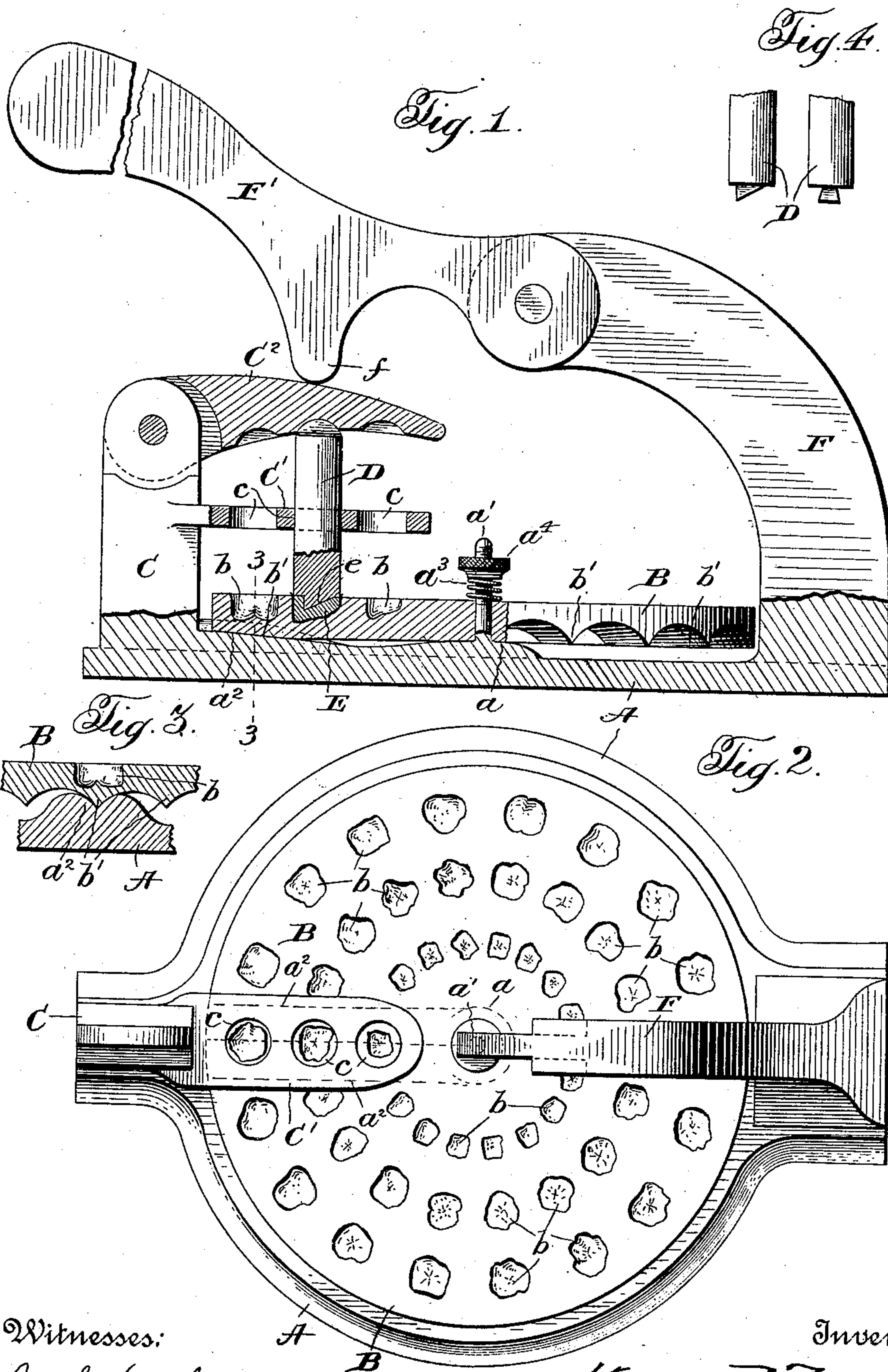


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DENTAL SWAGING APPARATUS.  
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910,631.

Patented Jan. 26, 1909.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

HYMAN B. ZENDEL, OF PASSAIC, NEW JERSEY.

## DENTAL SWAGING APPARATUS.

No. 910,631.

Specification of Letters Patent.

Patented Jan. 26, 1909.

Application filed September 21, 1908. Serial No. 453,936.

*To all whom it may concern:*

Be it known that HYMAN B. ZENDEL, a citizen of the United States, residing at 231 Main avenue, in the city of Passaic, in the county of Passaic and State of New Jersey, has invented certain new and useful Improvements in Dental Swaging Apparatus, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to an improvement in dental apparatus and more particularly to a dental swaging apparatus for producing gold crowns, facings, and cusps for plate and bridge work or for individual teeth.

The object of the present invention is the provision of a device of this character of a simple construction which is adapted for a wide range of work and with which cusps of any shape and size may be quickly and readily formed.

A further object of the present invention is the provision of a device of this character of such a construction that the cusps may be formed without the necessity of bringing any lead or zinc into contact with the gold, which frequently contaminates the gold so as to cause the same to melt during the annealing process.

Other objects of the invention will be apparent from the detailed description hereinafter when read in connection with the accompanying drawings forming a part hereof, wherein a preferable embodiment of the invention is shown and wherein like numerals of reference refer to similar parts in the several views.

In the drawings, Figure 1 is a perspective view of my improved swaging apparatus, parts being shown in section, Fig. 2 is a plan view, the operating lever being removed, and Figs. 3 and 4 are detail views.

Referring now more particularly to the drawings, A designates a substantially circular metallic base which is provided at the center thereof with an upwardly extending teat or boss *a* from which extends upwardly a pin *a'*. Rotatably mounted on the pin *a'* and normally resting upon the boss *a* of the base A is a die-plate B which is in the form of a disk and which is provided in its upper face with a plurality of dies or sockets *b* for forming crowns and facings for teeth of various kinds and sizes. The several sockets are arranged on the disk in concentric rows and the several sockets in said rows are arranged in

lines extending radially from the center of the disk or die-plate to the periphery thereof. The under side of the disk is provided with a plurality of radially disposed sharp ridges, one such ridge directly under lying each radial line of sockets in the upper face of the die-plate. The upper face of the base A is provided with a radially disposed projection *a*<sup>2</sup> which is provided with gradually inclined sides and with a radially disposed depression in the top thereof, in which is adapted to be seated any one of the radially disposed sharp ridges *b'* projecting from the under side of the die-plate B, so that said die-plate may be shifted to bring any desired socket therein into position to be operated thereon and then secured in such position against rotation. A spiral spring *a*<sup>3</sup> encircles the pin *a'* and is interposed between the upper face of the die-plate B and a nut *a*<sup>4</sup> threaded on the upper end of said pin. The spring *a*<sup>3</sup> normally holds the disk with one of the radially disposed sharp ridges *b'* thereof in engagement with the radially disposed depression in the top of the projection *a*<sup>2</sup> on the base, and it will be obvious that the spring will permit the die-plate B to move upwardly on the pin *a'* a sufficient distance to bring any particular row of sockets into position to be operated upon. Extending upwardly from one side of the base A is a standard C from the upper end of which projects laterally an arm C' which is arranged to overlie one row of the sockets in the disk B when the same is locked against rotation. The arm C' is provided with three circular openings *c* therein, each one of which is adapted to overlie one of the sockets *b* in the line of sockets in the die-plate B which underlies C' when the disk is locked against rotation.

D designates a cylindrical bar which is adapted to be interchangeably secured in any one of the three openings *c* in the arm C'. The lower end of the bar D is provided with a dove-tail projection extending therefrom for a purpose to be hereinafter more particularly set forth.

C<sup>2</sup> designates a lever which is pivotally secured to the upper end of the standard C and overlies the arm C' projecting therefrom, said lever being of a length to contact with the upper end of the bar D when it is secured in any of the three holes *c* in the arm C', and being provided with depressions in the under side thereof adapted to engage the upper end of said bar.



E designates the male dies or cusps, there being a male die provided for each of the sockets *b* in the upper face of the die-plate B. Each of the male dies E is provided on its rear face with a dove-tailed recess *e* therein so that any desired die may be readily secured to the lower end of the cylindrical bar D by engaging the recess *e* in the rear surface thereof with the dove-tailed projection extending from the lower end of the bar D. Extending upwardly from one side of the base A is a standard F to the upper end of which is fulcrumed an actuating lever F' which is provided with a depending portion *f*, which is adapted to engage the upper surface of the lever C<sup>2</sup> when the actuating lever is depressed.

In the use of the device the cusp or male die E is first selected which suits the case on hand and the disk B is rotated until the socket *b* therein which corresponds to the male die selected comes directly under one of the holes *c* in the plate C'. The male die is then secured to the lower end of the cylindrical bar D and after a piece of beaten gold has been placed over the proper socket in the disk, the cylindrical bar D is inserted in the proper hole in the arm C', the lever C<sup>2</sup> is thrown over until it rests on the top of the cylindrical bar D and the actuating lever is then depressed to effect the swaging of the crown. The crown can then be removed and annealed by any well known process.

While a preferred embodiment of the invention is shown in the drawings, it is obvious that the invention need not necessarily be limited to the exact construction shown and that many changes may be made thereto without departing from the spirit of the invention as defined in the appended claims.

I claim:

1. In a device of the character described, a base, a member shiftably mounted on said base and provided with a plurality of die-sockets in the upper surface thereof, a fixed member overlying said die member and provided with a plurality of openings therein, and a plunger adapted to be secured in any one of said openings so as to overlie any of the sockets in the die plate.

2. In a device of the character described, a base, a disk rotatably mounted on said base and provided with a plurality of die-sockets in the upper surface thereof, a fixed arm overlying said base and provided with a plurality of openings therein, and a plunger bar adapted to be secured in any one of said openings so as to overlie any of the sockets in the die plate.

3. In a device of the character described, a base, a disk rotatably mounted on said base and provided with a plurality of die-sockets in the upper face thereof arranged in regular rows, a fixed arm overlying said disk and provided with a plurality of openings there-

in, means for locking said disk in various positions of adjustment with any row of sockets under the apertured arm, and a plunger bar adapted to be secured in any one of said openings.

4. In a device of the character described, a base, a member shiftably mounted on said base and provided with a plurality of die-sockets in the upper surface thereof, a fixed member overlying said die member and provided with a plurality of openings therein, a plunger bar adapted to be secured in any one of said openings, and a male die member removably secured to the lower end of said plunger bar.

5. In a device of the character described, a base, a member shiftably mounted on said base and provided with a plurality of die-sockets in the upper surface thereof, a fixed member extending upwardly from the base and overlying said die member and provided with a plurality of openings therein, a plunger adapted to be secured in any one of said openings, a plurality of male dies adapted to cooperate with the die-sockets in the die member, and means for removably securing any of said male die members to the lower end of said plunger.

6. In a device of the character described, a base, a die member shiftably mounted on said base and provided with a plurality of die-sockets in the upper surface thereof, a fixed member extending upwardly from the base and overlying said die member and provided with a plurality of openings therein, a plunger bar adapted to be secured in any one of said openings and provided with a projection extending from the lower end thereof, and a plurality of male die members adapted to cooperate with the die sockets, said male dies being each provided with a recess permitting its attachment to the lower end of the plunger bar.

7. In a device of the character described, a base provided with a pin extending upwardly therefrom and with a depression therein at one side of said pin, a disk rotatably mounted on said pin and provided on its under side with a plurality of projections adapted to engage the depression in the base to hold the disk against rotation in any desired position of adjustment, said disk being provided with a plurality of die-sockets in the upper face thereof, a fixed member extending upwardly from the base and overlying said disk and provided with a plurality of openings therein, and a plunger bar adapted to be secured in any one of said openings.

8. In a device of the character described, a base, provided with a pin extending upwardly therefrom and with a depression therein at one side of said pin, a disk rotatably mounted on said pin and provided on its upper surface with a plurality of die-sockets and upon its under side with a plurality of

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projections adapted to coöperate with the depression in the base to hold said disk in various positions of adjustment, a spring yieldably engaging the upper surface of the disk, a member overlying the disk and provided with a plurality of openings therein, and a plunger bar adapted to be secured in any one of said openings.

9. In a device of the character described, a base, a fixed standard extending upwardly therefrom, an arm projecting laterally from said standard and provided with a series of openings therein, a die member shiftable on said base, said die member being provided with a plurality of die sockets in the upper surface thereof arranged in rows, means for locking the die member against movement on the base with any of the rows of sockets therein underneath the laterally projecting arm, and a plunger adapted to be secured in any one of the openings in said arm.

10. In a device of the character described, a base, a disk rotatably mounted on said base and provided with a plurality of die-sockets in the upper surface thereof, a standard extending upwardly from the base and provided with a laterally projecting arm overlying the base and having a plurality of openings therein, a plunger bar adapted to be secured in any of said openings, and a lever pivoted to the upper end of said standard and overlying the openings in the laterally projecting arm.

11. In a device of the character described, a base, a disk rotatably mounted on said base and provided with a plurality of die-sockets in the upper surface thereof, a standard extending upward from the base, an arm

projecting laterally from said standard over the base and having a plurality of openings therein, a plunger bar adapted to be secured in any one of said openings, a pivoted lever carried by said standard and adapted to rest upon said plunger bar, and means for depressing said pivoted lever.

12. In a device of the character described, a base, a disk rotatably mounted on said base and provided with a plurality of die-sockets in the upper surface thereof, a standard extending upwardly from said base, an arm projecting laterally from said standard over the base and having a plurality of openings therein, a plunger bar adapted to be secured in any one of said openings, a pivoted member carried by said standard and adapted to rest upon the upper end of said standard bar, and a pivoted actuating lever overlying said pivoted member.

13. In a device of the character described, a base, a member shiftable mounted on said base and provided with a plurality of die sockets in the upper surface thereof, a fixed member overlying said die member and provided with a plurality of openings therein, a plunger adapted to be secured in any one of the openings in the fixed member so as to overlie different sockets in the die plate, and means for depressing said plunger when in any of said openings.

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

HYMAN B. ZENDEL.

Witnesses:

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ALBERT K. CONDIT.