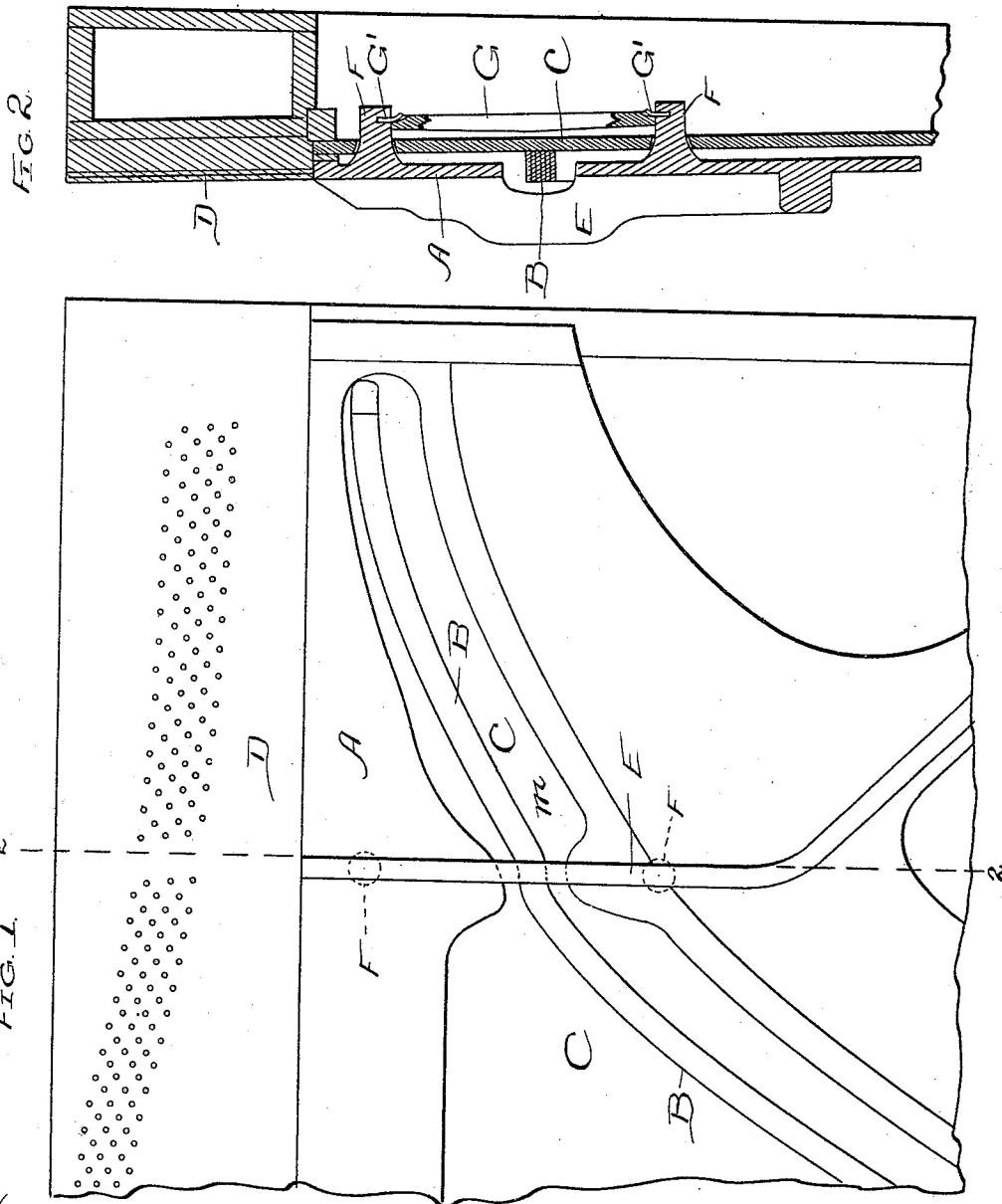


(No Model.)

D. L. RICE.
PIANO FRAME AND BRIDGE.

No. 546,709.

Patented Sept. 24, 1895.



WITNESSES:

Geo. C. Curtis
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INVENTOR:
DUANE L. RICE

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HIS ATTORNEYS.

UNITED STATES PATENT OFFICE.

DUANE L. RICE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE W. W. KIMBALL COMPANY, OF SAME PLACE.

PIANO FRAME AND BRIDGE.

SPECIFICATION forming part of Letters Patent No. 546,709, dated September 24, 1895.

Application filed June 26, 1895. Serial No. 554,085. (No model.)

To all whom it may concern:

Be it known that I, DUANE L. RICE, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Piano Frames and Bridges, of which the following is a specification.

In the ordinary piano a ridge, brace, or rib integral with the metal frame and spanning the opening therein in which the bridge connecting the strings with the sounding-board is located is employed to give the frame the stiffness necessary to enable it to withstand the severe strains put upon it by the strings. This brace is usually placed between the strings of adjoining notes located about two and a half octaves from the treble end of the piano, and in order that the brace may serve its purpose to the best advantage it has also been customary to cut away or notch into the bridge for a portion of its depth to give room for the brace, so that the latter may be made straight and thus be both strong and rigid. While this construction is so good as to insure its general adoption by piano manufacturers, it is not without a serious fault, because the cutting away or notching of the bridge impairs the tone, more especially in the case of the notes whose strings are adjacent to the notched portion of the bridge. To obviate this fault has been my object in the present invention, and I accomplish it by arching that portion of the brace which spans the bridge-opening in the frame, so as to give room for the bridge without any cutting away of the latter. This enables me to make the bridge without any break in its continuity either of surface or dimension between its ends; and in order that this arching of the brace may not weaken the structure unduly I reinforce the brace upon the back or under side of the frame by some suitable means—such, for instance, as posts or studs projecting backward from the frame and through the sounding-board and a compression member or brace inserted between the studs or posts. In this manner I wholly obviate the objection stated to the prevailing construction.

In the accompanying drawings I show at Figure 1 a partial face view of a piano-frame

embodying my invention, and at Fig. 2 a section on the line 2 2 of Fig. 1.

In said drawings, A represents the metal frame; B, the bridge; C, the sounding-board, 55 and D the pin-block or wrest-plank. The bridge is secured to the sounding-board in the customary way and lies in a curved diagonal opening *m* in the frame.

E is the usual stiffening rib or brace integral with the frame and spanning the opening *m* therein upon the string side and giving the frame the strength necessary to enable it to resist the tension of the strings. That portion of the rib which spans the opening *m* is arched, 65 as plainly shown at Fig. 2, so as to give room to the bridge and render unnecessary any cutting away of the bridge, which at this point possesses the same shape and size as at other points in its length. In other words, the 70 bridge is unbroken from end to end. Inasmuch as the arching of the rib E may render it less effective than in the old construction, I provide suitable means for bracing the frame upon the back or sounding-board side 75 thereof, so as to reinforce the rib and give the frame a rigidity and strength equal or superior to that possessed by it in the old construction. A desirable manner of thus reinforcing the rib is shown in the drawings, and 80 consists in providing the frame with two backwardly-extending posts or studs F, one at each side of the bridge-opening, and inserting a compression-resisting member or piece G between the studs. This reinforce effectually 85 prevents any tendency of the frame to bend toward the rear. The compression member is desirably held in place between the studs by keys G'. My invention effectually removes the cause of the imperfect tone heretofore 90 produced and caused by the cutting away of the bridge.

I claim—

1. In a piano, a metal frame having its stiffening rib arched to give room for the bridge, 95 in combination with the sounding board and a continuous bridge for the strings, substantially as specified.

2. In a piano, a metal frame having its stiffening rib arched to give room for the bridge, 100 and also having a rear brace, in combination with the sounding board and a continuous or

unbroken bridge for the strings, substantially as specified.

3. The combination in a piano, of frame A, arched rib E, posts F and compression member G, with the sounding board and the continuous or unbroken bridge secured to the board, substantially as specified.

4. In a piano, a metal frame provided with a stiffening rib upon its front or string side, and with a reinforce to said rib upon the back or sounding board side, substantially as specified.

5. In a piano, a metal frame provided with a stiffening rib upon its front or string side, and with a reinforce to said rib upon the back or sounding board side, in combination with a continuous or uncut bridge, passing under the rib and a sounding board, substantially as specified.

DUANE L. RICE.

Witnesses:

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