

(No Model.)

E. N. OGDEN.
CONSTRUCTION OF PIANOS.

No. 557,420.

Patented Mar. 31, 1896.

Fig. 1.

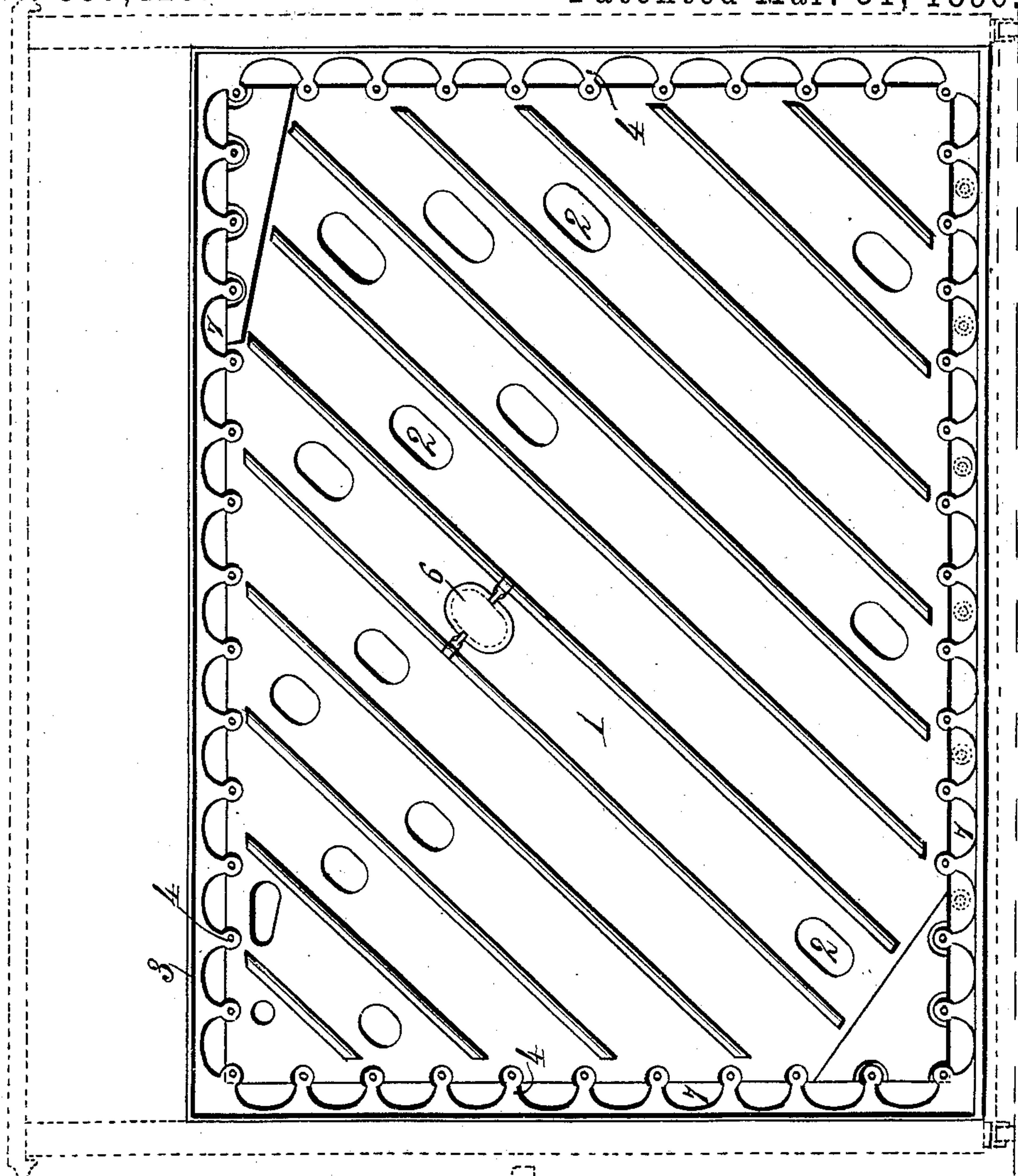
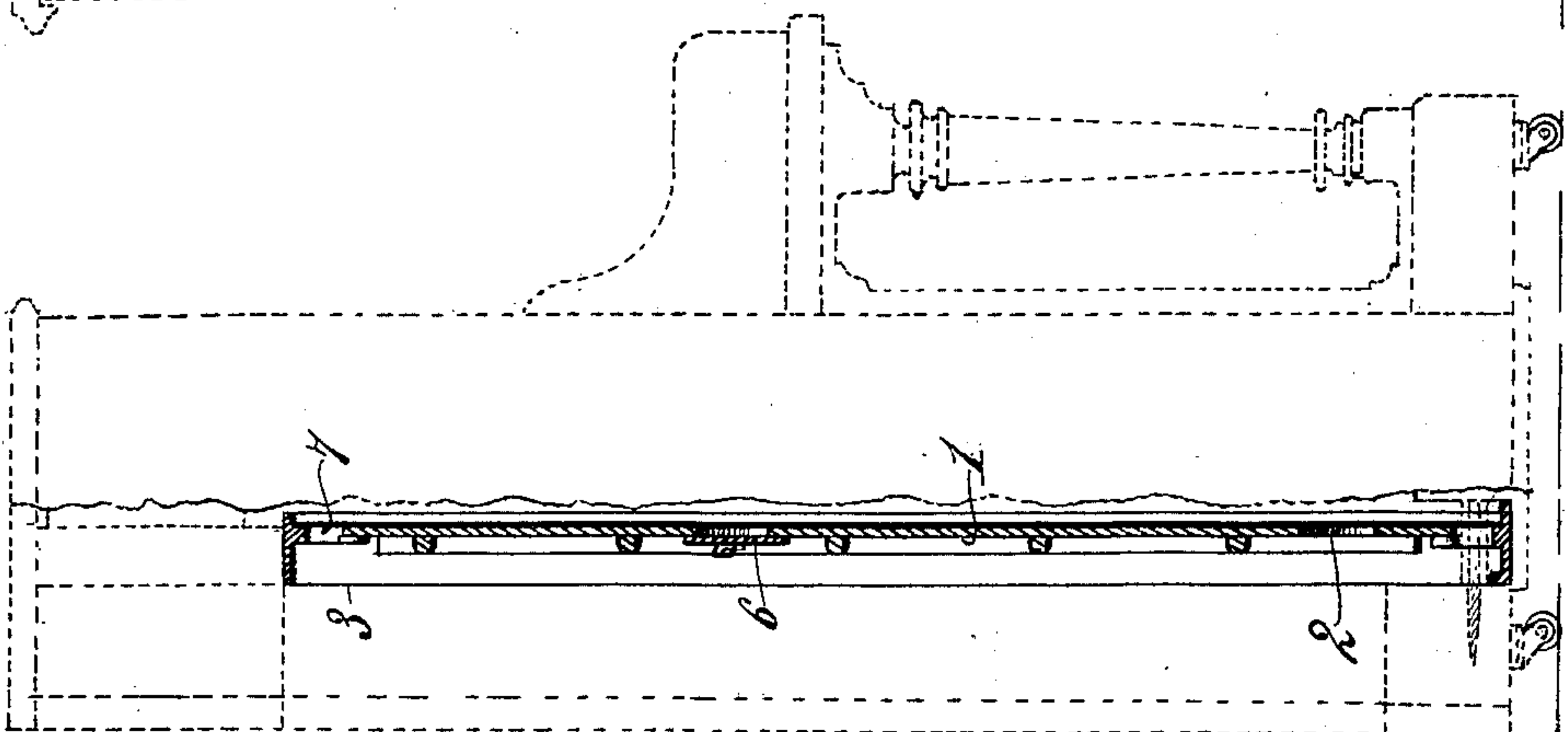


Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

ERNEST N. OGDEN, OF CHATHAM, NEW YORK, ASSIGNOR OF TWO-THIRDS
TO MAY E. RIDER, OF SAME PLACE, AND MARTIN V. SPRAGUE, OF PITTS-
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CONSTRUCTION OF PIANOS.

SPECIFICATION forming part of Letters Patent No. 557,420, dated March 31, 1896.

Application filed June 18, 1895. Serial No. 553,230. (No model.)

To all whom it may concern:

Be it known that I, ERNEST N. OGDEN, a citizen of the United States, residing at Chatham, in the county of Columbia and State of New York, have invented new and useful Improvements in the Construction of Pianos, of which the following is a specification.

My present invention relates to certain improvements in the construction of pianos, my object being to provide novel and simple means for supporting the sounding-board in such manner as to free its vibration at its edges by confining the marginal portions of said sounding-board at a few points only, which are separated from each other by comparatively wide intervals, whereby the vibrations set up in said sounding-board shall be equalized, or nearly so, throughout all its parts, in contradistinction to the limited vibration at and near the rigidly-clamped margin which is common under present forms of construction.

It is a further purpose of my invention to provide a sounding-board with a simple and novel construction and combination of parts, whereby the quality, volume, or intensity, and general character of the tone of the instrument may be varied in different degrees, according to the requirements of any particular occasion or individual case.

My invention consists, first, in providing a support for a sounding-board which shall have connection with the margin of the latter at uniform or substantially uniform intervals of comparatively wide separation, and in thereby providing marginal openings between the edges of the sounding-board and the edges of the supporting-frame, said openings being substantially coextensive with the intervals between the points of attachment, whereby I afford a free communication at the margin of the sounding-board between the front and rear of said sounding-board; secondly, to provide a sounding-board with a supporting-frame of aluminium, glass, compressed wood, molded pulp, or other suitable material, which shall have inwardly-projecting brackets, the ends of the latter being connected to the edges of the sounding-board at suitable intervals, and, third, to combine with a sound-

ing-board having suitable openings one or more covers or closing-diaphragms detachably mounted upon the sounding-board over one or more of said openings.

To enable others to fully understand and to practice my said invention, I will proceed to describe the same in detail, reference being had for this purpose to the accompanying drawings, in which—

Figure 1 is a rear elevation of the sounding-board of an ordinary upright piano, showing the supporting-frame. Fig. 2 is a sectional view of the same.

The reference-numeral 1 in said drawings indicates the sounding-board, which may be of any ordinary or preferred form, my invention making no change therein otherwise than the formation of a suitable number of openings 2 of such size, shape, and relative arrangement as may be most suitable. This feature, however, is fully described, shown, and claimed in a separate application filed by me of even date herewith, Serial No. 553,229.

The sounding-board 1 is supported by a surrounding frame 3 of rectangular or other suitable form, said frame being formed of aluminium, glass, compressed wood, pressed pulp, or such other material as may best be adapted to the purpose in view. From the inner edges of the frame, at suitable intervals, are projected brackets or lugs 4, the ends of which are connected to the edges of the sounding-board in any suitable manner—as, for example, by screws or rivets. As these attachments are made at points which are comparatively distant from each other, it will be seen that the marginal parts of the sounding-board, instead of being rigidly clamped at all points, as has heretofore been the case under known forms of construction, are set free and permitted to vibrate in unison with the strings, so that the range of vibration will be practically uniform in all parts of the board.

Any person who has sounded the upper note of an ordinary piano must have noted that the high note produced gives to the ear an impression as if the string was partly muffled. This effect is due to the fact that the two points of connection for the ends of

said string are both very near the edge of the sounding-board, and as the edges of the latter are rigidly clamped in pianos as heretofore constructed the sounding-board is prevented
 5 from having free vibration, and the power or intensity of the tone, as well as its duration and clearness, are more or less suppressed. By my invention, on the contrary, the marginal portions of the sounding-board between
 10 the supporting-brackets 4 are released from the rigid restraint imposed upon the edges of the sounding-board under present methods of construction and permitted to vibrate in unison with the strings to the same or sub-
 15 stantially the same degree as all the other parts of the board. The result is that the tones produced by the short strings located close to the edges of the board are as clear, sustained, and of substantially the same du-
 20 ration as any of those produced by those strings which vibrate the central or other portions of said sounding-board.

The sounding-board is provided with a suitable number of openings 5 of such size, form,
 25 and relative arrangement as may be preferred. Over one or more than one of these openings I propose to apply a cover or diaphragm 6 of aluminium, glass, compressed wood, pressed pulp, or any other suitable ma-
 30 terial, said cover being detachably mounted on the sounding-board in any manner preferred. The number of the openings thus covered will depend upon the effect to be produced. I can best describe this effect by
 35 terming the covers 6 means for modifying the quality and volume of the tone according to the conditions under which each piano is to be used, as well as in compliance with the taste of the purchaser. In a large apart-
 40 ment or hall the full volume and power of the instrument can be obtained by simply re-

moving all the covers, and for small rooms these qualities may be regulated by applying a suitable number of such covers. Their weight is so small that they do not overload
 45 the sounding-board and thus tend to reduce its range and duration of vibration.

Between the points of attachment of the brackets 4 the frame 3 is cut away, forming
 openings 7 of any suitable form and size, but
 50 preferably coextensive with the space between the points of attachment of said brackets 4. These openings give such free communication to the bodies of air upon both
 55 sides of the sounding-board that there is no impediment offered to its free vibration or to the dissemination of the acoustic vibrations.

What I claim is—

1. An upright piano having a supporting-frame for a sounding-board consisting of a rec-
 60 tangular structure having an inwardly-scalloped edge, the inwardly-projecting brackets between the scallops being rigidly connected to the edge of the sounding-board, the open spaces between said brackets affording free
 65 communication between the front and rear of the sounding-board, substantially as described.

2. A sounding-board for a piano having openings formed therein and coverings or dia-
 70 phragms suitably connected to, or mounted on said sounding-board in such manner as to cover one or more of said openings and to be detachable therefrom, substantially as de-
 75 scribed.

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

ERNEST N. OGDEN.

Witnesses:

JAMES L. NORRIS,
 J. GRANVILLE MEYERS, Jr.