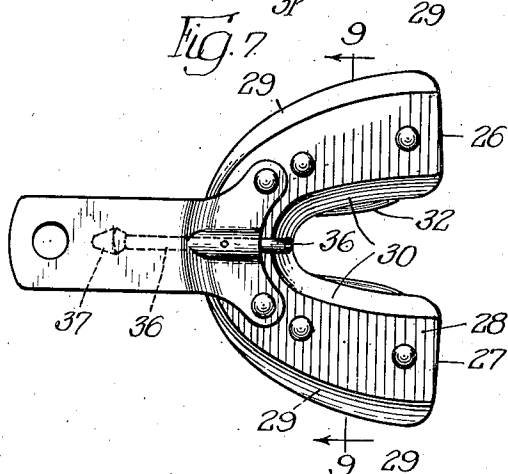
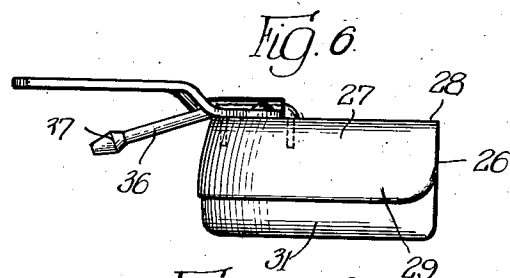
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METHOD AND MEANS FOR MAKING DENTURES

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UNITED STATES PATENT OFFICE

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METHOD AND MEANS FOR MAKING
DENTURES

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8 Claims. (Cl. 32—17)

This invention has to do with the making of dentures, and is particularly concerned with an improved way of taking impressions.

One object of the invention is to provide an improved method of taking an impression, which method employs directionally controlled fluid pressure against the plastic molding material to produce an impression having accurately conforming peripheral seals.

Another object of the invention is to provide an improved impression tray, specially constructed for use in accordance with said method.

Other more specific objects and advantages of the invention will be apparent to those skilled in the art upon a full understanding of the improved method and tray.

A preferred embodiment of the invention is presented herein by way of exemplification, but it will of course be appreciated that the invention is capable of being incorporated in many other structurally modified forms coming equally within the scope of the appended claims.

In the accompanying drawings:

Figs. 1, 2 and 3 are side, top and bottom views, respectively, of an upper jaw tray constructed in accordance with the invention;

Fig. 4 is a vertical transverse section through the tray, taken on the line 4—4 of Fig. 2;

Fig. 5 is a vertical longitudinal section through the tray, taken on the line 5—5 of Fig. 2;

Figs. 6, 7 and 8 are side, top and bottom views, respectively, of a lower jaw tray constructed in accordance with the invention; and

Fig. 9 is a vertical transverse section through the tray, taken on the line 9—9 of Fig. 7.

The upper jaw tray shown in Figs. 1 to 5, inclusive, will first be described. This tray—which is designated by the numeral 10—includes an upwardly opening sheet metal holder 11 having a bottom 12 and a U-shaped rim 13. The rim 12 extends across the front and back along both sides of the tray. The holder 11 is equipped with a small handle 14 which projects forwardly from the center of the same. The holder is provided with an inflatable pocket—in the form of a rubber tube 15—which extends across the front and back along both sides of the holder, above the bottom 12, and within the rim 13.

The tube 15, in this particular embodiment, is made from a strip of thin sheet rubber, which strip is bent back upon itself, with the edges of the same clamped between the rim 13 of the holder and a relatively low flange 16 on a sheet metal inner shell member 17. While the inflatable pocket is preferably made in the form of a

tube, and in this way, it can of course be constructed in a variety of ways and still give the same directionally controlled pressure results. The bottom of the tray is provided, at its center, with an upwardly convex, palate portion 18, leaving a shallow U-shaped cavity about said portion within the confines of the rubber tube 15 for the accommodation of the gum portion of the jaw from which the impression is to be taken.

Another inflatable pocket—in the form of a rubber tube 19—is provided across the bottom of the tray at the back of the palate portion 18. This tube, like the previously described one, is formed in this particular embodiment from a strip of thin sheet rubber, which has its edges folded together and clamped between the holder 12 and the inner shell member 17.

The rubber tube 15 is connected to the rubber tube 19 by a small metal tube 20 which is located within the tray at one side of the latter, between complementary embossments 21 in the holder and inner shell member. The rubber tube 19 is in turn connected with another small metal tube 22 which projects forwardly from the center of the tray and terminates in a nipple 23. The rubber tubes 15 and 19 are normally in a substantially collapsed condition. In taking an impression in accordance with the invention, these rubber tubes are adapted to be inflated with air. They can be inflated, however, with any other kind of fluid. An ordinary air bulb 24 can be used for this purpose—the flexible rubber tube 25 of the bulb being easily fitted to the nipple 23.

In taking an impression, the tray 10 is first filled with the usual modeling plaster or other semi-fluid but quickly hardening plastic substance. The filled tray is then sealed firmly about the jaw—in the manner ordinarily employed in taking an impression. While the substance in the tray is still in a plastic condition, and before it has had sufficient time to set firmly, the bulb 24 is operated to inflate the rubber tubes 15 and 19, thereby producing a uniform pressure against the rapidly setting substance throughout the anterior and posterior peripheral seal areas of the jaw. This pressure, which is limited almost entirely to the peripheral seal areas, is applied to such areas in directions generally normal to the same, as distinguished from in all directions, and is continued until the plastic material has fully hardened. After the material has hardened, the tray is removed and a cast made for the desired denture in the usual manner.

By employing the trays and the method of this

invention all guesswork in the taking of impressions will be entirely eliminated, giving an absolutely uniform seal throughout the peripheral seal areas of the dentures. With the directionally controlled pressures possible with the tray construction and method herein disclosed the soft tissues throughout the peripheral seal areas can be compressed uniformly and to a greater extent than ordinary hand pressure on the tray could possibly accomplish. The impressions obtained are uniform, with perfectly symmetrical outlines which take in both peripheral seals and cover the condyles (rear angles of the jaw). In taking impressions in accordance with the invention the pressure on the molding material as the latter hardens is not exerted indiscriminately in all directions—but rather is concentrated against the peripheral seal areas alone, in directions generally normal to the surfaces to be sealed. Substantially the same method which is used in the taking of an impression of the maxilla (upper jaw) is used in the taking of an impression of the mandible (lower jaw), inducing buccal and lingual pressure below (front and back pressure).

This same improved process can of course be used in the manufacture of roofless dentures, using the same buccal, lingual action to obtain the lateral pressure.

The lower jaw tray shown in Figs. 6 to 9, inclusive, will next be described. This tray—which is designated by the numeral 26—is similar in a general way to the upper jaw tray 10. The lower jaw tray 26 includes a downwardly opening sheet metal holder 27 of U-shaped form which is provided with a top 28, an outer rim 29 and an inner rim 30. The outer rim 29 extends across the front and back along both sides of the tray, while the inner rim 30 is spaced rearwardly from the outer rim 29 in generally parallel relation to the outer rim. The holder 27 is provided with two inflatable pockets—in the form of rubber tubes 31 and 32—which are disposed respectively adjacent to the edges of the rims 29 and 30 a substantial distance below the top 28.

The tubes 31 and 32 are shown in this particular embodiment as being made from strips of thin sheet rubber, which strips are bent back upon themselves, with the edges of the same clamped between the rims 29 and 30 and opposed relatively short flanges 33 and 34 on a sheet metal inner shell member 35.

The U-shaped rubber tube 32 is connected at its front portion to a small metal tube 36 which extends forwardly between the holder 27 and the inner shell member 35, and the U-shaped rubber tube 31 is also connected, at its center, to the tube 36. The tube 36 projects forwardly from the holder and terminates in a nipple 37, which nipple is adapted to be connected with the flexible rubber tube 25 of the air bulb 24 to effect inflation of the pockets 31 and 32.

We claim:

1. The method of taking an impression for a denture, which consists in placing a tray filled with a plastic material about the jaw, and applying fluid pressure to the material throughout the peripheral seal areas only of the jaw, in directions generally normal to such areas, whereby to cause the material during and after hardening to conform closely to the peripheral seal areas.
2. A denture impression tray, adapted to be filled with a plastic material and placed about a jaw, said tray being characterized by an inflatable peripheral seal portion, and means for inflating the same, said portion upon inflation forcing the plastic material in the tray directly against the peripheral seal of the jaw.
3. The method of taking an impression for a denture, which consists in placing a tray filled with a plastic material about the jaw, and applying pressure to the material throughout the peripheral seal areas only of the jaw, in directions generally normal to such areas.
4. The method of taking an impression for a denture, which consists in placing a tray filled with a plastic material about the jaw, and applying pressure to the material in directions primarily in the plane only of the peripheral seal areas of the jaw.
5. A denture impression tray, adapted to be filled with a plastic material and placed about a jaw, said tray being provided across its front and back along its sides with a fixed base portion and with a laterally movable rim portion which is disposed at a substantial angle to and spaced from the base portion, and means for effecting lateral movement of the rim portion.
6. A denture impression tray, adapted to be filled with a plastic material and placed about a jaw, said tray being provided across its front and back along its sides with a fixed base portion and with a laterally expansible rim portion which is spaced from the base portion and disposed at a substantial angle to the latter, and means for effecting lateral expansion of the rim portion.
7. The method of taking an impression for a denture, which consists in placing a tray filled with a plastic material about the jaw, and applying fluid pressure to the material in predetermined directions only at points spaced from the edges of the jaw.
8. The method of taking an impression for a denture, which consists in placing a tray filled with a plastic material about the jaw, and applying fluid pressure to the material against predetermined jaw areas spaced from the edges of the jaw.

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