

Jan. 11, 1966

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3,228,566

MOLDING WAX DISPENSER

Filed March 8, 1963

FIG. 1

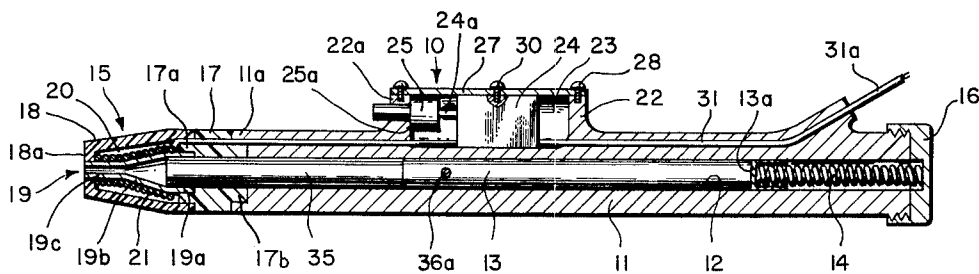


FIG. 3

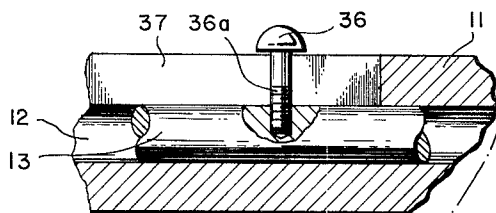
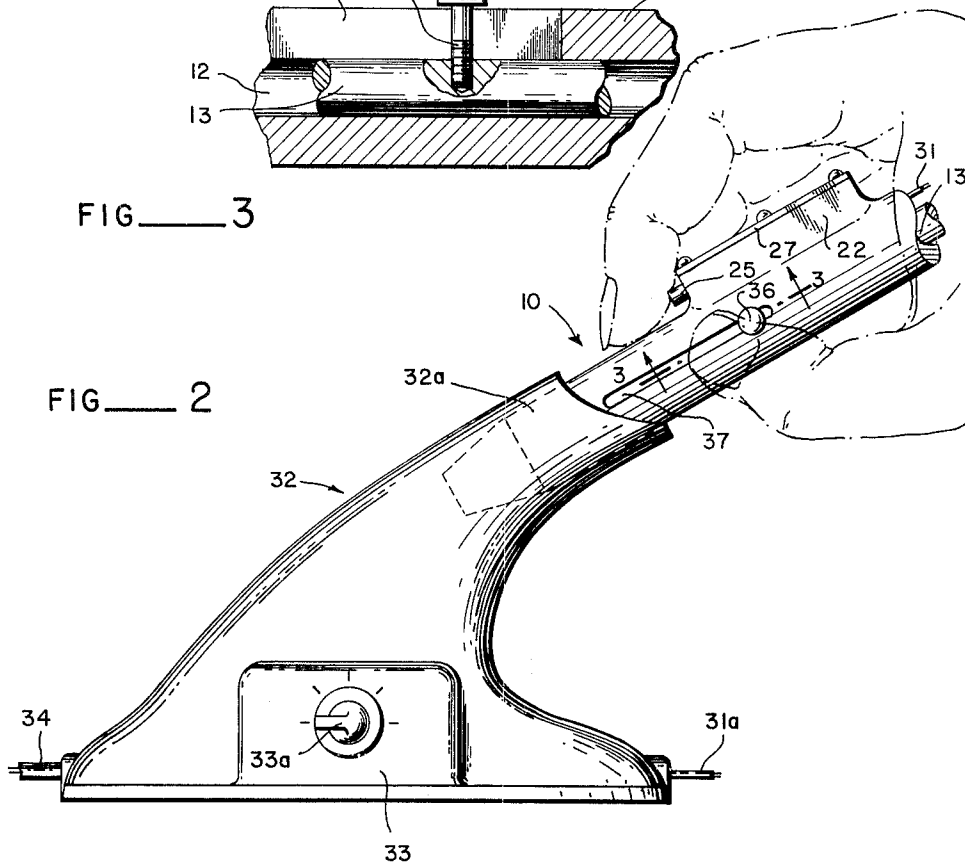


FIG. 2



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ATTORNEYS

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3,228,566

MOLDING WAX DISPENSER

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Filed Mar. 8, 1963, Ser. No. 263,776

3 Claims. (Cl. 222-146)

The present invention relates to a dental instrument for dispensing molding wax directly into the mouth in a predetermined heat-softened state proper for taking impressions.

In the past a dentist has had to soften a piece of wax preparatory to taking an impression by applying it directly to a flame and then letting it partially cool before inserting it into the patient's mouth. The amount of cooling necessary to prevent burning of the patient was purely guess work determined by physical contact with the heated wax. Difficulty has not only been experienced by dentists in gauging the proper wax temperature but also in handling and manipulating the heated wax to the desired location in the patient's mouth before the wax has cooled too far to obtain an accurate impression.

Accordingly, the present invention aims to provide a compact dispenser of simple and economical construction which heats the wax to the proper consistency and expels it when needed directly to the impression site in the patient's mouth.

These and other objects and advantages in view will appear and be understood in the course of the following description and claims, the invention consisting in the novel construction and in the adaptation and combination of parts hereinafter described and claimed.

In the accompanying drawing:

FIG. 1 is a longitudinal vertical sectional view of a wax dispenser embodying the present invention;

FIG. 2 is a side elevational view of a holder for the dispenser and illustrating the dispenser (shown fragmentarily) held therein; and

FIG. 3 is a detail sectional view taken as indicated by the line 3-3 of FIG. 2.

Referring to the drawings, it is seen that in the illustrated embodiment of the present invention the dispenser 10 has a barrel 11 with a plunger 13 operating in the bore 12 thereof. This plunger is urged by a spring 14 toward a tip unit 15, the spring being secured to the plunger by an adapter 13a and being seated against a base cap 16 threaded onto the barrel 11. A thermal-insulating ring 17 as of transite interconnects the tip unit and the barrel.

The tip unit 15 comprises a porcelain jacket 18 formed with an inturned annular head flange 18a, and a thermal-conducting bell-shaped liner 19 which may be stainless steel and is bonded as by an epoxy adhesive to the free edge of the head flange 18a. In this way the jacket 18 and liner 19 collectively define a tip cavity 20 for housing a resistance-heating wire coil 21. The tip cavity is closed at the rear by an interfitting flange 17a projecting from the front of the ring 17 while at its rear end, the ring 17 in turn interfits by an inner flange extension 17b with an outer flange 11a formed by a counterbore at the head end of the barrel 11. It will be noted that the ring 17 and rear end portions 19a of the liner 19 have an inside diameter corresponding to that of the barrel bore 12 so as to provide a forward continuance thereof. The bore then tapers inwardly by the central portion 19b of the liner and has a reduced cylindrical discharge portion defined by the head portion 19c of the liner.

On its upper side the barrel 11 is formed with a rectangular cheek projection 22 surrounding an upwardly opening cavity 23. This cavity receives a self-opening micro-switch unit 24 which is closed responsive to rearward manual depression of a spring-urged button 24a.

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For this purpose there is provided a slide trigger 25 projecting forwardly from the cavity through an opening in the front wall 22a of the cavity. A cavity cover plate 27 anchored by screws 28 holds the switch unit 24 against radial movement relative to the barrel while a central cover screw 30 anchors the switch unit against endwise movement. The trigger 25 is stepped to provide a forwardly facing stop flange 25a at the base thereof arranged to bear against the inner face of the front cavity wall 22a when urged thereagainst by the switch button 24a. In this forward position of the trigger the switch 24 is open and stops the flow of current to the heating coil 21 through a pair of wire leads 31. These leads are threaded endwise through the barrel 11 from the rear thereof into the cavity 23 wherein one of the leads is interrupted by the switch 24. From the cavity 23 the leads continue forwardly through the barrel and ring 17 into the nose cavity 20 for connection with the coil 21.

The coil leads 31 extend by a slack cord section 31a from the rear of the dispenser 10 into the base of a holder 32 having the general appearance of a pen holder in that it has an upper hollow open-ended neck 32a adapted to receive the forward end of the dispenser for convenient storage thereof. A rheostat 33 is mounted in the holder 32 and is disposed in the circuit between the coil leads 31 and power leads 34 to the front of the base of the holder 32. A control dial 33a is exposed at the side of the holder for adjusting by the rheostat the temperature at the tip of the dispenser.

The dispenser is loaded by removing the cap 16, spring 14 and plunger 13 and inserting a cylindrical stick of wax 35 into the bore 12. Then the wax stick is forced to the beveled portion 19b of the liner 19 at the front of the bore by reinserting the plunger and spring, and then compressing the latter by application of the cap 16. With the rheostat 33 at the desired setting the dentist grips the dispenser as indicated in FIG. 2 and presses the trigger 25 with his forefinger to complete the circuit to the heating coil 21. As the head of the dispenser is heated the front portion of the wax stick softens responsive thereto to the degree necessary for the compressed spring 14 to extrude the softened wax through the radially reduced discharge portion 19c, the temperature and spring pressure being coordinated to give the wax the proper molding consistency at the time of extrusion and discharge from the dispenser. Since the dispenser is slim and compact, about the size of a fountain pen, the tip of the dispenser can be inserted into the patient's mouth and the wax discharged directly at the impression site. The electric cord 31a is made long enough to permit freedom of use of the dispenser remote from its holder.

The dispenser may also have its plunger 13 provided with a radially projecting button 36 having its stem 36a threaded into the plunger and slidable along a side longitudinal slot 37 formed in the barrel 11. This button 36 can be easily engaged by the thumb as shown in FIG. 2 while the forefinger presses the trigger 25. In this way the dentist can supplement the pressure of the spring 14 or override the spring pressure. For some applications it may be desired to rely solely on thumb pressure exerted on the button 36. The button must of course be unscrewed from the plunger before the plunger can be removed from the barrel for reloading the dispenser with wax.

It is thought that the invention will have been clearly understood from the foregoing detailed description. Changes in the details of construction will suggest themselves and may be resorted to without departing from the spirit of the invention, wherefore it is my intention that no limitations be implied and that the hereto annexed claims be given a scope fully commensurate with

the broadest interpretation to which the employed language admits.

I claim:

1. A molding wax dispenser comprising, a barrel with a bore for receiving a wax stick, a tip assembly on said barrel thermally insulated therefrom and providing a continuously open orifice communicating with said bore, said tip assembly having an annular heater cavity surrounding the orifice and defined by a thermally-insulating jacket and a thermal-conducting liner, an electrical resistance heater in said heater cavity, stick pushing means in said bore spaced lengthwise thereof from said heater for urging a wax stick through said orifice when heated, and an electric control circuit for said heater including a self-opening off-on switch mounted on said barrel, and a trigger operatively associated with said switch for selectively manually closing the switch.

2. The dispenser of claim 1 in which said stick pushing means comprises a plunger slidably mounted in said bore and a spring in said bore arranged and adapted to yieldingly urge said plunger toward said orifice with a pressure adequate for extrusion of the wax stick when it

is heated by said heater and inadequate when the wax stick is not heated.

3. In combination with the dispenser of claim 1, a holder providing a storage socket for receiving the tip of said barrel, a temperature control rheostat in said holder, power leads to said rheostat, and leads in said control circuit from said rheostat to said switch and heater.

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