

(No Model.)

G. W. NÜTZ.
DENTAL PLUGGER.

No. 556,202.

Patented Mar. 10, 1896.

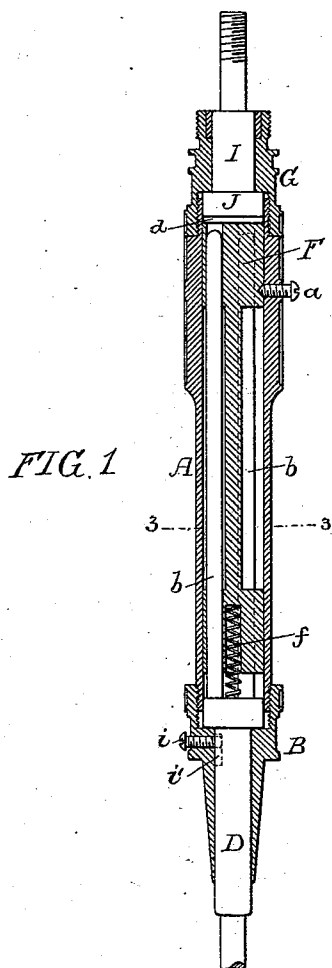


FIG. 1.

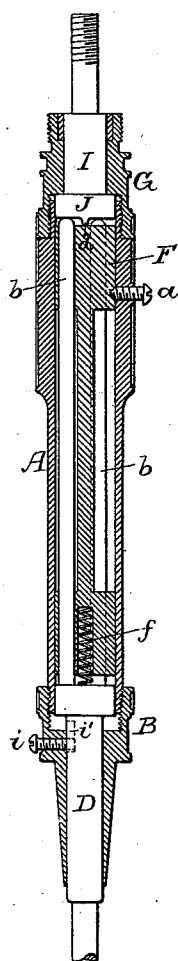


FIG. 2.

FIG. 3.

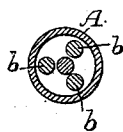


FIG. 4.



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UNITED STATES PATENT OFFICE.

GEORGE W. NÜTZ, OF WILMINGTON, DELAWARE.

DENTAL PLUGGER.

SPECIFICATION forming part of Letters Patent No. 556,202, dated March 10, 1896.

Application filed April 22, 1895. Serial No. 546,716. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. NÜTZ, a citizen of the United States, and a resident of Wilmington, Delaware, have invented certain
5 Improvements in Dental Pluggers, of which the following is a specification.

The object of my invention is to construct a cheap and simple form of dental plugger or like impact-tool which is capable, with a moderate speed of driving-shaft, of imparting
10 blows in very rapid succession, and this object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

15 Figure 1 is a longitudinal section of a dental plugger or like impact-tool constructed in accordance with my invention and showing the parts in inoperative position. Fig. 2 is a similar view, but showing the parts in operative relation with each other. Fig. 3 is a sectional plan view on the line 3 3, Fig. 1; and
20 Fig. 4 is a view of the face of the rotating cam whereby the tool is actuated.

A is the external tubular casing of the tool,
25 closed at the lower end by a tubular cap B, within which is guided a tool stock or holder D, constructed as usual at the outer end for the reception of any desired form of tool.

Within the tubular casing A is snugly fitted
30 a plug F, held in place by means of a set-screw *a*, and reduced in diameter in the central portion so as to lessen its weight and form at the opposite ends of the plug the bearings for a series of pins *b*, which are
35 guided longitudinally in said plug, three of these pins being shown in the present instance.

Screwed onto the upper end of the casing A is a cap G, in which is formed a bearing for a
40 shaft I, adapted to be connected to any ordinary form of flexible driving-shaft, this shaft I having at its inner end a cam J with transverse rib *d*, Fig. 4, on the inner face thereof. The cam with its projecting rib is lightly confined, so far as longitudinal movement is concerned, between the plug F and the cap G,
45 but is free to rotate in the chamber between said plug and cap.

To a recess in the plug F is adapted a coiled
50 spring *f*, which bears upon the inner end of the tool-stock D and serves to project the same, so that when the tool is not in use the

enlarged inner end of the tool-stock bears against the inner face of the cap B.

The pins *b* in this case are permitted to drop 55 or move forward, so that their upper ends are below the top of the plug F, and hence do not come under the influence of the rib *d* of the rotating cam J; but as soon as the tool is pressed against the work the tool-stock is
60 forced inward, so as to lift the pins *b* and cause their upper ends to project above the top of the plug F, as shown in Fig. 2, and thus bring them into range of the rib *d*. This rib *d* practically constitutes two cams, one
65 cam, *x*, on one side of the axis of the disk and the other cam, *x'*, on the other side of said axis, as shown in Fig. 4, so that there are practically two cam-lugs and three pins, and the number of blows delivered on each rotation
70 of the cam-disk J is equal to the number of pins multiplied by the number of lugs. The use in each series of a number of lugs or pins which is not a multiple of that in the other series is not absolutely essential to the broad-
75 est embodiment of my invention, since it is manifest that there might be four pins and two lugs if the latter were not symmetrically arranged on the cam-disk, but were so disposed that one lug acted first upon one of the
80 transmitting-pins, then the other lug acted upon another of said pins, then the first lug acted upon the pin in advance of that first operated by it, then the second lug acted upon the pin in advance of that first actuated by
85 it, and so on.

Heretofore in dental pluggers in which the cam-disk had a series of cams acting upon a series of transmitting contact-points the number of cams was always a multiple of the number of points, and both cams and contact-points were symmetrically arranged. Hence the group of cams acted simultaneously upon the corresponding group of transmitting contact-points, and the number of blows delivered on each rotation of the cam-disk only
90 equaled the number of contact-points divided by the number of cams. By so disposing the cams and transmitting contact-points, however, that the number of elements in one series is not a multiple of that in the other or when it is a multiple by adopting an unsymmetrical arrangement of the elements in one or the other series I am enabled to largely in-
100

crease the number of blows delivered on each rotation of the cam-disk, as before set forth.

The cap B has the usual set-screw *i*, adapted to a slot *i'* in the tool-stock to prevent the accidental detaching of the stock from the cap when the latter is unscrewed from the body of the tool.

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

1. An impact-tool in which are combined a body, a longitudinally-guided tool-stock in one end of the same, a rotating cam in the other end having a ribbed inner face, and a series of longitudinally-guided pins acting directly upon said tool-stock at one end, and acted upon directly by the ribbed face of the rotating cam at the other end so as to transmit the blow of the rib to the tool-stock in a straight line, and multiply the strokes upon said tool-stock, substantially as specified.

2. An impact-tool in which are combined a body having at one end a longitudinally-guided tool-stock, and at the other end a rotating cam, with a series of lugs on its inner face, and means for transmitting the blow of each of said lugs to the tool-stock, said transmitting means presenting a series of points for being struck by the cam-lugs and said cam-

lugs and transmitting contact-points being so disposed in respect to each other that the cam-lugs will act successively instead of simultaneously, whereby the number of blows delivered on each rotation of the cam-disk will equal the number of transmitting contact-points multiplied by the number of cam-lugs, substantially as specified.

3. An impact-tool in which are combined the tool-stock, a spring for depressing the same, a rotating cam having lugs on its inner face, a series of longitudinal pins whereby said cam is caused to act upon the tool-stock, a casing comprising an outer tube having at one end a cap constituting a guide for the tool-stock, and at the other end a cap forming a bearing for the rotating cam-shaft, and a central plug having bearings for the longitudinal pins, and a central recess at the lower end for the reception of the spring which depresses the tool-stock, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE W. NÜTZ.

Witnesses:

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LEWIS PORTER.