Dec. 21, 1926. 1,611,152

J. C. BACKUS

DENTAL IMPRESSION TRAY

Filed June 4, 1925

Fig. 1.

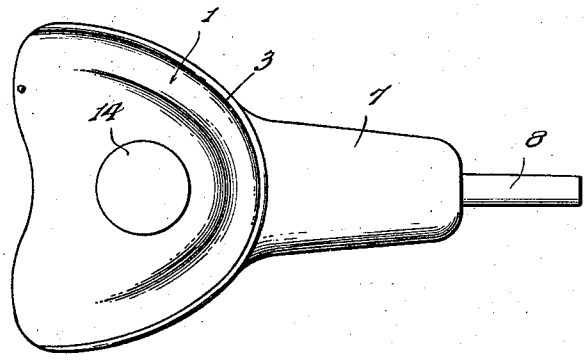
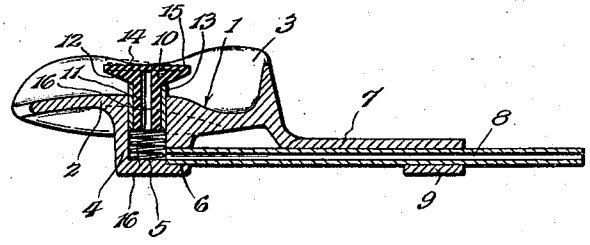



Fig. 2.



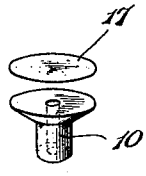




Fig. 3.

Inventor

J. C. Backus.

By

Lacey & Lacey, Attorneys

Patented Dec. 21, 1926. 1,611,152

# UNITED STATES PATENT OFFICE.

JOHN CLAYTON BACKUS, OF SMETHPORT, PENNSYLVANIA.

## DENTAL IMPRESSION TRAY.

Application filed June 4, 1925. Serial No. 34,910.

This invention relates to dental impression trays and has as its general object to provide a tray which will overcome the disadvantages attending the use of the ordinary impression trays. In the use of the ordinary tray, when the material in which the impression is made, sets and hardens, a partial vacuum is formed between the surface of the material and the roof of the patient's mouth and considerable force is frequently required to loosen the tray, thereby causing annoyance and pain to the patient and frequently resulting in the impression being so distorted that the plate molded in accordance therewith will not properly fit the patient's mouth. Therefore, the present invention contemplates the provision of a tray embodying means whereby this partial vacuum may be destroyed so that the tray and the material therein may be dislodged and removed from the patient's mouth without causing any discomfort and without any likelihood of distorting the impression.

The tray embodying the invention is provided in its bottom with a socket into which is slidably adjustably fitted a vent plug having the lower end of its bore in communication with the socket, a tube being mounted beneath the tray and in communication at its forward end with the said socket so that air may be admitted through the tube and through the bore of the plug to destroy the partial vacuum formed and thus permit of ready dislodgment of the tray and the material therein after the impression has been taken, and the invention contemplates the provision, at the upper end of said plug, of a valve which will close the upper end of the bore of the plug at the time the impression is taken so that the desired vacuum may be created.

In the accompanying drawings:

Figure 1 is a plan view of the tray embodying the invention.

Figure 2 is a vertical longitudinal sectional view through the tray.

Figure 3 is a perspective view illustrating a slight modification of the invention.

In the drawings, the tray is indicated in general by the numeral 1 and comprises the usual bottom 2 and marginal upstanding wall 3, both of which are formed to conform more or less to the contour of the roof of the mouth, and the bottom 2 of the tray is formed, upon its under side, with a thickened portion 4 provided with a cylindrical socket 5 having an opening 6 formed in the forward wall thereof. A handle 7 extends forwardly from the wall 3 of the tray and is preferably of the shape shown in the drawings, and an air supply tube 8 of metal is fitted through a sleeve portion 9 provided upon the under side of the handle 7 at the forward end thereof and has its rear end fitted into the opening 6, so that the bore of the tube is placed in communication with the lower end of the socket 5, the forward end of the tube extending a short distance beyond the forward end of the handle 7.

The vent plug heretofore referred to, is indicated in general by the numeral 10 and the plug body is formed of soft rubber and includes a cylindrical shank portion 11 provided at its upper end with a circumscribing outstanding flange 12 so that the upper end of the plug is of somewhat greater diameter than the body of the plug. A metal sleeve 13 is fitted onto the plug body 11 with its lower end flush with the lower end of said body and its upper end engaging the under side of the flange 12, and the sleeve is slidably frictionally fitted into the socket 5, so that the plug may be vertically adjusted to position its upper side at the desired elevation within the cavity of the tray.

In order that the desired vacuum may be created and maintained while the impression is being taken, the soft rubber plug 10 is provided with an integral circular valve flap 14 integrally connected with the flange 12 at one side thereof, as indicated by the numeral 15, the said flap being relatively thin and normally resting flat upon the upper end of the plug body and its flange, as shown in full lines in Figure 2 of the drawings, and thus closing the upper end of the bore of the plug, which bore is indicated by the numeral 16.

In the use of the tray, the plug 10 is adjusted to a suitably elevated position and the plastic material in which the impression is to be made is packed into the tray and about the valve and the under side of the flange 12 thereof. The tray is then inserted in the usual manner and is pressed against the roof of the mouth to make the impression in the material in the tray, and the surface of the material will, of course, be depressed to conform to the shape of the roof of the mouth and the upper gums, the plug 10 being forced downwardly into the material until the upper side of the valve 14 is

flush with the upper surface of the material. Inasmuch as the plug 10 is of soft rubber, it will yield when it contacts the roof of the mouth and, therefore, no inconvenience will be experienced by the patient. After the impression has been made, the tray is permitted to remain in place until the material has set and hardened, whereupon air is forced through the tube 8 into the socket 5 and through the bore 16 of the plug 10, thus causing the valve 14 to open sufficiently to provide for the admission of air between the roof of the patient's mouth and the surface of the material in which the impression has been made, thereby destroying the partial vacuum which was formed during the setting of the material and permitting of the ready withdrawal of the tray without the use of force or causing any inconvenience to the patient.

The sleeve 13 serves to suitably stiffen the upper portion of the body 11 of the vent plug 10 so that the flange at the upper end of the plug cannot become materially distorted at the time the impression is taken and, furthermore, the tube, being of metal, provides for greater freedom of sliding movement of the plug body in the socket 5.

In order to obviate the necessity for holding the vent plug 10 in the elevated position shown in Figure 2, while the plastic material is being filled into the tray, a light helical spring 16 is arranged within the lower portion of the socket 5 and bears at its lower end against the bottom of the socket and supports the said vent plug 10 in the position illustrated, it being understood that when the impression is made, the plug may move downwardly into the socket a greater or less distance under the pressure exerted thereagainst.

As illustrated in Figure 3 of the drawings, instead of providing the plug body with an integral flap valve such as the valve 14, a small valve disc 17 in the nature of a circular piece of tough, thin paper having the same diameter as the top of the plug body, may be employed, this disc being moistened prior to making the impression and laid flat upon the upper side of the said plug body.

Having thus described the invention, what I claim is:

1. A dental impression tray having a socket in its bottom, means for admitting air under pressure into the socket, a vent plug slidable in the socket and having a bore, and a valve normally closing the upper end of the bore, and adapted to open when air under pressure is admitted to the socket.

2. A dental impression tray having a socket in its bottom, means for admitting air under pressure into the lower portion of the socket, a vent plug slidably adjustably fitted into the upper portion of the socket and extending above the upper surface of the bottom of the tray, the said plug being of rubber and having a bore, and a valve flap integral with the plug at its upper end and normally seating upon said end to close the upper end of the bore of the plug, the said flap being adapted to open upwardly when air under pressure is admitted into the socket.

3. A dental impression tray having a socket in its bottom, means for admitting air under pressure into the socket, a vent plug comprising a body of soft rubber of substantially cylindrical form having a bore, a sleeve fitted upon the said body and slidably fitting within the socket, the said body having an outstanding flange at its upper end, and a valve flap integral with the flange at one side and normally resting upon the upper end of the plug and closing the upper end of the bore therein, the flap being adapted to open upwardly when air under pressure is admitted into the socket.

4. A dental impression tray having a socket in its bottom, means for admitting air under pressure into the socket, a vent plug slidably fitted into the socket and having a bore, and a valve for closing the bore comprising an imperforate disc-like relatively thin body arranged upon the upper end of the vent plug and closing the bore.

In testimony whereof I affix my signature.

JOHN CLAYTON BACKUS. [L. S.]