

No. 760,050.

PATENTED MAY 17, 1904.

G. B. WORTMAN.
DENTAL SWAGING MACHINE.

APPLICATION FILED NOV. 19, 1903.

NO MODEL.

Fig 1

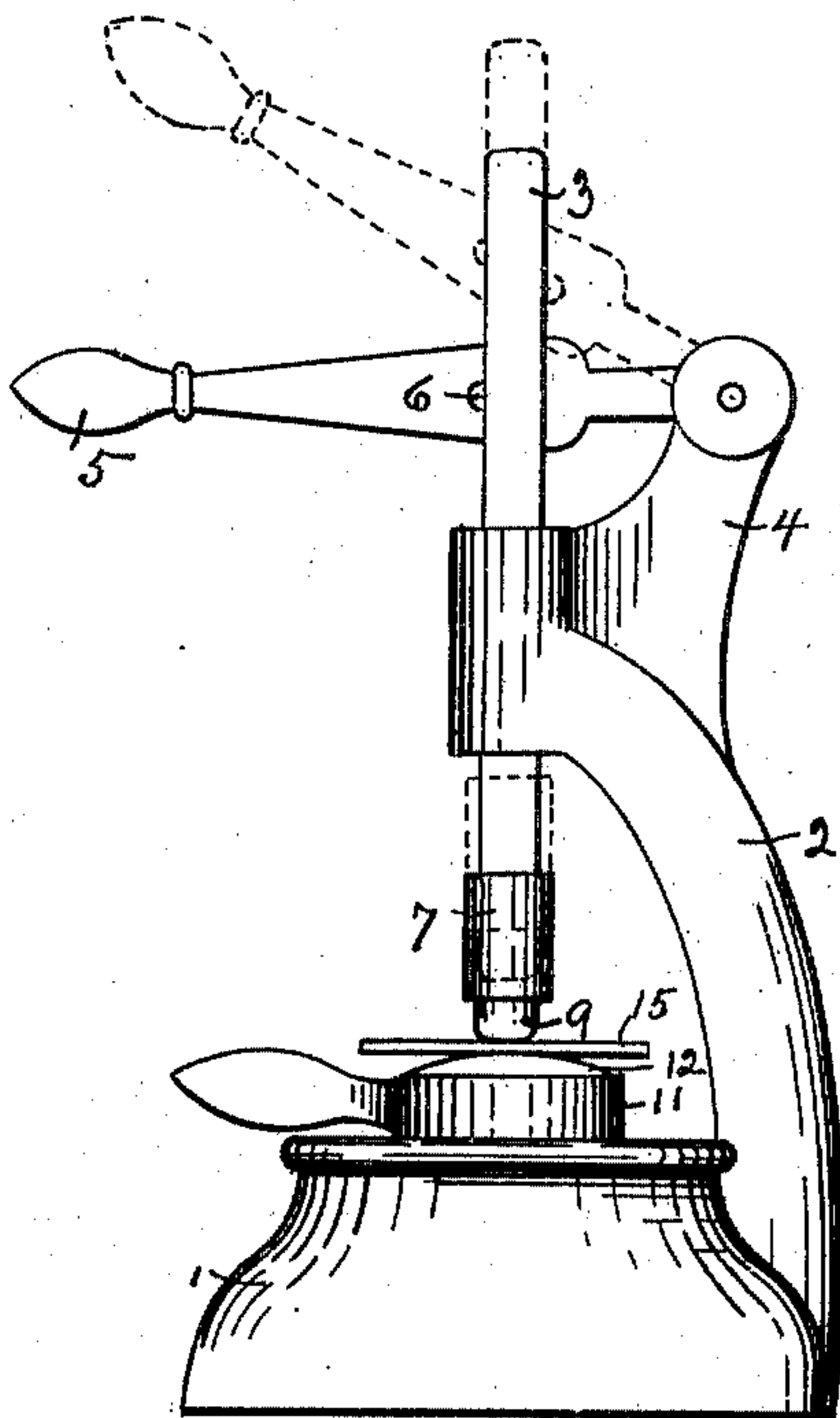


Fig 2

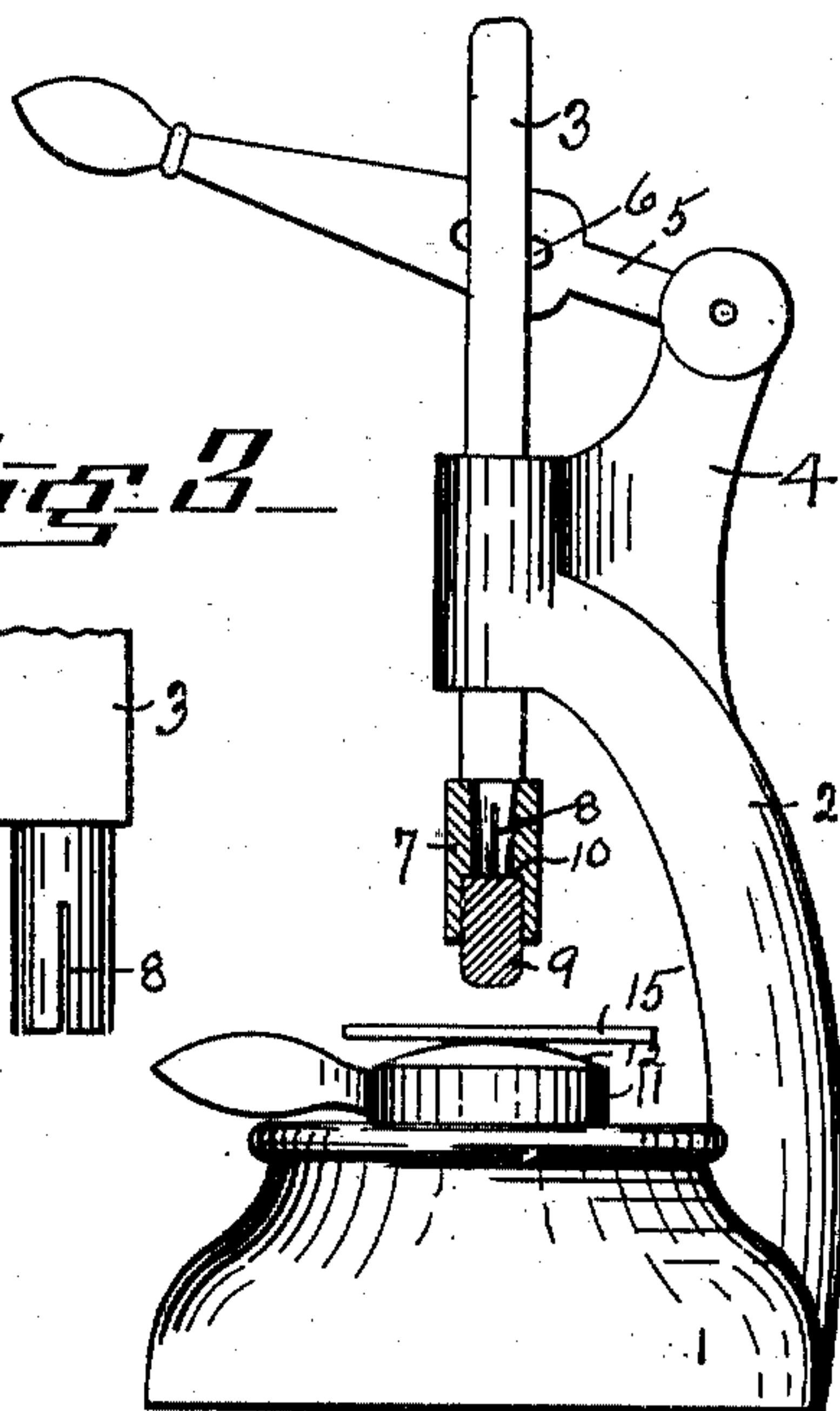


Fig 3

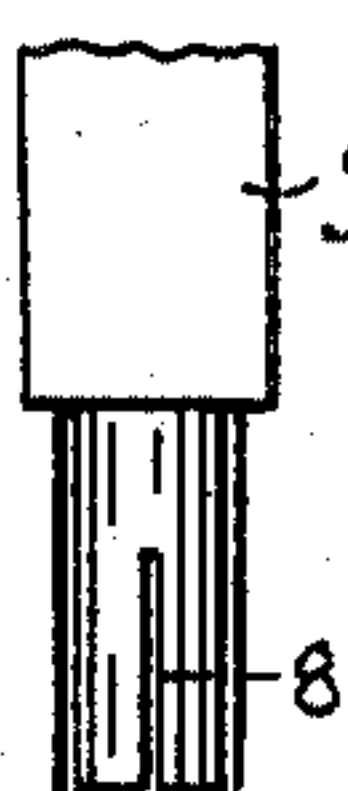


Fig 4



Fig 5

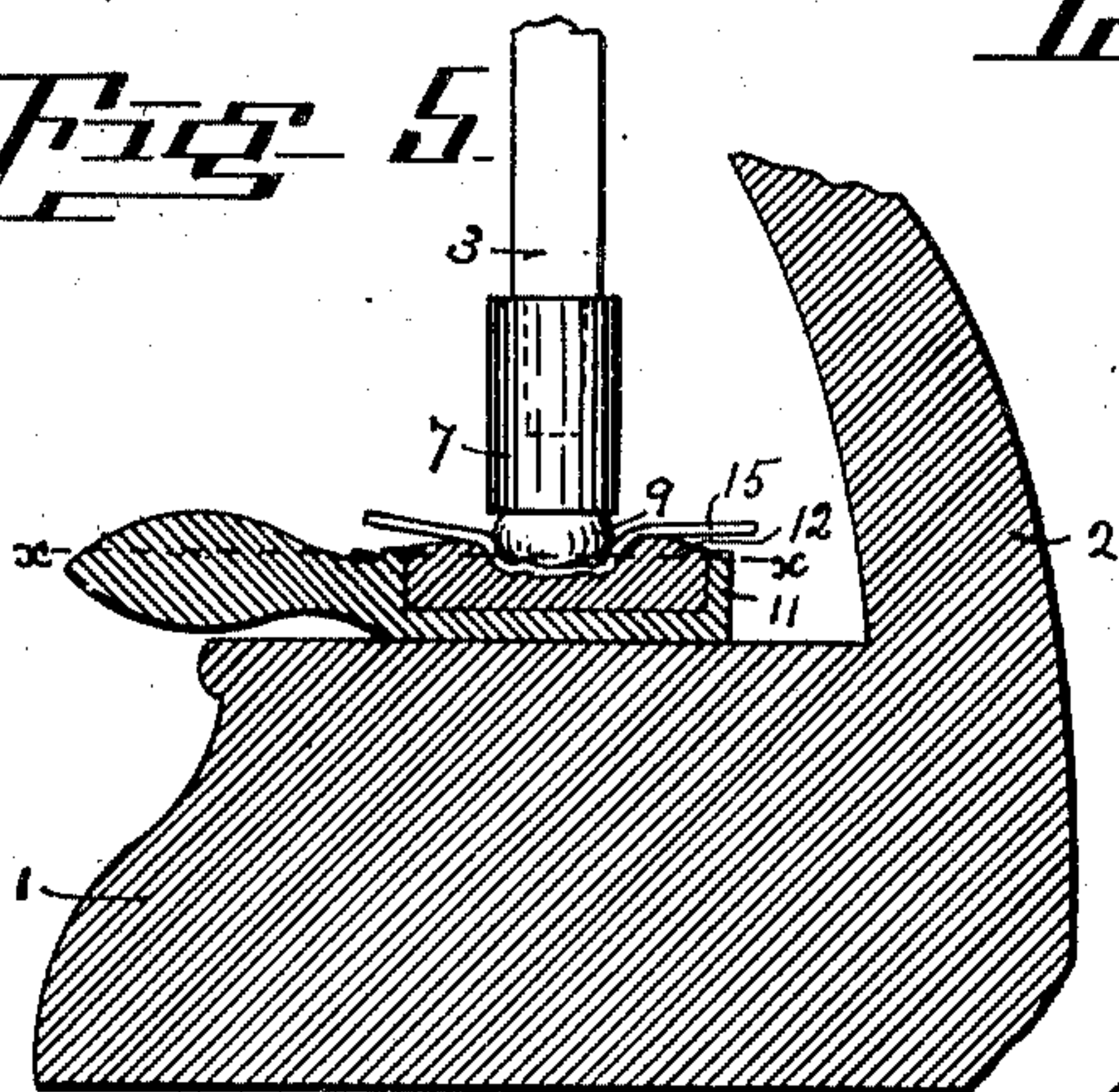


Fig 6

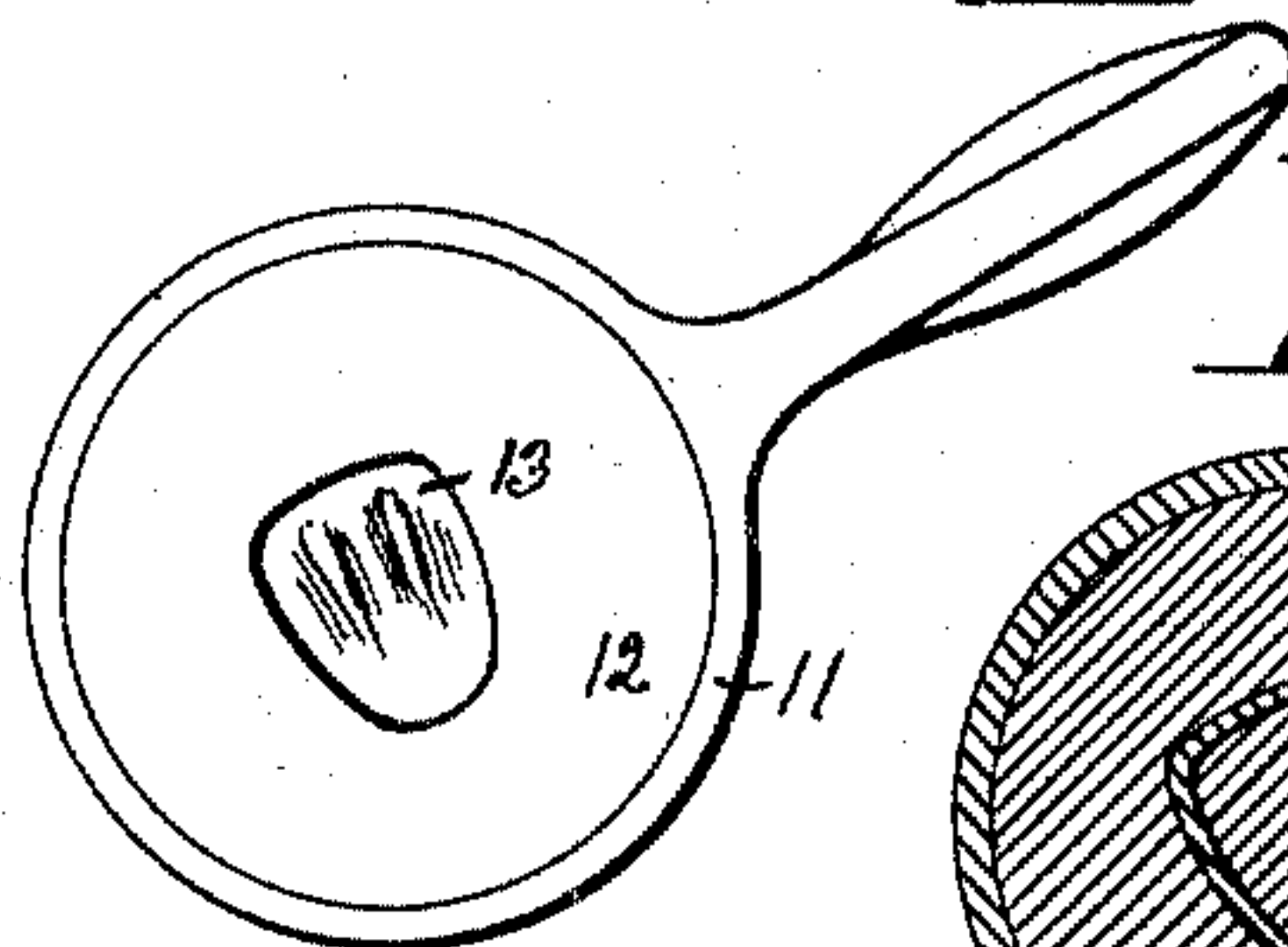
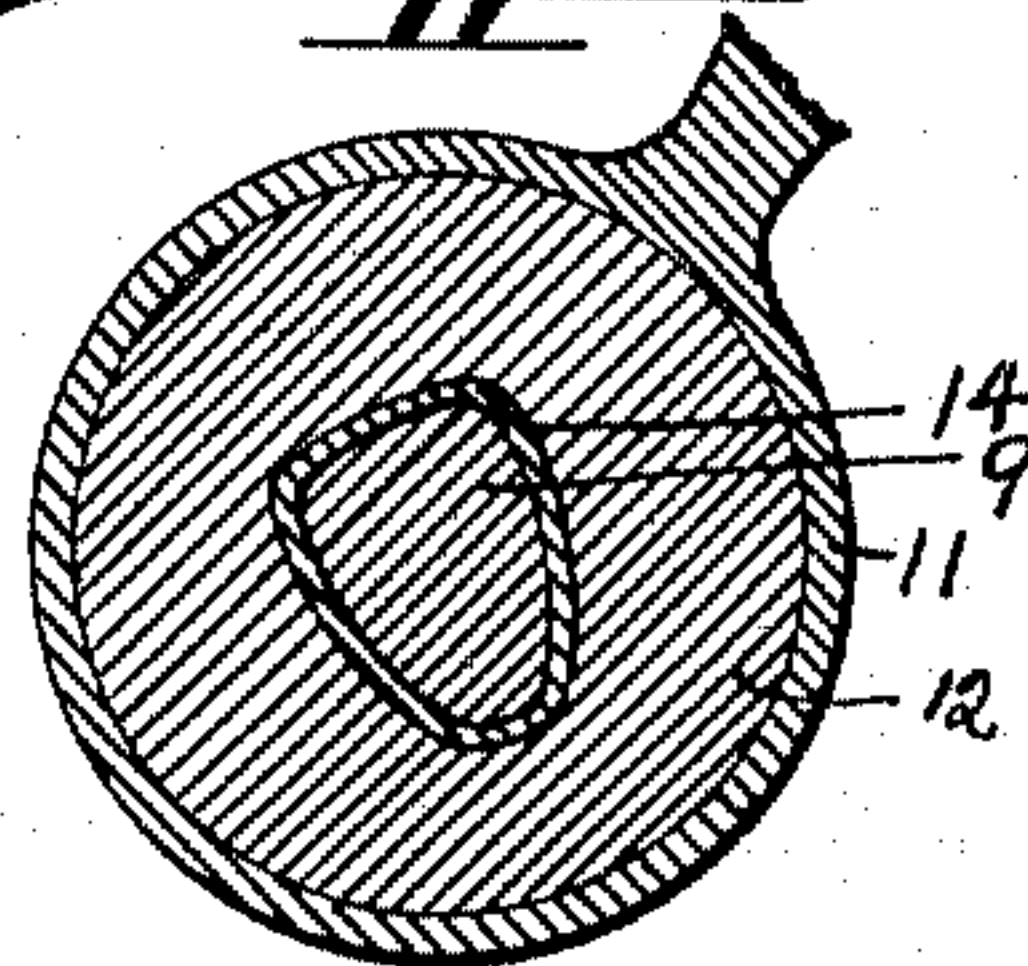


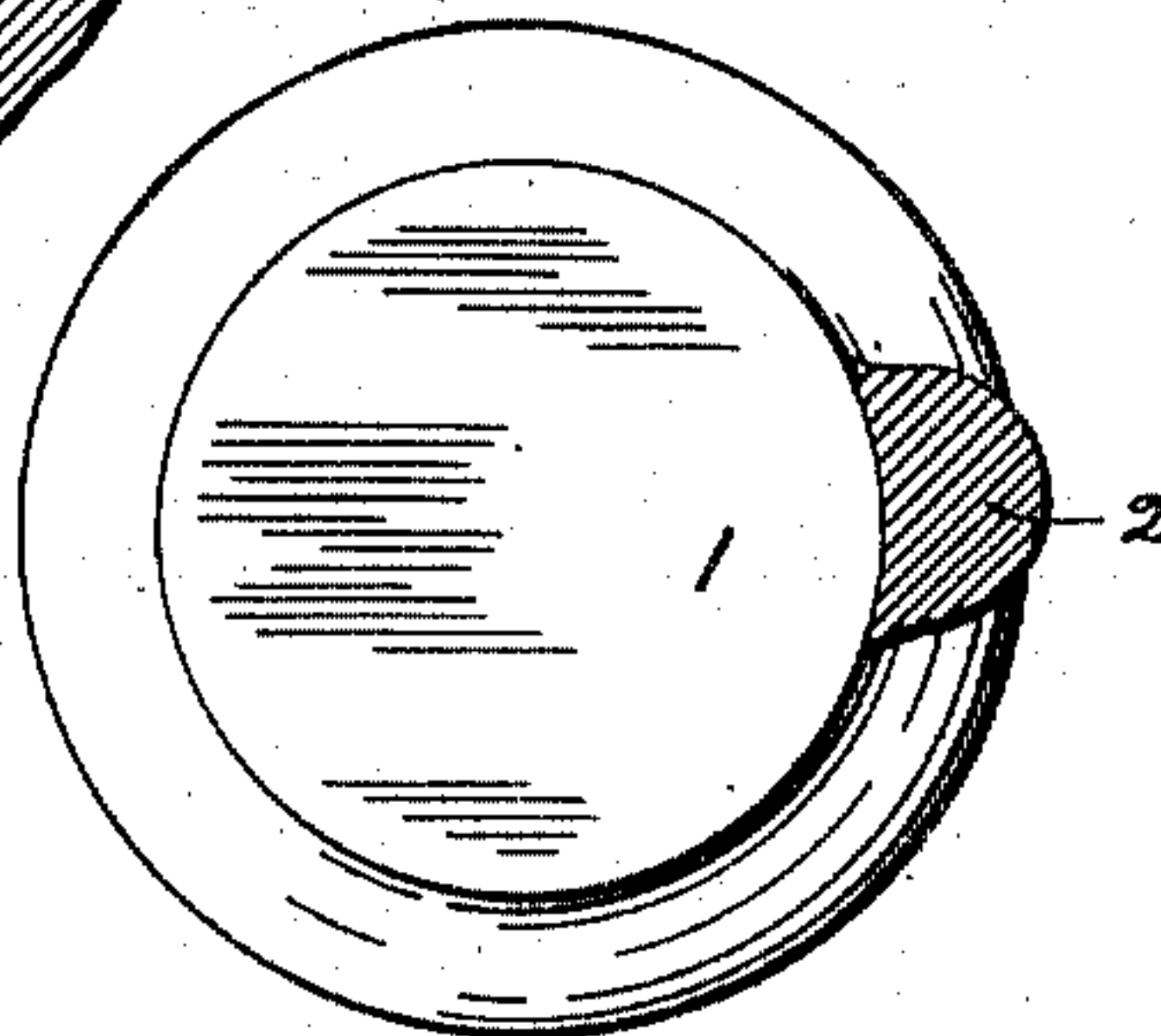
Fig 7



WITNESSES:

W. H. Stough
J. R. Bond

Fig 8



INVENTOR

George B. Wortman

BY *J. W. Bond*

ATTORNEY

UNITED STATES PATENT OFFICE.

GEORGE B. WORTMAN, OF MASSILLON, OHIO, ASSIGNOR OF ONE-HALF
TO GEORGE E. FURBAY, OF CANTON, OHIO.

DENTAL SWAGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 760,050, dated May 17, 1904.

Application filed November 19, 1903. Serial No. 181,763. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. WORTMAN, a citizen of the United States, residing at Massillon, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Dental Swaging-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this application, and to the figures of reference marked thereon, in which—

Figure 1 is a side elevation showing the different parts properly assembled and illustrating the elastic die located upon the plate designed to be swaged or shaped. Fig. 2 is a side elevation showing a section of the die-holding thimble, also showing the thimble properly attached to the die-bar and the die-bar and its parts elevated. Fig. 3 is a view showing the bottom or lower end of the die-bar and the thimble removed. Fig. 4 is a view of the plate swaged and showing its position before being bent to form the crown of a tooth. Fig. 5 is a sectional view of the anvil, the matrix-case, and matrix, showing the elastic die lowered into the matrix and upon the plate. Fig. 6 is a top view of the matrix-frame and matrix. Fig. 7 is a horizontal section taken through line *x x*, Fig. 5. Fig. 8 is a top view of the anvil.

The object of the present invention is to provide a device to stamp the metal from which the crowns of teeth are produced and to stamp the metal to form the crown.

The present invention has relation to dental swaging-machines designed to form or produce crowns for teeth having the general configuration of the tooth designed to be crowned; and it consists in the novel arrangement hereinafter described, and particularly pointed out in the claims.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

In the accompanying drawings, 1 represents the base or anvil, which may be substantially of the form shown in the drawings. To the base 1 is attached or formed integral therewith the upright 2, which upright is curved,

and its curved upper portion is provided with an aperture to receive and guide the die-bar 3. The upright 2 is also provided with the flange or ear 4, to the top or upper end of which flange or ear is pivotally attached the lever 5, to which lever is pivotally connected the die-bar 3. For the purpose of allowing the die-bar 3 to move in a true vertical plane the lever 5 is provided with the elongated slot 6, thereby providing a means for compensating for the arc described by the movement of the lever 5.

To the bottom or lower end of the die-bar 3 is removably attached the die-holding thimble 7, and for the purpose of providing a means for frictionally holding the die-holding thimble 7 the lower end of the die-bar is provided with the slot 8, thereby allowing the lower end of the die-bar to be compressed as the die-holding thimble is attached and expanded sufficiently to frictionally hold the die-holding thimble 7, together with the elastic die 9, in proper position with reference to the die-bar 3. The die-holding thimble 7 is provided with the shoulder 10, which shoulder is for the purpose of abutting against the top or upper end of the elastic die 9, by which arrangement the entire portion of the top or upper end of said die is seated against a metal surface, the inner portion of said die coming against the bottom or lower end of the die-bar and the outer portion against the shoulder 10. The elastic die is extended a short distance below the bottom or lower end of the die-holding thimble 7 and is so extended for the purpose hereinafter described.

The matrix-holding frame 11 may be substantially of the form shown and when placed in proper position is located upon the top of the base or anvil 1, as illustrated in Figs. 1, 2, and 5, and of course is to be located with reference to the elastic die 9 to carry out the function of said die, as hereinafter described. The matrix-frame 11 is for the purpose of holding the material 12 from which the matrix proper 13 is formed. The matrix 13 is formed in the material 12, which material is of a plastic nature and may be wax or other suitable material.

In the formation of crowns for teeth it is well known that each crown when finished is to have a particular formation and that no uniform formation can be provided for, owing to the great variety of forms of teeth.

In use the matrix 13 is formed by means of an artificial tooth produced or selected to correspond as near as it may be and can be with the particular tooth to be crowned. The crown is produced from a sheet of metal originally formed rectangular or substantially rectangular in shape and of course from the material commonly used in the manufacture of crowns, the material commonly used being gold. The bottom of the matrix 13 is given the form of the front or forward portion of the crown proper, and in order to give the finished crown the proper configuration it is necessary to provide an elastic die 9 that will have a sufficient amount of rigidity to press the sheet and yet at the same time have a sufficient amount of elasticity to yield under pressure to complete the formation of the crown so far as its configuration with reference to the particular tooth to which it is to be attached is concerned. The die is shown fully extended under pressure to accomplish this result in Fig. 7. The bottom or lower end of the die is shown in Fig. 5 seated upon the top of the sheet and illustrating the assumed formation of the die under pressure sufficient to press the front face of the crown.

It will be understood that in order to accomplish the result above described it is necessary to form the die 9 so that its normal size will be less than the size of the matrix into which the die is to be forced and into which matrix the crown-sheet is to be pressed and formed.

In use the matrix-frame, together with the matrix, is placed in proper position, and the die-bar 3, together with the different parts carried thereby, is lowered by means of the lever 5 until the die assumes the position illustrated in Fig. 5 and the die-bar still further pressed downward until the die is firmly seated upon the plate, after which and while the die is firmly seated upon the plate the top or upper end of the die-bar should be given a few strokes by means of a hammer or other tool to expand the elastic die 9 in all directions, so as to form the walls 14 in the crown-sheet 15.

It will be understood that in use various sizes of elastic dies such as 9 should be and preferably are employed, owing to the fact that various sizes of crowns are to be formed, and in order to provide means for changing the die-holding thimble it is detachably at-

tached to the bottom or lower end of the die-bar, so that different-size die-holding thimbles and different-size elastic dies may be attached to the die-bar.

In the drawings I have illustrated the inserted portion of the elastic die the same size as the extended portion; but as to whether or not the same thimble is to be employed for different-size dies or different thimbles for different-size dies is a mere matter of judgment; but in order to carry out the object of the present invention the die, of whatever size it may be, must be while in its normal condition less than the size of the matrix, so that no portion of the die will rest or come upon the surface surrounding the matrix.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a dental swaging-machine the combination of a die-bar located in a guide-frame and having pivotally attached thereto a lever, said lever located at the upper portion of the die-bar, a thimble attached to the lower portion of the die-bar, and an elastic die connected to said thimble, a matrix formed of a size in cross-section greater than the size of the elastic die, and the matrix located below the die-bar and below the normal position of the elastic die all arranged, substantially as and for the purpose specified.

2. In a dental swaging-machine, the combination of a base, a matrix-holding frame and a matrix located therein and the matrix held by the frame, a reciprocating die-bar having attached thereto a die-holding thimble, an elastic die carried by the thimble and die-bar, said elastic die formed of a size in cross-section less than the size of the matrix, substantially as and for the purpose specified.

3. In a dental swaging-machine, a base and an upright extended therefrom, a lever pivoted to the upright, a die-bar carried by the lever, said die-bar provided with a die-holding thimble, an elastic die secured to the thimble, a matrix-frame and matrix carried by the frame, and the matrix having the formation of a tooth, and the elastic die formed of a size less than the size of the tooth-matrix, substantially as and for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

GEORGE B. WORTMAN.

Witnesses:

J. A. JEFFERS,
F. W. BOND.