(No Model.)

# H. S. LOWRY.

## DENTAL APPLIANCE.

No. 576,593. Patented Feb. 9, 1897.

*Fig. 1.*

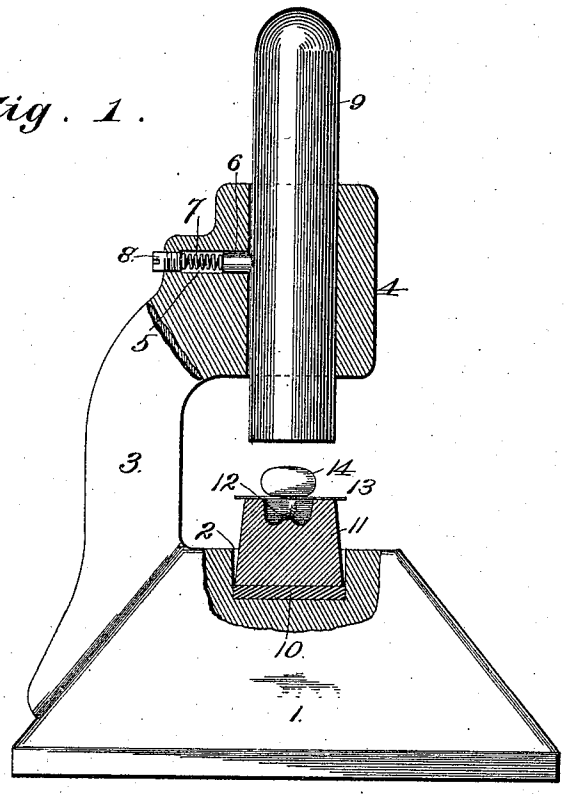


*Fig. 2.*

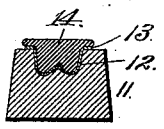



*Fig. 3.*

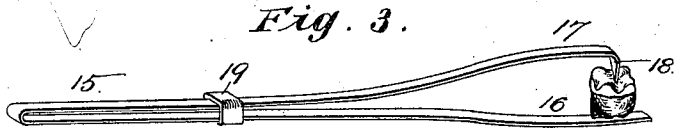


*Fig. 4.*

Witnesses:
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# UNITED STATES PATENT OFFICE.

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## DENTAL APPLIANCE.

SPECIFICATION forming part of Letters Patent No. 576,593, dated February 9, 1897.

Application filed March 28, 1896. Serial No. 585,284. (No model.)

*To all whom it may concern:*

Be it known that I, HOWARD S. LOWRY, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improvements in Dental Appliances, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to dental appliances, and more particularly to that class of dental appliances for forming or contouring metallic or artificial tooth-crowns or side contours.

Previous to my invention various methods and appliances have been employed for these purposes, the most successful among which are the method of and appliance for molding soft-metal dies having the surface to be reproduced artificially intaglio, by burnishing the metallic plate to form the crown or side contour therein; but this method, while superior to any other which has been followed in practice, has one rather serious objection in that in molding said dies the metal used, which fuses at a low temperature, does not follow or penetrate closely the sharply-defined fissures and outlines of the mold from which said die receives its intaglio impression, and consequently when the metallic plate of gold or other metal is burnished or swaged into the die to produce the crown or side contour, as the case may be, it is not provided with the fissures and sharply-defined outline of the tooth or model from which the die was produced, and therefore but imperfectly articulates with the opposing tooth above.

My method and the appliances which I use in its execution obviate this disadvantage, and an artificial crown or side contour is produced in which the fissures or outlines are an exact counterpart or reproduction of the original tooth, pattern, or model by which the die is cast.

With the object in view then of producing artificial tooth-crowns which are far more perfect in their likeness to the originals or models than any heretofore produced, and also with the object of producing such artificial crowns or contours more expeditiously, conveniently, and cheaply, the invention consists in certain novel and peculiar features of construction and combination of parts which will be hereinafter described and claimed.

In order that the invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 represents, partly in side elevation and partly in vertical section, an appliance for producing artificial tooth-crowns or contours. Fig. 2 represents in vertical section a view showing the mating dies and the tooth-crown contoured and interposed between them. Fig. 3 is a detail perspective view of one of the die-selecting caps. Fig. 4 represents in perspective a pair of pliers for holding the crown-cap in position relative to the band of the crown until it is reliably secured in such position.

Referring to said drawings in detail, 1 designates a substantial metal base provided with a cavity 2, preferably rectangular, in its upper side. Extending upwardly from said base is an arm 3, which terminates at its upper end in a vertical guide-sleeve 4, which is arranged vertically above or overhangs the cavity 2. Said sleeve is provided with a radial passage 5, and fitting loosely but snugly therein is a pin 6. A spring 7 is located in said sleeve and bears at its inner end against the pin 6 and at its outer end against a screw-plug 8, which is screwed in the outer end of said passage. By this arrangement it is obvious that said spring 7, which is of the expansive type, holds the pin 6, advanced with a yielding pressure, into frictional engagement with the plunger 9, extending vertically and adapted to reciprocate through the guide-sleeve 4. By this construction it is obvious also that the pressure of the pin against said plunger may be increased or diminished at will by simply screwing said plug 8 farther in or out. This object may be accomplished also by removing said plug and said spring, stretching the latter longitudinally, and then replacing it in position and replacing the plug also. This spring-pressure is only sufficient and the spring-actuated pin is only designed to support the plunger at any desired point of adjustment.

10 designates a plate of lead or equivalent material which is located in the recess or

cavity 2, and 11 an extremely-hard-metal intaglio-impression die. This die is an accurate reproduction of the original core or model around which it was cast, owing to the fact that it is composed of a composition metal which fuses at a high temperature and becomes so "liquid" that it follows and flows into every fissure or crevice of the model or core, in order that the outline shall be sharply and clearly defined. These dies cannot be produced by molding, but must be cast in sand in the customary manner. It is fully as hard as steel, and it is much superior to the latter in that its wearing qualities are superior, and hence crowns or contours may be manufactured from these dies by swaging without any appreciable wear upon the same. This advantage will be appreciated by the profession, as with dies made as hereinbefore indicated after each crown is swaged thereon the die is unfit for further service and must be fused and molded again if it be desirable to produce a second crown or contour. This molding process is objectionable, too, owing to the fact that the operation sometimes has to be repeated a number of times before an accurate die, *i. e.*, one without a flaw, can be produced. This die is placed upon the lead-plate seat 10 in the recess 2, within which it fits snugly, and a plate of gold or other metal 13 is placed upon it, so as to bridge the intaglio impression 12 of the die, and upon said plate is placed a leaden or other compressible ball 14. To produce an artificial crown now, all that is necessary is to strike the upper end of the plunger a sharp blow with a mallet, which causes it in descending to compress the leaden ball and thereby the interposed plate 13 into the intaglio impression or cavity 12, and also by the force of said descent to "set" the die firmly and squarely upon the lead plate 10, which prevents any possible rebounding or bouncing tendency of the die, which it would have if it were placed directly upon the hard cast-metal base 1. Thus it will be seen that with one blow of the mallet a mating die for the die 11 is formed and forced into position simultaneously, so that the interposed plate must absolutely follow the outlines and crevices or cavities of the surface or contour to be reproduced, and it is also obvious that when thus formed and driven home said mating die cannot rebound or spring upwardly, owing to the fact that the spring-actuated pin 6 prevents the slightest upward movement of the plunger. When the parts are thus arranged, which is accomplished in an instant, one or two additional sharp blows with the mallet upon the plunger are sufficient to complete the formation of the artificial crown or side contour, as the case may be, which crown or contour is an exact duplicate in all its lines of the model or core upon which the die 11 is cast. The plunger is then elevated, the die removed, and the mating die 14 and the artificial crown 13 removed. Said crown is then trimmed in the customary manner to fit snugly upon the band, and it is secured in such position in the customary manner.

In practice there will be about one hundred and forty-four, more or less, of these dies 11, all of them in clearness of outline corresponding to the natural tooth, and each of them provided with a small counterpart cap designated by the numeral $12^a$, (illustrated in Fig. 3,) which the dentist will use as the means for quickly selecting the die to be employed in connection with the band of the tooth to be crowned, that is, when it is desired to select a particular crown for a band of a certain contour one of these caps is picked up quickly and easily by the dentist and is fitted upon said band. If it does not fit accurately, it is placed back in its proper position and another selected, and this operation is repeated until the cap of the requisite formation and contour is obtained. The die corresponding to such cap is therefore the die from which the crown must be made in the manner already described.

It is obvious, of course, that it will be practically impossible to take the dies and fit them to the contour of the bands, as a great deal of time would be wasted by so doing.

Thus it will be seen that I have produced appliances for making artificial crowns or side contours in a most expeditious and approved manner which are cheap of manufacture, simple and durable of construction, and easily handled, and by which more perfect results are attained than has been possible heretofore.

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

1. In a dental appliance, the combination of a base or anvil a female die thereon, a vertical reciprocatory plunger arranged over the die-cavity, and a ball of lead arranged vertically below the plunger, uninclosed by walls and resting loosely upon the plate to be swaged, and vertically over the cavity of the die, for the purpose set forth.

2. A dental appliance, comprising a metallic base provided with a recess in its upper side, an arm projecting upwardly from said base and provided with a vertical guide-sleeve which overhangs said recess, a plunger in said sleeve, a lead plate in said recess, an intaglio-impression die within said recess and seated upon said lead plate, and upon which die the crown-forming plate is placed, a compressible ball upon said crown-forming plate, and a spring-actuated pin, bearing frictionally against the plunger, to hold it at any desired point of adjustment, substantially as described.

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

HOWARD S. LOWRY.

Witnesses:
H. E. PRICE,
G. Y. THORPE.