H. LAURENCE.
Dental-Engine.

No. 213,909. Patented April 1, 1879.

Fig. 1.

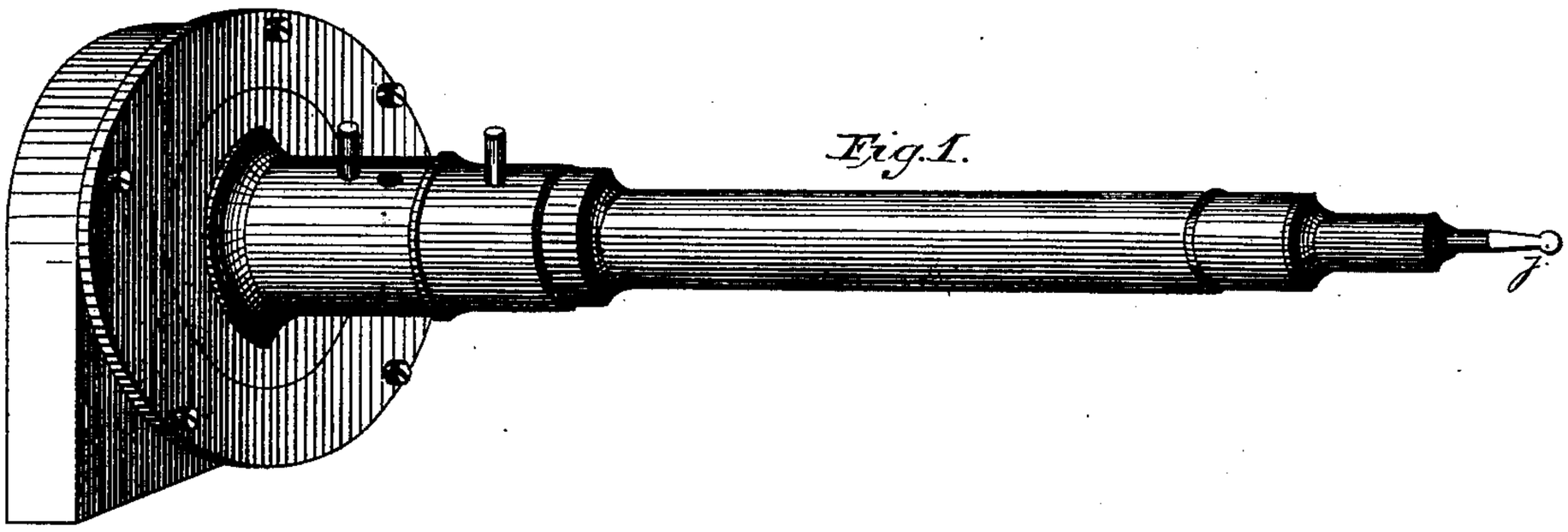


Fig. 2.

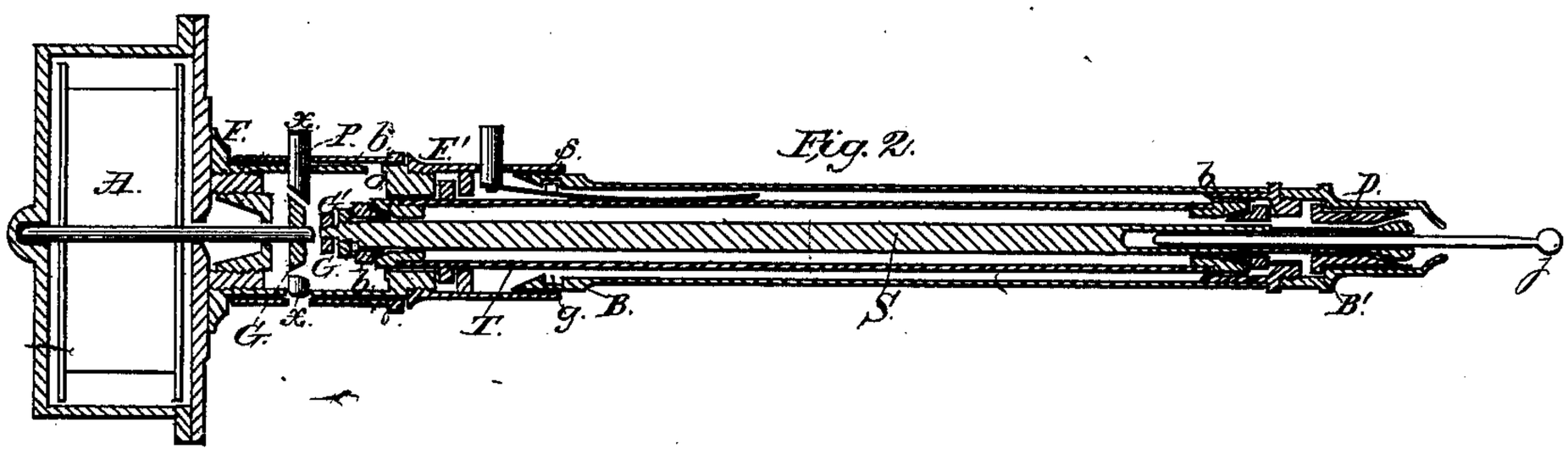



Fig. 3.

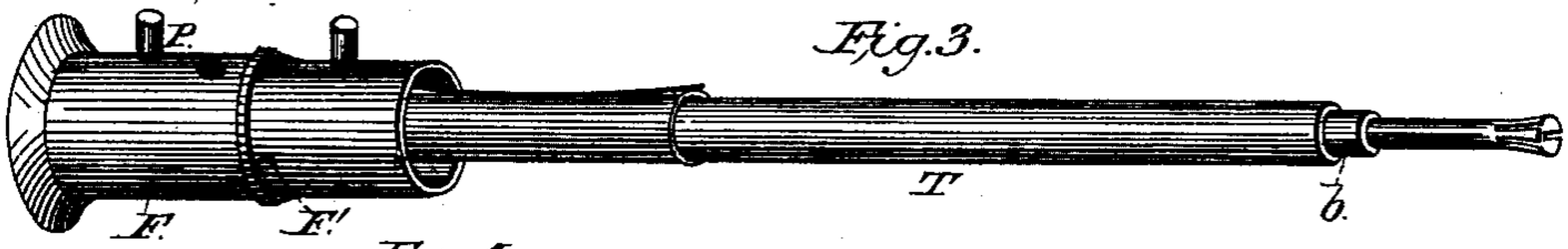



Fig. 4.

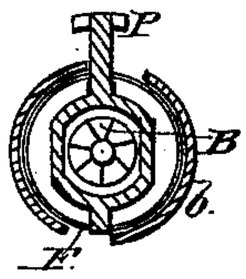
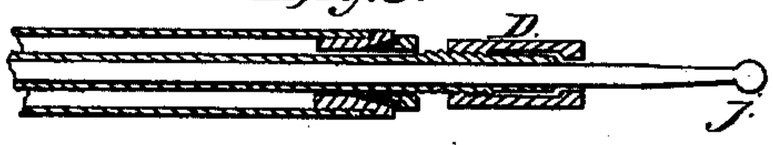



Fig. 6.


Fig. 5.




Witnesses:

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# UNITED STATES PATENT OFFICE.

HENRY LAURENCE, OF CHICAGO, ILLINOIS.

## IMPROVEMENT IN DENTAL ENGINES.

Specification forming part of Letters Patent No. **213,909**, dated April 1, 1879; application filed July 26, 1878.

*To all whom it may concern:*

Be it known that I, HENRY LAURENCE, of Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Combined Dental Engine and Motor, which improvements are fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a perspective view of a motor and my engine attached thereto. Fig. 2 is a vertical longitudinal section thereof. Fig. 3 is a perspective view of my engine detached from the motor, having the sheath removed. Fig. 4 is a cross-section on line *x* of Fig. 2. Fig. 5 is a part section, showing the screw-collar bit-fastening. Fig. 6 is a perspective view of the bit-fastening screw-collar.

The object of my invention is to furnish a combined dental engine and motor that can be manipulated without interference of the motor, and which will permit the ready insertion and removal of bits, and will secure them without shaking, as also the instantaneous connection and disconnection of the engine and motor shafts.

It consists of a removable sheath made to revolve freely on the engine, and held in place by a spring-catch and groove, a bit-fastening screw-collar operated by the sheath, and a clutch with inclined sides and a detaching push-pin.

In the drawings, A is the motor, having a ratchet-clutch, C, with inclined sides, attached to its shaft. P is the clutch-detaching push-pin; C′, the ratchet-clutch fastened to the engine-shaft. T is a tube, carrying the shaft S in the bearings *b*. F F′ are ferrules joining the engine to the motor. B is the sheath, having cap B′ and groove *g*. D is the screw-collar fastening the bit *j*. *s* is the spring-catch holding the sheath in place. *o* is an oil-hole, and *f* a movable sleeve to close the same.

In use the motive power is conveyed to the motor by flexible tubes conveniently suspended. The engine is held in the hand by the revolving sheath, which allows the motor to adjust its position in regard to the tubes. In this way the engine can be held in any position without requiring attention to the position of the tubes, which will adjust itself.

The sheath also serves as a bit-fastening medium, it having an inverse toothed collar in its point corresponding to the toothed face of the screw-collar D. It is not necessary that these faces should be toothed. A single notch and pin will also be serviceable.

The hollow end of the shaft which relieves the bit is tapered at the point and split, and has a screw-thread back of the splits, whereon the collar is screwed, whose point is inverse tapering, and binds the split points to the bit when screwed up, thus firmly uniting the bit to the shaft.

The shaft is held from turning by the knob of the spring-catch, which projects through the tube T.

The sheath is held by the spring-catch *s* engaging in a groove, which allows it to revolve. It covers the collar D, and leaves nothing exposed but the bit, and thereby avoids outside contact with any moving part. When removed it exposes the front bearing of the shaft for oiling. The back bearing is oiled through the hole *o*.

The motion of the bit is arrested by the push-pin P.

The shaft of the motor, being laterally movable and carrying a ratchet-clutch, C, with inclined sides, is moved back by the push-pin sliding on this incline, which disengages the two clutch-wheels. When the push-pin is released the shaft of the motor is moved forward by the pressure in the motor, the push-pin is thrown back by the incline, and the ratchets re-engage.

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

1. In a combined dental engine and motor, the detachable and revolving sheath B, for the purpose of allowing the motor to swing free, to protect moving parts, and to facilitate oiling.

2. The bit-fastening screw-collar D, in combination with the shaft S, the sheath B, having an inverse toothed collar in its point, the catch-spring *s* and its knob, and the groove *g*, for the purpose hereinbefore described.

3. The ratchet-clutch C, having inclined sides, and fastened to a laterally-movable motor-shaft, in combination with the sliding push-pin P and the ratchet-clutch C′, fastened to the rear end of the shaft S, for the purpose of disconnecting the motor and engine shafts, as hereinbefore described.

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