(No Model.)

P. M. ZEIDLER.

SOUNDING BOARD FOR PIANOS.

No. 594,718. Patented Nov. 30, 1897.

Fig. 1.

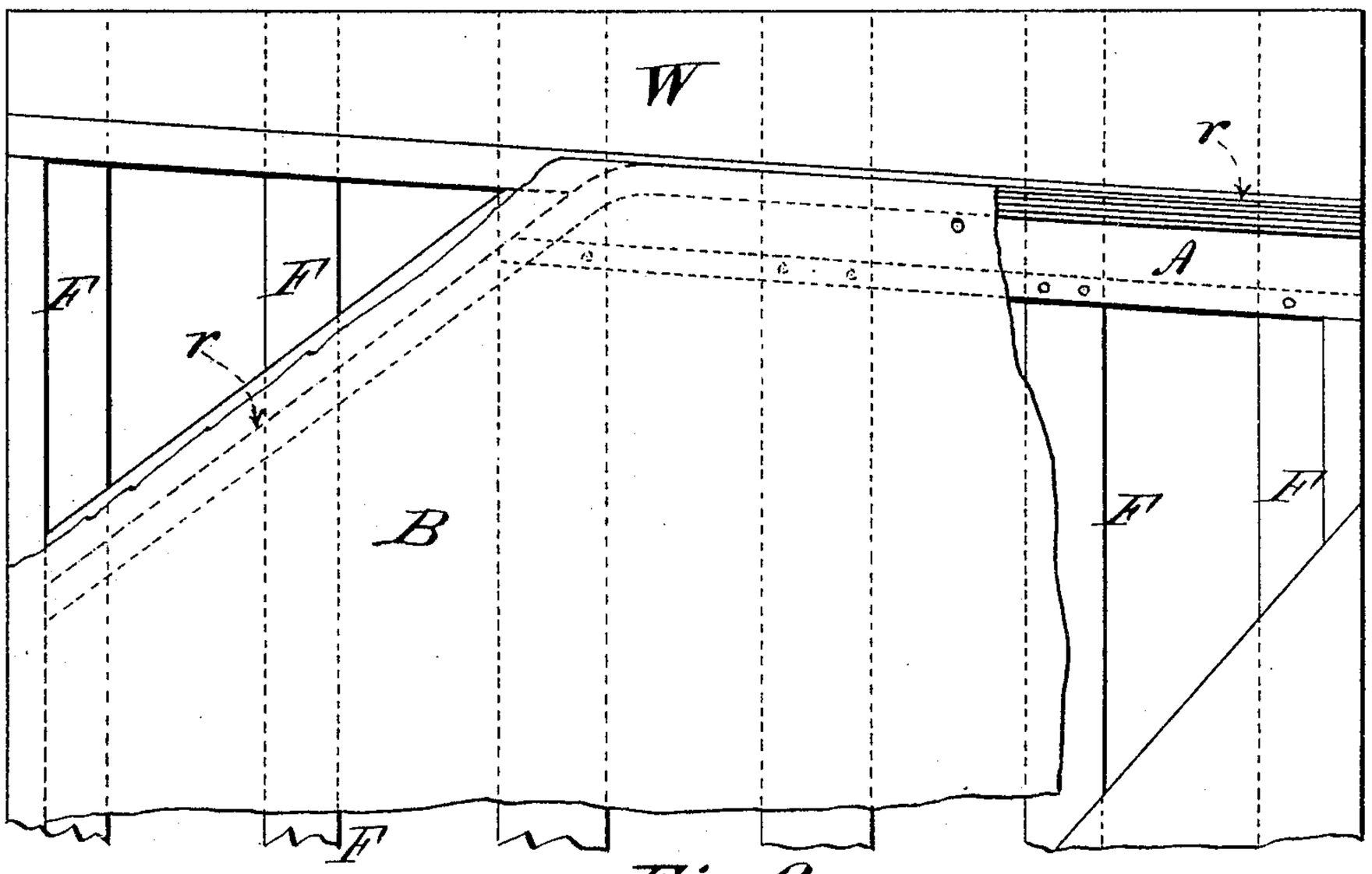


Fig. 2.

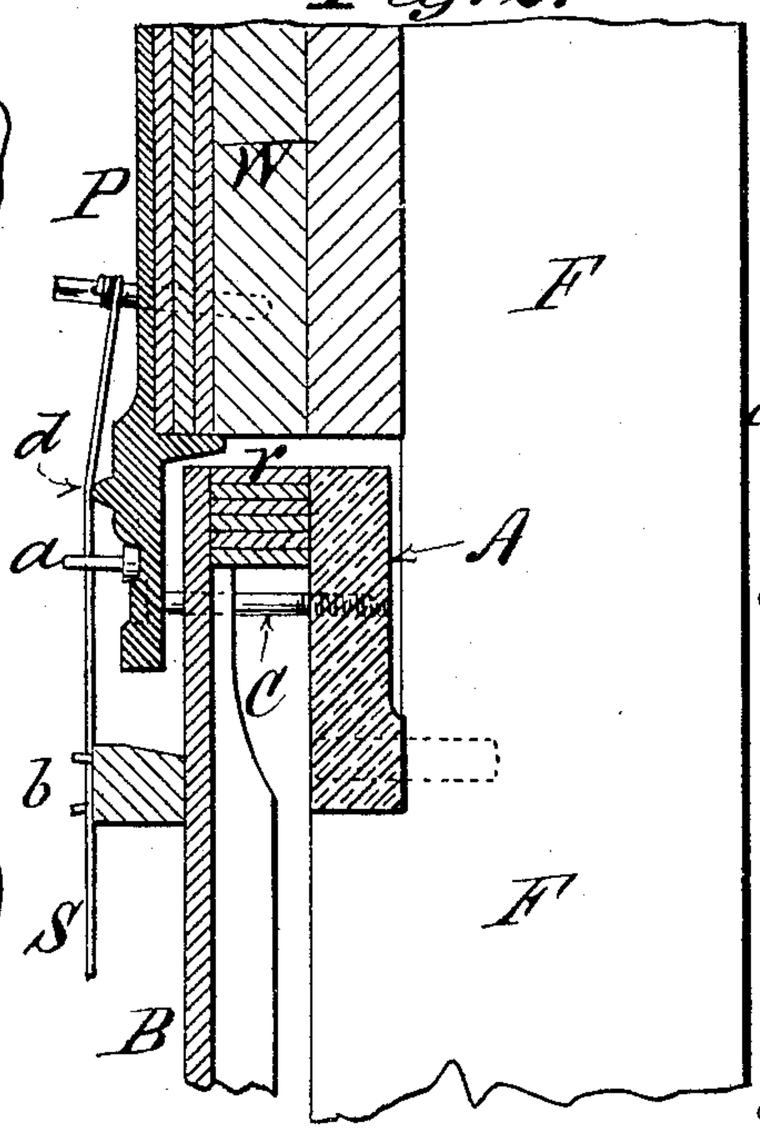


Fig. 3.

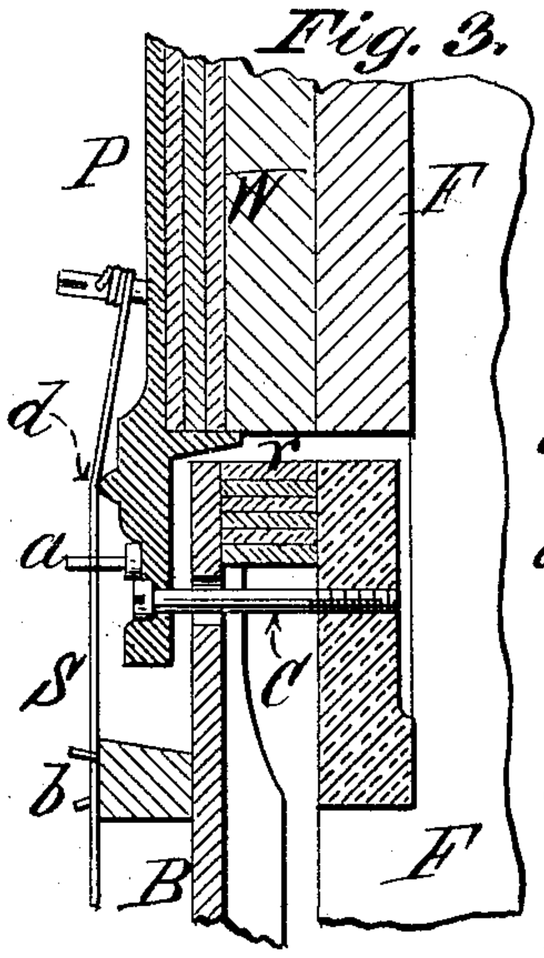
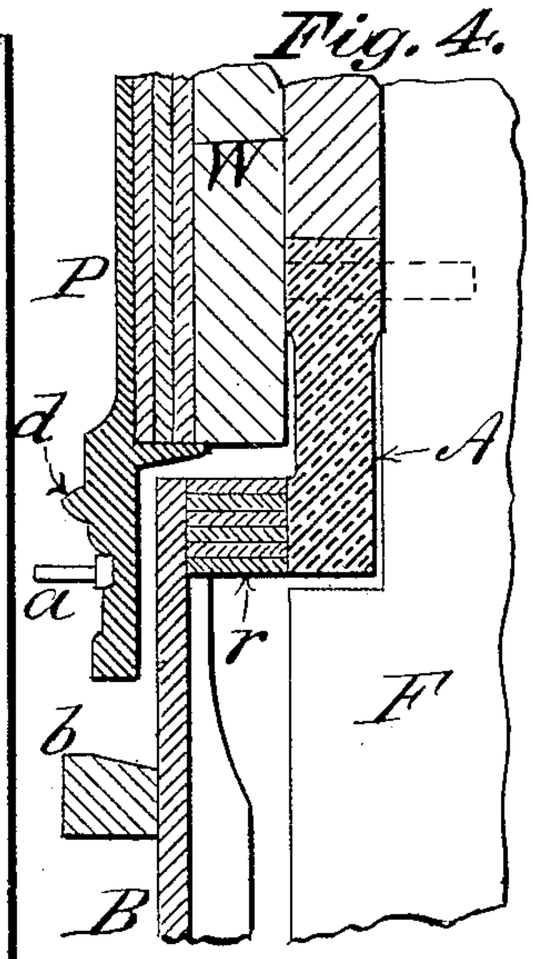


Fig. 4.



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UNITED STATES PATENT OFFICE.

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SOUNDING-BOARD FOR PIANOS.

SPECIFICATION forming part of Letters Patent No. 594,718, dated November 30, 1897.

Application filed March 15, 1897. Serial No. 627,467. (No model.)

To all whom it may concern:

Be it known that I, PAUL M. ZEIDLER, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Sounding-Boards for Pianos, of which the following is a specification sufficient to enable others skilled in the art to which the invention appertains to make and use the same.

My invention relates to means for securing the treble ends of sounding-boards to piano-frames, and is designed to afford an increased area of board to secure a more uniform distribution of the area of the board with relation to the bridge and to augment its resilience without impairing its strength of resistance to the strain imparted by the strings.

In the construction of pianos the edges of the portions of sounding-boards adjoining the treble strings have heretofore been secured in position by gluing to the wrest-planks or to facings or rims secured rigidly to the frames, thus establishing practically the same conditions of rigidity and tension for both the treble and the bass strings, and thereby muffling or neutralizing the relatively greater vibratory action of the strings of the treble, the boards sometimes even being made thicker at the treble ends to withstand the greater strain to which such portions are subjected.

My invention consists, primarily, in securing the edge of a sounding-board immediately beneath or behind the treble strings (and other portions of the edges of the board, if desired) to a facing or rim mounted upon a spring-board of greater width than said facing or rim, said spring-board being rigidly secured to the frame of the piano beyond the position of the facing or rim, the portion of said spring-board between such rigid connection with the frame and the sounding-board facing or rim being free of contact with the frame. By thus supporting the face or rim of the sounding-board independently and indirectly upon the frame I am enabled to extend the sounding-board under the edge of the string-plate, thereby increasing the area of the sounding-board on that side of the bridge and at the same time increasing its resilience or vibratory quality, since the spring-board, while sufficiently stiff and rigid to support the board against the strain imparted by the strings, is also sufficiently elastic to conform more or less to the vibrations of the board and transmit them without interference or modification, save in force, to the frame. In other words, the portion of the spring-board free of contact with the frame interposed between the sounding-board facing or rim and the frame acts as a resilient buffer between the frame and sounding-board and by adapting itself to the action of the board obviates the abrupt interference or obstruction of vibration which is inevitable where the facing or rim of the board is secured directly to the rigid framework. As a result of this indirect transmission to the frame the vibratory force is diffused without material alteration in character, all the parts acting in unison, thereby improving both the tone and volume of sound generated in the strings as given out by the instrument as a whole. The increase in area of sounding-board between the bridge and wrest-plank which is rendered practicable by the use of the spring-board interposed between the sounding-board and the frame is also an important factor in improving the power and tone of the instrument.

Another feature of my invention consists in coupling the string-plate and my auxiliary support or spring-board together by means of a screw or equivalent mechanical expedient, whereby the vibratory force imparted to the string-plate by the strings is transmitted to the spring-board and whereby the latter is reinforced in position with a uniform tension under all conditions.

The invention also includes the use of a coupling device which is adjustable for the purpose of regulating the tension of the sounding-board.

An incidental feature of my invention in connection with my method of attaching the edge of the sounding-board indirectly to the piano-frame consists in forming the facing or rim of the sounding-board of a series of strips of veneer glued together and placed endwise between the edge of the sounding-board and the spring-board intermediate between it and the frame. I am aware that facings have thus been made before; but in the present case the facing or rim so constructed

forms an important adjunct to my intermediate spring-board, since by combining the two I am enabled to attain relatively greater stiffness and strength with a maximum degree of elasticity and resilience in a comparatively thin supporting medium between the sounding-board and the frame of the piano. Thus in order to properly resist and sustain the strain imparted to the sounding-board by the strings my new intermediate support, if the facing or rim were made of a single thickness of wood, would have to be made so thick and heavy in order to attain the requisite strength that it would lack the elasticity and resilience essential in attaining the new and beneficial results hereinbefore set forth.

In the accompanying drawings, Figure 1 is an elevation of a portion of a piano-frame, the string-plate being omitted and the sounding-board being shown as partially broken away. Fig. 2 is a vertical section, upon a larger scale, of the edge of a portion of a sounding-board and adjacent parts. Fig. 3 is a similar view showing more clearly means for connecting the string-plate and support for the edge of the sounding-board. Fig. 4 is a view similar to Fig. 1, showing a modification in the arrangement of parts.

W represents the wrest-plank secured to the framework F of the piano.

P is the string-plate, and S one of the treble strings, secured in the usual manner and passing over the duplex *d*, through the agraffe *a*, and over the bridge *b* of the sounding-board B.

The edge of the sounding-board B is glued to a facing or rim *r*, preferably formed of strips of wood joined together, so as to attain the maximum of strength and lightness with the minimum of material. The facing or rim *r* is in turn glued to the spring-board A, the edges of the layers of wood of which it is composed abutting against the sounding-board on one side and said spring-board on the other.

The spring-board A is considerably wider than the facing or rim *r* and is rigidly secured to the frame F beyond the position of the said facing or rim *r* by gluing and doweling, as indicated in the drawings, or by other suitable means.

The part of the spring-board to which the facing or rim is attached and the part thereof between said facing or rim and the part that is secured to the frame F are formed so as to be free of contact with the frame, or the adjoining parts of the latter are so formed as to leave a space between them and the said spring-board, excepting where secured thereto, so that the said spring-board is free to adapt itself to the pulsations of the sounding-board B under the action of the strings.

The string-plate P and spring-board A are coupled together when desired, as when the spring-board is arranged in the position shown in Figs. 1, 2, and 3, by a screw C, the head of which engages with the string-plate P, while the threaded end *c* screws into the spring-board A, the sounding-board being perforated to admit of the passage of the shank of the screw without contact therewith. This affords a simple and convenient means of connection between the string-plate P and the spring-board A, as well as means for regulating the tension of the sounding-board B through the medium of the spring-board A and facing or rim *r*; but I do not confine myself to the use of the screw C, as any other mechanical expedient may be resorted to with like result.

It is obvious that, if desired, the whole or more or less of the sounding-board may be supported in the same manner in which I have herein described the treble end only as supported without departing from the spirit and intent of my invention; also, that the parts described may be modified more or less in structure and still attain the results which distinguish my invention from the prior state of the art.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination with the frame and sounding-board of a piano, of a spring-board interposed between said parts and attached to the facing or rim of the sounding-board and to the frame of the piano, said spring-board being free of contact with said sounding-board and frame except where attached thereto, substantially in the manner and for the purpose described.

2. The combination with the frame, sounding-board and string-plate of a piano, of a spring-board attached to the facing or rim of the sounding-board and to the frame of the piano, said spring-board being free of contact with said sounding-board and frame except where attached thereto, and means for coupling the said string-plate and spring-board together, substantially in the manner and for the purpose described.

3. The combination with the frame, sounding-board and string-plate of a piano, of a spring-board attached to the facing or rim of the sounding-board and to the frame of the piano, said spring-board being free of contact with said sounding-board and frame except where attached thereto, and an adjustable coupling between said string-plate and said spring-board for the purpose of regulating the tension of the sounding-board, substantially as described.

4. In a piano, the combination with the frame, of a sounding-board having a rim or facing formed of layers of wood joined together, and a spring-board secured rigidly to said facing or rim and to the frame of the piano, said spring-board being free of contact with said sounding-board and said frame except where attached to said rim or facing and to the frame, substantially in the manner and for the purpose described.

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