M. I. GALLAGER.

Automatic Dental-Drills.

No. 135,109. Patented Jan. 21, 1873.

Fig. 1.

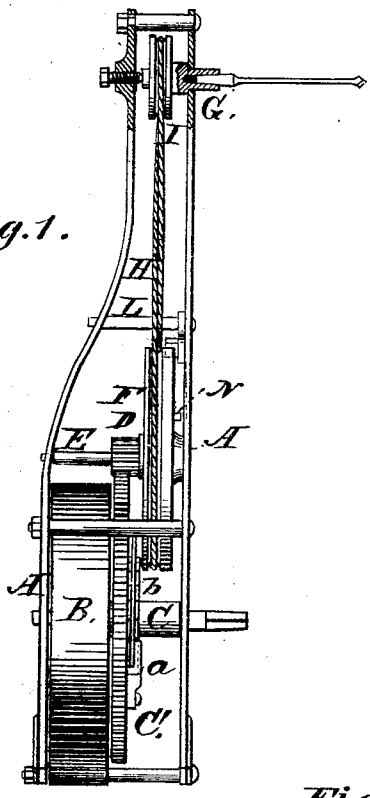


Fig. 2.

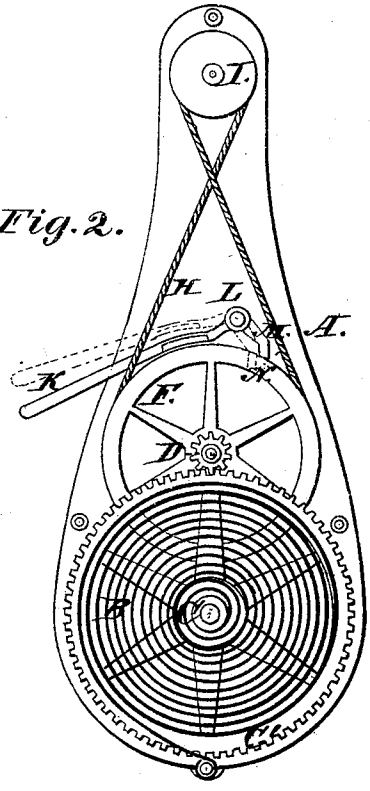
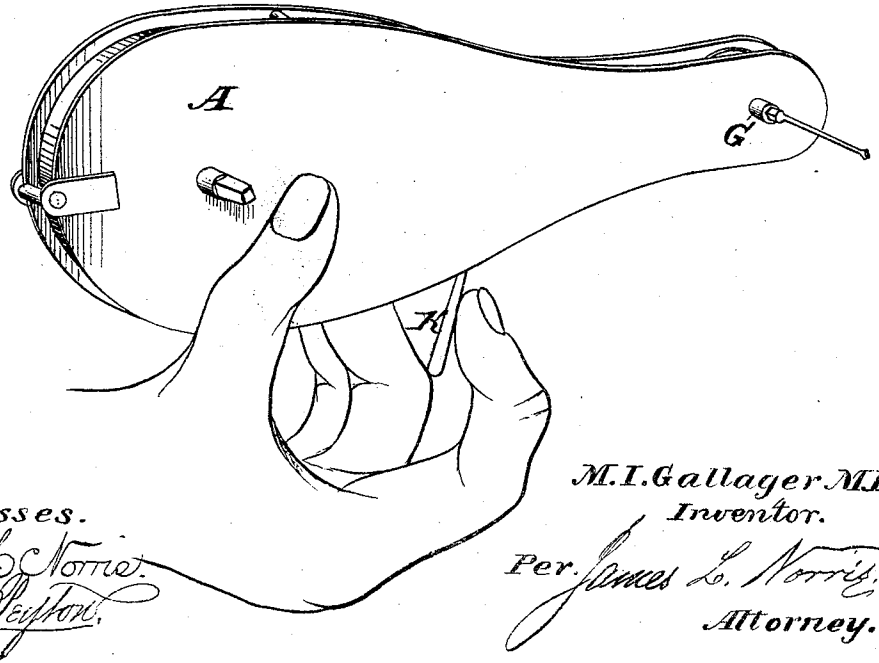


Fig. 3.



Witnesses.

Albert H. Norris.

Wm. J. Peyton.

M. I. Gallager M.D.
Inventor.

Per. James L. Norris.
Attorney.

UNITED STATES PATENT OFFICE.

MAHLON I. GALLAGER, OF SAVANNAH, GEORGIA.

IMPROVEMENT IN AUTOMATIC DENTAL DRILLS.

Specification forming part of Letters Patent No. **135,109**, dated January 21, 1873.

To all whom it may concern:

Be it known that I, MAHLON I. GALLAGER, of Savannah, in the county of Chatham and State of Georgia, have invented certain new and useful Improvements in Automatic Dental Drills, of which the following is a specification:

This invention has for its object to improve upon the hand instruments now in use for grinding and drilling teeth while in the mouth of the patient; and it consists in a certain definite arrangement of a spring motor connected by means of a train of gearing-pulleys with a revolving-spindle, which is adapted to receive burrs, drills, or other revolving tools used upon the teeth, the entire operative mechanism being inclosed in a case which is adapted to be held in the hand of the operator—the construction and peculiar arrangement of parts being hereinafter set forth and claimed. The invention further consists in the provision of a pivoted brake, which, when brought in contact with the gearing, will serve to diminish the speed or accelerate the rotation of the drill-spindle, according to the degree of pressure, and by a reverse movement of the brake arm or lever the operative power will be arrested by causing a projecting arm to be brought in contact with a stop on the belt-wheel, thus retarding the rotation of the same—the form of the brake, its construction and arrangement being hereinafter specified and claimed.

In the drawing, Figure 1 represents a longitudinal central section of my invention. Fig. 2 represents a plan view, with a portion of the case removed. Fig. 3 is a view of the instrument in the hands of the operator.

The case A, inclosing the spring-power and carrying the entire operative mechanism, is constructed of sheet metal or other suitable material, and is formed either with closed or open sides, as may be found most expedient. The coiled spring B is mounted on a spindle or arbor, C, the square end of which extends through one of the ends of the inclosing-case to enable a key to be applied to the same, for winding up or renewing the power of the spring when exhausted. The usual pawl *a* and ratchet-disk *b* are provided for preventing a retrograde movement of the spring. The arbor of the spring or barrel thereof carries a large spur-wheel, C′, which meshes with a pinion, D, located on a transverse shaft, E, on which is mounted and secured a large band-wheel or pulley, F. A continuous rotary movement is imparted to said shaft E by the expansive power of the spring and the gear-wheels C′ D, and is transmitted to the revolving tool-holding spindle G journaled in the upper end or neck of the case A through the medium of an endless belt, H, which passes around the pulley I located on the tool-spindle, and over the pulley F on the power-transmitting shaft. The tool-spindle is formed with a socket for the reception of detachable tools or points, such as drills, burrs, and other rotary devices used by dentists preparatory to inserting the plugging or filling materials into the teeth.

It will be perceived that a rapid revolution is imparted to the drill-spindle by the expansive force of the spring and the transmitting gearing, pulleys, and belt, and in order to accelerate or diminish the speed; and to enable the instrument to be under complete control of the operator, I provide an oscillating brake-lever, K, mounted on a transverse rock-shaft, L, on which it is capable of being freely moved in a vertical plane. To the hub of said brake-lever is applied a downwardly-projecting curved arm, M, the functions of which will be hereinafter stated.

When the instrument is in use the operator grasps the same in his hand, as represented in Fig. 3, and places one of his fingers upon the projecting end of the brake-lever with more or less force, according to the degree of speed to be attained. The lateral face of the brake-lever may be caused to act upon the side of the belt-pulley F, or the periphery of the latter may be made sufficiently wide for permitting the brake to be applied to the same, so as not to interfere with the movement of the belt. When the brake is applied to the side of the pulley F, then it is loosely applied to its shaft for permitting a limited lateral play of the same, in order that it may be caused to bear with more or less force or pressure upon the pulley for increasing or diminishing the speed of the drill-spindle.

By elevating the brake-lever a downward movement of the curved arm M is effected, and a projecting stud or pin, N, on the side

face of the belt-wheel F comes in contact with said arm, and the movement of the operative mechanism is arrested.

Thus it will be seen that means are provided for placing the instrument under complete control of the operator to enable him to impart a slow or rapid movement to the drill-spindle, and to arrest the same entirely when the power of the spring is not exhausted.

I do not broadly claim transmitting a rotary motion to the drill-spindle by means of spring power and gearing, for such is not new; but,

Having thus described my invention, what I claim is—

1. In a hand dental drill for the purpose specified, the spur-wheel C′, spring B, pawl and ratchet *a b*, winding-arbor C, the belt-wheel F, pinion D, belt H, pulley I, and drill-spindle G, each part being constructed and arranged in respect to each other, within the case A, as herein shown and described.

2. In a hand dental drill for operating upon the teeth while in the mouth, the lever K, formed as described, pivoted within the case for controlling the movement of the belt-wheel, substantially as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 12th day of December, 1872.

M. I. GALLAGER.

Witnesses:
J. A. GRAEFE,
R. WAYNE RUSSELL.