

Oct. 22, 1963

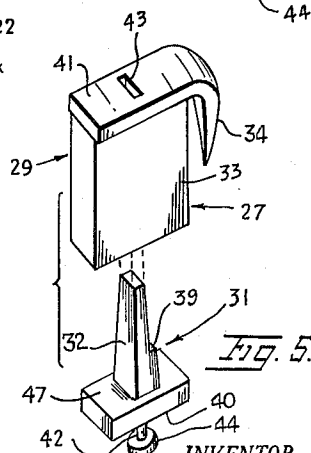
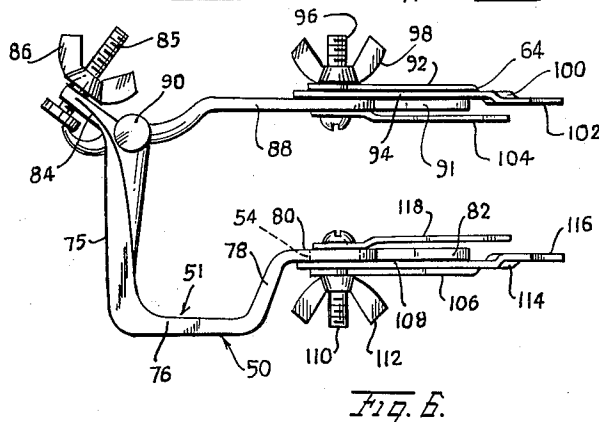
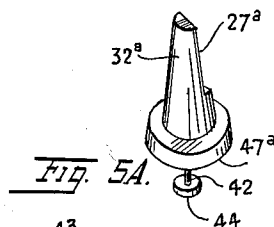
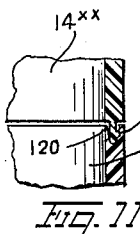
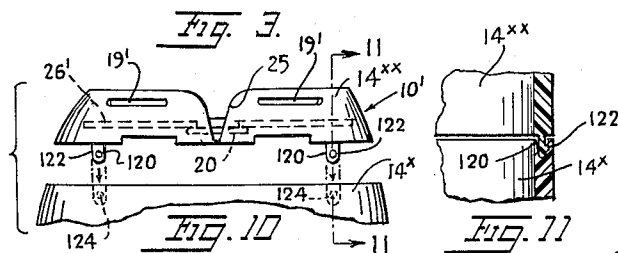
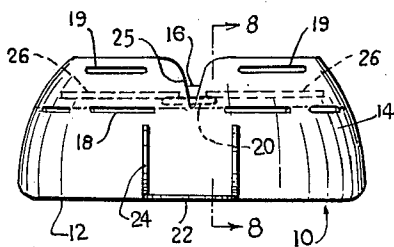
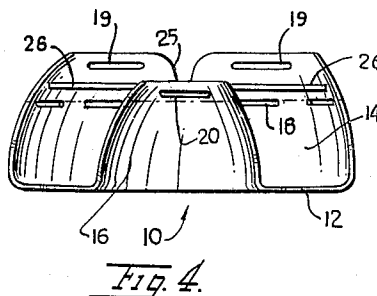
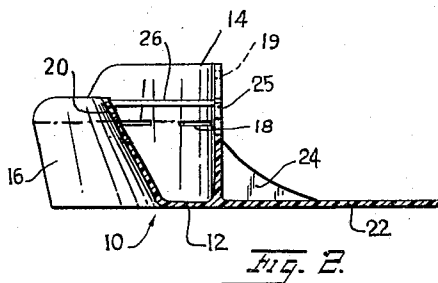
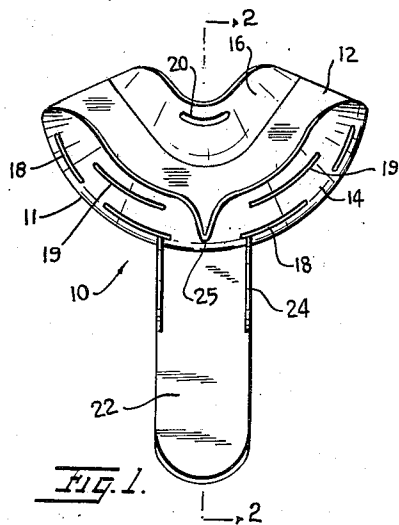
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3,107,428

DENTAL IMPRESSION TRAY

Filed May 3, 1961

2 Sheets-Sheet 1



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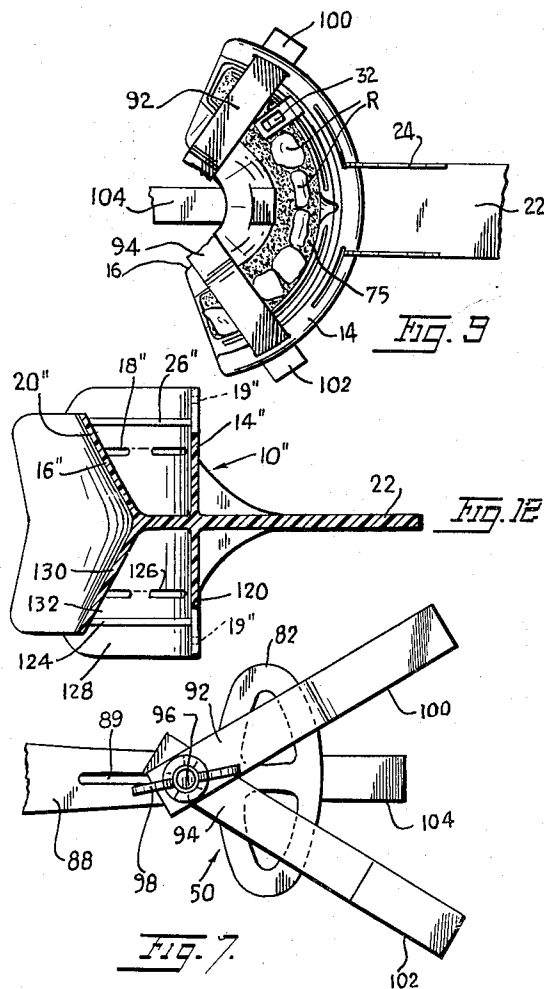
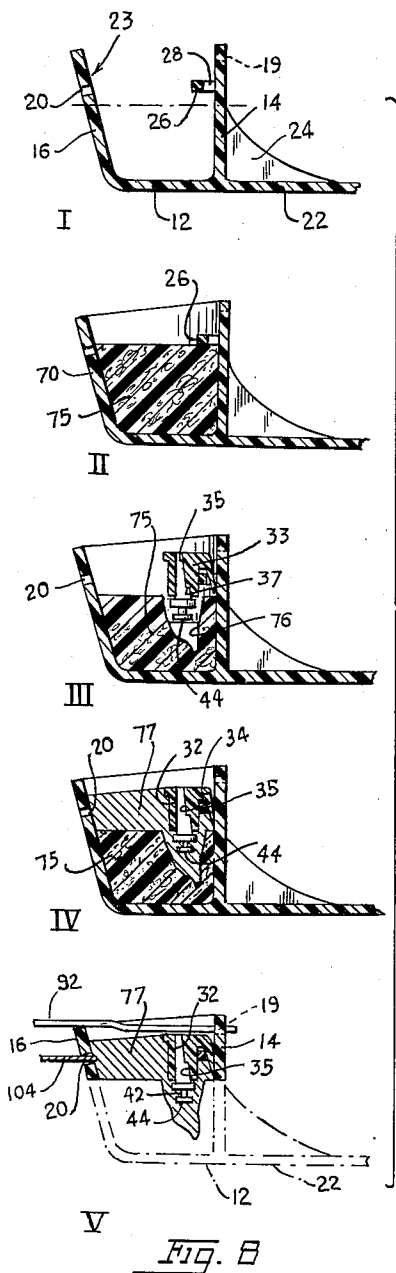
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DENTAL IMPRESSION TRAY

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2 Sheets-Sheet 2



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DENTAL IMPRESSION TRAY

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8 Claims. (Cl. 32—17)

This invention relates to the art of dentistry and more particularly to apparatus for a method of restoring dentures.

A principal object of the present invention is to provide a tray construction in the form of a curved or arcuate shaped trough for receiving impression-forming substance and for supporting a die assembly.

Another object of the invention is to provide a tray construction having means for removably supporting the tray on an articulator device so that the hands of the dentist are free for other related work.

A further object is to provide a die assembly having means for removably supporting same in a trough-shaped tray construction with a weakened line for severance of a portion from the remainder of the construction, the severed portion having means for removably mounting the same on an articulator device.

Yet another object of the invention is to provide a sectional die assembly comprising a socket, a removable die member, means for hanging the socket over a support and means for ejecting the die member from the socket.

It is also an object of the invention to provide a tray construction for taking the impression of either the top or bottom teeth of a patient.

It is also proposed according to a modification of the invention to provide a tray construction with means for taking the impressions of both the top and bottom teeth of a patient simultaneously.

For further comprehension of the invention and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

FIG. 1 is a top perspective view of a dental tray embodying my invention.

FIG. 2 is a vertical sectional view taken on the line 2—2 of FIG. 1.

FIG. 3 is a front elevational view of the tray.

FIG. 4 is a rear elevational view thereof.

FIG. 5 is a spread perspective view of a die assembly used with the tray.

FIG. 5A is a perspective view of a modified form of die member.

FIG. 6 is a side elevational view of an articulator stand employed with the tray.

FIG. 7 is a fragmentary top plan view of the articulator stand.

FIG. 8 is a sectional view through the tray showing the steps of restoring a tooth.

FIG. 9 is a top plan view of the tray and articulator stand showing one of the steps shown in FIG. 8, parts being broken away.

FIG. 10 is a fragmentary front elevational view of a modified form of dental tray showing the top thereof in detached condition.

FIG. 11 is a vertical sectional view taken on the line 11—11 of FIG. 10.

FIG. 12 is a vertical sectional view taken through the center of another modified form of dental tray.

Referring in detail to the drawings, in FIG. 1 a dental tray embodying one form of my invention is shown and designated generally by the reference numeral 10. The

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tray 10 is formed of a light plastic material such as acrylic and comprises an arcuate shaped and tapered shaped body 11 open at the top and ends. The body is constituted by a curved flat bottom wall 12, a long front wall 14 and a short rear wall 16. The front wall is slightly higher than the rear wall. The front wall is arcuate in shape and the rear wall 16 curves longitudinally and transversely. The end edges of the bottom wall 12 slant inwardly from the front wall to the rear wall. The upper edge of the front wall 14 is notched at its center as indicated at 25. The bottom, front and rear walls define a trough 23. A rail 26 is integrally formed on the inner surface of the front wall 14 at each side of the notch 25, the rail being secured at its ends to the wall, the remainder of the rail being spaced away from the wall leaving a clearance 28 between the rail and wall.

The front wall 14 is weakened by a series of aligned closed slots 18 whereby the wall may be readily severed along this line. Above the slots 18, the wall 14 is formed with a short closed slot 19 on one side of the notch 25 and with a similar close slot 19 on the other side of the notch. The rear wall 16 is formed with a similar closed slot 20 centrally thereof just below its top edge.

A die assembly 27 best shown in FIG. 5 is used with the tray 10. This assembly includes a socket member 29 and a die member or tail 31, both members being formed of suitable plastic material. The socket member 29 consists of a rectangular shaped casing 33 with a central socket opening 35 therein extending from the bottom end of the casing through the top thereof. The socket opening 35 tapers inwardly from the bottom end of the casing and is provided with a shoulder 37 midway its ends. The top of the casing is closed by a flat plate cover 41 formed with a closed slot 43 therein communicating with the socket opening 35. The plate cover 41 extends beyond and downwardly over one side of the casing and is shaped to constitute a hook 34.

The die member 31 has a tapered body 32 similar in shape to the socket opening 35 in the casing and is formed with a shoulder 39 midway its ends adapted to rest against the shoulder 37 of the socket opening. A rectangular shaped flat base block 47 is formed on the bottom or wide end of the tapered body and seats against the bottom end of the casing when the die member is inserted into the socket opening. A pin 42 having a circular head 44 is secured to the center of the block and projects outwardly therefrom. By reason of the shape and construction of the socket opening and tapered body of the die member, the die member can be inserted fully to operative snug position in the socket member when the die member is in only one position, that is, with its shoulder 39 facing the shoulder 37 in the socket opening as shown in FIG. 5.

The die member may also take the shape and construction of the die member 27a shown in FIG. 5A wherein the body 32A of the member is round and the block 47A is circular. This form of die member needs a similarly shaped socket opening in the socket member.

The tray and die assembly 27 are shown in use in FIG. 8. In step I, the tray is shown empty and positioned to receive the impression material. In the next step II, the impression material 75 such as hydrocolloid is inserted into the trough 23. In the next step III, the tray with the impression material is inserted into the patient's mouth and a negative impression of the patient's teeth taken, after which the die assembly 27 is mounted on the rail 26 by means of hook 34 above and in the cavity 76 formed by the tooth to be restored. The negative impression is constituted by a series of recesses R shown in FIG. 9. The next step IV, is to pour the casting plaster

material 77, such as stone, into the trough over the impression material 75 and around the die assembly and into the cavity 76 around the block 47, pin 42 and head 44 thereof, of the die member whereby the die assembly becomes embedded therein. A positive impression is thus obtained. Finally as shown in step V, the tray with its contents is mounted on an articulator stand, such as the articulator stand 50 shown in FIG. 6. The front wall 14 of the tray is severed or cut along the line of slots 18, the casting material 77 with the die assembly 27 embedded therein is removed, and the tray with the negative impression material 75 therein is discarded.

The die member 31 with the tooth forming material 77 thereon is ejected from the socket member 29 by inserting a tool through the slot 43 in the cover 41 of the casing 33 and forcing the die member out through the bottom of the casing.

The articular stand or apparatus 50 shown in FIGS. 6 and 7 comprises a generally C-shaped body having a rectangular shaped bottom arm 51 formed of flat bar metal. The arm has a vertically shaped portion 75 continuing into a horizontal shaped portion 76. The portion 76 continues into an upwardly slanting portion 78 which terminates in a horizontally arranged portion 80 parallel with portion 76. Portion 80 is formed with an elongated closed slot 54 centrally thereof. An elliptical-shaped frame 82 is formed on the end of portion 80 and is disposed transversely thereof. The vertical portion 75 terminates at its top end in an offset enlarged portion 84 with a hole therein to receive a headed screw 85 which is secured in the hole by wing nut 86. The C-shaped body also has an upper arm 88 formed of flat bar metal. One end of arm 88 is hingedly connected to the top end of arm 51 by means of a hinge pin 90, the extreme end of the arm engaging the head on screw 85. Arm 88 is formed with a closed slot 89 centrally thereof. An elliptical shaped frame 91 is formed at the other end of the arm and is disposed transversely thereof. The upper arm 88 carries removably and adjustably a pair of fingers 92 and 94 of flat bar metal pivotally secured at one end to the top surface of the arm 88 by a pivot screw 96 extending through slot 89 and by a wing nut 98. The fingers 92 and 94 have offset free ends 100 and 102 so as to position the ends on the same plane. Another finger 104 is pivotally supported on the under surface of arm 88 by means of the screw 96 with its free end disposed in a plane below the plane of the ends 100 and 102.

The lower arm 51 also carries removably and adjustably a pair of fingers 106 and 108 of flat bar metal pivotally secured at one end to the under surface of the arm by a pivot screw 110 and wing nut 112. The fingers have offset free ends 114 and 116 so as to position the ends on the same plane. Another finger 118 is pivotally supported on the upper surface of the arm by means of the screw 110 with its free end disposed in a plane above the plane of ends 114 and 116.

In FIG. 8, the bottom finger 104, of arm 88 is shown inserted in the slot 20 in the rear wall 16, and one of the upper fingers, the finger 92 is shown extended over the trough and inserted into one of the slots 19, the other upper finger 94, being inserted in the other slot 19 (not shown).

The bottom arm 51 of the articulator stand is adapted to similarly support another denture impression for purposes of testing the denture, with the denture on the top arm, as will be understood.

In the modified form of tray 10' shown in FIGS. 10 and 11, instead of providing a weakened line formed by slots such as the slots 18 of tray 10, the front wall is sectional, comprising a bottom section 14x and a removable top section 14xx. The top section 14xx is formed with the spaced slots 19' and the central notch 25' similarly to the tray 10, and is also provided with the inner rails 26' as in the form of FIG. 1. The top section 14xx

is removably attached to the bottom section by means of depending lugs 120 depending from the bottom edge of the top section and having spherical members forming detents 122 at the free ends thereof snapping into complementary shaped semispherical recesses 124 in the bottom section adjacent its top end edge. The bottom section can thus be easily and quickly removed and discarded.

In FIG. 12, another modified form of tray 10'' is shown. This tray is for simultaneously taking impressions of the upper teeth and of the lower teeth in a patient's mouth. For this purpose, the superstructure shown in FIG. 2 comprising the front wall 14'' with rail 26'', weakening slots 18'' and articulator slots 19''; and the spaced rear wall 16'' with articulator slot 20'', is duplicated below the bottom plate 12'' and handle 22'' by providing a bottom or downwardly extending front plate 120 with supporting rails 124, weakening slots 126 and articulator slots 128, and by providing a spaced bottom or downwardly extending rear plate 130 with articulator slot 132.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and that various changes and modifications may be made within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. A dental tray for making dental impressions comprising a curved trough-shaped body defined by a curved bottom wall, a curved front wall, a curved rear wall, spaced from the front wall, an elongated handle extending radially from the front wall, said front wall having means for supporting a die assembly, said front and rear walls having means for receiving portions of an articulator stand for supporting the body, said front wall having means to facilitate severance of a portion thereof.

2. A dental tray for making dental impressions comprising a curved trough-shaped body defined by a curved bottom wall, a curved front wall, a curved rear wall spaced from the front wall, an elongated handle extending radially from the front wall, said front and rear walls having means for receiving portions of an articulator stand for supporting the body, said front wall having means to facilitate severance of a portion thereof, and spaced rails on the inner surface of the front wall and spaced from the front wall for adjustably and removably supporting a die assembly thereon.

3. A dental tray for making dental impressions comprising a curved trough-shaped body defined by a curved bottom wall, a curved front wall, a curved rear wall spaced from the front wall, an elongated handle extending radially from the front wall, said front wall having means for supporting a die assembly, said front wall having means to facilitate severance of a portion thereof, said front and rear walls having spaced closed aligned slots for receiving portions of an articulator stand for supporting the body.

4. A dental tray for making dental impressions comprising a curved trough-shaped body defined by a curved bottom wall, a curved front wall, a curved rear wall spaced from the front wall, an elongated handle extending radially from the front wall, said front wall having means for supporting a die assembly, said front and rear walls having means for receiving portions of an articulator stand for supporting the body, said front wall having aligned closed slots for weakening the front wall therealong to facilitate severing of the front wall therealong.

5. A dental tray for making dental impressions comprising a curved trough-shaped body defined by a curved bottom wall, a curved front wall, a curved rear wall spaced from the front wall, spaced rails on the inner sur-

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face of the front wall and spaced from the front wall for adjustably receiving and removably supporting a die assembly thereon, means on the front and rear walls for receiving portions of an articulator stand for supporting the body, said front wall having means to facilitate severance of a portion thereof.

6. A dental tray for making impressions comprising a curved trough-shaped body defined by a curved bottom wall, a curved front wall, a curved rear wall spaced from the front wall, an elongated handle extending gradially from the front wall, spaced rails on and along the inner surface of the front wall and spaced from the front wall for adjustably receiving and removably supporting a die assembly thereon, said front wall having a pair of aligned closed slots and said rear wall having a closed slot for receiving portions of an articular stand for supporting the body, said front wall having means to facilitate severance of a portion thereof.

7. A dental tray for making impressions comprising a curved trough-shaped plastic body defined by a curved bottom wall, a curved front wall, a curved rear wall spaced from the front wall, an elongated handle extending radially from the front wall, spaced rails on and along the inner surface of the front wall and spaced from the front wall for adjustably receiving and removably supporting a die assembly thereon, said front wall having a pair of aligned closed slots and said rear wall having

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a closed slot for receiving portions of an articulator stand for supporting the body, said front wall having a series of aligned closed weakening slots to facilitate severance of the wall therealong.

8. A dental tray for making dental impressions comprising a curved trough-shaped body defined by a curved bottom wall, a sectional curved front wall, a curved rear wall spaced from the front wall, an elongated handle extending radially from the front wall, said front wall having means for supporting a die assembly, said front and rear walls having means for receiving portions of an articulator stand for supporting the body, said front wall having a lower section and removable upper section, means of connection between the lower and upper sections including lugs depending from the bottom edge of the upper section, semispherical protuberances on one surface of the lugs, said lower section having semispherical recesses to detachably receive the protuberances on the lugs on the upper section.

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