M. CLARK.

MOTOR FOR AUTOMATIC PIANOS.

APPLICATION FILED JUNE 20, 1913.

1,089,748.

Patented Mar. 10, 1914.

2 SHEETS—SHEET 1.

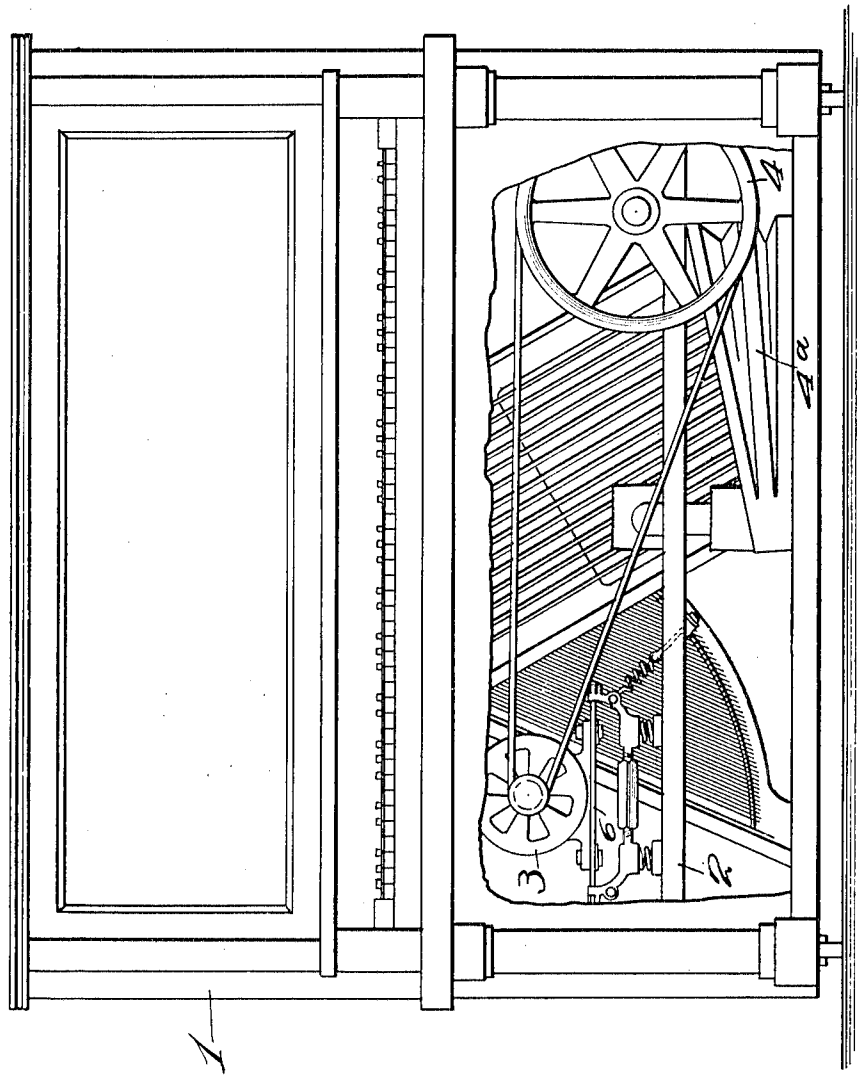


Fig. 1.

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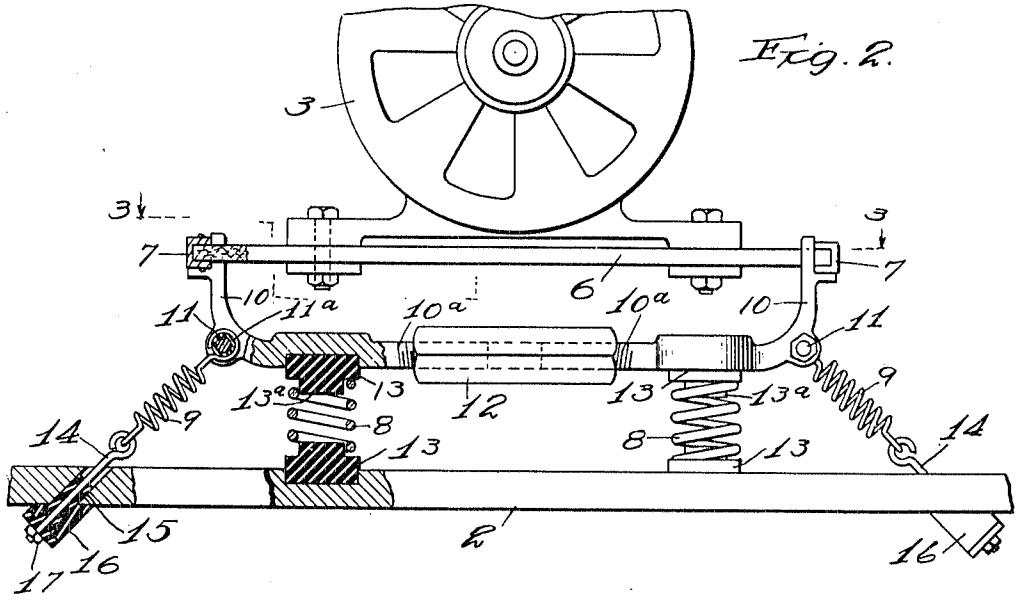
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2 SHEETS—SHEET 2.

Fig. 2.



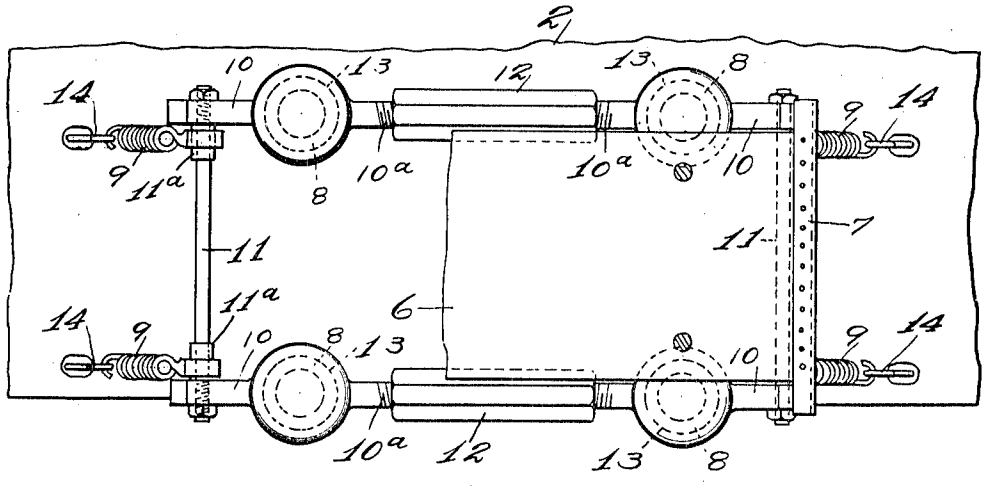


Fig. 3.

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UNITED STATES PATENT OFFICE.

MELVILLE CLARK, OF CHICAGO, ILLINOIS, ASSIGNOR TO MELVILLE CLARK PIANO COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

MOTOR FOR AUTOMATIC PIANOS.

1,089,748. Specification of Letters Patent. Patented Mar. 10, 1914.

Application filed June 20, 1913. Serial No. 774,779.

To all whom it may concern:

Be it known that I, MELVILLE CLARK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Motors for Automatic Pianos, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

The purpose of this invention is to provide a construction by which in a motor-actuated automatic piano, the running of the motor may be prevented from causing any sound interfering with the musical effect of the playing.

It consists in the elements and features of construction shown and described as indicated in the claims.

In the drawings: Figure 1 is a front elevation of a portion of an automatic piano equipped with this invention, having the front panels of the lower part of the casing removed to disclose the features embodying the invention. Fig. 2 is a partly sectional detail elevation of the motor and its immediate supporting devices in the piano case. Fig. 3 is a section at the line, 3—3, on Fig. 2.

In the drawings there is represented the casing, 1, of an upright piano of ordinary form of construction, and within the lower part of the casing a shelf or ledge, 2, upon which there is mounted, as hereinafter more particularly described, an electric motor, 3, for actuating the playing mechanism, said playing mechanism not being shown in detail, but indicated only by the representation of the main belt wheel, 4, which it may be understood operates by proper connections the pumper bellows, 4^a, and any other parts of the mechanism requiring mechanical actuation. In instruments of this character,—that is, having an electric motor mounted in the casing,—especially when the motor is of the alternating current type, the rotation of the motor at the necessary high speed produces a vibration which is intensified or accentuated by the presence of the sound-producing devices of the instrument, viz:—the strings stretched on the sounding board,—which in the drawings, Fig. 1, are represented in a customary position in respect to the casing and motor. The vibration of the motor, in the ordinary construction of these parts heretofore, resultant from the rotation at high speed of the revolving member of the motor is communicated through all the solid parts of the casing, and responded to more or less by the various strings of the piano, which thus intensify the sound and render it particularly detrimental to the musical effect of the playing of the instrument.

In the present invention the communication of the vibration from the motor to the solid parts of the casing is practically prevented by mounting the motor, 3, upon a flexible strip of belting, 6, which is in turn supported at its ends upon cross bars, 7,—7, the belting being preferably stretched tight from cross bar to cross bar so that the motor mounted upon said belting between the lines of support of the belting on the bars, 7, while definitely positioned, is held elastically on the belting which is further stretched by the weight of the motor mounted upon it. Practically all vibration of the motor casing is absorbed and nullified, as to its capacity for producing audible sound, by the belting strip, 6. This belting strip is preferably made of leather which is finished so as to be soft and pliable, and thereby as free as possible from any capacity for transmitting vibration. This belting, however, may be of any other suitable flexible material, such as rubber belting or any form of fiber webbing, and the part denoted, 6, in the drawings may be understood as being made of these or like materials. Preferably, to still further eliminate the possibility of vibration being communicated from the motor to the casing of the instrument, the cross bars, 7, between which the belting strip, 6, is stretched, comprised in their support upon the rigid shelf or ledge, 2, compression springs, 8, and tension springs, 9, which are themselves deprived of capacity for communicating vibration to the ledge and thus to the case, by the construction shown in which leather, rubber, or equivalent cushioning material is interposed between the springs and the solid parts between which they extend. The specific construction shown is a convenient one for accomplishing the several purposes. As illustrated, the cross bars, 7, are metal strips folded channel-wise and clasping the ends of the belting and riveted thereto, and having their ends extending beyond the side edges of the belt s · as to have lodgment

upon and be stopped by brackets, 10, one at each corner of the belting strip, the two at each end being connected rigidly by a rod, 11, and the two at each side being connected by a right-and-left thread coupling, 12, screwed onto the correspondingly threaded terminals, 10^a, of the brackets. In the lower side of each of the brackets there is formed a socket which receives a rubber block, 13, terminating downwardly in a round nipple, 13^a, for centering one of the compression springs, 8, and the lower end of each of these springs is similarly lodged upon and centered by another of the blocks, 13, which is led into a socket provided for it in the upper surface of the ledge or shelf 2. The tension springs, 9, are engaged with the transverse rods, 11, upon which, for seating the hooked ends of the springs, there are placed rubber sleeves, 11^a. The opposite hooked ends of the springs, 9, are engaged in the eyes of eye-bolts, 14, which extend through rubber bushings, 15, which are mounted in the ledge, 2, and below said bushings the eye-bolts are provided with washers, 16, and nuts, 17, by which the eye-bolts may be drawn more or less through the bushings to tension the springs. Thus every connection from the cross bars, 7, to the ledge, 2, comprises one or more cushioning elements, and there is no connection through which vibration can be communicated to any perceptible extent.

I do not limit myself to the detail construction shown in respect to the means of securing the ends of the belting strip on which the motor is lodged, nor to the means of supporting the end supports of said belting strip on the rigid shelf, nor to the relative position of said ledge and the motor; and obviously the flexible belting strip which constitutes the immediate support of the motor can be itself connected with a rigid support in the piano casing so as to afford the result sought and embodied in a great variety of ways, without departing from the substance of this invention.

I claim—

1. A support for a motor for minimizing the sound produced by its operation, consisting of a strip of flexible belting adapted to have the motor mounted upon it between its ends, and supports to which the ends of the belting are directly connected.

2. A support for a motor for the purpose of deadening its sound, consisting of flexible belting adapted to have the motor mounted upon it between its ends; cross bars to which the ends of the belting are made fast, and springs by which the cross bars are yieldingly supported.

3. A support for a motor for deadening its sound, comprising a flexible belting strip; means by which such belting strip is supported at its ends with freedom to sag between its said supports, and means by which the motor may be lodged upon the belt between its supports so as to permit it to sag.

4. A support for a motor to deaden its sound, consisting of a flexible belting strip; crosswise-extending supports for the belting strip at its ends, and elastically yielding supports for said crosswise supports, the belting strip being adapted to have the motor support lodged upon it between said crosswise supports.

5. A support for a motor to deaden its sound, comprising a flexible belting strip; supports connected to the ends of the belting strip; means for spreading said supports to stretch the belt taut between them, and means for mounting the motor upon the belt between said supports.

6. A support for a motor for deadening its sound, comprising a flexible belting strip adapted to have the motor lodged upon it between its ends; crosswise supports for the ends; elastically yielding supports for said crosswise supports, and means for spreading apart said crosswise supports to stretch the belt taut between them.

In testimony whereof, I have hereunto set my hand at Chicago, Illinois, this 17th day of June, 1913.

MELVILLE CLARK.

Witnesses:
M. GERTRUDE ADY,
LUCY I. STONE.