

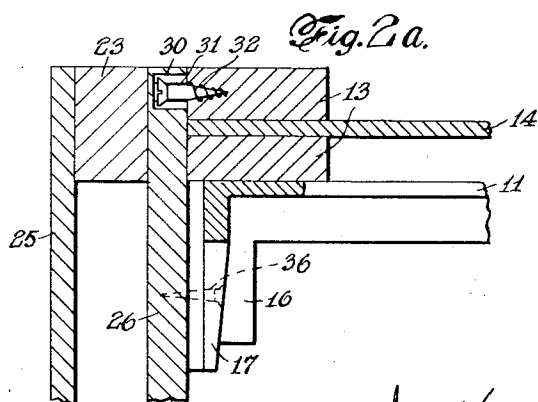
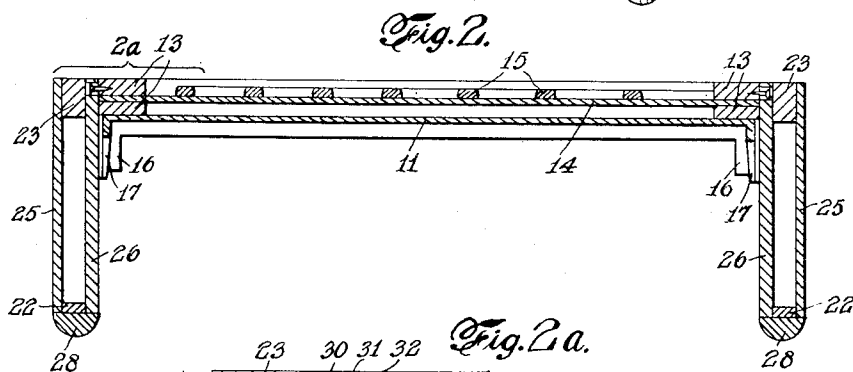
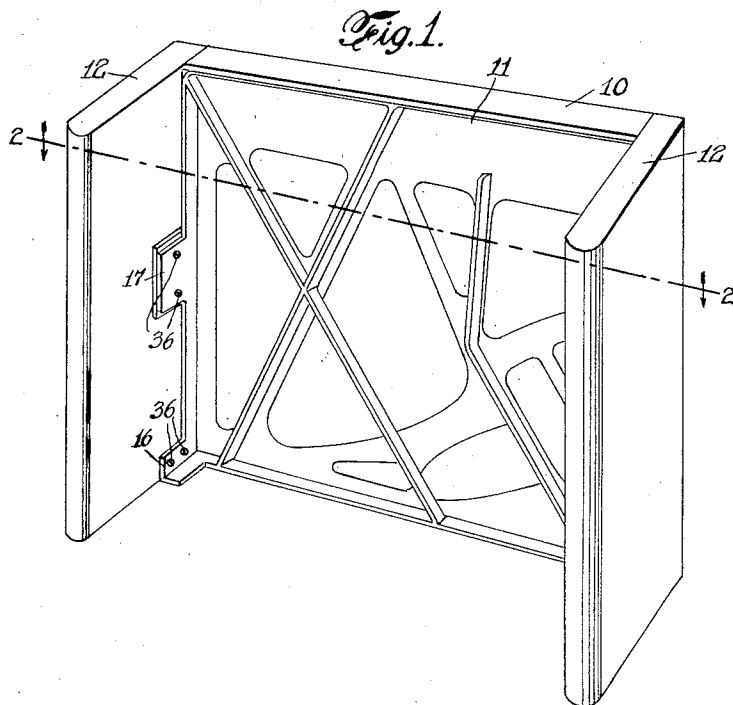
Oct. 3, 1939.

J. SAUERLAND

2,174,671

PIANO CASE

Original Filed Oct. 30, 1936 2 Sheets-Sheet 1



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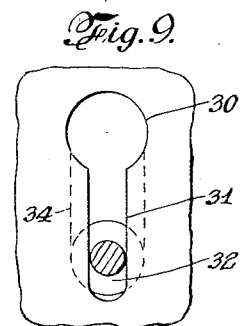
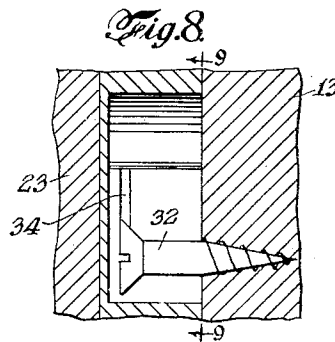
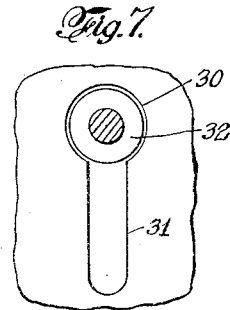
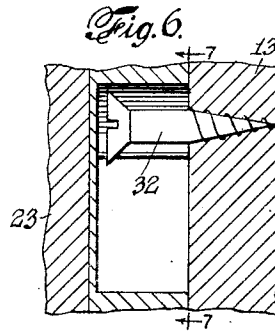
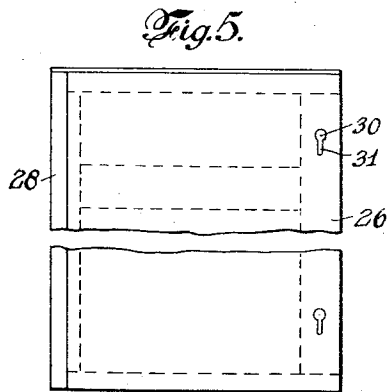
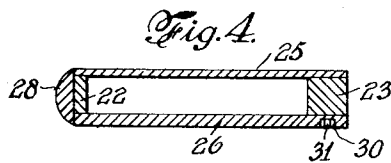
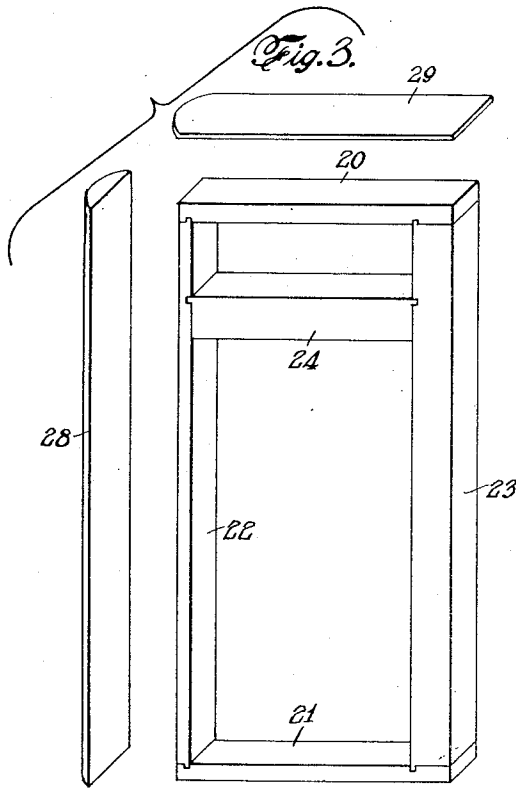
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2,174,671

PIANO CASE

Original Filed Oct. 30, 1936 2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,174,671

PIANO CASE

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Original application October 30, 1936, Serial No.
108,324. Divided and this application January
10, 1938, Serial No. 184,169

3 Claims. (Cl. 84—177)

The invention relates to pianos and its general object is to provide an improved construction of the case.

The present trend in the manufacture of pianos of moderate price for use in the home is toward instruments of small dimensions, as exemplified by the many existent varieties of so-called "miniature" upright pianos. With the reduction of the size of a piano there is generally experienced a loss of tone quality due to the decrease in the area of the sounding board and the size of other parts. One of the objects of this invention is to provide a piano case for pianos of this type which will augment the sounding board vibrations and compensate for the loss of tone otherwise experienced, providing a full, rich and resonant tone throughout the range of the instrument. To this end the case is so constructed as to contain a plurality of resonating chambers. The major parts of the piano case are the back assembly, which includes the wooden framework, the sounding board and the metal string frame, and the two sides. These sides are of a hollow box-like construction, serving not only as parts of the cabinet but also as sound chambers for the improvement of the tone of the instrument. The back assembly and the sides are constructed as separate units and a further object of this invention is to provide novel means for fastening them together quickly, accurately and with a minimum of labor.

I have also provided apparatus for assembling these case parts together which is described in my co-pending application for Letters Patent, Serial No. 108,324, filed October 30, 1936, of which the present application is a division.

A further object of the invention is to provide a piano case which is of simple construction, of relatively light weight yet strong and which can be economically manufactured.

Other objects and advantages will be apparent from the following detailed description of an illustrative embodiment of a preferred form of the invention as applied to one type of "miniature" piano, the case of which is shown in the drawings, in which:

Fig. 1 is a perspective view of the assembled back and sides of the piano case;

Fig. 2 is a horizontal section on the line 2—2 of Fig. 1;

Fig. 2a is an enlarged detail of the section 2a of Fig. 2;

Fig. 3 is an exploded view of the frame, front piece and top trim of one side of the case;

Fig. 4 is a horizontal section through a side.

Fig. 5 is a condensed side elevation of a side; Fig. 6 is a detailed cross-section showing means for fastening the side to the back of the piano case;

Fig. 7 is a view taken on the line 7—7 of Fig. 6; and

Figs. 8 and 9 correspond with Figs. 6 and 7, respectively, but show the position of the fastening means after relative movement of the back and side into locking position.

Referring to the drawings, the construction of the case is as follows:

Referring to Fig. 1, it will be seen that the main parts of the piano case are the back assembly 10 and the sides 12, 12. Many detailed parts such as strings, bridges, tuning pins etc. are omitted for greater clarity, being no part of the invention. The back assembly 10 (see Fig. 2) includes the iron string frame 11, which is of such rigidity and strength as to require no support from the wood parts. To the frame 11 a rather light, rectangular wooden frame structure 13 is secured by screws (not shown), in which is held the sounding board 14 having the usual ribs 15. The frame 11 is provided at its two lower corners with short angular extensions 16 and midway of its sides with flat lugs or brackets 17, these extensions and brackets being provided with holes for screws.

The sides 12, 12, it will be noted, are hollow and are built up as is best shown in Figs. 3, 4 and 5. A substantial wooden frame is first constructed with a top 20, a bottom 21, a front post 22 and a back post 23. A cross member 24 extends between the front and back posts, dividing the inside of the frame into a small upper chamber and a larger lower chamber, which, differing in volume, would obviously have differing resonance characteristics. The cross member 24 also serves as a strong support for other parts of the piano subsequently assembled in the case such as the key-bed, etc.

Upon this frame are assembled a relatively thin outer panel 25 and a thicker inner panel 26, which I prefer to construct of three-eighths and five-eighths inch plywood respectively. These panels are glued to the frame in a press and allowed to dry. To finish the sides and give them a pleasing appearance a rounded front strip 28 is glued to the front post 22 after the panels have been trimmed to size and a thin cap 29 is glued across the tops of the strip 28 and the top 20. The sides may then be given any desired finish prior to being fastened to the back assembly. The box-like construction of these sides greatly improves

the tone of the piano as the chambers in the sides act as resonators for the vibrations transmitted to them from the back and the relatively thin panels 25 and 26 act to augment the sound-board in transmitting the vibrations to the surrounding air.

By constructing pianos of the type referred to with sides of solid wood and with the hollow sides just described, the pianos being otherwise the same, it has definitely been demonstrated that the hollow sides greatly improve the tone quality of the instrument, whereas with solid sides the tone seems thin, particularly in the base. The existence of vibrations of considerable amplitude in the sides can easily be determined when the instrument is being played.

The sides after being built as described are prepared for assembling to the back by cutting in them the openings, illustrated in Figs. 6-9 and elsewhere, the general locations of which relative to the top and bottom may be seen in Fig. 5. These openings are generally in the shape of a keyhole and consist of a round hole or boring 30 into which opens an elongated slot 31. The hole 30 is of such a size as to receive freely the head of a large flat-head screw 32. The slot 31 is of a size to receive freely the shank of the screw. While the drawings show the use of two such openings, one near the top and one near the bottom, the number may be increased to give as much strength as desired. I have found two to be sufficient.

The screws 32 are secured in the frame 13 of the back with their heads protruding a suitable distance therefrom, and are properly located to fit into the corresponding openings 30 in the sides, in the positions shown in Figs. 6 and 7. The back, at this stage, is slightly above its final assembled position. While the sides are held tightly against the back, glue having been applied between, the back is forced downwardly, moving the screws into the slots 31, as shown in Figs. 8 and 9. The head of the screw cuts its own groove in the wood surrounding the slot 31, as shown at 34 in Fig. 8. This securely locks the sides to the back and when the glue has dried they are immovable.

Due to slight variations in the size or shape of the string frame, which inevitably result from the fact that it is a casting, the string frame is made of such a size that it does not quite reach the sides 12, 12. After the operations described above are completed and after the sides have been squared up, wooden shims 35 are inserted to fill the spaces between the sides and the lugs 17 and extensions 16, after which the sides are securely screwed to these lugs and extensions, as shown, by screws 36.

The case is then complete and ready for the installation of the parts and mechanism which go to make up a complete piano.

The foregoing detailed description pertains only to a preferred embodiment of the invention selected for purposes of illustration and it is obvious that many changes in detail might be

made therein. For example, instead of using a fastening which will cut its own groove, a fastening not capable of so doing might be used in conjunction with a groove preformed to receive it. The specific case construction is also subject to many variations of style. For example, the sides 12, 12 are of modernistic design, but it is within the scope of the invention to change the size, shape and extent of the box-like part to receive legs at its lower part to meet the demand for different period designs.

What is claimed is:

1. In a piano case including a wooden back and a pair of wooden sides, means for fastening the sides and the back together including a plurality of fastening members having shanks and enlarged sharp-edged heads, said members being secured in one of the two last-mentioned parts with their heads and a part of their shanks extending outwardly therefrom, the other of said parts being provided with openings cut into the wood each opening comprising a hole to freely receive said heads and a contiguous slot approximately the width of said shank, said members having the sharp edges of their heads embedded in the wood of said part adjacent said slots.

2. In a piano case including a wooden back and a pair of wooden sides, means for fastening the sides to said back including a plurality of fastening members having shanks and enlarged sharp-edged heads, said members being secured in the back with their heads and a part of said shanks extending outwardly from said back, said sides being provided with openings cut into the wood each opening comprising a hole to freely receive said heads and a contiguous slot approximately the width of said shank, said members having the sharp edges of their heads embedded in the wood of the sides adjacent said slots.

3. In a piano case for a miniature piano having a wooden back, a pair of wooden sides and a metal string frame; means for securing the back, sides and metal frame together comprising a plurality of brackets integral with the metal frame and extending outwardly therefrom parallel to a face of each of said sides; means for immovably securing the metal frame to the back; means for fastening the sides to the back including a plurality of fastening members having shanks and enlarged sharp-edged heads, said members being secured in one of the two last-mentioned parts with their heads and a part of their shanks extending outwardly therefrom, the other of said parts being provided with corresponding openings cut into the wood each opening comprising a hole to freely receive said heads and a contiguous slot approximately the width of said shank, said members having the sharp edges of their heads embedded in the wood of said part adjacent said slots; and further means for fastening the sides to the brackets on the metal frame whereby longitudinal movement between the back and the sides is prevented.

JOSEPH SAUERLAND.