

(No Model.)

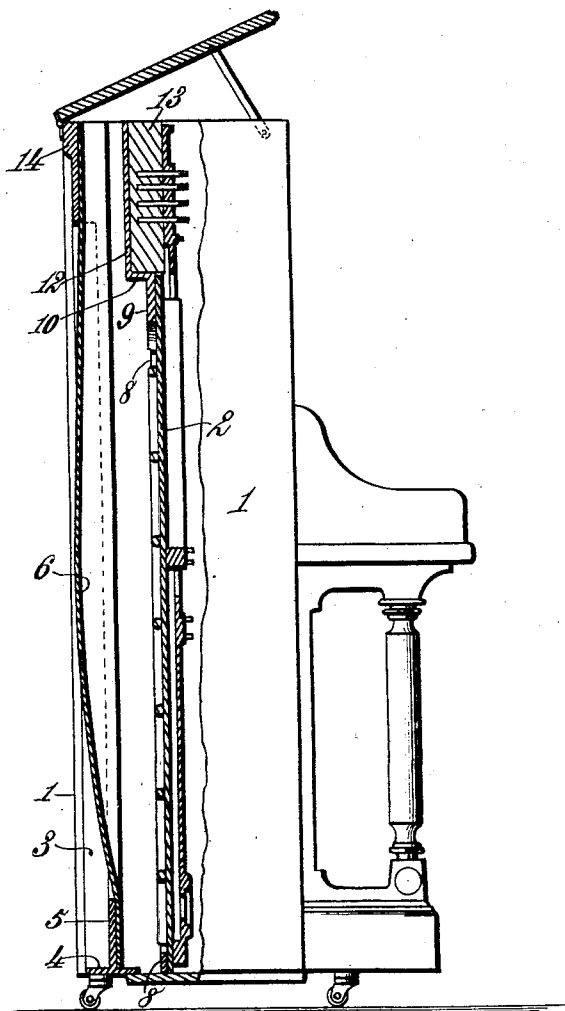
2 Sheets—Sheet 1.

E. N. OGDEN & A. H. MEECH.
PIANO FRAME.

No. 562,236.

Patented June 16, 1896.

Fig. 1.



Witnesses.

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

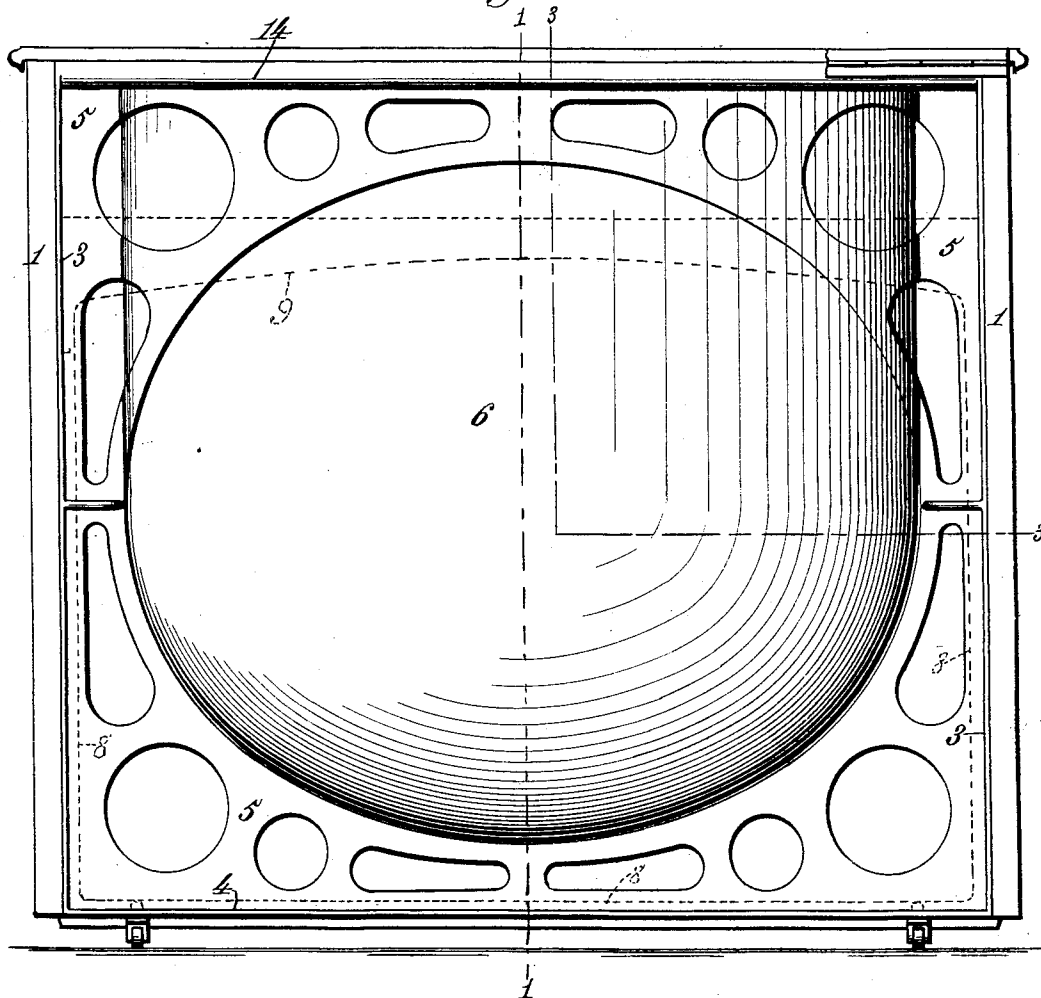
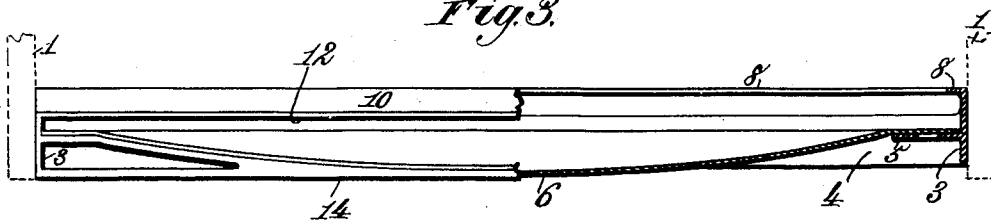


Fig. 3.



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UNITED STATES PATENT OFFICE.

ERNEST N. OGDEN AND ALFRED H. MEECH, OF CHATHAM, NEW YORK,
ASSIGNORS OF ONE-HALF TO MAY E. RIDER, OF SAME PLACE, AND
MARTIN V. SPRAGUE, OF PITTSFIELD, MASSACHUSETTS.

PIANO-FRAME.

SPECIFICATION forming part of Letters Patent No. 562,236, dated June 16, 1896.

Application filed June 18, 1895. Serial No. 553,228. (No model.)

To all whom it may concern:

Be it known that we, ERNEST N. OGDEN and ALFRED H. MEECH, citizens 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.

Our invention relates to the construction of pianos, our purpose being, first, to remove the posts which have heretofore been placed in the rear of the frame, and to provide a suitable support in place thereof, whereby the rearward portion of the frame may be entirely open for the purposes hereinafter specified; second, to form a tone-chamber in rear of the sounding-board having such construction that the sound waves or pulsations shall find a natural passage out through the open top of the instrument; third, to provide what we term a "tone-controller," having such shape that the area of the tone-chamber shall be increased in its horizontal dimension at such points that the acoustic pulsations set up in said chamber shall have a maximum amplitude of vibration and shall be caused to pass upward and out through the top, which is opened by raising the lid, said pulsations being liberated in the room, apartment, or other place in which the piano is located with full volume, maximum duration, and uniform clearness and power.

It is a further purpose of our invention to provide a frame which shall have a seat for the pin-block and a rest for the sounding-board, and by which support shall also be given to the tone-controller.

It is our object also to inclose a single, continuous, uninterrupted tone-chamber in rear of the sounding-board, the rear-wall of said chamber being formed by the tone-controller and by the frame supporting it.

Finally, it is one object of our present invention to provide a tone-controller for upright pianos which shall have a lower, semi-elliptical, concavo-convex form, the concave face being inward, and an upper, outwardly-arched, or curved continuation of the lower, semielliptical part, extending to the top of the frame, whereby the sound-pulsations are

given a maximum amplitude of vibration without being divided, broken up, or interrupted by the numerous angles and separate, narrow chambers, or spaces, which are formed in rear of the sounding-board by the present forms of construction, whereby we are able to produce tones of marked clearness, volume, and strength, which find a natural passage, or outlet, at the top of the case by opening the lid either partially or wholly.

To enable those skilled in the art to which our invention pertains to fully understand and to practice the same, we will now proceed to describe said invention in detail, reference being had, for such purpose, to the accompanying drawings, in which—

Figure 1 is a central vertical section of a piano embodying our invention, the section being taken upon the line 1 1 in Fig. 2. Fig. 2 is a rear elevation of the same parts. Fig. 3 is a detail section showing the lower end, or side of the case, to illustrate the form and arrangement of the parts.

The reference-numeral 1, in said drawings, indicates the side case of the piano, between which the sounding-board 2 is arranged. In its general structure the piano is not materially changed from the forms heretofore well known, and we need not describe these features any further than to note the changes which are made necessary by our invention.

The principal alteration we make is the removal of the posts which are commonly placed in the rear of the sounding-board, and the insertion, in their place, of a frame having the following construction. Said frame is composed of two upright members or sides 3, which are parallel and lie closely adjacent to the side case of the piano. At their lower ends the upright members 3 are connected by a horizontal flange 4, which lies substantially in the plane of the lower edge of the sounding-board, and is preferably formed in one piece with the lower ends of the sides 3 of the inner frame. Rising from the said flange 4 is the lower vertical part 5 of what we term the "frame-plate," which is preferably integral with the said horizontal flange 4. At its middle point the edge of this vertical frame-plate is nearest the horizontal flange 4,

and from this point the frame-plate extends along all four sides of the inner metallic frame, its main portion being cut away to form an opening which may be either approximately circular or approximately elliptic, the major axis of the same being in or not far from the horizontal plane of the keyboard frame. In other words, the inner metallic frame is carried around the four sides of the piano-frame, and the frame-plate springs or projects from it at substantially right angles, the upper portion of said frame-plate being arched, or curved toward the rear, to conform to the shape given to the tone-controller, which we will now describe. This frame-plate 5, which is carried entirely around the four sides of the interior metallic frame, is preferably made in one piece with the latter.

The part which we term the "tone-controller" consists of a comparatively light plate 6, of aluminium, or other suitable material. Its marginal portions inlap upon the frame-plate 5 around all four sides of said frame-plate, and preferably inlap far enough to bring the edges of the tone-controlling plate up to or near the inner faces of the four-sided inner or metallic frame. It is fastened to the said frame-plate in any suitable manner, and its lower semielliptical or semicircular portion is convexed outward, or, in other words, the semielliptical portion lying below the horizontal plane of the keyboard-frame is of concavo-convex form, the concave face being next the sounding-board. Above this semielliptical portion the rearward convexity of the tone-controlling plate is preserved and said plate is carried directly upward, or nearly so, until its upper edge, from side to side, inlaps upon the upper member or part of the frame which is curved rearwardly to correspond to the rearward convexity of the tone-controller.

Along the lower and the two vertical edges of the sides of the inner metallic frame flanges 8 are formed which project upward from the lower and inward from the two side portions of the metallic frame to provide a rest for the sounding-board, which is secured to said flanges in any suitable manner. At the upper parts of the side portions of the inner frame a strong arched plate 9 is thrown from one side to the other side of said inner frame, as shown in dotted lines in Fig. 2. This arched plate forms part of a bottom and back seat 10 and 12, respectively, for the support of the pin-block 13, or that portion of the frame which is usually so termed. The upper marginal portion of the sounding-board is connected to the arched plate 9 in any suitable manner, its other three edges having rest or support upon the three flanges 8, which are projected upward from the lower member of the inner frame and laterally, or in-

ward, from the vertical members. From the top of one vertical side to the top of the other side of the inner metallic frame a rib 14 is extended, which provides a convenient attachment for the hinges of the lid or cover.

What we claim is—

1. A piano having an inner metallic frame, lying within and close to the top, bottom, and sides of the piano-case and provided with a frame-plate having an opening, a sounding-board in front of said frame-plate and separated from it by a suitable interval, said sounding-board being supported by flanges projecting from the bottom and two sides of the metallic frame, a pin-block supported by a seat connected to the vertical sides of the metallic frame, the lower portion of said seat forming a support for the upper portion of the sounding-board, and a tone-controller mounted on the frame-plate and closing the opening therein, said tone-controller and sounding-board forming the rear and front of a single continuous, and unobstructed tone-chamber which opens at its top beneath the lid, substantially as described.

2. In an upright piano, an inner metallic frame at the rear of and within the case, having a frame-plate integral with said frame and having its ends supported on the sides thereof, a seat for the pin-block consisting of an arched plate extending from one side of the metal frame to the other, said arched plate having a lower, horizontal portion forming the seat for the pin-block and a vertical portion forming a back seat for the same, a sounding-board having its upper portion connected to the arched plate below the seat for the pin-block, and a tone-controller in rear, between which and the sounding-board is a single, unobstructed tone-chamber, substantially as described.

3. An upright piano having an inner metallic rectangular frame the four sides of which lie close to the four sides of the piano-case, said frame being provided with a frame-plate having an oval, or approximately circular opening and a tone-controller covering said opening and sustained by said frame, its lower, semielliptical portion being outwardly convexed and the upper portion above said lower portion being carried directly upward with a rearward convexity corresponding to that of said lower portion, substantially as described.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

ERNEST N. OGDEN.
ALFRED H. MEECH.

Witnesses:

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