United States Patent

Curtis

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[54] **DENTAL CROWN AND BRIDGE REMOVING ADAPTOR**

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[52] **U.S. Cl.**.....**32/43**

[51] **Int. Cl.**.....**Ab1c 3/16**

[58] **Field of Search**.....32/43, 61

[56] **References Cited**

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[57] **ABSTRACT**

A dental crown and bridge removing adaptor is provided with screw tightened arcuate jaw members having crown or bridge gripping faces for securely fastening to a crown or bridge to be removed and an engaging loop for application of removing force by a tapping tool or other force applying means to lift the crown or bridge without injury thereto.

5 Claims, 4 Drawing Figures

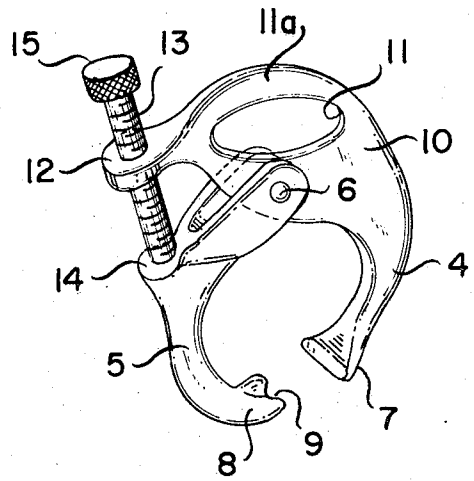


Fig. 1

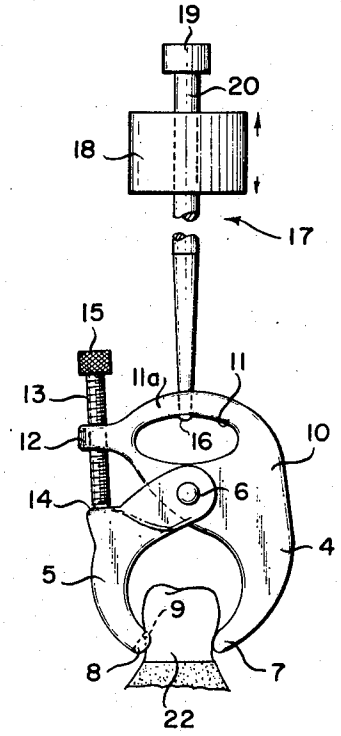


Fig. 2

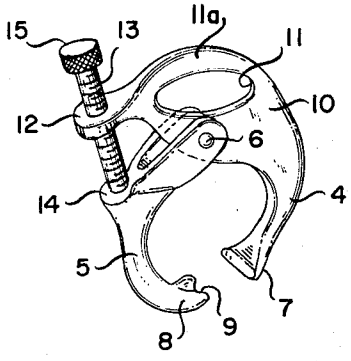


Fig. 3

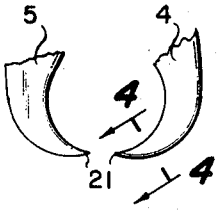




Fig. 4

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DENTAL CROWN AND BRIDGE REMOVING ADAPTOR

DISCUSSION OF PRIOR ART

Various tools have been proposed for removal of dental crowns or bridges some of which included clamping means for gripping the crown and lifting means such as an elevating screw operating through a hole drilled in the crown and bearing on the underlying tooth structure. Also in use is a tapping type tool having a hook to engage the edge of a crown and a sliding weight engaging an abutment to apply the removing force. Use of all of these prior proposals usually results in damage to the crown either incidental to use thereof or deliberately through the drilling of holes for use of the instrument.

OBJECTS OF THE INVENTION

The object of the present invention is to provide a crown or bridge removing adaptor which embodies crown or bridge engaging jaws carried by tong-like arms and including screw operated tightening means and force applying means so related that the crown or bridge is firmly gripped without injury and the removal force is applied in such a way as to lift the crown or bridge in the direction of insertion without injury thereto.

A further object is to provide a screw tightened tong-like clamp having crown gripping jaws provided on opposed ends of pivotally connected arcuate arms adapted to embrace the crown to be removed for securely gripping the sides of the crown without injury and having a force applying tool engaging part carried by one of the arms in the center line of the pivotal connection whereby the applied force of removal acts to increase the grip of the clamp on the crown and further permits the application of selected force applying means for the removal of the crown without injury thereto.

These and other objects and advantages of the invention will be apparent from the following specification with reference to the accompanying drawing forming a part thereof and in which

FIG. 1 is a side elevation of a crown removing adaptor embodying the invention;

FIG. 2 is a perspective view thereof;

FIG. 3 is a fragmentary view of bridge engaging ends on a modified form of the invention; and

FIG. 4 is a sectional view taken along line 4—4 of FIG. 3.

DESCRIPTION OF INVENTION

Referring more particularly to FIG. 1 of the drawings the crown removing adaptor comprises arcuate arm members 4 and 5 pivoted together at 6 and terminating at one end in opposed crown engaging jaws 7 and 8. The end of jaw 8 on the arm 5 is contoured concave as indicated at 9 for centering on the curve of the crown 22. In use the adaptor is applied with the arms embracing the crown and with the jaws applied to engage the same in a bucco-lingual or labio-lingual direction near the gingiva. The end of the arm 4 opposite the jaw end 7 is formed with a vertical web portion 10 having an elongated substantially oval eye opening 11 formed therein defining a flat loop centered over the pivot 6.

The web portion 10 extends beyond the pivot and terminates in a projecting ear 12 through which is threaded a tightening screw 13 the lower end of which abuts a shoulder 14 formed on the back of the arm 5. The screw 13 is provided with a knurled head 15 for manual turning to operate the same. When tightened, the screw end bearing on the shoulder 14 rocks the arms 4 and 5 about the pivot 6 to close the jaws 7 and 8 on the crown to be removed. The upper end of the arm 5 is bifurcated with the ends flattened and parallel to receive the lower part of the web portion 10 through which the pivot 6 passes to provide a laterally rigid structural assembly.

The elongated eye 11 in the web portion of arm 4 provides a loop in which the hook 16 of a force applying tool 17 (for instance) may be engaged with the under side of bail portion 11*a* to give a controlled direction of force application in removing a crown using the adaptor. As will be understood, the sliding weight 18 on the tool 17 is manipulated to strike a blow on the head 19 of the stem portion 20 to transmit the required lifting force to the adaptor to break the crown loose.

Since teeth vary considerably in contour, the crown removing adaptor does not always "hang" at a straight vertical line. The curve of the bail portion 11*a* of the loop was carefully developed to give the best angle of pull in most positions of attachment so as to be able to apply the removing force in the direction of insertion regardless of the "hang" of the adaptor on the crown.

It will be noted that the ear 12 on the arm 4 extends substantially horizontally beyond the pivot 6 and is centered over the shoulder 14 on the curved back of the arm 5 so that the entire assembly presents a low profile which is important when working within the mouth of a patient. Also it will be noted that the contour and placement of the eye 11 of the loop portion of the arm 4 is important in order to give a controlled direction of force in the removal process.

The adaptor, when firmly seated and gripping the crown in a bucco-lingual or labio-lingual direction near the gingiva, has the ability to exert the force necessary for the removal of the crown in the optimum direction which is in line with the path of insertion of the crown. It furthermore permits the removal of the crown with a minimum of force and without the usual damage which normally results from the use of most of the lifting implements now available.

As will be obvious from the description, the adaptor is applied to the crown to be removed by backing off on the screw 13 to permit the jaws 7 and 8 to open sufficiently to slip over the top of the crown with the arms embracing the same. The screw is then tightened while holding the adaptor in position so that the jaws close on the crown in the bucco-lingual or labio-lingual direction near the gingiva and lock the adaptor rigidly on the crown.

A force applying tool for the removal of the crown is then engaged with the loop 10. It is usually necessary and desirable to use a tool such as that illustrated to deliver repeated hammer blows or taps in the direction of removal which is coincident with the direction of insertion so as to break the crown loose from its seat on the underlying tooth with the minimum of force and thus minimum chance of damage. The rigid grip of the

adaptor on the crown transmits the force to the crown without slippage thus avoiding scarring or tearing of the margin of the crown which can easily occur with instruments which engage the edge of the margin, for instance.

The bridge removing adaptor shown in FIG. 3 and 4 are similar in construction to the crown removing adaptor except that the gripping ends of the pivoted arms are tapered to points 21 which fit into the embrasure between two adjacent teeth on a bridge or splint to be removed.

The adaptors according to the invention are preferably made of stainless steel although they could be made of any other material of suitable strength and rigidity capable of withstanding the forces applied and repeated sterilization.

I claim:

1. Dental crown or bridge removing adaptor comprising opposed arcuate first and second arm members pivotally connected an adapted to embrace the crown or bridge to be removed with the opposed free ends in gripping relation therewith, the first arm having a loop portion substantially centered over the pivotal connection between the arms and an integral end portion extending beyond the loop portion and overlying a portion of the second arm, and a tightening screw member threaded through the extended portion of the first arm and engaging the second arm.

2. Dental crown or bridge removing adaptor according to claim 1 wherein the first arm member is formed with an enlarged web constituting the loop portion, in which the web has a substantially oval opening centered over the pivotal connection between the arms and in which the web terminates beyond the pivot in the integral end portion through which the adjusting screw is threaded.

3. Dental crown or bridge removing adaptor according to claim 1 wherein the first arm member is formed with an enlarged web constituting the loop portion, in which the web has a substantially oval opening centered over the pivotal connection between the arms, in which the web terminates beyond the pivot in the integral end portion through which the adjusting screw is threaded and in which the second arm is provided with an abutment on the back thereof in alignment with the tightening screw member.

4. Dental crown removing adaptor according to claim 1 wherein one of the first and second arm members is formed with a concave jaw end adapted to grip a crown in the bucco-lingual or labio-lingual direction.

5. Dental bridge removing adaptor according to claim 1 wherein the first and second arm members are formed with opposed tapered end portions adapted to engage the embrasure between the teeth of a splint or bridge to be removed.

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