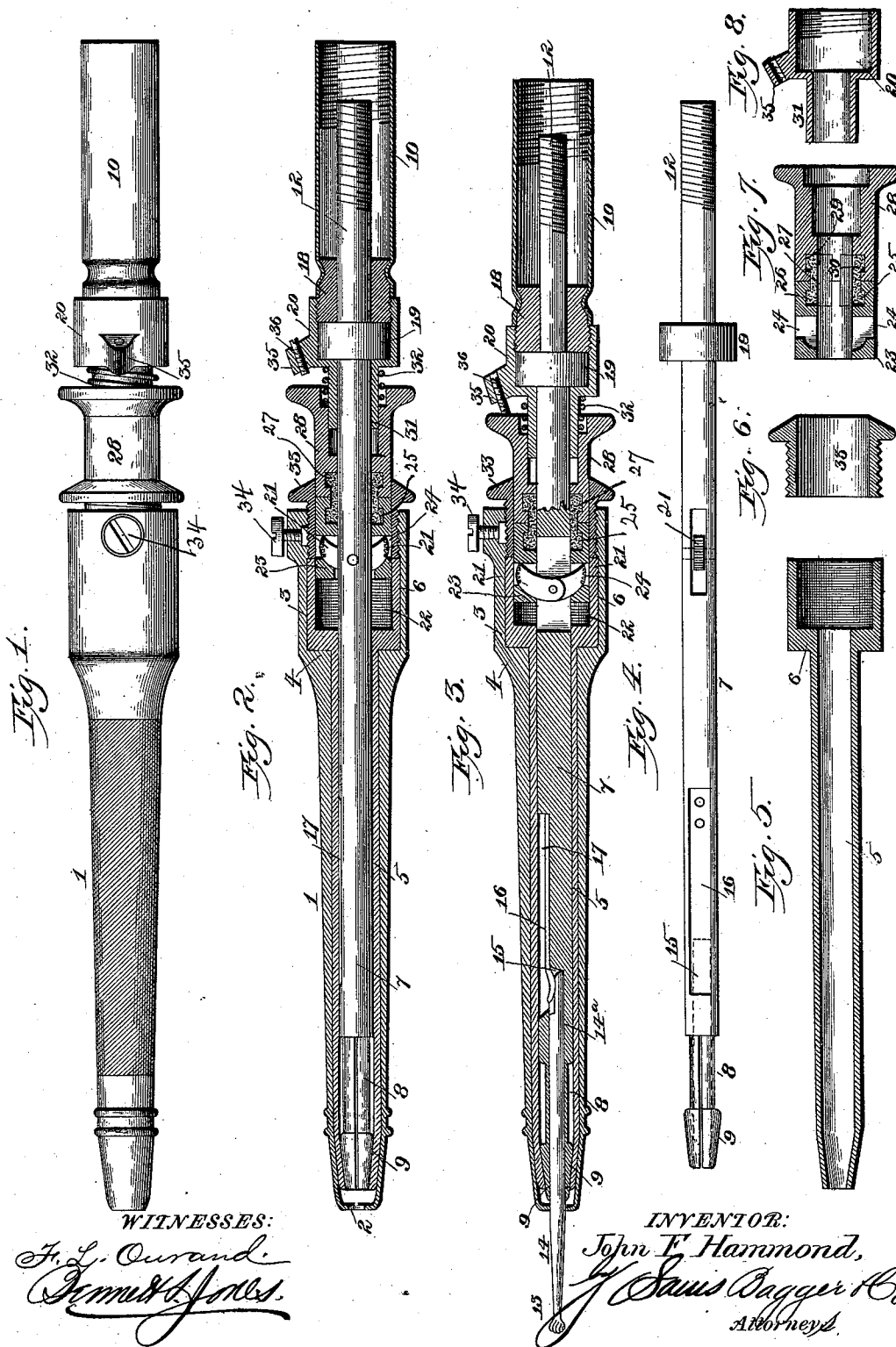


(No Model.)

J. F. HAMMOND.
HAND PIECE FOR DENTAL ENGINES.

No. 466,462.

Patented Jan. 5, 1892.



UNITED STATES PATENT OFFICE.

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SAME PLACE.

HAND-PIECE FOR DENTAL ENGINES.

SPECIFICATION forming part of Letters Patent No. 466,462, dated January 5, 1892.

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To all whom it may concern:

Be it known that I, JOHN F. HAMMOND, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Hand-Pieces for Dental Engines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improvements in dental hand-pieces or tool-holders which shall combine simplicity of construction with extreme effectiveness in operation and durability.

The invention consists in the novel construction and combination of parts hereinafter fully described, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is an elevation of a dental hand-piece made in accordance with my invention. Fig. 2 is a central horizontal sectional view, the revolving spindle carrying the burr being shown in elevation. Fig. 3 is a central longitudinal sectional view. Fig. 4 is a view of the spindle detached. Figs. 5, 6, 7, and 8 are detail views of certain parts detached.

In the said drawings, the reference-numeral 1 designates the casing of the hand-piece, having its outer end tapering and provided with a central aperture 2 for the passage of the shank of the burr and its inner end provided with an enlarged recess 3, forming a shoulder 4. Within this casing fits a tubular sleeve 5, which extends nearly to the outer end thereof and is tapered to conform with the tapered end of the casing. The inner end of this sleeve is formed with an enlarged head 6, which fits within the recess in the casing.

The numeral 7 designates a revolving spindle having one end formed with a series of spring-jaws 8, having slightly-tapered ends 9. This spindle is inserted in the sleeve 5 and extends rearwardly to a sleeve 10, and at this end is provided with a screw-threaded shank

12, to which the flexible connection (not shown) with the dental engine is secured.

The numeral 13 designates the burr, and 14 the shank thereof, which latter is embraced by the spring-arms 8, and is seated in an aperture 14^a in the spindle.

Secured in a slot 15, near the end of the spindle, and which communicates with the aperture 14^a, is a friction-spring 16, the free end of which bears against the foot or inner end of the shank, said spindle being also provided with a recess 17 to receive said spring. The tension of this spring should be such that it will prevent the shank from revolving in the spindle by frictional contact therewith, except under extraordinary conditions, when too great resistance might render the shank liable to be broken. In this case the shank would overcome the resiliency of the spring and revolve until the danger was past, when it would again be held stationary therein.

The sleeve 10 is provided with a plug 18 with a central aperture, through which passes the threaded shank 12 of the spindle, which latter is provided with a collar 19, which is embraced by a screw-threaded coupling 20, connected with said sleeve so that the spindle may be moved longitudinally within the sleeve 5 by means of sleeve 10, for the purpose of clutching the burr-shank between the arms 8 by forcing the tapering ends thereof into contact with the tapering end of the sleeve 5.

To lock or retain the spindle in place and prevent longitudinal movement, which would disengage the burr-shank from the clutch, I provide the following mechanism: Pivoted to the spindle are two oppositely-projecting dogs 21 21, having curved serrated ends which are engaged and disengaged with serrations 22 on the inner surface of the enlarged head 6 of the sleeve 5. Embracing the spindle and with one end working in said head 6 is a sleeve 23, having slots 24 near its front end, through which project the serrated ends of the dogs 21. The rear end of this sleeve is provided with an interior annular groove 25, in which works an annular flange 26 on a coupling 27, which connects said sleeve with

a sleeve 28, provided with a groove 29 to receive a flange 30, similar to the grooves and flanges 25 and 26. This sleeve 28 embraces the projecting end 31 of sleeve 10, and interposed therebetween is a coiled spring 32. The numeral 33 designates a hollow screw-plug which fits in the rear end of sleeve 5, and is prevented from turning by means of set-screw 34, the object of this plug being to take up lost motion between casing 1 and shoulder 4 of sleeve 5. The coupling 20 is provided with a boss 35, through which passes a set-screw 36 for regulating the distance between the sleeves 10 and 28 and determining just how far the dogs shall be opened in unlocking them. The sleeve 28 is provided with a feather which fits in a groove in the plug 33, whereby these parts and the casing 1 are prevented from turning relatively to each other, thus forming, as it were, a continuous casing over the revolving parts of the device.

The operation is as follows: The parts being connected together, as shown in Figs. 1 and 2, the burr-shank is inserted in the end of the casing with its ends seated in the aperture in the end of the spindle and the friction-spring pressing thereon, as shown in Fig. 3, the locking-dogs and connections being in the position shown in Fig. 2. The spindle is then pushed forward by the pressure of the hand on sleeve 10, which will cause the jaws 8 to be forced into contact with the tapering end of the sleeve 5, which will firmly clutch the shank, so that it will revolve with the sleeve and spindle. The sleeve 28 is then pushed forward by the spring 32, which will actuate the sleeve 23 and force the dogs outward; the serrated ends of which, engaging with the serrations in the enlarged head of the sleeve 5, will securely hold or lock the latter and the spindle together, when the implement will be ready for use. The very slight taper of the gripping-jaws is so proportioned, being less than four degrees, that the thrusting pressure of the hand alone on the back end of the spindle forces the jaws forward into the contracted end of the sleeve, gripping the burr with great power, thereby dispensing with all multiplying levers, compound screws, and similar devices.

Having thus described my invention, what I claim is—

1. In a dental hand-piece, the combination, with the casing, of the tubular sleeve having a contracted or tapering end, a revoluble and longitudinally-movable spindle having tapering jaws adapted to embrace and clamp a burr-shank, and a spring clutch mechanism for automatically locking the sleeve and spindle together when the latter is inserted in the sleeve, substantially as described.

2. In a dental hand-piece, the combination, with the casing, a revoluble tubular sleeve

having a tapering end, and a revoluble and longitudinally-movable spindle having spring clamping-jaws, of the locking-dogs pivoted to the spindle, and means, substantially as described, for throwing said dogs into and out of engagement with said tubular sleeve.

3. In a dental hand-piece, the combination, with a casing, a revoluble tubular sleeve having a tapering outer end, and a revoluble and horizontally-movable spindle having tapering spring clamping-jaws, of locking-dogs pivoted to said spindle, and a longitudinally-movable sleeve having slots through which said dogs project, substantially as described.

4. In a dental hand-piece, the combination, with the casing having an enlarged recess in its rear end, the revoluble tubular sleeve having a tapering front end and an enlarged head at its rear end, and the revoluble and horizontally-movable spindle having tapering spring-jaws, of the locking-dogs pivoted to said spindle, the sleeve having slots through which said dogs project, and provided with an annular groove near its rear end, a sleeve provided with a similar groove near its front end, a coupling having annular flanges fitting in said grooves and connecting said sleeves, and coupling-sleeves through which the rear end of the spindle passes, substantially as described.

5. In a dental hand-piece, the combination, with the casing having an enlarged recess at its rear end, the tubular sleeve having tapering front end and enlarged head at its rear end, and the revoluble and horizontally-movable spindle having tapering spring-jaws at its front end and a collar near its rear end, of the locking-dogs pivoted to said spindle, a sleeve 23, coupling 27, sleeve 28, coupling 20, and the coiled spring 32, substantially as described.

6. In a dental hand-piece, the combination, with the casing having an enlarged recess at its rear end, the sleeve having tapering front end and enlarged head at its rear end, and the revoluble and horizontally-movable spindle having tapering spring-jaws at its front end and a collar near its rear end, of the locking-dogs pivoted to said spindle, the sleeve 23, having slots 24, through which said dogs project, and annular groove 25, the coupling 27, having flanges 26 and 30, the sleeve 28, having groove 29, the coupling 20, having boss 35 and adjusting-screw 36, the coiled spring 32, and the screw-plug 33, substantially as described.

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

JOHN F. HAMMOND.

Witnesses:

WM. S. GUTHRIE,
S. B. WALKER.