F. W. TRACY.

APPARATUS FOR CASTING DENTAL PLATES.

APPLICATION FILED MAY 9, 1908.

926,037. Patented June 22, 1909

Fig. 1.

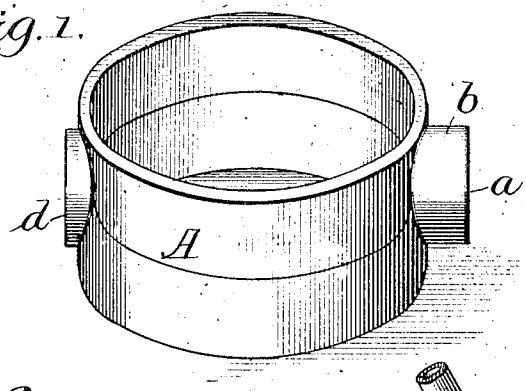


Fig. 2.

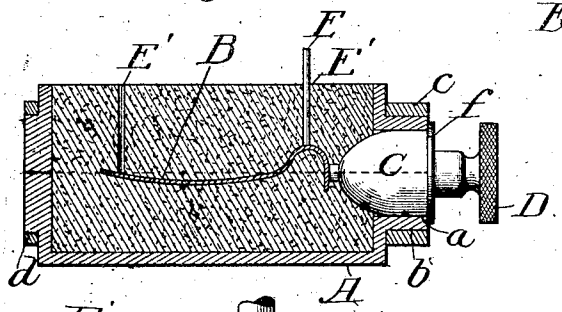


Fig. 3.

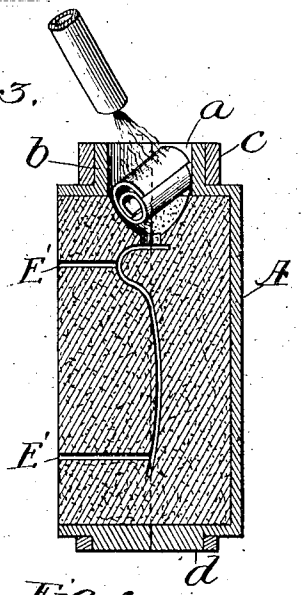


Fig. 4.

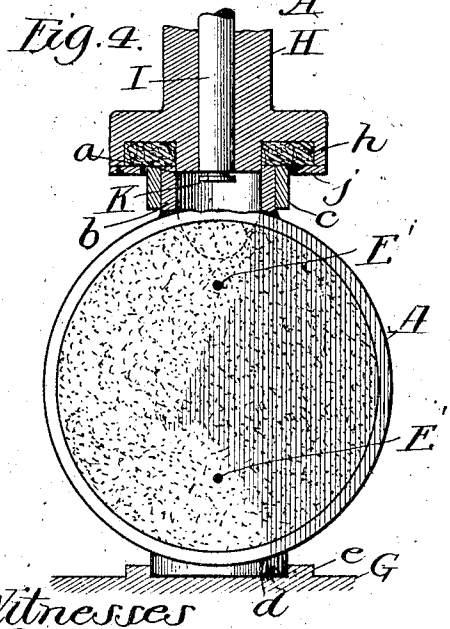
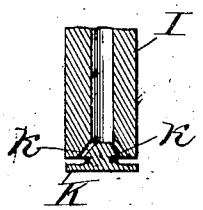


Fig. 5.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR CASTING DENTAL PLATES.

No. 926,037. Specification of Letters Patent. Patented June 22, 1909.

Application filed May 9, 1908. Serial No. 431,836.

To all whom it may concern:

Be it known that I, FRANK W. TRACY, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Apparatus for Casting Dental Plates, of which the following is a clear, full, and exact description.

My invention relates to means for casting dental work and particularly plates for false teeth. Heretofore dentists have had considerable difficulty in casting this comparatively large work, owing to the difficulty in getting the air out of the mold, and in getting the metal to flow into all parts of the same, and particularly owing to the peculiar plastic condition of aluminum, which is the metal usually employed for this purpose.

The object of my invention is to overcome these difficulties and to produce a smooth perfect casting economically and quickly, substantially as hereinafter fully described and as particularly pointed out in the claims.

In the drawings:—Figure 1 is a perspective view of my improved flask. Fig. 2 is a transverse section of the same in a horizontal position, showing the crucible former in place. Fig. 3 is a similar view of the same, set vertically on edge, and showing the manner of melting the metal in the crucible. Fig. 4 is a side elevation of the flask, taken at right angles to that shown in Fig. 3, and the superimposed means for pneumatically forcing the metal into the mold, shown in vertical central section. Fig. 5 is a detail view of the discharge end of the compressed air-pipe.

The principal part of my invention comprises a metal flask A, which is, preferably, cylindrical in shape and has a closed bottom and an open top, substantially as shown in the drawings. The inner diameter of this flask is sufficient to accommodate a plate for false teeth, and at one side it is provided with an opening *a*, whose edges, *b*, are flanged outward a short distance, and diametrically opposite opening, *a*, the flask is provided with a circular boss *d*. This flask consists of two parts A and A′ whose meeting edges are in a plane parallel with the plane of its top edges, that intersect the axes of opening *a*, and boss *d*, and these two parts are secured together by a metal ring *c* that is slipped over the flanged edges *b* of opening *a*, and by an annular plate *e*, which is placed around boss *d* and, together with said boss, forms a base for the support of the flask when it is set on its side with opening *a* uppermost. The flask is thus made in two sections to facilitate the removal of the casting, although it can be made in one piece if desired.

In use, the "investment material" (or composition in which the mold is made) is reduced to a plastic state and placed in the flask when the latter is in a horizontal position, substantially as shown in Fig. 2 of the drawings. The flask is usually filled from one-third to one-half full, and then the wax pattern B of the plate to be cast is inserted therein, with the bend or portion of the plate adapted to cover the gums, near the opening *a*. The remainder of the flask is then filled, after which a crucible former C is inserted in opening *a* until the circular flange *f* thereof bears against the outer edges of flange *b*. This former is, preferably, provided with an integral finger-grasp D extending outward from the flanged end thereof in alinement with its axis, whose outer end terminates in a knob having milled edges, substantially as shown. The former, C, is, preferably, of the shape of the small end of an egg, and its truncated end is provided with a short extension *g* which, when the former is pushed home, substantially as shown in Fig. 2, comes in contact with the bend of the plate-pattern. If this former should not reach the bend of said pattern after the former is removed, a sprue is made by any suitable implement which will connect the crucible with said pattern. The flask is then subjected to a sufficient degree of heat, to harden or fix the mold and to melt the wax, but before this is done, however, I make a small opening or vent E′ into the exposed surfaces of the plastic investment material, by means of a wire E, or other suitable device, which extends to and comes in contact with the broad side of the plate, substantially as shown in Fig. 3. If desired, I can make other openings or vents E^2, substantially as shown in Fig. 3 of the drawings. When the wax is thus melted it runs out of these vents. After the mold is fixed the base of the flask is seated in a suitable depression or seat in bed G, which corresponds to the contours thereof, and then the mouth of the opening *a*

is closed by means of a suitable presser-foot H. The lower end of this presser-foot is, preferably, greater in diameter than the upper portion, and between its outer circumference and the central portion thereof the under engaging surface is recessed and filled with asbestos *h* or other suitable non-combustible packing, which is retained in place by a suitable annular-plate *j*. The diameter of the solid central portion of the underside of the presser-foot corresponds to or is slightly less than the circumference of opening, *a*, of the flask, into which it is adapted to enter slightly so as to make the asbestos packing when the presser-foot is moved downward to the limit of its lower movement, bear tightly upon the upper edges of flange *a*, and its reinforcing band *c* and make an air-tight joint. This presser-foot is provided with a suitable central bore, and a pipe or tube, I, fits snugly within and extends through said bore sufficiently tight to prevent the escape of air around its sides. The bore of pipe I terminates near the lower end of the same, but compressed air is discharged therefrom by means of a series of orifices *k* which extend in an outwardly inclined direction through the lower end of the said pipe at points equal distances apart. This arrangement is adopted in order to throw the air discharged from pipe I in a radial direction against the sides of the crucible. This spreading of the air is facilitated by a circular deflector K which is, preferably, of the same diameter as the pipe, and is secured integrally or otherwise to the central portion of the pipe I, substantially as shown in Fig. 5 of the drawings. The object in thus spreading the compressed air as it enters the crucible is to press the molten metal in the crucible downward equally on all sides, and force the metal into the mold. The metal, which it is preferred to use for the casting of the plates for false-teeth, is aluminum, and when aluminum is melted, it does not flow like other molten metals but is more the consistency of lard, and has to be pneumatically forced into the mold, before it will fill all of the cavities made by the pattern. The use of compressed air or other gas is, therefore, a necessity, but if the compressed air was discharged into the crucible in a solid current in alinement with the axis of the pipe I, it would bore a hole through the molten aluminum, whereas by spreading it the pressure of the air is diffused so as to be equal all over the surface of the molten body of the metal and it is forced into the mold in a satisfactory and efficient manner.

What I claim as new is:—

1. A flask consisting of upper and lower portions the upper face of one of which is cut away, an opening in one side of said flask, a boss on the opposite side of said flask, and rings surrounding said opening and boss, in combination with a crucible former removably inserted in said opening and a vent formed in the open side of said mold at substantially right angles to the axis of said crucible.

2. A dental mold having the crucible and sprue made in the inclosed edge thereof, a vent in the uncovered top of the same and means which close the mouth of and discharge air radially into the crucible to force the metal into the mold.

3. A dental mold having a crucible therein and sprue extending axially therefrom into the cavity of the mold, in combination with means adapted to close the mouth of the crucible and discharge air under pressure radially into the same.

4. A flask the top of which is always open, and which has an opening in the side thereof, in combination with a crucible former adapted to be removably inserted therein and means for closing and discharging air under pressure radially into said crucible.

5. A flask the top of which is always open, and which has an opening in the side thereof, in combination with a crucible former adapted to be removably inserted in said opening, a suitable vent formed in the mold substantially at right angles to the axis of said crucible, and means for closing and discharging air under pressure radially into said crucible.

In testimony whereof I have hereunto set my hand and seal this 2nd day of May, A. D., 1908.

FRANK W. TRACY. [L. S.]

Witnesses:
CHARLES MCKINLEY,
FRANK D. THOMASON.