No. 849,208. PATENTED APR. 2, 1907.

L. H. CRAWFORD.

DENTAL HANDPIECE.

APPLICATION FILED APR. 13, 1906.

Fig. 1.

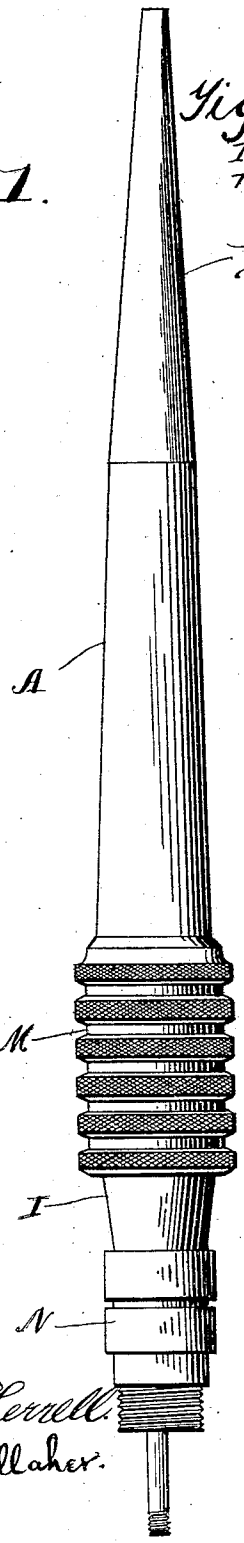


Fig. 5.

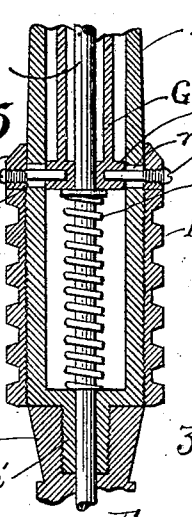


Fig. 3.

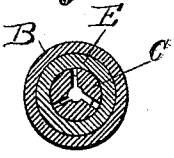


Fig. 4.

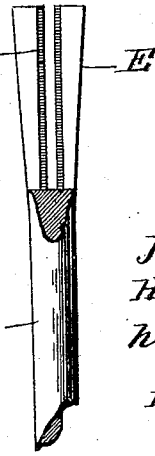
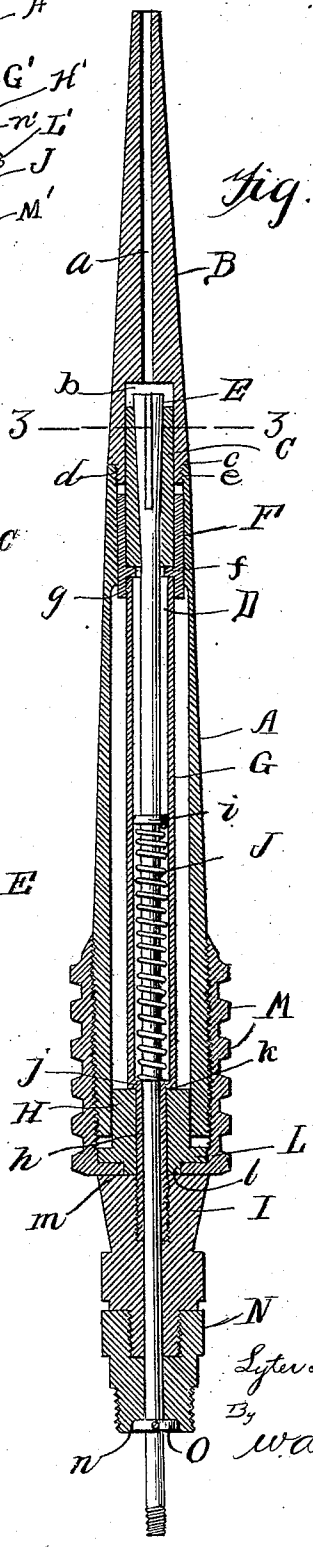


Fig. 2.



Witnesses
Philip Ferrell.
J. H. Gallaher.

Inventor
Lyter H. Crawford
By W. A. Edmunds.
Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

LYTER H. CRAWFORD, OF NEW YORK, N. Y.

DENTAL HANDPIECE.

No. 849,208. Specification of Letters Patent. Patented April 2, 1907.

Application filed April 13, 1906. Serial No. 311,548.

To all whom it may concern:

Be it known that I, LYTER H. CRAWFORD, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Dental Handpieces; and I do 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.

This invention relates to handpieces for holding a drill, a bur, or other form of abrading-tool for preparing teeth for filling, crowns, or other dental work; and it has for its object to provide a simple comparatively inexpensive handpiece of few parts adapted to easily and quickly clamp the tool and to firmly hold the same in position while in operation; and it consists of the parts and combinations of parts hereinafter described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a side elevation of my improved handpiece. Fig. 2 is a longitudinal section through the handpiece. Fig. 3 is a cross-section on the line 3 3, Fig. 2; Fig. 4, an enlarged detail view of chuck-shaft; Fig. 5, a detail longitudinal section of a modification.

Similar letters refer to similar parts throughout the several views.

Referring to the drawings, A represents the case or barrel of the instrument, to which is connected a nozzle B. The case or barrel tapers toward the nozzle, and the latter continues the taper of the case to its free end. An opening *a* is formed longitudinally through the nozzle and terminates in a circular recess or chamber *b* of enlarged diameter. The larger end or base of the nozzle is exteriorly reduced to provide the shoulder *c*, and its reduced portion is formed with screw-threads *d*, as shown in Fig. 2, in order to connect the nozzle to the case A, the smaller end of which is interiorly threaded, as at *e*, to receive the reduced end of said nozzle and effect the connection between the parts.

Extending into the recess *b* of the nozzle is a cylindrical block C, having a central tapered opening formed longitudinally therethrough in which the enlarged and tapered end of a shaft D is arranged. The enlarged end of the shaft D is centrally drilled and split longitudinally at three points (see Fig. 3) to form a chuck E to receive and clamp the tool it is desired to use in the particular operation being performed. The opening formed in the chuck is serrated, as at *s*, its entire depth in order to afford a firmer grasp or hold on the tool. (See Fig. 4.)

The rear end or base of the block C rests in a cup F, through the rear portion of which an opening *f* is formed for the passage of the shaft D. The rear end of the cup is formed with the longitudinally-extending flange *g*, to which is brazed or otherwise rigidly secured the forward end of a tube G, the other end of which is reduced and screw-threaded, as at *h*, and passes through a loose collar H and screws into a tubular bearing I. The tube G forms a chamber for a coiled spring J, which surrounds the shaft D and bears at one end against a fixed collar *i* on the shaft and at its other end against the annular shoulder *j*, formed in the tube. The tube G is also formed with the exterior shoulder *k*, which bears against the forward end of the loose collar H.

The collar H is formed with an annular external flange L and is reduced, as at *l*, to fit into the opening *m* of a cup-shaped threaded sleeve M, which is fitted onto the enlarged screw-threaded end of the barrel or case A. The flange L of the collar H rests on the inner face of the cup-shaped sleeve M and extends outwardly in rear of the enlarged end of the barrel or case A. A tubular bearing N, through which shaft D extends, is screwed onto the bearing I and is formed with an annular recess *n* to receive a set-collar O, which acts to prevent the longitudinal movement of the shaft in one direction when the sleeve M is turned to lock the chuck.

The tool to be used is inserted through the opening *a* in the nozzle B and into the chuck, where it is secured by rotating the sleeve M to the right, which action causes the collar H to move longitudinally in the case or barrel A and through its engagement with shoulder *k* moves the tube G and the cup F, fastened thereto. The movement of the latter causes the block C to move along the chuck and close it on the tool in order to firmly secure or clamp the same in the chuck. The spring J is employed to facilitate the unlocking of the chuck to release the tool when the sleeve M is turned to the left, the spring acting to force the shaft D out of the block C as the sleeve M and connected parts are moved away from or backward on the chuck. The shaft D is shown as threaded at one end for connection with a flexible shaft from a dental

engine, as is usual. As will be noted, the nozzle is of comparatively great length, and thus affords a long bearing for the tool and insures its steadiness and accuracy in operation.

In Fig. 5 I show a modified form of the means for moving the cup F into position to clamp the chuck on the tool, and in which G′ represents the tube having a rigid collar H′ at its rear end, into openings in which extend the unthreaded ends of the screws L′ through short slots N′, formed in the barrel A′ of the handpiece. The screws L′ are screwed into threaded openings formed in a loose collar on ring P′, encircling the barrel and bearing against the sleeve M′, so that it follows the movements of said sleeve M′ and moves the tube G′ in one direction of the other according to the direction or rotation of the sleeve on the barrel. The barrel is formed with a closed end having the projecting threaded portion *h′* to receive the tubular bearing I and through which the shaft extends. The advantage of the form shown in the modification is that it provides a shorter handpiece.

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

1. A dental handpiece comprising a barrel or casing, a nozzle having a recess or chamber, a chuck located in said recess or chamber, a block for engaging said chuck, and means for actuating said block to clamp the tool in the chuck, said means comprising a sleeve arranged to be rotated on said barrel or casing and a longitudinally-movable member connecting said block and sleeve.

2. A dental handpiece comprising a barrel or casing, a nozzle, a chuck, a tubular member, a shaft, a block for engaging said chuck, and means arranged to be rotated on said barrel or casing for actuating said member to operate the block.

3. A dental handpiece comprising a barrel or case, a nozzle, a shaft having one end formed into a chuck, a block for locking said chuck, a sleeve, and means intermediate said block and sleeve for imparting a longitudinal sliding movement to said block upon rotation of the sleeve.

4. A dental handpiece comprising a barrel or case, a nozzle, a shaft having one end formed into a chuck, a block for locking said chuck, a cup for supporting said block, a collar in operative connection with said cup, and a threaded sleeve engaging said collar, whereby the rotation of said sleeve will cause the locking of the chuck.

5. A dental handpiece comprising a barrel or case, a nozzle removably attached to said barrel or case, a shaft carrying a chuck, a block for locking said chuck, a cup for supporting said block, a tube secured to said cup, a collar for imparting a longitudinal movement to said tube, and a sleeve engaging said collar to impart a longitudinal movement thereto.

6. A dental handpiece comprising a barrel or case, a nozzle, a tube, a shaft carrying a chuck extending through said tube, a block for locking said chuck, a spring surrounding said shaft, a collar engaging said tube, and a sleeve for imparting a longitudinal movement to said collar.

7. A dental handpiece comprising a barrel or case, a nozzle, a shaft carrying a chuck, a block for locking said chuck, a cup for supporting said block, a tube connected to said cup, a collar engaging said tube, a threaded sleeve mounted on said barrel or case and engaging said collar, a bearing into which said tube is screwed, a bearing having a recess, and a collar fixed on the shaft and adapted to enter said recess to limit the longitudinal or inward thrust of the shaft.

In testimony whereof I affix my signature in presence of two witnesses.

LYTER H. CRAWFORD.

Witnesses:
A. MEYERS,
GEO. A. RUSSELL.