

METAL FRAMES FOR PIANOFORTES.

Patented Nov. 30, 1875.

This technical drawing illustrates the cross-section of a ship's hull, focusing on the internal structural framework. The hull is shown in profile, with the internal ribs and longitudinal members clearly delineated. Key components and labels include:

- Structural Members:**
 - Top Deck/Rib:** Labeled with 'e' and 'c'.
 - Internal Ribs:** Labeled with 'b' and 'a'.
 - Longitudinal Members:** Labeled with 'c' and 'd'.
 - Bottom Structure:** Labeled with 'c' and 'f'.
- Reference Lines:**
 - A horizontal dashed line labeled 'x' is drawn across the section.
 - A vertical dashed line labeled 'y' is drawn near the stern.
- Dimensions and Markings:**
 - A dimension line at the bottom left indicates a length of '51 1/2'.
 - A dimension line at the bottom right indicates a length of '12 1/2'.
 - Small circles are placed along several of the structural members, likely representing rivets or fasteners.
- Other Labels:**
 - The letter 'A' is placed in the upper central area of the hull.
 - The letter 'f' is placed near the bottom left corner.

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IMPROVEMENT IN METAL FRAMES FOR PIANO-FORTES.

Specification forming part of Letters Patent No. **170,647**, dated November 30, 1875; application filed October 20, 1875.

To all whom it may concern:

Be it known that I, CHRISTIAN FR. THEODORE STEINWAY, of the city, county, and State of New York, have invented a new and useful Improvement in Metal Frames for Piano-Fortes, which improvement is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a plan or top view. Fig. 2 is a longitudinal section in the plane xx , Fig. 1.

Similar letters indicate corresponding parts.

This invention consists in a metal frame provided with a strengthening rib or projection at its under side, and with the ordinary longitudinal braces, in combination with a rectilinear transverse brace, running parallel, or nearly so, with the strengthening-rib, and being connected to the same by the ends of the longitudinal braces, all the parts being cast solid, so that, by the combined action of the transverse brace, the longitudinal braces, and the strengthening-rib, the front end of the metal frame is enabled to resist a very great strain without being disturbed in its position. With the transverse brace and the longitudinal braces is combined an oblique brace, extending from the convex side of the hitch-pin plate to the corner formed between one of the longitudinal braces and the transverse plate, so that by said oblique brace the hitch-pin plate is effectually prevented from being bent inward by the strain of the strings, the oblique brace being sustained in its position by the combined action of the transverse and longitudinal braces.

In the drawing, the letter A designates a metal frame, which is provided on its under side, near one end, with a strengthening-rib, a , that is intended to bear against the wrist or wrest-plank, as described in the patent of my brother, Henry Steinway, Jr., dated November 29, 1859, No. 26,300, said rib being cast solid with a plate, b , which covers the wrest-plank, and forms part of the metal frame A. From the plate b extend a series of longitudinal braces, c , to the hitch-pin plate d , and with these longitudinal braces is combined a transverse brace, e , which runs parallel, or nearly so, with the strengthening-rib a . All these

parts are cast out of one solid piece, the longitudinal braces being made to extend beyond the transverse brace and over the wrest-plank plate b . This transverse brace, together with the front ends of the longitudinal braces and strengthening-rib, forms a sort of a ladder connection, whereby the front part of the metal frame is enabled to sustain a great strain without bending either up or down.

The metal frames which I have used heretofore, and which were made without the transverse brace e , were constructed to withstand a strain of the strings of thirty-three thousand pounds. By adding the transverse bar, and without otherwise changing the proportion of the frame, I have increased the strength to a strain of forty-five thousand pounds.

The sustaining power of my metal frame is still further increased by an oblique brace, f , which extends from the convex edge of the hitch-pin plate d to the corner formed between one of the longitudinal braces and the transverse brace e . Without this oblique brace, the hitch-pin plate is liable to bend inward by the strain of the strings; but such oblique brace can be applied with advantage only when the transverse brace e is used, since, without that, neither of the longitudinal braces would be able to offer a firm resistance to a strain brought to bear upon it in the direction of the oblique brace. Said oblique brace may be made to terminate in the corner next to it, as shown in the drawing, or it may be made to intersect one of the longitudinal braces, and to terminate in the corner beyond that in which it terminates in the drawing. By the application of this oblique brace, in combination with the longitudinal and the transverse braces and with strengthening-rib, I expect to raise the sustaining power of my metal frame to seventy thousand pounds without materially increasing the weight of metal, and by attaining the result the power of the instrument will be proportionately increased.

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

1. In a metal frame for piano-fortes, the combination of a transverse brace, e , with longitudinal braces c , and with a strengthening-

rib, *a*, on the wrest-plank plate *b*, said transverse brace running parallel, or nearly so, to the strengthening-rib, substantially as shown and described.

2. In a metal frame for piano-fortes, the combination of the oblique brace *f* with the hitch-pin plate *d*, transverse brace *e*, and longitudinal braces *c*, constructed and arranged substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 15th day of October, 1875.

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

Witnesses:

W. HAUFF,

E. F. KASTENHUBER.