Nov. 11, 1930. J. H. CLARK 1,781,216

PIANO

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Fig. 3.

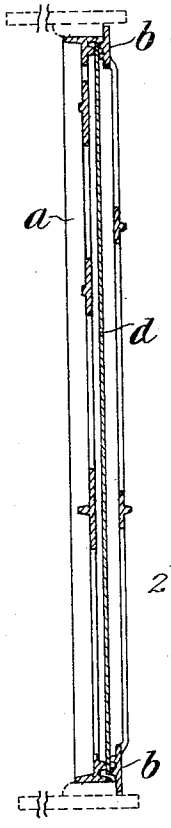


Fig. 1.

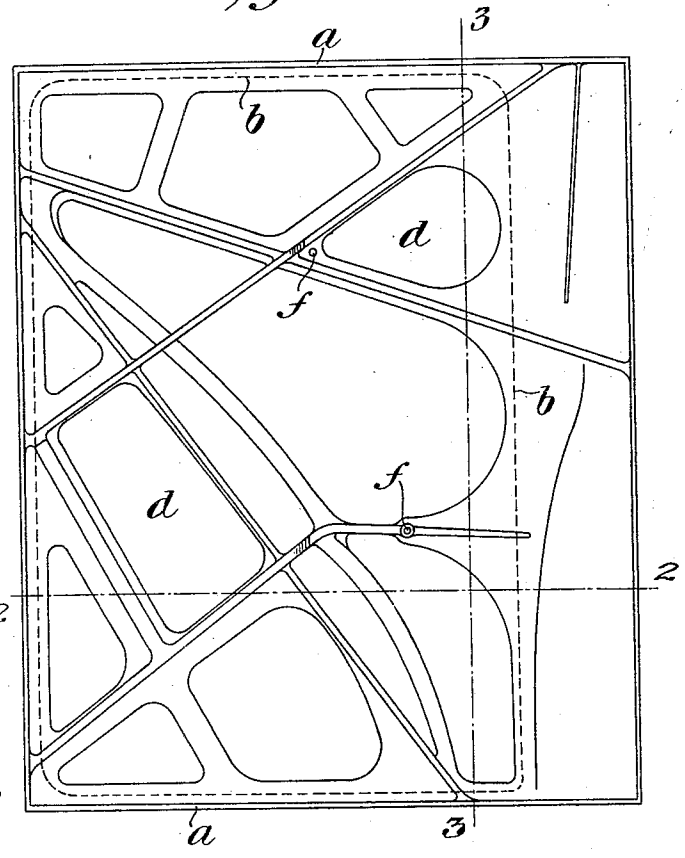
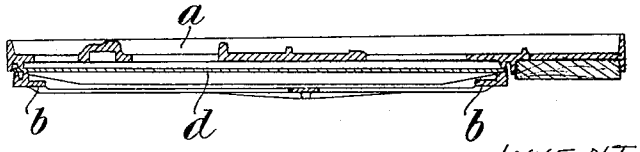


Fig. 2.



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Fig. 5.

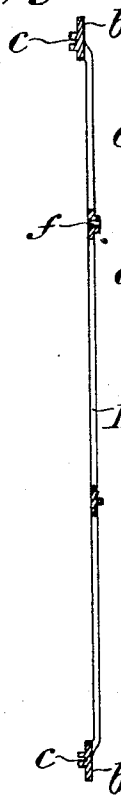


Fig. 4.

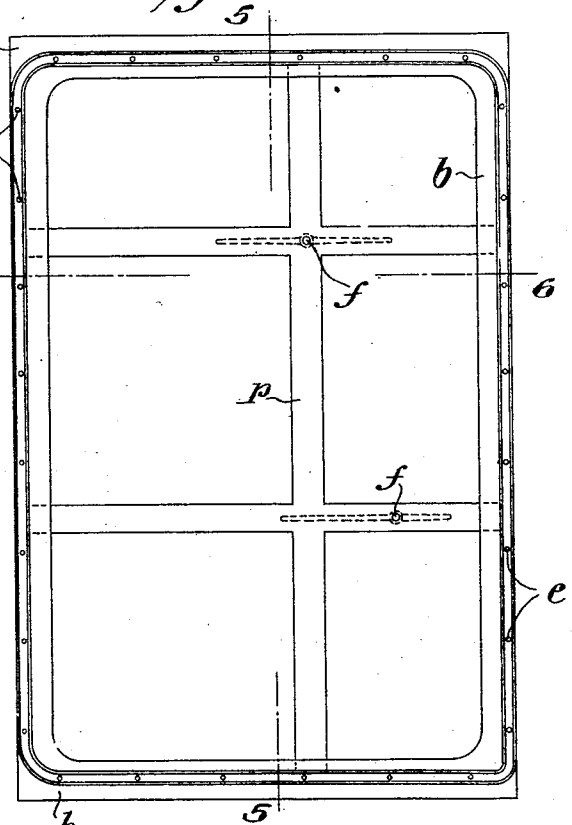
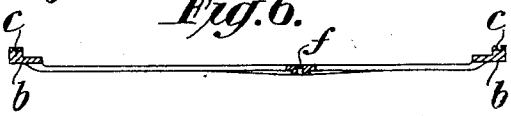


Fig. 6.



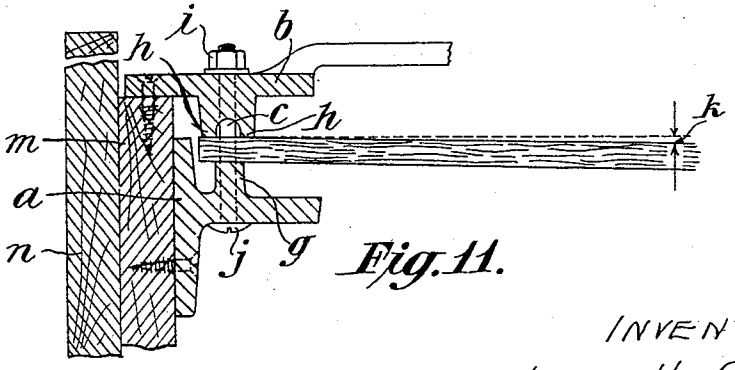


Fig. 11.

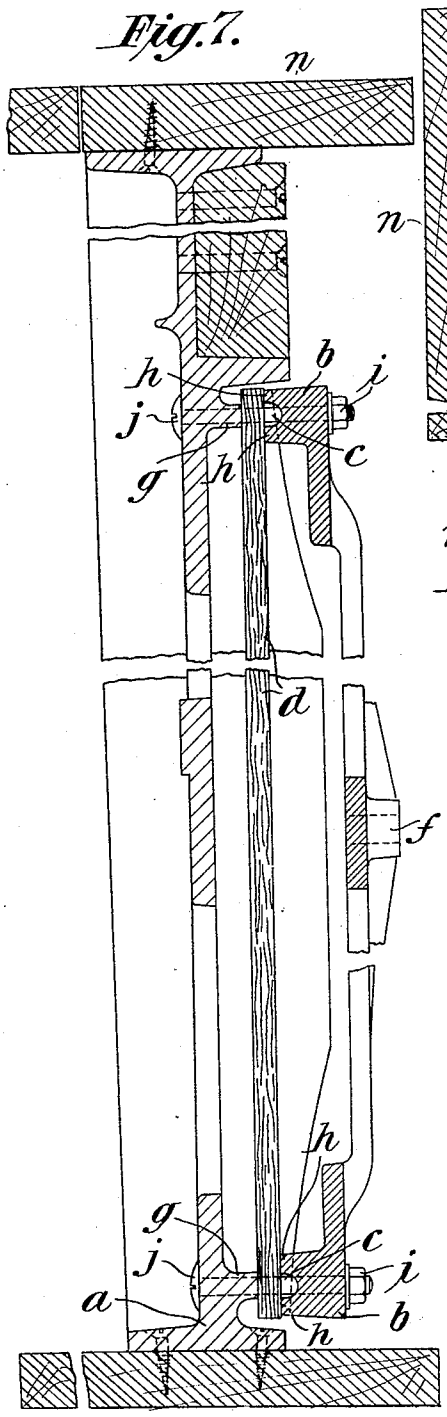
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Fig. 7.



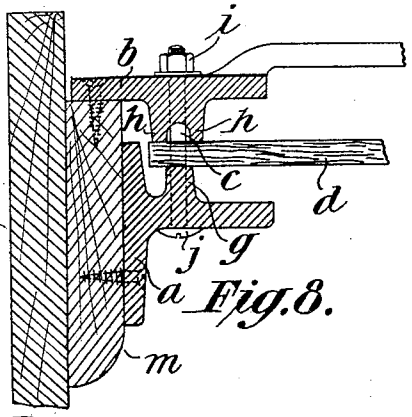


Fig. 8.

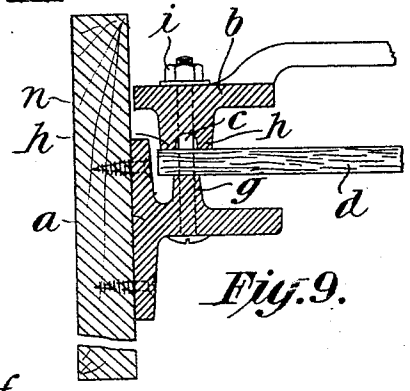


Fig. 9.

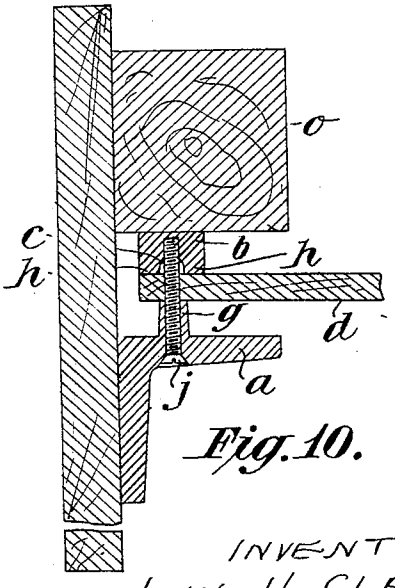


Fig. 10.

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UNITED STATES PATENT OFFICE

JOHN HENRY CLARK, OF WHETSTONE, ENGLAND

PIANO

Application filed July 15, 1929, Serial No. 378,348, and in Great Britain September 18, 1928.

This invention, which relates to pianos, has reference to an improved means for housing and securing the soundboard to a metal piano frame or metal backless piano frame, said invention being applicable to upright and grand pianos. An object of the invention is to provide soundboard gripping means which will not be affected by climatic changes or conditions.

In its broadest aspect the invention may be said to consist in a piano wherein at least one of two members including the frame, between which the soundboard is gripped, is grooved or recessed along a soundboard-margin clamping rim in order to provide along the margin of the soundboard, on at least one side thereof, multiple abutment gripping faces.

Such gripping of the soundboard around its margin leaves the main central portion of said soundboard free of any lineal grip and the present invention, therefore, is not to be confused with a proposal already set forth wherein the soundboard was rigidly clamped diagonally across approximately from corner to corner to a diagonal string-securing portion of an iron frame; in such prior arrangement, the said diagonal frame portion was formed with multiple abutment faces constituted by two parallel lines of projecting ribs, one line continuous and the other interrupted, adapted to bear on the soundboard due to the pressure exerted by connecting bolts passed through the soundboard and having their heads bearing on the other side thereof along a line located between the two lines of ribs.

To more particularly define the present invention, according to the preferred arrangement, said invention provides for a housing wherein the soundboard is clamped, with a three-line grip, between front and rear members when said members are drawn together.

It forms a feature of the invention that the three-line grip is obtained through the medium of a doubly beaded or recessed rim on the one member and an outstanding rib on the other member, the rib being conveniently of the same width as and aligning with the recess in the rim so that said beads and rib sink into the soundboard aforesaid, and give the necessary camber to the soundboard.

The arrangement of the gripping elements is such as to give the necessary camber to the soundboard when said elements are drawn together, the pressure on said soundboard being such that the finest vibrations, waving or molecular vibration cannot pass or leak but are thrown back, thereby enhancing the tone and sustaining power of the instrument.

Further, the arrangement of clamping provides for all external noises, due to loose parts of the mechanism and the like, being insulated from the soundboard of the instrument, thereby improving the tone thereof.

For a ready understanding of the said invention, reference is to be had to the following description and accompanying sheets of drawings, wherein:—

Figure 1 is a front view of the backless or front frame turned on to one end, the position of the soundboard rim being shown in dotted lines.

Figure 2 is a sectional view taken on line 2—2 of said Figure 1.

Figure 3 is a sectional view taken on line 3—3 of said Figure 1.

Figure 4 is a front view of the soundboard rim.

Figure 5 is a sectional view taken on line 5—5 of said Figure 4.

Figure 6 is a sectional view taken on line 6—6 of said Figure 4.

Figure 7 is a sectional view, drawn to an enlarged scale, showing backless frame, soundboard and soundboard rim assembled together.

Figure 8 is a fragmentary sectional view illustrative of the method of securing the backless frame and soundboard rim to piano case end.

Figure 9 is a fragmentary sectional view showing backless frame secured direct to piano case end.

Figure 10 is a fragmentary sectional view showing the application of the invention to an ordinary metal frame.

Figure 11 is a fragmentary sectional view,

similar to Figure 8, but illustrative of the camber of the soundboard.

Like letters of reference indicate corresponding parts in the several figures.

Referring first to Figures 1–6 of the drawings, *a* represents the front or backless frame constituting the one member of the housing, *b* the soundboard rim which constitutes the other member of the housing, *c* the recess in said soundboard rim, *d* the soundboard housed between said members *a* and *b*, and *e* and *f* holes for the reception of bolts or screws wherewith to connect the soundboard rim to the backless frame.

Referring now to Figures 2, 7, 8, 9 and 10 of the drawings, it will be seen that the backless frame *a* is provided with an outstanding rib *g* constituting the one element of the three-line grip, whilst the soundboard rim *b* is provided with a recess or groove *c* therein leaving two opposed beads *h* which constitute the other two elements of the three-line grip.

The outer end of the rib *g* is of the same width as and aligns with the recess *c* aforesaid, so that when the soundboard *d* is in position between the backless frame *a* and the soundboard rim *b*, and the frame and rim are drawn together by screwing down the nuts *i* of the bolts *j* passed through the holes *e* (see Figure 4) in said rim *b*, the rib *g* and beads *h* aforesaid sink into the soundboard *d*, i. e. the three-line grip, giving the necessary camber to the soundboard *d*, as shown at *k* in Figure 11, the elasticity of said soundboard *d* being sufficient to maintain a tight joint. As shown, the bolt holes *e* in the frame and soundboard rim are so located that the bolts *j* pass through the aligning rib *g* and recess *c*.

Spring washers may be interposed between the nuts *i* and the soundboard rim *b*, but such springs are not essential to the proper working of the housing.

The backless frame *a* may, as shown in Figures 8 and 11, be screwed to a board *m* affixed to the case end *n*, and the soundboard rim *b* be screwed to said board *m*, or, as shown in Figure 9, said backless frame *a* may be screwed direct to the case end *n* without the intervention of the board *m* aforesaid.

Or, as shown in Figure 10, the rib *g* may be formed in one piece with an ordinary frame *a* which is secured to a wooden back *o* in the usual manner, the metal soundboard rim *b* being tapped to receive the clamping screws *j* by which it is secured to the frame *a*.

Cross bars *p* of the soundboard rim *b* may serve as lifting handles.

Modifications may be made within the scope of the appended claims. For example, variation may be made from the particular methods herein described and illustrated as to the securing of the frame within the case of the instrument. Also, variation may be made as to the relative cross-sectional shapes of the faces by which the soundboard is gripped, provided that at least one of said gripping faces is grooved or recessed to provide multiple gripping faces. For instance, both of the opposed gripping faces could be grooved, the grooves, and consequently the parallel lines of grip, being in register at the two sides of the soundboard. As a further modification wherein one gripping element only is grooved, the gripping rib of the other co-operating element may be considerably wider than the said groove; for instance, said rib could be approximately equal in width to the entire grooved bead *h* and having a gradual radiused or salient face, the arc of which extends across its entire width.

I claim:—

1. In a piano, a metal soundboard frame comprising front and rear frame members, a rib projecting laterally from one of said frame members, a rim projecting laterally from the other of said frame members, said rim being of greater width than said rib and having a groove therein adapted to aline with said rib, a soundboard having its marginal portion disposed between the rib and the rim of the respective frame members, and means for drawing the frame members together to clamp the soundboard therebetween.

2. In a piano, a metal soundboard frame comprising front and rear frame members, a rib projecting laterally from one of said frame members, a rim projecting laterally from the other of said frame members, said rim being of greater width than said rib and having a groove therein of substantially the same width as said rib adapted to aline with said rib, a soundboard having its marginal portion disposed between the rib and the rim of the respective frame members, and means for drawing the frame members together to clamp the soundboard therebetween.

3. In a piano, a metal soundboard frame comprising front and rear frame members, a soundboard disposed between said frame members, a pair of spaced beads projecting from the inner face of one of said frame members engaging the marginal portion of the adjacent face of said soundboard, a rib on the other frame member engaging the marginal portion of the adjacent face of the soundboard in alinement with the space between the beads of the first mentioned frame member, and means for drawing the frame members together to clamp the marginal portion of the soundboard between said rib and said beads, respectively.

In testimony whereof I have affixed my signature hereto this 17th day of June 1929.

JOHN HENRY CLARK.