

[54] DENTAL IMPRESSION MATERIAL
INJECTING SYRINGE

2,903,794 9/1959 Carfagni 32/60

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[57] ABSTRACT

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[51] Int. Cl. A61c 5/04

[58] Field of Search 222/326, 386, 387,
222/391, 526; 32/60

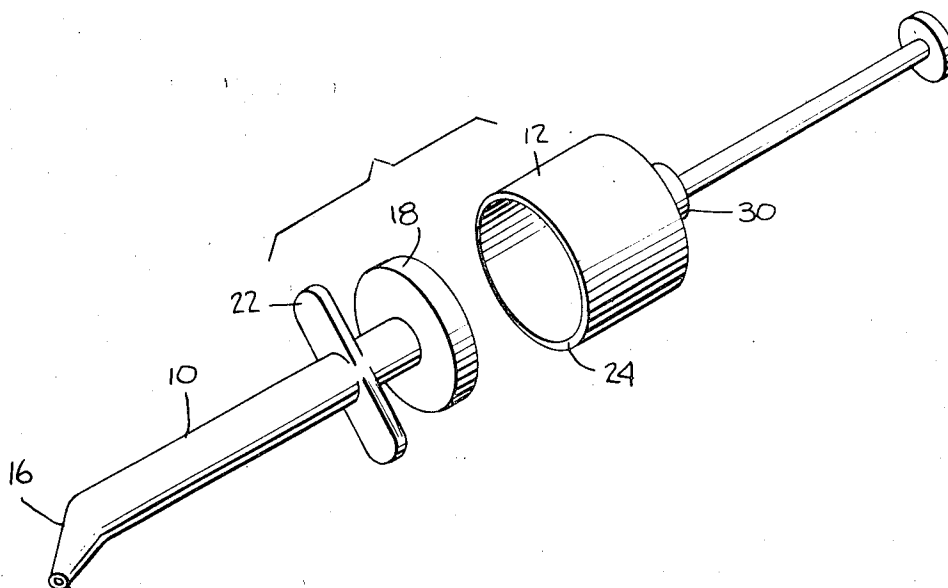
A dental syringe for elastic impression material is provided which comprises a nozzle section and plunger section. The plunger section includes a mixing chamber adapted to receive the nozzle section. When the two sections are coupled, the impression material may be extruded through the nozzle.

[56] References Cited

UNITED STATES PATENTS

2,056,173 10/1936 Douglass et al. 222/391

6 Claims, 4 Drawing Figures



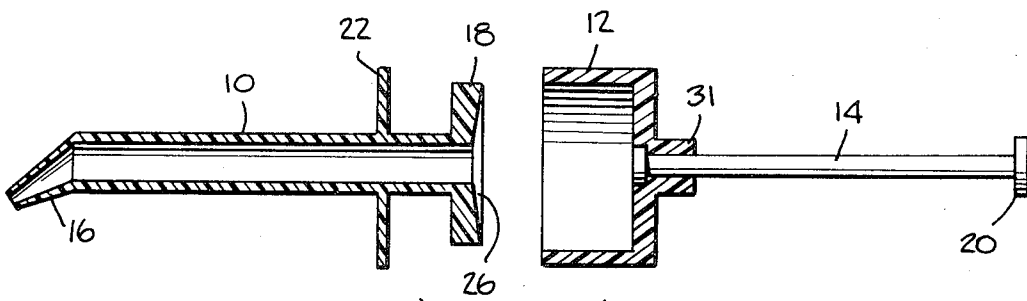
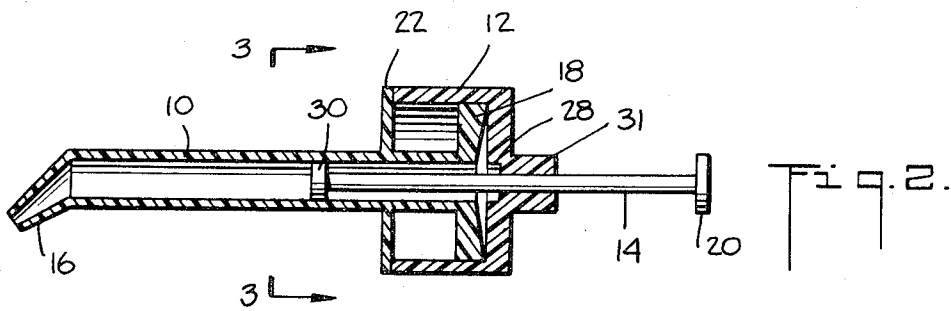
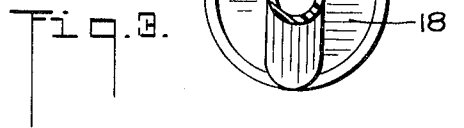
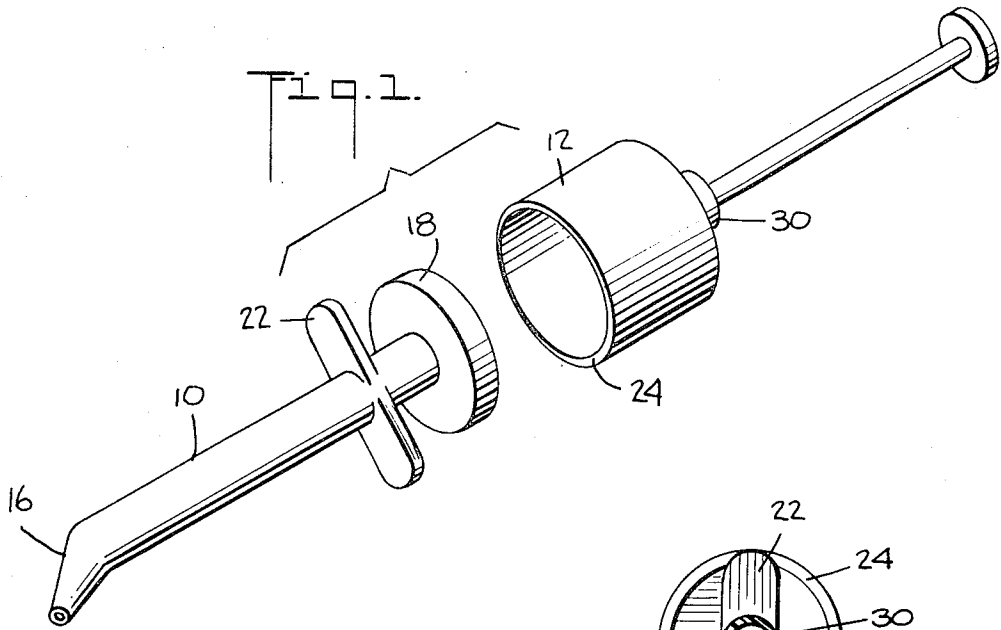


Fig. 4.

DENTAL IMPRESSION MATERIAL INJECTING SYRINGE

BACKGROUND OF THE INVENTION

The present invention relates to a dental tool and more particularly to dental syringe for extruding elastic dental impression material. The syringe includes a mixing chamber wherein the constituents of the elastic impression material may be mixed and then extruded in a facile manner.

Heretofore, in making elastic impressions of teeth preparations, it was necessary for dentists to use two devices; an injecting syringe, and a paper or glass slab for mixing the impression material. Dental impression material is generally two components and comprises a base material and a hardening agent. The two components must be mixed immediately prior to use; and thereafter inserted into a syringe-type apparatus for the dentist's use. This procedure is generally carried out by repeatedly pressing the open end of the syringe against the mixed material to fill the syringe. It is obvious that this is a tedious procedure and is extremely time consuming. Moreover, in loading the syringe, the dentist has to be careful to avoid trapping air. In addition, since the elastic impression material sets rather quickly, the loading operation must be completed in a short period of time and, therefore the dentist is often rushed, which leads to improperly prepared impressions. Heretofore, in order to negate the above-noted objectional features, it was often necessary for the dentist to make use of an assistant to help manipulate the syringe and mixing pad.

Accordingly, it is the primary object of the present invention to provide a combination syringe and mixing chamber whereby the components of the dental impression material may be mixed directly in the syringe and thereafter extruded in one simple procedure.

SUMMARY OF THE INVENTION

In accordance with the invention, a syringe is provided having two separable sections. One section comprises a barrel and nozzle and the second section comprises a mixing chamber and a displaceable plunger attached thereto. The barrel section includes an annular flange adapted to be closely fitted within the mixing chamber, whereby upon insertion of the barrel into the mixing chamber, the impression material is displaced into the syringe barrel. The separate parts of the syringe are arranged in such manner that when the barrel section is inserted within the mixing chamber, the barrel aligns with the plunger so that the latter may be readily depressed into the barrel to extrude the impression material through the nozzle.

There has thus been outlined rather broadly the more important features of the invention in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better appreciated. There are, of course, additional features of the invention that will be described hereinafter and which will form the subject of the claims appended thereto. Those skilled in the art will appreciate that the conception upon which this disclosure is based, may readily be utilized as a basis for the designing of other structures for carrying out the several purposes of the invention. It is important, therefore, that the claims be regarded as including such

equivalent constructions as do not depart from the spirit and scope of the invention.

A specific embodiment of the invention has been chosen for purposes of illustration and description, and is shown in the accompanying drawings, forming a part of the specification, wherein:

FIG. 1 is a perspective view of the device of the present invention in a disassembled form;

FIG. 2 is a longitudinal cross-section of the device of the present invention in an assembled form;

FIG. 3 is a cross-sectional view taken along lines 3—3 of FIG. 2; and

FIG. 4 is a longitudinal cross-sectional view of the device of the present invention in disassembled form.

DESCRIPTION OF THE INVENTION

With reference to FIG. 1, the device of the present invention generally comprises a tubular barrel 10, an enlarged tubular mixing chamber 12, and a plunger 14. The tubular barrel 10, converges at one end into a nozzle 16 which is preferably angularly disposed thereto. Additionally, the barrel 10 includes, at its opposite end, an annular flange or disc 18 which is adapted to snugly fit within the mixing chamber 12. The plunger 14 includes, at its distal end, a button 20 for depressing the plunger within the syringe. The barrel 10 may also include projecting flanges 22 which are used as finger grips and which are positioned so that they abut the rim 24 of mixing chamber 12 when the barrel assembly is inserted within the mixing chamber. It is to be noted that the tool is constructed of such size and configuration so that it is readily inserted into the mouth of a patient in such manner that the nozzle 16 may be placed in close proximity to the preparation to be impressed. In addition, the syringe of the present invention may be constructed of any non-toxic material and is preferably constructed of plastic.

In FIG. 2, the syringe of the invention is shown in an assembled state. As shown in the figure, the annular flange 18 of the barrel 10 closely fits within the mixing chamber 12 to engage the base of the chamber. In addition, the flange 18 is preferably includes a disked out recess 26 adapted to assist the flow of the impression material into the barrel 10 when same is inserted within the chamber 12. The base of chamber 12 includes a depression 28 adapted to house the plunger head 30 when the plunger is fully extended thereby providing an essentially flat surface for mixing the constituents of the impression material. Moreover, the depression 28 forms a stop means to prevent the plunger from disengaging the mixing chamber section. As shown in the figure, the barrel assembly and plunger assembly are constructed in such manner that when the barrel assembly is inserted within the mixing chamber 12, the interior diameter of the barrel will correspond to the plunger head 30 so that the latter may be readily inserted within the barrel 10. The mixing chamber 12 further includes a tubular extension 30 partially housing said plunger 14 and providing suitable retaining and alignment of said plunger.

With reference to FIG. 3, the finger grips 22 are adapted to abut against the rim 24 of the mixing chamber 12 when the annular flange 18 is fully inserted within the mixing chamber 12. In addition, the dimensions of the flange 18 are such that it is snugly accommodated with the chamber 12 so that the dental impression material is completely forced within the barrel

10 without leakage around the edges of the ring 18 and the chamber 12.

In operation, the plunger and mixing chamber section of the apparatus is held in a vertical direction so that the plunger head 30 rests within the depression 28 to form a solid mixing base within the chamber 12. The two components of the impression material are added to the mixing chamber 12 and are mixed to the proper consistency such as with a spatula. The barrel section 10 is then inserted into the mixing chamber 12 so that the conical section 26 of the annular ring 18 abuts against the floor of mixing chamber 12. In such manner, the mixed impression material abuts the base of the mixing chamber 12, the barrel 10 will be filled with the elastic impression material. Thereafter, using the tool in a syringe-like manner, the plunger 14 is depressed by exerting pressure on button 20. This action will cause the plunger head 30 to move forward compressing the material into the barrel 10 and nozzle 16 and thereafter extruding the impression material through the nozzle 16. In such manner, the elastic impression material may be delivered to the preparation.

In an alternative embodiment, it is possible to provide a preloaded mixing chamber which contains the two components of the impression material separated by a partition and pressure cap. In this embodiment, the partition would be removed and the materials mixed, and thereafter the barrel is inserted through the pressure cap.

What is claimed is:

1. A dental impression material injecting syringe which comprises

a tubular barrel, said barrel including a nozzle at one end and an enlarged annular flange at the other end, said barrel further including finger grasps intermediate said flange and nozzle;

a tubular mixing chamber dimensioned to closely receive said annular flange; and

a plunger mounted through the base of said chamber and positioned in alignment with said barrel when said flange is positioned in said mixing chamber, said plunger having a head dimensioned to closely fit within said barrel.

2. A tool according to claim 1 wherein said annular flange includes a disked out recess.

3. A tool according to claim 1 wherein said finger grasps are positioned to abut the rim of said mixing chamber when said annular flange is completely inserted within said mixing chamber.

4. A tool according to claim 1 which is constructed of plastic.

5. A tool according to claim 1 wherein said nozzle is disposed angularly to said barrel.

6. A tool according to claim 1 wherein the base of said mixing chamber includes a depression dimensioned to accommodate said plunger head whereby the base of said chamber is essentially flat when said plunger is completely extended.

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