

June 3, 1947.

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2,421,698

APPARATUS FOR CASTING DENTAL RESTORATIONS

Filed Jan. 4, 1946

Fig. 2.

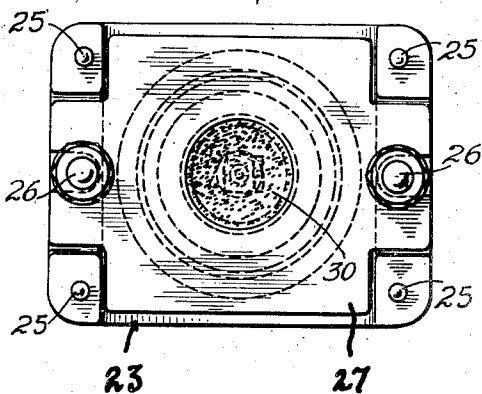


Fig. 1.

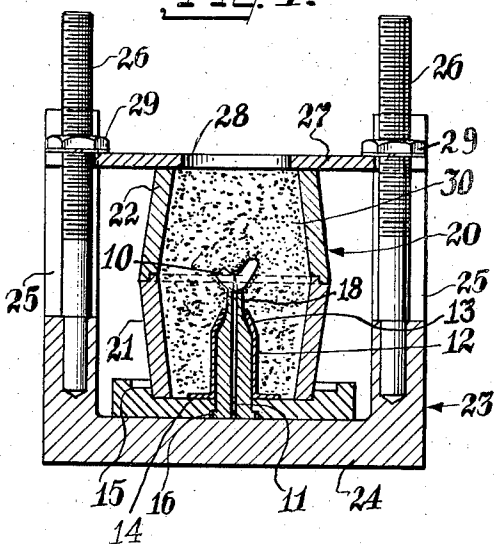


Fig. 3.

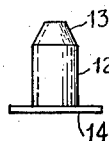


Fig. 4.

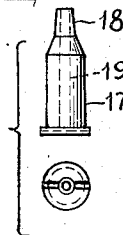


Fig. 5.



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2,421,698

APPARATUS FOR CASTING DENTAL RESTORATIONS

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Application January 4, 1946, Serial No. 639,078

2 Claims. (Cl. 18—5.7)

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My invention relates particularly to apparatus for use in the casting of dental restorations, that is, in forming a bridge, an artificial tooth or part thereof, such as an inlay crown and the like, and other dental structures.

A primary object of my invention is to produce a novel apparatus which is particularly suited for casting dental restorations using a plastic or other suitable material as the casting material.

Another object is to provide means for keeping the acrylic clean.

Another object is to provide means for preventing particles of investment material entering into the mold.

Another object is to eliminate the necessity for a protective coating on the sprue.

Another object is to provide apparatus of this kind that is easily manipulated, inexpensive, comparatively simple in construction and readily adjustable to meet any requirements in the casting of dental restorations.

Other objects and advantages of the invention will be apparent from the description thereof to follow taken in connection with the accompanying drawing in which—

Fig. 1 is a vertical sectional view of my improved apparatus showing the flask in position on its frame or support and with the sprue forming members in position and carrying a wax pattern which forms the mold in the investment.

Fig. 2 is a top plan view of the parts shown in Fig. 1.

Fig. 3 is a detail view of the outer sprue forming member.

Fig. 4 is a detail view of the inner sprue forming member.

Fig. 5 is a detail view of the inner sprue member and pin and the wax pattern supported thereby.

The plastic used for making dental restorations should be in a soft but viscous state, that is, about the consistency of putty or a thick paste. Plastic in this condition may be obtained or prepared in two ways. Powdered or granulated plastic in its cured or polymeric form is mixed with a portion of the plastic in liquid or monomeric form in a manner known to the dental technician in preparing plastic to be used for forming dental plates and the like. The viscous plastic may be obtained also by using polymeric plastic in powdered, granular or biscuit form and heating it until it has the proper viscous consistency.

The investment for the casting may be formed in the customary manner using known materials such as plaster of Paris or the like.

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Referring to Fig. 1 of the drawing, a wax pattern 10 is formed in a known manner after which it is mounted upon a pin 11. A cavity forming metal sleeve or outer sprue member 12 is formed with an inwardly tapered shoulder 13 at one end providing a restricted opening at said end and with a flange 14 at its other end forming a base for supporting said sleeve on a metal disc-like base member 15 which is provided with a central opening 16. An inner sprue member 17 projects through the opening 16 and is provided with a shoulder portion adapted to engage the shoulder of the sleeve 12 and with a projecting neck portion 18 extending outwardly of the restricted opening in said sleeve. An opening 19 extends centrally through said sprue member 17.

The wax pattern 10 is mounted upon the pin 11, after which the latter is inserted into the opening 19 and held in position by a spot of wax which connects said pattern with the upper edge of the neck 18 of the member 17. The wax pattern is thus held spaced from the end of the outer sprue member 12.

The flask 20 is a split or two-part type of flask comprising a lower mold section 21 and an upper mold section 22, as shown in Fig. 1, said sections having interlocking flange portions on their edges and may have pry-notches on said edges to facilitate separation of the sections. The mold sections have tapered inner walls in opposed relation.

The sections of the flask are held in superimposed position by means of a clamping device consisting of a frame 23 preferably formed of a casting having a rectangular base 24 with an upwardly extending post 25 at each corner. Between the posts 25 on each side is another guide post 26 having a screw threaded upper end, which posts 26 project above the posts 25. Slidably and detachably mounted on the posts 26 is a plate 27. The plate is formed with end openings for receiving the posts 26 and with a central opening 28 adapted to register with the openings in the flask sections. The plate rests on the upper edge of the flask. Nuts 29 on the posts above the plate clamp the flask sections together and hold them against displacement on their support.

In using my improved apparatus, the disc-like base 15 with the sprue members 12 and 17 and pin 11 with the wax pattern 10 thereon is placed on the base 24 of the casting. The flask with its lower and upper sections 21 and 22, respectively, is positioned over the member 12. The clamping plate 27 is then mounted on the posts 26 and laid on the upper edge of the upper section 22. The screws 29 are then set upon to clamp the sections

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in position and prevent displacement thereof. Investment material 46 is then poured into the lower section 21 to or approximately to the upper edge thereof and tapped leaving a portion of the wax pattern 10 projecting above said investment material. A coating of separating material may then be applied to the upper surface of the investment material to facilitate separation of the flask sections. The upper section 22 is then filled with investment material in the same manner. The investment material is then permitted to harden. The mold is then placed in boiling water and the wax is melted out. The two sections are separated, and the pin 11 and sprue member 17 removed leaving the sprue sleeve 12 embedded in the investment and forming a cavity or mold in the investment material in section 22 shaped like the pattern 10 and leaving a chamber inside the sleeve 12 connected by a gate passage or sprue shaped like the neck 18 of the sprue member 17.

The flask is thus prepared to receive the denture material.

The flask is next positioned on the base 24 of the casting in an inverted position, that is, the section 21 with the member 12 embedded therein on the top and the section 22 on the bottom. The clamping plate is then positioned on the posts 26 and the flask clamped in position on said base. The mold is then slightly hand packed with suitable plastic denture material. A pressure device is then mounted on the casting for processing.

When sufficient pressure has been applied, the entire apparatus is placed in a hot bath, oven, furnace, or the like whereupon the plastic hardens or sets while pressure is retained thereon.

After processing the casting, it is allowed to cool. The sections of the flask are then separated by a suitable tool. The restoration is then removed from the investment and cleaned.

The sprue forming member 12 is an important feature of the present invention as in addition to forming a sprue in the investment, it also provides means for supporting the pattern in proper position within the soft investment until it hardens. The flange portion 14 of the member 12 and the plate 27 seals the investment in the flask during the processing. This member 12 also keeps the acrylic clean and presents particles of investment from being forced into the mold during processing. It also eliminates the necessity of a protective coating as in the case where the chamber is made of investment material, and furthermore.

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it is so shaped that it facilitates the removal of the surplus plastic material.

I claim:

1. In apparatus of the character described, 5 cavity and sprue forming devices consisting of a hollow metal cylindrical member having a restricted opening at one end, a cylindrical member inside of said hollow member and having a central passage and a restricted neck portion 10 projecting outwardly through said restricted opening, a pin detachably mounted in said passage and projecting outwardly thereof and a wax pattern on the projecting end of said pin.

2. In apparatus of the character described, a 15 disc member having a central opening, a sectional hollow flask supported on said disc member above said opening for receiving investment material, an outer hollow cylindrical member on said disc member above said opening and extending 20 inwardly of the flask, an inner cylindrical member extending through the opening in said disc member and into the interior of said outer cylindrical member, said inner cylindrical member having a central passage and a neck portion 25 projecting outwardly of said outer member, a pin detachably mounted in said central passage and projecting outwardly thereof and a wax pattern on the projecting end of said pin.

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