4 Sheets—Sheet 1.

C. F. BARNARD.

STAMPING DENTAL PLATES.

No. 186,522. Patented Jan. 23, 1877.

Fig. 1.

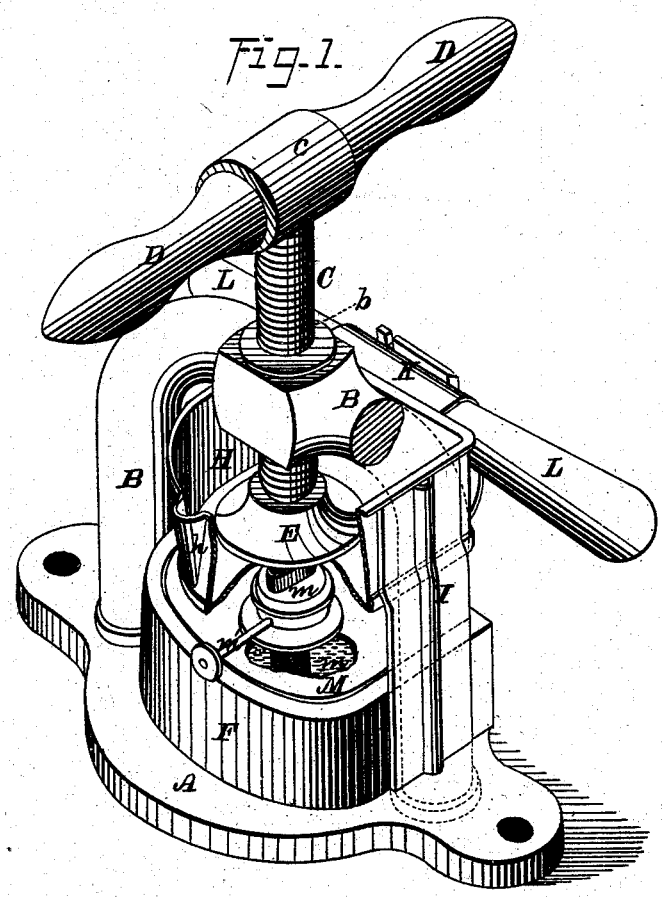

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Fig. 2.

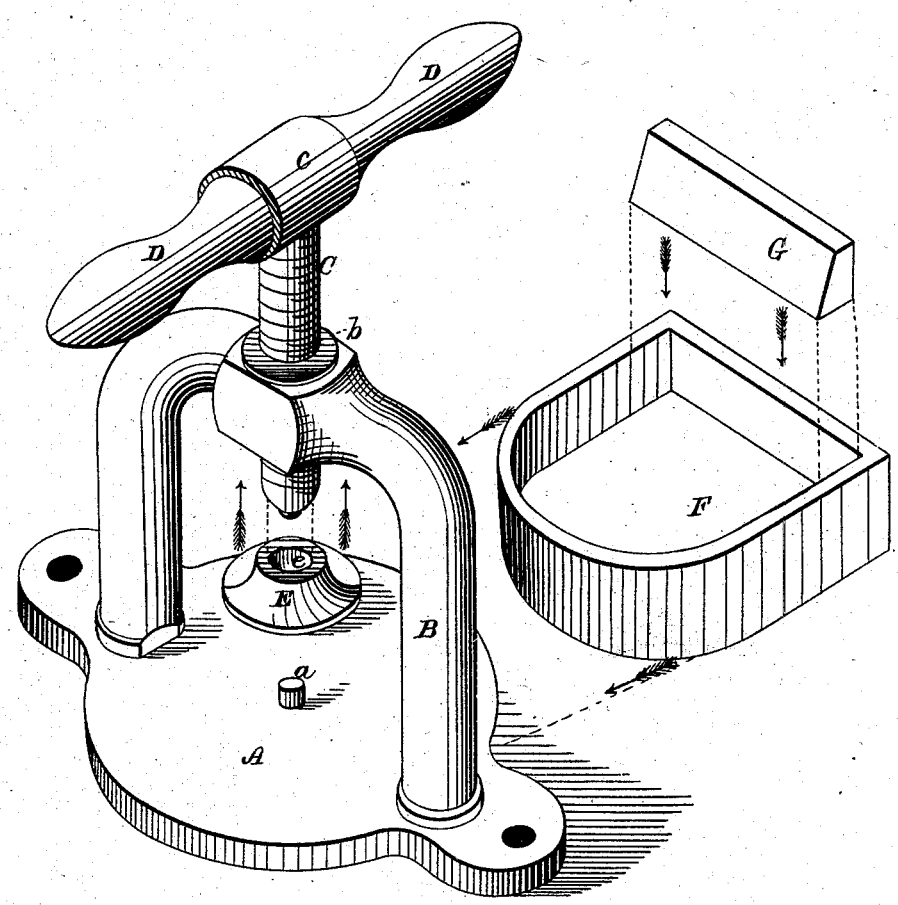

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Fig. 3.

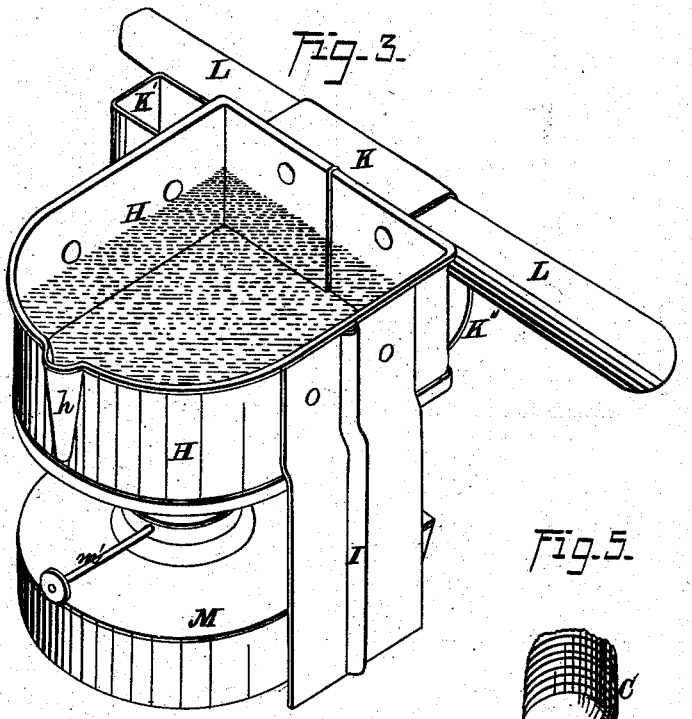


Fig. 4.

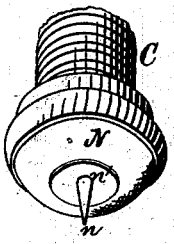


Fig. 5.

Fig. 6.

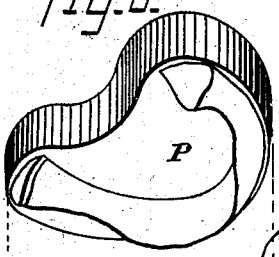


Fig. 8.

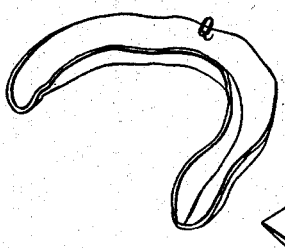
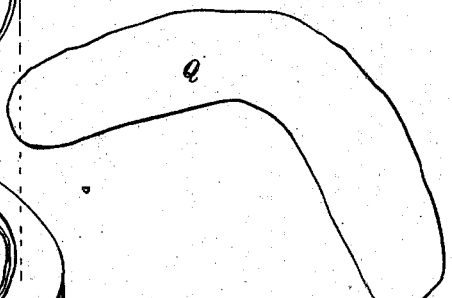
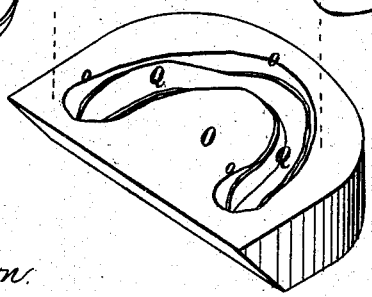


Fig. 7.





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STAMPING DENTAL PLATES.

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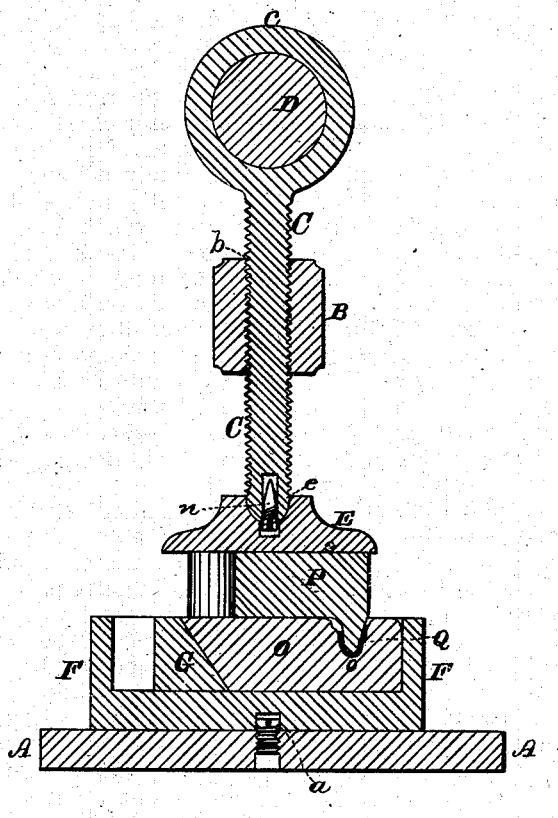
Fig. 9.



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UNITED STATES PATENT OFFICE.

CHARLES F. BARNARD, OF VICTORIA, BRITISH COLUMBIA.

IMPROVEMENT IN STAMPING DENTAL PLATES.

Specification forming part of Letters Patent No. **186,522**, dated January 23, 1877; application filed August 8, 1876.

To all whom it may concern:

Be it known that I, CHARLES F. BARNARD, of Victoria, in British Columbia, have invented certain new and useful Improvements in the Art of and Mechanism for Constructing Dental Plates; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of my apparatus as arranged for storage. Fig. 2 is a like view of the press and molding-flask separated from each other. Fig. 3 is a perspective view of the mechanism employed for melting the soft metal used for forming the die-blocks. Fig. 4 is a perspective view of the lower end of the screw, having attached thereto the device for holding a plaster cast. Fig. 5 is a like view of said screw end, showing a different arrangement of the cast perforator. Fig. 6 is a like view of a pair of die-blocks, with a mouth-plate in position within the lower die. Fig. 7 is a plan view of the blank employed for producing said plate. Fig. 8 is a perspective view of a mouth-plate separated from the mold, and Fig. 9 is a vertical central section of my improved press and die-blocks as arranged for use.

Letters of like name and kind refer to like parts in each of the figures.

The design of my invention is to lessen the labor and expense attendant upon the formation of mouth-plates, and to enable the same to be more quickly produced, and to have greater strength and a more perfect form; to which end it consists, principally, as an improvement in the art of mechanical dentistry, in the method for producing mouth-plates, substantially as is hereinafter specified. It consists, further, in the mechanism employed for forming the dies, substantially as and for the purpose hereinafter shown. It consists, further, in the means employed for melting the metal used for forming the dies, substantially as is hereinafter set forth. It consists, further, in the mechanism employed in forming the mouth-plates, substantially as and for the purpose hereinafter shown and described.

Heretofore it has been customary for dentists to form their mouth-plates by placing a plate of suitable metal between two dies, and, by repeated blows with a heavy hammer, to force said dies slowly together, said plates being thus caused to conform imperfectly to the form of the impinging surfaces of the latter. This method has, however, been found to possess many and marked disadvantages, among which are the time and hard labor required; the hardening of the plate under the repeated blows, which frequently cause the metal to become fractured, and require that it should be frequently annealed; and the imperfect manner in which said plates are caused to conform to the shape of said dies, it being nearly or quite impossible to fit a plate perfectly to the mouth of a person by such means. These difficulties are sought to be obviated by the method and mechanism hereinafter described, and mechanical dentistry relieved of some of its most objectionable features.

As my method and mechanism are closely related, I will describe them at one and the same time.

In the annexed drawings, A represents the base, and B a ∩-shaped yoke, which form the frame of my press. Said base has preferably a length of about ten inches and a breadth of about seven inches at its center, while said yoke has inside a height of five inches and about the same breadth. In and through the upper central portion of the yoke B is provided a vertical threaded opening, *b*, that receives and contains a correspondingly-threaded screw, C, which screw is provided at its upper end with an eye, *c*, for the reception of a cross-bar, D. The lower end of the screw C is pointed or rounded, and fits into a correspondingly-shaped socket, *e*, that is formed within the upper central portion of a platen, E, which platen is preferably made round in plan view.

Fitted loosely between the vertical portions of the yoke B is a flask, F, which has nearly equal dimensions in each direction in plan view, is square at one end and semicircular at its opposite end, and has a depth inside of about one inch. A stud, *a*, secured upon, and projecting vertically upward from, the axial center of the base A, fits into a corresponding recess within the bottom of the flask F, and insures the relative horizontal position of the

latter. A block, G, having a length just equal to the transverse dimensions of the interior of the flask F, and a height equal to the depth of the same, is fitted therein and capable of being moved forward or back, so as to lessen or increase the space between its front side and the rounded end of said flask. The rear side of said block or dam is vertical, so as to permit it to be placed against the rear wall of said flask, while its front side is inclined, as shown, for the purpose of giving increased breadth of base without lessening the area of the space inclosed at its upper side.

The flask described is employed for producing the metal mold upon or within which the mouth-plate is to be formed, as is hereinafter described.

For the purpose of melting the fusible alloy used for forming the metal mold, I employ a vessel, H, constructed from sheet metal in substantially the same form as the flask F, but having considerably more depth, which vessel is supported upon two sheet-metal legs, I and I, that are secured to opposite sides, and have such breadth as to afford firm bearings for said vessel. At its front rounded end the vessel H is provided with a lip, *h*, from which the molten metal is more readily poured, while at its rear side is a horizontal socket, K, that receives the correspondingly-shaped end of a bar, L, which bar furnishes a handle for raising and tilting said vessel. A second square socket, K′, is secured vertically upon one side, near the rear end of said vessel, in which said bar may be used, if desired.

The lamp M, for furnishing heat to the melting-vessel H, is made to correspond exteriorly to, and to fill the interior of, the flask F in front of the dam G, for convenience of storage, and is provided with a flat wick, *m*, that is raised by a wick-wheel shaft, *m′*, of usual construction. A screw-cap, N, fitted to and inclosing the lower end of the screw C, and provided within its lower end with a pointed stud, *n*, that has its upper threaded end contained within a correspondingly-threaded opening, *n′*, which is provided in said cap, completes my mechanism, the operation of which is as follows:

If desired, the cap N may be omitted, and the stud *n* fitted into a threaded opening in the lower end of the screw C.

The plaster cast of the mouth is placed upon the stud *n* in such position as to bring the former centrally over the flask F, after which said cast is lowered, by means of the screw C, until its molded lower surface is below the upper edge of said flask. The dam G is moved forward to or near the rear end of said cast, and the molten metal is then poured from the vessel H into said flask, and allowed to cool. The female die O having thus been prepared, the male die P is formed in the usual manner, after which the former is placed in position within the flask. A blank plate, Q, is placed over the impression *o*. Said male die P is placed upon the latter, and the platen E then placed upon the upper side of said die P, when, by means of the pressure of the screw C, the latter is forced downward, and said plate-blank is caused to conform perfectly to the impression *o*. The operation of direct and constant pressure upon the plate A imparts to the latter a slight degree of temper, but does not crack said plate, or render it brittle and liable to crack, as in case of plates that are formed by repeated blows of a hammer upon the back of the male die.

This method of forming the plates is simple, comparatively noiseless, and relieves mechanical dentistry of one of its most objectionable and laborious features.

When not in use, the apparatus is packed together, as shown in Fig. 1, its lamp being placed in the flask, the melting-vessel placed astride of the latter, with the platen and screw-cap contained within its interior.

A socket, K″, corresponding to the dimensions of the screw-lever D, is provided upon the rear side of the melting-vessel H, for the reception of said lever when not in use.

The blank Q has such size and shape that, when molded into form, but slight trimming of its edges will be required to adapt it to use.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. As an improvement in the art of mechanical dentistry, the method of forming metallic dental mouth-plates, which consists in shaping the same between dies by constantly-increasing pressure, in contradistinction to percussive force, for the purpose specified.

2. The screw-press, platen, flask, dam, and cast perforator or point, constructed and combined to operate in the manner and for the purpose substantially as shown.

3. The melting-vessel H, *h*, I, and I, lamp M, and operating lever or bar L, combined with each other in the manner and for the purpose substantially as set forth.

4. The combination of the dies, screw-press, platen, and flask, substantially as and for the purpose shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 22d day of April, 1876.

CHAS. F. BARNARD.

Witnesses:
A. RICKMAN,
A. OFNER.