

A. O. LECHNER.
PIANOFORTE.
APPLICATION FILED NOV. 6, 1909.

1,013,604.

Patented Jan. 2, 1912.

Fig. 1.

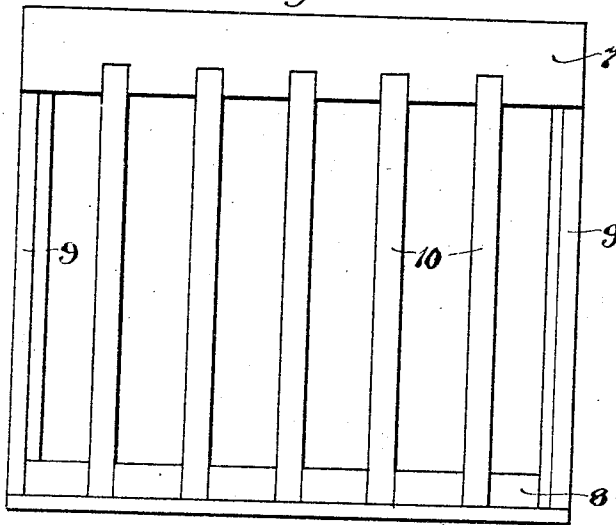


Fig. 2.

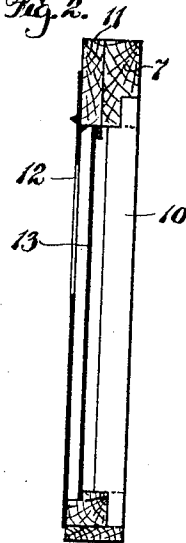


Fig. 3.

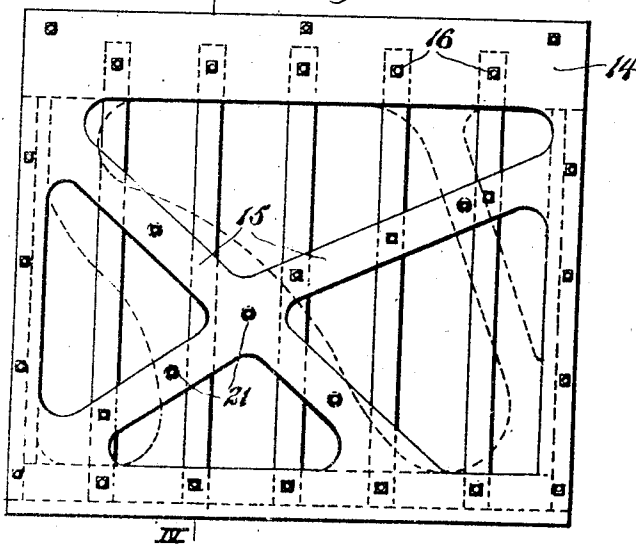


Fig. 4.

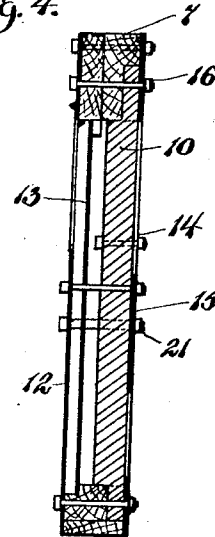


Fig. 5.

WITNESSES
Henry L. Lechner
Dwight Bellinger

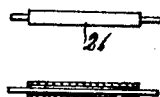
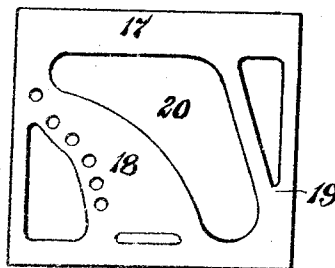


Fig. 6.

INVENTOR

Arthur O. Lechner
by
Paul Synnestvedt

UNITED STATES PATENT OFFICE.

ARTHUR O. LECHNER, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO LECHNER & SCHOENBERGER COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

PIANOFORTE.

1,013,604.

Specification of Letters Patent.

Patented Jan. 2, 1912.

Application filed November 6, 1909. Serial No. 526,523.

To all whom it may concern:

Be it known that I, ARTHUR O. LECHNER, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Pianofortes, of which the following is a specification.

My invention has relation in general to piano fortes and in particular to the framework and structure of piano fortes. It has for its primary objects; the provision of an improved arrangement of string plate and framework; the provision of stiffening and strengthening means applicable to the standard piano frame; and the provision of improved means for bracing and supporting the string plate. These and such other objects as may hereinafter appear I attain by means of a device illustrated in preferred form in the accompanying drawings, wherein

Figure 1 is a back view of the usual piano frame, Fig. 2 is a section through the piano frame of Fig. 1 with the string plate added, Fig. 3 is a rear view of the usual piano frame work with my improved stiffening means applied thereto, Fig. 4 is a section on the line IV—IV of Fig. 3, Fig. 5 is a plan view of the string plate, and Fig. 6 shows in plan and sectional views the construction of one of the connecting members or posts.

In general my invention resides in the provision of a metal stiffening plate secured to the ordinary wooden piano frame in such manner as to make the structure rigid, the said plate also serving to prevent deformation of the string plate. Heretofore piano frames have been made as indicated in Figures 1 and 2, comprising a top rail 7, a bottom rail 8, end rails 9, and upright posts 10 extending between the top and bottom rails and secured thereto in the manner indicated in Figure 4. A wrest plank 11 carrying the piano strings is secured to the top rail 7, and the usual string plate 12 is mounted on the wrest plank and the bottom rail 8. The sounding board 13 is mounted on the edge members of the frame between the posts 10 and the string plate, free to vibrate. This structure while having many of the qualities necessary to good tone, has noticeable defects, chief among which are that it is not rigid enough and is apt to warp and spread through the effects of different temperatures

and moistures, etc., and even through the strain occasioned in handling the instrument; that the wrest plank springs away from the top-rail; and that consequently the string plate warps and springs so that the instrument does not remain in tune. I am aware that various forms of metal constructions have been designed to replace the ordinary framework and overcome the defects mentioned, but these special constructions have been inadequate for the purpose and in certain respects are not as satisfactory as the ordinary type of frame. My invention is designed to overcome the defects and still retain the structure found most suitable to secure the best qualities in the instrument, and this I accomplish by a construction now to be described.

Referring more particularly to Figures 3 and 4, it will be seen that in carrying out my invention, I employ the usual framework, as above described, and provide at the back thereof an integral metal stiffening plate 14 having cross braces 15. In the front of the frame is the metal string plate 12, the framework thus having a metal plate disposed on either side. A plurality of bolts 16 extend entirely through the metal plates, the rails of the frame and through the upright posts 10, and bind the whole into a rigid structure not liable to warp or spread.

In Figure 5, in full lines, and in Figure 3, in dotted lines, I have shown an accepted form of string plate, which is divided into three portions 17, 18, and 19, by the opening across which the rows of strings extend. Because of its form the string plate is apt to warp and spring under the tension of the strings and for the reasons above set out. The diagonal braces 15 are so disposed that they come opposite the portions 18 and 19, and there are positioned, between the braces and said portions, a plurality of spacing members 21, said members being provided with shoulders abutting the plates and with reduced shanks which project through the plates and are secured by nuts in the manner shown. If so desired spacing members may be employed which consist of a rod carrying a sleeve of appropriate length and having screw-threaded ends, such as indicated in Figure 6. This arrangement prevents the string plate from springing in any direction, and assists, in connection with the bolts 16, in binding the frame the back stiffening

plate 14 and the string plate into a rigid unit.

My invention thus retains the wooden framework found to give the best tone qualities, and at the same time secures substantial advantages and improved results, such for example as durability, superior tone, less tuning. The improvement can readily be added to all standard types with but slight change and at small cost. Other advantages will present themselves to those familiar with the art.

Having thus described my invention and illustrated its use what I claim as new and desire to secure by Letters Patent is the following:—

1. In combination in a piano forte, a wooden frame comprising a top rail, a bottom rail, end rails connecting the top and bottom rails, and upright posts spaced between the end rails and extending between the top and bottom rails; a metal string plate rigidly secured to the front face of the frame; and a metal stiffening plate rigidly secured to the rear sides of the said rails.

2. In combination in a piano forte, a wooden frame comprising a top rail, a bottom rail, end rails connecting the top and bottom rails, and upright posts spaced between the end rails and extending between the top and bottom rails, and a wrest plate secured to the front side of the top rail; a metal string plate rigidly secured to the front faces of the wrest plate and the side and bottom rails; a metal stiffening plate mounted upon the rear sides of the said rails, and securing bolts extending through the wooden frame and through the string plate and the stiffening plate.

3. In combination in a piano forte, a wooden frame comprising a top rail, a bottom rail, end rails connecting the top and

bottom rails, and upright posts spaced between the end rails and extending between the top and bottom rails; a metal string plate rigidly secured to the front face of the frame; a metal stiffening plate of skeleton form rigidly secured to the rear sides of the said rails; and transverse supporting members extending from the string plate inside the frame to the stiffening plate, and serving to hold the string and stiffening plates against relative movement.

4. In combination, a wooden piano frame comprising top, bottom and side rails and upright posts intermediate the side rails; a metal string plate secured to the front face of the frame; a metal skeleton stiffening plate secured to the rear face of the frame, and comprising an edge portion bearing against the said rails and brace portions, means for securing the edge portion of the stiffening plate to the said rails, and means for securing the said brace portions of the stiffening plate to the said upright posts.

5. In combination, a wooden piano frame comprising top, bottom and side rails; a metal string plate secured to the front face of the frame; a metal skeleton stiffening plate secured to the rear face of the frame and comprising an edge portion bearing against the said rails and diagonal brace portions, and transverse supporting members lying inside the edge portion of the stiffening plate and connecting the said brace portions and the string plate.

In testimony whereof I have hereunto set my hand in the presence of the two subscribed witnesses.

ARTHUR O. LECHNER.

Witnesses:

HARVEY L. LECHNER,
ARCHWORTH MARTIN.