(No Model.)

2 Sheets—Sheet 1.

C. C. HUDSON.

UPRIGHT PIANO CASE.

No. 390,169. Patented Sept. 25, 1888.

FIG. 1.

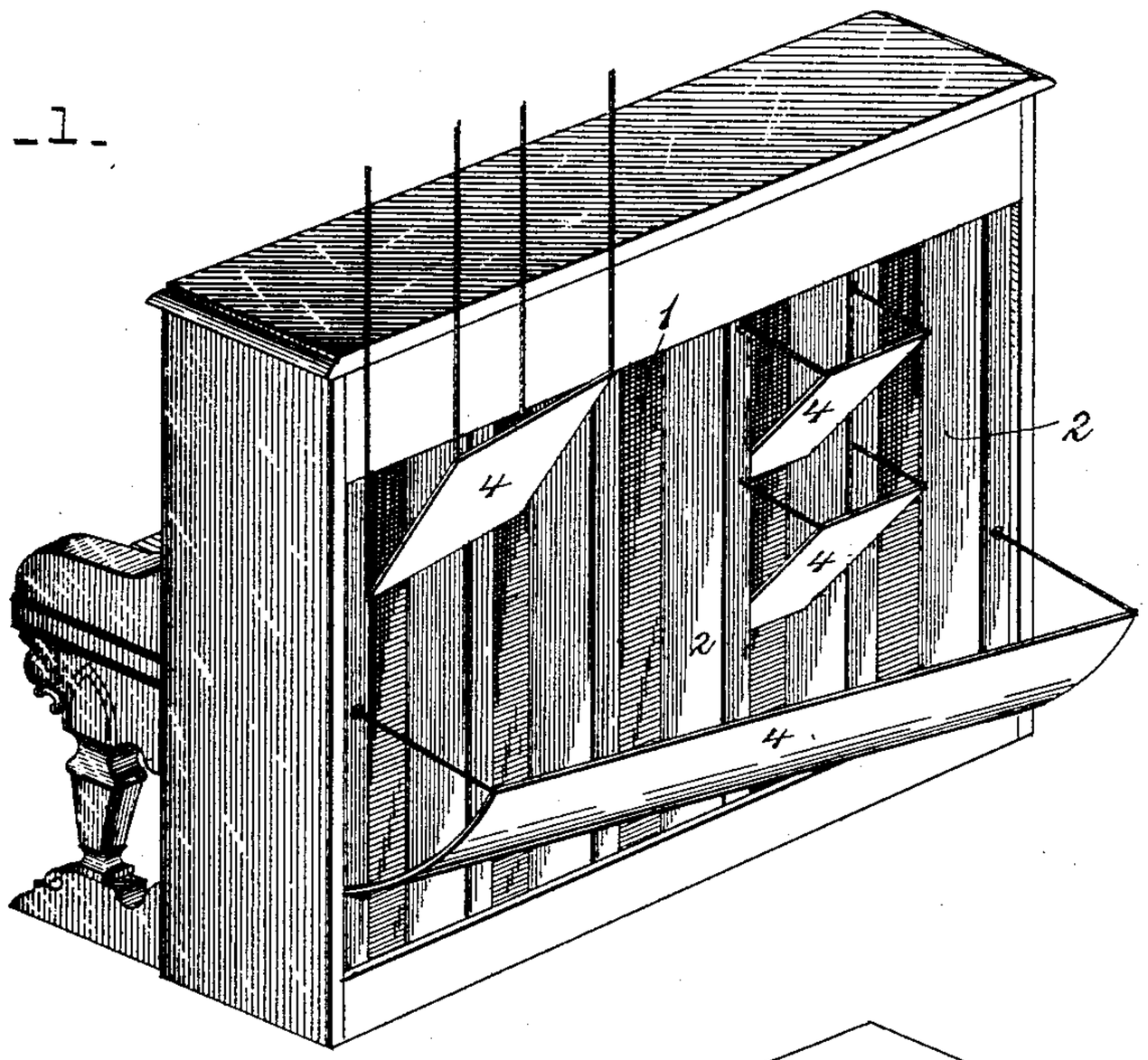
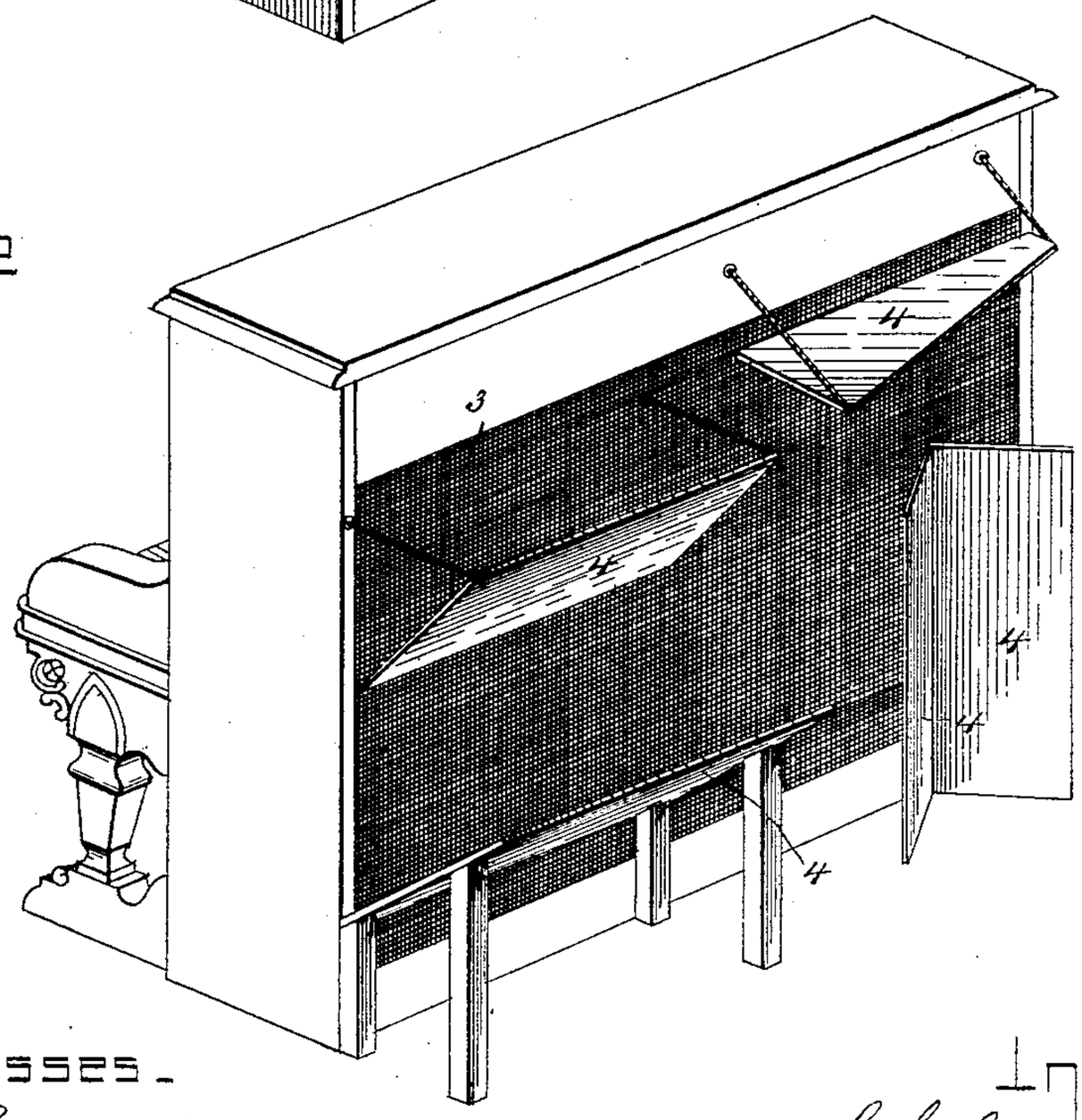


FIG. 2



Witnesses.
E. D. Smith
C. M. Newman

Inventor.
C. Columbus Hudson
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Atty.

(No Model.)

2 Sheets—Sheet 2.

C. C. HUDSON.

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No. 390,169. Patented Sept. 25, 1888.

FIG. 3.

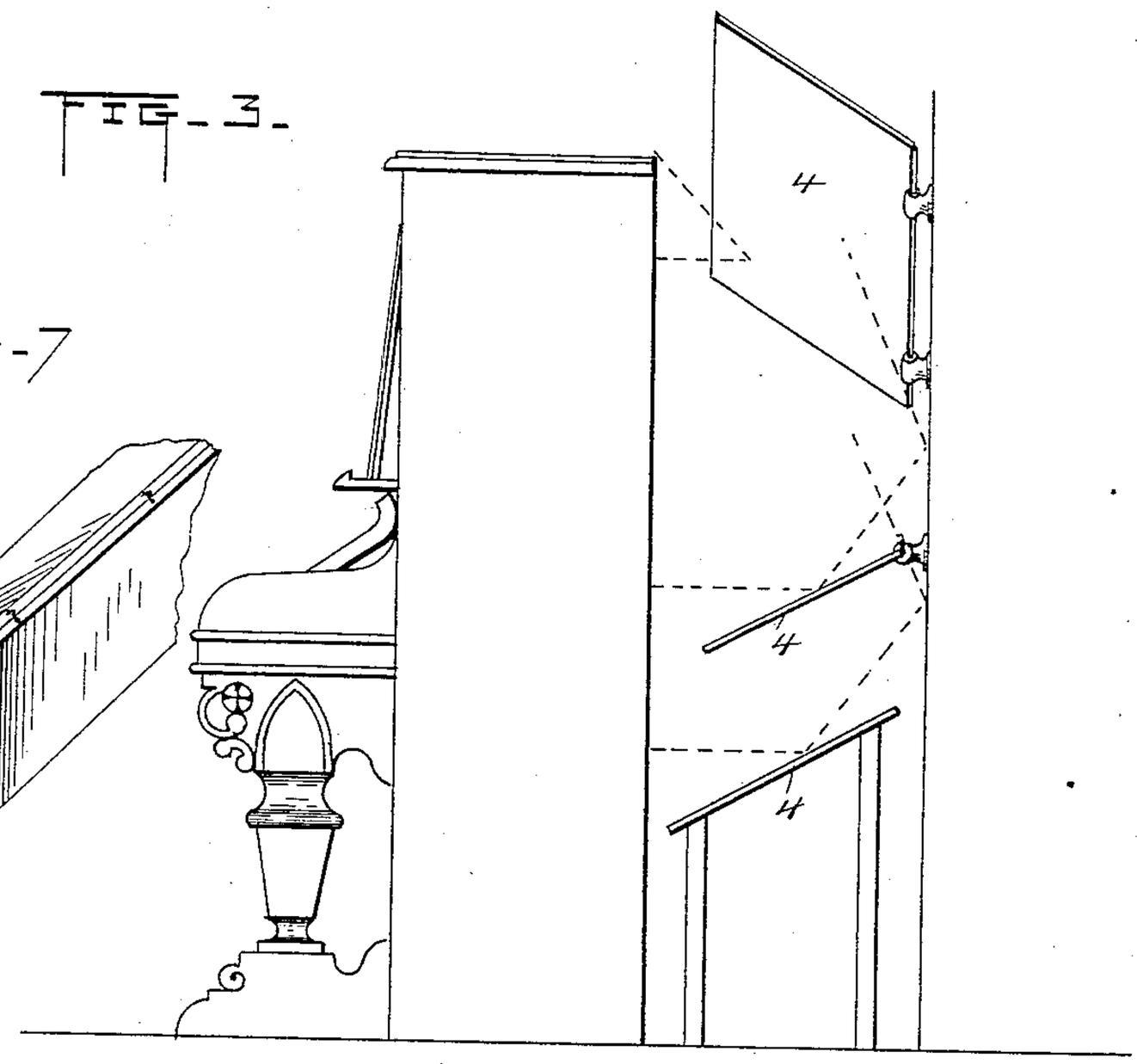


FIG. 7

FIG. 4.

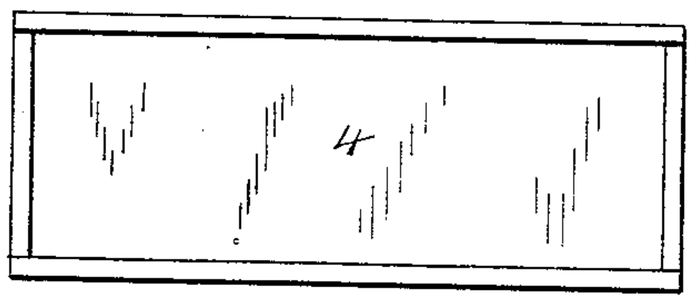


FIG. 5.

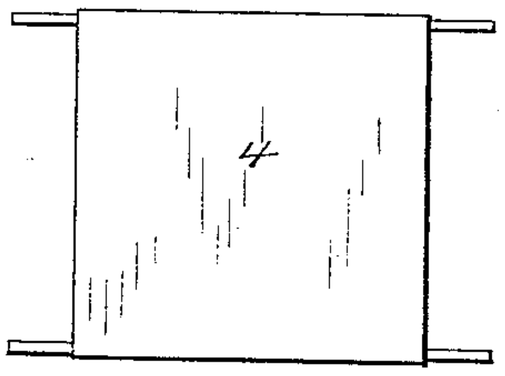
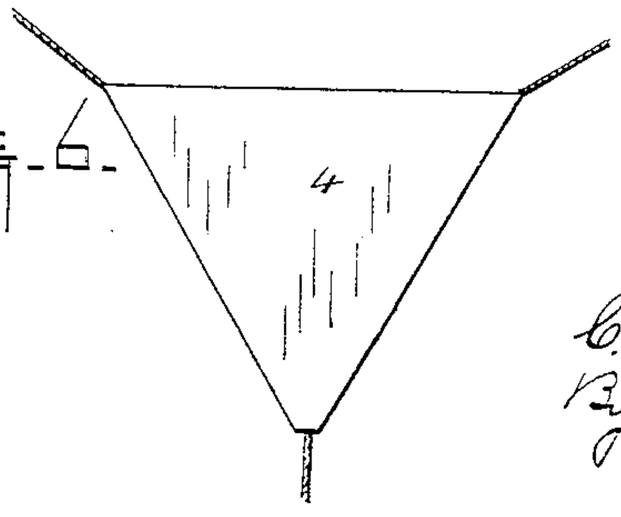


FIG. 6.



Witnesses.
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UNITED STATES PATENT OFFICE.

CHRISTOPHER COLUMBUS HUDSON, OF ELMIRA, NEW YORK.

UPRIGHT-PIANO CASE.

SPECIFICATION forming part of Letters Patent No. 390,169, dated September 25, 1888.

Application filed March 31, 1888. Serial No. 269,100. (No model.)

To all whom it may concern:

Be it known that I, CHRISTOPHER COLUMBUS HUDSON, a citizen of the United States, residing at Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Sound-Deflectors for Upright Pianos; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to overcome the various objections to this class of pianos—such, for instance, as unevenness of scale between the soprano and bass, the "dead-tones" almost always produced by certain keys of the bass-scale, also the roaring sound frequently caused by sound-waves rebounding from a wall back of the sounding-board, and, furthermore, to remedy imperfections of tone resulting from acoustic defects of the room in which the piano may be placed; in short, to place the tone of the instrument largely under the control of the performer, so that when used—for instance, in playing accompaniments—the tone of all or any portion of the scale may be united or softened to harmonize with the voice of a singer; or, if desired, the tones may be rendered more brilliant, so that they will blend perfectly with other musical instruments. These variations of tone may be produced in the entire scale or in any portion of it, the bass can be made heavy, and the soprano united or softened, or vice versa.

My invention, in fact, enables the performer to adapt any piano to its special environments, to overcome disagreeable tones resulting from acoustic defects of the room, to adapt the piano to different styles of voices, and to make its tones blend more perfectly with other musical instruments. In order to accomplish these results in a simple and inexpensive manner I have devised a system of sound-deflectors adapted for attachment in any suitable manner back of an upright piano, for the purpose of receiving that portion of the sound-waves which issues from the back of the sounding-board when put into vibration and diverting them in any direction or number of directions at will simply by adjusting the deflectors at suitable angles with reference to the sounding-board, as hereinafter explained. These deflectors may be made of any suitable material—as, for example, wood, metal, leather, paper, or cloth—with or without frames, as may be required, may be made of any suitable size or shape to suit the special instrument to which they are applied, and may be attached either to the instrument or to the wall in any preferred manner, as will presently be more fully described.

In the accompanying drawings, forming part of this specification, Figure 1 is a perspective of an upright piano, the view being from the back, the wire screen usually covering the back of such instruments being dispensed with and sound-deflectors applied, some of them being placed between the braces. Fig. 2 is a similar view, the back of the piano being covered by a wire screen and deflectors applied in different ways; Fig. 3, an end view of an upright piano, showing deflectors applied to the wall and indicating in dotted lines various angles of reflection of the sound-waves. Figs. 4, 5, and 6 are elevations of different styles of deflectors detached; and Fig. 7 is a perspective illustrating the manner in which I sometimes attach rectangular deflectors together to form a triangular deflector which may be adjusted at any desired angle.

1 denotes the sounding-board of a piano; 2, the braces, which are of ordinary construction, and 3, the wire screen, which may or may not be used, as preferred.

4 denotes sound-deflectors which I combine with the piano in any suitable manner for the purposes hereinbefore set forth. For ordinary home use—as for pupils taking lessons—the adjustment of these deflectors may be made by a tuner, and by means thereof irregularities of the scale, or defects in either the bass or soprano scale, or peculiarities of tone resulting from defective acoustic qualities of the room, may be remedied. The adjustment of the deflectors, however, is not a matter that necessarily requires the services of a tuner or of a highly-skilled performer. Any performer of ordinary musical ability can readily learn to adjust the deflectors to suit the various purposes for which the piano may be used—as, for instance, in accompanying different qualities of voice in singing or in accompanying various other musical instruments.

As the various angles at which the deflectors are to be applied will depend entirely upon the special circumstances under which they are used, general explanations only for their use can be given. It may be said, in a general way, that if inclined upward they prevent the sound-waves from striking the wall and deflect them upward into the room. On the other hand, if inclined downward, they act to soften the tones and may be made to unite them more or less, as may be desired. It not infrequently happens that certain portions of either the soprano or the bass need to be softened to harmonize with the rest of the scale. It is easily accomplished by placing deflectors back of the portion of the scale that it is desired to soften and inclining the deflectors downward. On the other hand, if it is desired to increase the brilliancy of certain portions of the scale, the deflectors are inclined upward. Sometimes a single deflector will accomplish the desired result. At other times enough of them are required so that all sound-waves coming from the sounding-board will be deflected upward or downward instead of being allowed to strike the wall, as is usual with this class of pianos. The difference in number of deflectors used and of degrees of angle at which applied depends largely upon the quality of the instrument in use and upon the room in which it is located.

The manner in which the deflectors are held in place is not of the essence of my invention. They may be attached in place by cords, as in Figs. 1 and 2. They may be of various shapes and sizes, as shown in these figures, and either plane surfaces or curved. For the class of deflectors shown in Fig. 1 a simple means is to use cords attached to the deflectors themselves and to screw-eyes in the braces, the lower ends of the deflectors resting upon screw-eyes or upon very small nails in the braces. Where it is required to permanently increase the brilliancy of the soprano-scale, a deflector may be placed upon standards, as in Fig. 2 and also in Fig. 3; or to produce certain other permanent effects it may rest upon the floor, being held in position with reference to the piano by means of cords or wires, as in Fig. 2. Still another form is to attach the deflectors by means of brackets in the wall, as is also shown in Fig. 3.

I have found under certain circumstances that two deflectors secured together at any required angle and placed with the apex of the angle toward the back of the piano will accomplish valuable results in deflecting the sound-waves sidewise and preventing them from striking the wall at the back. I have sometimes secured valuable results by securing three single deflectors together in the form of a triangle and suspending at any desired angle back of the piano, the deflector at the back, of course, merely serving as a brace for the other two, as shown in Fig. 7. When made of textile material or paper, the deflectors are provided with frames, as in Fig. 4, and when made of leather they may be stretched by cords, as in Figs. 5 and 6.

It will of course be understood that these various details of construction may be varied to an almost unlimited extent without departing from the principle of my invention.

I claim—

1. The combination, with an upright piano having an open back, of a sound-deflector of a relatively small area situated behind the sounding-board and opposite a portion only of the springs of the instrument, and means, substantially as described, for adjusting said deflector, whereby the sound-waves from a limited number of the strings are affected relatively to the waves from the other strings, substantially as set forth.

2. The combination, with an upright piano having an open back, of a sound-deflector inclined toward the side of the instrument and adapted to deflect the sound-waves laterally, and means, substantially as described, for supporting said deflector, as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

C. COLUMBUS HUDSON.

Witnesses:

A. M. WOOSTER,

BERTHA E. LEE.