

W. S. ELLIOTT.

Improvement in Dental-Drills.

No. 131,156.

Patented Sep. 10, 1872.

Fig. 1.



Fig. 2.

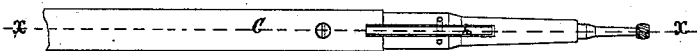


Fig. 3.



Fig. 4.

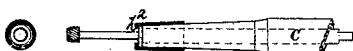
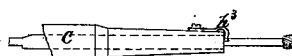


Fig. 5.



Witnesses.

M. M. Linsford
J. P. Beecher

Inventor.

Walter Scott Elliott

UNITED STATES PATENT OFFICE.

WALTER SCOTT ELLIOTT, OF GOSHEN, ASSIGNOR TO JOHNSTON BROTHERS,
OF NEW YORK, N. Y.

IMPROVEMENT IN DENTAL-DRILLS.

Specification forming part of Letters Patent No. 131,156, dated September 10, 1872.

To all whom it may concern:

Be it known that I, WALTER SCOTT ELLIOTT, of Goshen, in the county of Orange and State of New York, have invented a certain new and useful Improvement in Dental-Drills; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing which forms part of this specification.

My present invention relates more particularly to an improvement in that part of a dental engine termed the "hand-piece;" and it also relates to the construction of the tool used for operating upon the teeth. In the best and most improved forms of dental engines a sleeve is employed to envelop a certain portion of the rotating shaft, and to extend beyond the end of the same, so as to form a bearing or journal-box for the tool. The section or portion of the apparatus enveloped by the said sleeve is usually termed the hand-piece, and the construction described enables the dentist to grasp the said hand-piece so that his hand or fingers may be close to the operating end of the tool, and hence insure steadiness and accuracy in operating upon a tooth—absolute requisites. Heretofore the shanks of these tools (which are usually termed "burrs" and "drills") have, in the most practical machines, been provided with one or more flat or plain faces or sides, and a corresponding socket has been made in the end of the rotating shaft, and the tool, when inserted, thereby caused to rotate with the shaft, the friction of the faced or squared end of the shank in the socket being all the provision made for keeping the tool from falling out, and hence considerable embarrassment is often occasioned by the tool dropping out of its socket. The object, therefore, of this invention is to so construct the tool and to so combine a locking mechanism with the hand-piece that the tool will be held securely against accidental detachment, and at the same time no impediment offered to its free rotation. To such end my invention consists, first, in an improved tool for dental purposes, provided with one or more plain or flat faces at or near the end of its shank, and with a circumferential or annular shoulder formed on it at a suitable intermediate point of its length; the said tool be-

ing constructed and adapted for use in combination with a suitable securing device on the hand-piece of a dental-engine. It consists, secondly, in the combination, with the sleeve and rotating shaft, (or hand-piece,) of a nose or catch so arranged that when a tool constructed as above described is inserted in its socket it will bear against the said shoulder and prevent the tool from becoming accidentally disengaged from the rotating shaft, and at the same time offer no impediment to the free rotation of the tool.

In the accompanying drawing, Figure 1 is a longitudinal section of a portion of a hand-piece of a dental engine, showing my present improvements, the section being taken on the plane of the line *x x*, Fig. 2. Fig. 2 is an external view of the same. Fig. 3 is an external view of the improved tool. Figs. 4 and 5 show modifications of my invention.

A designates the rotating shaft, which is provided with a socket at its outer end for receiving the end of the shank of the dental tool. The tool is provided with one or more plane or flat faces at the end of its shank, and the socket is correspondently made, and hence, when the end of the tool is inserted in its socket, said tool will be caused to rotate with the shaft, as is obvious. In the present instance the shank of the tool is provided with two plane faces, *a a*, and it fits into a corresponding socket, *b*, in the end of the shaft. The tool is designated by the letter B. In Fig. 3 the tool is shown as provided with a circumferential groove, *c*, and one side wall of this groove forms a shoulder, *d*, all around the tool. In Fig. 4 the tool is provided with the necessary circumferential shoulder by forming or sweating a ring upon it; and in Fig. 5, by decreasing the size of the tool near its operating end. It will therefore be seen that the necessary shoulder may be formed by increasing or decreasing the diameter of the tool at some suitable point between its extreme ends, so that when a catch is applied to the sleeve, (which will be presently described,) I am enabled to hold the tool securely against accidental displacement, and at the same time permit the tool to have its bearings in the sleeve. C designates the sleeve which envelops the rotating shaft and a portion of the tool. The outer

end of this sleeve, it will be observed, forms a bearing for the tool; it is, in fact, its journal-box; but this feature of so constructing the tool and sleeve that a certain portion of the tool—say, that lettered *f*—shall be its own journal, and a portion of the sleeve—say, that lettered *g*—the bearing, for the tool is not new with me; it is shown in a patent granted to one J. B. Morrison, August 16, 1870. The said sleeve (see Figs. 1 and 2) is provided with a slot into which is pivoted a latch, *h*, carrying a nose, *h*¹, which bears against the shoulder *d*, formed by the groove cut around the tool. The catch or latch, it will be observed, entirely precludes the possibility of the tool becoming accidentally disengaged from its socket, and it will also be observed that it constitutes no bar to the free rotation of the tool. As a desirable construction and arrangement, I have shown the latch *h* as pivoted in the slot in the sleeve, and so constructed that its nose *h*¹ will, when in its normal condition, be kept in a locking position, but capable, however, of being released by operating said latch. In Fig. 4 the sleeve *C* is provided with a nut or cap carrying a lip or nose, *h*², (one or more,) which bears against the shoulder formed by increasing the diameter of the tool, as before described, and the said cap may be held or locked upon the sleeve in many well-known ways—by screwing it upon the end of said sleeve, by holding by friction, or by a pin entering a rectangular groove. In Fig. 5 the end of the sleeve *C* is provided with an overhanging catch or spring, *h*³, which bears against the shoulder formed on the tool by decreasing its diameter beyond the end of the sleeve. These modifications, it is believed, will be fully understood by reference to said Figs. 4 and 5.

I am well aware that it is not new to provide a tool or bit with a recess into which a catch or

lug is caused to enter in order to hold the tool or bit in its socket; but in all such cases, so far as I am aware, such catch or lug is applied directly to the head or part of the device which carries and revolves the tool. Such arrangement would not be applicable in this case; here it is necessary that the sleeve be stationary, and that the tool be held in its socket in such manner that the device which holds or locks such tool in its socket shall operate on some part of the tool other than that which is inserted in the socket provided for it in the rotating shaft. A catch, nose, or lug bearing against a shoulder formed upon the tool at some point between its socket end and its operating end answers the purpose desired satisfactorily. The tool is securely held against accidentally dropping out of its socket, and the rotation of the tool within the sleeve is in nowise interfered with.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A drill, burr, or tool for operating upon the teeth, provided with an annular groove or circumferential shoulder formed around it at some suitable point between its extreme ends, and also provided with one or more plane or flat faces at its shank end, the said tool being constructed and adapted for use in combination with a suitable securing device on the hand-piece of a dental-engine, substantially as and for the purpose herein specified.

2. The combination of a nose, catch, or lug with the sleeve and rotating shaft of the hand-piece of a dental-engine, substantially as and for the purpose herein specified.

WALTER SCOTT ELLIOTT.

Witnesses:

H. V. D. HOYT,
M. M. LIVINGSTON.