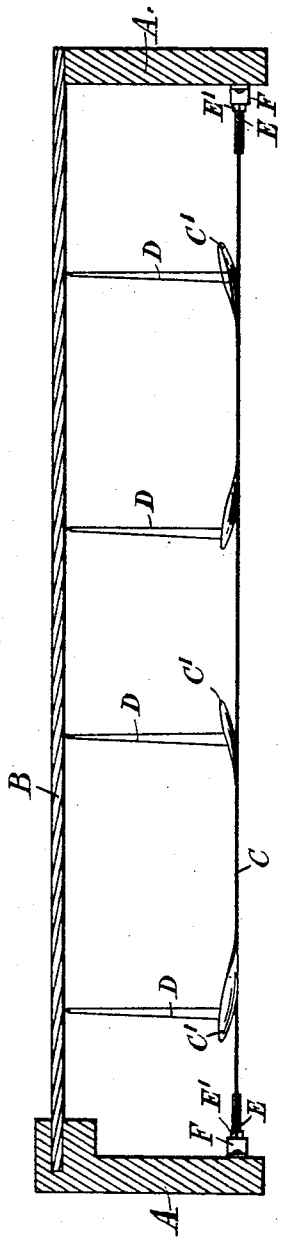
(No Model.) 3 Sheets—Sheet 1.

W. ROBINSON.

STRINGED MUSICAL INSTRUMENT.

No. 561,915. Patented June 9, 1896.

Fig. 1.



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(No Model.) 3 Sheets—Sheet 2.

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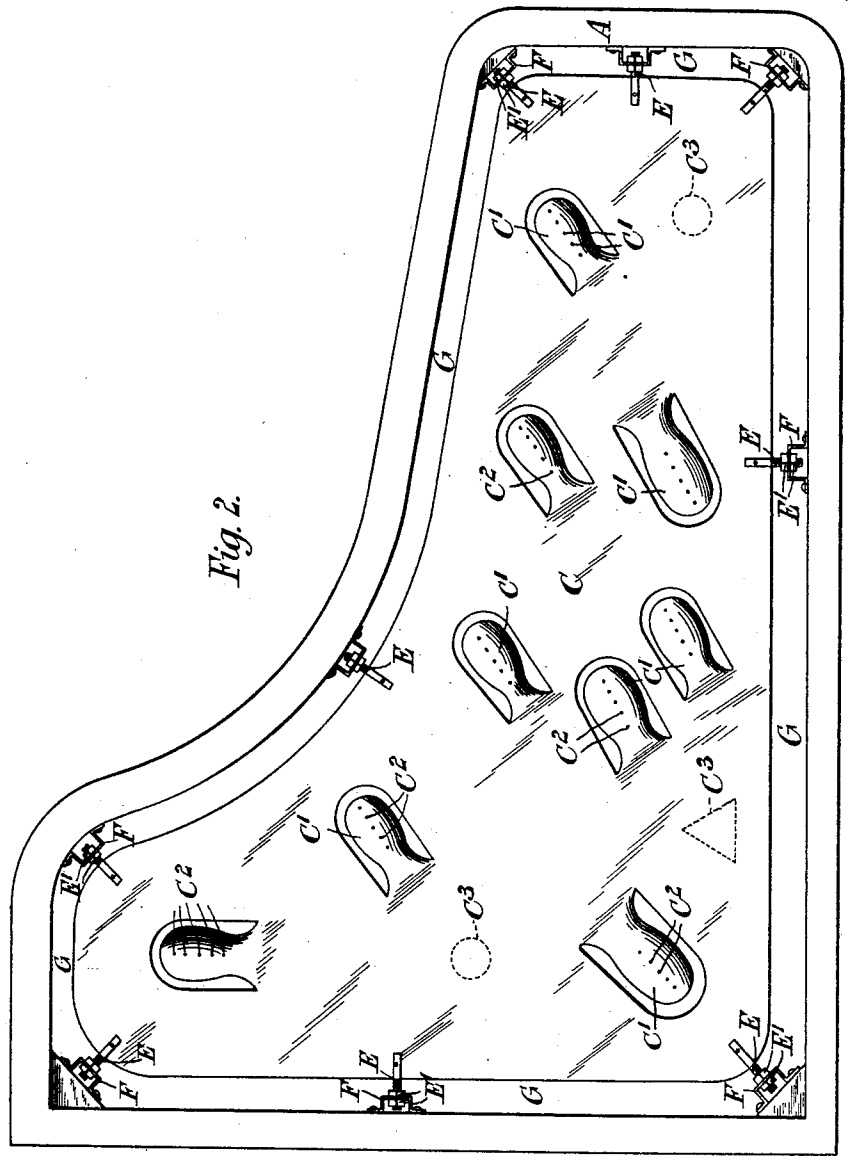

Fig. 2.

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(No Model.) 3 Sheets—Sheet 3.

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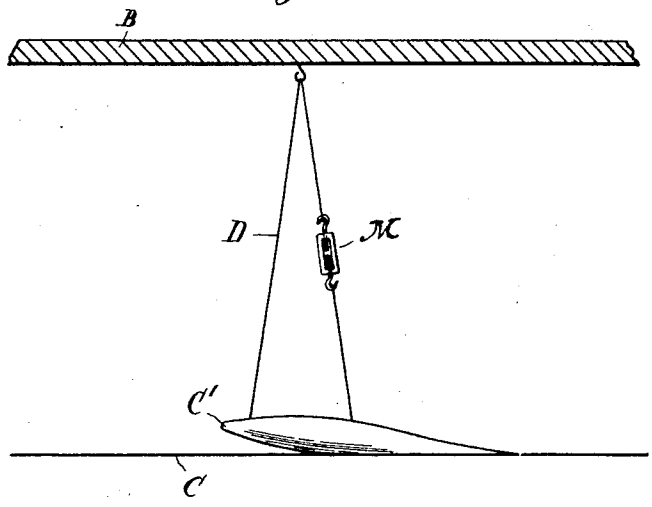
Fig. 3



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UNITED STATES PATENT OFFICE.

WILLIAM ROBINSON, OF LONDON, ENGLAND, ASSIGNOR TO DANIEL MAYER, OF SAME PLACE.

STRINGED MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 561,915, dated June 9, 1896.

Application filed June 10, 1895. Serial No. 552,294. (No model.) Patented in England October 30, 1894, No. 20,764; in France June 4, 1895, No. 247,891; in Germany June 4, 1895, No. 86,179, and in Canada January 24, 1896, No. 51,128.

To all whom it may concern:

Be it known that I, WILLIAM ROBINSON, a subject of the Queen of England, residing at London, England, have invented certain new and useful Improvements in Stringed Musical Instruments, (for which, since the execution of the present application, British Patent No. 20,764, dated October 30, 1894, has been granted to me, as well, also, as French Patent No. 247,891, dated June 4, 1895; German Patent No. 86,179, dated June 4, 1895, and Canadian Patent No. 51,128, dated January 24, 1896,) of which the following is a specification.

This invention relates to stringed musical instruments, particularly pianofortes, the object in view being to improve the quality and volume of the tone.

The invention will be best understood by reference to the accompanying drawings, in which I have, as an example, shown how the invention may be applied to a pianoforte.

Figure 1 is a vertical section, and Fig. 2 a view, of the under side of as much of a grand pianoforte as is necessary to illustrate the application of my invention thereto. Fig. 3 is a view in detail representing the means for adjusting the tension of the flexible connecting devices between the sound-board and the resonator.

Like letters indicate like parts throughout the drawings.

A is the pianoforte case or frame, and B the belly or sound-board, secured therein in the usual manner.

C is the plate or "resonator," which, in accordance with my invention, I connect with the belly or sound-board B by strings or equivalent D.

The plate C may be made of various materials; but I find a mild quality of steel to give excellent results. Nevertheless, I do not bind myself only to use steel or even metal, as other materials—wood, for example—may be employed. Aluminium and other metals would suit; but it is desirable that the material used should have good vibrating qualities.

The plate or resonator C may be connected to the frame A in any desired manner, preference, however, being given to means whereby the tension on the plate may be increased or decreased, and an open space is left between its edge and the frame A—as, for example, at G, Fig. 2—to admit of the free egress of the sound from the interior of the instrument. A convenient way of carrying this into practice is to rivet or otherwise secure bolts E to the edge of the plate and pass these through bridge-pieces or yokes F, secured to the frame A, two nuts E′ being provided on each bolt to enable its position to be adjusted and lock it in the yoke. It will be readily seen that by adjusting the nuts on the bolts E the resonator C may be tightened or slackened.

The edge of the resonator C may, however, be secured to the frame A by ordinary wood-screws, in which arrangement the resonator would be approximately of the same size as the frame A instead of, as shown in the drawings, smaller, washers or equivalent being preferably interposed between the resonator and the portion of the frame overlapped by it, so that its vibrating properties may be interfered with as little as possible.

The strings D are of any suitable material, preferably gut. They may be passed through eyes or equivalent, secured to or provided in the belly B or in the bars or ribs thereof and through holes formed at any desired parts of the resonator, the two ends of each string being connected together conveniently by a right-and-left-handed screwed nut M or other device, whereby the string may be slackened or drawn taut, and consequently its tension or the strain exerted by it on the resonator regulated.

To improve the tone-developing properties of the resonator C, I prefer to provide it with a convenient number of vibratory tongues or gongs C′, each of which at its free end may have its edge turned up or over, so as to make it hollow and take somewhat the form of a spoon, the part near its root being left flat, so that its vibrating properties may not be interfered with. When these tongues C′ are provided, I prefer to connect the strings D directly to them, for which purpose one or more holes C^2 may be formed in each of them to ad-

mit of the adjustment of the point of attachment of the string with the tongue, it being found that the nature of the tone improvement may be modified by changing this point of attachment.

The strings D may be attached to the resonator C or tongues C′ by means other than the holes C^2 previously described.

In an instrument constructed as before described the tongues C^2, and more or less the whole plate or resonator C, vibrate in sympathy with the belly or sound-board B, and I find by experiment that where the strings D are of gut the harmonics are reduced to a minimum.

If desired, any flexible connection other than gut and capable of transferring the vibrations of the sound-board to the resonator, so as to cause the latter to vibrate in sympathy with the former, may, however, be employed, the word "string" herein used including all such connections.

The resonator C may, if desired, be provided with holes, as represented in dotted lines at C^3 in Fig. 2, to give freer egress to the sound, and it may be fitted in any convenient part of the instrument.

The plate or resonator C may have a number of comparatively large perforations, which would, as it were, cause it to take the form of a frame. For example, in the arrangement wherein the tongues are provided only sufficient material may be left for properly supporting the tongues, the word "plate" or "resonator" herein used including all such arrangements.

Although I have illustrated my invention as applied to a grand or horizontal pianoforte, I wish it to be understood that it may equally well be applied to a vertical one and to other musical instruments in which bellies or sound-boards are employed.

I claim—

1. The combination with a belly or sound-board of a musical instrument of a plate or resonator and strings connecting the belly and resonator together, substantially as described.

2. The combination with the belly or sound-board of a musical instrument of a plate or resonator secured to the case or frame of the instrument and connected by strings to the belly substantially as described.

3. The combination with the sound-board of a musical instrument, of a plate or resonator connected to the same by strings and having perforations therein, substantially as described.

4. The combination with the sound-board of a musical instrument, of a plate or resonator connected to the same by strings, and having a space between the edge thereof and the frame of the instrument, substantially as described.

5. The combination with the belly or sound-board of a musical instrument of a resonator having vibratory tongues and strings connecting the resonator with the sound-board, substantially as described.

6. The combination with the belly or sound-board of a musical instrument, of a resonator having vibratory tongues, and strings connecting the resonator with the sound-board through the medium of the tongues, substantially as described.

7. The combination with the sound-board of a musical instrument, of a resonator having vibratory tongues and secured to the frame of the instrument, and strings by which the resonator is connected with the sound-board, substantially as described.

8. The combination with the sound-board of a musical instrument, of a resonator having vibratory tongues, and secured to the frame of the instrument, and strings connecting the resonator with the sound-board through the medium of the tongues, substantially as described.

9. The combination with the sound-board of a musical instrument, of flexible devices for connecting the resonator therewith, the resonator, and means for adjusting the tension on the resonator, and means for adjusting the tension of the flexible devices, substantially as described.

10. The combination with the sound-board of a musical instrument, of a resonator, strings for connecting said resonator with the sound-board, and means for adjusting the tension of the strings, substantially as described.

In testimony whereof I have hereto set my hand in the presence of the two subscribing witnesses.

WILLIAM ROBINSON.

Witnesses:
H. METHVEN-SMITH,
ALFRED J. BOULT.