

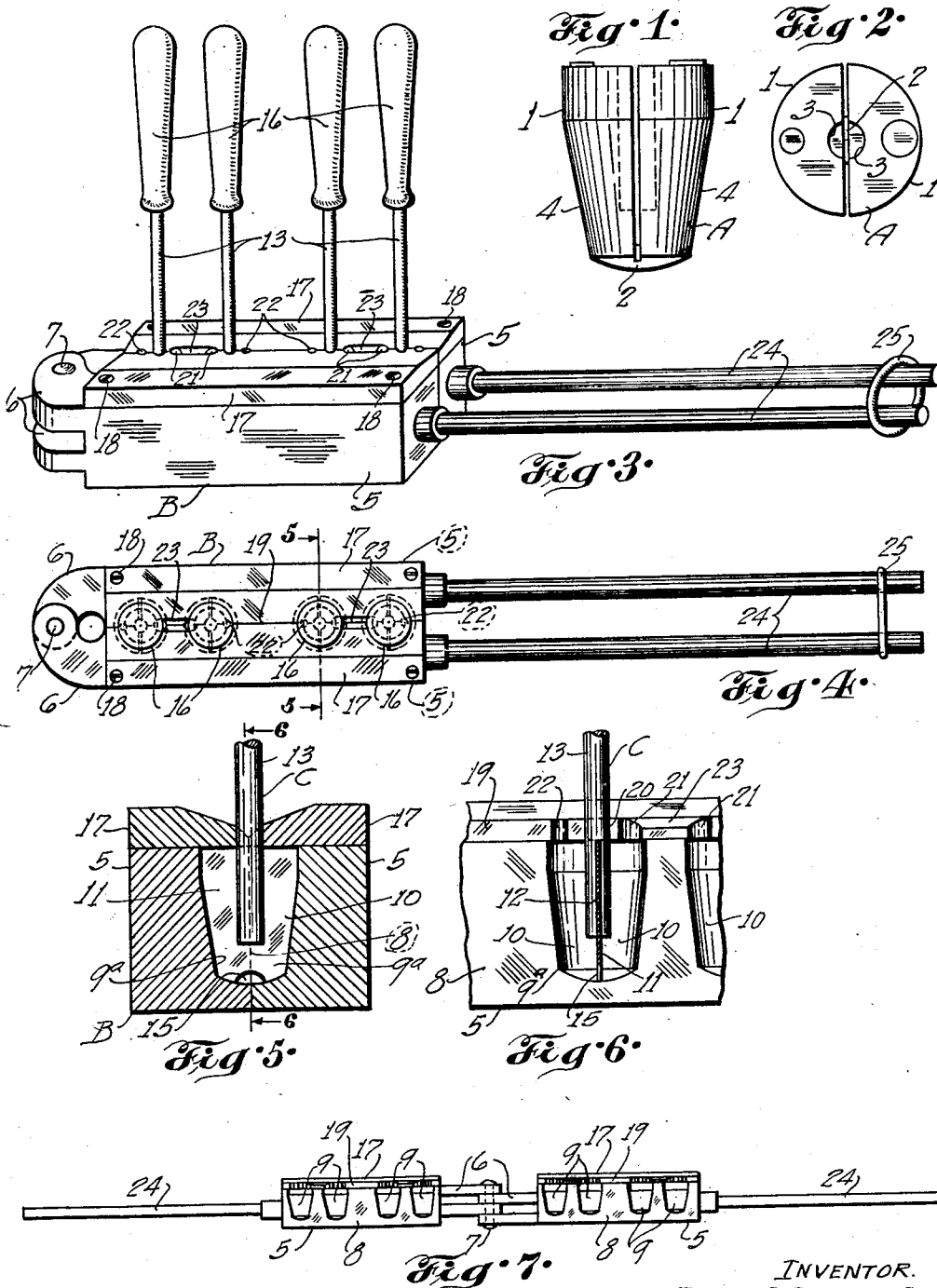
May 10, 1932.

J. C. SCHWARTZ

1,857,289

DENTAL APPARATUS

Filed Jan. 30, 1930



INVENTOR.
JACOB C. SCHWARTZ, DEC'D.
By MERCANTILE-COMMERCE BANK
AND TRUST CO. TRUSTEE.

By *Ralph K. Smith*
ATTORNEY

UNITED STATES PATENT OFFICE

JACOB C. SCHWARTZ, DECEASED, LATE OF UNIVERSITY CITY, MISSOURI, BY
MERCANTILE-COMMERCE BANK AND TRUST COMPANY, TRUSTEE, OF ST. LOUIS,
MISSOURI, ASSIGNOR TO BERRY DENTAL LABORATORY CO., OF ST. LOUIS, MISSOURI,
A CORPORATION OF MISSOURI

DENTAL APPARATUS

Application filed January 30, 1930. Serial No. 424,612.

This invention relates generally to dental apparatus and, more particularly, to a certain new and useful improvement in molding devices for plugs for shaping gold crowns to teeth.

Such plug-devices are molded in a single piece from a malleable metal, such as lead, for subsequent compression about or around a model of the tooth, as more particularly described in Patent No. 1,052,850, of February 11, 1913, to which reference is made. Heretofore, said plug-devices have been constructed in individual molds, such production being more or less uneconomical in waste of time and labor and resulting in plugs of non-uniform dimensions.

The principal objects of the present invention are to simplify the production and to reduce the time involved in and cost of making such plug-devices; to provide such plug-devices of uniform dimensions and symmetry; and in general to advance the art of molding dental-appliances of the character set forth.

And with the above and other objects in view, the invention resides in the novel features of form, construction, arrangement, and combination of parts hereinafter described and pointed out in the claims.

In the accompanying drawings,—

Figure 1 is a side elevational view of a plug-device for shaping gold crowns to teeth;

Figure 2 is a top plan view of the plug-device;

Figure 3 is a perspective view of a molding device embodying the preferred form of the invention adapted for forming the plug-devices of Figures 1 and 2;

Figure 4 is a top plan view of the molding-device;

Figure 5 is a sectional view through the multiple-compartment cavity of the mold taken approximately along the line 5—5, Figure 4;

Figure 6 is a side view of one of the confronting faces of the molding device, taken approximately along the line 6—6, Figure 5; and

Figure 7 is a side elevational view of the fully expanded jaws of the molding device,

showing the cavity-forming recesses in the meeting faces of the mold.

Referring now more in detail and by reference characters to the drawings, first there will be briefly described the plug device A for shaping gold-crowns to teeth, as illustrated in Figures 1 and 2, reference being had to said Patent No. 1,052,850, for a more particular description of the purposes and uses thereof, the present invention having to do especially with certain perfections and improvements in the construction of said plug-device, as will from time to time be pointed out as the description proceeds.

The plug A, for the purposes of this invention, comprises preferably a body of malleable metal, such as lead, to be molded in semi-cylindrical opposing halves 1, 1, united integrally at an end, as at 2, the opposing faces of said halves having depressions 3, 3, in registering relation to form a preferably axial opening for the reception of a tooth-model with a crown fitted therein (not shown), one end of said opening 3, 3, being closed by the end-lead 2 that unites the halves 1, 1, the plug A being for the most part of a frusto-conical shape, as at 4, having a rounded bottom, all for purposes fully set forth in said Patent No. 1,052,850.

The present invention is directed to a molding device B for forming a plurality of the plugs A, the mold B including a pair of oblong-rectangular companion body-members or blocks 5, 5, hinged together at an end, as by co-operating pairs of hinge arms 6, 6, pivotally interconnected by a pintle-pin 7, for swingable actuation of the body-members 5, 5, from closed or opposed position, as shown in Figure 3, to open or expanded position, as shown in Figure 7.

Each of the mold-members 5 is longitudinally provided upon its inner face 8 with a plurality or series of cavity forming recesses 9a, each opening to one side of the mold-member, the recesses 9a of one member 5 being adapted, when the mold-members 5 are in closed position, to opposingly register with the respective recesses 9a in the confronting face 8 of the other or companion mold-member 5 in the formation of mold-cavities 9 cor-

responding in contour with the described contour of the finished plugs A, the upper part of each of the recesses 9a, 9a, being preferably semi-cylindrical and the lower part tapering inwardly toward the bottom thereof, where the final cavity 9 is rounded, as shown in Figures 5 and 6. In the production of the plugs 5, each cavity 9 is divided vertically into two compartments 10, 10, as shown in Figure 6, said respective compartments 10, 10, preferably, though not necessarily, extending crosswise of the meeting faces 8, 8, of the mold B.

For such purpose, there is provided a removable core-piece C, which includes a blade 11 rigidly fixed or secured in a slot 12, provided in an end of a mandrel 13, said end of the mandrel 13 preferably terminating within a short distance of the lower edge of the blade or plate 11, the slot 12 being preferably arranged to extend longitudinally through the axis of the mandrel 13, so that the two parts of the latter that embrace the blade 11 serve the purpose of a core for forming the opening 3—3 in the plug-device A, the blade 11, it will be seen, extending vertically transversely of the cavity 9 for partially parting the plug A thereat. In such respect, the mandrel 13 is preferably located centrally of the blade 11 in such manner that, when the latter is inserted into its proper position in the mold-cavity 9 for partition thereof, the axis of the mandrel 13 will coincide substantially with the axis of said cavity 9, as best seen in Figure 4. The blade 11 is formed with a configuration that is substantially the same as the vertical sectional configuration of the conjoined pair of recesses 9a, in such respect that, when the blade is inserted into its proper position in the mold B, the side and lower edges of the blade 11 fit closely to the sides and bottom of the mold-cavity 9, whereby the two compartments 10, 10, into which the cavity 9 is divided by the blade 11, are separated from each other without any communication except through a notch or cut-away portion 15 in the rounded or lower edge of the blade 11, said notch 15 being preferably located below the lower end of the mandrel 13, Figure 5. Preferably the other end of the mandrel 13 is provided with a protruding handle 16 for manipulation of the core-piece C, as soon appearing.

It may here be stated that the core-piece C corresponds in a certain degree to a like-member described in said Patent No. 1,052,850. The present invention, however, provides unique means for supporting or holding the core-piece C in proper position in the mold B and also for forming a finished upper surface on the several plugs A. For such several purposes, the mold-members 5, 5, are each provided with a separable complementary oblong rectangular cover plate 17, detachably secured flatwise to the mold-member 5 by suitable fastening means 18, 18,

the pair of plates 17, 17, being adapted for meeting engagement on closure of the mold B for providing a top wall for the mold cavities to define and in such manner form a finished top surface on the several plugs A, as soon appearing. The top surface of each cover-plate 17 declines toward the inner or meeting faces 19, 19, of the pair, the plates 17, 17, in such respect, parting at the longitudinal center line of the series of cavities 9 and the declivity so formed providing a pouring-channel on the top of the mold B (Figure 4).

The inner faces 19, 19, of the cape or cover plates 17, 17, are each provided with a plurality of groups of registering preferably semi-cylindrical notches 20, 21, and 22, of which the pairs of notches 20 are axially disposed with respect to the mold cavities 9, 9, thereunder, so that, when conjoined, on closure of the mold B, the respective pairs of co-operating notches 20, 20, are adapted to receive, for lateral supporting or positioning engagement therewith, the respective mandrels 13 upstanding from the mold-body B, as will be understood, when the core-pieces C are suitably positioned therein.

In like manner, the respective pairs of notches 21 form pouring gates communicating with one of the chambers 10 in each cavity and, in such respect, it may be pointed out that the cavities 9 are preferably arranged for gating in pairs, the pouring gates 21—21 of each pair being adjacent to one another and joined by a runner 23 formed by suitable beveled portions of the meeting faces 19, 19, of the mating cover-plates 17, 17. In a similar manner, the respective pairs of notches 22 provide vents or ports communicating with the other one of the chambers 10 in each of the mold-cavities 9, said vents 22—22 being diametrically opposite the pouring-gates 21—21.

Presented from the free or front ends of each of the companion mold-jaws 5, 5, is a somewhat springable handle or rod 24, said pair of handles 24, 24, constituting a manually operable means for swingingly actuating the mold-members 5, 5, into open or closed position, the handles 24 and the conjoined jaws 5, 5, being releasably held in closed or molding relation by preferably a suitable mechanical means, such as a ring 25 slipped over the projected pair of ends of the handles 24 when the same are yieldingly pressed together for such purpose.

The use of the molding device is thought to be obvious from the foregoing description, but it may be said that, the mold B being in its expanded or opened position, the core-pieces C are properly inserted into the respective cavities 9 and the mold B tensionally closed as described. The mold is now ready for the casting operation, for which purpose a low fusing malleable metal, preferably

lead, in a molten state is poured into the runners 23, 23, and flows thence through the opposite pouring-gates 21, 21, into the subjoined respective chambers 10.

5 The molten lead not only fills the particular compartment 10 into which it is run, but, also, at the same time, runs through the notch 15 in the lower edge of the blade 11 into the other compartment 10, the latter being vented
10 through the ports 22—22 aforesaid. In such manner, the molten lead will fill both compartments 10, 10, to the underside of the cover-plates 17, 17, and in such respect it will be understood that the molten metal will stand
15 in the gate 21—21 and vent 22—22 forming risers for accommodating the shrinkage of the metal and in such manner having the effect of producing a nicely finished molded article for the purposes intended. When the
20 lead has cooled in the mold B, the latter is parted, and the plugs A and their contained core-pieces C may be readily removed, where-upon, by grasping the handles 16, the cores C may be drawn from the respective plugs A.

25 Thus it will be seen that the invention accomplishes its objects, more particularly in providing a closed molding-chamber for producing a plurality of uniform, symmetrical fully finished articles, and, again, in providing
30 for the economical and expeditious production thereof.

It will be understood that the dimensions of the various parts of the molding device may be varied for the production of different
35 size plugs, and that other changes and modifications in the form, construction, arrangement, and combination of the several parts of the mold may be made and substituted for those herein shown and described without departing from the nature and principle of the
40 invention.

The invention being thus described, what it is desired to secure by Letters Patent is:

1. A mold including, in combination, a pair
45 of companion blocks hinged together at an end and whose inner meeting faces are provided with co-operable cavity-forming recesses for registration to form a mold-cavity, said recesses also opening upon the upper
50 face of the respective blocks, a core-piece comprising a mandrel and a notched blade, the latter being disposed transversely within the cavity for partially parting the casting, and a pair of co-operating marginally
55 notched cover-plates flatwise disposed on said blocks over said recesses for meeting engagement for supportingly notchwise engaging the mandrel of the core-piece and providing a finishing upper surface for the molded matter.
60

2. A mold including, in combination, a pair of companion blocks hinged together at an end and whose inner meeting faces are provided with co-operable cavity-forming recesses for registration to form a mold-cavity,
65

said recesses also opening upon the upper face of the respective blocks, a core-piece comprising a mandrel and a notched blade, the latter being disposed transversely within the cavity for partially parting the casting and
70 dividing the cavity into compartments, and a pair of co-operating marginally notched cover-plates disposed flatwise on said blocks over said recesses for meeting engagement for notch-wise supportingly engaging the mandrel of the core-piece, said cover-plates also
75 providing a finishing surface for the molded matter and being provided with additional registering notches for gating one of said compartments and venting the other.
80

3. A mold including, in combination, a pair of companion oblong-rectangular blocks hinged together at an end and whose inner meeting faces are provided with a longitudinal series of spaced cavity-forming recesses
85 for registration to form a plurality of mold cavities, said recesses also opening upon the upper face of said blocks, core-pieces each comprising a mandrel and a blade, the latter being respectively disposed in the cavities for
90 dividing each of the same into two compartments, and co-operating cover-plates disposed flatwise on the upper face of said blocks over said recesses for meeting engagement for closing said compartments at
95 their upper end and providing a finishing surface for the molded matter, said cover-plates having a plurality of marginal co-operably registering notches for supportingly engaging the respective mandrels of said
100 core-pieces and for gating and venting the respective compartments of the several cavities.

In testimony whereof, said MERCANTILE-COMMERCE BANK & TRUST COMPANY has
105 signed its name to this specification, by its vice-president thereunto duly authorized.

MERCANTILE COMMERCE

BANK AND TRUST CO. [L. s.]

Trustee for Jacob C. Schwartz, Deceased. 110

By THOS. C. HENNINGS,

Vice Pres.

115

120

125

130