

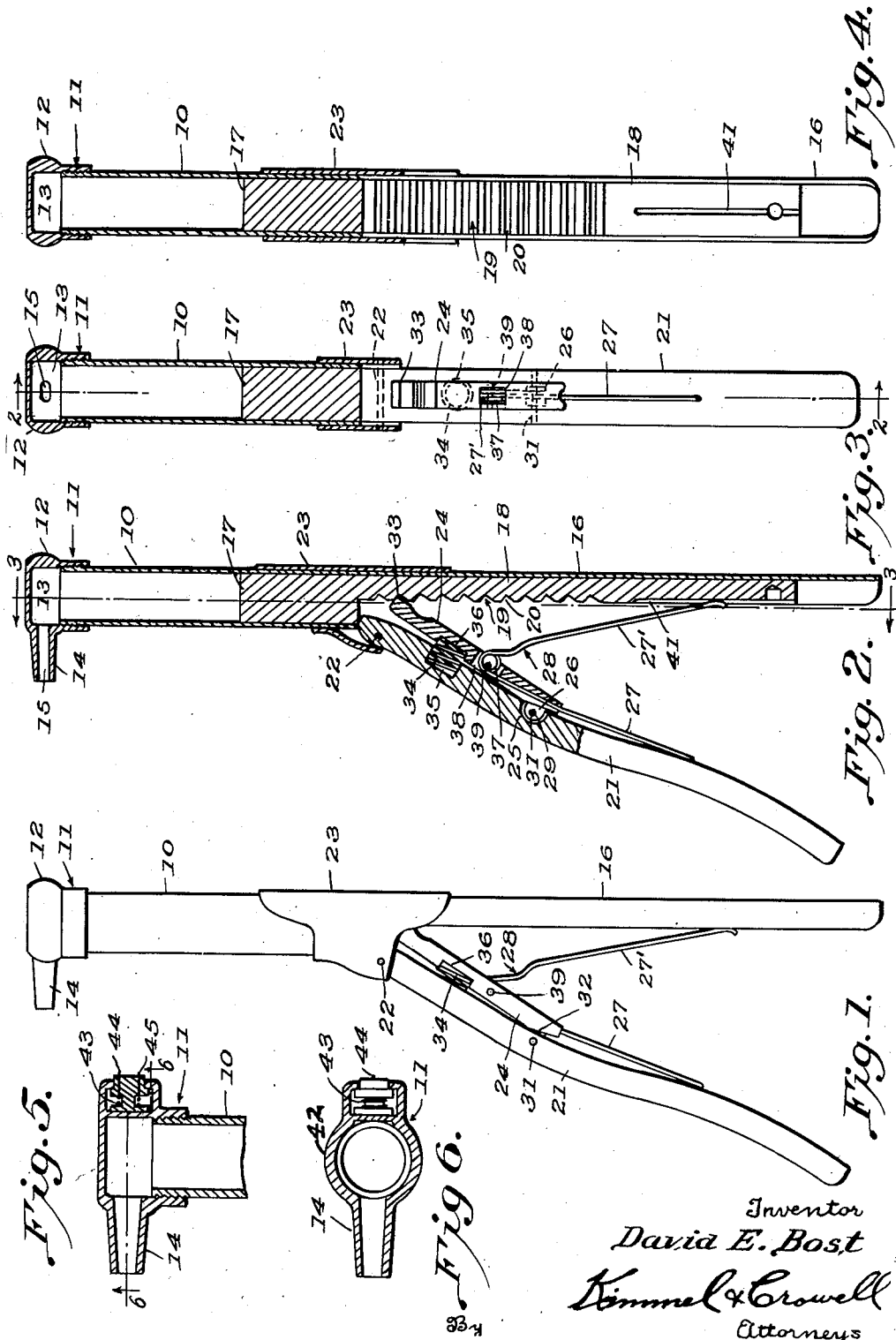
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DENTAL INSTRUMENT

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DENTAL INSTRUMENT

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6 Claims. (Cl. 32—70)

This invention relates to a dental instrument and more particularly but not necessarily to a wax gun.

It is one object of this invention to provide a dental instrument that shall be particularly adapted for discharging wax or other pattern making material into a prepared cavity of a tooth. When the cavity includes more than one surface of the tooth a fitted matrix around the cavity and tooth provides a proper form for the reception of the wax as it is discharged from the gun. It is understood that the pattern resulting from the filling of the prepared cavity with wax is usually a step in the construction of a metal casting which serves as the finished filling for the tooth.

Another object is to provide a dental instrument that shall be adapted to discharge a pre-determined amount of wax or other material during one actuation of the device.

A further object is to provide a dental instrument that shall discharge a pre-determined amount of wax or other material intermittently and at independent operations of the device.

A still further object is to provide a dental instrument having the above characteristics that shall be novel in construction, rugged, efficient in operation, particularly adapted for the use for which it is intended and comparatively inexpensive to manufacture.

The above and other objects will be made apparent throughout the further description of the invention when taken in connection with the accompanying drawing wherein like reference characters refer to like parts. It is to be distinctly understood that the drawing is not a definition of the invention but merely illustrates one form of the device showing a preferred structure for carrying out the invention. The invention will be defined by the appended claims.

In the drawing:—

Figure 1 is a side elevational view of a device embodying the invention,

Figure 2 is a sectional view taken along the line 2—2, Figure 3,

Figure 3 is a sectional view taken along the line 3—3, Figure 2 looking to the left,

Figure 4 is a sectional view taken along the same line as Figure 3 but looking to the right,

Figure 5 is a fragmental view in section showing a modification of the invention, and

Figure 6 is a sectional view taken along the line 6—6, Figure 5.

In the forms shown, 10 indicates a cylinder having its upper end threaded at 11 to receive a head member 12. The head member 12 contains a chamber 13 communicating with the interior of the cylinder 10. Projecting from the head 12 is a nipple 14 preferably formed integrally therewith and having an opening or

passage-way 15 disposed therethrough and communicating with the chamber 13. The lower end of the cylinder 10 terminates in a downwardly extending handle and guide portion 16 formed integrally with the cylinder and having a cross section substantially semi-circular in shape. A piston 17 is slidably positioned within the cylinder 10 and terminates at its lower end in a rearwardly extending integrally formed reduced portion or member 18. The outer surface of the member 18 is preferably concave or semi-circular in shape for slidably contacting the co-operating inner surface of the semi-circular handle portion 16. The handle member 16 operates to act as a track and guide for the member 18 which is adapted for relatively slidable movement therewith. The other or inner surface of the member 18 is provided at its upper portion with a rack 19 having tooth receiving notches 20 spaced apart a pre-determined distance.

Novel means is provided for urging the rack forward of the device and progressively moving the piston 17 through the cylinder in stepped relation as required by the operator. This means comprises a handle member 21 arcuate in shape to render it easy to be grasped with the hand of an operator. The end of the handle member 21 is pivotally mounted by means of a pin or shaft 22 extending through the lower side walls of a band or clamping member 23. The clamping member 23 extends around the lower end of the cylinder 10. The end of the member 21 is so positioned within the band member 23 as to form a stop for the piston 17 and defining the piston's extreme innermost portion within the cylinder 10. In order that the rack together with the piston may be moved forward step by step, there is provided a pawl member 24 having its lower end turnably mounted adjacent the inner side of the member 21. The member 21 is provided with a recess 25 adapted to receive a projection or lug 26 extending from the lower end of the pawl 24. The lug 26 is bifurcated longitudinally for receiving and accommodating a leg 27 of a spring means represented in its entirety by 28 later to be described. The lug 26 is provided with an opening 29 disposed at substantially right angles to the bifurcation therein and adapted to receive a pin 31 having its ends extending into the side walls of the recess 25 provided in the handle member 21 and turnably supporting the lower end of the pawl 24, the latter being cut away at 32 to permit free movement of the lower end of the pawl with respect to the co-operating and adjacent surfaces of the member 21. The upper end of the pawl is provided with a tooth 33 for engaging and co-operating with the notches or grooves provided and forming the rack 19. The upper end of the pawl 24 is biased toward the rack 19 by means of a coil spring 34 mounted in

oppositely disposed recesses 35 and 36 formed in adjacent surfaces of the members 21 and pawl 24 respectively.

It can now be readily understood that since the lower end of the pawl 24 is turnably mounted on the member 21 and at a point positioned off center and at a distance from the axis 22 of the member 21 that upon movement of the member 21 towards the co-operating handle portion 16 the pawl will be carried forward sufficiently to move the rack 19 a distance equal to the spacing of the notches 20 in the rack 19. Therefore upon each closing movement of the handle 21 the piston will be carried forward in steps and will urge wax or other material through the chamber 13 in the head portion 11 and out through the passageway 15.

For the purpose of biasing the handle member 21 in open position a spring means 28 is provided and consists of a pair of legs 27 and 27' formed in substantially V-shape and connected at the apex of the V by means of a loop 37. The spring means 28 extends through an opening 38 formed through the pawl 24, the means 28 being so positioned that the loop 37 will extend into the opening 38 and adapted to receive a pin 39 extending through substantially the center of the opening 38 and having its end anchored into the opposite side walls of the opening 38. The free ends of the legs 27 and 27' are adapted to rest on and press against the opposing sides or surfaces of the handle member 21 and the rack member 18 respectively. These members 21 and 18 may be provided on their inner faces with a groove 41 for guiding the inner ends of the legs 27 and 27' of the spring means 28.

The head portion 11 is constructed so as to provide an increased thickness around the periphery thereof as shown at 42. This increase in material permits the head 11 to be heated and retain such heats of sufficient length of time to render the wax therein pliable and workable. The head 11 may be heated by a direct flame or the gun may be constructed with a built-in resistance coil and heated by electricity as shown in Figures 5 and 6. The resistance coil 43 may be connected within the head 11 as shown or associated therewith in any manner that will properly supply heat to the head 11. The resistance coil 43 may be provided with a pair of contacts 44 and 45 adapted to engage and contact with similar contacts supplied with a source of electricity.

In the operation of the device the head 11 is removed from the upper end of the cylinder 10 and the upper end of the pawl 24 is disengaged from the rack 19 by moving it against the spring 34 after which time the piston 17 together with the member 18 and rack 19 is shoved to its lowermost position and until the lower end of the piston 17 contacts the upper end or stop member of the handle 21. The cylinder 10 is then filled with wax or other material to be employed, after which time the desired type of head 11 is assembled on the upper end of the cylinder. The device is now in position for actuating the handle 21 for carrying the rack 19 and piston 17 forward which will urge the wax through the heated head 11 out the opening 15 provided through the nipple 14.

While there has been illustrated and described only two embodiments of the invention, it will be obvious to those skilled in the art that certain structural changes may be made in the device as well as other modifications, substitutions, additions and omissions without departing from the spirit and scope of the appended claims.

What I claim is:—

1. A dental instrument comprising a cylinder having a rearwardly extending integrally formed handle member, said handle member being substantially semi-circular in shape, a piston in said cylinder having a rearwardly extending rack member integrally formed therewith, means for moving said rack to cause said piston to slide within said cylinder, the said semi-circular-shaped handle member being adapted to receive said rack member and serve as a track therefor, the said rack moving means includes another handle member having one of its ends turnably mounted adjacent the rear end of said cylinder and adapted to limit the rearward movement of said piston in said cylinder.

2. A dental instrument comprising a cylinder, a piston slidable therein, means for urging said piston through said cylinder, means for limiting the movement of said piston in one direction in said cylinder, the first said means including the second said means, and means for turnably mounting the said last said means adjacent one end of the said cylinder.

3. A dental instrument in accordance with claim 2 wherein the said first said means includes a rack extending from one end of said piston and formed integrally therewith, and a pawl carried by the said second said means for engaging and actuating said rack.

4. A dental instrument in accordance with claim 2 wherein the said cylinder terminates in a rearwardly extending integrally formed handle member, the said handle member having a cross section substantially semi-circular in shape and adapted to receive and guide the first said means during the movement of said piston in said cylinder.

5. A dental instrument comprising a cylinder, a piston therein having a rearwardly extending integrally formed rack member, and a pair of handle members, one of said handle members having a cross section substantially semi-circular in shape and formed integrally with said cylinder, the other one of said handle members is turnably mounted at one of its ends adjacent the rear end of the said cylinder and operates as a stop member for limiting the rearward movement of the piston through said cylinder.

6. A dental instrument comprising a cylinder, a piston therein having a rearwardly extending integrally formed rack member, and a pair of handle members, one of said handle members having a cross section substantially semi-circular in shape and formed integrally with said cylinder, means is provided for actuating the said rack member for urging the said piston through said cylinder, the said means including a pawl member having one of its ends turnably supported on the other of said handle members, and means for biasing the other end of said pawl into contact relation with the said rack.

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