

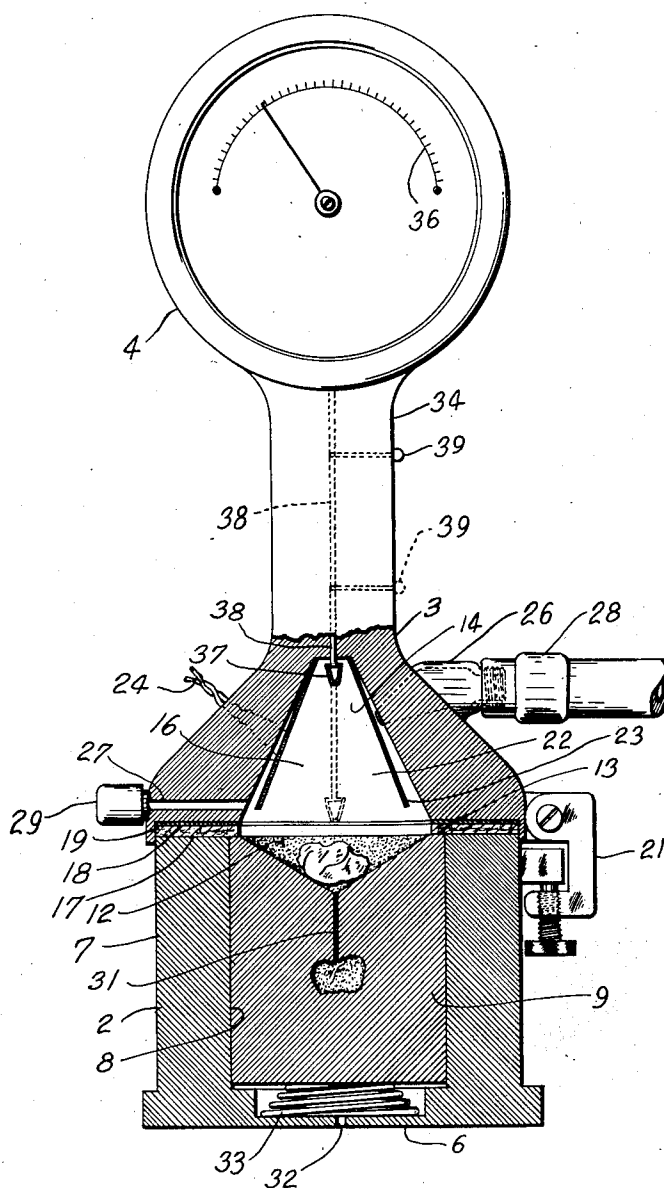
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MELTING AND CASTING UNIT

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MELTING AND CASTING UNIT

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1 Claim. (Cl. 22—69.1)

The invention relates to a device for melting casting material and applying the same to the mold to effect the casting operation.

5 An object of the invention is to provide a device of the character described by which the melting of the casting material and the application thereof to the mold may be effected without oxidization of the material.

10 Another object of the invention is to provide a device of the character described in which the means for effecting the melting of the casting material is combined with the means of holding the mold for the application of said material thereto.

15 A further object is to provide a device of the character described wherein the mold to which the casting material is to be applied is arranged to form a part of the heating chamber in which the material is to be melted.

20 A still further object is to provide a device of the character described which will have a pyrometer that may be controlled to indicate the temperature of the heating chamber at different points therein.

25 The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawing accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawing and description may be adopted within the scope of the invention as set forth in the claim.

35 The drawing is a front elevation view, partly in section, of a unit embodying the features of my invention.

40 In the present embodiment of the invention the unit is particularly designed for use in the practice of dentistry and in dental laboratories, and more especially in melting and casting gold in the forming of inlays. As here shown the unit in general comprises an inlay-ring supporting section 2 which forms the base of the unit, a closure section 3 which carries electric heating means and is arranged to cover the supporting section and form with the ring therein a non-oxidizing heating chamber, and a pyrometer 4 mounted on the closure section and designed to permit a reading of the temperature in different parts of the chamber.

45 More specifically the supporting section 2 as illustrated in the drawing comprises a bottom side wall 6 and an annular vertical side wall 7 which together define a cavity 8 in which a casting ma-

trix such as the inlay-ring 9 may be removably inserted with its open side 12 at the top opening 13 of the section. The closure section 3, which as previously stated is arranged to be positioned over the section 2, is formed on its under side with a cavity 14 which is designed in the operative position of the closure to define with the open side 12 of the ring a heating chamber 16. Interposed between the opposing edges 17 and 18 of the sections is arranged a gasket 19 preferably formed of an asbestos composition and adapted to effect a seal between the sections. Attachment of the sections together may be effected by any suitable means such as the clamp 21.

15 The portion of the closure section defining the cavity 14 is in the nature of a refractory lining 22 which is preferably in the form of an inverted hollow frustrum of a cone. Arranged in the walls of the lining 22 are a plurality of electric heating elements 23 designed to heat the chamber on being energized, suitable conductor leads 24 extending through the walls of the section for connecting the elements to a source of electric current.

20 The melting and casting operation in the use of my device is arranged to be effected with the casting material and mold exposed only to a non-oxidizing gas such as hydrogen or nitrogen and for this reason means are provided which permit the air in the heating chamber and mold to be displaced by a charge of such gas. As here shown, suitable passages 26 and 27 are provided in the walls of the cover section which respectively serve as an inlet for the non-oxidizing gas to the chamber and as outlet for the air displaced thereby, suitable check valves 28 and 29 being associated with the inlet and outlet passages in order that the desired pressure of gas may be maintained in the chamber. The operating pressure in the chamber during the casting operation is above atmospheric so that pressure will be applied against the molten material to force same through the pouring passage 31 of the ring and into the mold, the ring as will be understood being formed of a porous material whereby the gas may find its way therethrough and out of the cavity 8 through a suitable opening 32 in the wall 6. In order that the inlay ring may form a proper seal for the chamber, the edge portions of the open side of the ring are held in sealing engagement with the gasket 19 by means of a spring 33 interposed between the bottom of the ring and the wall 6. By being thus held by said spring, the ring, particularly the open side thereof, is maintained in a predetermined elevated

relation in the chamber regardless of the depth of the ring.

5 The pyrometer 4 is preferably carried by the section 3 as a fixed part thereof and as here shown extends thereabove in the form of a centrally disposed standard 34 carrying a reading dial 36. Operatively associated with the pyrometer is a thermo-couple 37 here shown carried on the lower extremity of a vertically adjustable stem 38. By any suitable means such as the arm 10 39 fixed to the stem and accessible from the exterior of the standard, the stem and consequently the thermo-couple 37, may be positioned at any height in the chamber whereby the temperature of the chamber directly at the casting material 15 or any portion of the chamber thereabove may be readily and accurately indicated on the dial.

20 The operation of the unit can now be readily understood. Assuming that an inlay-ring has been inserted in the supporting section with a piece of casting material set in the depression leading to the pouring passage 31, the sections are properly secured together with the ring set in sealed position. The air may then be displaced with the nitrogen or other suitable gas, 25 and the electric current turned on to energize the elements. This condition is then maintained to raise the temperature in the chamber sufficient

to readily melt the casting material. When the material is thus melted the gas pressure is increased above atmospheric whereby under the influence thereof the molten material will be forced into the mold to insure a perfect casting. It will thus be clear that at no time is the casting material subject to oxidization during the melting or casting operation, and that as a result thereof the final product will be entirely free of any objectionable impurities. 5 10

I claim:

15 In a unit of the character described, a base member having a concavity for the reception of a porous casting matrix and being open at the top and bottom, an enclosure member having a refractory inner surface and arranged to fit over said first member to define with said matrix a heating chamber, a sealing gasket interposed between said members, means securing said members together, means in the second member providing an inlet and exit for gases to and from the chamber, electric heating elements carried by the second member, a pyrometer on said second member including a thermo-couple adjustably positionable in the chamber, and means resiliently urging the matrix in engagement with said gasket. 20 25

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