

No. 677,579.

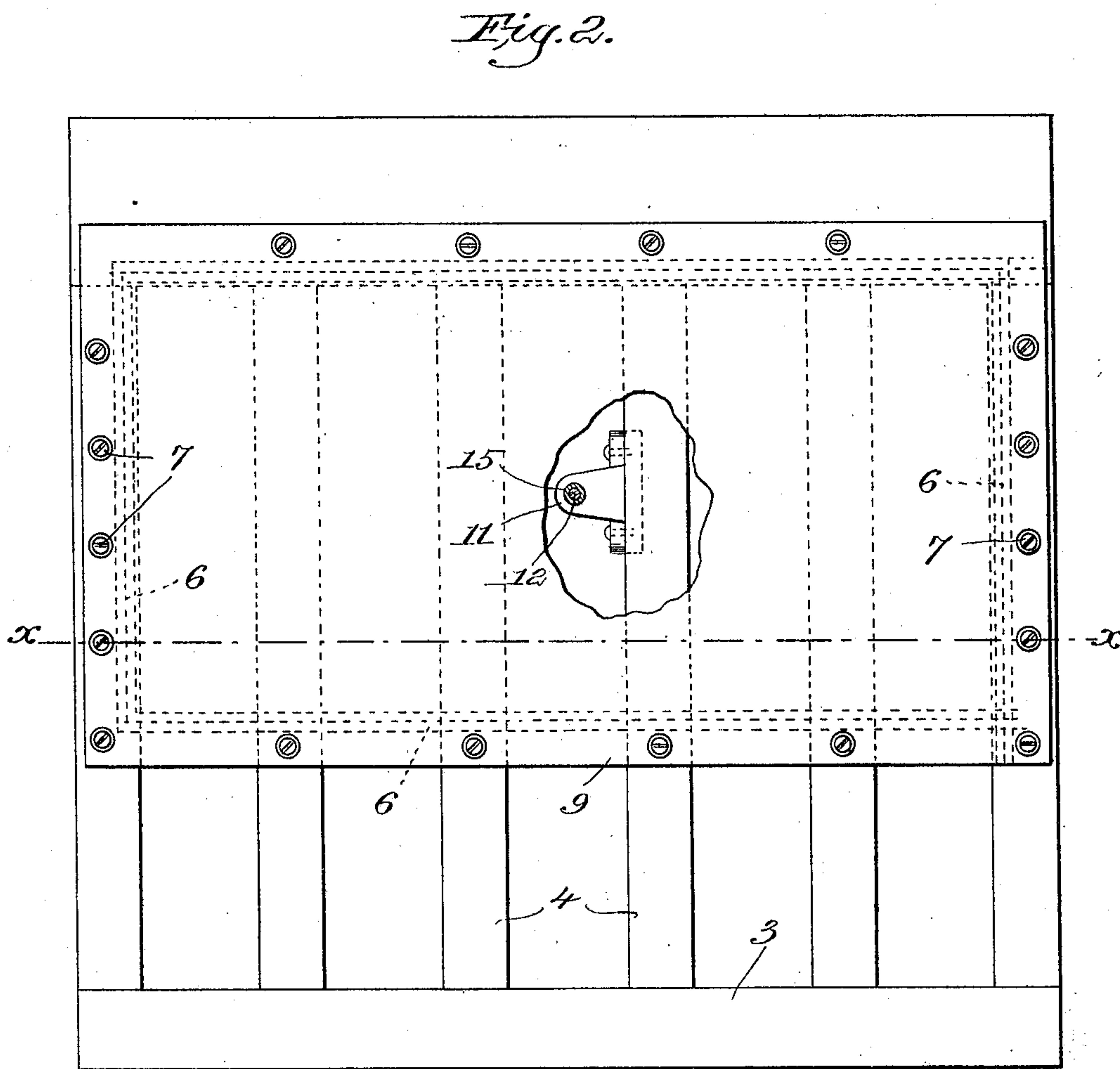
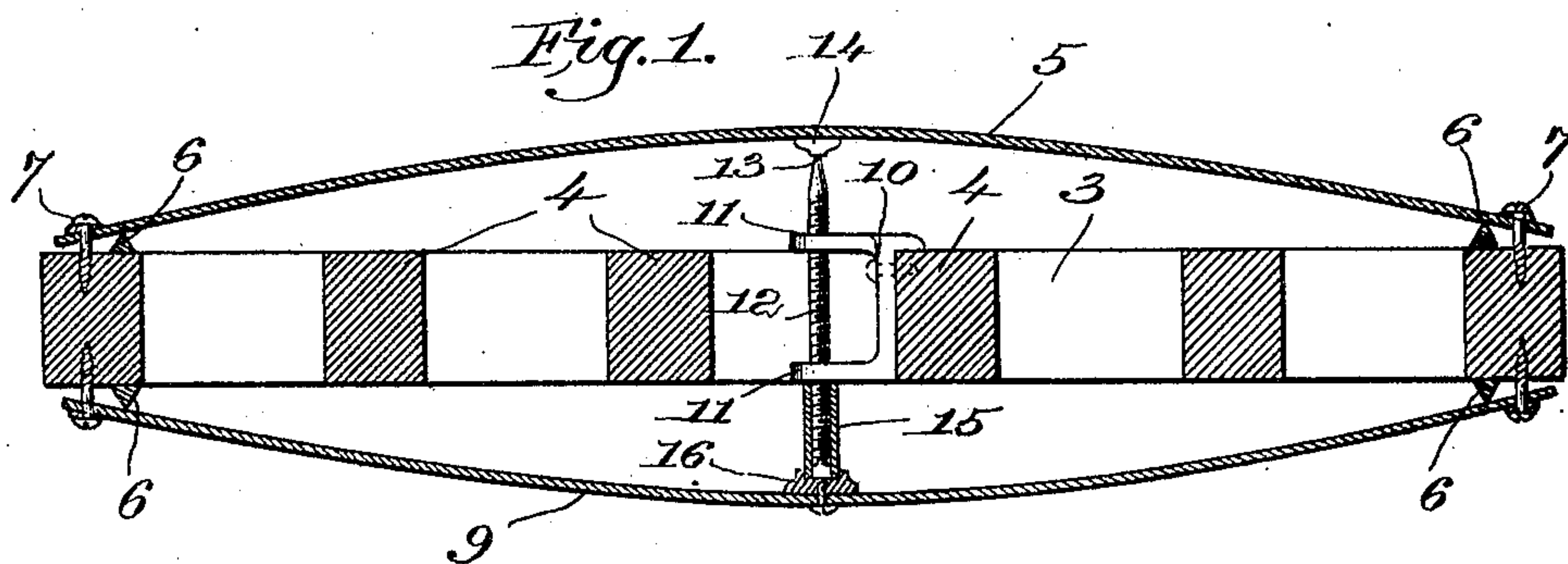
Patented July 2, 1901.

G. LUTZ.
SOUNDING BOARD FOR PIANOS.

(Application filed Jan. 9, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses.
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Fig. 3.

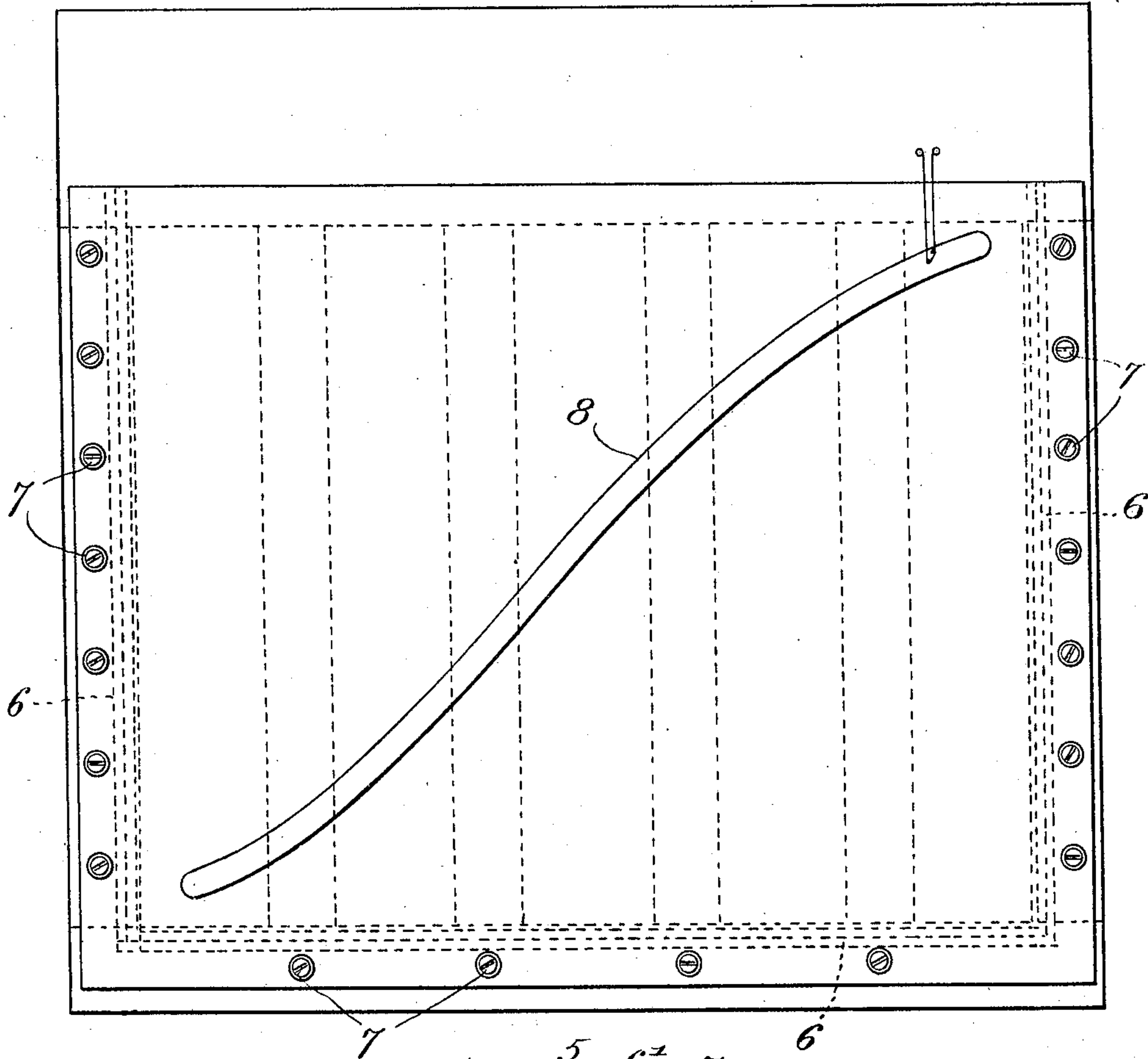
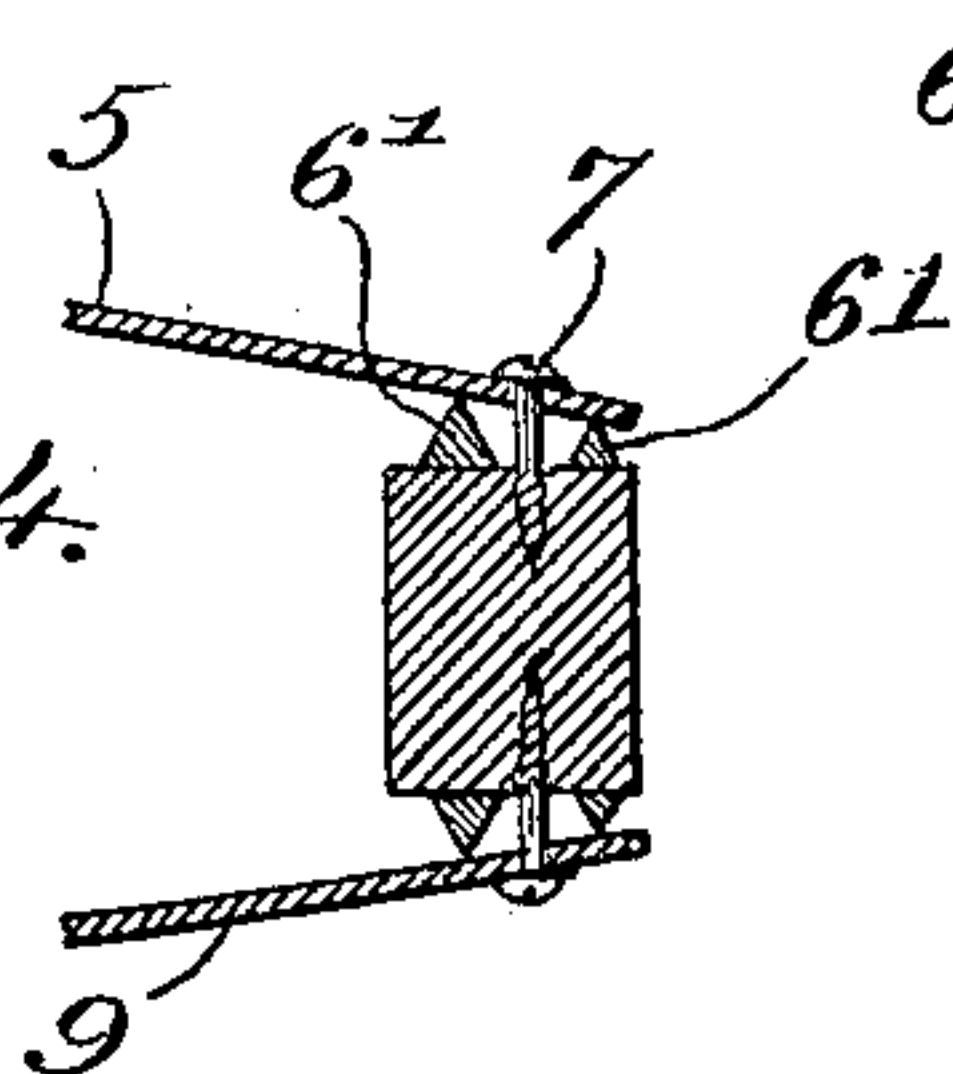


Fig. 4.



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UNITED STATES PATENT OFFICE.

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SOUNDING-BOARD FOR PIANOS.

SPECIFICATION forming part of Letters Patent No. 677,579, dated July 2, 1901.

Application filed January 9, 1901. Serial No. 42,607. (No model.)

To all whom it may concern:

Be it known that I, GEORGE LUTZ, a citizen of the United States, and a resident of Cambridge, county of Middlesex, and State of Massachusetts, have invented an Improvement in Sounding-Boards for Pianos, of which the following description, in connection with the accompanying drawings, is a specification, like figures on the drawings representing like parts.

This invention has for its object the production of a novel sounding-board for pianos, and its aim is to produce a sounding-board which will give to the notes of the piano a fuller, richer, and more sonorous sound than can be produced with the ordinary sounding-board.

My invention consists of two oppositely-curved sounding-boards, which instead of being glued to the back framing of the piano, as is the ordinary construction, rest near their edges upon bearing-ribs and are secured to the back framing by screws or other suitable means which pass through the said sounding-board adjacent to the ribs and into the back framing of the piano. I also employ between the sounding-boards a sound-post, which is rigidly or unyieldingly held centrally of its length and which bears at its ends against the sounding-boards. The sound-post therefore being prevented from vibrating longitudinally synchronously with the sounding-boards acts both as a support for the sounding-boards to preserve their bowed or convex shape and also to transmit the vibrations from the front sounding-board to the back sounding-board. With this construction the serpentine vibrations of the strings are communicated to the sounding-board to which the bridge is attached and focused at the point of bearing between the said sounding-board and the sound-post, and such vibrations are transmitted through the sound-post to the opposite sounding-board, where they are transformed into circular waves. The result is that the tone of the piano is richer and fuller and more like an organ-tone.

Figure 1 illustrates a section on the line $x x$, Fig. 2, and shows the back posts of the piano with the sounding-boards attached thereto. Fig. 2 is an elevation of the back

sounding-board or governor. Fig. 3 is an elevation of the front sounding-board, and Fig. 4 shows a modification.

The back framing of the piano is designated generally by 3, and it includes the usual posts 4. The front sounding-board is shown at 5, the bridge being omitted in Fig. 1 for the sake of clearness, and I may, if desired, make the said sounding-board without the usual bars at its back side, as shown in Fig. 1. In the ordinary sounding-board these stiffening-bars at the back thereof are arranged transverse to the direction of the boards of which the sounding-board is composed, and the vibrations thereof produce a conflicting tone, which operates to deaden the vibrations of the sounding-board proper. Instead of being glued at all of its edges to the back framing, as is the usual construction in pianos, the said sounding-board rests upon suitable bearing-ribs 6, which are preferably wedge-shaped, as shown, the sounding-board merely resting upon the edge of said ribs and not being secured thereto. In order to hold the said board in position, I employ some suitable form of adjustable securing means which secures the board to the back framing or posts of the piano at a point adjacent the bearing-point of the ribs 6, such adjustable securing means being shown as screws 7, which pass through the edge of the sounding-board and into the back posts, as illustrated. Preferably the said sounding-board will be glued to the framing at the top, as seen in Fig. 3, and the screws 7 will be used at the sides and bottom only.

In addition to the regular sounding-board 5, to which the usual bridge 8 is attached, I employ a back sounding-board or governor 9, the said governor being preferably of a smaller size than the front sounding-board, as seen in Fig. 2, whereby an opening to the sound-chest between the sounding-board and governor is produced to allow of the proper freedom in the distribution of the vibrations. The governor 9 is secured to the back framing of the piano in the same way as the sounding-board 5, except that preferably the ribs 6 will extend entirely around the same, as seen in Fig. 2, and the said governor is also preferably made without the back bars,

it being constructed simply by securing suitable boards together, edge to edge, in any approved way.

It is well known that when an elastic body is vibrated the greater the tension of the said elastic body the purer and richer will be the sound caused by such vibrations, and therefore in order to render the sounds caused by the vibrations of the sounding-boards richer, fuller, and more sonorous I have put the same under considerable tension by bending or curving the said sounding-boards outwardly or in opposite directions, the said sounding-boards being maintained in such curved condition by a tensioning device which is rigidly or fixedly sustained upon some solid support, such as one of the posts of the piano.

The tension device comprises a pin or post which is in the nature of a sounding-post and which bears at one end against the sounding-board and at the other against the governor, said pin or post being fixedly held at its central portion against longitudinal movement in a suitable bracket or other support rigidly carried by one of the posts of the back framing. Since the sound-post is rigidly sustained upon some firm support at its central portion, it cannot vibrate bodily in a longitudinal direction, and it therefore not only acts as a support for the central or convex portion of the sounding-boards to preserve their curved shape, but also transmits the vibrations from one sounding-board to the other. Owing to the fact that the sound-post has no longitudinal movement the sound-waves on the front sounding-board, which are serpentine vibrations, are focused on the bearing-point of the sound-post on said sounding-board, and said sound waves or vibrations are transmitted through the rigidly or fixedly sustained sounding-post and communicated to the back sounding-board or governor, where they assume a circular form instead of serpentine. The two sounding-boards therefore while they vibrate in unison, yet have vibrations of different character therein.

Referring to Fig. 1, the bracket which carries the sound-post 12 is designated by 10, it being rigidly secured to one of the posts of the piano by any usual means and having the two lugs or ears 11. The pin or sound-post 12 passes through said ears and is preferably screw-threaded therethrough, whereby it may be adjusted, the said post being pointed at one end, as at 13, and said pointed end resting in a socket-piece 14, which bears against the sounding-board 5. The opposite end of the pin projects beyond the posts 4 and has screw-threaded thereon a sleeve 15, which sets at one end in a socket-piece 16, suitably fastened to the governor 9. Preferably the socket-piece 14 and post 12 will be of steel, this being found best adapted to conduct sound-vibrations from the sounding-board 5 to the governor 9, while the sleeve 15

may be of brass or other suitable material. It will thus be seen that I have provided a tensioning device comprising a lengthwise-adjustable pin which is fixedly held centrally of its length, the ends of the pin bearing against the sounding-board and governor, respectively, and operating not only to maintain the same in a curved or bowed form, as shown, but also operating as a sound-post to transmit the vibrations from the front sounding-board 5 to the rear sounding-board or governor 9. As stated above, by rigidly sustaining the sound-post centrally of its length the serpentine vibrations which are communicated from the strings of the piano to the front sounding-board are focused at the bearing-point of the pin upon the said sounding-board and are transmitted through the rigidly-sustained sounding-post to the governor, where they are given off as circular vibrations.

In order to get a proper and even tension on all parts of the sounding-board, the screws 7 will be adjusted, and by screw-threading the post 12 into the lugs 11 the position thereof may be varied, so that the sounding-board and governor may be bowed more or less, according to circumstances.

With a piano sounding-board made as above described the serpentine vibrations of the sounding-board 5 are focused at the bearing-point of the sound-post and transmitted through the pin 12 and sleeve 15 to the governor 9, where they are changed into circular vibrations instead of serpentine.

I have found by experiment that with a construction such as described the tones of the piano are rendered more sonorous and more like organ-tones.

Fig. 4 shows a slightly-modified construction wherein the double bearing-rib is used instead of a single one, as in the other figures, and in this modification the inner rib 6' is slightly larger than the outer rib 61, so that when the sounding-board and governor are sprung into their bowed or curved position they will rest squarely on both ribs.

Various modifications may be made in the device without departing from the invention as expressed in the appended claims.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a piano, two oppositely-curved sounding-boards, a central support between the same, and means fixedly attached thereto and bearing against each sounding-board and serving to maintain them in their curved position.

2. In a piano, two sounding-boards spaced apart to form a sound-chest therebetween, and a fixedly-mounted sound-post bearing at its ends against the sounding-boards.

3. In a piano, two sounding-boards spaced apart so as to form a sound-chest therebetween, a sound-post bearing at its ends against the sounding-boards, and means to fixedly

support the said sound-post intermediate its ends.

4. In a piano, two oppositely-curved sounding-boards, and a fixedly-supported sound-post bearing at its ends against the convex side of each sounding-board.

5. In a piano, two oppositely-curved sounding-boards forming a sound-chest therebetween, a sound-post bearing against each sounding-board, and means to fixedly support said sounding-post intermediate its ends.

6. In a piano, two oppositely-curved sounding-boards, a metallic pin or post bearing at each end against the convex side of the sounding-board, and means for fixedly sustaining the post at its central portion, the said post serving to transmit the vibrations from one sounding-board to the other.

7. In a piano, two oppositely-curved sounding-boards, a lengthwise-adjustable metallic post bearing at each end against the convex side of the sounding-board, and means for fixedly sustaining the post at its central portion, the said post serving to transmit the vibrations from one sounding-board to the other.

8. In a piano, two oppositely-curved sounding-boards, a fixedly-mounted bracket, a metallic pin fast therein, and bearing at one end against one sounding-board, a sleeve screw-threaded on the other end of said pin and bearing against the other sounding-board, said pin serving to transmit the vibrations from one sounding-board to the other.

9. In a piano, two oppositely-curved sounding-boards and a resonator between the same, said resonator comprising a fixedly-mounted bracket, a metallic pointed pin screw-threaded in said bracket, a socket-piece resting against one sounding-board, and in which the point of the pin rests, and a sleeve screw-threaded

on the other end of said pin and bearing against the other sounding-board.

10. In a piano, two oppositely-curved sounding-boards, V-shaped ribs fast to the framing of the piano and against which the sounding-boards rest near their edges, and adjustable means for securing the edges of the sounding-boards to the framing of the piano adjacent to said ribs, whereby an even tension may be applied to each sounding-board.

11. In a piano, two oppositely-curved sounding-boards, on opposite sides of the back framing, and means connected to one of the posts of the framing and bearing against each of said sounding-boards and sustaining them in their curved condition, combined with bearing-ribs fast on said framing near the edges of said boards, and adjusting means for securing the edges of said sounding-boards to the said framing, said adjusting means being adjacent the ribs.

12. In a piano, two oppositely-curved sounding-boards, a metallic pin or post bearing at each end against the convex side of the sounding-boards, and means for fixedly holding said pin centrally of its length, said pin serving to transmit the vibrations from one sounding-board to the other, combined with bearing-ribs fast on the said framing near the edges of said sounding-boards, and screws for securing the edges of the sounding-boards to the framing, said screws being adjacent the ribs whereby an even tension on the sounding-boards may be produced.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE LUTZ.

Witnesses:

GEO. W. GREGORY,
LOUIS C. SMITH.