

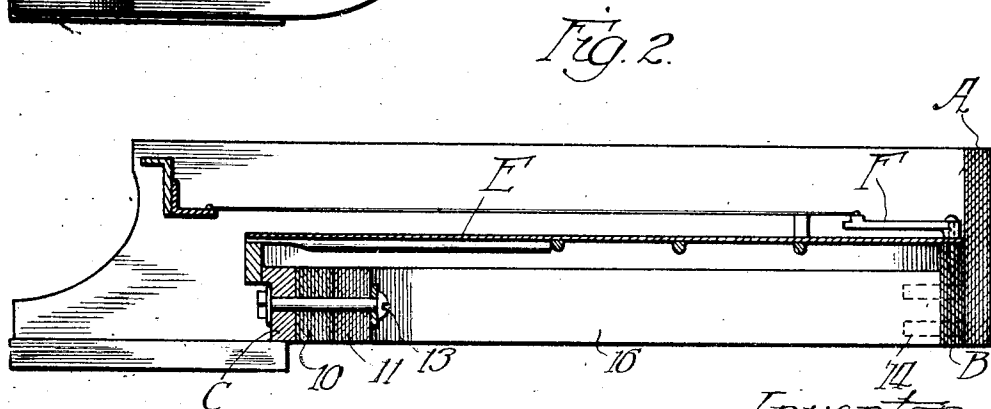
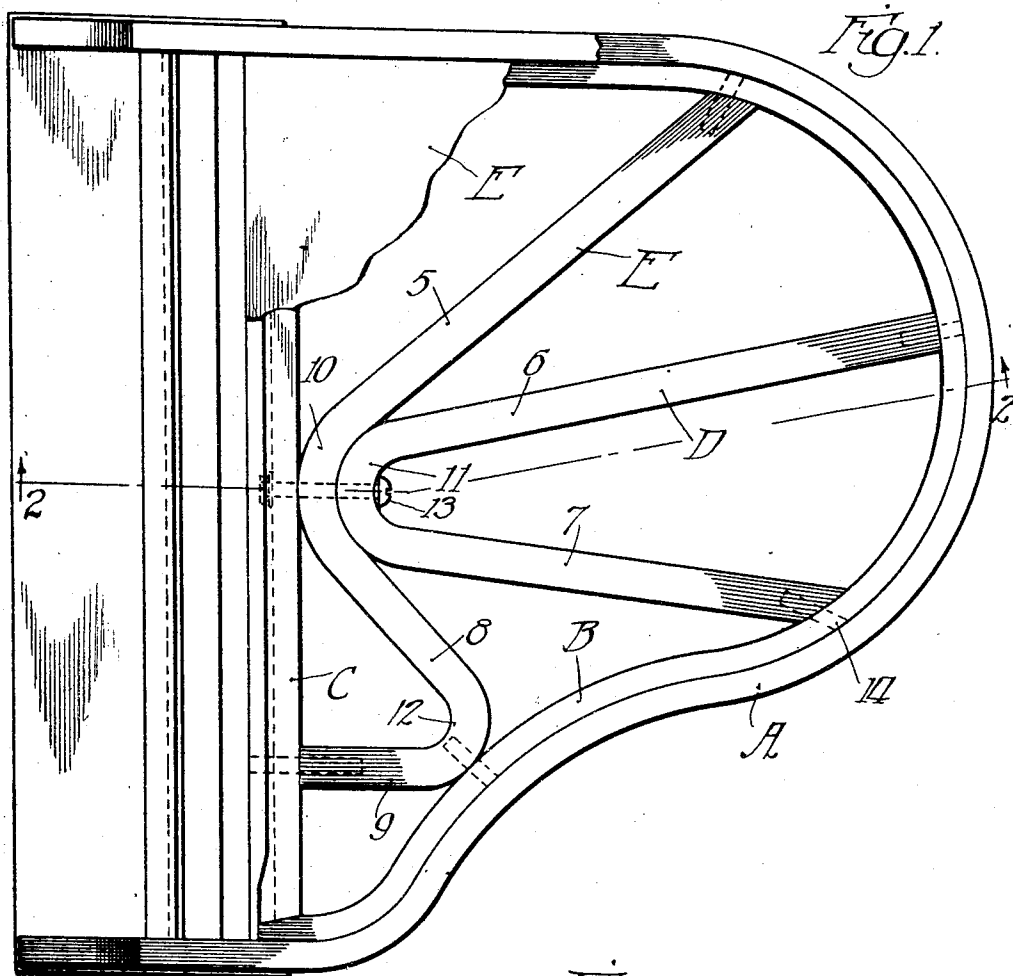
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W. G. BETZ

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GRAND PIANO

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Inventor
William G. Betz.
George E. Mueller Atty.

UNITED STATES PATENT OFFICE.

WILLIAM G. BETZ, OF HAMMOND, INDIANA, ASSIGNOR TO STRAUBE PIANO CO., OF
HAMMOND, INDIANA, A CORPORATION OF INDIANA

GRAND PIANO.

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My invention relates to grand pianos, and has to do more particularly with the provision of an improved frame construction; one of the objects being to provide a more rigidly braced construction, and having other features and advantages which will be apparent from the illustration and description thereof.

For a better understanding of my invention, reference is to be had to the accompanying drawing, in which—

Fig. 1 is a top plan view of a grand piano frame with the sound board broken away to show my improved bracing construction; and

Fig. 2 is a sectional view along the line 2—2 of Fig. 1.

Referring now more in detail to my invention as illustrated, I have shown the usual laminated outside rim A ordinarily employed for the outer casing of a grand piano and which may be formed up and laminated in the usual way.

Now as to the interior bracing and frame construction, I show the inner lining or inside rim B, which is formed up from laminations and shaped so as to snugly fit inside the outside rim A so that they may be secured or fastened together in intimate contact. A front cross rail C is provided, being suitably secured at its ends to the inside rim or frame B by gluing and dowelling in the usual way and attached to the inside rim and all shaped before being secured inside the outer rim A. Thus we have the inside frame with its front cross rail C all shaped up and assembled before the bracing is installed.

Now as to this bracing, I preferably build up the inside brace posts by forming up continuous bracing pieces by laminations and shaped so as to properly abut a plurality of points inside the frame and extend to the cross rail, so as to properly brace the inside frame. To this end I preferably form an inner U-shaped brace D and a second brace E, the braces being formed so that although there are but four outer connections, or abutting connections with the inner frame, there are five brace posts consisting of portions 5, 6, 7, 8 and 9. The second brace E is preferably formed in a U-shape consisting of the leg pieces 5—8 and the closed end 10 in which is set the closed end 11 of the inner brace D, said closed ends thus abutting and also abutting the cross rail C. The leg 8 of the outer brace E preferably extends on as a brace post 9, so as to brace the

inner frame across a portion where there is great strain from the strings.

In building up the braces I preferably provide a suitable form, and in connection with the brace D this is such that the laminations are bent over on the form and the brace built up layer by layer and suitably secured together by gluing in the usual manner.

Likewise brace E is built up from laminations on a suitable form which fits into the yoke or closed end 10 and also into the yoke 12 connecting the posts 8—9. These forms are of course so shaped that the finished brace is of proper size so that its ends may be trimmed off and the brace fitted inside the inner frame, as indicated.

After the two braces D—E are fitted into the frame, they are suitably fastened to the front cross rail C, preferably by bolting the abutting yoke portions by means of a bolt 13. The free or extending ends of the legs are then suitably fastened to the inside face of the inside frame and front cross piece, preferably by gluing and dowels 14.

I now have the inside frame with its braces built up as a unit, after which it is built into the outside frame A and the sound board G and string plate F fastened thereto.

What I claim as new and desire to secure by United States Letters Patent is:

1. A grand piano including an inner rim, a front cross rail therefor, and an integral continuous U-shaped brace formed of laminated wood having its closed end attached to the cross rail and the leg ends extending rearwardly into connection with the inner rim.

2. A grand piano including an inner rim, a front cross rail therefor, and a pair of U-shaped braces one set within the other and having abutting closed ends attached to the cross rail and the legs extending rearwardly into connection with the inner rim.

3. A grand piano including an inner rim, a front cross rail therefor, and an integral continuous U-shaped brace formed of laminated wood having its closed end attached to the cross rail and the leg ends extending rearwardly into connection with the inner rim, said brace abutting inner faces of the inner rim and cross rail.

4. A grand piano including an inner rim, a front cross rail therefor, and a pair of U-shaped braces one set within the other and having abutting closed ends attached to the

cross rail and the legs extending rearwardly into connection with the inner rim, said braces abutting inner faces of the inner rim and cross rail.

5 5. A grand piano including an inner rim, a front cross rail therefor, and a continuous brace extending from a point on the inner rim to the front rail, continuing rearwardly to another point on the inner rim and then forwardly to the front rail.

10 6. An inner frame brace for grand pianos made up of wooden laminations formed into a U-shape.

15 7. An inner frame brace for grand pianos made up of laminations formed into a U-shape for abutting connection inside the inner frame and having one leg continuing on and turned back on itself as a third post.

20 8. An inner frame brace for grand pianos made up of laminations formed into an S-shape and fitted into the inner frame with its ends and connecting curved portions abutting the frame on its inner face.

9. A grand piano including an inner rim; a

front cross rail therefor, and an inner brace, 25 said brace comprising an S-shaped integral laminated brace member and a U-shaped integral laminated brace member, the two brace members secured together intermediate their ends to the cross rail, the ends of the U-shaped brace secured to the inner rim, and the S-shaped having one end and an intermediate 30 portion thereof secured to the inner rim with the other end secured to said cross rail.

10. A grand piano comprising an inner 35 rim, a front cross rail therefor, a continuous U-shaped brace formed of laminated wood and having its closed end secured to the cross rail and its leg ends fastened to said inner rim, and a second and separate brace member 40 disposed between the legs of said U-shaped brace, secured to said inner rim intermediate the two leg ends and fastened to the inner closed end of said U-shaped brace.

In witness whereof, I hereunto subscribe 45 my name this 17th day of July, 1925.

WILLIAM G. BETZ.