Specification of George Fellows Harrington : apparatus for drilling, cutting and polishing teeth.

Contributors

Harrington, George Fellows.

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A.D. 1864, 22nd APRIL. N° 1017.

SPECIFICATION

OF

GEORGE FELLOWS HARRINGTON.

APPARATUS FOR DRILLING, CUTTING, AND POLISHING TEETH.

LONDON:
PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,
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1864.

A.D. 1864, *22nd April.* N° 1017.

Apparatus for Drilling, Cutting, and Polishing Teeth.

LETTERS PATENT to George Fellows Harrington, of Sedgeley House, Ryde, in the Isle of Wight, Surgeon Dentist, for the Invention of "IMPROVEMENTS IN MACHINERY OR APPARATUS FOR DRILLING, CUTTING, GRINDING, AND POLISHING TEETH WHILST IN THE MOUTH."

Sealed the 20th October 1864, and dated the 22nd April 1864.

PROVISIONAL SPECIFICATION left by the said George Fellows Harrington at the Office of the Commissioners of Patents, with his Petition, on the 22nd April 1864.

I, GEORGE FELLOWS HARRINGTON, of Sedgeley House, Ryde, in the Isle of Wight, Surgeon Dentist, do hereby declare the nature of the said Invention for "IMPROVEMENTS IN MACHINERY OR APPARATUS FOR DRILLING, CUTTING, GRINDING, AND POLISHING TEETH WHILST IN THE MOUTH," to be as follows :—

This Invention consists in the application and use of any arrangement of spring clockwork for giving continuous rotatory motion in one direction to drilling, cutting, grinding, and polishing tools intended to operate upon teeth whilst in the mouth. The clockwork, which consists of any suitable and well-known arrangement of a barrel spring and toothed gearing, arranged according to the speed and power required, is contained within a hollow metal box, case, or holder of a convenient size to be held in the hand of the operator. In the arbour or spindle of one of the wheels of the clockwork a square socket or hole is made, into which the square end of a loose or detachable spindle is temporarily fitted, the greater portion of such spindle

being contained within a tube or sheath fixed to the outside of the box or holder case of the clockwork, whilst its outer end, or that which protrudes beyond the sheath carries the required tool (the tools being made removable), so as to be changed to suit the operation to be performed. A small collar bearing is fitted inside the outer end of the tube or sheath to steady the spindle in its revolution. When the spring is wound up the clockwork immediately commences to revolve, and thus imparts a rapid rotatory motion to the tool. In using this apparatus the clockwork case or holder is held in the hand of the operator, and the end of the spindle which carries the tool is introduced into the mouth, and the tool brought in contact with the tooth or teeth to be operated upon. The essential feature of this Invention is the substitution of any suitable arrangement of spring clockwork for an archimedean screw or bow for giving a rotatory motion to the tools intended to operate upon teeth whilst in the mouth. The revolutions of the tool are either arrested or controlled by pressing the thumb or finger against a break wheel which is fitted on to the arbour or spindle of one of the train of wheels forming the clockwork, whereby more or less friction or resistance will be obtained, thereby regulating the speed of revolution of the tool. A catch may also be employed, fitted to the box, case, or holder, to temporarily arrest the motion of the clockwork when the apparatus is not in the hand of the operator.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said George Fellows Harrington in the Great Seal Patent Office on the 22nd October 1864.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, GEORGE FELLOWS HARRINGTON, of Sedgeley House, Ryde, in the Isle of Wight, Surgeon Dentist, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Twenty-second day of April, in the year of our Lord One thousand eight hundred and sixty-four, in the twenty-seventh year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said George Fellows Harrington, Her special license that I, the said George Fellows Harrington, my executors, administrators, and assigns, or such others as I, the said George Fellows Harrington, my executors, administrators, or assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should

and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "IMPROVEMENTS IN MACHINERY OR APPARATUS FOR DRILLING, CUTTING, GRINDING, AND POLISHING TEETH WHILST IN THE MOUTH," upon the condition (amongst others) that I, the said George Fellows Harrington, my executors or administrators, by an instrument in writing under my hand and seal, or under the hand and seal of one of them, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said George Fellows Harrington, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement, reference being had to the accompanying Drawings, and to the letters and figures marked thereon, that is to say:—

My said Invention consists in the application and use of any arrangement of spring clockwork for giving a continuous rotatory motion in one direction to drilling, cutting, grinding, and polishing tools intended to operate upon teeth whilst in the mouth. The clockwork which consists of any suitable and well-known arrangement of a barrel spring and toothed gearing, arranged according to the speed and power required, is contained within a hollow metal box, case, or holder of a convenient size to be held in the hand of the operator. In the arbour or spindle of one of the wheels of the clockwork a square socket or hole is made, into which the square end of a loose or detachable spindle is temporarily fitted, the greater portion of such spindle being contained within a tube or sheath fixed to the outside of the box, case, or holder of the clockwork, whilst its outer end, or that which protrudes beyond the sheath carries the required tool, the tools being made removable, so as to be changed to suit the operation to be performed. A small collar bearing is fitted inside the outer end of the tube or sheath to steady the spindle in its revolution. When the spring is wound up the clockwork immediately commences to revolve, and thus imparts a rapid rotatory motion to the tool. In using this apparatus the clockwork case or holder is held in the hand of the operator, and the end of the spindle which carries the tool is introduced into the mouth, and the tool brought in contact with the tooth or teeth to be operated upon. The essential feature of this Invention is the substitution of any suitable arrangement of spring clockwork for the archimedean screw bow or other contrivance hitherto employed for giving a

rotatory motion to tools intended to operate upon teeth whilst in the mouth. The revolutions of the tools are arrested or controlled by the pressure of the thumb or finger, or of a break lever against a break wheel, which is fitted on to the arbour or spindle of one of the train of wheels forming the clockwork, whereby more or less friction or resistance will be obtained, thereby regulating or controlling the speed of revolution of the tools, or stopping the same when not required for use.

And in order that my said Invention may be fully understood, I shall now proceed more particularly to describe the same, and for that purpose I shall refer to the several Figures on the Sheet of Drawings hereunto annexed, the same letters of reference indicating corresponding parts throughout all the Figures.

Fig. 1 of my Drawings is a full-sized elevation of my apparatus showing the mode of using the same; Fig. 2 is a front elevation of the same; Fig. 3 is a similar view with the cap removed, to show the train of gearing; Fig. 4 is a side view corresponding to Fig. 1; Fig. 5 is a longitudinal vertical section of the spring box and first driving wheel; Fig. 6 is a front view of the same with the top plate removed; and Figs. 7 and 8 are enlarged details, which I shall herein-after more fully refer to.

A is a hollow metal spring box, within which is fitted a barrel spring B, the inner end of such spring being connected to the axis C of a ratchet wheel D, such axis turning freely in the large toothed driving wheel E; F is a spring pall or detent secured to the face of the wheel E, and taking into the teeth of the ratchet wheel, so that on the axis C being rotated by the barrel spring a rotatory motion will be imparted to the toothed wheel E through the ratchet wheel and pall F; G is a square shank on the end of the axis C, by which the spring B may be wound up; H is a plate or cover, which is screwed on to the spring box A, and conceals the main wheel E and its attachments. Through an opening in this plate or cover passes the small pinion I fast on the axis of the toothed wheel K, which wheel gears into another pinion L fast on the axis of the toothed wheel M, and this latter wheel gears into a third pinion N fast on the axis of the friction or break wheel O; the several wheels and pinions K, L, M, N, and O are concealed by a cap or cover P, which is attached by screws or otherwise to the plate or cover H; Q is a tube or sheath, which is screwed at one end into a boss R formed upon the cap P. Within this tube is placed the spindle S, provided with a pivot or journal at its inner end, and having formed or fitted thereon a small pinion T, which when the tube and spindle are adjusted gears into the teeth of the spur wheel K, and consequently receives a rapid rotatory motion therefrom. A

small collar bearing U is formed in the outer end of the tube or sheath Q, within which works the outer end of the spindle S, and consequently this spindle is maintained perfectly steady and free from vibration whilst rotating.

A small shoulder or collar V is formed upon the spindle which bears against the inner end of the collar bearing U, and so keeps the spindle S in its proper place within its tube or sheath. The outer end of the spindle which protrudes beyond the tube or sheath may be squared and slightly tapered, as shewn in Figures 1 and 4, on to which tapered square portion may be fitted any required rotatory cutting, grinding, or polishing tool or wheel W. Or if preferred the protruding end of the spindle S may have a tapped hole or socket made longitudinally therein, into which the stem of the tool W having a screw thread made thereon may be inserted, as shewn in the enlarged detail of the tube and spindle at Fig. 7. When required for drilling purposes the drill may be formed on the end of the spindle itself. Each apparatus may if desired be furnished with two or more loose spindles S, according to the requirements of the operator, it being simply necessary in order to change a spindle to unscrew the tube or sheath Q, withdraw the spindle, and replace it by another. In cases where it would be found more convenient to have the axis of rotation of the tool at an angle with the axial line of the spindle S, the arrangement shown by the enlarged detail, Fig. 8, may be employed. In this case a small bevel pinion *a* is fitted on to the outer end of the spindle, which wheel gears into a corresponding bevil pinion *b*, the axis of which is supported in a light frame *c* on the end of the tube or sheath Q, the stem of the tool W being screwed or fitted in any other convenient manner into the axis of the bevil wheel *b*. In lieu of each spindle S having its actuating toothed pinion T formed in one piece therewith, or fitted thereon, so as to be removable with the spindle, this pinion may if preferred be separate and distinct from the spindle, and remain a fixture in the apparatus, as shewn in the detail, Fig. 7. For this purpose a central boss *d* is formed on the upper side of the pinion, which serves as a journal, such boss fitting a corresponding hole in the cap or cover P, and having a central square socket made therein, into which socket the correspondingly squared end of the spindle is to be inserted when required for use. Or a tapped hole may be made in the boss, and a corresponding screw thread formed upon the inner end of the spindle which is inserted therein. When the spring B has been wound up, the train of wheels are prevented from rotating by the pressure of a spring break lever X on the periphery of the break wheel O, as shewn clearly in Fig. 2, where a portion of the cap or cover is broken away, to shew the parts inside. Or any other well-known form of detent or catch may be used. When held

in the hand the thumb or finger of the operator is placed over the protruding end of the break lever, as shown in Fig. 1, so that by depressing that lever the break will be partially or entirely removed from the break wheel, thereby controlling or regulating the revolution of the tool at pleasure.

Although the apparatus herein-before described and illustrated by my Drawings is specially intended to be used for operating upon teeth whilst in the mouth, it is obvious that by increasing the power of the spring B the same apparatus might be employed in operating upon "pieces" at the work bench. And I may observe that although I have described and illustrated a certain arrangement of wheelwork for driving the tools, I do not confine or restrict myself to such arrangement, so long as the essential feature of my Invention be retained, namely, the driving of such tools by means of a barrel or volute spring.

Having now described and particularly ascertained the nature of my said Invention, and the manner in which the same is or may be used or carried into effect, I would observe, in conclusion, that what I consider to be novel and original, and therefore claim as the Invention secured to me by the herein-before in part recited Letters Patent is,—

First, the general construction, arrangement, and combination of apparatus for drilling, cutting, grinding, and polishing teeth whilst in the mouth, substantially as herein-before described.

Second, the application and use to and in the driving or actuating of drilling, cutting, grinding, and polishing tools intended for operating upon teeth whilst in the mouth, of a barrel spring in combination with any suitable train of toothed gearing, substantially as herein-before described.

In witness whereof, I, the said George Fellows Harrington, have to this my Specification hereunto set my hand and seal, the Seventeenth day of October, One thousand eight hundred and sixty-four.

GEORGE FELLOWS HARRINGTON. (L.S.)

LONDON:
Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1864.

FIG. 1.

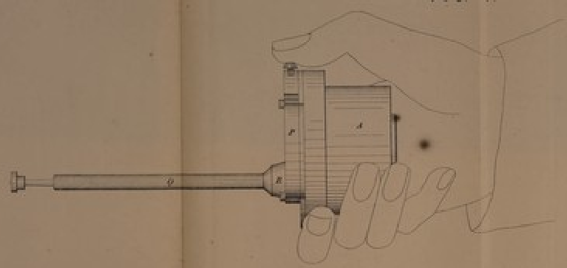


FIG. 2.

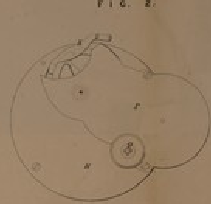


FIG. 3.

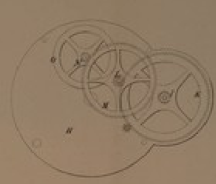


FIG. 4.

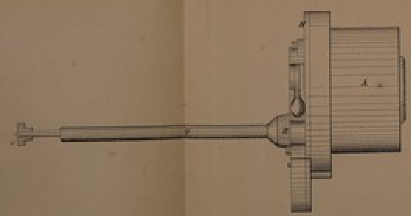


FIG. 5.

FIG. 6.

FIG. 8.

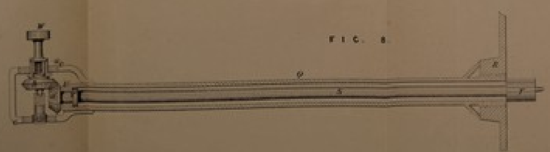
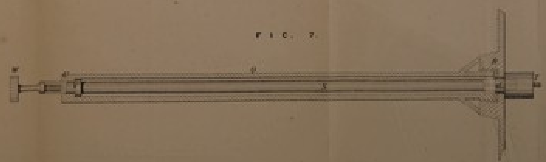


FIG. 7.



The Seal drawing is not colored.