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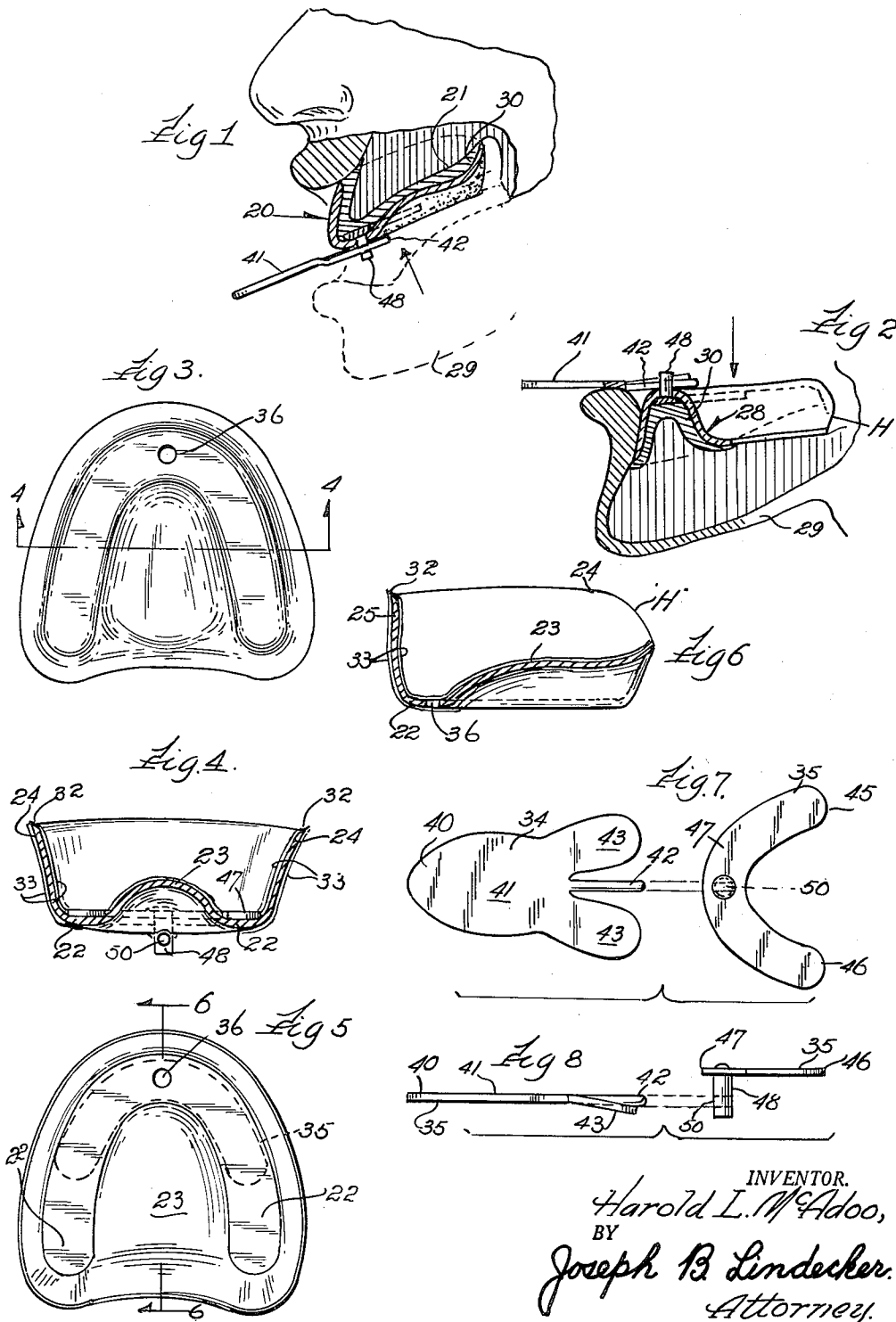
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2,924,011

DENTAL IMPRESSION TRAY

Filed July 3, 1958

2 Sheets-Sheet 1



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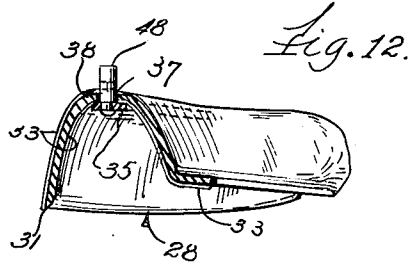
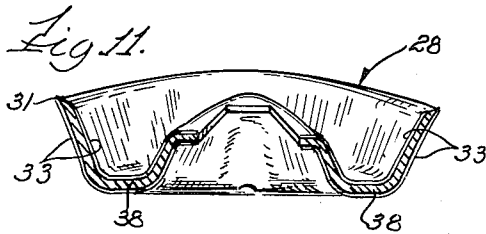
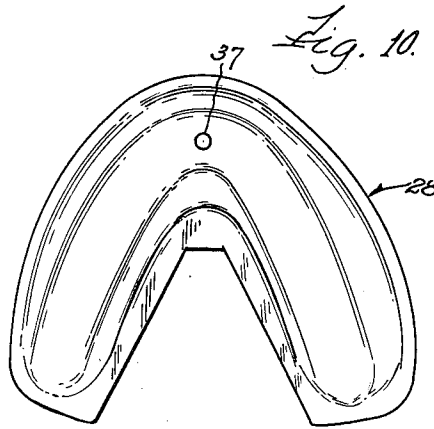
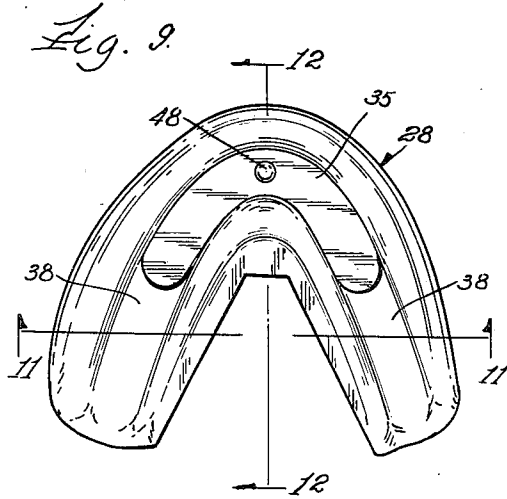
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DENTAL IMPRESSION TRAY

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2 Sheets-Sheet 2



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2,924,011

**DENTAL IMPRESSION TRAY**

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11 Claims. (Cl. 32—17)

This invention relates to dental apparatus and particularly to impression trays. In the making of full dentures, casts, impressions or prints of the upper jaw, the lower jaw, or for making of dental prosthetics, such as bridges and partial plates, it is essential that a good impression be made. In many instances, poor impressions result from the apparatus now available and used in the art.

This invention provides a type of tray construction which makes it possible to improve the quality of an impression while reducing the amount of discomfort to the patient. It is thus possible to make an impression with far less inconvenience to the patient so that a good impression may be obtained the very first time. In addition, the resulting impression obtained by the use of this invention is less likely to have flaws than is true with impressions made by conventional means.

This invention further provides a non-metallic type of tray which will hold impression materials whose ingredients are conducive to proper combination to create more effective molds. With this tray it has been discovered that it is possible to control dimensional changes and increase flexibility which will prevent dimensional distortion.

A further embodiment of this invention consists in the provision of a tray made of fibrous material such as pressed wood-pulp, with edge portions having less stock therein than the remaining portions of the trays whereby to constitute a thin, moldable edge portion for forming a good seal when pressed against the roof and like portions of the mouth of a patient.

A preferred form of this invention consists of a fibrous dental tray properly shaped to hold impression forming compound for oral prosthetic work, comprising a tray preformed of fibrous material, the fibrous material being wood-pulp with a hardened outer surface, as for example a varnish covered surface, varnish being a suitable means to harden the outer surface thereof.

A still further object of this invention is to provide a wood-pulp dental tray which can be inserted, if so desired, in a less extensive metallic tray, the wood-pulp tray holding the impression material and providing soft fibrous edge portions for coming in contact with the patient's mouth.

A still further object of this invention is to provide both upper and lower type trays, singularly without an anterior handle, composed of wood-pulp material adapted to be nested together in storage, and for temporary employment, to be thrown away after once using and to be replaced by another new or fresh one the next time a tray is needed to hold impression material.

A still further object of this invention is to provide both upper and lower type dental trays composed of wood-pulp material adapted to be thrown away after once using, each tray embodying means for interconnecting said tray with a permanent metal handle portion and a metal pressure plate, in a detachable but otherwise strong and rigid manner.

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A still further object of this invention is to provide an improved dental tray for holding moldable impression material until it is set, the tray formed of wood-pulp pressed to desired configuration, the wood-pulp normally soft and peelable, the tray coated with a film of varnish to give a relatively hard surface when dry, and said tray capable of being softened by water and peeled from the impression material allowed to harden therein.

A still further object of this invention is to provide a dental tray comprising three parts or sections, two parts of which are metallic or otherwise rigid and durable, forming a permanent holder or support, and place, while the other section, which is thin, may be composed of preformed, strong and tough wood-pulp, or substantially non-rigid material coated with varnish, or other hardening material; said tray adapted to be assembled with the two-part permanent sections, and is for temporary employment, to be thrown away after once using and to be replaced by another new or fresh one the next time a tray is to be used to make an impression.

A still further object of this invention is to provide a dental tray formed of wood-pulp for assembly with a metal handle and metal pressure plate, impression material to be held thereby when an impression is taken and a mold is poured therein and allowed to set. After the impression and mold have set, or hardened, the tray with impression and mold are placed in water for a few minutes to soften the tray, which can then be peeled off from the impression material and discarded leaving a perfect impression cast and mold therein, from which impression cast the mold can then easily be removed.

A still further object of this invention is to provide a dental tray of wood-pulp for assembly with a metal pressure plate and metal handle made of metal, such as stainless steel, the metal plate giving added strength to the wood-pulp tray.

It has heretofore been the practice in making impressions of the upper, or lower jaw and the like, to select one rigid tray from fifty or more dental trays which will fit the mouth of the patient and make a good seal against the roof of the mouth or other portions of the mouth. The tray must be thoroughly cleaned, filled with impression material and inserted into the mouth of the patient. If the tray employed in the art of dentistry is open at the back or lightly arched and does not make a good seal because its side portions are too high, the impression material displaced by the jaw will freely flow out at the back. If a cast of the upper jaw is taken while the patient occupies a recumbent position, the excess material is liable to penetrate into the throat of the patient and to cause irritations. This practice requires the storage of a large number of rigid trays of all shapes and sizes, all of which must be kept clean and the procurement of same and upkeep of which is very expensive. Applicant provides a novel, substantially rigid tray with thin terminal portions which will hold the impression material satisfactorily. Said tray can be held tightly by the dentist and arranged into all the indentations and around the raised portions in a patient's mouth. Said tray being constructed of wood pulp, or other similar or suitable material, and produced at a small cost, can be employed by the dentist as a single use tray, the tray to be thrown away after once using and to be replaced by another new or fresh one for each impression.

Another object thereof is to provide a simple, efficient and inexpensive dental impression tray.

Further objects of my invention will appear from the following description thereof, taken in connection with the attached drawings illustrating a preferred form of embodiment thereof, and in which:

Figure 1 is a partial section in combination with a fragment of a human head, having an upper dental tray em-

bodying the present invention within the mouth thereof, the lower jaw shown dotted, and illustrating the tray in section and filled with impression compound;

Figure 2 is a partial section in combination with a fragment of the lower jaw of a human head, having a lower dental tray embodying the present invention applied thereto, and illustrating the tray in section and filled with impression compound;

Figure 3 is an upper plan view of an upper, or maxillary type, wood pulp dental tray embodying the present invention;

Figure 4 is a cross-sectional view of the wood-pulp tray taken substantially on line 4—4 of Fig. 3, with a metal pressure plate assembled therewith;

Figure 5 is a bottom plan view of the upper type dental tray as shown by Figures 3 and 4, the pressure plate shown dotted in assembled position;

Figure 6 is a longitudinal sectional view taken substantially on line 6—6 of Fig. 5, the pressure plate omitted;

Figure 7 is an exploded view showing the metal handle and metal pressure plate in plan view as embodied in the invention;

Figure 8 is an exploded view showing the metal handle and metal pressure plate, shown by Figure 7, now in side elevation;

Figure 9 is a top plan view of a lower, or mandibular type dental tray embodying the present invention, the pressure plate assembled therewith;

Figure 10 is a bottom plan view of the dental tray shown in Figure 9;

Figure 11 is a sectional view of the dental tray shown in Fig. 9, taken on line 11—11 of Fig. 9; and

Figure 12 is a fragmentary sectional view taken substantially on line 12—12 of Fig. 9.

Referring now to the drawings for a more particular description, 20 indicates an upper, or maxillary type, wood pulp dental tray provided with a shape which closely conforms to the roof 21 of the patient's mouth. The tray comprises a ridge portion 22 having a vault portion 23 and a flange portion 24. It will be noted that flange portion 24 varies from a minimum height at the heel "H" of the tray to a maximum at labial portion 25 as seen in Figures 1 and 6. The tray shown in Figures 1, 3, 4, 5 and 6 may be supported by the dentist's fingers, or preferably by a rigid metal handle member.

A lower or mandibular type dental tray 28 is indicated in Figures 2, 9, 10, 11 and 12, said tray shaped with thin edge portions 31 to fit the surface of the lower jaw 29. It is understood that in Figures 1 and 2 there is indicated at 30 a comparatively thick layer of impression compound which is shown thick solely for convenience of illustration.

The trays 20 and 28 in the practice of the present invention are formed of wood pulp for use with a compound having the characteristic of being adapted to adhere to the tray to which it is applied after solidification, and the further characteristic of not adhering permanently to the mouth of the patient.

The upper, or maxillary type, dental tray shown in Figures 1, 3, 4, 5 and 6 comprises a wood pulp tray for temporary use properly shaped to hold impression compound, the edge portions 32 being formed of less thickness for forming a good seal when pressed against the roof or like portions of the mouth of a patient.

The mandibular type dental tray shown by Figures 2, 9, 10, 11 and 12 is also constructed in the same manner and of like material as described above. It will be understood that the mandibular type dental tray will have the same thin, moldable edges and may be fitted to a lower jaw with equal facility and by substantially the same method and means as that herein described for the upper jaw.

The wood pulp trays with varnished coated surface 33 will efficiently hold the impression compound and can

be used by a dentist, with or without the metal handle 34, or metal pressure plate 35, shown by Figures 7 and 8.

When the wood pulp trays are desired to be used with the metal handle 34 and metal plate 35, an aperture 36 is formed in the ridge portion 22 of the upper type tray 20, and an aperture 37 is formed in the ridge portion 38 of the lower type tray 28. The pulp trays being without the handle portions will nest with greater ease and require less space than former types with integral handle members.

The metal handle 34, clearly shown in Figures 1, 2, 7 and 8 is formed with a rear end portion 40, a body portion 41, a pin-shaped forward end male member 42, and ear portions 43, said ear portions 43 inclined slightly downwardly from a horizontal plane extending through the handle.

The metal pressure plate 35 is of horse-shoe shape with end portions 45 and 46, an intermediate front portion 47 and a depending cylindrical pin 48 with a lateral bore 50.

Said metal handle and pressure plate are designed to be assembled together, the projecting male portion 42 of the handle adapted to fit snugly within the bore 50 of the pin 48 formed upon the lower surface of plate 35. Said handle 34 and plate 35 will fit either the upper or lower tray when assembled therewith.

When said handle 34 and plate 35 assembled with the tray 20 as shown by Fig. 1, the compound 30 when applied, flows into the tray and on top of the plate 35. The dentist will fit the tray to the patient's mouth by trimming the edges 32 where necessary. The upward pressure applied by the dentist to the handle 41 effects upward pressure to the plate 35 through the intermediation of male member 42 in bore 50 of pin 48. The ears 43 will press upon the lower wall of the ridge portion 22 of tray 20. Angular pressures can be exerted upon the handle and thus effect angular relation movement of the tray 20 with the roof of the mouth of the patient. After an impression is taken, the mold is poured therein; thereafter the mold and the tray 20 are immersed in water to soften the tray. The handle 41 can be removed; however, the pressure plate remains between the forward portion of tray 20 and the rigid, set compound 30. The entire unit—tray, mold, compound and tray are then removed from the water at which time the tray can be peeled from the model impression and discarded. There is never any breakage of teeth on the mold as happens when using metal trays and in prying the mold, or model, therefrom.

When the handle 34 and plate 35 are assembled with the lower type tray 28, as shown by Fig. 3, the compound 30 when placed in the tray will cover the plate 35. The dentist will trim the edge portions of the tray 28 and use similar techniques as described above with plate 20.

It is seen that the time element is an important factor. The wood pulp trays can be made in numerous sizes from which the dentist can choose. The dentist can trim the tray to individual mouth sizes in less time than he would spend in waxing up a metal, or hard material tray, only to find out he must use a different size tray. The trimmed wood pulp trays are less damaging to the mouth as they do not cut or harm the tender tissues thereof. These trays are made of pressed wood pulp and coated with varnish 33, or some other satisfactory protective coating which allows the tray to soften in water and be peeled from the model impression, and mold.

The quick removable handle 34 and inner support plate 35 can be made from any hard metal, the metal illustrated being stainless steel. They can be used on any upper tray if the upper tray used is provided with an aperture 36, and with a lower tray if provided with an aperture 37 to receive the pin 48. The combined handle and pressure plate gives added strength to the wood

pulp tray and are efficiently interchangeable with either upper or lower trays.

It will be understood that the construction shown in the various figures of the drawing, and above described, pertains to a novel invention which is equally useful in connection with the making of full dentures, casts, impressions or prints of the upper jaw, the lower jaw, or for making of dental prosthetics, such as bridges and partial plates.

The types of trays shown and described are preferably wood pulp dental trays which will hold impression materials to create effective molds. The thin extremities of the trays are intended to reduce the mouth irritation when said outer extremities of the tray are pressed against the mouth portions of the patient. The sanitary feature is very important as the tray is made at a small cost and is for temporary employment, to be thrown away after once using and to be replaced by another new or fresh one the next time a tray is needed to hold impression material.

It may be desirable to make the wood pulp tray in various sizes. However, it is estimated that a maximum of ten different sizes of upper and lower type trays which can be cut or trimmed to size will replace approximately seventy different sizes of metallic trays as now employed in the dental profession. The fibrous, or wood pulp, trays will be constructed so that they can be cut, or trimmed, at the peripheral edges, and especially at the heel of the lower type trays, and especially the thin heel of the central portion of the tray which comes in contact with the palate, or roof portion, of the patient's mouth.

A substantial advantage accruing from the use of the present invention, will become manifest in connection with the manufacture of plaster of Paris casts from the impression. As is well known, an impression of compound in a tray is first formed and thereafter a plaster of Paris cast of this impression must be made. After the plaster of Paris has set, it is necessary to separate the plaster of Paris cast from the compound and tray. By virtue of the present invention, it is much simpler to remove the wood pulp tray by peeling it from the impression material, and/or the plaster of Paris cast, in place of removing the plaster of Paris cast from a rigid metal tray. Hence the sanitary fibrous tray shown and described is a great improvement over the prior art.

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

1. An improved preformed dental tray for holding moldable impression material until set, said tray formed of wood pulp pressed to its desired configuration, said wood pulp normally relatively soft and peelable, said preformed tray covered with a thin film of liquid varnish which effects a relatively hard surface thereto when dry, and said tray capable of being softened by water and peeled from the impression material allowed to harden therein.

2. An improved dental tray according to claim 1 including a rigid pressure plate and a rigid removable handle assembled therewith.

3. An improved dental tray according to claim 1 including a metal pressure plate and a metal removable handle assembled therewith.

4. A dental tray properly shaped to hold impression forming compound for oral prosthetic work, comprising a thin preformed wood pulp tray, a pressure plate and a removable handle, said wood pulp tray forming a dental tray with a thick central ridge and thin flange portion, said construction providing a tray with peripheral edge portions having less stock therein than the remaining portions of the tray, constituting a thin, moldable edge portion for forming a good seal when pressed against the roof and like portions of the mouth of a patient, and said removable handle for said tray provided with an extend-

ing male member for slidably mounting with the pressure plate in said tray.

5. A dental tray with removable parts properly shaped to hold impression forming compound for oral prosthetic work, comprising a tray wood pulp material, a removable metal handle and a metal plate, said tray having a central portion, ridge and flange portions, said construction providing a tray with peripheral edge portions having less stock therein than the remaining portions of the tray constituting a thin, relatively soft, moldable edge portion for forming a good seal when pressed against the roof and like portions of the mouth of a patient, said removable handle embodying a male member for slidably mounting with a female member integrally formed with said metal plate assembled with said tray.

6. A wood pulp dental tray with removable handle and pressure plate for taking lower or mandibular impressions, said tray comprising ridge and labial portions, said labial portions extending outwardly at an angle to said ridge portion and having less stock in its peripheral edge portions than the remaining portions of the tray forming a feather edge rim whereby to constitute a ridge portion of stiffness and rigidity surrounded by an outer less rigid labial peripheral edge portion, said handle made of rigid metal with a male member at one end thereof, said pressure plate having a depending portion with a female portion therein, said male member for slidably mounting with said female portion when supporting said tray, said tray capable of being softened by water and peeled from the impressions formed in said tray.

7. In a dental spoon with a removable handle and pressure plate for taking impressions of the upper jaw, in combination, a preformed wood pulp spoon, said spoon rounded at the back, has divergent edges and a rimmed concave front, a rear portion concave in cross section in respect to its central portion, said portions meeting at a feather edge rim, a removable metal handle with a male member extending forwardly from said tray, and pin means attached to the intermediate portion of a horse-shoe shaped plate and depending therefrom, said pin means extending through said tray when assembled therewith, said male member engaging said pin when said handle is assembled with said tray and said plate, said tray capable of being softened by water and peeled from any impressions made and formed in said tray.

8. A dental tray properly shaped to hold impression forming compound for oral prosthetic work, comprising a preferred tray of wood pulp material, a metal handle and a metal plate, said wood pulp tray embodying a thick wood pulp central portion, a thick wood pulp ridge portion, and a thin wood pulp flange portion, said construction providing a tray with peripheral edge portions having less stock therein than the remaining portions of the tray constituting a thin, soft, moldable edge portion for forming a good seal when pressed against the roof and like portions of the mouth of a patient, said metal handle forming a removable handle for said tray, said metal handle provided at one end thereof with a male extending portion for slidably mounting with female means secured to the metal plate assembled with and arranged inside said tray.

9. An improved preformed dental tray to hold moldable impression material until set, said tray formed of wood pulp normally relatively soft and coated with a thin and uniform film of varnish effecting a relatively hard surface thereto, and said tray capable of being softened by water and peeled from the impression material allowed to harden therein.

10. An improved preformed dental tray to hold impression material, said tray formed of wood pulp pressed to a desired configuration and coated with a relatively hard surface film, said tray capable of being softened by water and peeled from impression material allowed to harden therein, said tray including a metal pressure plate of curved configuration and having free end portions, a

metal pin integrally formed with said plate and depending therefrom, said tray having an aperture therethrough to receive said pin, said pin having a transverse bore adjacent the free end thereof, and a metal handle embodying means for assembly with the depending portion of said pin to support said tray and effect pressure to said plate, said means of said handle comprising a male member for assembly with said metal pin by insertion of said male member within said bore and said pin depending from the intermediate section of said plate and through the adjacent wall of the tray assembled therewith.

11. An improved preformed dental tray to hold impression material, said tray formed of wood pulp pressed to a desired configuration and coated with a relatively hard surface film, said tray capable of being softened by water and peeled from impression material allowed to harden therein, said tray including a metal pressure plate

of horse-shoe configuration and a metal pin integrally formed therewith and depending from the curved portion intermediate its free ends, said tray having an aperture therethrough to receive said pin, said pin having a transverse bore therein, a metal handle embodying means for assembly with the depending portion of said pin to support said tray and effect pressure to said plate, said handle means for supporting the tray being a male member projecting from one free end thereof, and said handle having ear portions for contacting said tray when said male member is assembled within the bore of said pin.

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