C. E. & A F. ROGERS.

Stringing and Tuning Devices for Pianos.

No. 197,407. Patented Nov. 20, 1877.

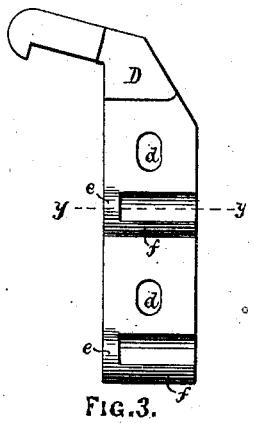

FIG. 3.

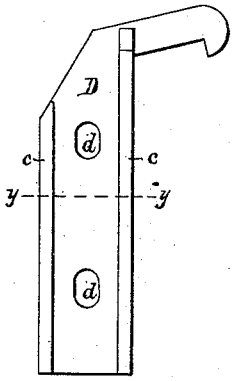

FIG. 4.

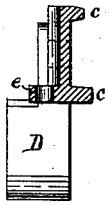

FIG. 5.

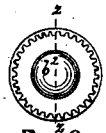

FIG. 6.

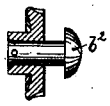

FIG. 7.

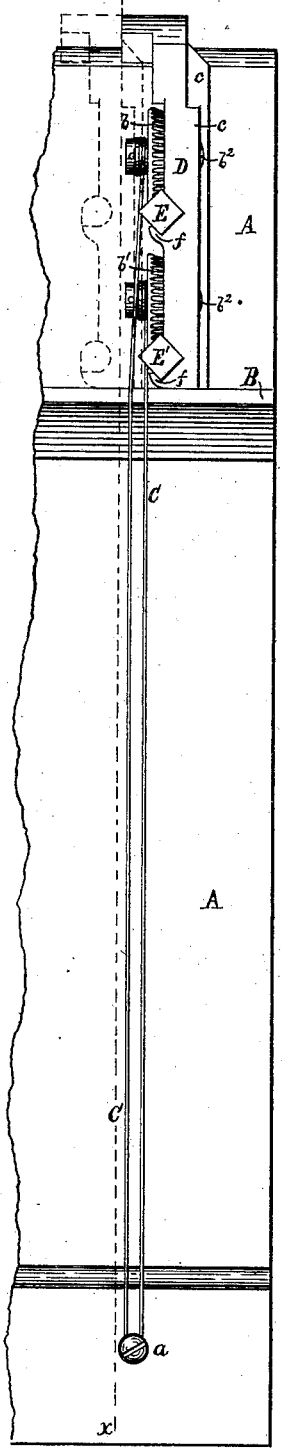

FIG. 1.

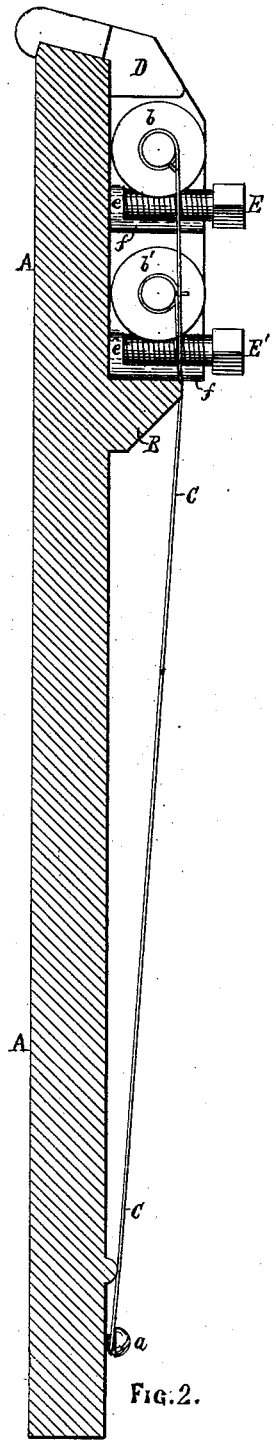

FIG. 2.

WITNESSES:

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UNITED STATES PATENT OFFICE.

CHARLES E. ROGERS AND ALFRED F. ROGERS, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN STRINGING AND TUNING DEVICES FOR PIANOS.

Specification forming part of Letters Patent No. **197,407**, dated November 20, 1877; application filed June 12, 1877.

To all whom it may concern:

Be it known that we, CHARLES E. ROGERS and ALFRED F. ROGERS, both of Boston, in the county of Suffolk and State of Massachusetts, have jointly invented certain new and useful Improvements in Stringing and Tuning Devices for Pianos, of which the following, taken in connection with the accompanying drawings, is a specification.

Our invention relates to the manner of applying and straining the strings of a piano; and it consists, first, in the use of a worm-wheel provided with a hub, upon which the string is wound, and a worm or screw for operating said worm-wheel placed between the edge of said wheel and the "bridge" on the plate, so that the strain of the string will tend to keep the worm-wheel engaged with its operating worm or screw.

Our invention further consists in the use of a metal hook adapted to engage with the edge of the plate, and provided with means for mounting upon one side thereof one or more worm-wheels, and one or more projecting lips extending transversely across said hook at right angles to the line of draft of the string, and adapted to partially embrace and form a support for the worm or screw directly opposite said worm wheel or wheels, as will be further described.

Our invention further consists in the use of a metal hook adapted to engage with the edge of the plate, and provided with one or more slots to receive the journals of one or more worm-wheels, one or more ears in which to step the inner or lower ends of the worms or screws for operating said worm-wheels, and one or more lips extending transversely across said hook parallel to the axes of said worms or screws, and at right angles to the line of draft of the strings, and adapted to support said worms upon the side farthest from said worm-wheels, and toward which the strain of the string is exerted.

Our invention further consists in providing said hooks with one or more ribs, extending longitudinally thereof upon the side opposite to the worm-wheels.

Our invention further consists in the combination of a metal hook adapted to engage with the edge of the plate, and provided with one or more slots, and one or more worm-wheels, each secured firmly to a stud or journal fitted to revolve in and be moved longitudinally of one of said slots, said studs being each provided with a head or shoulder to bear against the back side of said hook or the side opposite to the worm-wheel, as will be described.

Figure 1 of the drawings is a front elevation of a portion of the string-plate and one pair of strings, and the mechanism for straining and tuning the same. Fig. 2 is a section on line *x x* on Fig. 1. Fig. 3 is an elevation of one side of the stringing-hook. Fig. 4 is an elevation of the opposite side of the same, and Fig. 5 is a transverse section on line *y y* on Figs. 3 and 4. Fig. 6 is an elevation of one of the worm-wheels and its journal detached from the hook, and Fig. 7 is a longitudinal section thereof on line *z z*.

A is the string-plate, provided with the bridge B, and C is a doubled string, secured at its bight to the pin *a* in a well-known manner, and having the upper end of one of its strands passed through and wound around the hub of the worm-wheel *b*, and the upper end of the other strand passed through and wound around the hub of the worm-wheel b^1, as shown in Figs. 1 and 2.

D is a metal hook fitted to engage with the upper edge of the plate A, and provided with the stiffening-ribs *c c*, one or more slots, *d d*, one or more ears, *e e*, and one or more transverse ribs, *f f*, as shown.

The worm-wheels *b* b^1 are made of the form shown in Figs. 1, 2, 6, and 7, and provided with the headed journal-pins b^2, which are passed through the slots *d d*, with their heads bearing against the back side of the web of the hook D between the ribs *c c*, and firmly riveted into the wheels *b* and b^1, placed upon the opposite side of the hook D, the whole being so fitted and adjusted that the journals b^2 may revolve freely in the slots *d d*, and at the same time be free to be moved in said slots in the direction of the strain of the strings.

E and E′ are threaded screws stepped in bearings in the ears *e e*, said screws being placed between the worm-wheels and the bridge B, with the screw-threads engaging upon their upper sides with the teeth upon the periphery of the worm-wheels, and the opposite side of

said screws bearing against the transverse ribs *f f*, all arranged in such a manner that the strain of the string will tend to keep the worm-wheels in gear with the tuning-screws E and E′.

The screws E and E′ have square heads upon their outer ends, by means of which and a suitable wrench or key they may be turned upon their axes to strain and tune the strings.

The hooks D are placed side by side in contact with each other, as indicated in dotted lines in Fig. 1, the ribs *c c* partially covering the hubs of the worm-wheels *b* and b^1, mounted upon the next hook to the right.

What we claim as new, and desire to secure by Letters Patent of the United States, is—

1. As a means of straining and tuning a piano-string, the worm-wheel *b* or b^1, provided with a hub to receive the string, in combination with a worm or screw shaft, E or E′, placed between the worm-wheel and the bridge, over which the string is drawn in a position at right angles, or nearly so, to the line of draft of the string, with its screw-thread engaging with the teeth upon the periphery of the worm-wheel, substantially as and for the purposes described.

2. The hook D, provided with one or more slots, *d*, one or more ears, *e*, and one or more transverse ribs, *f f*, constructed and arranged substantially as and for the purposes described.

3. The hook D, provided with one or more slots, *d*, and one or more transverse ribs or lips, *f f*, constructed and arranged substantially as described.

4. The hook D, provided with one or more slots, *d*, one or more transverse lips, *f*, and one or more longitudinal strengthening-ribs, *c c*, all constructed and arranged substantially as described.

5. The combination of the hook D, provided with one or more slots, *d*, and one or more worm-wheels, *b* or b^1, provided with headed journals b^2, fitted to rotate in and adapted to be moved longitudinally of said slot or slots, substantially as and for the purposes described.

Executed at Boston, Massachusetts, this 6th day of June, A. D. 1877.

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ALFRED F. ROGERS.

Witnesses:
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