

No. 674,965.

Patented May 28, 1901.

J. C. GRAFT.
DENTAL TOOL.

(Application filed Oct. 4, 1900.)

(No Model.)

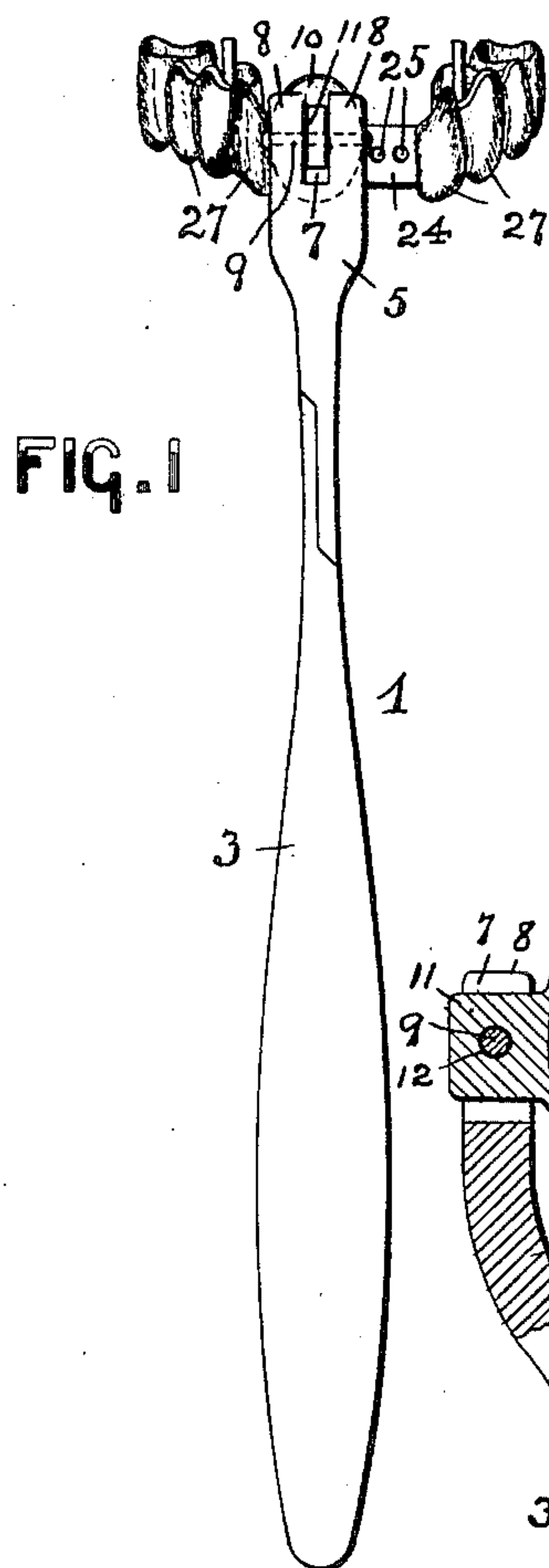


FIG. 1

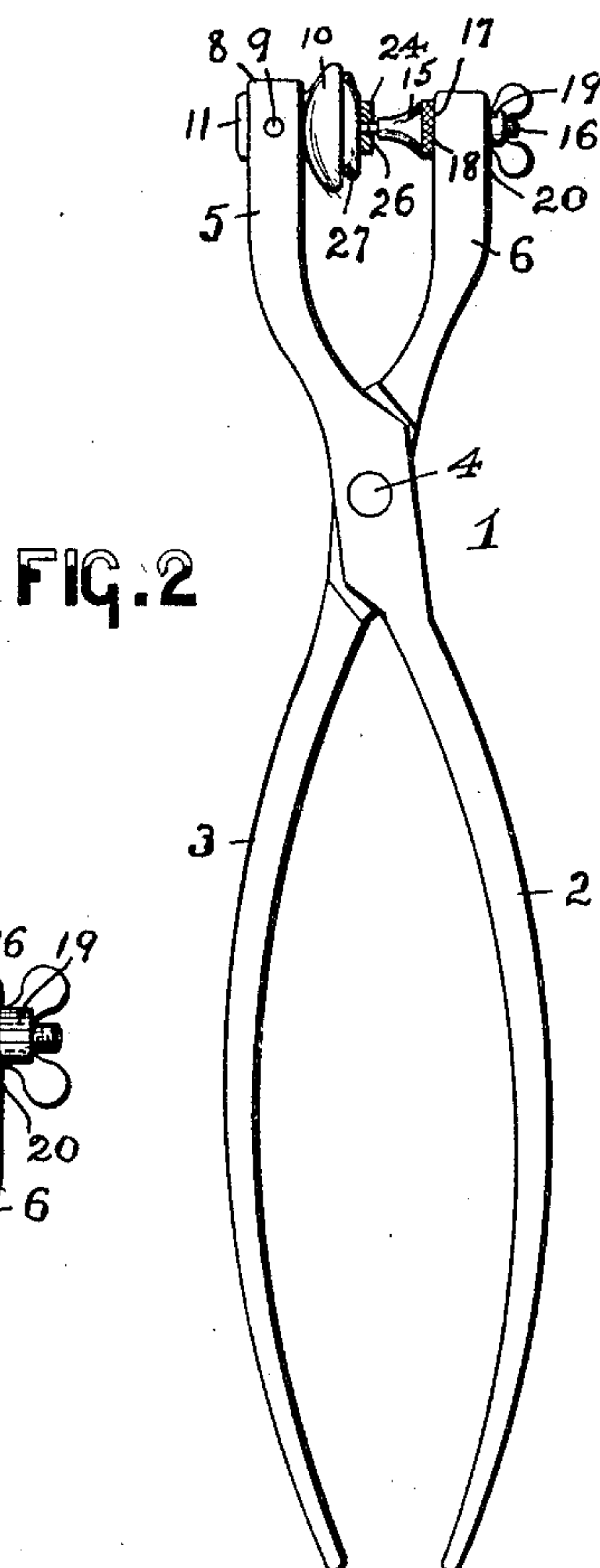


FIG. 2

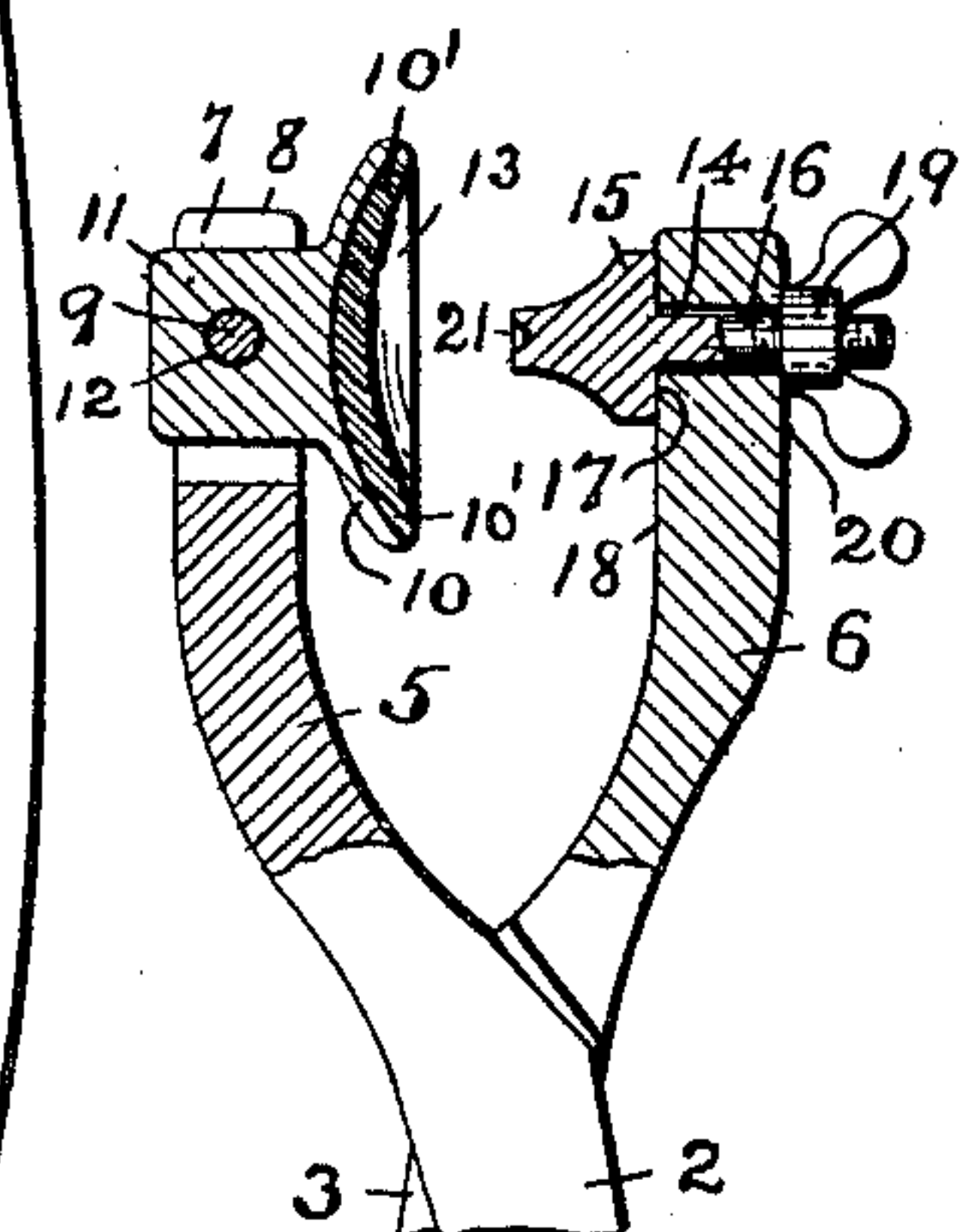


FIG. 3

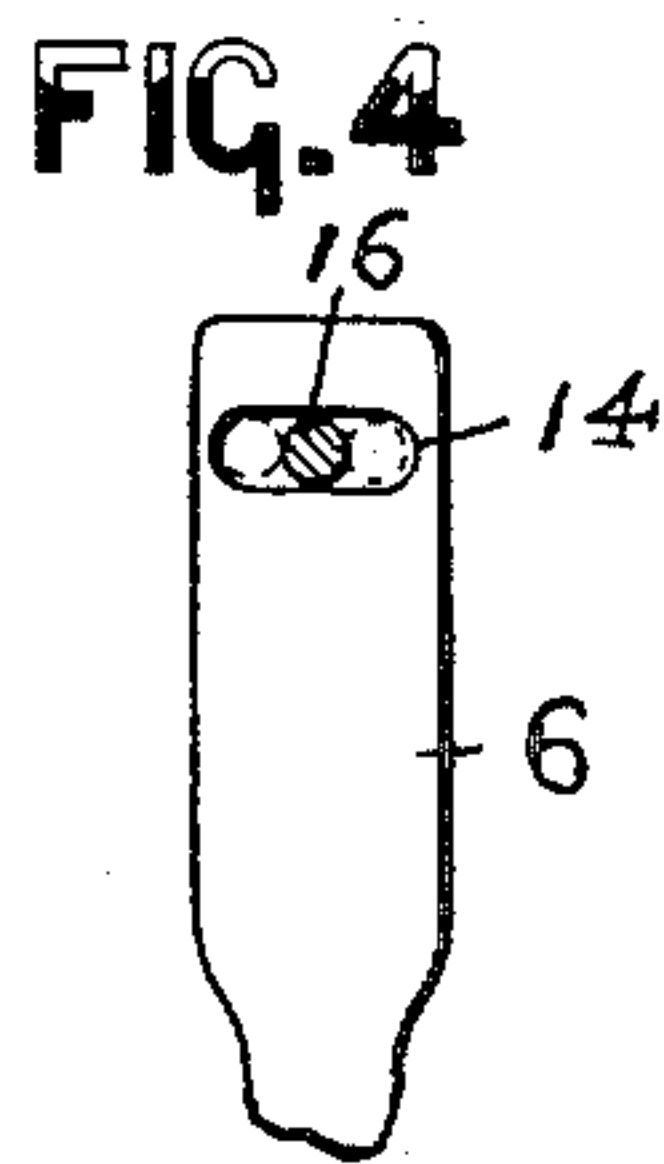


FIG. 4

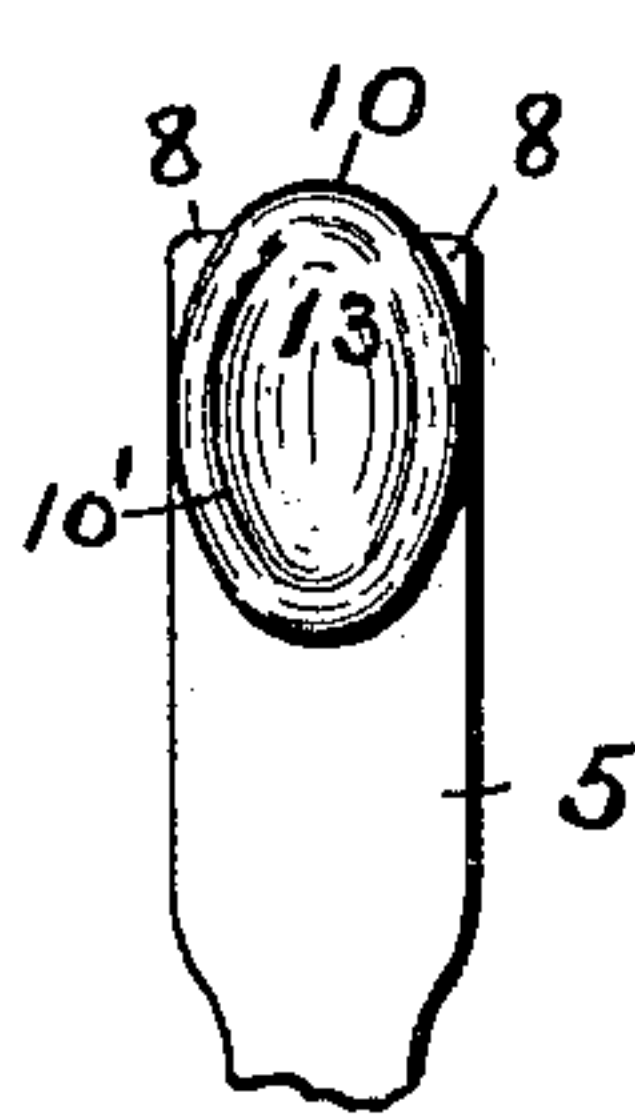
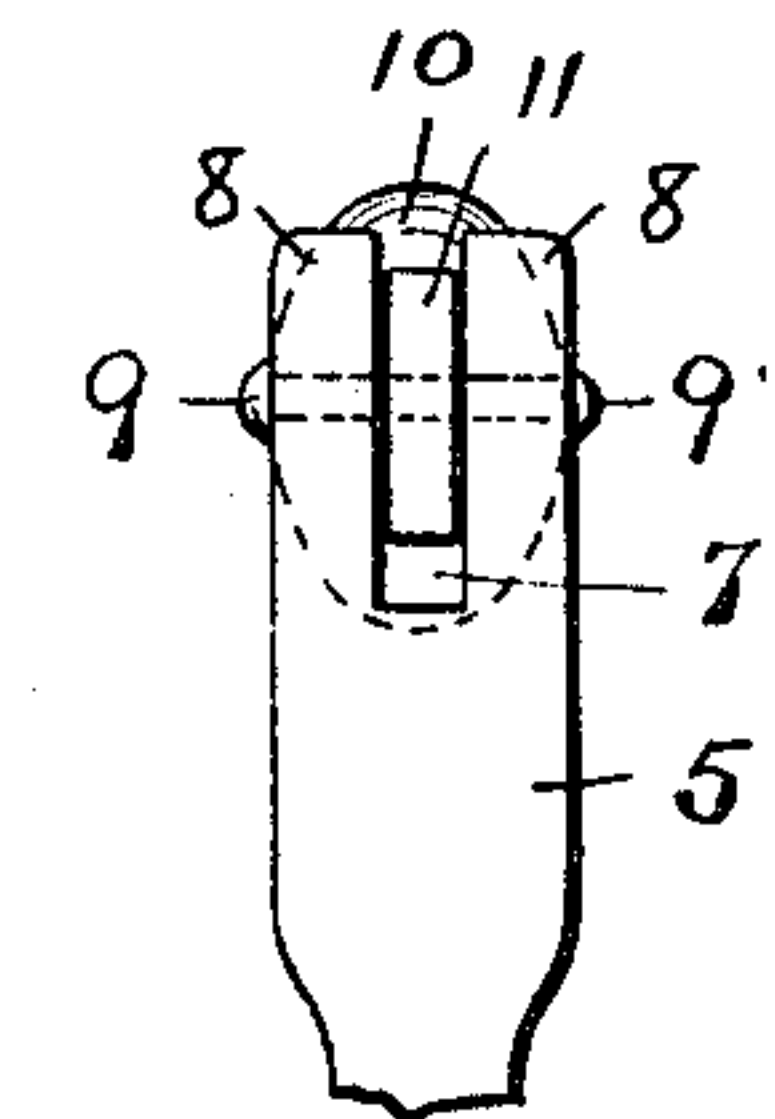
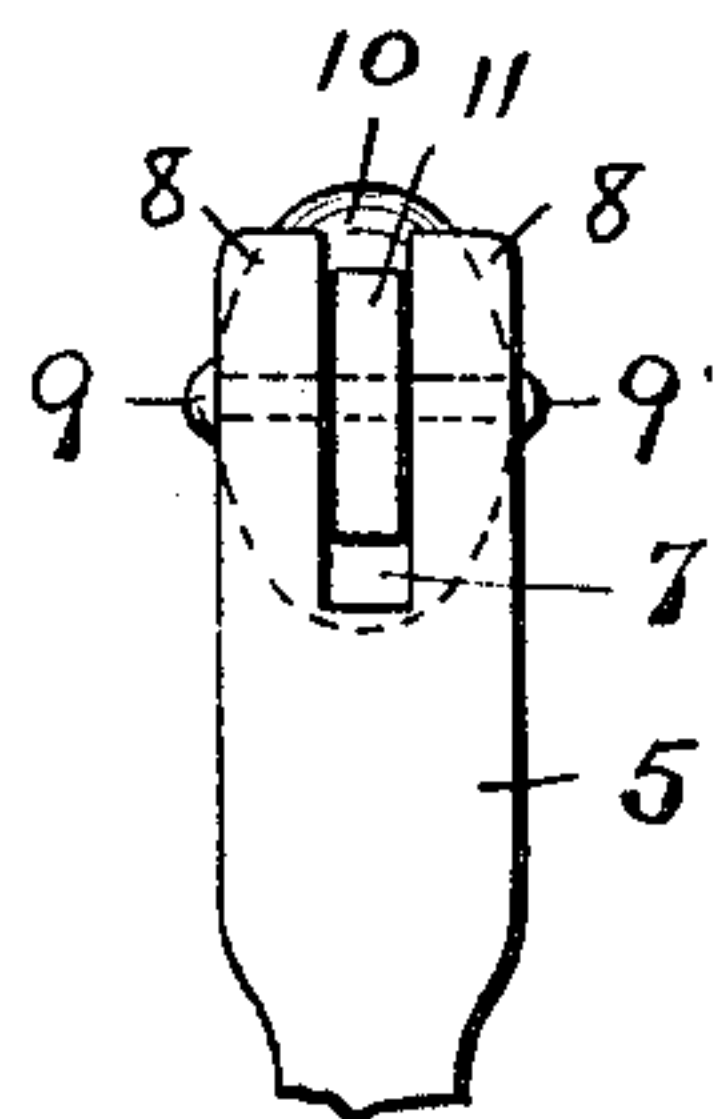


FIG. 6

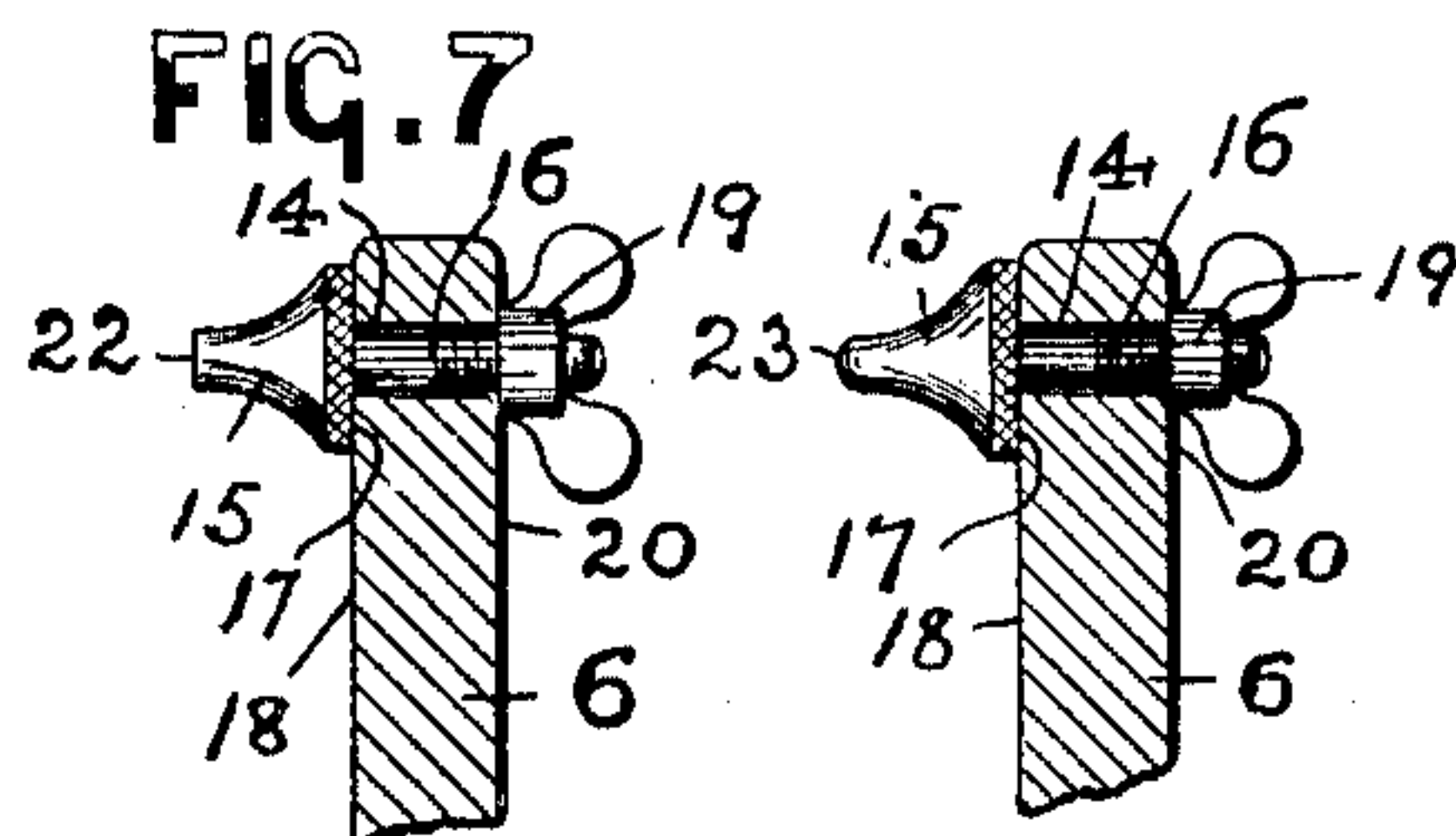


FIG. 7

FIG. 8

WITNESSES: FIG. 5

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DENTAL TOOL.

SPECIFICATION forming part of Letters Patent No. 674,965, dated May 28, 1901.

Application filed October 4, 1900. Serial No. 31,963. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. GRAFT, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Dentists' Tools; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

My present invention has reference to improvements in tools for dentists' use; and this invention has for its principal object to provide a novel construction of dentists' tool in the form of pliers, pincers, or riveting device which can be conveniently employed in the bridgework or platework of dentists, and to provide a tool having a self-adjustable cushion, which fits itself against the outer curvature or contour of the porcelain tooth, and, furthermore, to provide a tool having laterally movable and adjustable piercing and riveting studs which can be adjusted to the positions of the rearwardly-extending securing-pins on the back of the porcelain tooth to more easily and quickly center the riveting or bending-over stud of the tool with the holding pin or stud of the tooth.

In the art of securing porcelain teeth to a backing, as in bridgework or in single tooth-work, a metallic backing is employed, which is provided with holes or perforations, and the porcelain tooth or teeth are provided with two rearwardly-extending metallic pins or studs, usually of platinum, which are placed at either side of the longitudinal central axis of the tooth, and which pins or studs are inserted in the holes or perforations in the said backing and have their projecting ends riveted down against said backing and then burnished off. Owing to the varying contour or curvature of the faces of the different porcelain teeth to be secured upon the bridge-piece it is necessary to provide the tool with a self-adjusting cushion, of a soft material, which will readily grasp or hold against the outer surface of the tooth without injury to the same, and, furthermore, owing to the fact that the securing or fastening pins or

studs on the back of the porcelain teeth are arranged on either side of the longitudinal central axis of the tooth and usually quite near the thin edges of the same it is necessary to provide the tool with a laterally movable or adjustable riveting-stud, so that the stud on the tool and the pin or stud on the tooth can both be brought in alinement, and whereby when the dentist applies the tool the pressure upon the end of the pin or stud of the tooth which is to be riveted or bent over will be a direct one for properly and positively securing the porcelain tooth in position against the backing.

The present invention consists in the novel construction of dentists' tool for the purposes hereinabove stated which is provided with an adjustable cushion, and, furthermore, to provide, in connection with the tool, a laterally movable and adjustable riveting or burnishing stud.

The invention consists, furthermore, in the several novel arrangements and combinations of parts, all of which will be hereinafter more fully described, and then finally embodied in the clauses of the claim, which form a part of this specification.

The invention is clearly illustrated in the accompanying drawings, in which—

Figure 1 is a face view of a dentist's bridge with several porcelain teeth in position thereon and one tooth removed to illustrate the position of the holes or perforations in the plate in which the riveting pins or studs of the tooth are to be arranged and riveted over on the back of the plate, said view also representing an edge view of the tool embodying the principles of my invention and setting forth the use of the tool in connection with the bridge-plate. Fig. 2 is a side view of the tool, the jaws thereof being represented in their respective positions when in the act of securing a porcelain tooth against the backing, such tooth being represented in side elevation and the backing being shown in vertical cross-section through one of the holes or perforations therein. Fig. 3 is a sectional view, on an enlarged scale, of the two jaw portions of the tool, one of said jaws being provided with a self-adjustable cushion of a soft metal and the other jaw being provided with a laterally movable and adjustable clenching

or riveting stud, removably secured in position on said jaw. Fig. 4 is a face view of the end portion of one of the jaws of the tool, the same being provided with an elongated slot extending in a lateral direction across the end portion of the jaw and illustrating in cross-section the shank of the movable and adjustable clenching or riveting stud in position in said elongated slot. Figs. 5 and 6 are two views of the outer and inner faces, respectively, of the other jaw portion of the tool provided with the self-adjustable cushion. Fig. 7 is a sectional view of one of the jaws of the tool, provided with a flattening-stud movably and adjustably as well as removably arranged in the elongated slot in the jaw; and Fig. 8 is a similar view of the said jaw, but provided with a burnishing-stud in place of the riveting-stud represented in Figs. 2 and 3 or the flattening-stud represented in said Fig. 7.

Similar numerals of reference are employed in all of the said above-described views to indicate corresponding parts.

In the said drawings, 1 indicates the complete tool, which consists, essentially, of a pair of handle portions 2 and 3, pivotally connected at 4 by means of a pin or rivet, as clearly illustrated in Fig. 2 of the drawings. The said portion 2 is provided with a forwardly-extending jaw-section 5 and the portion 3 is provided with a jaw-section 6. The said jaw-section 5 is provided at its free end portion with a slot 7 and a pair of perforated ears 8, in which I have secured a pin 9, substantially as illustrated in the several figures of the drawings. The supporting-cushion, which has a lining 10 of a soft metal, as lead or the like, is indicated by the reference-figure 10. This cushion is provided with a rearwardly-projecting lug or ear 11, which is provided with a hole or perforation 12, by means of which when the said lug or ear 11 is placed between the two ears 8 of the jaw-section 5 the said lug or ear 11 can be pivotally arranged upon the pin 9 in said ears 8, and whereby the said cushion is capable of an oscillatory motion upon the inner face of the jaw-section 5 to accommodate itself automatically to the curvature of the outer face of the porcelain tooth which is to be secured in position upon the bridge-plate. The soft-metal lining of the cushion 10 is also provided in its face with a concaved portion 13, which approximately corresponds to the curvature of the face of the porcelain teeth, or nearly so, that the cushion after its self-adjustment against the face of the tooth will more positively fit the face of the tooth, and pressure can be applied, without the least danger of destroying the porcelain finish or breaking the tooth during the riveting, flattening out, or burnishing operations, in the manner to be hereinafter more fully described. The other jaw-section, 6, of the tool, as will be seen from the several figures of the drawings, is provided with an elongated and laterally-extending opening or

slot 14 near its free end, and movably and adjustably arranged in said elongated opening 14 is the screw portion 16 of a suitable stud 15. This stud, as will be seen from Figs. 3, 7, and 8, when placed in position in the said elongated opening 14 has a shoulder or other similarly-constructed stop portion 17 firmly arranged against the inner face 18 of the jaw-section 6 by screwing a thumb-nut 19 or other suitable fastening means down upon the screw portion 16 of the stud and against the outer face 20 of said jaw-section. With each jaw-section 6 I prefer to use several of such studs 15, the one represented in Fig. 3 having in its free end a curved recess or socketed portion 21, which is for the purpose of providing a slight head upon the pin or rivet connected with the porcelain tooth and is for riveting the same against the back of the metal bridge-plate or backing in the manner to be presently described. The stud 15 represented in Fig. 7 has a flat end surface 22, which is for the purpose of flattening out the head of said pin on the tooth against the backing, and the stud 15 represented in Fig. 8 has a spherical portion 23, which is used for burnishing purposes. These several studs are interchangeably secured in their laterally-adjustable positions in the elongated slot or opening 14 of the jaw-section 6 and may be removed therefrom by unscrewing the thumb or other nut 19 from the screw-shank 16, as will be clearly evident. In this manner these studs (illustrated in the several figures of the drawings) may also be replaced by studs of other shapes, (not here represented or shown,) as will be understood.

The manner of using the tool for attaching a porcelain tooth is as follows: In Figs. 1 and 2 of the drawings, 24 indicates the metal backing of a dentist's bridge. This backing, whether it is used for a single tooth or whether for bridgework, as here indicated, is provided with suitably-disposed holes or perforations 25, arranged side by side, as shown, for the reception of certain pins or studs 26, which project from the backs of the porcelain teeth 27. The said pins or studs 26 on the back of the porcelain teeth 27 are generally arranged in pairs, one pin or stud on the left of the longitudinal central axis of the tooth and the second pin or stud being arranged on the right side of the said axis, and in very small and narrow teeth, where the width of the tooth is very limited, these pins or studs, as will be evident, are of necessity placed near the thin edges of the tooth. Now having arranged the said two pins or studs of the tooth in a pair of holes or perforations 25 in the backing 24 at the desired place the concave supporting-cushion 10 of the one jaw-section, 5, of the tool is placed directly against the outer or front face of the tooth, and the riveting or clenching stud 15 connected with the other jaw-section, 6, of the tool is slid either to the left or to the right in the elongated slot or opening 14 of said jaw-section,

as indicated in dotted outline in Fig. 4, whereby the working end of the said stud 15 is brought in direct and central alinement with the respective pin or stud 26 of the tooth to be fastened in position against the backing or bridge-plate 24. By thus being enabled to adjust the said studs 15 to the right or left a direct pressure is exerted upon the free end of the fastening pin or stud of the tooth, and all pressure in an angular direction against the stud or pin of the tooth that may be liable to irregularly bend the said holding pin or stud over and produce an unsatisfactory finish is entirely obviated, which is of great benefit and advantage to the dentist in repairing of bridgework or platework, as he can thereby work with greater ease and rapidity, and there is no danger of poorly clenching or riveting the end of the fastening pin or stud or of splitting or breaking the porcelain tooth. In using the tool the stud 15 illustrated in Fig. 3 is first employed for forming a small head on the projecting end of the pin 26, which extends from the back of the bridge-plate 24, as clearly indicated in Fig. 2. Then by employing the stud 15 provided with the flat surface 22 (indicated in Fig. 7) the said head on the pin 26 is flattened out against the back surface of the backing or bridge-plate 24, and finally by using the stud 15 with the spherical end 23 (indicated in Fig. 8) the said flattened-out portion of the pin 26 is burnished and furnishes, with the back surface of the backing or bridge-plate 24, a finished surface.

From the above description it will be seen that I have devised a simply-constructed tool which can easily and rapidly be employed and with great certainty for securing porcelain teeth to a backing or bridge-plate, whether in new work or in repair-work without the least danger of improperly bending over the fastening-pins connected with the teeth and without the possibility of splitting or cracking a tooth while securing the tooth in place.

I am fully aware that some changes may be made in the several arrangements and combinations of the parts of the tool and in the details of the construction of the several parts without departing from the scope of my present invention. Hence I do not limit my invention to the exact arrangements and combinations of the parts as herein described, and illustrated in the accompanying drawings, nor do I confine myself to the exact details of the construction of the said parts.

Having thus described my invention, what I claim is—

1. A dentist's tool for attaching porcelain teeth to a backing, comprising a pair of pivoted jaw-sections, one section being adapted to fit against the face of the tooth to be attached, and means adjustably and detachably arranged upon and connected with the other jaw-section for attaching a pin or stud

on said tooth to the backing, substantially as and for the purposes set forth.

2. A dentist's tool for attaching porcelain teeth to a backing, comprising a pair of pivoted jaw-sections, a cushion of a soft material on one of said jaw-sections arranged to be fitted against the face of the tooth to be attached, and means adjustably and slidably arranged upon and connected with the other jaw-section for attaching a pin or stud on said tooth to the backing, substantially as and for the purposes set forth.

3. A dentist's tool for attaching porcelain teeth to a backing, comprising a pair of pivoted jaw-sections, a cushion of a soft material on one of said jaw-sections arranged to be fitted against the face of the tooth to be attached, and a stud slidably and adjustably connected with the other jaw-section provided with means for flattening out the end of a pin or stud on said tooth and securing it to the backing, and means on said stud for securing it in its adjusted position, substantially as and for the purposes set forth.

4. A dentist's tool for attaching porcelain teeth to a backing, comprising a pair of pivoted jaw-sections, a cushion of a soft material on one of said jaw-sections arranged to be fitted against the face of the tooth to be attached, a riveting or clenching stud having a screw-threaded shank slidably arranged in an elongated slot or opening in one of the said jaw-sections, and a nut on said screw-threaded shank for securing said stud in its adjusted position, substantially as and for the purposes set forth.

5. A dentist's tool for attaching porcelain teeth to a backing, comprising a pair of pivoted jaw-sections, a supporting-cushion and means connected with said cushion for pivotally attaching it to one of said jaw-sections arranged so as to adjust itself against the face of the tooth to be attached, and means on the other jaw-section for attaching a pin or stud on said tooth to the backing, substantially as and for the purpose set forth.

6. A dentist's tool for attaching porcelain teeth to a backing, comprising a pair of jaw-sections, one of said jaw-sections having a slotted portion 7 and ears or lugs 8, a pin 9 in said ears or lugs extending across said slotted portion 7, and a supporting-cushion having a perforated projection arranged in said slotted portion 7 and pivoted on said pin, and means on the other jaw-section for attaching a pin or stud on said tooth to the backing, substantially as and for the purposes set forth.

7. The herein-described dentist's tool, consisting, essentially, of a pair of pivoted jaw-sections 5 and 6, said jaw-section 5 having a slotted portion 7, a pair of perforated ears or lugs and a pin extending across the said slotted portion, a supporting-cushion having a perforated projection arranged in said slotted portion 7 and pivoted on said pin, and the other jaw-section having a laterally-extend-

ing slot or opening, and a stud, provided with a shank slidably and adjustably arranged in said laterally-extending slot or opening in the jaw-section 6, and means on said shank for
 5 securing said stud in its laterally-adjusted position, substantially as and for the purposes set forth.

8. The herein-described dentist's tool, consisting, essentially, of a pair of pivoted jaw-
 10 sections 5 and 6, said jaw-section 5 having a slotted portion 7, a pair of perforated ears or lugs and a pin extending across the said slotted portion, a supporting-cushion having a perforated projection arranged in said slotted
 15 portion 7 and pivoted on said pin, and the other jaw-section having a laterally-extend-

ing slot or opening, and a stud, provided with a screw-threaded shank slidably and adjustably arranged in said laterally-extending slot or opening in the jaw-section 6, and a thumb- 20 nut on said screw-threaded shank for securing said stud in its laterally-adjusted position, substantially as and for the purposes set forth.

In testimony that I claim the invention set 25 forth above I have hereunto set my hand this 3d day of October, 1900.

JOHN C. GRAFT.

Witnesses:

FREDK. C. FRAENTZEL,
 GEO. D. RICHARDS.