(Model.)

E. T. STARR.

DENTAL TOOL HOLDER.

No. 248,958. Patented Nov. 1, 1881.

Fig. 1,

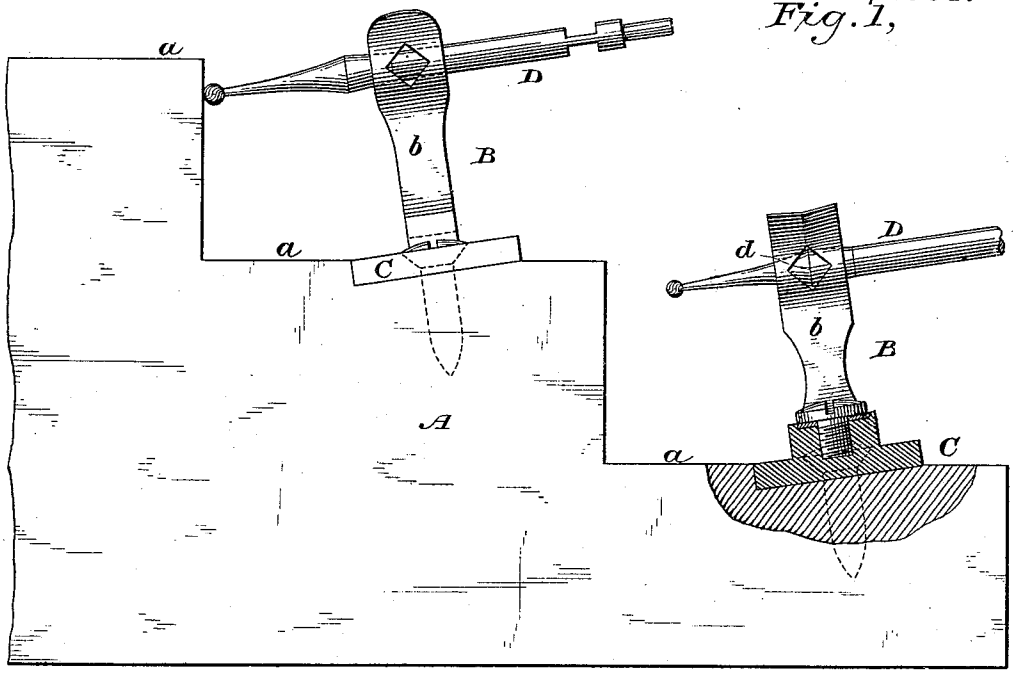
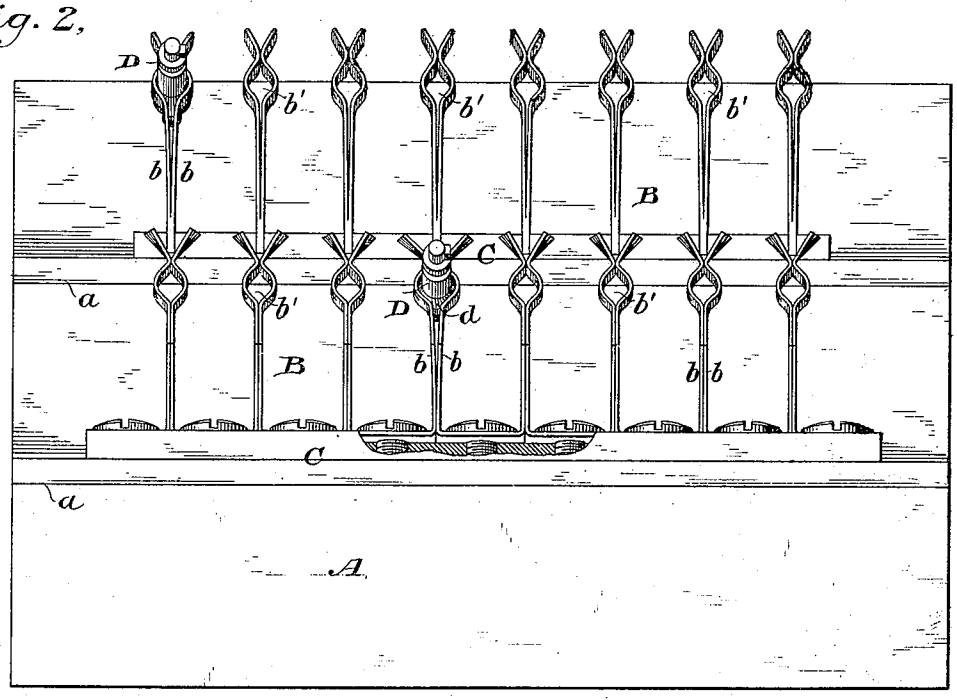


Fig. 2,



WITNESSES

Wm. A. Skinkle

Geo. W. Breck

INVENTOR.

Eli T. Starr,

By his Attorneys

Baldwin, Hopkins & Peyton.

N. PETERS. Photo-Lithographer. Washington. D. C.

UNITED STATES PATENT OFFICE.

ELI T. STARR, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO JAMES W. WHITE, JAMES CLARENCE WHITE, AND H. M. LEWIS, TRUSTEES, ALL OF SAME PLACE.

DENTAL-TOOL HOLDER.

SPECIFICATION forming part of Letters Patent No. 248,958, dated November 1, 1881.

Application filed June 30, 1881. (Model.)

To all whom it may concern:

Be it known that I, ELI T. STARR, of the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Dental-Engine Bit or Tool Holders, of which the following is a specification.

There are generally a large number of operating bits or tools for use interchangeably with the hand-piece of a dental-engine, the chuck of the hand-piece, which revolves in suitable bearings in the hand-piece casing, having its front end socketed for the reception of the notched shanks of the bits or tools. The working-points of these bits or tools vary in their character, owing to the different kinds of work they are required to perform, and probably, in working upon a single tooth, the dentist may have to change his operating bit or tool a half dozen times.

The object of my present invention is to provide for the removal of the bit or tool from the spindle-chuck of the hand-piece without necessitating the use of the operator's fingers for that purpose, and without stopping the rotation of the chuck, and at the same time to avoid the necessity for the use of the operator's fingers in placing the shank of a tool in the chuck-socket, whether the chuck is being rotated or remains at rest in its bearings.

The subject-matter claimed is particularly pointed out at the close of the specification.

In the accompanying drawings, which show my improvements, Figure 1 is a side view, and Fig. 2 a front view, of the holder.

The base or block A may have steps or ledges *a a a*, one above the other, on its upper surface, and on each step or ledge is a row of spring-holders, B. Three rows of spring-holders, with ten holders, to the row would probably be amply sufficient in capacity, as that number of spring-holders would hold probably all the bits or tools with operating-points of different character in daily use by the dentist of large practice.

I have shown in the drawings only two rows of spring-holders, with eight holders to each row. The number of spring-holders employed and their arrangement in rows or series will be according to taste or convenience. I prefer each row of holders B to be mounted upon a plate, C, detachably connected (by screws, for example) with a base, A, so as to be removable independently, if desired, for any purpose.

Each of said spring-holders B consists of two plate-spring arms or jaws, *b b*, rising vertically from the plate C, and having their lower ends united or closely joined, so that the tendency of the arms or jaws will be to remain close together, and so that anything which opens said arms or jaws by passing between them will be grasped or held by them, owing to their resiliency. The upper or free ends of said arms or jaws *b b* are bent outward or flaring, so as to form a comparatively wide mouth to receive an enlargement, *d*, on the bit or tool shank D, and permit said enlargement to be readily forced down to spread apart the jaws and pass into a seat or socket, *b'*, in the spring-holder and rest therein with the jaws grasping the shank. An opening or recess, preferably of the square form, shown in Fig. 1, is cut or formed in the side walls of the seat or socket *b'* of the plate-spring arms or jaws *b*, so that the tool-enlargement may rest in its seat in the holder without forcing the jaws thereof too far apart or necessitating the enlargement of the walls of the seat or socket. Moreover, by forming the openings or recesses in the side walls of the seat *b'*, the spring-arms take a positive hold of the tool-enlargement upon both sides, and prevent endwise movement of the tool by either a thrust or pull, thus enabling me to provide a holder to operate in the manner hereinafter described in extracting a tool from or inserting one in the chuck of a dental-engine hand-piece.

When the enlargement on the tool-shank is of cone shape, as shown and claimed in Johnston and Browne's Patent, No. 213,662, of March 25, 1879, I prefer the flaring mouth of the spring-holder to be shaped as shown in the lower row of holders, marked 1 in the drawings.

The manner in which a bit or tool shank is held in the holder is clearly shown. It will also be seen that the plates C, which I preferably employ to carry the spring-holders, are so fastened to the base A that the holders are

slightly tilted or inclined out of the perpendicular, which is for the purpose of throwing the notched driving ends of the tool-shanks a little higher up from the base than would be the case were the spring-holders exactly perpendicular. Moreover, this inclination of the spring-holders enables the tool to be more easily removed from the chuck-socket, as it gives the holder a better action on the tool-enlargement.

The operation of the holder is as follows: Suppose, in using a dental-engine hand-piece, such, for instance, as the one shown in Letters Patent granted to me October 26, 1880, as No. 233,709, modified to receive tools having a conical enlargement, as described herein, a tool with a working point or end of peculiar character has been used, and it is desired to rapidly remove the tool without stopping the engine or the rotation of the chuck and to insert in the chuck-socket another tool with a working point of different character or size, all that is necessary is to rock the lever of said hand-piece, which controls the tool-fastening devices of the chuck, so as to release the fastenings from the tool-shank and then engage the tool-shank, in advance of the nose of the hand-piece, with the spring-holder until the enlargement on the tool is permitted to fit and be pressed into the flaring mouth of the spring-holder, and thence into the seat or socket *b'* below, the arms or jaws of the holder being sprung apart for the purpose. As soon as the tool-enlargement is pressed into its seat in the spring-holder said holder will grasp it and hold the tool firmly enough to withdraw it from the chuck as the hand-piece is moved or drawn back. When removed the tool will be held by the holder, as shown in the drawings.

To insert a tool in the socket of the chuck, move the hand-piece up to the tool-shank so as to enter said shank in the socket a distance sufficient to enable the tool to be lifted, moved, or forced upward so as to disengage it from the spring-holder. Then hold the hand-piece in a vertical position with its nose or front end upward. This position, owing to the revolution of the chuck, will cause the tool to move into its place in the socket for the engagement of the tool-locking devices with its notched ends, which devices are then permitted to close upon the tool-shank and lock it securely in the chuck, with which it is driven firmly and steadily to do its work.

The removal and insertion of a tool can be accomplished with exceeding rapidity and without the use of the operator's fingers to take hold of the tool, thus leaving his hand free to do other necessary work about the patient.

I do not claim herein, broadly, a spring-holder composed of two spring-arms having a flaring mouth and a seat for the article to be held, nor a series of such holders arranged in a row upon a base or block. Such devices have long been in common use as pen-racks, &c., but they have never before, so far as I am aware, been organized for the purpose of holding rotary engine tools or bits, and of operating therewith in the manner set out by me. The openings or recesses in the sides of the spring-jaws to fit around the tool-enlargement are a necessary feature in my invention.

I claim as my invention—

The spring-holder for engine bits or tools, constructed, substantially as hereinbefore set forth, of two spring-jaws the side walls of which are provided with openings or recesses to receive the enlargement of the tool-shank and firmly grasp it so as positively to prevent endwise movement of the tool.

In testimony whereof I have hereunto subscribed my name this 28th day of June, A. D. 1881.

ELI T. STARR.

Witnesses:
FRANK L. HISE,
ALBERT P. ROOT.