Nov. 15, 1949 F. R. POFCHER 2,488,036

INLAY REMOVER

Filed Oct. 22, 1947

Fig. 1.

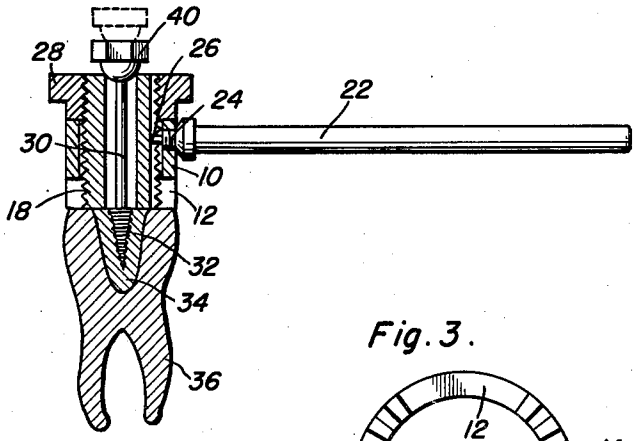
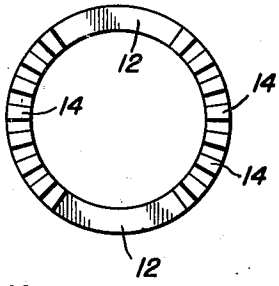



Fig. 3.



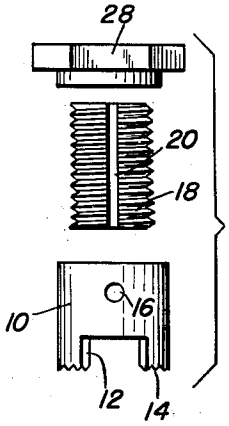




Fig. 2.

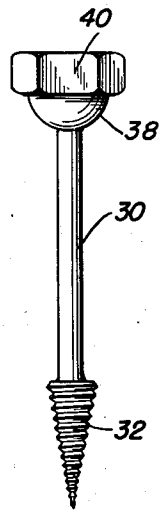



Fig. 4.

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## INLAY REMOVER

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Application October 22, 1947, Serial No. 781,264

4 Claims. (Cl. 32—40)

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This invention appertains to novel and useful improvements in dental instruments.

One object of this invention is to lift the inlay of a tooth therefrom easily, conveniently, and painlessly.

Another object of this invention is to provide means for carrying out the above mentioned function.

A further object of this invention is to provide a sleeve having a vision slot therein, friction conducive means at the bottom portion thereof adapted to seat on a tooth.

Another purpose of this invention is to provide a hollow shaft in said sleeve having anti-rotation means associated therewith and means for lifting the said hollow shaft from the said sleeve.

Another purpose of this invention is to provide a pin in said hollow shaft having means at one end thereof adapted to be anchored in an inlay and means at the other end thereof adapted to seat on the hollow shaft, to be lifted therewith, while the said sleeve remains in contact with the said tooth.

Another purpose of this invention is to provide a convenient handle for retaining the said sleeve and other operative associated elements in the desired position relative to the said tooth during th lifting operation.

Another purpose of this invention is to provide an extremely inexpensive device of the character described which lends itself well to commercial manufacture and common shop practices.

Ancillary objects and features of novelty will become apparent to those skilled in the art, in following the description of the preferred form of the invention, illustrated in the accompanying drawings, wherein:

Figure 1 is a longitudinal sectional view of the preferred form of the present invention showing its use in association with a conventional tooth;

Figure 2 is an exploded elevational view of certain operative elements forming part of the present invention;

Figure 3 is a bottom view of the sleeve utilized in association with the present invention and illustrating the friction conducive means pertinent thereto; and

Figure 4 is an elevational side view of the central shaft adapted to engage and frictionally bind a filling prior to the removal thereof.

Referring now in detail to the illustrated preferred form of the invention, reference is made primarily to the accompanying drawings wherein there is illustrated a device for lifting the

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inlays of conventional teeth, after breaking the cement bond between the said teeth and inlays.

The means for carrying out the above mentioned function characterizes the major portion of the present invention which is composed of any suitable material, preferably metallic. A sleeve 10 is provided with a vision slot 12 at the bottom portion thereof. This slot serves another function, namely, to compensate for certain irregularities found in certain portions of teeth by providing diametrically positioned legs as shown. Friction conducive means is provided at the bottom portion of the said legs and is preferably in the form of a plurality of ridges or teeth 14. An internally threaded aperture 16 is provided in the said sleeve perpendicular to the bore thereof.

A hollow shaft 18 having external threads the full length thereof is provided with a keyway 20 which is adapted to align with the said aperture 16. Of course, the said hollow shaft 18 is slidably received in the said sleeve 10, as is clearly evident from an inspection of Figure 1.

A handle 22 having a threaded portion 24 adjacent one end thereof is adapted to be secured to the said sleeve 10 through the medium of the internally threaded aperture 16. A small lug 26 extends from the threaded portion 24 and projects in the said keyway 20, thereby preventing relative rotation between the said sleeve 10 and hollow shaft 18.

Means for lifting the said hollow shaft 18 from the said sleeve 10 is provided. This means may be noted as an internally threaded collar 28 which is threadedly received on the said hollow shaft 18. This internally threaded collar or nut 28 has an annular flange therearound which seats directly on the said sleeve 10. Of course, any suitable tool may be utilized for the purpose of rotating the said nut 28 such as a specially provided wrench.

Means for anchoring an inlay is received through the bore of the said externally threaded hollow shaft 18. Inspection of Figure 4 clearly discloses this element which is obviously a pin 30 having an enlargement, externally threaded, 32 thereon. This enlargement is threadedly received in the inlay 34 of the conventional tooth 36. After effecting the anchor in this manner, the semi-spherical seat 38 will then be positioned on or adjacent the upper portion of the said hollow shaft 18. Upon rotation of the said internally threaded collar 28, the head 40 of the pin 30 will be lifted relative to the sleeve 10 thereby lifting the shaft 30, thus lifting the inlay enough to break the cement bond between the said in-

lay 34 and the said tooth 36. The upper portion of the semi-spherical seat 38 may be flattened on the sides for the purpose of receiving a wrench thereon. Of course, a suitably devised wrench having the proper jaw sizes at each end may be used for rotating both the internally threaded collar 28 and the flattened portion 40 of the said shaft 30.

In more detail, the operation is as follows: It is assumed that the threaded hollow shaft 18 is slidably inserted in the sleeve 10 with the collar 28 screwed just far enough down the hollow shaft to hold the two together. The collar rests upon the upper end of the sleeve. The keyway 20 of the hollow shaft is aligned with the aperture 16 in the sleeve 10, and the handle 22 is screwed into the aperture, and the lug 26 enters the keyway 20. The handle thus enables the sleeve 10 to be held firmly in a position on a tooth, and its lug prevents relative rotation between sleeve and hollow shaft while permitting relative axial movement. The pin 30 is loosely inserted through the hollow shaft.

The inlay to be removed may be drilled and tapped, if desired, to provide threads for receiving the pin 30.

The sleeve is then positioned on a tooth, with the ridges or serrations 14 of the sleeve legs engaging the tooth, to prevent slipping. This positioning should be done so that the tooth-contacting portions of the sleeve are external of the inlay 34 to be removed. This is shown in Figure 1.

The pin 30 extending loosely through the hollow shaft 18 is then screwed into the inlay by application of a wrench to the flattened head portion 40 of the pin. When this is done, the semi-spherical head portion 38 is engaged, or ready to be engaged, against the upper end of the hollow shaft 18, depending upon how deep the pin has been screwed into the inlay.

It is now apparent that when the pin 30 is elevated relative to the sleeve 10, it will elevate the inlay, because the sleeve 10 is seating upon the tooth externally of the inlay, having no contact with, at least no seriously obstructive contact, with the inlay.

The elevating action is accomplished by turning the threaded collar 28 on the threads of the hollow shaft 18, while holding the handle 22 so that the sleeve 10 and consequently the hollow shaft 18 are held against rotation. As the collar 28 is rotated, bearing upon the upper end of sleeve 10, the hollow shaft 18 is forced upwardly, and with it the pin 30, carrying the inlay with it.

While there has been described and illustrated only a preferred form of the invention, it is apparent that certain variations may be made without departing from the spirit thereof. Accordingly, limitation is sought only in accordance with the scope of the following claims.

Having described the invention, what is claimed as new is:

1. A dental inlay remover comprising a sleeve the lower end of which is adapted to rest upon a tooth, a hollow shaft externally threaded slidably positioned in said sleeve, said shaft being provided with an external longitudinal keyway, a handle extending outwardly from said sleeve and provided with an inner end extending through said sleeve and into said keyway in the hollow shaft to prevent relative rotation of said shaft and sleeve but permitting relative sliding movement thereof, an internally threaded collar threadedly engaging said hollow shaft and rotatably bearing upon the upper end of said sleeve, and a pin loosely fitting in the bore of said hollow shaft, said pin being provided with a head adapted to bear upon the upper end of said hollow shaft and provided with means at the lower end for securing to an inlay, whereby when the sleeve is placed upon a tooth the pin may be secured to an inlay in said tooth, the handle may be held to prevent rotation of said sleeve on the tooth and of said hollow shaft within the sleeve, and said threaded collar may be turned on the hollow shaft to draw said shaft outwardly from the sleeve and thereby force the pin outwardly with said hollow shaft, the pin lifting the inlay with it.



2. A dental inlay remover comprising a sleeve, said sleeve being slotted at the lower end affording vision through said slot and providing diametrically positioned legs adapted to rest upon a tooth, a hollow shaft externally threaded slidably positioned in said sleeve, said shaft being provided with an external longitudinal keyway, a handle extending outwardly from said sleeve and provided with an inner end extending through said sleeve and into said keyway in the hollow shaft to prevent relative rotation of said shaft and sleeve but permitting relative sliding movement thereof, an internally threaded collar threadedly engaging said hollow shaft and rotatably bearing upon the upper end of said sleeve, and a pin loosely fitting in the bore of said hollow shaft, said pin being provided with a head adapted to bear upon the upper end of said hollow shaft and provided with means at the lower end for securing to an inlay, whereby when the sleeve legs are placed upon a tooth the pin may be secured to an inlay in said tooth, the handle may be held to prevent rotation of said sleeve on the tooth and of said hollow shaft within the sleeve, and said threaded collar may be turned on the hollow shaft to draw said shaft outwardly from the sleeve and thereby force the pin outwardly with said hollow shaft, the pin lifting the inlay with it.

3. A dental inlay remover comprising a sleeve the lower end of which is adapted to rest upon a tooth, a hollow shaft externally threaded slidably positioned in said sleeve, said shaft being provided with an external longitudinal keyway, a handle extending outwardly from said sleeve and provided with an inner end extending through said sleeve and into said keyway in the hollow shaft to prevent relative rotation of said shaft and sleeve but permitting relative sliding movement thereof, an internally threaded collar threadedly engaging said hollow shaft and rotatably bearing upon the upper end of said sleeve, and a pin longer than and loosely fitting in the bore of said hollow shaft, said pin provided with a head adapted to bear upon the upper end of said hollow shaft and having threaded means at the lower end for securing to an inlay, whereby when the sleeve is placed upon a tooth the pin may be secured to an inlay in said tooth, the handle may be held to prevent rotation of said sleeve on the tooth and of said hollow shaft within the sleeve, and said threaded collar may be rotated on the hollow shaft to draw said shaft outwardly from the sleeve and thereby force the pin outwardly with said hollow shaft, the pin lifting the inlay with it.

4. A dental inlay remover comprising a sleeve, said sleeve being slotted at the lower end affording vision through said slot and providing diametrically positioned legs adapted to rest upon a

tooth, the end surfaces of said legs being serrated to minimize slippage of the sleeve on the tooth, a hollow shaft externally threaded slidably positioned in said sleeve, said shaft being provided with an external longitudinal keyway, a handle extending outwardly from said sleeve and provided with an inner end extending through said sleeve and into said keyway in the hollow shaft to prevent relative rotation of said shaft and sleeve but permitting relative sliding movement thereof, an internally threaded collar threadedly engaging said hollow shaft and rotatably bearing upon the upper end of said sleeve, and a pin longer than and loosely fitting in the bore of said hollow shaft, said pin provided with a head adapted to bear upon the upper end of said hollow shaft and having threaded means at the lower end for securing to an inlay, whereby when the sleeve is placed upon a tooth the pin may be secured to



an inlay in said tooth, the handle may be held to prevent rotation of said sleeve on the tooth and of said hollow shaft within the sleeve, and said threaded collar may be rotated on the hollow shaft to draw said shaft outwardly from the sleeve and thereby force the pin outwardly with said hollow shaft, the pin lifting the inlay with it.

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## REFERENCES CITED

**The following references are of record in the file of this patent:**

### UNITED STATES PATENTS

| Number | Name | Date |
|---|---|---|
| 403,293 | Rosenthal | May 14, 1889 |
| 812,976 | Carpenter | Feb. 20, 1906 |
| 1,102,850 | Arden | July 7, 1914 |
| 1,666,860 | Maranda | Apr. 17, 1928 |