United States Patent

Edelman

[15] 3,690,005

[45] Sept. 12, 1972

[54] **TOOL FOR INSERTING DENTAL IMPLANTS**

[72] Inventor: **Alfred E. Edelman,** 2723 Federal St., Camden, N.J. 08105

[22] Filed: **Nov. 24, 1970**

[21] Appl. No.: **92,464**

[52] **U.S. Cl.** ..... **32/40 R**

[51] **Int. Cl.** **A61c 3/00**

[58] **Field of Search** ..... 32/40, 10 A, 56, 51

[56] **References Cited**

UNITED STATES PATENTS

3,471,929	10/1969	Boone	32/40 R
887,388	5/1908	Golly	32/56

Primary Examiner—Robert Peshock

Attorney—Munson H. Lane

[57] **ABSTRACT**

An elongated shank is provided in one end portion thereof with a socket for receiving the head portion of a wide vent dental implant so that the blade portion of the implant may be driven into the jaw by impacts delivered to the other end of the shank. The socket is provided with a notch for direct engagement with the blade portion of the implant in an alternative manner of use when the implant head portion is not in the socket. In place of impacting the shank directly, the shank may be separably attached to a socketed head on a laterally offset end portion of a handle which constitutes an extension for the shank.

9 Claims, 7 Drawing Figures

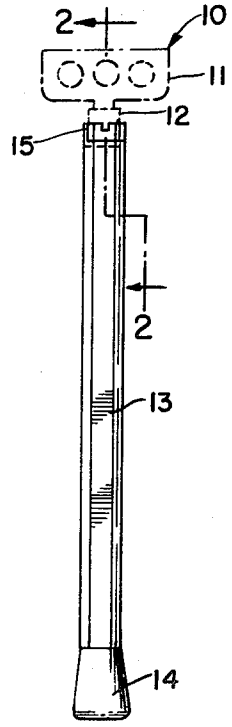


FIG. 1.

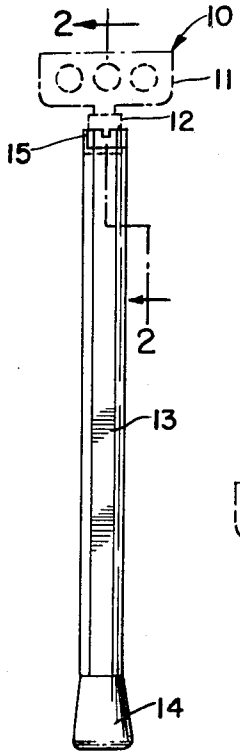


FIG. 3.

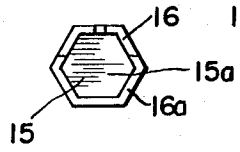


FIG. 2.

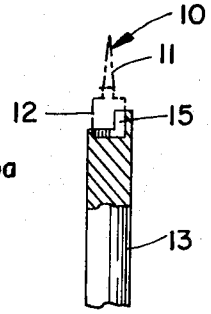


FIG. 4.

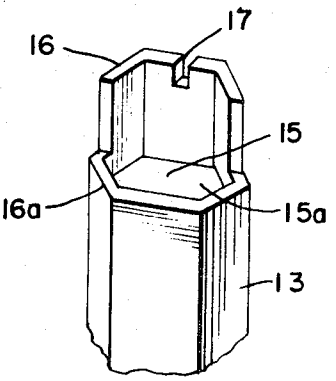


FIG. 6.

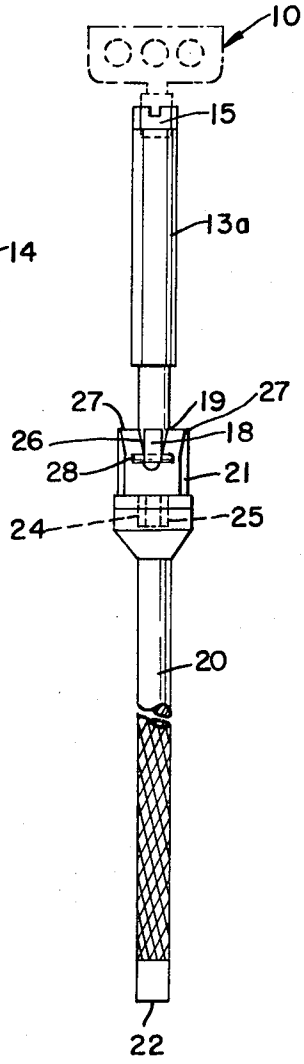


FIG. 7.

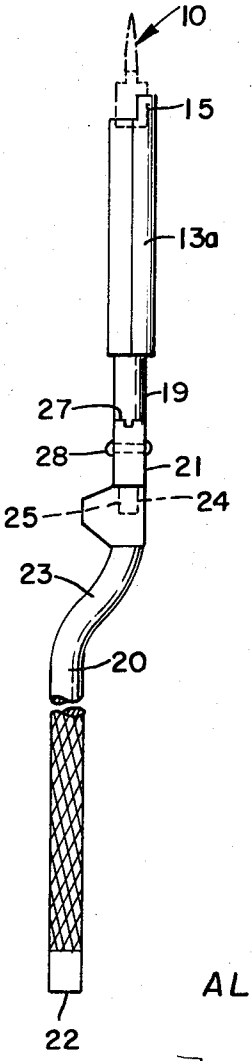
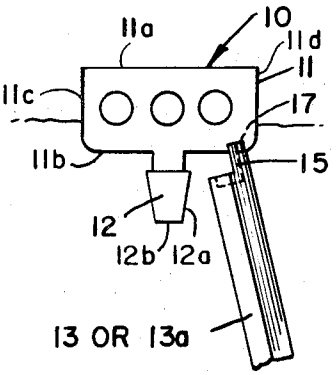


FIG. 5.



INVENTOR
ALFRED E. EDELMAN
BY Winston H. Paine
ATTORNEY

TOOL FOR INSERTING DENTAL IMPLANTS

This invention relates to new and useful improvements in tools for inserting dental implants into the jaw bone of a patient, so that subsequent to their installation, such implants may be used as anchorage for artificial teeth, dental crowns, bridgework, and the like.

Dental implants of this type, often referred to as wide vent dental implants, are usually characterized in that they have a wide blade portion which is driven into the jaw bone and is provided with a head portion projecting out of the jaw for anchorage purposes. In order that the blade portion may be driven into the jaw bone, it is necessary to apply impacts to the head portion, and since as a practical matter this cannot be done directly, as by a mallet or a hammer, a tool is utilized by being applied to the implant while impacts are delivered to the tool. Some examples of such a tool or impact transmitting appliance are disclosed in my copending patent application Ser. No. 839,377, filed July 7, 1969, now U.S. Pat. No. 3,562,912.

The principal object of the present invention is to provide other useful embodiments of the implant inserting tool, which are particularly advantageous in that they afford effective transmission of impact forces to the implant, yet are capable of some degree of angular adjustment in the line of impact force, thus enabling the tool to be used and the implant installed under a wide variety of anatomical conditions.

As such, the tool of the present invention is very versatile and provides facilities for transferring impacts to the head portion of the implant as well as directly to its blade portion, in instances where application of impacting force to the blade portion is desirable in order to properly orient the implant in the jaw bone. Also, the tool may include an elongated extension having a lateral offset therein to afford clearance for anatomical protuberances in the restricted space of the operating site.

With the foregoing more important object and features in view and such other objects and features which may become apparent as this specification proceeds, the invention will be understood from the following description taken in conjunction with the accompanying drawings, in which like characters of reference are used to designate like parts, and in which:

FIG. 1 is an elevational view of one embodiment of the tool of the present invention, shown as being applied to an implant illustrated by dotted lines;

FIG. 2 is a fragmentary sectional view, taken substantially in the plane of the line 2—2 in FIG. 1;

FIG. 3 is an enlarged end view of the socket of the tool;

FIG. 4 is an enlarged, fragmentary perspective view of the socket;

FIG. 5 is a fragmentary elevational view showing the tool applied directly to the blade portion of the implant;

FIG. 6 is an elevational view of a modified embodiment of the tool, including an extension on the tool shank; and

FIG. 7 is an elevational view, taken from the right side of FIG. 6.

Referring now to the accompanying drawings in detail, more particularly to FIGS. 1–4 thereof, the general reference numeral 10 designates a so-called wide vent dental implant having a blade portion 11 which is adapted to be driven into the jaw bone and also having a head portion 12 which is adapted to project from the jaw so that artificial teeth, crowns, bridges, or the like, may be anchored thereto. The relatively thin blade portion 11 has a free leading edge 11*a* which leads the blade upon insertion into the jaw, a trailing edge portion 11*b* opposite said leading edge, and a pair of opposite side edge portions 11*c* and 11*d* connecting the trailing edge portion and the leading edge. The head portion 12 projects rearwardly from the trailing edge portion 11*b* intermediate the pair of opposite side edge portions 11*c* and 11*d* and is defined by an elongated perimetric surface, and an outer end surface 12*b* transversely intersecting said perimetric surface 12*a*.

The implant inserting tool comprises an elongated shank 13 which is provided at one end thereof with an impact receiving member 14, while its other end portion is hollowed out to form a socket 15 for reception of the head portion 12 of the implant 10. The socket 15 is cross-sectionally complemental to the implant head portion 12, and if the head portion is of a polygonal cross-section, the socket is also polygonal, as shown. However, the head portion and the socket may be circular, oval, or of any other desired cross-section.

The socket 15 is defined by a perimetric wall 16 which is cut away along somewhat more than one-half the perimeter of the socket so as to leave a lip 16*a* which is of a substantially lesser height than the remaining, uncut portion of the wall 16, as will be clearly apparent from the drawings. The bottom 15*a* of the socket 15 is closed and adapted to abut the head portion 12 of the implant.

The low lip 16*a* coacts with the uncut socket wall 16 to retain the implant head portion 12 in the socket 15, or in other words, to prevent the tool from becoming displaced laterally from the head portion 12, while impacts are delivered, as by a mallet or hammer, to the anvil-like member 14 of the shank 13. Inasmuch as the socket 15 and the implant head portion 12 are cross-sectionally complemental, their configuration may be shaped, for example polygonally as shown, to prevent relative rotation or turning between the shank 13 and the implant. However, since the perimetric wall of the socket 15 is cut away as already described, it is possible to apply the socket to the head portion of the implant at a small angle, if this should be desirable or necessary under some operating conditions.

The uncut wall portion 16 of the socket 15 is formed in its end edge with a rectangular notch 17, the width of which corresponds substantially to the thickness of the blade portion 11 of the implant. Thus, when the tool is not being used by applying the socket 15 to the implant head portion 12, the socketed end of the shank 13 may be applied directly to the implant blade portion 13 by engaging the notch 17 with the blade portion, as exemplified in FIG. 5. This may be done at either or both sides of the head portion 12, as may be desirable to properly orient the implant in the jaw bone.

FIGS. 6 and 7 illustrate a modified arrangement of the tool in which the shank 13*a* is provided with the socket 15 as already described in connection with FIGS. 1–5. However, the shank 13*a* is somewhat shorter than the shank 13 and its impact receiving end portion 18 is stepped to provide a shoulder 19.

The shank 13*a* is intended to be used with an extension constituted by an elongated handle **20** and a removable implant receiving-head **21**, these parts being of the type disclosed in my aforementioned U.S. Pat No. 3,562,912. As there disclosed, the handle has an impact receiving end **22**, while its other end portion is laterally offset as at **23** and is provided with a polygonal recess **24** to non-rotatably but removably receive a polygonal mounting stud **25** of the head **21**. The head **21** is provided with a socket **26** between a pair of wing portions **27** and the socket is equipped with a resilient ring **28**. In application Ser. No. 839,377 the socket **26** is intended to receive the head portion **12** of the implant **10** while impacts delivered to the end **22** of the handle **20** are transmitted by the wing portions **27** to the blade portion **11** of the implant.

However, in the present arrangement the socket **26** removably receives the end portion **18** of the shank 13*a* and impacts delivered to the end **22** of the handle **20** are transmitted by the wing portions **27** to the shoulder **19**, and thence through the shank 13*a* to the implant **10** in the socket **15**.

The extension of the shank 13*a* afforded by the handle **20** increases the length of the tool and the offset **23** in the handle provides clearance for anatomical obstructions at the operating site. The shank 13*a* may be readily separated from the head **21** and an implant applied directly to the head as in application Ser. No. 839,377, when it is desired to use the handle **20** and head **21** without the shank 13*a*.

It may be also noted that when the shank 13*a* is applied to the head **21** of the handle **20**, the shank end portion **18** may have a small angular movement in the socket **26** in which the portion **18** is frictionally held by the ring **28**. This angular adjustment, combined with that afforded by angular positioning of the socket **15** on the implant head portion **12**, will permit the shank 13*a* and the handle **20** to be held at selected angles to the implant head portion, as necessitated for clearance of anatomical protuberances.

What is claimed as new is:

1. A tool for inserting in the jaw a wide vent dental implant which includes a relatively thin blade portion for implanting in the jaw, and a head portion; joined to said blade portion as a rearward extension thereof so as to project from the jaw when the blade portion is implanted, said blade portion having a free leading edge which leads the blade upon insertion into the jaw, a trailing edge portion opposite said leading edge and a pair of opposite side edge portions connecting said trailing edge and said leading edge, said head portion projecting from said trailing edge portion intermediate said pair of opposite side edge portions and having an elongated perimetric surface and an outer end surface transversely intersecting said perimetric surface; said tool comprising an elongated shank adapted to receive impacts at one end thereof and provided at its other end with a socket extending axially into said shank and being defined by a perimetric wall, a transverse bottom surface and an open end opposite said bottom surface, said socket being adapted to receive therein and being cross sectionally complemental to the head portion of an implant to be inserted by the tool, said perimetric wall being provided with a notch in an end edge thereof for engagement with an edge portion of an implant when the head portion of the implant is not in said socket.

2. The device as defined in claim **1** wherein said perimetric wall is cut away along somewhat more than one-half the perimeter of the socket to leave a lip of substantially lesser height than the remaining uncut portion of the wall, whereby to afford some degree of angular variation between said shank and the implant head portion in the socket.

3. The device as defined in claim **2** wherein an end edge of said remaining uncut portion of the perimetric wall is provided with said notch for engagement with an edge of the blade portion of an implant when the head portion of the implant is not in said socket.

4. The device as defined in claim **1** together with an extension separably attached to the impact receiving end of said shank, said extension comprising an elongated handle provided in one end thereof with a recess, and an implant receiving head removably mounted on said one end of said handle, said head comprising a mounting stud removably positioned in said recess and a head body on said mounting stud, said head body being provided with a socket adapted to receive the impact receiving end portion of said shank.

5. The device as defined in claim **4** wherein said one end portion of said handle provided with said recess is laterally offset from the main longitudinal axis of the handle.

6. The device as defined in claim **4** together with resilient means provided in said head body for frictionally retaining said impact receiving end portion of said shank in said head body socket.

7. The device as defined in claim **4** in which said impact receiving end portion of said shank includes a shoulder, said head body also including a pair of wing portions disposed at opposite sides of the head body socket and abuttingly engaging said shoulder of the shank for transferring impact forces thereto.

8. The device as defined in claim **1** together with an extension separably attached to the impact receiving end of said shank.

9. A tool for inserting in the jaw a wide vent dental implant which includes a relatively thin blade portion for implanting in the jaw, and a head portion joined to said blade portion as a rearward extension thereof so as to project from the jaw when the blade portion is implanted, said blade portion having a free leading edge which leads the blade upon insertion into the jaw, a trailing edge portion opposite said leading edge and a pair of opposite side edge portions connecting said trailing edge and said leading edge, said head portion projecting from said trailing edge portion intermediate said pair of opposite side edge portions and having an elongated perimetric surface and an outer end surface transversely intersecting said perimetric surface; said tool comprising an elongated shank adapted to receive impacts at one end thereof and provided at its other end with a socket extending axially into said shank and being defined by a perimetric wall, a transverse bottom surface and an open end opposite said bottom surface, said socket being adapted to receive therein and being cross sectionally complemental to the head portion of an implant to be inserted by the tool, said perimetric wall being cut away along somewhat more than one-half the perimeter of the socket to leave a lip of sub-

stantially lesser height than the remaining uncut portion of the wall, whereby to afford some degree of angular variation between said shank and the implant head portion in the socket.

* * * * *