

W. S. HOW.
Dental-Tool Holder.

No. 203,733.

Patented May 14, 1878.

Fig 1.

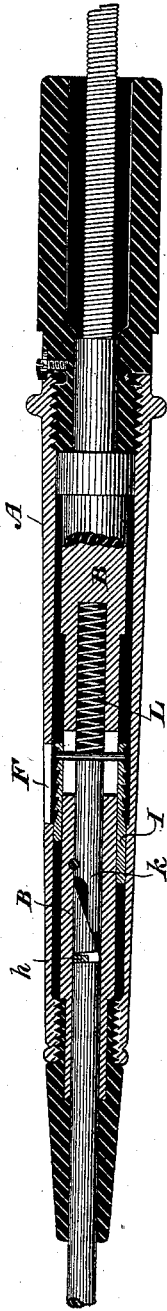


Fig 2

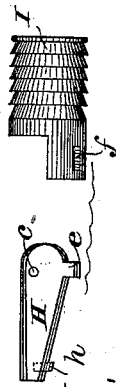


Fig A.

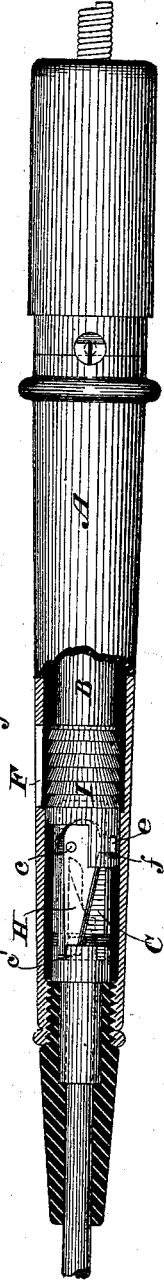
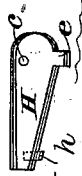


Fig 5.

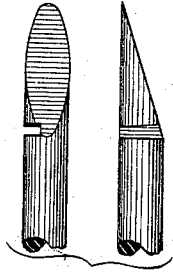


Fig 6

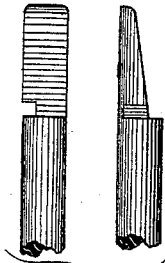


Fig 7.

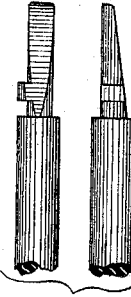
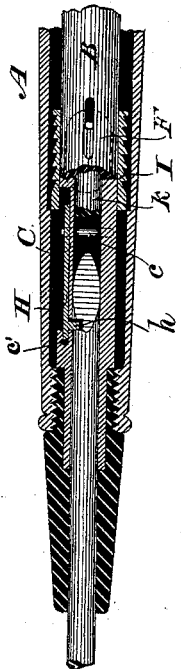


Fig 3



WITNESSES

Wm A. Skinkle
Geo. W. Breck

INVENTOR

Woodbury, S. How.

By his Attorneys

Baldwin, Hopkins & Peyton

UNITED STATES PATENT OFFICE.

WOODBURY S. HOW, OF CINCINNATI, OHIO, ASSIGNOR TO SAMUEL STOCKTON WHITE, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN DENTAL-TOOL HOLDERS.

Specification forming part of Letters Patent No. **203,733**, dated May 14, 1878; application filed August 3, 1877.

To all whom it may concern:

Be it known that I, WOODBURY S. HOW, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Dental-Engine Tool-Holders, of which the following is a specification:

My invention more especially relates to an improvement in tool-locking mechanism or tool-holders for dental-engine hand-pieces. Its object is to enable an operating tool or implement to be quickly inserted in and readily removed from the socket of the rotary chuck-holder or mandrel of the hand-piece, and yet be held securely therein while in operation, and be firmly driven, which ends I attain by a tool-lock consisting of a pivoted latch, catch, or tumbler, mounted upon and rotating with the chuck, controlled and rocked upon its pivot in both directions, to positively engage or disengage it from the tool-shank, by an endwise-moving sleeve, thimble, or finger-piece, also mounted upon and rotating with the chuck.

The subject-matter claimed hereinafter specifically will be designated.

In the accompanying drawings I have shown my invention as embodied in the best way now known to me. Obviously, however, it might be embodied in other forms without departing from its spirit.

Figure 1 is a longitudinal central section through the casing and chuck or mandrel of a dental-engine hand-piece having my improvements applied thereto; Fig. 2, a view in elevation thereof, the casing being partly in section to show clearly the tool-locking mechanism; Fig. 3, a longitudinal section of the front portion of the chuck and casing at right angles to the plane of section in Fig. 1; Fig. 4, a view of the positively-operated latch or tumbler and its controlling-sleeve or finger-piece detached; and Figs. 5, 6, and 7 show several different forms of tool-shanks adapted to be locked in the rotary chuck.

The sectional casing A of the hand-piece envelops a rotary chuck-holder or mandrel, B, turning in suitable bearings, and locked from endwise movement when in operation, as usual, the chuck being adapted to be connected at the rear with and receive rotary motion from

a flexible driving-shaft in well-known ways, whereby a wide range of movement is given to the hand-piece. This flexible shaft may be enveloped by a flexible non-rotating sheath, as in the well-known S. S. White dental engine.

The chuck or spindle is socketed as usual for the reception of the shank of an operating tool or implement, which tool is, by preference, provided with a flattened, scarfed, or beveled driving end and transverse locking-groove, as shown in my patent of December 5, 1876. The socket of the chuck is provided with a lug, pin, surface, or actuator, *k*, with which the flattened, beveled, or scarfed driving end of the tool-shank engages, by which means the tool is compelled to turn positively with the spindle, and is prevented from turning movements independently thereof.

To lock the tool against endwise movement and prevent its falling or pulling out when a draw-cut is being made, or when pulling-strains are exerted upon the tool, I pivot in a slot in the chuck a locking latch, catch, or tumbler, H, having a hooked end, lug, or projection, *h*, which engages with the locking-groove in the tool-shank when inserted in the socket of the chuck. This catch or tumbler is controlled by a sleeve, thimble, or finger-piece, I, mounted upon, revolving with, and sliding freely endwise on, the spindle, and normally thrown forward by the action of a spring, L, in a well-known way.

I have found it desirable to positively operate the latch or tumbler in both directions, or rock it positively upon its pivot for engagement with or disengagement from the tool-shank, by means of a controlling-sleeve, and this positive action is the prime characteristic of my present invention. In this instance I connect the latch and sleeve by means of a lug, *e*, on the latch, working in an aperture or slot, *f*, in the sleeve or thimble, whereby, when the thimble is retracted by the operator, the hooked end or lug of the latch is positively raised or disengaged from the groove in the tool-shank to permit of the withdrawal of the tool by the rocking of the latch upon its pivot, and when the thimble is released the latch is positively thrown into engagement with the tool by the expansion of the spring L, the ten-

sion of which is accumulated during the retraction of the controlling-sleeve.

The controlling-sleeve is shown, in the present instance, as adapted to be operated or retracted through an opening or slot, F, in the casing, by the nail of the operator, in a well-known way in this class of implements; but it will be obvious that other ways of operating the sleeve can be employed, some of which may possess advantages in particular instances.

I have shown the latch or tumbler as pivoted at *c* upon one side of the chuck in a slot, guide, or depression, C, in such manner that its hooked end, lug, or nose vibrates through a transverse slot, as shown in Figs. 2 and 3, into the socket for engagement with the grooved tool-shank, and this latch or tumbler may, in some instances, serve to actuate or rotate the tool without the aid of the lug or auxiliary actuator *k*, which engages with the driving end of the tool-shank.

The extreme front end of the catch or tumbler, in this instance, works in a slot, *c'*, in the chuck to prevent radial displacement, whereby, in the construction shown, in the absence of the actuator, stop, or projection *k*, the tumbler would be an actuator; but, as under some forms of construction of tool-shanks, this would be objectionable, I prefer to retain the auxiliary actuator *k*, which effects certain and positive actuation in either direction of rotation.

This actuator *k* is clearly shown in Fig. 1, and, by preference, consists of a plate or rod, having an inclined surface corresponding to the inclined driving end of the tool-shank, and may be fixed in the bore or socket of the chuck by the pivot-pin of the tumbler or latch; but a pin, lug, or projection in the socket would answer the same purpose.

It will be noticed that in Fig. 5 the driving end of the tool-shank is scarfed or inclined

obliquely, and has a transverse locking-groove formed just behind the base of the oblique scarf or incline, which construction possesses advantages over the forms shown in Figs. 6 and 7, as it gives increased length of groove.

I claim as of my invention—

1. The improved tool-locking device for dental-engine hand-pieces hereinbefore described, consisting of a pivoted latch or tumbler, acted upon by a sliding sleeve or thimble to positively operate or rock it upon its pivot to disengage or release it from the tool-shank.

2. The combination, substantially as hereinbefore set forth, of the socketed spindle or chuck, its lug or actuator, the pivoted locking-latch, positively operated by the thimble or sleeve, and a spring acting upon the thimble.

3. In socketed tool-holders, the pivoted spring-acting lug-nosed tumbler or latch, located at a point outside of the tool, and vibrating in a plane tangential thereto into the socket, to actuate and to lock or to unlock suitably-notched tool-shanks, substantially as and for the purpose described.

4. In combination with a socketed tool-holder provided with a pivoted spring-acting lug-nosed tumbler or latch, located and operating as described, a tool-shank having an oblique scarfed or inclined end, and a locking-groove or notch, substantially as and for the purpose set forth.

5. In a device, as herein described, the combination of the tumbler or latch E, constructed and operating as set forth, with an auxiliary actuator, *k*, substantially as and for the purposes shown.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

WOODBURY STOWE HOW.

Witnesses:

J. L. WARTMANN,

JOHN L. JEFFERIES.