No. 791,426. PATENTED MAY 30, 1905.

W. P. KELLY.

FALL BOARD MECHANISM FOR PIANOS.

APPLICATION FILED NOV. 21, 1904.

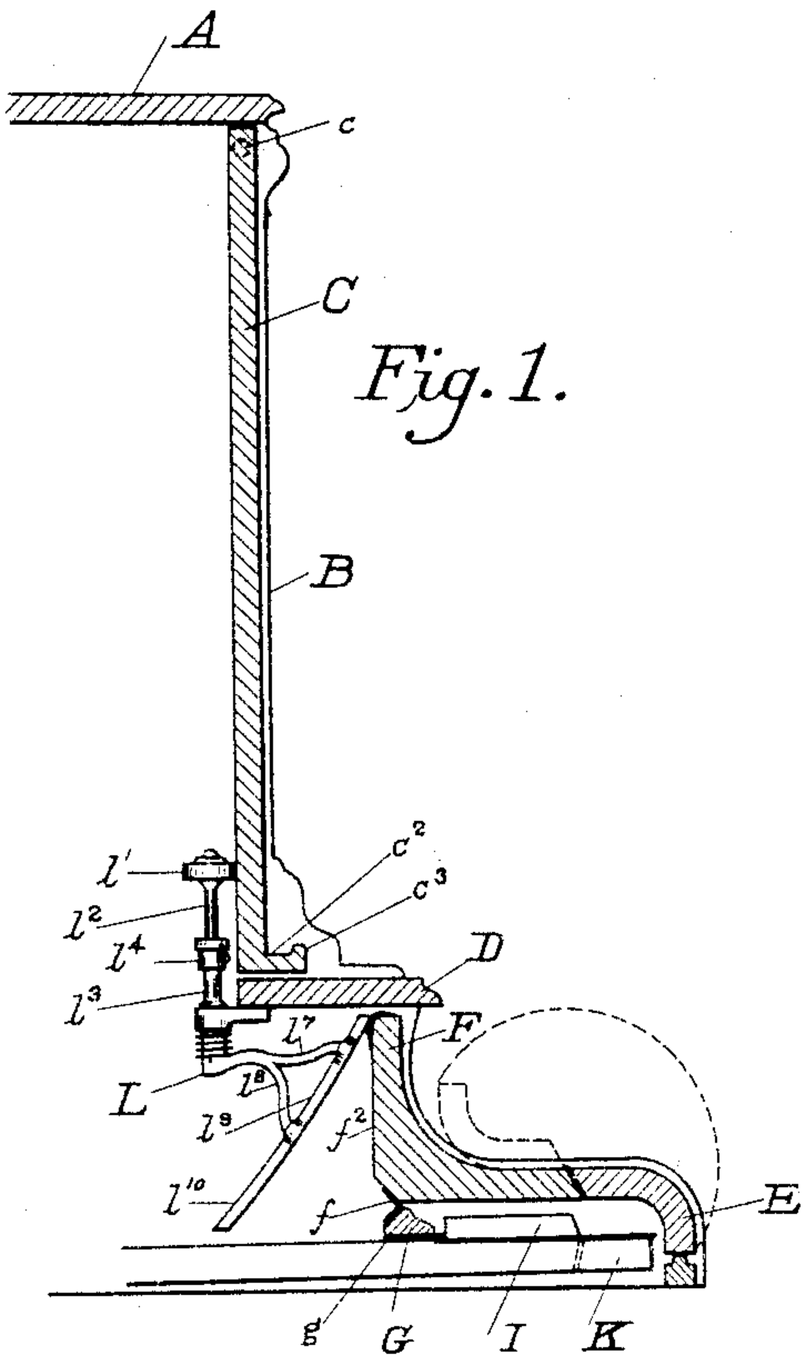

Fig. 1.

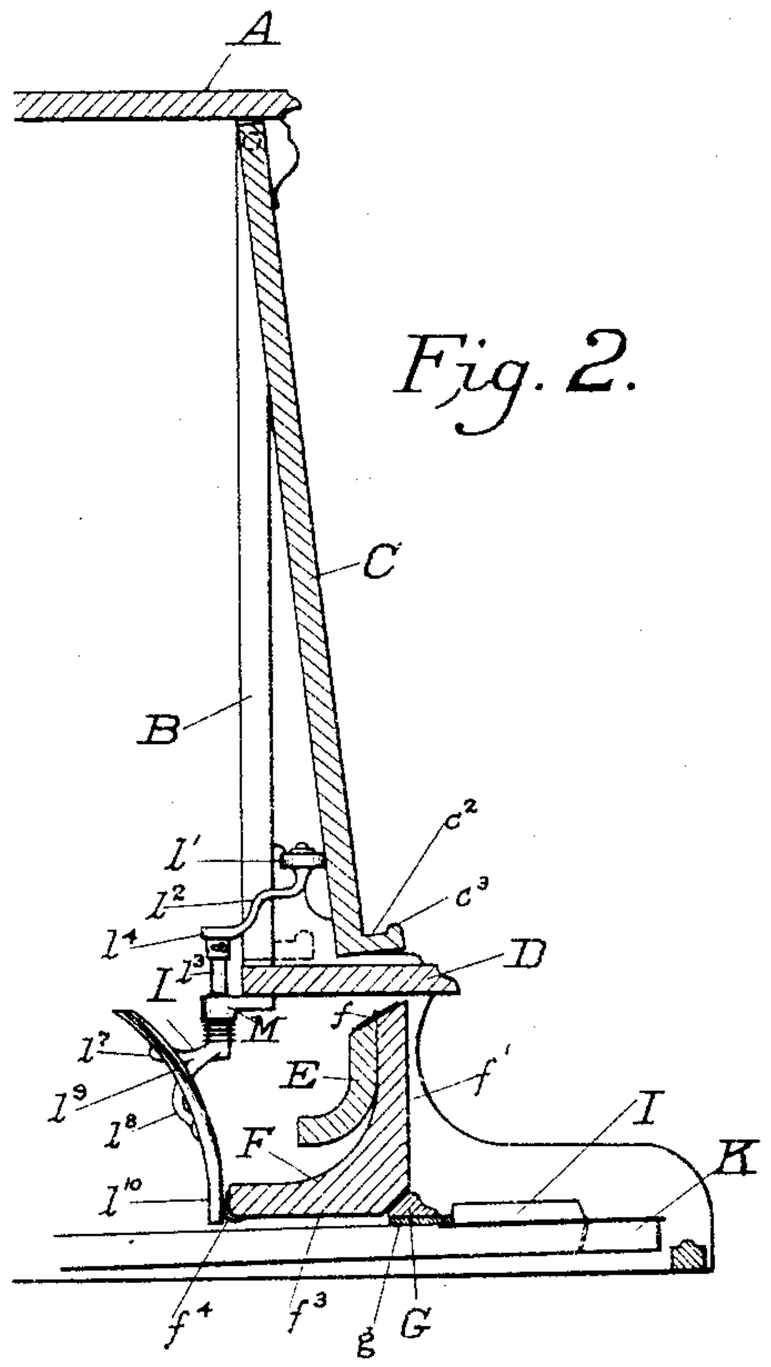

Fig. 2.

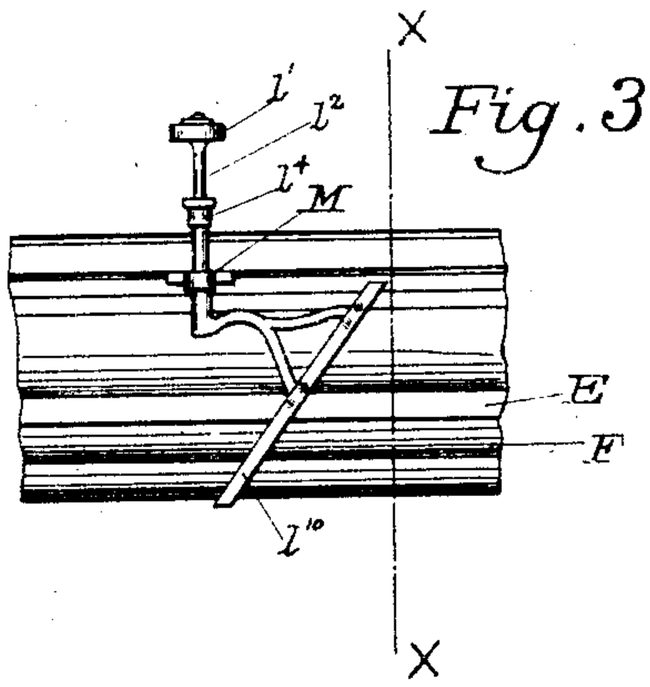

Fig. 3.

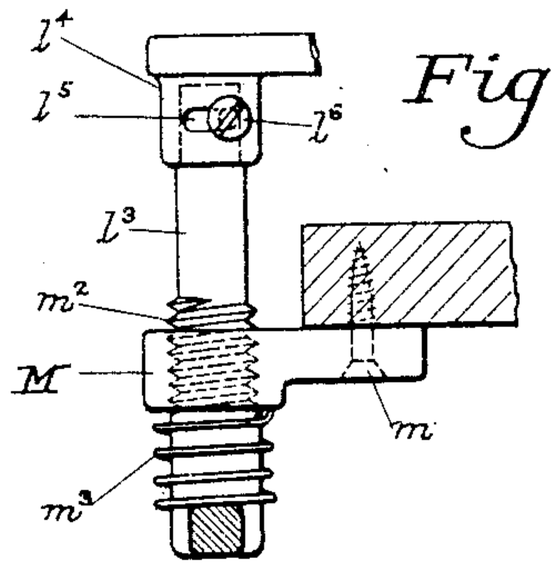

Fig. 4.

Witnesses.
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UNITED STATES PATENT OFFICE.

WILLIAM P. KELLY, OF ANSONIA, CONNECTICUT.

FALL-BOARD MECHANISM FOR PIANOS.

SPECIFICATION forming part of Letters Patent No. 791,426, dated May 30, 1905.

Application filed November 21, 1904. Serial No. 233,777.

To all whom it may concern:

Be it known that I, WILLIAM P. KELLY, a resident of the city of Ansonia, county of New Haven, and State of Connecticut, have invented a certain new and useful Improvement in Fall-Board Mechanism for Pianos, of which the following is a specification.

My invention relates to pianos, and particularly to that class of pianos known as the "upright," and which has a music-desk pivoted in the front of the case above the keys, so that its lower end may be swung outwardly from the case toward the player, thus forming an easel-like support for the music directly in front of the player. It is customary in this class of pianos to inclose the front portion of the keys with a cover extending longitudinally of the case and to also inclose the space between the rear end of the cover and the lower end of the vertical front portion of the case over the keys with a further cover or covers. These latter are of various configurations, according to the style of the instrument, and are known in the trade as the "fall-board," which is shown and described herein as being rigid and substantially L-shaped.

My invention consists of intervening mechanism arranged between the fall-board and music-rest and in the rear of the same in such a manner that when the cover and the fall-board are moved back to expose the keys the intervening mechanism will operate to throw out the lower end of the music-rest.

My invention also consists of further details of construction and manner of operation more specifically described in the following specification and appended claims.

In the drawings, Figure 1 is a cross-sectional view of a fragmentary portion of a piano when closed. Fig. 2 is the same view taken in Fig. 1, but showing the piano open. Fig. 3 is a rear view of the fall-board and lever shown in Fig. 2. Fig. 4 is a detail view of a fragmentary portion of the lever.

Referring to Figs. 1 and 2, A is the top of the case of the piano having a vertical front face B, in which swings the music-desk C. I have shown the music-desk pivoted at its topmost portion at *c;* but the same may be pivoted at any intermediate portion thereof, so that when it is swung out into the oblique position shown in Fig. 2 the portion above the pivot will swing back into the case. At the lower end of the music-rest and integral therewith is a ledge c^2, having a bead at its front edge c^3, thus forming a support for the lower edges of the music-sheets, the backs of which rest against the music-rest C. Below the music-rest C is located the shelf D, which projects forwardly from the vertical front face of the case beyond the music-rest C when the same is thrown outwardly, as shown in Fig. 2. The forward ends of the keys are inclosed throughout their entire length by the cover E, which is hinged to the L-shaped fall-board F, the latter being in turn hinged longitudinally to the support G. This support is fastened at its ends to the case and has a felt lining *g* on its bottom side, so that it forms a soft cushion running the entire length of the keyboard. The keys are partially shown as I and K and may be of the usual construction, as is customary in pianos. The cover E is hinged longitudinally to the fall-board F and may be opened and swung back to rest on the face of the latter, as shown in dotted lines in Fig. 1. The fall-board F is hinged at f' to the support G in such a manner that after throwing back the cover E, as shown in dotted lines in Fig. 1, the said fall-board may be also turned back to the position shown in Fig. 2, thus exposing that portion of the keys necessary for the manipulation of the instrument and at the same time closing the space between the shelf D and the upper portion of the keys.

The front portion of the fall-board when the piano is opened as above described presents a vertical face f^2 to view from the front of the piano, whereas its bottom face f^3 extends rearwardly over the keys. On the lower corner of the rearward portion of the fall-board and extending longitudinally thereof for a short distance is a buffer f^4, as shown in Fig. 2, the function of which will be hereinafter described. In the rear of the shelf D and near the middle thereof is journaled the lever L, which swings horizontally in the sleeve M, which is fastened to the shelf by the screw *m*. This lever is of peculiar configuration and has its uppermost portion

above the sleeve or pivot M constructed in the shape of a crank, as shown in Fig. 2, on the upper end of which lever is journaled the roller l' on the crank portion l^2. This crank portion is detachably and adjustably attached to the vertical portion l^3, as shown in detail in Fig. 4, in which l^4 is a sleeve slipped over the upper end of the vertical portion l^3, the said sleeve having therein a horizontal slot l^5. This sleeve is fastened to the portion l^3 by the screw l^6, which passes loosely through the slot l^5 and screws into a screw-hole in the upper end of the portion l^3. Thus by turning the sleeve, to which is attached the upper portion of the lever carrying the roller l', the said roller may be adjusted at any angle and fastened by tightening the screw l^6, the purpose of which adjustment will be hereinafter more fully described. The said lever L is journaled or pivoted in the sleeve M by means of screw-threads m^2; but such means are merely shown for the purpose of illustration, and any other suitable means for pivoting the lever L in the rear of the shelf D may be utilized and still be within the scope of my invention. The vertical portion of the lever l^3 terminates at a short distance below the sleeve M, and extending therefrom at a sharp angle are the braces l^7 and l^8, which support a curved portion of the lever l^9. This curved portion terminates and runs into a straight portion l^{10}, which in turn terminates at the extreme lower end of the lever. The said curved portion l^9 of the lever has its curvature alone in one plane, as shown in Fig. 3, the exact curvature being shown in Fig. 2, which is taken at right angles to Fig. 3. It is evident that the braces l^7 and l^8 may be of any suitable configuration to suit the taste or some other means used in their place, their function being merely to maintain the relative position of the parts l^9 and l^{10} with the fulcrum of the lever. When the said lever L is hereinafter referred to as a "horizontal" lever, or pivoted horizontally, or in any other manner defining its movement as being horizontal, it is intended to mean that any point in the same when moved will describe a circle in a horizontal plane in contradistinction to a lever otherwise pivoted, any point in which describes a circle in a vertical or other plane. The said lever L is held normally in position, as shown in Fig. 1, by means of a spiral spring m^3, which has its lower end fastened to said lever and its upper end to the sleeve M. Any movement of the lever out of this normal position is resisted by the force of said spring, which also acts to return it to its normal position when released.

Having now described the construction of my device, I will proceed to explain the operation thereof. When it is desired to open the piano—that is, to expose the keys in such a manner that they may be operated by the player—the cover E is turned backwardly on its hinges until it rests upon the fall-board F, as shown in dotted lines in Fig. 1. The fall-board, together with the cover, is then turned back on its hinges f' until it comes to rest in the position shown in Fig. 2, thus leaving that portion of the keys I and K exposed to view as is customary in the art of pianos when the instrument is said to be open. During the movement of the fall-board from its position shown in Fig. 1 to its position shown in Fig. 2 its buffer portion f^4, which at the initial position of the fall-board is in contact with the upper end of the portion l^9 of the lever L, by a sliding contact with said curved portion turns the said lever on its pivot until it comes to rest in the position shown in Fig. 2, after which the said buffer portion continues its sliding engagement down the straight lower end of l^{10} of the lever L until the fall-board comes to rest in its final position, as shown in Fig. 2. The turning of the lever by the engagement of the buffer on the fall-board with the curved portion heretofore mentioned effects the turning of the upper end of said lever from the position shown in Fig. 1 to that shown in Fig. 2. During this movement the roller l', journaled on the upper end of the lever, by its movement in the path of a circle in a horizontal plane operates or throws out the music-desk from the position shown in Fig. 1 to that shown in Fig. 2. This horizontal movement of the lever L is resisted by or is against the tension of the spring m^3, which latter would operate to return the lever L back to its position shown in Fig. 1 should it not be locked in some manner against such return movement. The yielding resistance offered by the lever to the fall-board is to the top portion thereof and is continuous during the entire movement of the fall-board from its closed to its open position, and this yielding resistance, taken together with the sliding friction of the top of the fall-board along the curve l^9, gives to the movement a positive, uniform, and steady action, all of the parts being in close engagement, thus leaving no chance for swinging or rattling. It is distinctly understood that the spring acting upon the lever is not confined to a coil-spring, as illustrated and described in this specification; but any spring or the equivalent thereof which is adapted to be applied directly to any part of the lever to accomplish this same function is within the scope of my invention. When the fall-board has reached the limit of its throw, the resistance of the spring is thrown out by means of a locking device. Such a locking arrangement is effected by the straight portion l^{10}, adjacent to the lower end of the lever, being in contact with the buffer f^4 of the fall-board. Thus the tendency of the lever L to return to its normal position, as shown in Fig. 1, by virtue of the resistance of the spring m^3 is resisted by the engagement of the straight

portion l^{10} of the lever with the said buffer, for until the fall-board is operated manually or otherwise to bring the said buffer into sliding contact with the portion of the lever the pressure of the lever against the said buffer in no way produces any movement of the fall-board, since said pressure would neither operate to slide the buffer up or down on a straight portion of the lever. This same locking arrangement can be effected regardless of the position of the hinge on the fall-board so long as the straight portion of the lever is substantially tangent to a circle of which the hinge is the center. Neither is it necessary that the lower end l^{10} of the lever be straight, for it might be curved downwardly and rearwardly or in any other direction, provided its direction was not downwardly and forwardly, since the latter direction would always have a tendency to raise the fall-board upwardly. Thus that portion of the lever which is engaged by a corner of the fall-board or its buffer consists, essentially, of two portions, the one being of such a configuration as to operate or turn the lever and the other being of such a configuration as to lock the lever against a return movement, and although I have shown that part of the lever which is to be engaged by the fall-board for the purpose of moving the lever as being curved downwardly and rearwardly from the fall-board in its initial position I do not limit myself to such peculiar configuration of this portion of the lever as is illustrated and described, but reserve the right to utilize any other peculiar configuration that will perform this same function—as, for instance, a downwardly-extending portion wherein the parts l^9 and l^{10} are both straight and in alinement with each other. The crank portion l^2, on the end of which is journaled the roller l', may be adjusted by the screw and slot shown in Fig. 4, so that the roller, when the lever is in its initial position, as shown in Fig. 1, may be either in contact with the back of the music-desk or a short distance in the rear thereof, as desired.

Although I have shown the lever journaled in a sleeve attached to the shelf D, it may be journaled in any other suitable location on the instrument, as at the ends, respectively, of the fall-board, and, further, although I have shown one lever two or more may be utilized, as desired.

Any other convenient means of hinging the fall-board may be used other than that shown and described, such as pins journaled in sockets at the respective ends of the board.

Although I have used various terms to describe my invention—such as "cover," "fall-board," "lever," "pivot," "roller," "music-desk," &c.—yet I do not wish to be confined to the exact construction of these elements, but reserve the right to utilize any of the well-known equivalents of the same within the scope of my invention.

I am aware that heretofore there has existed in the art mechanism in the rear of the fall-board for the purpose of operating the music-desk. I am also aware that flexible fall-boards have been utilized to operate levers in various ways for the purpose of throwing out the music-desk, and I am further aware that it has been common to utilize the rigid L-shaped fall-board to operate a vertical-swinging lever to throw out a music-desk; but I am not aware that a horizontal lever has ever been used in this connection nor any type of lever which is in continuous engagement with the fall-board during its entire movement.

Having now fully described my invention, what I desire to claim and secure by Letters Patent is—

1. In a piano, the combination with a swinging music-desk and a rigid substantially L-shaped fall-board pivotally secured near the base, of a lever in the rear of the fall-board adapted to swing horizontally and to be engaged by the fall-board to operate the music-desk.

2. In a piano, the combination of a swinging music-desk and a swinging fall-board, with a lever adapted to swing horizontally and adapted to operate the music-desk by an engagement of the fall-board with the said lever.

3. In a piano, the combination with a swinging music-desk and a rigid substantially L-shaped fall-board, of a lever in the rear of the fall-board adapted to swing horizontally and to be engaged by the fall-board to operate the music-desk.

4. In a piano, the combination with the case of a substantially L-shaped fall-board pivotally secured therein near its base and adapted to be folded so as to pass under the ledge of the casing and close the space between the ledge and the keys whether the fall-board be opened or closed, a horizontally-swinging lever pivotally secured in the rear of the fall-board having a portion thereof on one side of and at some distance from said pivot extending downwardly and curved in a plane which intersects a vertical line dropped from said pivot, and the part adjacent to the lower end of said downwardly-extending portion being straight and in the said plane, whereby the fall-board when thrown back so that its upper portion will be in a straight line between the straight end of the lever and the hinge of the board, the said lever will be locked against return movement, and a music-desk in front of the case adapted to be operated by the lever.

5. In a piano, the combination, with the case, of a substantially L-shaped fall-board pivotally secured therein near its base, and adapted to be folded so as to pass under the ledge of the case and close the space between the ledge and the keys whether the fall-board be open or closed, a horizontal-swinging lever

pivoted in the rear of the board said lever having a portion thereof on one side of said pivot extending downwardly in the path of and adapted to be engaged by the upper portion of the fall-board, and a music-desk in front of the case adapted to be operated by the lever.

6. In a piano, the combination, with the case, of a substantially L-shaped fall-board pivotally secured therein near its base, and adapted to be folded so as to pass under the ledge of the case and close the space between the ledge and the keys whether the fall-board be open or closed, a horizontally-swinging lever pivotally secured in the rear of the fall-board said lever having a portion thereof on one side of and at some distance from said pivot extending downwardly and toward the vertical line of the pivot, and a music-desk in the front of the case adapted to be operated by said lever.

7. In a piano, the combination, with the case, of a substantially L-shaped fall-board pivotally secured therein near its base, and adapted to be folded so as to pass under the ledge of the case and close the space between the ledge and the keys whether the fall-board be open or closed, a horizontally-swinging lever pivotally secured in the rear of the fall-board having a portion thereof on one side of and at some distance from said pivot extending downwardly and curved in a plane which intersects a vertical line dropped from said pivot, and a swinging music-desk adapted to be operated by said lever.

8. In a piano, the combination, with the case, of a substantially L-shaped fall-board pivotally secured therein near its base, and adapted to be folded so as to pass under the ledge of the case and close the space between the ledge and the keys whether the fall-board be open or closed, a horizontally-swinging lever pivotally secured in the rear of the fall-board having a portion thereof one side of and at some distance from said pivot extending downwardly and curved in a plane which intersects a vertical line dropped from said pivot, and having the part adjacent to the lower end of said downwardly-extending portion in a straight line in the said plane, and a music-desk adapted to be operated by said lever.

9. In a piano, the combination with a swinging music-desk and a rigid substantially L-shaped fall-board of a horizontally-swinging lever pivoted in the rear of the fall-board a portion of said lever on one side of its pivot extending into engagement with the moving fall-board for operating the music-desk, and another portion engaging the fall-board in its open position for locking it.

10. In a piano, the combination of a swinging music-desk and a rigid substantially L-shaped fall-board of a horizontally-swinging lever pivoted in the rear of the fall-board, a portion of the said lever on one side of its pivot extending into engagement with the top of the moving fall-board for operating the music-desk and another portion engaging the fall-board in its open position for locking it.

11. In a piano, the combination of a swinging music-desk and a rigid substantially L-shaped fall-board of a horizontally-swinging lever pivoted in the rear of the fall-board, a portion of the said lever on one side of its pivot extending into engagement with the top of the moving fall-board for operating the music-desk and another portion engaging the fall-board in its open position for locking it, and a spring acting directly upon said lever to give the same a yielding resistance to said fall-board during its entire movement.

12. In a piano, the combination with a swinging music-desk and a rigid substantially L-shaped fall-board of a horizontally-swinging lever pivoted in the rear of said fall-board, a portion of said lever on one side of its pivot extending into engagement with the upper portion of said fall-board during the entire movement of the latter and a spring acting directly upon said lever to give the same a yielding resistance to said fall-board during said movement.

13. In a piano, the combination with a swinging music-desk and a rigid substantially L-shaped fall-board pivotally secured near its base of a horizontally-swinging rigid lever pivotally secured in the rear of the fall-board and adapted to operate the music-desk by its continuous engagement with said fall-board, and a spring acting directly upon said lever, to give the same a yielding resistance to said fall-board during its entire movement.

14. In a piano, a case, a swinging music-desk, a rigid substantially L-shaped fall-board pivotally secured to a rigid portion of the case, horizontally-swinging lever pivotally secured in the rear of the fall-board having a portion thereof on one side of its fulcrum and always in engagement with the moving portion of the fall-board, and its end on the opposite side of the fulcrum adapted to operate the music-desk and a spring acting directly upon said lever to give the same a yielding resistance to said fall-board during said movement.

15. In a piano, a case, a swinging music-desk, a rigid substantially L-shaped fall-board pivotally secured to a rigid portion of the case and a horizontally-swinging rigid lever pivotally secured in the rear of the fall-board having a portion thereof on one side of its pivot always in contact with, and in the path of the upper portion of said fall-board and another portion on the opposite side of its pivot adapted to operate the music-desk and a spring acting directly upon said lever to give the same a yielding resistance to said fall-board during said movement.

16. In a piano, the combination with a swinging music-desk and a rigid substantially

L-shaped fall-board, of a horizontally-swinging lever pivoted in the rear of said fall-board, a portion of the said lever on one side of its pivot extending into engagement with the moving fall-board for operating the music-desk.

17. In a piano the combination with a swinging music-desk and a rigid substantially L-shaped fall-board of a horizontally-swinging rigid lever pivoted in the rear of the said fall-board a portion of said lever on one side of its pivot extending into positive engagement with the moving fall-board for operating the music-desk and a spring acting directly upon said lever to give said lever a yielding resistance to said fall-board during its entire movement.

In testimony whereof I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM P. KELLY.

Witnesses:

PHILIP VIVIAN TIPPET,

FREDERICK W. HOLDEN.