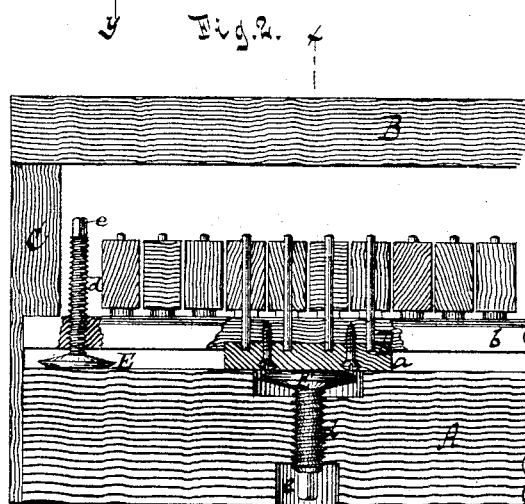
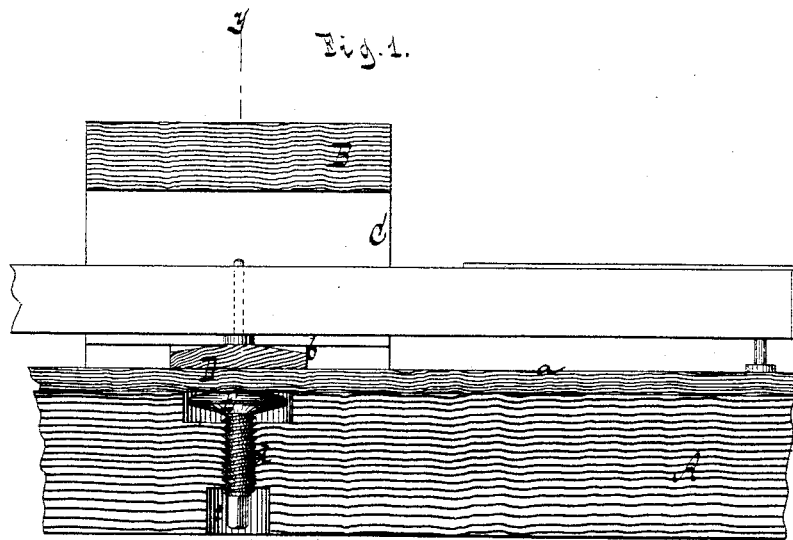


C. F. T. STEINWAY.  
Device for Leveling Key-Frames of Piano-Fortes.

No. 217,828.

Patented July 22, 1879.



Witnesses.

Otto Schupelaud  
William Miller.

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Christian Friedrich Theodor Steinway  
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his attorneys.

# UNITED STATES PATENT OFFICE.

CHRISTIAN F. T. STEINWAY, OF NEW YORK, N. Y.

## IMPROVEMENT IN DEVICES FOR LEVELING THE KEY-FRAMES OF PIANO-FORTES.

Specification forming part of Letters Patent No. **217,828**, dated July 22, 1879; application filed May 14, 1879.

*To all whom it may concern:*

Be it known that I, CHRISTIAN FRIEDRICH THEODOR STEINWAY, of the city, county, and State of New York, have invented a new and useful Improvement in Devices for Leveling and Regulating the Key-Frames of Piano-Fortes, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a vertical section of a key-frame containing my invention, the plane of section being indicated by the line *x x*, Fig. 2. Fig. 2 is a similar section in the plane of the line *y y*, Fig. 1.

Similar letters indicate corresponding parts.

The object of my invention is to produce a simple and effective device for leveling, regulating, or controlling the position of the key-frame in a piano-forte, and especially that part of such frame called the "balance-rail."

Prior to my invention the bottom frame of a piano formed the rest or foundation of the key-frame, and, inasmuch as by the character of a piano-action it was necessary to plane or face these two frames with the utmost accuracy, much labor was involved in perfecting the same, while at the same time the least warping of either frame caused by the drying or swelling of the wood influenced or changed the level of the key-frame. This change affected the key-frame mostly at the balance-rail, constituting the fulcrum of the keys, and hence changed or spoiled the touch of the action.

My invention, being applicable alike to grand, square, and upright pianos, consists in combining with the bottom frame or support of the key-frame one or more metallic disks having a screw-threaded leg, adapted to be turned by means of a wrench or otherwise so that the key-frame rests directly on the disk or disks, and by simply adjusting the latter the level of such frame can be changed and controlled.

In the example shown in the drawings, the letter A designates a portion of the bottom frame of a grand piano-forte, connected with the wrest-plank B by side pieces, one of which is shown at C, and D is a portion of the key-

frame, this latter being situated above or upon the bottom frame. This key-frame consists of from four to six base-rails, *a*, extending parallel with the keys, and of a balance-rail, *b*, extending transversely to the base-rails and forming the fulcrum of the keys.

For the purpose of supporting the key-frame D on the bottom frame A, the latter is equipped with a metallic disk or plate, E, or a number of such disks. This disk E is sunken into the top surface of the bottom frame A, and is preferably made convex, as shown, while upon the same is cast or otherwise formed a leg, *d*, which is screw-threaded, and which projects downward through a threaded hole in the bottom frame A. On its lower end the leg *d* is made square, so that the same may receive a wrench or tuning-hammer for the purpose of turning the leg *d*, thereby adjusting the disk in a higher or lower position; and the leg *d* terminates within or above the lower surface of the bottom frame A, while the latter is provided with a recess, *e*, around the leg *d*, to admit the wrench or tuning-hammer referred to.

The disk or disks E are placed in that part of the bottom frame A which is in the line of the balance-rail *b* and beneath each base-rail *a*, so that each base-rail rests directly upon its disk; hence by a proper adjustment of this disk or disks E the level of the key-frame D, and particularly that of the balance-rail, can be very readily adjusted and controlled to the greatest nicety.

In some cases it is desirable to reverse the position of the disks E, so that they bear upon the bottom frame A, while their legs *d* extend up through and screw into the balance-rail, as shown in Fig. 2. This change becomes necessary near the ends of the key-frame, where the bottom frame rests upon the legs of the piano-forte, so that the screw-legs *d* of the disks E cannot be reached from below.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the support of the key-frame in a piano-forte, of a metallic disk (one or more) having a screw-threaded leg, adapted to be turned by means of a wrench, tuning-hammer, or otherwise, for the purpose

of directly leveling and regulating the key-frame, and thereby simultaneously adjusting all the keys, substantially as described.

2. The combination, with the support of the key-frame of a piano-forte and the balance-rail of the keys, of a metallic disk (one or more) having a screw-threaded leg adapted to be turned by means of a wrench, tuning-hammer, or otherwise, for the purpose of leveling

and regulating the key-frame, substantially as described.

In testimony that I claim the foregoing I hereunto set my hand and seal this 29th day of April, 1879.

CHRISTIAN F. T. STEINWAY. [L. S.]

Witnesses:

W. HAUFF,

CHAS. WAHLERS.