June 9, 1936. L. KALVIN 2,043,294

DENTAL IMPRESSION SUPPORTING TRAY

Filed Aug. 7, 1933

Fig. 1.

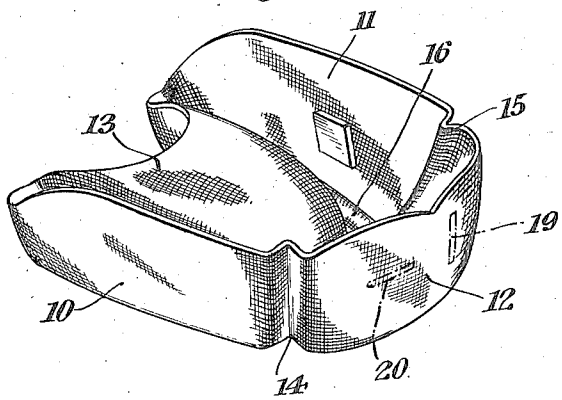


Fig. 2.

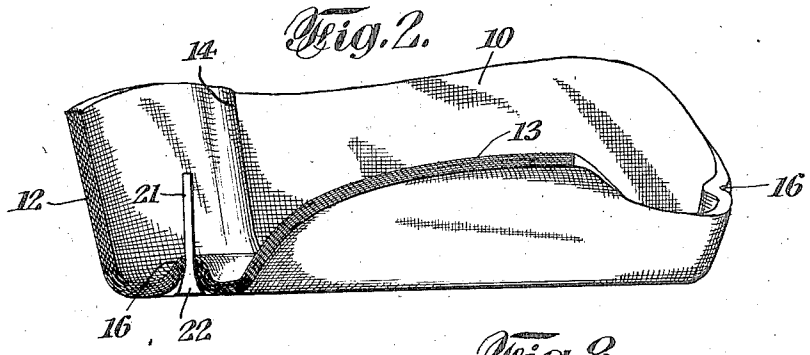


Fig. 3.



Fig. 8.

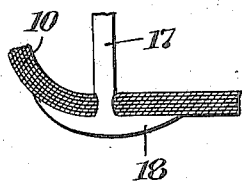


Fig. 6.

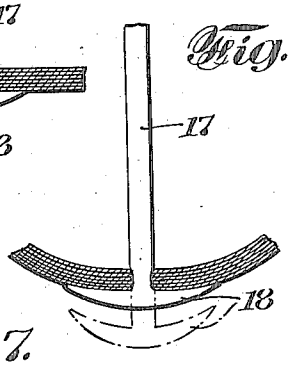


Fig. 4.

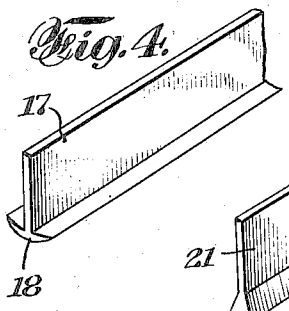


Fig. 5.

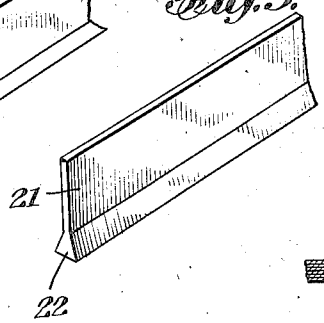
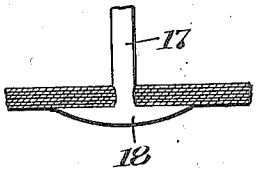


Fig. 7.



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Patented June 9, 1936

2,043,294

UNITED STATES PATENT OFFICE

2,043,294

DENTAL IMPRESSION SUPPORTING TRAY

Louis Kalvin, New York, N. Y.

Application August 7, 1933, Serial No. 683,956

6 Claims. (Cl. 32—18)

This invention relates to trays for supporting the plaster or the like while making dental impressions.

To the extent that the subject matter claimed herein is disclosed in my prior applications, Serial No. 638,310, filed October 18, 1932, and Serial No. 551,869, filed July 20, 1931 the present application is a continuation in part thereof.

A common practice in this art is to pour the liquid plaster of Paris into a metallic supporting tray, and while the plaster is in fluid or plastic condition, the tray with the plaster is inserted into the patient's mouth and pressed firmly against the dental arch where it is held for a period of time during which the plaster sets. The supporting tray is usually removed prior to the completion of the setting of the plaster, and the cast or impression block is eventually broken apart into segments and removed.

Sanitary considerations make it desirable that a tray be employed which can be thrown away after a single use. The comfort of the patient requires that the bulk or dimensions of the tray be kept at a minimum, and hence be thin-walled and properly shaped and proportioned to the particular patient's mouth in each case. In order that the tray may adequately support the fluid plaster and impart the desired pressure to the plastic mass, it is necessary that the tray have adequate stiffness or rigidity. A further consideration is that the tray must be susceptible of ready removal from the partly set plaster.

The primary object of the present invention is to provide a dental impression supporting tray which will answer the foregoing and other incidental requirements, and to this end the invention makes use of cellulosic material such as woven fabric, felted or woven pulp, or the like. Such material can readily be formed in dies to give the desired configuration, and can be made amply cheap to admit of the tray being discarded after a single use. Special provisions must be made, however, to ensure adequate stiffness while preventing permanent adherence to the plaster. For this purpose, the invention contemplates the maintenance of stiffness and strength by having the outer surface of the tray resistant to heat and moisture, while the inner surface is of such a nature as to prevent permanent adhesion between the plaster and the tray. This latter function is obtained by having the inner surface susceptible to heat or moisture, or to the combined effect of both of these conditions, so as to soften under such influence and permit of the material being readily stripped or peeled from the partially set plaster. This may be accomplished, for example, by the use of sizing or the like, which softens in contact with the moist plaster.

The invention further comprises certain improvements in parting fins which may be advantageously employed in various ways to facilitate the parting of the impression on prescribed lines, or for excluding plaster from prescribed portions of the impression, as for example in spaces where one or more teeth are missing, or in "core work". The type of tray herein described readily admits of the use of these parting fins in substantially any position which would be found necessary in dental work of this character, as will hereinafter more fully appear.

The invention is illustrated by way of example in the accompanying drawing, in which

Figure 1 is a perspective view of a complete tray for an upper impression.

Figure 2 is a central vertical section thereof.

Figure 3 is a detailed section illustrating the laminated construction which may be employed in the manufacture of the tray.

Figure 4 is a perspective view of a parting fin strip of one type, from which suitable lengths may be cut to form the parting fin.

Figure 5 is a similar view of another form of parting fin strip; and

Figures 6, 7, and 8 are sectional views illustrating the application of parting fins, of the type illustrated in Figure 4, to various forms of flat and curved surfaces of the supporting tray.

It will be understood that the invention is applicable to either upper or lower trays or to partial trays, the illustration of the complete upper tray being deemed sufficient to enable anyone skilled in the art to fully understand and practice the invention.

Referring in detail to said drawing, the tray is formed with side walls **10** and **11**, a front wall **12**, and a floor or bottom **13**, these portions providing the pouring space for the plaster. I prefer that the tray be formed with parting partition ridges such as **14**, **15** and **16** to stiffen the tray and weaken the plaster on definite lines to facilitate the fracture into definite segments, in accordance with already known principles. The material which I have found most suitable for the tray construction in a sized buckram or similar woven fabric, preferably in a plurality of plies or layers, although this is not strictly requisite. As illustrated in Figure 3, the construction involves two layers of three-ply buckram. The three plies of each of the two layers may be already united by sizing such as starch, tapioca, glue, dex-

trin, and the like, which softens on absorbing water and hardens on drying or under the influence of heat. These two layers of three-ply buckram, having been first moistened and allowed to mull for several hours, are superposed over the heated die press, corresponding with the shape which it is desired to produce, and are then subjected to formation under heat and pressure in such die press whereby the plies and layers are firmly united and the formed tray is discharged from the press as a virtually unitary or composite rigid shell. The outer surface is then sprayed with waterproofing material to prevent its subsequent softening under contact with water. The inner layer, being left unprotected, remains susceptible to heat and moisture in contact with the plaster, so that the tray is readily stripped from the partly set plaster when used in making the dental impression. Various types of waterproofing applications may be employed, the collodion spray having been found particularly satisfactory.

The use of two layers of three ply buckram is particularly satisfactory, but a greater or less number of layers or plies may be employed; and indeed a single heavy ply, waterproofed on one side and susceptible to moisture on the other, could be used.

The parting fins, which may be employed in accordance with the present invention, are preferably of semi-hard rubber or other elastic gum, and are preferably made in strips from which pieces of the desired length may be cut. Figure 4 illustrates such a strip, in which the web or fin portion 17 has a crescent or arcuate head 18, which latter is of such resilience as to follow the contour of a surface against which the head is drawn, as illustrated in Figures 6, 7 and 8. In the use of this fin strip, a section is severed from the strip and pulled through a slot in the tray, such as, for example, 19 or 20 (Figure 1) until the head 18 firmly engages the outer surface of the tray. The action is clearly indicated in Figures 6, 7 and 8, where the web portion 17 is shown to have been stretched in pulling it through the slot such as 19 or 20, so that upon its release and the contraction of the rubber or other gum, the web becomes elastically locked in position due to the cross-section of the slot 19 and 20 being somewhat less than the normal cross-section of the web. The fin may be readily removed by gripping the exposed head portion and pulling outwardly to stretch the rubber.

The form of fin illustrated in Figure 5 comprises a web portion 21 having a wedge-shaped head 22, which is designed to conform with the under surface of the parting partition ridges 14, 15 and 16. The slit having been formed at the desired place in the parting partition ridge, a portion of the fin strip of requisite length is cut off and passed through such slit from the under side of the parting partition ridge after which the inwardly projecting web portion 21 is engaged to pull the head firmly into its seat. This form of fin is removed in the same manner as already described in connection with that illustrated in Figures 4, 6, 7 and 8.

With these two types of fins, the dentist is enabled to provide parting partitions or to block off predetermined areas as desired. While the parting partition fins are very readily applied to a tray of the particular type set forth, their use is not limited to such trays. Any tray which may be slotted will obviously admit of the application of these parting fins.

I claim:—

1. A dental impression supporting tray, comprising a composite pressed body of sized cellulosic fabric having a water absorbent inner surface and a water repellent outer surface.

2. A dental impression supporting tray, comprising a body of a plurality of plies of sized cellulosic fabric united in the form of a composite structure, said body having a water absorbent inner surface and a water repellent outer surface.

3. A dental impression supporting tray, comprising a body of hot pressed buckram with a waterproofing agent on its outer surface and water absorbent sizing on its inner surface.

4. A dental impression parting fin formed of semi-hard elastic material, and comprising a flat web or fin portion and a resilient crescent or arcuate head.

5. A dental impression supporting tray, comprising a compressed body of sized cellulosic fabric dished to provide space to receive and retain the impression material, said body being impervious to the impression material and on its inner surface being non-adherent thereto.

6. A dental impression supporting tray, comprising a compressed body of superposed layers of cellulosic textile fabric and sizing material uniting the layers of textile fabric in the form of a unitary composite structure, impervious to the impression material, moisture-resistant on its outer surface, and non-adherent to the impression material on its inner surface.

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