D. S. MACKENZIE.

APPARATUS FOR MAKING DENTAL FILLINGS, BRIDGES, AND THE LIKE.

APPLICATION FILED JUNE 7, 1910.

1,048,982. Patented Dec. 31, 1912.

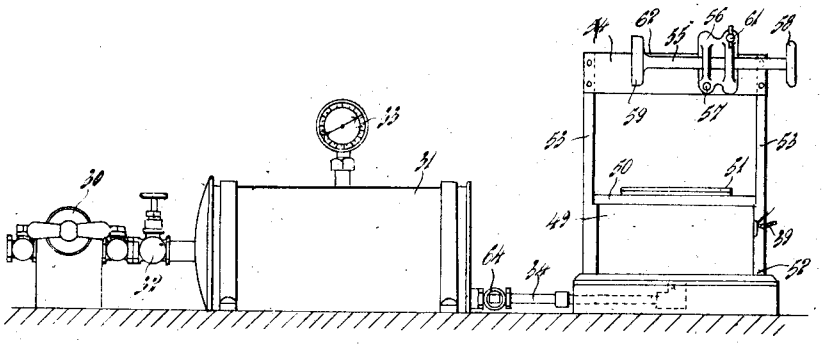

FIG. 1.

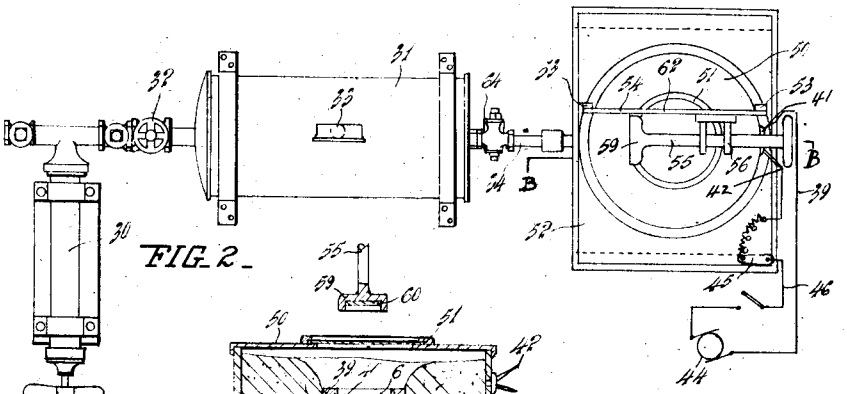

FIG. 2.

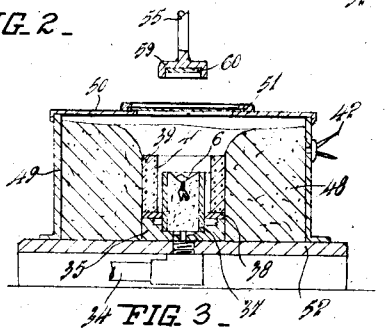

FIG. 3.

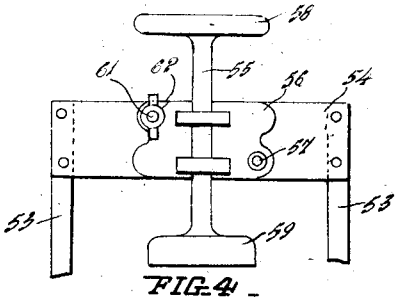

FIG. 4.

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UNITED STATES PATENT OFFICE.

DAVID STUART MACKENZIE, OF LEVIN, NEW ZEALAND.

APPARATUS FOR MAKING DENTAL FILLINGS, BRIDGES, AND THE LIKE.

1,048,982. Specification of Letters Patent. Patented Dec. 31, 1912.

Application filed June 7, 1910. Serial No. 565,625.

To all whom it may concern:

Be it known that I, DAVID STUART MACKENZIE, a citizen of the Dominion of New Zealand, and residing at Levin, in the Provincial District of Wellington, in the Dominion of New Zealand, have invented certain new and useful Improvements in Apparatus for Making Dental Fillings, Bridges, and the Like, of which the following is a specification.

This invention relates to improvements in apparatus for casting dental fillings, crowns, plates, bridges and the like and the object of the invention is to provide means whereby the flow of metal into the molds is assisted by pressure above and a vacuum below the mold.

In the accompanying drawings, Figure 1 is a side elevation of an apparatus constructed in accordance with the invention; Fig. 2 is a plan view; Fig. 3 is a vertical sectional view on the line B—B of Fig. 2; Fig. 4 is a detail view.

The particular embodiment of the invention illustrated is adapted for use in large business and the several parts are of such size that the apparatus is not readily portable. It will be understood however that there can be variation in this particular without departing from the invention.

Referring to the drawings, 30 designates a vacuum pump which is connected with a reservoir 31 by means including a stop cock 32. The reservoir is provided with an ordinary vacuum gage 33 and communicates through a pipe 34 having therein a stop valve 64 with the lower end of a cup-like container 35 shown as having a stepped bottom, whereby it is adapted to receive cylinders 37 of various sizes, the cylinders and proper portion of the container bottom being connected by screw threads. Said cylinders may be connected with the cup by suitable threads so that a cylinder of proper size for the particular work to be performed may be readily fitted in place.

Within the cylinder is arranged the usual investment material in which the mold is formed, said mold communicating with a recess 6 at the upper end of the cylinder adapted to receive the model to be melted. A muffle 40 of fire clay reinforced with continuous wires 39 having terminals 41, 42, surrounds the cylinder 37 and a washer 38 of asbestos is preferably arranged between said muffle and the cup 35. The cylinder and muffle are inclosed in a casing 49 and a body of asbestos 48 through which the terminals of the wires of the muffle 40 extend, a metal cover 50 being provided for the upper end of such casing which is supported by a base plate 52. The cover is provided with a removable lid 51 for an opening, through which is adapted to pass a cover 59 for the cylinder 37, said cylinder cover having in its inner surface an absorbent pad 60 preferably made of asbestos. Said cylinder cover is carried by a rod or stem 55 slidably supported in a bracket 56 which is pivotally connected at 57 to a cross bar 54 supported by uprights or standards 53 that rise from the base 52. At its upper or outer end said rod 55 has a head or cross bar 58 by means of which the rod and cylinder cover 59 may be moved to and from position to cause the cover to fit upon the upper end of the cylinder 37.

When the device is in use the bracket 56 is secured against movement about its pivot 57 by means of a bolt 61 engaging a slot 62 in the supporting member 54. By loosening such bolt and adjusting the rod 55 vertically to carry the cover 59 above the top of the casing 49, the bracket 56 can be turned upon its pivot so that the contents of the muffle may be exposed and readily examined. The wires 39 form part of a circuit including an electric generator 44 and a rheostat 45 is introduced into one branch 46 of such circuit.

In using the apparatus a suitable mold is prepared and arranged within the cylinder 37 secured to the cup 35 as before described, and by means of an electric current the muffle is suitably heated while the lid 51 of the casing 49 is in place and the cover 59 for the cylinder 37 is in the position shown in Fig. 1. When the temperature within the casing 49 has been raised sufficiently high to melt the metal in the recess 6, the lid 51 of the casing is removed and the bracket 56 and stem 55 adjusted so as to position the cover 59 upon the cylinder 37, the pad 60 within such cover having been suitably loosened. Within the stop cock 64 in the pipe 34 is opened to establish communication between the cup 35 and the vacuum reservoir 31. The steam generated by the action of the heat of the casing upon the mixture contained in the pad 60 of the cover 59 of the mold cylinder and the vacuum act to force the metal into the mold.

Having described my invention what is claimed and desired to be secured by Letters-Patent is,

1. The combination, in an apparatus of the character described, of a vertically arranged mold-casing having an opening at its top, means for withdrawing air from said casing, an electric coil adapted to heat said casing, a closure for the opening at the upper end of the mold casing adapted when heated by said coil to create pressure in the casing, and means supporting said closure and adapting it to be moved vertically to and from the mold casing and to rock about a horizontal axis.

2. Apparatus of the kind described, comprising the combination of a cylinder and mold contained therein, with a cup fitting the end of the cylinder, an electric muffle surrounding the cylinder, means for generating an electric current in the muffle, a casing having a removable lid and containing the muffle, asbestos material surrounding the muffle, a cover adapted to pass into the casing and close the top of the cylinder, and an asbestos pad within the cover, substantially as set forth.

3. Apparatus of the kind described, comprising the combination of a cylinder, and mold contained therein, with a cup fitting the end of the cylinder, a base plate supporting the cup, an electric muffle surrounding the cylinder, means for generating an electric current in the muffle, a casing having a removable lid and containing the muffle, a standard rising from the base plate and having horizontal arms, a rod slidable in the arms, a cover fixed to the rod and adapted to fit upon the cylinder, substantially as set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

DAVID STUART MACKENZIE.

Witnesses:

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