(No Model.)

J. McDONALD, Dec'd.

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PIANO FORTE.

No. 386,080. Patented July 10, 1888.

Fig. 1.

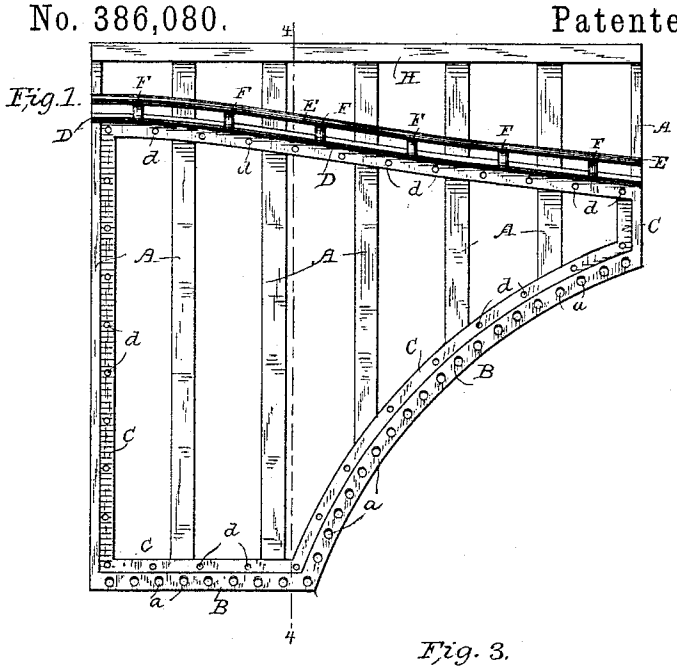


Fig. 4.

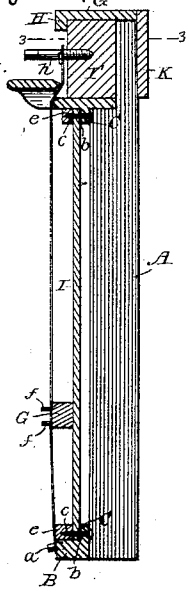


Fig. 3.

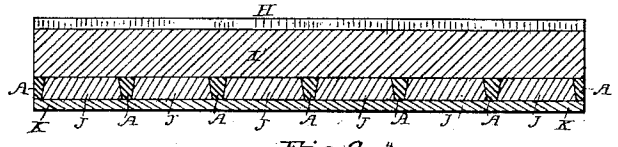


Fig. 2.

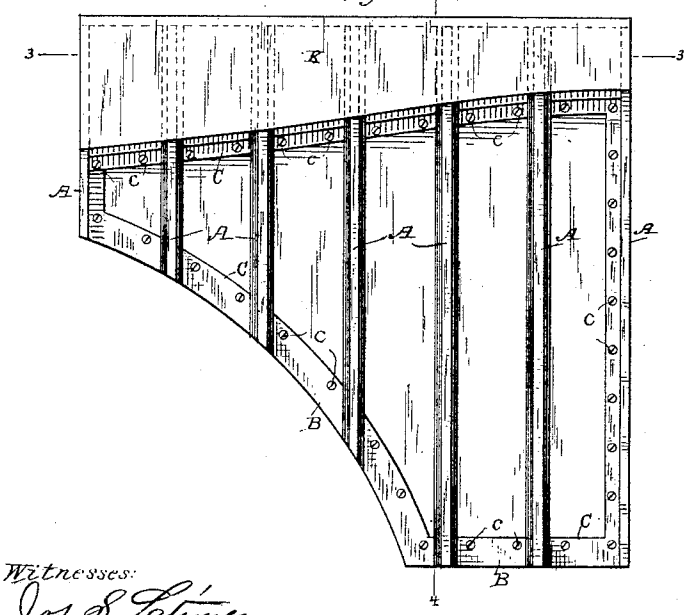
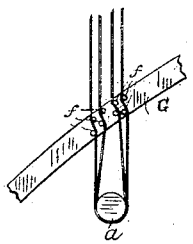


Fig. 5.



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UNITED STATES PATENT OFFICE.

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PIANO-FORTE.

SPECIFICATION forming part of Letters Patent No. 386,080, dated July 10, 1888.

Application filed June 24, 1887. Serial No. 242,422. (No model.)

To all whom it may concern:

Be it known that I, JAMES McDONALD, of the city, county, and State of New York, have invented certain new and useful Improvements in Piano-Fortes, of which the following is a specification.

This invention relates to the frames of upright pianos, in which the frame is composed of a single metal casting, the casting including longitudinal bars extending in the direction of the strings and proportioned in length to the length of the strings, a marginal plate supporting the hitch-pins, which are integral therewith, an inwardly-projecting continuous flange to which the sounding-board is secured, the hammer-bridge over which the strings pass, a down-bearing bar supported by the bridge through intermediate brackets, and an overhanging flange which retains in position the wrest-plank. In connection with this metallic frame the invention comprises the method or means for securing the sounding-board and the wrest-plank thereto.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of the metallic frame. Fig. 2 is a bottom view thereof, the wrest-plank and sounding-board being in position. Fig. 3 is a section on the line 3 3 in Fig. 2. Fig. 4 is a section on the line 4 4 in Figs. 1 and 2, and Fig. 5 is a fragmentary view showing the method of stringing at the hitch-pins and sounding-board bridge.

A A are the longitudinal bars, which are beveled, being wider on their outer than on their inner sides. B is the marginal plate, on which are formed the hitch-pins *a a*. C is the continuous flange which supports the sounding-board. D is the hammer-bridge. E is the down-bearing bar, secured to the bridge by intermediate brackets, F F, located at proper intervals. G is a top plate having an overhanging flange, H, all of which parts are cast or otherwise constructed in a single piece of metal.

I is the sounding-board, which rests upon the flange C, cement (indicated at *b*) being interposed between the board and flange. The sounding-board is secured in place by screws *c*, passing through apertures *d d*, cast in the flange C, which extend through the sounding-board and enter hard-wood strips *e e*, arranged along and glued to the outer margin of the sounding-board. The sounding-board is held by the flange C away from and out of contact with the bars, so that it is free to vibrate throughout its entire extent. The wooden strips *e e*, adjoining the marginal plate B where the hitch-pins are located, extend outward farther than the marginal plate, so that when the strings are in position they bear down upon said strips, and so hold the sounding-board permanently and tightly against the flange C, thereby preventing any jarring or looseness of the sounding-board.

Between the bridge D and the top plate, G, is a space above the bars A, which is wider at the treble than at the bass end of the frame, and which gradually diminishes from the treble to the bass. Across this space the brackets F, carrying the down-bearing bar E and the overhanging flange H partly extend. The depth of the bars A beneath this space (that is, between the bridge D and plate G) is preferably less than beneath the sounding-board, since this portion of the bars is relieved almost entirely from the strain of the strings, and more space is thus left for the wrest-plank I'. The wrest-plank I', which varies in width corresponding to the space between the bridge and top plate, is inserted at the treble end of the frame and is held between the bars A at the back and the brackets F and flange H at the front. The wrest-plank is held in place by being glued on its back to blocks J J, fitted in between the bars A and accurately planed on both sides, and to the back of these blocks is glued a back piece, K, extending across the frame immediately behind the bars.

The wrest-pin plank is prevented from tilting forward under the strain of the strings by the overhanging flange H and by the blocks J, which are held from moving forward by the beveled sides of the bars A, and it is held from any lateral movement by resting against the hammer-bridge D throughout its length.

In stringing the piano the strings are passed around the hitch-pins *a a*, thence over and in contact with the hard-wood strips *e*, thence between pins *f f* on the sound-board bridge *g*,

thence over the hammer-bridge D, thence under the down-bearing bar E to the wrest-pins *h h* on the wrest-plank. The bridge D and bar E are formed with suitable bearing-edges for the strings, their edges being in different planes, that of the bar E being nearer the outer surface of the wrest-plank than that of the bridge. Being thus held there is no rattling of the strings, and they are kept firm and solid. The diameters of the several hitch-pins *a a* are just equal to the required spaces between the strings, so that all of the strings are parallel with each other throughout their lengths. The strings are also arranged in the line of the bars A from the hitch-pins *a* to the pins *f* on the sounding-board bridge, and from the latter to the hammer-bridge. The strings are thus kept at the proper proportional pitch during all changes of temperature, since the length of the bars A is proportioned to the length of the springs, so that the expansion and contraction of the bars act proportionally on the strings to keep them all at the proper proportional pitch.

Since the bars are longer at the bass than at the treble end, it is important that the wrest-plank should be inserted at the treble end, where the plank is widest, in order to economize space as much as possible.

I claim as my invention—

1. A metallic frame for pianos, comprising in a single piece longitudinal parallel bars proportional in length to the length of the strings and in line with the strings, a marginal plate, hitch-pins on said marginal plate, a continuous flange for the support of the sounding-board, a hammer-bridge, a top plate above the hammer-bridge having an overhanging flange for the retention of the wrest-plank, said top plate being formed with said parallel bars, which extend above the hammer-bridge, and a down-bearing bar located above the hammer-bridge between it and said top plate, said down-bearing bar being connected to the bridge by intermediate brackets, substantially as set forth.

2. The metallic frame having a supporting-flange for the sounding-board, in combination with the sounding-board resting on said flange, wooden strips on the outer surface of the sounding-board, and attaching-screws extending through said flange and board and into said strips, as set forth.

3. The metallic frame having a marginal plate or rim, the hitch-pins thereon, and a supporting-flange for the sounding-board, in combination with the sounding-board resting on said flange, and strips on said sounding-board which project outward beyond said marginal plate, whereby the strings press upon said strips and hold said sounding-board in place, substantially as set forth.

4. The metallic frame having in one piece longitudinal bars, hammer-bridge, and top plate having an overhanging flange, said top plate being connected to said hammer-bridge by said bars, whereby a space is formed between said top plate and bridge and in front of said bars, which is wide at one end and gradually narrows to the other end, over which space said flange projects, in combination with the wrest-plank, which is inserted into said space and which rests in front of said bars against said hammer-bridge throughout its entire length, and which is held beneath said overhanging flange, substantially as set forth.

5. The metallic frame having hammer-bridge, top plate having overhanging flange, and connecting-bars, in combination with the wrest-plank between said hammer-bridge and top plate and resting on said bars beneath said overhanging flange, blocks inserted between said bars and glued to the wrest-plank, and a back piece behind the bars glued to said blocks, substantially as set forth.

6. A metallic frame for a piano, comprising longitudinal bars proportioned in length to the length of the strings, a hammer-bridge, and a top plate above the hammer-bridge connected therewith by the longitudinal bars, so that a space is left between said bridge and top plate for the reception of the wrest-plank, said space being widest at the treble end of the frame and gradually narrowing to the bass end, substantially as set forth.

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