(No Model.) 2 Sheets—Sheet 1.

J. E. STANTON.

ADJUSTABLE DENTAL ENGINE BRACKET ARM.

No. 513,214. Patented Jan. 23, 1894.

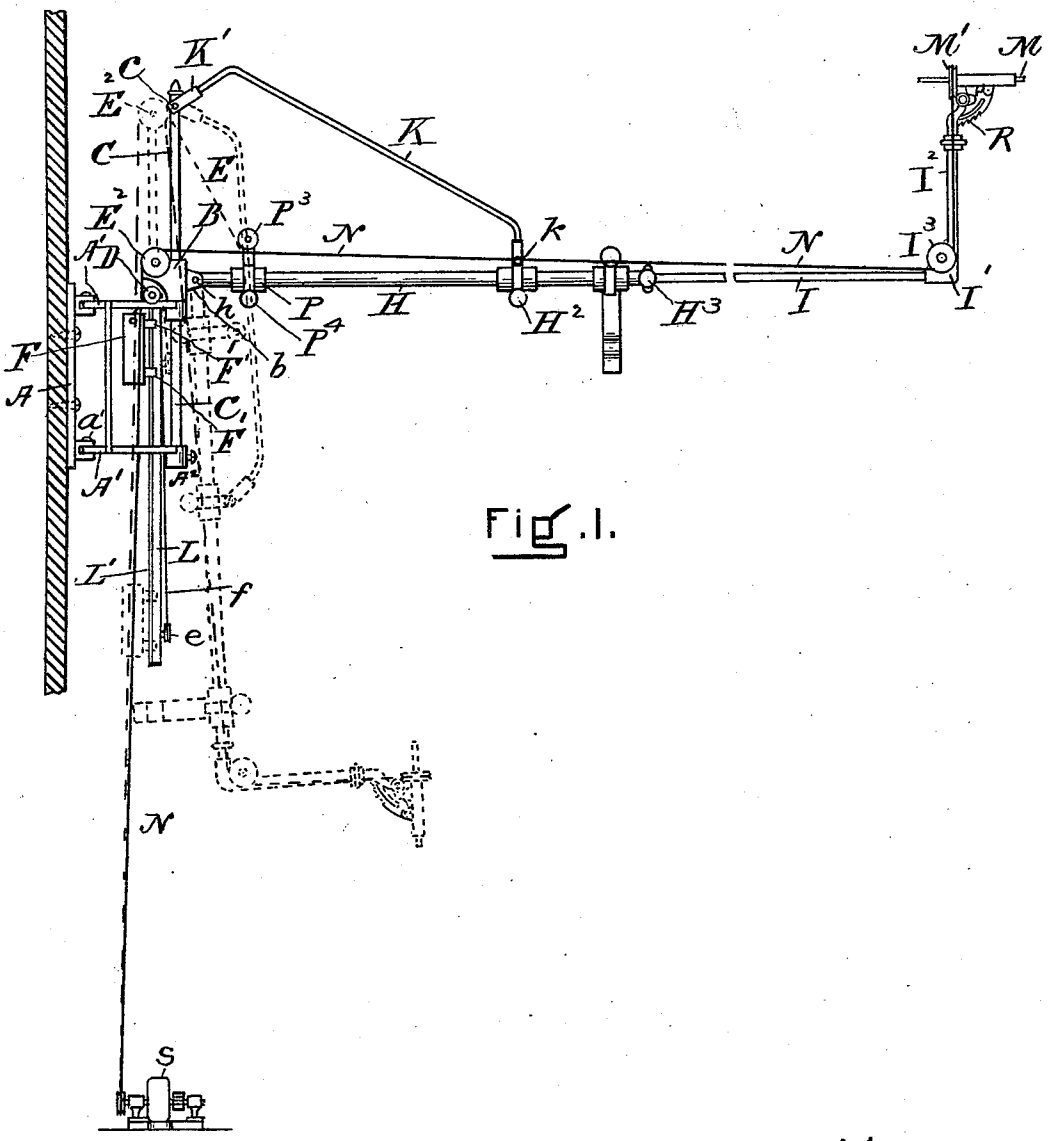

Fig. 1.

WITNESSES
Charles P. Wormsley
M. T. Leach.

INVENTOR
Jere E. Stanton
by Albert E. Leach
his Atty

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

J. E. STANTON.

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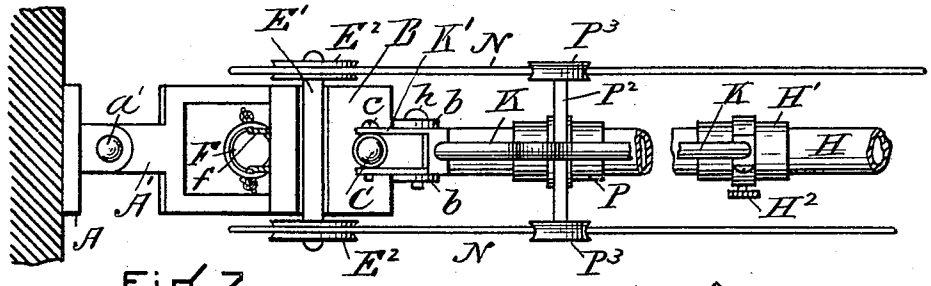


Fig. 2.

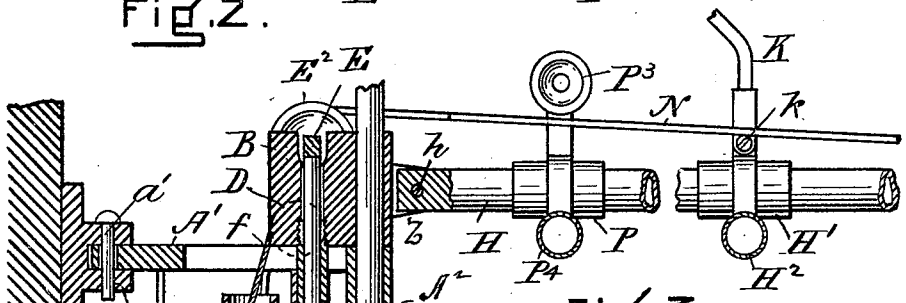
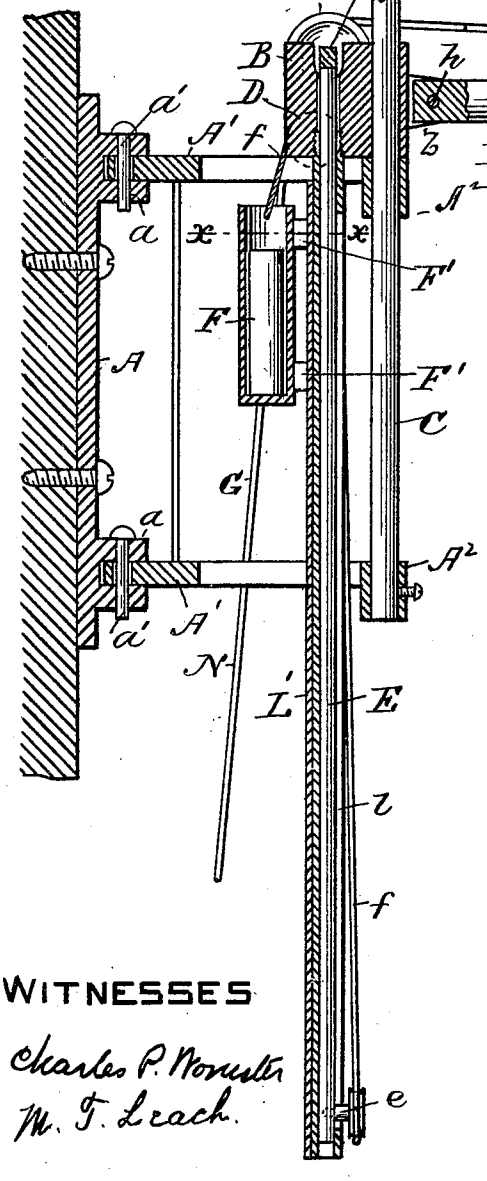


Fig. 3.



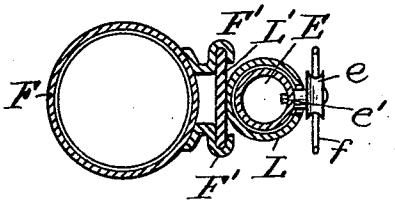


Fig. 4.

WITNESSES

Charles P. Worcester

M. T. Leach.

INVENTOR

Jno E. Stanton

by Albert E. Leach

his atty

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JERE E. STANTON, OF BOSTON, MASSACHUSETTS.

ADJUSTABLE DENTAL-ENGINE BRACKET-ARM.

SPECIFICATION forming part of Letters Patent No. 513,214, dated January 23, 1894.

Application filed June 19, 1893. Serial No. 478,064. (No model.)

To all whom it may concern:

Be it known that I, JERE E. STANTON, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Dental and Surgical Bracket and Arm, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention consists of an improved jointed bracket and arm for holding and transmitting power to a rotary, flexible tool-bearing spindle for dentists' or surgeons' use, the apparatus being adapted to be supported by the wall and so constructed as to be capable of being folded down compactly against the wall, or held in a great variety of positions, or varied instantly in length of reach, without removing or breaking the continuity of the endless belt or cord which carries the power from the motor to the tool-bearing spindle at the outer end of the arm. As the arm is varied in length or changed in position about its joints, the slack of the endless belt that would otherwise be formed, is automatically taken up by a compensating device in a manner fully described hereinafter in detail.

Referring to the accompanying drawings:—Figure 1. is a side elevation of a bracket and arm embodying my invention. Fig. 2. is a plan view on a larger scale of the inner part of the apparatus. Fig. 3. is a longitudinal, upright section thereof, taken through the center of the belt compensating device; and Fig. 4. is a transverse sectional view on a still larger scale, taken in the plane of x x, Fig. 3.

A is the stationary part of the apparatus which is screwed, or otherwise firmly secured, to the wall or to any convenient, upright support. The part A is provided with the lugs or ears a, to which, by means of the pivotal bolts a' in line with each other, is jointed the bracket, consisting of the similarly shaped pieces, A' A', an upper and a lower, rigidly held together by suitable connections. Each piece A' terminates at its outer ends, in a sleeve or collar A^2, in which is firmly held the vertical rod C.

B is a block through which the rod C passes, said block being firmly secured to the upper piece A' in the position shown in Fig. 3. This block is provided with the forwardly projecting lugs b between which is jointed at h the tube H.

K is a brace having at its upper end the bifurcated piece K', which embraces the top of the rod C and is pivoted at c thereto. The lower end of the brace is jointed at k to a sleeve H' which is movable longitudinally over the tube H and capable of being clamped in any position thereon by means of the set screw H^2. The tube H forms a hollow socket within which the rod I is adapted to slide, said rod being clamped at any desired position by means of the set screw H^3 in the tube H. The rod I terminates at its outer end in the angle connection I' in which is also firmly secured the second rod I^2, preferably at right angles to the rod I. The rod I^2 is adapted to hold in its upper end a support R of any approved construction having bearings for the arbor M, provided with the pulley M'. The arbor M gives motion to the flexible tool-holding spindle (not shown) which is secured thereto, the part of the apparatus above and beyond the arm I^2 being of ordinary construction common to dental and surgical engines. The source of motive power is in the drawings represented by an electric motor S from the driving wheel of which the endless belt N passes along suitable guiding pulleys presently to be described, and around the spindle-driving pulley M'. It will be seen that by this construction of jointed parts the arm may be moved in all directions, having free lateral movement about a vertical axis passing through the pivotal bolts a' a', and having a vertical movement about the pivot at h. When it is desired to change the position of the arm in a vertical plane, the thumb-screw H^2 in the sleeve H is loosened, the arm placed at the required angle, and the screw H^2 again tightened. In this manner the arm may be clamped at any desired angle, either horizontal, as shown in Fig. 1, or pointing upward or downward, or folded compactly down against the wall as indicated by the dotted lines. Furthermore the arm may be varied greatly in length by pushing in or drawing out the rod I within the tube H, the thumb screw H^3 serving to clamp the rod at any desired position. While the length of the arm and its position may thus be varied at will, I have provided an automatic com-

pensating device whereby the endless power-transmitting belt N instantly adapts itself to the varying conditions and requires no attention on the part of the operator in shifting the arm about, but drives the arbor M equally well in all positions of the arm.

As shown in the drawings, the endless belt N runs around the motor pulley, over the pair of sheave pulleys E^2, under the pair of similar pulleys P^3, and under the third pair of pulleys I^3 and around the pulley M'. The guiding pulleys P^3 are journaled on the cross-piece P^2 which is preferably connected with a sleeve P, capable of being clamped at any desired position on the arm H, by means of the set screw P^4. The pair of guiding sheave pulleys I^3 are journaled, one on each side of the angle connection I'. The cross-piece E', to each end of which one of the pair of guiding pulleys E^2 is journaled, is secured to the upper end of a rod E which moves easily up and down in the vertical tube L, said tube being rigidly held in the block B. The tube L has the longitudinal slot *l* through which projects the pin *e* fixed in the rod E near the lower end thereof.

D D is a pair of sheave pulleys journaled one on each side of the block B.

F is a weight suitably guided to move up and down, being hung by the cords *f* fastened at one end to the top of the weight. These cords pass over the pulleys D one on each side, and are secured at the other end to the pin *e*. As represented in Fig. 4, the weight F is provided with lugs F' which move over opposite sides of the plate L' on the back of the tube L. The parts are so arranged, and the weight F is such, that whenever a slack would occur in the endless belt N, either by shortening up the arm or changing its angular position, or both, the weight F falls, drawing up the rod E in the tube L and lifting up the pulleys E^2 under the belt N, thus taking up the slack. As the arm is varied in length by pulling out or pushing in, the weight moves up and down, keeping the belt N at all times at the proper tension.

Dotted lines in Fig. 1. show the weight in its lowest position, and the pulleys E^2 in their uppermost position, corresponding to the shortest reach of the arm.

Instead of employing a weight-operated compensating device for taking up the slack of the belt, the movement of the rod L bearing the sheave pulleys E^2 could readily be effected by means of a spring acting in any desired manner thereon. In any event, whether by weight or spring, the actuating power tends to keep the pulleys E^2 firmly pressed against the cord or belt with sufficient force to keep the belt constantly tight, so that when any slack would occur in changing the position of the arm, this slack is immediately taken up automatically by the movement of the rod L bearing the pulleys thereon. One pulley might obviously be employed instead of a pair, to accomplish the same purpose.

I claim—

A suitably supported, tool-holding arm, adjustable in length and provided with a tool-driving pulley, in combination with a motor drive-wheel, an endless power-transmitting belt or cord, suitably arranged guiding pulleys, a vertically movable rod having mounted thereon one or more pulleys engaging with said belt, and a properly guided operating weight connected by cord and pulley with said rod, as and for the purposes set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 10th day of February, A. D. 1893.

JERE E. STANTON.

Witnesses:
ALBERT E. LEACH,
M. T. LEACH.