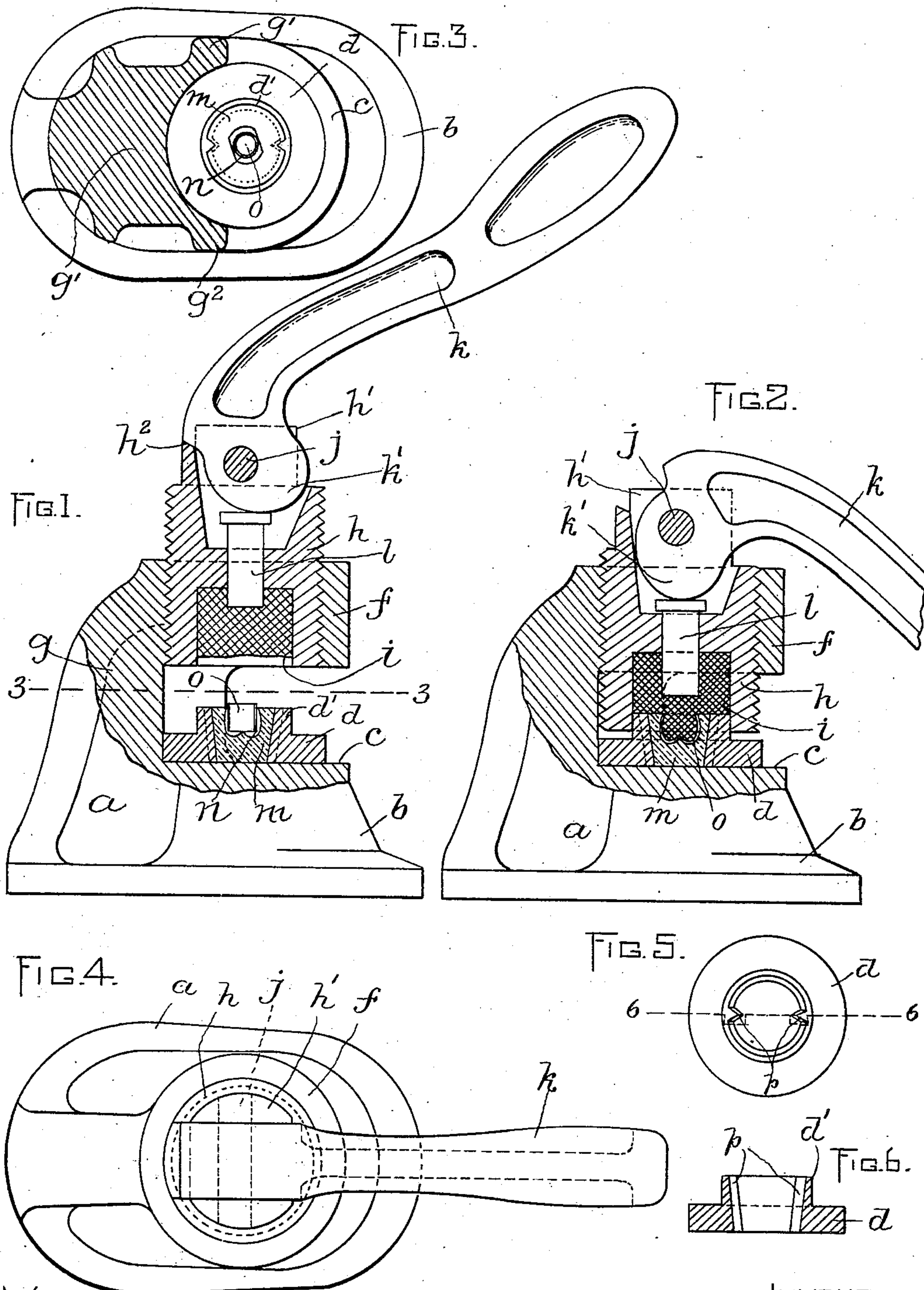


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PATENTED APR. 7, 1908.

W. G. BRIDGE.  
PRESS FOR SWAGING SEAMLESS CROWNS.

APPLICATION FILED MAR. 6, 1907



WITNESSES.  
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# UNITED STATES PATENT OFFICE.

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PRESS FOR SWAGING SEAMLESS CROWNS.

No. 884,311.

Specification of Letters Patent.

Patented April 7, 1908.

Application filed March 6, 1907. Serial No. 360,938.

*To all whom it may concern:*

Be it known that I, WALTER G. BRIDGE, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Presses for Swaging Seamless Crowns, of which the following is a specification.

This invention relates to presses used in dental work for shaping metal tooth crowns so that they will have the appearance of teeth. The crowns are originally manufactured as short cylindrical tubes closed at one end, and of course have no similarity in appearance to a natural tooth.

It is the object of this invention to provide an apparatus by which such crowns can be quickly and easily worked to give them the exact shape, with all the projections, indentations, and irregularities of models corresponding to the original forms of the teeth upon which the crowns are to be mounted.

Carrying out my invention I construct a rigid frame with provisions for holding a mold having the shape to which the crown is to be conformed, and a movable member mounted in an overhanging part of the frame which is adapted to be moved toward the mold and held close thereto, while a quantity of soft and somewhat fluid material, such as wax, gutta-percha, etc., carried by the member, is forced into the interior of the crown so as to expand the sides of the latter against the walls of the mold.

The accompanying drawings show the preferred form of a device embodying the principles of my invention.

Figure 1 represents an elevation of the device partially in section. Fig. 2 represents a similar view, showing the operating parts in a different position. Fig. 3 represents a sectional plan view of the parts below the line 3—3 of Fig. 1. Fig. 4 represents a plan view of the whole device. Fig. 5 represents a plan view of the mold-holder. Fig. 6 represents a sectional view on line 6—6 of Fig. 5.

The same reference characters indicate the same parts in all the figures.

In the drawings, *a* designates the frame of the swaging press which is made of cast metal, massive and as rigid as possible. Part of the frame consists of the base *b* which has a flat supporting surface for a mold-holder *d*, and an overhanging head *f* with an internally-threaded bore, the axis of which is perpendicular to the surface *c*. The head *f* is united to the base *b* by a rigid neck *g* which is cen-

trally recessed on a cylindrical curve coaxial with the bore of the head, and is formed with the side flanges *g'* *g''* which serve to locate the mold-holder *d* accurately with respect to the other parts of the press to be described.

Meshing in the threaded bore of the neck is an externally-threaded plug *h* which has in its lower end a cavity *i* adapted to contain a quantity of viscous, semi-fluid material, such as dentist's wax, gutta-percha or the like. The cavity *i* is of sufficiently large diameter to admit the upper body portion *b'* of the die-holder with a close fit. The base of this die-holder is formed with a wide concentric flange which fits into the recess in the neck *g* between the side flanges or ribs *g'* of the latter, and is positioned thereby so as to lie exactly in the axial line of the plug *h*.

The above-named plug extends entirely through the head *f*, and its upper end is bifurcated to form two separated wings *h'*, and a stop shoulder *h''*. Between the wings *h'* extends a pivot pin *j* upon which is pivoted a cam lever having a handle portion *k* and a cam protuberance *k'*. Between the cavity *i* and the space which receives the cam lever is a central passage in which fits slidingly a plunger *l*, of which the upper end or head is beneath and in contact with the cam *k'*, while its lower end projects into the cavity *i*.

The mold-holder *d* has a tapering bore in which is set a mold *m* having a space or pocket *n* of the exact shape to which a crown is to be formed. The mold is made of an alloy which fuses at a low temperature, being preferably that composition which melts in boiling water. It is poured into the mold-holder surrounding a model made in the form of a tooth which the crown is to represent. After becoming set about the model it is removed from the holder and cut into two parts, whereupon after the model has been removed the parts may be assembled again in the holder, and a tubular seamless crown *o* inserted in the pocket *n*. The mold holder is then placed upon the support *c* and positioned as above described, directly under the cavity *i*. The handle *k* which is caused by the stop shoulder *h''* to project laterally, is turned so as to screw down the plug *h* toward the mold-holder into the position shown in Fig. 2. This causes the sides of the plug surrounding the cavity *i* to pass over the part *d'* of the mold-holder, and force some of the wax into the tubular crown *o*. The lever handle *k* is then depressed, causing the cam



portion *k* to act with a wedging action upon the plunger *l*, pushing the latter with great force into the cavity *i*, and thus expelling a portion of the wax into the interior of the crown, and through the fluidity of the wax, bringing a powerful expanding pressure in all directions upon the internal surface of the crown walls. This pressure causes the crown which originally was cylindrical with a closed end, to expand and fit all the irregular hollows of the mold cavity *n*, whereupon it is given the exact shape with all the irregularities of the original model. The mold is then taken from the holder separated, and the finished crown removed ready for use. When the plug *h* is screwed upward away from the base, the flange on the bottom of the mold holder strikes the bottom of the threaded head *f* and is raised thereby so that further upward movement of the plug disengages the mold holder from the wax cavity.

From Figs. 5 and 6, it will be seen that at diametrically opposite elements of the internal space of the mold-holder are arranged V-shaped ribs *p*. These are provided for assistance in dividing a mold with a clean fracture. It will be understood that they cause corresponding deep grooves in the sides of the mold when the latter is first made. By striking inward in each of the grooves simultaneously with a sharp blow, the mold is divided on an axial plane into two equal parts, which can subsequently be assembled and caused to fit exactly when necessity arises for their use in shaping crowns.

I claim:—

1. A press for swaging tooth crowns, comprising a rigid frame having a base for supporting a mold and an overhanging head provided with an internally-threaded bore; an externally-threaded holder contained in said head and adapted to be screwed toward and from the base, said holder having a cavity in its lower end adapted to contain a viscous semi-fluid substance; a plunger mounted in said holder and movable into the cavity; and a lever pivoted to the holder in such a way as to serve as a handle for screwing the holder toward and from the base, and having a cam portion arranged to bear on said plunger to force the same into the cavity and thereby press the semi-fluid material into a crown contained in a mold on the base.

2. A press for swaging tooth crowns, comprising the combination of a rigid frame having a base for supporting a mold and an overhanging head provided with an internally-threaded bore; an externally-threaded holder contained in said head and adapted to be screwed toward and from the base, said holder having a cavity in its lower end adapted to contain a viscous semi-fluid substance; a mold carrier supported on said base carrying a mold shaped internally conform-

ably to a tooth and having its upper portion of a shape and size to enter and fit closely within said cavity, whereby the holder, when screwed downward, may surround such portion of the mold carrier and force some of the semi-fluid material into the mold; a plunger mounted in said holder and movable into the cavity; and a lever pivoted to the holder in such a way as to serve as a handle for screwing the holder toward and from the base, and having a cam portion arranged to bear on said plunger to force the same into the cavity and thereby press the semi-fluid material into a crown contained in said mold.

3. A press of the character described, comprising a rigid frame having a support for a mold or die, a holder having a socket in its end for containing viscous fluid material mounted in the frame so as to be movable bodily toward the mold and to be held against retraction by a direct thrust, a plunger mounted in the holder, and a device for pressing the plunger end into the socket and thereby forcing the viscous material into a crown held in the mold.

4. A press of the character described, comprising a rigid frame having a support for a mold or die, a holder having a socket in its end for containing viscous fluid material mounted in the frame so as to be movable bodily toward the mold and to be held against retraction by a direct thrust, a plunger mounted in the holder, and a cam lever pivoted to the holder in position to bear on one end of said plunger for pressing the other end into the socket and thereby expelling part of the viscous material.

5. A press of the character described, comprising a rigid frame having a support for a mold or die, a holder having a socket in its end for containing viscous fluid material and formed with an external screw-thread engaged with an internal thread in the frame, whereby it may be forced toward the die, a plunger contained in the holder so as to be capable of entering the socket therein, and a cam lever pivoted to the holder for pressing the plunger into the socket and forcing part of the viscous material into a crown placed in the die.

6. A press of the character described, comprising a rigid frame having a base with a flat die-supporting surface and an overhanging head internally bored and threaded, connected with the base by a neck, the latter being recessed between the head and base on a circular arc, a wax-holder threaded to fit the bore of the head and having a wax-containing cavity in its lower end and a central passage opening thereinto, a die-holder containing a mold or die shaped internally conformably to a tooth, and having a body of slightly less diameter than the wax-containing cavity, and a wide flange

for entering the recess of the neck and positioning the body on the base directly under the wax-cavity, a plunger in the central passage of the wax-holder, and a cam lever pivoted to the outer end of the wax-holder arranged to bear on said plunger and force the same into the wax-cavity.

In testimony whereof I have affixed my signature, in presence of two witnesses.

WALTER G. BRIDGE.

Witnesses:

E. BATCHELDER,  
ARTHUR H. BROWN.