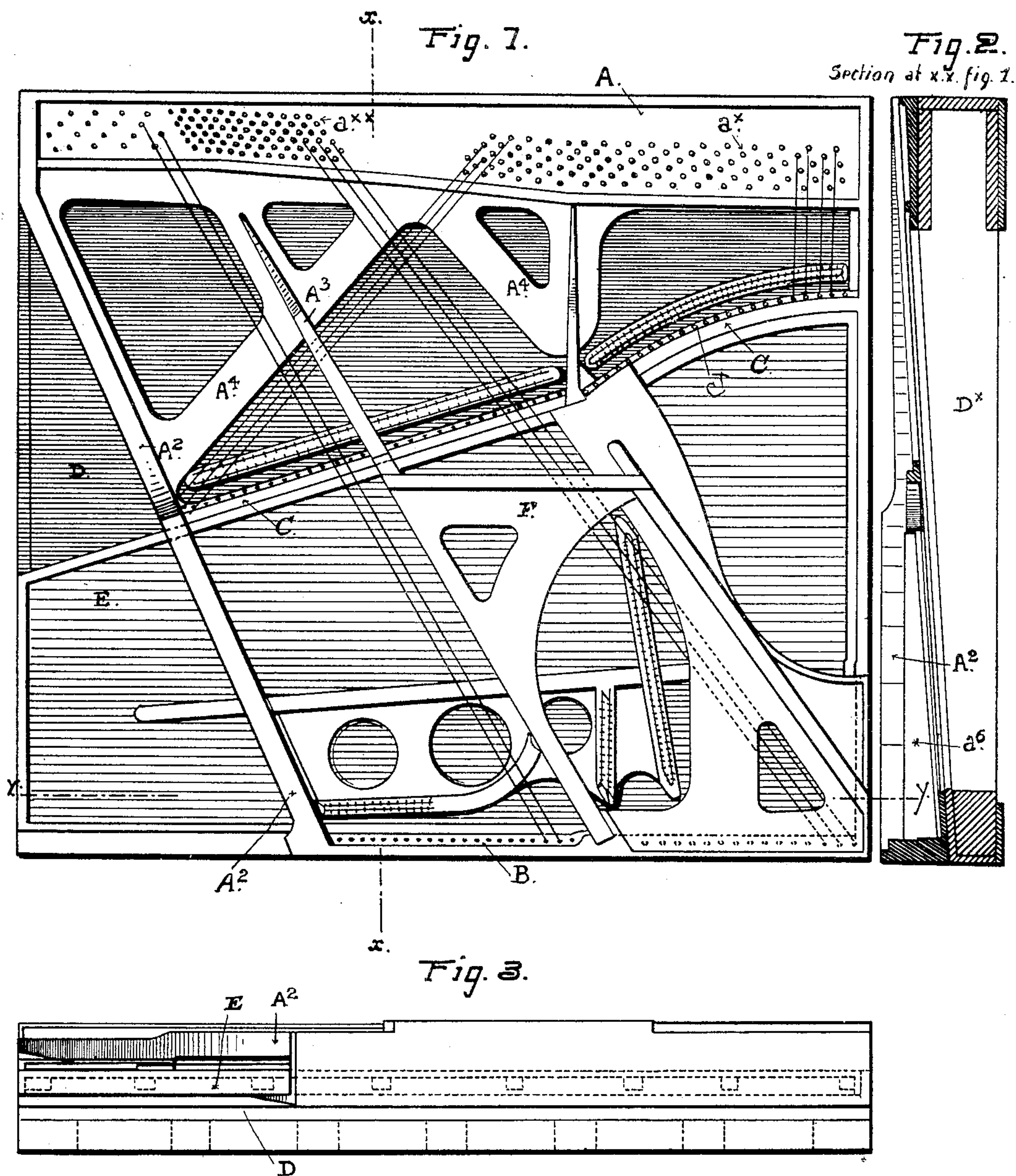


(No Model.)

2 Sheets—Sheet 1.

P. SCHOEN.
FRAME AND SOUNDING BOARD FOR PIANOS.
No. 584,710. Patented June 15, 1897.



Witnesses:

Marcus S. Leve

M. Regner

Inventor:

Paul Schoen

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his Atty.

(No Model.)

2 Sheets—Sheet 2.

P. SCHOEN.

FRAME AND SOUNDING BOARD FOR PIANOS.

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Fig. 4.

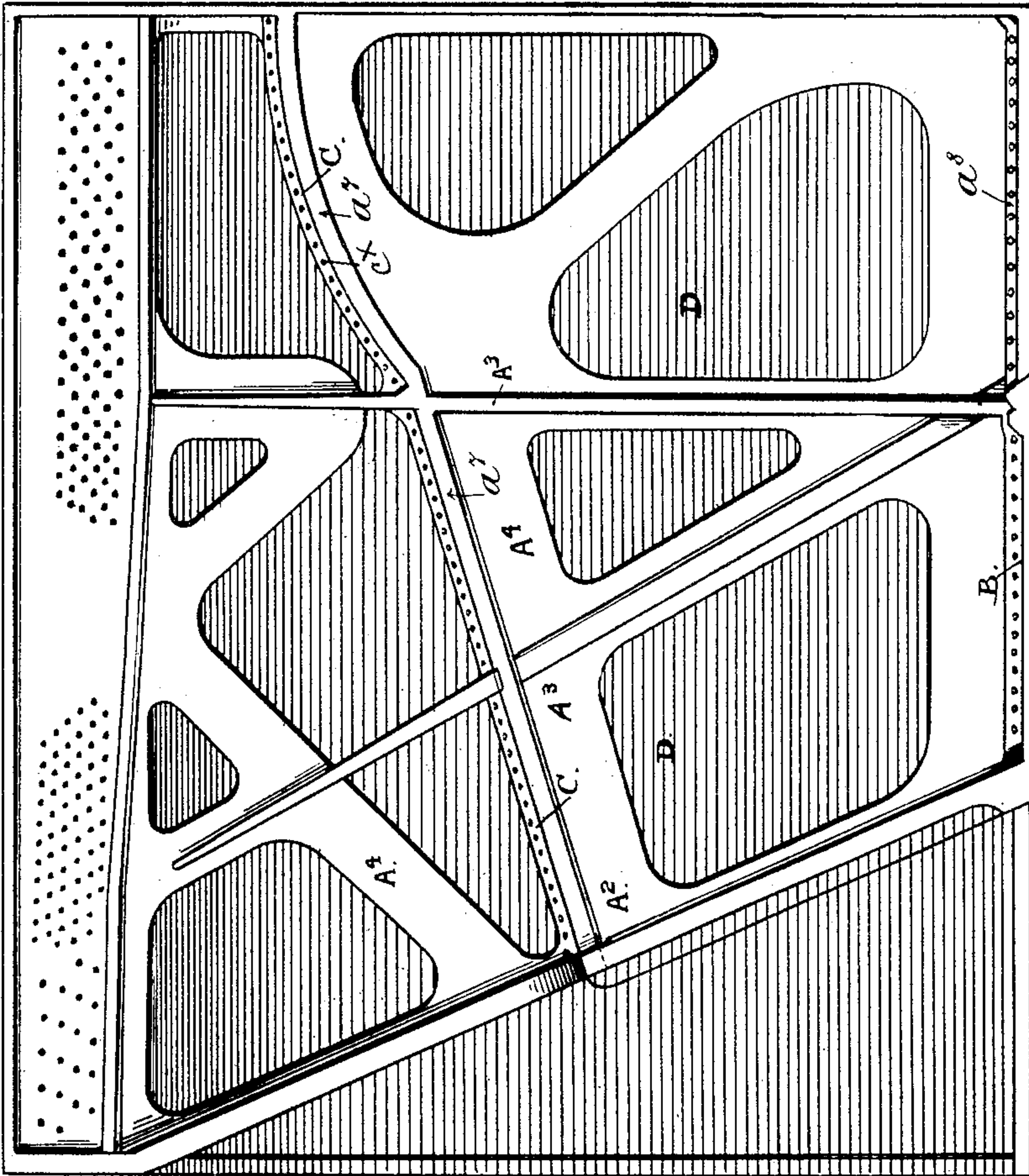


Fig. 6.

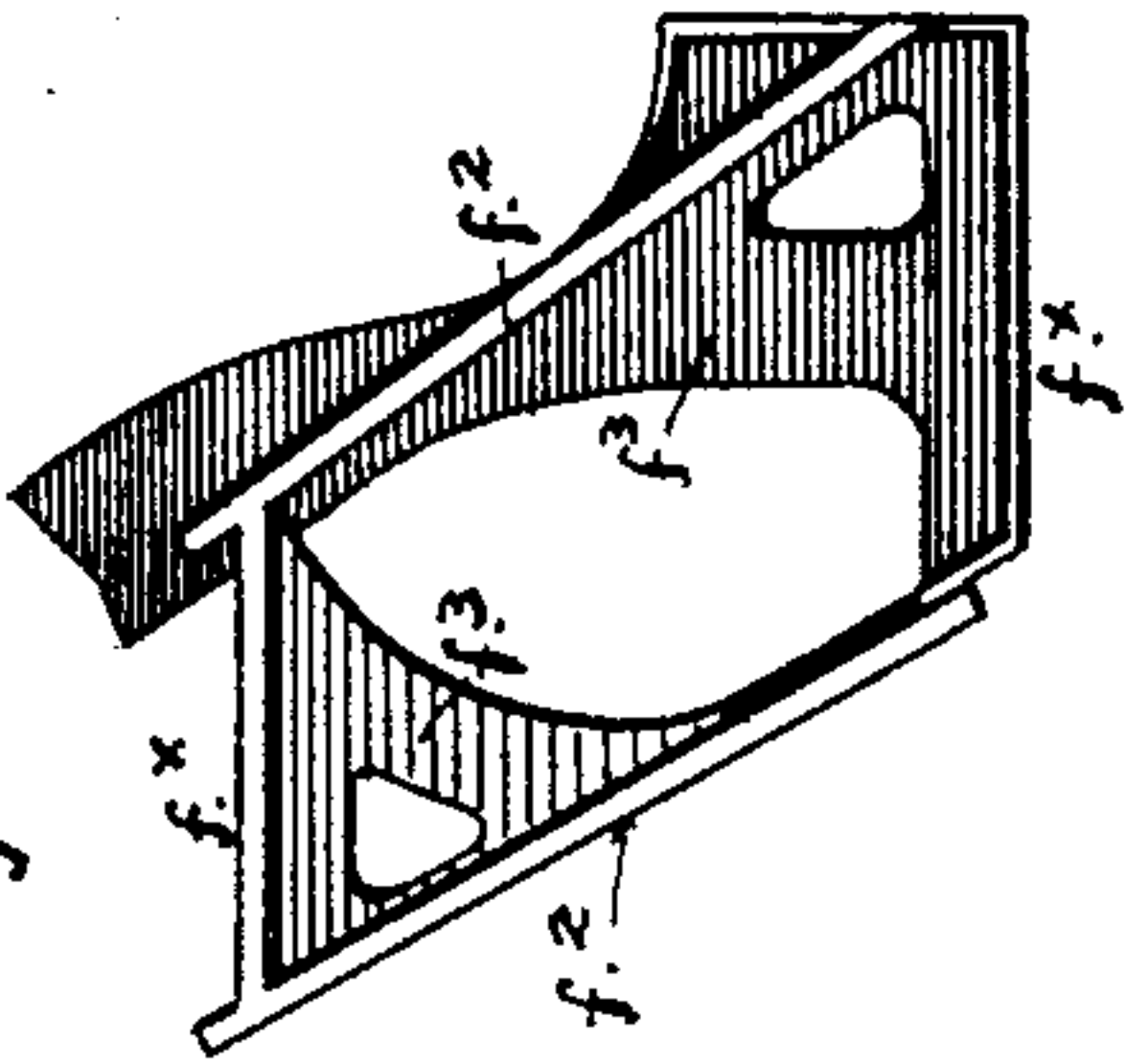


Fig. 5.

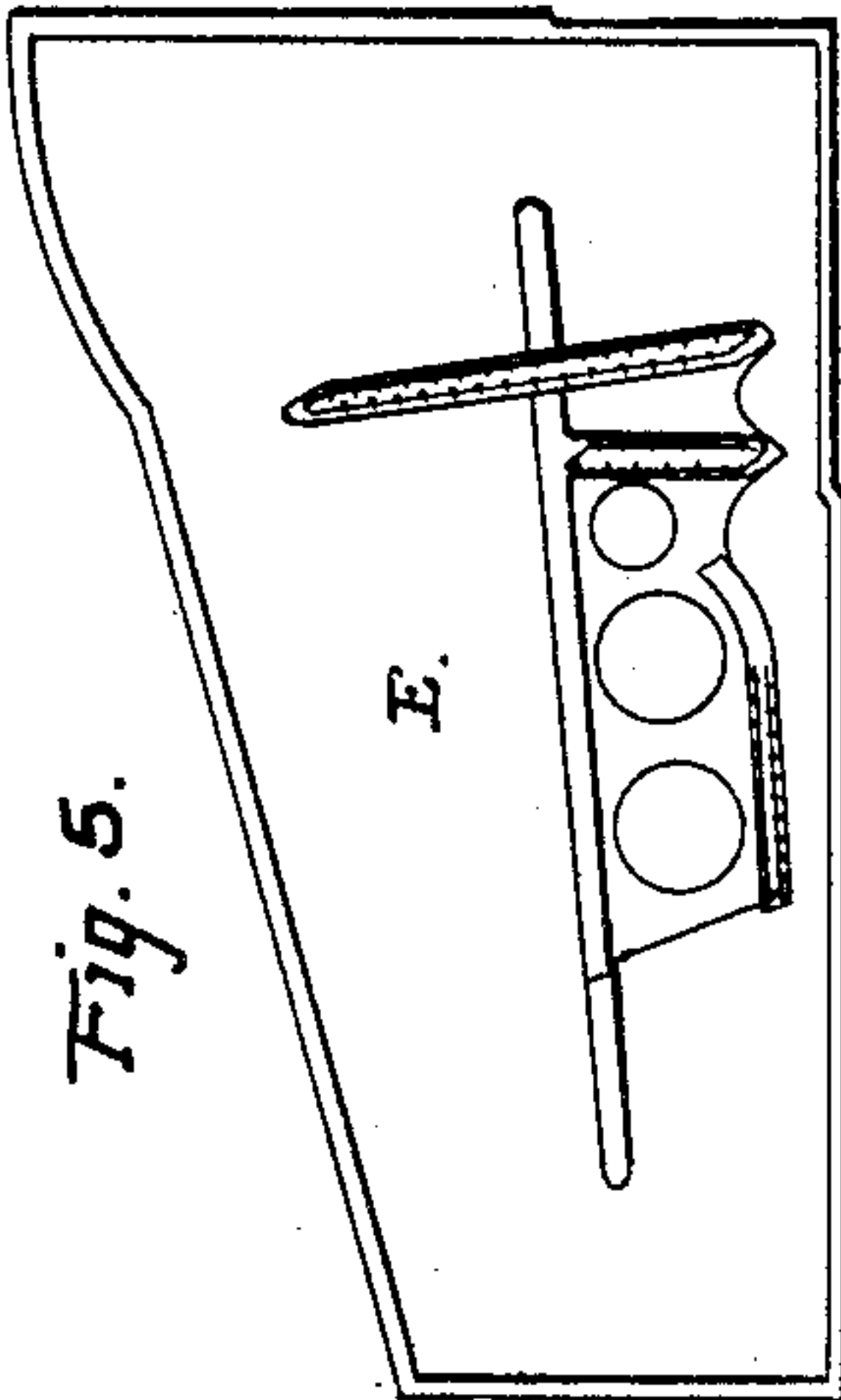
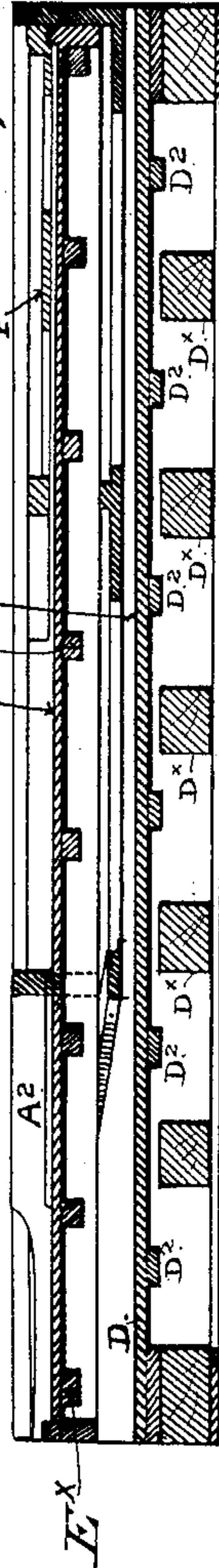


Fig. 7. Section through y-y
Fig. 1.



Witnesses:

Marcus S. Leach.

M. Wagner.

Inventor:

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UNITED STATES PATENT OFFICE.

PAUL SCHOEN, OF OAKLAND, CALIFORNIA.

FRAME AND SOUNDING-BOARD FOR PIANOS.

SPECIFICATION forming part of Letters Patent No. 584,710, dated June 15, 1897.

Application filed October 21, 1895. Serial No. 566,413. (No model.)

To all whom it may concern:

Be it known that I, PAUL SCHOEN, a citizen of the United States, residing in Oakland, Alameda county, State of California, have
5 invented certain new and useful Improvements in Frames and Sounding-Boards for Pianos, of which the following is a specification.

My invention has for its object, mainly, to
10 so increase the sounding-board area in a piano that the strings of the lower notes in the scale shall have a separate sounding-board or vibrating surface, which is an addition to and in its action is independent of the sound-
15 ing-board for the strings of the higher notes, whereby the vibrations of the strings and of the sounding-board are brought more closely into unison and the interference between the short and the long waves in the vibrating
20 surface is materially reduced or is removed to such a degree that greater clearness and brilliancy in the higher notes and greater depth and purity of tone in the lower notes are obtained than has been possible in those
25 constructions where the same sounding-board surface is made to serve for all the strings of the scale.

To such end and object my invention consists in certain novel construction and combination of double sounding-boards and iron
30 frame and in the combination of said parts, as hereinafter fully explained, and set forth in the claims, reference being had in the following description to the drawings that accompany and form part of this specification.

These improvements are applicable both to upright and to square pianos.

In the said drawings, Figure 1 represents a plan or front view of a frame and sounding-
40 boards for an upright piano with a portion of the strings in place. Fig. 2 is a cross-section at the line $x x$ with the auxiliary sounding-board and the strings omitted. Fig. 3 is an end view from the bottom of the frame or the lower side of Fig. 1. Fig. 4 is a plan or a
45 front view of the main frame and the main sounding-board. Fig. 5 is a plan or a front view of the supplemental sounding-board on a reduced scale. Fig. 6 is a plan or front
50 view of that portion of the iron frame that overlies the supplemental sounding-board when that part is set in position. Fig. 7 is a

transverse section taken on the line $y y$, Fig. 1.

The construction of frame and sounding-
55 board herein shown and described is designed for an upright piano, but with such modifications in form and dimensions as the shape of the case and the arrangement of the action may require these improvements
60 are applicable to square pianos and to grand pianos as well as to pianos of the upright kind.

The arrangement of the parts forming the iron frame and the general construction of
65 the principal frame will be better understood by referring to Figs. 4 and 6 of the drawings.

A indicates the wrest-plate, in which are set the pins $a^x a^x$ for the treble strings and
70 $a^{xx} a^{xx}$ for the bass strings.

C indicates the string-plate for the treble strings, arranged in line diagonally across the frame, and from the studs C^x of which the strings are stretched to the turning-pins a^x
75 above in the manner indicated in Fig. 1, where a few of the longest and the shortest strings are shown in position.

B indicates the string-plate for the bass strings. This plate carries the studs for the
80 bass strings and is located at the bottom of the frame parallel with the wrest-plate at the opposite end of the frame. These plates are joined by straight metallic bars $A^2 A^3$, disposed in the best manner to resist the strain
85 of the stretched strings, and these bars and the plates before mentioned are united by intermediate webs, or wide and relatively thin metallic plates $A^4 A^4$.

The bars $A^2 A^3$ have the same general direction as the bass strings, and the outermost
90 one, A^2 , stands at the lower portion of the frame clear of the bed-plate from the lower end, where it joins the bottom of the frame, to the middle of the frame at the line of the string-plate C. This outer bar stands practically vertical, but the other bars and the
95 bed-plate or principal portion of the frame occupies a slanting position which is produced by setting in or toward the back the lower end or foot of the frame. This construction
100 will be understood from Fig. 2, where the opening under the "bridge-bar," as the outer bar A^2 may be termed, is seen at a^6 . The object of this construction is to afford room within

the iron frame and over the main sounding-board for the supplemental sounding-board E without increasing the depth or thickness of the whole structure or body. This part E is constructed of a suitable shape and size to fit under the bridge-bar and into the space between the upper string-plate C and the lower string-plate B, and this portion of the iron frame is recessed, and the height or thickness of the bars A^3 that lie under the part E is reduced to bring the bottom of the sounding-board E close to the bed-plate of the frame. The strength of the frame on the lines of these bars is augmented, however, by the supplementary frame F, composed principally of two top bars $f^x f^x$, united by transverse rails $f^2 f^2$ and a web-plate f^3 with openings through it, the bars being fitted to set against the ends of the bars of the main frame $A^3 A^4$ and being also disposed, as to position, in the direction best adapted to resist the strains of the stretched strings.

When the supplemental sounding-board is set into the frame, its narrow end is inserted through the opening under the bridge-bar A^2 and its edges or margin at the top and the bottom seat upon the ledges or recesses $a^7 a^8$ on the iron frame within the string-plates B C, so that the studs in these plates for the strings that have the greatest extent of vibration are exposed for stringing. The result of this construction of frame and sounding-boards and this manner of stringing is to isolate the sounding-board surface that responds to the vibrations of the shorter strings from the similar surface vibrating with the longer strings, so that there shall be no interference between the long and the short vibrations, for the whole extent of the main sounding-board is appropriated to the higher notes in the scale and the lower notes are provided with their own sounding-board, which is separate from and is independent of the principal vibrating surface under the upper notes.

The main sounding-board D is framed in the usual way, excepting that the parallel bars $D^x D^x$ of the frame are tapered on the front face in order to give the belly or vibrating surface D an inward slant at the bottom, as shown in the vertical cross-section, Fig. 2, the object of which, as before mentioned, is to afford room for the supplemental sounding-board E in the front and lower portion of the frame without increasing the thickness of the structure.

The belly D has strengthening ribs or bars D^2 on the back or bottom surface, and it has suitable clearance between its surface and the iron frame above it. The vibrating surface E of the supplemental sounding-board is supported at the sides of the iron frame above and clear of the frame, so that it is free to vibrate without interference, and it is strengthened in the usual way by the ribs E^x , glued to the back.

The supplementary frame or brace F is fixed over the last-mentioned sounding-board after that part is placed in the frame. The form of this supplemental vibrating surface is shown in Fig. 5, and its position when in the frame is seen in Fig. 1.

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

1. In a piano, the combination, with a main or principal sounding-board located behind the treble strings, of the overstrung bass and a supplemental sounding-board in a plane between the planes of the bass strings and treble strings, substantially as described.

2. In a piano, the combination of the main frame, main sounding-board under the treble strings, overstrung bass strings, supplemental sounding-board interposed between the planes of the bass strings and treble strings, and the iron frame over the said supplemental sounding-board, substantially as described.

3. In a piano, an iron frame composed of the main frame having wrest-plates and string-plates, the bridge-bars and the supplementary frame in combination with the main sounding-board located beneath the main frame, and the supplemental sounding-board located between the main frame and the supplementary frame, substantially as described.

4. In a piano, the combination of a principal sounding-board located behind the strings of the treble notes, an overstrung bass, and a supplementary sounding-board interposed between the main sounding-board and the strings of the bass notes, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

PAUL SCHIÖEN. [L. S.]

Witnesses:

PHILIPP HOLZMANN,
F. HENRICKSON.