April 17, 1928. 1,666,097

R. R. JONES

IMPRESSION TRAY

Filed Aug. 25, 1926

Fig. 5

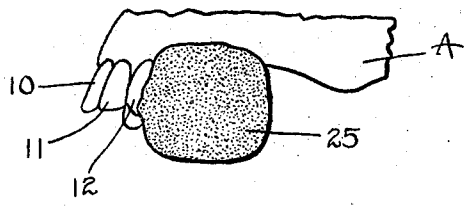


Fig. 7

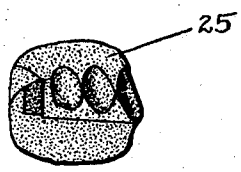


Fig. 4

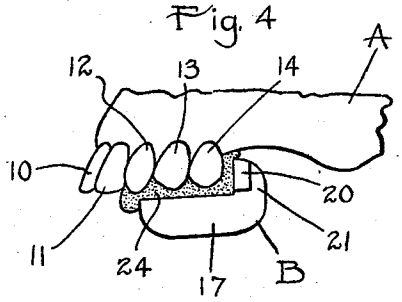


Fig. 6

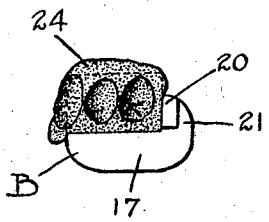


Fig. 2

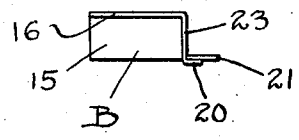
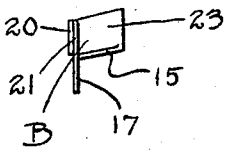


Fig. 3



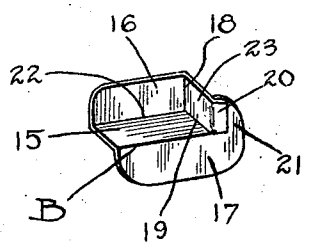


Fig. 1.

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Patented Apr. 17, 1928. 1,666,097

UNITED STATES PATENT OFFICE.

ROLLAND R. JONES, OF MINNEAPOLIS, MINNESOTA.

IMPRESSION TRAY.

Application filed August 25, 1926. Serial No. 131,364.

My invention relates to impression trays of the nature used in dental work for procuring impressions of individual teeth, and has for an object thereof to provide a device adapted to support impression material and form impressions in sections, whereby tooth models may be accurately constructed in all instances, particularly where malformations, deep under-cuts and other irregularities exist, which prevent the removal of the ordinary impression without extensive distortion.

Another object of the invention resides in constructing the impression tray with a body portion having a pocket for the reception of impression material for a partial tooth impression, and in forming thereon an outwardly extending flange by means of which the impression tray may be conveniently held while an impression is being formed and which further serves as a parting plate for causing the tooth impressions to separate along the desired surface.

A still further object of the invention resides in constructing the impression tray of sheet metal, the same being formed with an occlusal wall having a lingual wall bent from one side thereof, said flange being bent from the other side of said occlusal wall, and in further forming said tray with a proximal wall bent from said lingual wall.

A still further object of the invention resides in forming an angular projection on the end of said proximal wall, which angular projection is adapted to be engaged by an ear formed on said flange and lodged behind the same to resist internal forces of the impression material within the tray when the impression is being formed.

Another object of the invention resides in arranging said angular projection so that the same provides a protruberance on the surface of said flange to supply a guide for repositioning the complemental tooth impression after removal from the specimen.

With the foregoing and other objects in view, which will appear in the following description, the invention resides in the novel combination and arrangement of parts and in the details of construction hereinafter described and claimed.

Fig. 1 is a perspective view of my improved impression tray.

Fig. 2 is a plan view of the impression tray shown in Fig. 1.

Fig. 3 is an end elevational view of the structure shown in Figs. 1 and 2.

Fig. 4 is a fragmentary side elevational view of an upper human maxilla illustrating the application of my improved impression tray thereto.

Fig. 5 is a view similar to Fig. 4 showing the complemental impression mounted upon the impression tray.

Fig. 6 is an obverse elevational view of the impression tray with its impression therein removed from the specimen.

Fig. 7 is a reverse elevational view of the complemental impression illustrated in Fig. 5.

In the formation of tooth models or plaster casts thereof for the purpose of constructing clasps and other appliances requiring accuracy for the adaptation of the same to the teeth, considerable difficulty has heretofore been encountered in the construction of such models, due to the fact that where malformations, under-cuts, and other irregularities are present the impression can not be withdrawn from the specimens without extensive mutilation. Where hinged trays have been used for the purpose, the removal of the sections of the impression from the specimen has necessarily been confined to the movement of the tray halves about their pivots, which in certain instances would not permit the removal of the impression from the specimen without distortion. At the same time such devices require a certain species of impression compound adapted to be split in order to remove the impression, thereby requiring additional skill and care in the splitting of the same. Such impression trays are more or less difficult to handle and do not allow the packing and application of the impression compound

into the proximal spaces as readily as should be, thereby frequently producing impressions with imperfections and other blemishes. My invention overcomes these difficulties by providing a simple and effective impression tray which may be used with any species of impression compound now available for the purpose, and which permits of packing the impression compound within the proximal space to form a perfect impression, which device is simple and convenient to handle and at the same time provides a guide for the replacement of the complemental impression, after the same has been removed from the specimen.

My invention is for the purpose of forming impressions of single teeth and particularly where adjacent teeth are missing or have been extracted, and for the purpose of illustrating the application of my invention to the human teeth, I have illustrated in Figs. 5 and 6 a portion of a human maxilla A in which the incisors 10 and 11, the cuspid 12 and the two bi-cuspids 13 and 14 are shown, the molars having been previously extracted. Although it can readily be comprehended that the invention may be used for forming impressions in a multiplicity of instances, yet its application to the particular specimen illustrated will suffice to show the application and utility of the device.

My improved impression tray is best illustrated in Figs. 1, 2 and 3 and is preferably formed of sheet metal bent into the formation illustrated. This impression tray comprises a body portion B which consists of an occlusal wall 15 of rectangular formation having bent up from one side thereof a lingual wall 16. From the other side of said occlusal wall is bent out a flange 17 which extends in opposite direction to the lingual wall 16 and is substantially parallel thereto. From the end 18 of the lingual wall 16 is bent outwardly therefrom a proximal wall 23 which meets the occlusal wall 15 along a corner 19 and extends outwardly beyond the flange 17. On the end of this proximal wall is formed an angular projection 20 which overlies an ear 21 formed on flange 17, said angular projection lying in contact therewith. With this construction the body B is formed with a pocket 22 bounded by the walls 15, 16 and 23, the flange 17 extending outwardly therefrom. This pocket is for the reception of the impression compound and when the same is forced therein the angular projection 20 cooperating with the ear 21 serves to resist the internal force of the impression compound and to stiffen and hold the impression tray intact.

My invention is preferably used as follows: As previously stated for the purpose of illustrating the application of my invention to a tooth specimen, I have shown the maxilla A as illustrated in Figs. 4 and 5, and it will be assumed that a model of the bicuspid 14 is desired. In the use of the device a small amount of impression compound, indicated at 24, is heated and the pocket of the tray is filled with the same to about two-thirds full and said compound is then allowed to cool slightly. The compound is next held over an open flame and softened to a depth of about three-sixteenths of an inch and tempered in water at 150° to bring the compound into a suitable condition for receiving the impression of the tooth specimen. Where the device is to form an impression of the bicuspid 14 the tray, manipulated through flange 17 as a finger piece, is placed on the lingual surface of said tooth, with the proximal wall 23 back of the cuspid 14, and is pressed toward the teeth until the same are firmly imbedded within the compound along the lingual surface thereof. The impression so formed is next chilled after which the same may be removed lingually from the teeth specimens without fracturing or mutilating the impression. The specimen is next trimmed back with a sharp knife or other suitable tool to the greatest mesio-distal diameter on the lingual side, and the surface of the impression coated with a thin film of vaseline or other parting substance. After replacing the impression upon the tooth specimen, as appears in Fig. 4, the complemental impression is formed by taking a roll of partly softened compound 25, approximately three-fourths of an inch long, the size of the little finger, and heating one side over the flame. The same is then tempered in water at 150°, after which said compound is firmly pressed upon the labial or buccal surface of the teeth as the case may be, with a portion thereof overlying the flange 17 and particularly the angular projection 20 formed on the end of the proximal wall 23, as shown in Fig. 5. At the same time the impression mounted within the pocket 22 of the impression tray is firmly held in place by means of the fore finger of one hand and until the proximal spaces along the labial or buccal surfaces of the teeth have been completely filled with the compounds. The complemental impression is now chilled and both impressions removed, the same appearing as illustrated in Figs. 6 and 7. The two impressions are next re-assembled outside of the mouth and the unnecessary edges of the complemental impression trimmed away and the two impressions cemented together with wax or any other suitable substance. By means of the angular projection 20 the two impressions may be readily assembled in proper relation to one another, said angular projection serving as a guide for re-positioning the complemental impression upon the flange 17 and the impression

24 within the pocket 22. The flange 17 further serves as a parting plate for causing the impression to separate and for holding the same in proper position when re-assembled. The impression so formed is next flowed with investment, "kryptex", low-fusing metal, or any other suitable casting compound, and the cast allowed to set or cool as the case may be. When the model is hard, a knife blade may be slipped under the tray and the tray snapped off. The impression compound may next be softened and removed in the customary manner leaving a clean and perfect model of the tooth specimens which will be an exact reproduction of the original specimen embodying all the irregularities, malformations, and undercuts present in the same.

My invention is highly meritorious in that it provides a simple and effective impression tray whch may be readily and conveniently used in conjunction with the forming of models of single teeth, and which is particularly adapted to be used where adjacent teeth have been extracted. The device is easily and readily applied and through the agency of the angular projection formed on the proximal wall thereof serves to provide a guide for re-assembling the complemental impression upon the tray so as to hold the same in proper relation to form the completed model. The impressions may be removed independently so that the same may be withdrawn from the specimens in the proper direction to prevent fracture or mutilation of the impressions. The two impressions being free from one another permit the same of being withdrawn from the specimen in differing directions so that extremely irregular models may be readily formed. The device is extremely simple in construction and can be manufactured at a nominal cost. By means of the angular projection and the ear formed on the flange co-operating therewith a rigid and substantial construction is provided adapted to withstand the internal strains caused by the pressing of the impression compound against the tooth specimens. The angular projection further serves as a guide for enabling the operator to readily re-assemble the impression sections for the purpose of pouring or flowing the casting compound into the mold. The flange formed on the body portion of my improved impression tray besides serving as a parting surface also provides a convenient handle for holding and manipulating the device while the same is being used. The tray as shown, is designed to be used for upper lefts and lower rights, although it can readily be comprehended that the impression tray can be constructed both left hand and right hand so that the same may be used for upper rights and lower lefts, as well.

Changes in the specific form of my invention, as herein disclosed, may be made within the scope of what is claimed without departing from the spirit of my invention.

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

1. An impression tray comprising a body portion having a lingual wall, an occlusal wall and a proximal wall, a flange issuing outwardly from said occlusal wall substantially parallel to said lingual wall and extending in the opposite direction therefrom, and an ear formed on said flange co-operating with said proximal wall for resisting internal pressure.

2. An impression tray formed of sheet metal comprising a body portion having an occlusal wall, a lingual wall bent from one side of said occlusal wall, a flange bent from the other side of said occlusal wall extending in a direction opposite to that of said lingual wall, a proximal wall bent from one end of said lingual wall, an angular projection formed on the end of said proximal wall and an ear on said flange co-operating with said projection for resisting internal pressure.

3. An impression tray formed of sheet metal comprising a body portion having an occlusal wall, a lingual wall bent from one side of said occlusal wall, a flange bent from the other side of said occlusal wall extending in the opposite direction to said lingual wall, a proximal wall bent from one end of said lingual wall under the occlusal wall, the free margin of said proximal wall being bent back to provide an angular projection, and an ear on said flange interlocked with said projection.

4. An impression tray comprising a body portion having a lingual wall, an occlusal wall and a proximal wall, a flange formed on said occlusal wall substantially parallel to said lingual wall extending in the opposite direction therefrom and projecting in its entirety without said body portion, said flange extending the entire width of said occlusal wall and providing a parting surface and handle for manipulating the tray.

5. An impression tray comprising a body portion having a lingual wall, an occlusal wall and a proximal wall, a flange formed on said occlusal wall substantially parallel to said lingual wall extending in the opposite direction therefrom and projecting in its entirety without said body portion, said flange extending the entire width of said occusal wall and having a portion lying in the plane thereof and without said body portion connected to said proximal wall.

6. An impression tray formed of sheet metal comprising a body portion having an occlusal wall, a lingual wall bent from one side of said occlusal wall, a flange bent from

the other side of said occlusal wall extending in the opposite direction to said lingual wall, a proximal wall bent from one end of said lingual wall under the occlusal wall, the free margin of said proximal wall being bent back to provide an angular projection, and an ear on said flange interlocked with said projection, said projection lying outwardly from the face of said flange to provide a lug adapted to be impressed in a complemental impression and serving as a guide in the reassembling of said impression after separation thereof and removal of the same from the specimen.

In testimony whereof, I have signed my name to this specification.

ROLLAND R. JONES.