I. F. GILMORE.

MUSICAL INSTRUMENT.

APPLICATION FILED JAN. 10, 1907.

903,968. Patented Nov. 17, 1908.

2 SHEETS—SHEET 1.

Fig. 1.

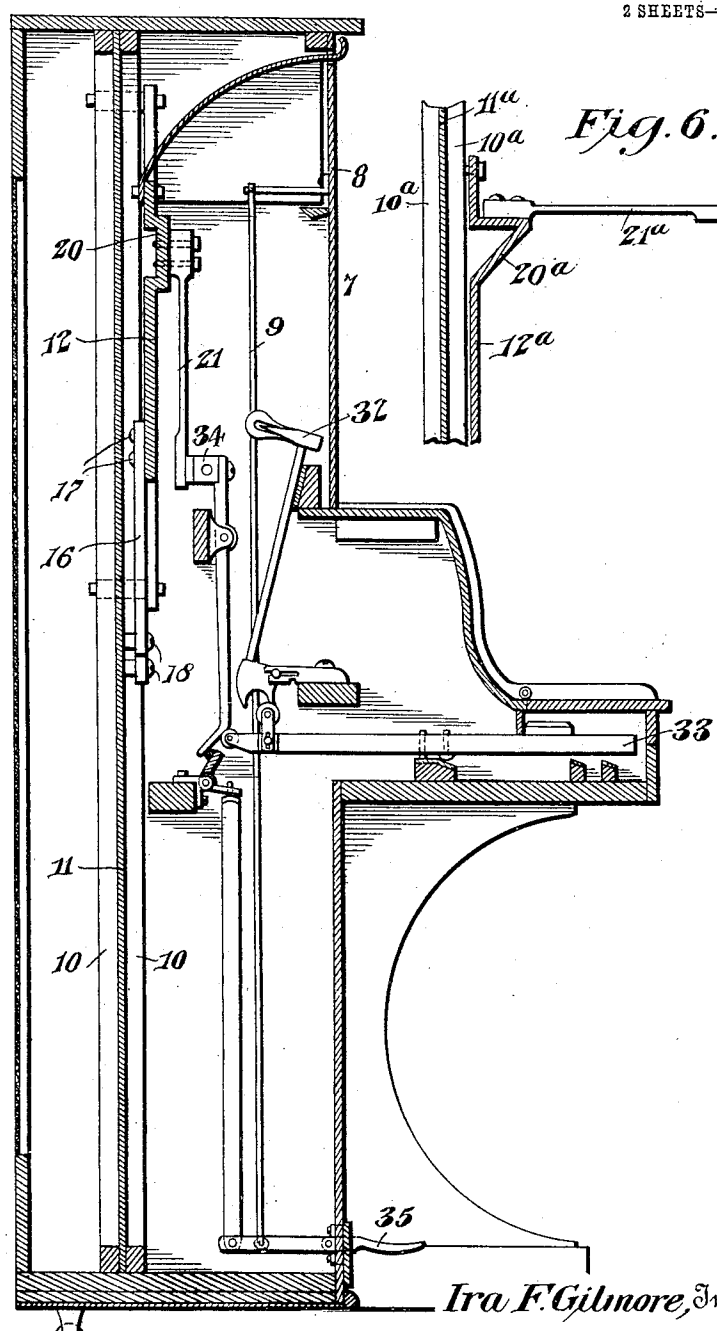


Fig. 6.

Witnesses

Jas. E. McCathran

B. G. Foster

Ira F. Gilmore, Inventor

By E. G. Siggers

Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C.

I. F. GILMORE.

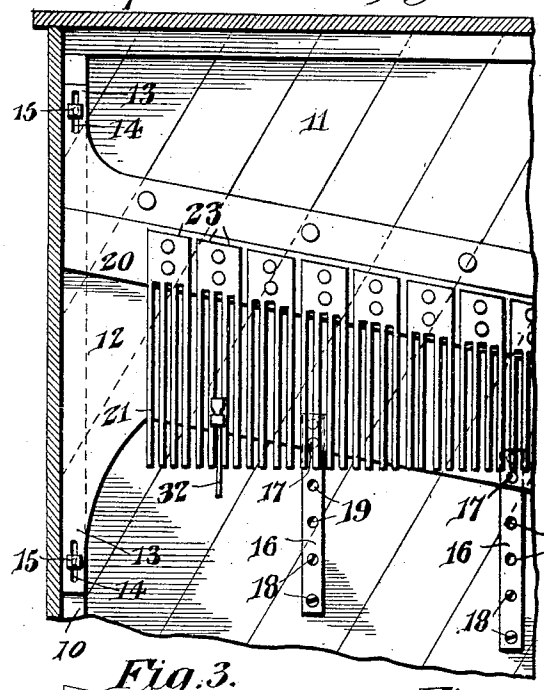
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2 SHEETS—SHEET 2.

Fig. 2.



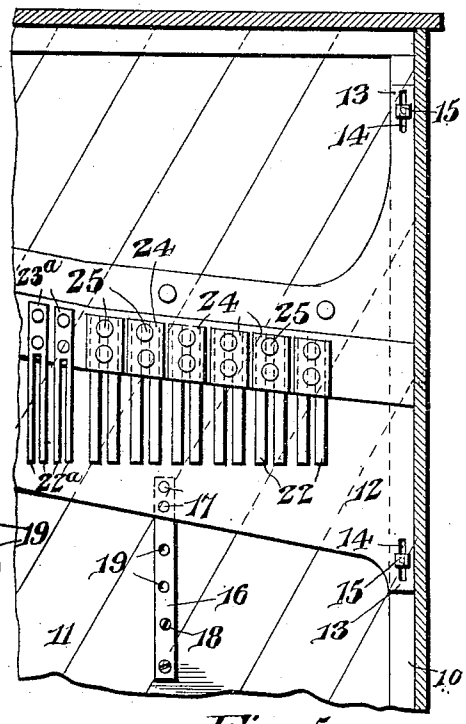


Fig. 3.

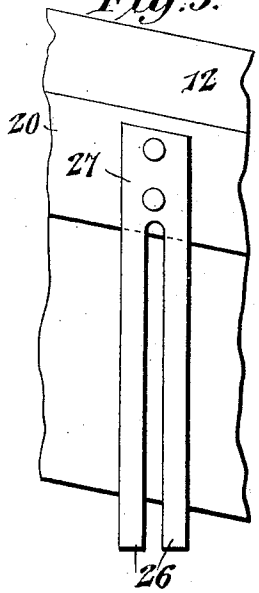


Fig. 4.

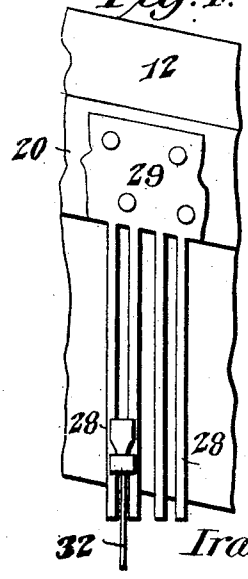
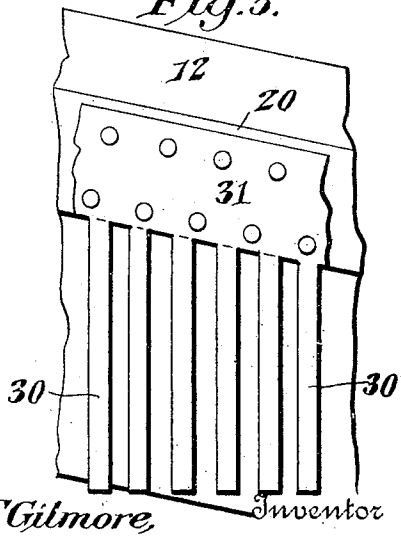


Fig. 5.



Witnesses

Jas. K. McCathran

B. L. Tate

Inventor

Ira F. Gilmore,

By E. G. Siggers

Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

IRA F. GILMORE, OF BLOOMINGTON, ILLINOIS.

MUSICAL INSTRUMENT.

No. 903,968. Specification of Letters Patent. Patented Nov. 17, 1908.

Application filed January 10, 1907. Serial No. 351,653.

To all whom it may concern:

Be it known that I, IRA F. GILMORE, a citizen of the United States, residing at Bloomington, in the county of McLean and State of Illinois, have invented a new and useful Musical Instrument, of which the following is a specification.

This invention relates to musical instruments of that type known as wireless pianos, wherein reeds, sound emitting forks or tongues are employed instead of strings or wires.

The principal object is to provide a simple and thoroughly practical structure of the above character, which can be easily constructed, is very light in weight, and which may be made to produce sweeter and more varied tones, as well as greater volume and better quality.

The preferred form of construction is illustrated in the accompanying drawings, wherein:—

Figure 1 is a vertical sectional view through a piano constructed in accordance with the present invention. Fig. 2 is a vertical longitudinal sectional view therethrough. Figs. 3, 4 and 5 are detail views, illustrating different ways in which the tongues may be constructed and mounted. Fig. 6 is a detail sectional view through a modified form of bridge.

In the embodiment illustrated, the case 7 may be made of any desired form and construction, but preferably is of the type set forth in a former patent granted to me on December 29, 1903, No. 747,966, being provided with a front wall 8 that can be opened by operating a suitable pedal, said pedal having a link connection 9 with the wall. Within the case is located a frame comprising sections 10, between which the margins of a sounding-board 11 are clamped, said sounding-board extending from the top to the bottom of the case and from end to end thereof. A metal bridge 12 is located alongside the upper portion of the front face of the sounding-board 11 in spaced relation thereto, and is supported independently of said sounding-board by having its ends secured to the outer section 10 of the frame. This bridge, as shown in Fig. 2, is disposed at an inclination within the case, and has terminal oppositely-disposed ears 13 that rest against the outer face of the frame 10, said ears being provided with vertical slots 14. Holding bolts 15 pass through the slots, and through the frame, said bolts serving to maintain the bridge at any desired height within the case. Sound-conducting arms 16 have their upper ends secured against the rear face of the bridge by suitable fasteners 17, and the lower ends of these arms are connected to intermediate portions of the sounding-board by posts 18. The arms, as shown, are provided with a series of openings 19 that permit the vertical adjustment of the bridge and arms.

Connections between the bridge and sounding-board may be made at any points desired as may be found advantageous, the adjustable engagements thereof permitting the desired adjustment of the bridge and its associated parts. The said bridge 12 is provided with a longitudinally disposed outstanding rib 20 of considerably less width than the bridge, and preferably arranged nearer its upper edge than its lower edge. This rib is preferably constructed by offsetting the material of the bridge, as illustrated in Fig. 1, though it may be made of a separate piece, as will be evident. Secured at their upper ends to the rib are the music tongues 21 and 22. These tongues may be constructed and fastened in a variety of ways. For instance, in Fig. 2, the tongues for the deeper notes comprise the tines of combs or forks 23 fastened to the rib. The tongues for the intermediate notes comprise legs 22^a of forks 23^a, and the tongues 22 for the higher notes are separate pieces, the upper ends of which rest against the rib and are secured thereto by clamping plates 24 arranged over said upper ends, and held in place by bolts or screws 25. In the particular embodiment disclosed in Fig. 2, there are four tines or legs 21 to each fork 23, and each adjacent pair are tuned to the same pitch and are adapted to be struck by a single hammer. The intermediate forks 23^a, each has its legs adapted to be struck by a single hammer, while the short tongues 22 for the higher notes are each struck by a single hammer. It will thus be evident that a variety of tones may be produced.

Fig. 3 discloses a slight modification, wherein the tongues 26 constitute the legs of a fork 27, said legs being made slightly broader, each one being tuned to a different note and arranged to be struck by a separate hammer. In Fig. 4, another embodiment of the invention is disclosed. In this form, the tongues 28 are formed from a single strip

29 secured to the rib and the tongues are made narrower, so that two adjacent forks can be struck by a single hammer, and these tongues are tuned to the same tone. Substantially the same embodiment is illustrated in Fig. 5, wherein the tongues 30 are formed from a single strip 31 that is secured to the rib, but in this instance, the tongues are made broader, and each is operated on by a single hammer. Thus each tongue will be tuned to produce a different note.

The various tongues are vibrated by any suitable means, as for instance, hammers 32 pivoted within the case, and operated from keys 33. Dampers 34, also actuated by the keys and by a pedal 35, coöperates with the hammers and with the tongues. The particular mechanism set forth forms the subject-matter of a co-pending application, and consequently no claims are herein made thereto. Moreover, other means for vibrating the tongues may be employed if desired.

Experience has demonstrated that with this structure, a piano can be made very much lighter in weight, and the structure prevents the jar of sound, which is bound to occur in the more complicated mechanisms. The adjustment of the bridge is important, inasmuch as thereby the tongues can be properly positioned to receive the contact of the hammers at the proper points, making it possible to obtain a pure harp tone.

The construction of the bridge and the simple manner in which the tongues are secured thereto not only reduces complications but adds to the quality of the music produced, and moreover it has been found highly advantageous to support the bridge separately from the sounding-board, and yet secure the proper coöperation of the latter by means of the transmitters in the form of arms and posts, the latter touching the sounding-board at the points where the best results are obtained. In this construction, moreover, the necessity for the sound-box heretofore employed is eliminated, which also eliminates unnecessary weight, and adds to the firmness and volume of sound, as well as the carrying quality of the tones. Finally, it is possible to manufacture different grades of instruments. For instance, simple single tongues may be employed for each key, or a plurality may be operated on by each key, as will be evident, and these tongues may be constructed of different metals or a combination of different metals to produce the best possible tones.

A slight modification of the structure is disclosed in Fig. 6. The sounding-board is designated 11^a, and is clamped between frame sections 10^a. The bridge 12^a is adjustably secured at its ends to the outer frame sections 10^a, and has a longitudinal rib 20^a. Upon the upper face of this rib music tongues 21^a are secured, these tongues in the present embodiment being horizontally disposed.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. In an instrument of the character set forth, the combination with a case, of a frame located within the case and comprising sections, a sounding-board having its margins clamped between the sections, a bridge secured at its ends to the outer side of one section and spaced from the sounding-board, tongues mounted on the bridge, and means for vibrating the tongues.

2. In an instrument of the character set forth, the combination with a case, of a frame located within the case and comprising sections, a sounding-board having its margins clamped between the sections, a bridge secured at its ends to the outer side of one section and spaced from the sounding-board, sound-conducting arms secured at one end to the rear face of the bridge and having their outer ends associated with the front face of the sounding-board, tongues mounted on the bridge, and means for vibrating the tongues.

3. In an instrument of the character set forth, the combination with a frame comprising sections, of a sounding-board having its margins clamped between the sections, a bridge having its ends disposed against the outer side of one section and provided with slots, bolts for holding the bridge in different positions passing through the slots into the frame, tongues mounted on the bridge, and means for vibrating the tongues, said tongues being adjustable with the bridge to different position with respect to the sounding-board and vibrating means.

4. In an instrument of the character set forth, the combination with a frame comprising sections, of a sounding-board having its margins clamped between the sections, a bridge having oppositely disposed ears at its ends provided with slots, said ears being disposed against the outer side of one of the frame sections, bolts passing through the slots into the frame, arms adjustably connecting intermediate portions of the bridge and sounding-board, tongues mounted on the bridge, and means for vibrating the tongues.

5. In an instrument of the character set

forth, the combination with a sounding-board, of a bridge spaced therefrom and having a longitudinally disposed outstanding rib, the rear side of which is hollow, said rib being provided with a substantially flat bearing face, a plurality of tongues having portions located against said face, fasteners for securing the tongues, said fasteners engaging the rib, and key operated hammers that engage the tongues to vibrate the same.

6. In an instrument of the character set forth, the combination with a case, of a frame located within the case and comprising sections, a sounding-board having its margins clamped between the sections of the frame, a bridge secured at its ends to the frame and spaced from the sounding-board, arms connecting intermediate portions of the bridge and sounding-board, said bridge being provided with an integral outstanding rib disposed between its side edges, a series of tongues mounted on and secured to the rib, and means for vibrating the tongues.

7. In an instrument of the character set forth, the combination with a frame, of a sounding-board secured to the frame, a bridge adjustably associated with the frame, means for securing the bridge in different positions to the frame, a sound-conducting arm connecting the bridge and sounding-board between their ends, holding means for the arm permitting the adjustment of said arm, tongues mounted on the bridge, and means for vibrating the tongues.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

IRA F. GILMORE.

Witnesses:

JESSE M. GOODHEART,

MARY R. CROTTY.