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PATENTED FEB. 13, 1906.

F. MEYER.  
PIANO BRIDGE.

APPLICATION FILED OCT. 5, 1904.

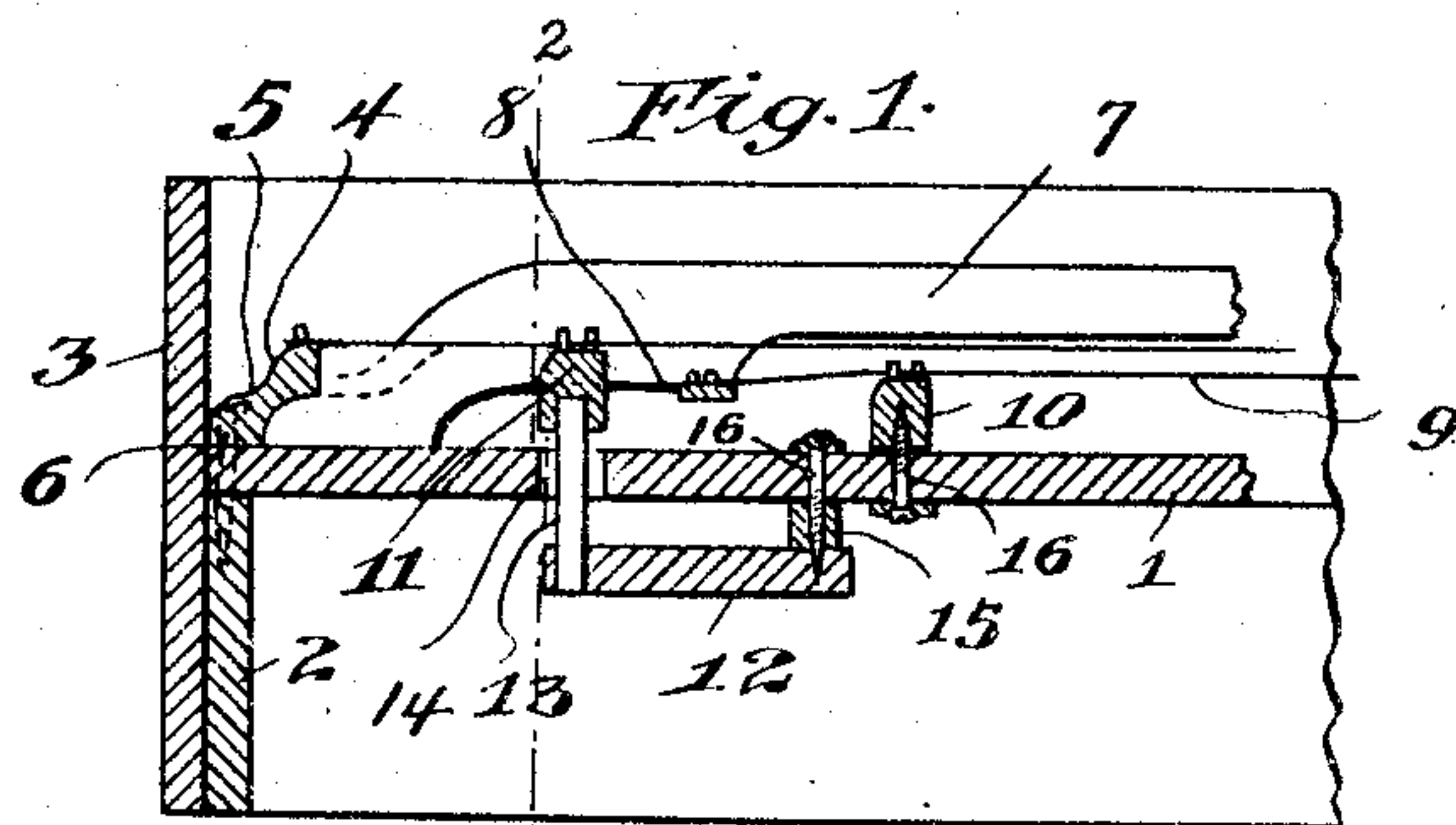


Fig. 2.

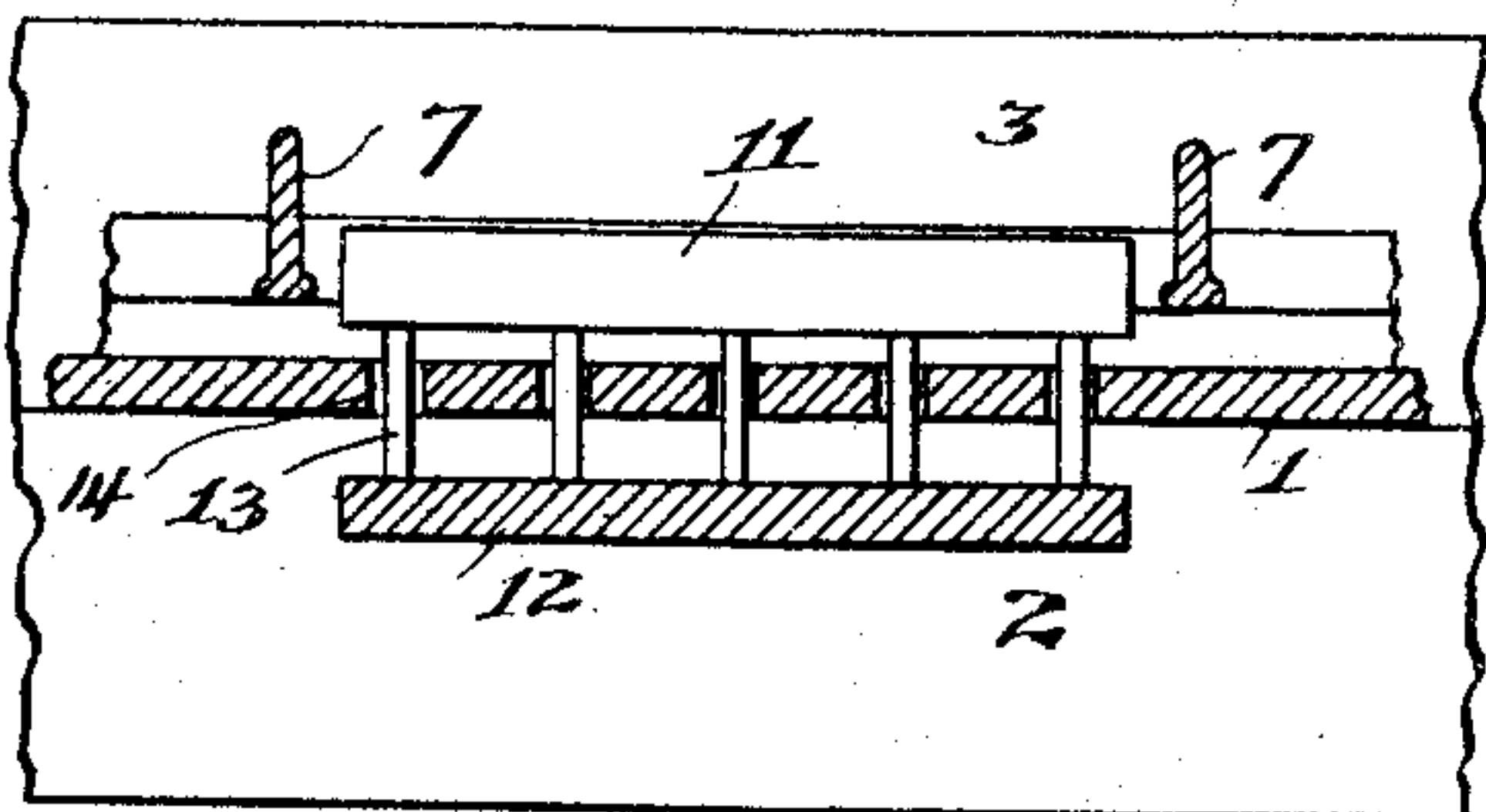


Fig. 3.

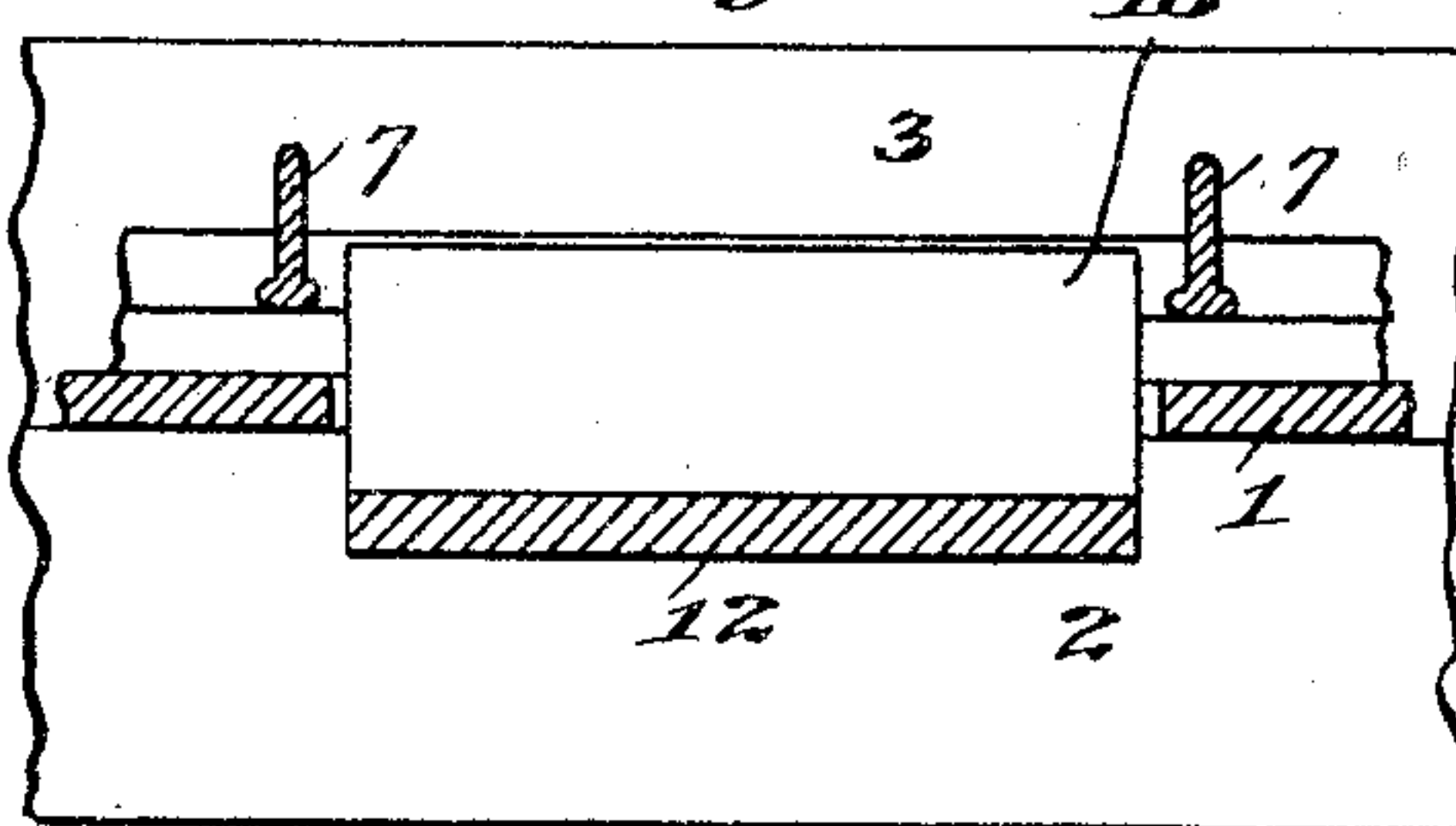


Fig. 4.

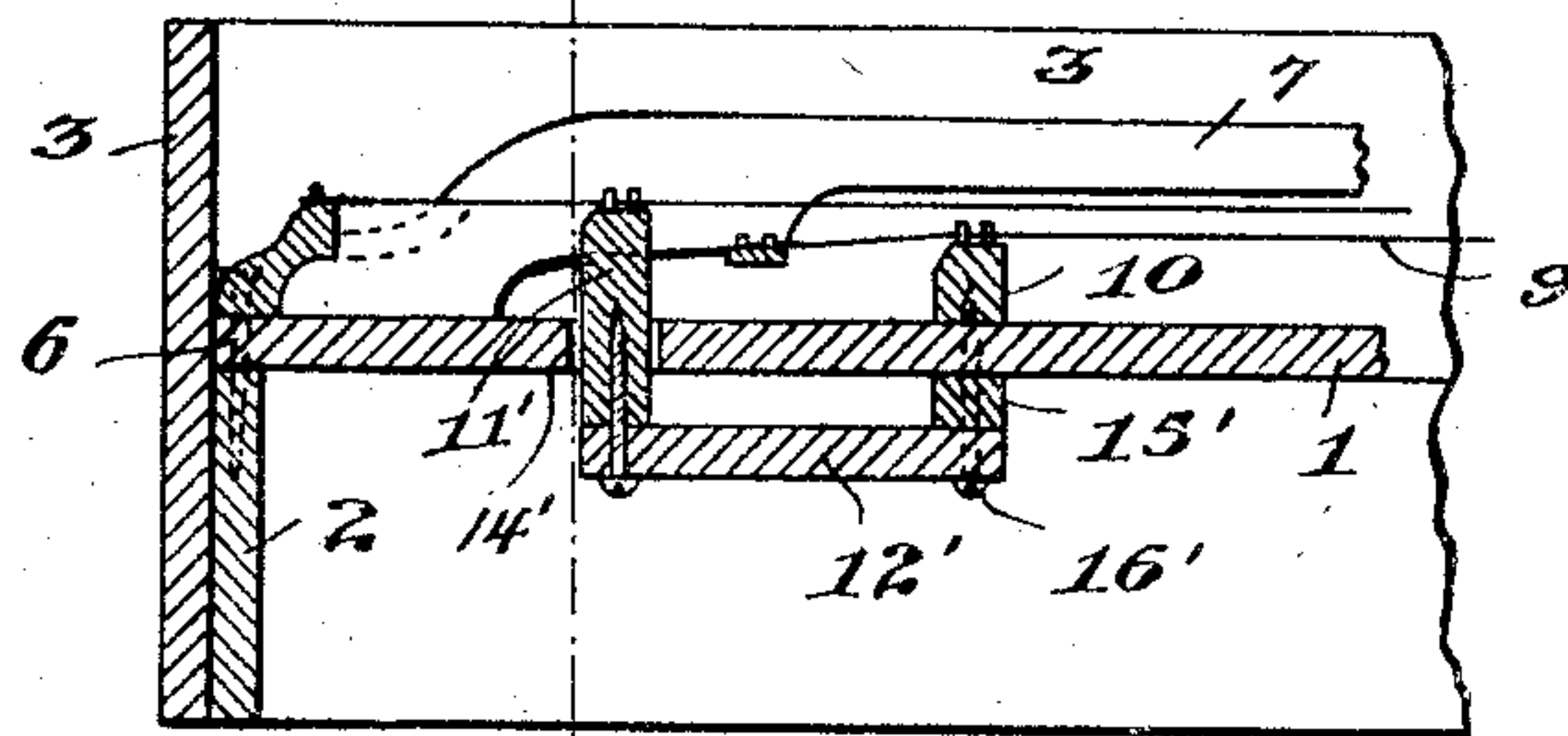
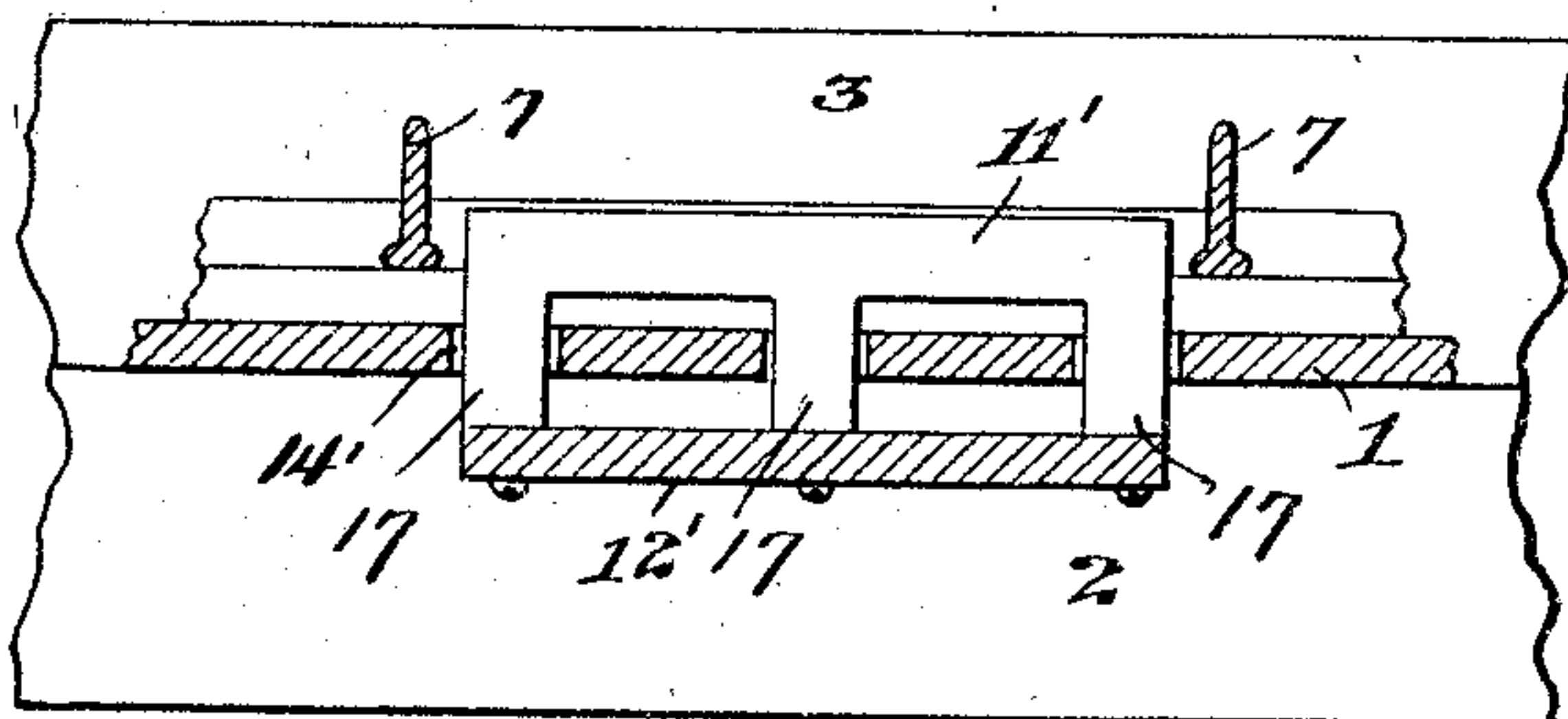


Fig. 5.



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# UNITED STATES PATENT OFFICE.

FRANZ MEYER, OF OAK PARK, ILLINOIS.

## PIANO-BRIDGE.

No. 812,510.

Specification of Letters Patent.

Patented Feb. 13, 1906.

Application filed October 5, 1904. Serial No. 227,330.

*To all whom it may concern:*

Be it known that I, FRANZ MEYER, a citizen of the United States, residing at Oak Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Piano-Bridges, of which the following is a specification.

This invention relates to improvements in pianos, and refers more specifically to an improved construction in the sounding-board bridges, which support the strings and transmit the vibrations to the sounding-board, and in the string-supports used in conjunction therewith.

The salient object of the present invention is to improve the quality and volume of the tone by the adoption of a peculiar construction and arrangement of the sounding-board and bridges.

Secondary objects of the invention are to provide a construction which enables practically the entire area of the sounding-board to be utilized for vibration and caused to vibrate freely at all times, whether the vibration be imparted thereto through bass or treble strings; to provide a construction in which the location of the bridges through which the vibrations of the strings are imparted to the sounding-board is the same, or practically the same, for both bass and treble strings, whereby perfect uniformity of tone throughout the full register of the piano is made feasible; to provide a construction which is alike available for pianos of the various types now commonly in use; to provide a construction which by utilizing the full area of the sounding-board enables the latter to be of somewhat smaller dimensions than has heretofore been possible; to produce a given volume of sound, and in general to provide a simple and improved construction and arrangement of the character referred to.

To the above ends my invention consists in the matters hereinafter described, and more particularly pointed out in the appended claims.

The invention will be readily understood from the following description, reference being had to the accompanying drawings, in which—

Figure 1 is a transverse sectional view taken through that side of the sounding-board which supports bridges and showing also in section parts of the surrounding and supporting frame members. Fig. 2 is a sectional view taken approximately at right angles to

that shown in Fig. 1 on the line 2 2 and looking in the direction of the arrows. Fig. 3 is a view similar to Fig. 2, showing a slightly-modified construction of the bass bridge. Fig. 4 is a view similar to Fig. 1, but showing a slightly-modified construction; and Fig. 5 is a view similar to Fig. 2, taken on line 5 5 of Fig. 4 and looking in the direction of the arrows.

In stringing pianos it is of course necessary in order to secure a proper distribution of the bass and treble strings over the sounding-board and a proper disposition of both thereon that the bass bridge, which supports the bass strings, be located at some distance outside of or toward the margin of the sounding-board from the treble-string bridge. It has heretofore been the practice to interpose the bass bridge directly between the strings and the sounding-board in its proper position relatively to the length of the bass strings and likewise to interpose the treble bridge between the treble strings and sounding-board in its proper position with relation to the length of the treble strings. In this arrangement of course the vibrations of the two sets of strings are imparted to the sounding-board at two quite widely-separated points, with the result that the bass bridge acts to some extent as a muffle to interfere with the vibrations of the board when the treble strings are sounded, and similarly the treble bridge acts as a muffle to interfere with the vibrations of the sounding-board when the bass strings are sounded. These defects have been recognized heretofore, and it has been proposed to avoid the same by providing independent sounding-boards, one for the set of treble strings and another for the set of bass strings. It has also been customary to make the sounding-boards of relatively large area for the purpose of minimizing the objectionable muffling and interfering vibration effects incident to the usual arrangement of bridges. A marked effect, and perhaps the one which is most serious, incident to the old construction is that it is impossible to secure a perfectly uniform tone-register, there being inevitably a "break" in the tone step between the treble and bass registers. Various expedients have been adopted to minimize and conceal this break, particularly the use of strings specially constructed to compensate for the difference in tone effect due to the different positions of bridge contact with the sounding-board. In the present in-



vention I overcome these defects by supporting both bridges from a common line on the sounding-board, so that the vibrations imparted to the sounding-board, whether derived from bass or treble strings, are transmitted to the board at the same place, and the entire area of the sounding-board inside of its marginal supports is undamped, unmuffled, and vibrates freely.

In the drawings I have shown so much of a piano mechanism as is necessary to understand a simple embodiment of the invention.

Referring to Figs. 1 and 2, 1 designates a sounding-board, 2 the rim-frame, upon which the sounding-board is mounted, and 3 the marginal or casing frame, within which the sounding-board is seated. 4 designates as a whole a string-supporting frame, which in the present instance takes the form of a skeleton casting having a marginal portion 5, conforming to the marginal configuration of the sounding-board and suitably secured to the latter, as indicated at 6. Said frame member 4 is provided with bar members 7, which extend parallel or substantially parallel with the strings of the instrument and are spaced apart some distance, as indicated in Fig. 2, and at a point some distance inside of the rim or toward the center of the board a cross-bar 8 extends between the bars 7 and forms a support for the ends of the treble strings 9, as indicated clearly in Fig. 1. The bass strings extend above and beyond the treble strings and are secured to the marginal member 5 of the frame, as shown clearly in the drawings. 10 designates the treble bridge, which is mounted upon the sounding-board in the usual manner, and 11 designates the bass bridge, which is, as usual, located between the treble bridge and the margin of the sounding-board. The bass bridge, however, instead of resting directly upon the sounding-board at its foot is carried by a structure which is connected with the sounding-board at a point substantially coincident with the foot of the treble bridge 10. In the construction shown in Figs. 1 and 2 this bass-bridge-supporting structure comprises a bracket 12, secured to the under side of the sounding-board, and a series of pins or supports 13, connected with the free end of the bracket, extending upwardly through suitable apertures 14 in the sounding-board and connected with the foot portion of the bridge. The foot portion 15 of the bracket is rigidly connected with the sounding-board at a point as nearly coincident with the foot of the treble bridge as may be and still permit the insertion of the securing-screws 16 through the sounding-board and into the foot of the bracket and bridge, respectively. The bracket 12 and supporting-pins 13, carried thereby, are free from contact with the sounding-board except as the foot of the bracket is united to the board, the apertures

14 being larger than the pins 13, as indicated clearly in the figures of the drawings. It follows that the vibrations from the strings are imparted to the sounding-board at substantially the same point or transverse line both through the bass and treble bridges, and since the ends of the two sets of strings are supported by the frame member 4 free from the sounding-board the latter is unmuffled and free to vibrate throughout its entire area.

In Fig. 3 the construction is substantially identical with that shown in Fig. 2, except that in lieu of the series of pins 13 a single bridge member 13' is extended down to and connected with the supporting-bracket.

In Figs. 4 and 5 I have shown a modification which is theoretically more perfect than that shown in Figs. 1, 2, and 3. In this modification the foot 15' of the bracket 12' is arranged in exact register with the opposed foot of the treble bridge 10, and the securing-screws 16' are inserted through the bracket, the interposed portion of the sounding-board, and into the bass portion of the treble-bridge. In this instance also the bass bridge 11' is provided with extensions 17, forming feet which extend through suitable openings 14' in the sounding-board and are directly connected with the main body of the bracket. By thus connecting the bass bridge to the under side of the sounding-board I transmit the stress of the strings in a better manner than would be the case were both bridges supported from the same point upon one side of the sounding-board only. The principle of transmitting the vibrations from both treble and bass strings to the same part of the sounding-board would, however, remain the same if the construction last suggested be adopted.

It will be obvious from the foregoing description that the details of construction may be modified without in any sense departing from the spirit of the invention, and I do not, therefore, limit myself to details of construction and arrangement except to the extent that they are made the subject of specific claims.

I claim as my invention—

1. In a piano, the combination with the sounding-board of two string-supporting bridges spaced apart as to their string-engaged edges but connected to the sounding-board at the same common location, or substantially so.

2. In a piano, the combination with the sounding-board and sets of bass and treble strings, of a bass-string bridge and a treble-string bridge, both of said bridges having vibration-imparting engagement with the sounding-board at substantially the same place.

3. In a piano, the combination with the sounding-board and supporting-frame therefor, of a treble bridge applied to one side of



said sounding-board at a point removed from the margin of the board, a bass bridge arranged between the treble bridge and margin of the board, and supporting devices connected with said bass bridge extending through openings in the sounding-board and connected with the opposite side of the latter at a location substantially coincident with the location of engagement therewith of the treble bridge.

4. In a piano, the combination with the sounding-board and supporting-frame therefor, of a bridge applied to one side of said sounding-board and supporting one set of strings, a second bridge arranged to support a second set of strings at a location removed from said first bridge, and supporting devices connected with said second bridge extending through the sounding-board and arranged in vibration-transmitting engagement with the opposite side of the sounding-board at a location substantially coincident with the engagement therewith of the first-named bridge.

5. In a piano, the combination of a sounding-board, a marginal frame supporting said board, a string-supporting frame connected with said marginal frame, a set of treble strings connected with a part of the string-supporting frame which overhangs the sounding-board, a set of bass strings connected with the marginal portion of said string-supporting frame, a treble bridge interposed between the treble strings and sounding-board and having direct bearing with the latter, a bass bridge supporting the bass strings, and a bracket supporting said bass bridge and having its foot portion connected

with the sounding-board substantially in register with the line of engagement of the treble bridge.

6. In a piano, the combination of a sounding-board, a marginal frame supporting said board, a string-supporting frame connected with said marginal frame, a set of treble strings connected with a part of the string-supporting frame which overhangs the sounding-board, a set of bass strings connected with the marginal portion of said string-supporting frame, a treble bridge interposed between the treble strings and sounding-board and having direct bearing with the latter, a bass bridge supporting the bass strings, and a bracket supporting said bass bridge and having its foot portion connected with the sounding-board substantially in register with the line of engagement of the treble bridge but at the opposite side of the board, substantially as described.

7. In a piano, the combination with a sounding-board and supporting-frame therefor, of a treble bridge applied to one side of said sounding-board at a location removed from the margin of the board, a bass bridge arranged between the treble bridge and proximate margin of the board and a supporting-frame connected with said bass bridge extending freely through the sounding-board and connected to the under side of the latter at a location removed from and inside of the bass bridge.

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