E. SWANSON.

FOLDING PEDAL.

APPLICATION FILED MAR. 27, 1913.

1,074,222. Patented Sept. 30, 1913.

Fig. 1

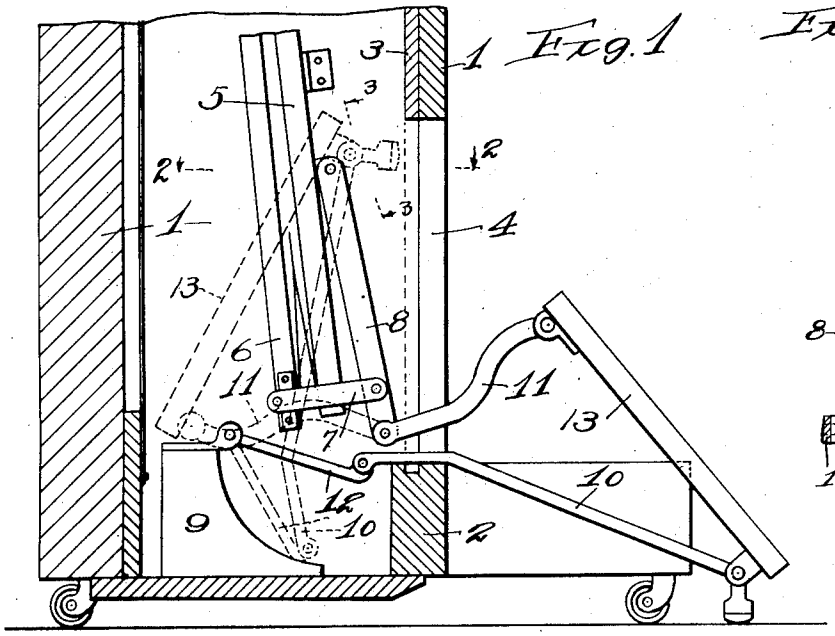


Fig. 3

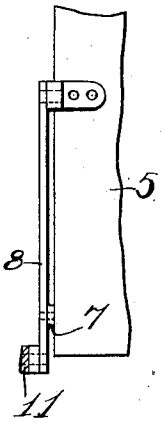
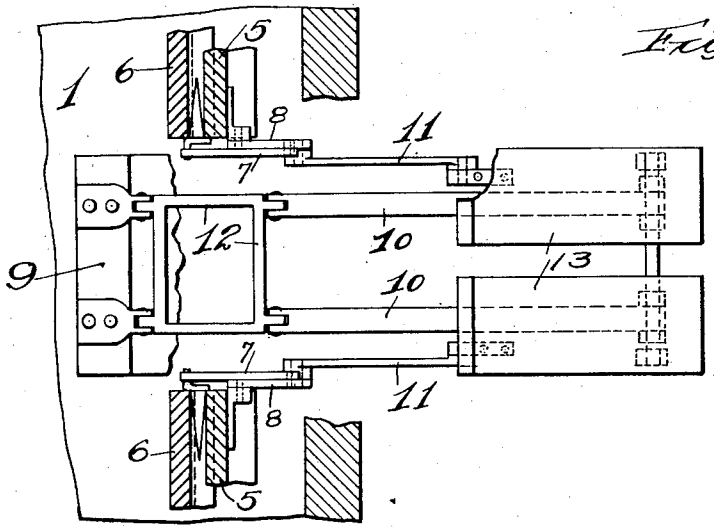


Fig. 2.



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UNITED STATES PATENT OFFICE.

EMIL SWANSON, OF STEGER, ILLINOIS, ASSIGNOR TO STEGER & SONS PIANO MANUFACTURING COMPANY, OF STEGER, ILLINOIS, A CORPORATION OF ILLINOIS.

FOLDING PEDAL.

1,074,222. Specification of Letters Patent. Patented Sept. 30, 1913.

Application filed March 27, 1913. Serial No. 757,133.

To all whom it may concern:

Be it known that I, EMIL SWANSON, a citizen of the United States, residing at Steger, in the county of Will and State of Illinois, have invented new and useful Improvements in Folding Pedals, 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 an improved construction of folding pedal for operating the pumpers of an automatic piano or like instrument, or to be used in similar situations.

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

In the drawings:—Figure 1 is a fore-and-aft vertical section of the lower portion of a piano case and mechanism therein embodying this invention. Fig. 2 is a section at the line 2—2 on Fig. 1. Fig. 3 is a detail section at the line 3—3 on Fig. 1.

The specific problem to the solution of which this invention is directed arises from the common form and proportions of piano cases in which there is a panel at the front below the manual which slides upward to open the case for the folding pedal construction which passes in through the opening so as to be concealed within the case behind the panel when not in use, and swings out through the opening and down to the floor for use when the pedal is held at its operative position. In the cases indicated, there is a bottom rail whose upper edge bounds the opening at the lower side, and for which a certain minimum height from the floor is requisite or desired; and since the height of the key-board from the floor is fixed, and the sliding panel in its upward movement cannot pass a certain point on account of the manual keys extending across the plane in which the panel slides, it follows that the panel cannot be wider than half the distance from the upper edge of the bottom rail to the horizontal plane which the upper edge of the panel cannot pass without colliding with the keys; and the opening through which the folding pedal must pass into and out of the case is limited in vertical width to something less than this minimum width of the panel.

The detail construction of the devices shown and about to be described is dictated by the necessity of making the pedal support suitably rigid for service when the pedal is swung outside the case and in use, and yet permit the entire structure to swing back readily and with certainty as to its position and movements, through an opening in the front of the case, which can be closed by a panel limited in dimensions as above indicated; but it should be understood that the invention is not limited to combination with a casing having such restricted opening.

In the drawings, 1 is the case having the bottom rail, 2, and panel, 3, for closing the opening, 4, at the front.

5 is the fixed board of the pumper bellows extending up and down in the case, and having the moving board, 6, located behind it and hinged at its upper end for swinging back and forth at its lower end in the pumping action. In view of the position of the moving member, 6, located so far to the rear in the case, as shown, it is desirable to obtain a more forward position for connecting the bellows-operating link from the pedal than that which is afforded by the lower end of the moving bellows board, 6; and for this purpose, the lower end of said moving board, 6, is connected by a link, 7, which extends thence forward past the fixed board, 5, to a lever, 8, which is fulcrumed at its upper end on the forward side of the fixed board, 5, and extends thence downward in front of said board for connection with the link, 7.

At the rear lower part of the case, there is provided a fixed member, 9, to which there is hinged a link frame, 12, extending thence forwardly, and having pivotally connected to its forward end a pedal-positioning frame or bar, 10, which at operative position extends out across the upper edge of the bottom rail, 2, and thence down forwardly to the floor. The pedal-operating link is connected at one end to the lower end of the lever, 8, and to the other end the pedal, 13, is connected at its toe end, the heel end of the pedal being pivoted to the floor-supported end of the bar or frame, 10. With the construction described, when the pedal-positioning bar or frame, 10, is folded outward and downward to the floor, as shown in Fig. 1, it is rendered fixed and definite in its position for supporting the pedal by its lodgment on the upper edge of the bottom rail, 2, where it crosses that rail, and

by its support upon the floor at the outer end. And, whereas, if its inner end were pivoted at a fixed point and it were of the necessary length to properly position the heel of the pedal at the outer end, it would be too long to permit it to carry the pedal in through the opening, 4, in its upward rearward swinging movement, it is adapted to so carry the pedal with it through the opening, by reason of the fact that its rear pivoted end is not mounted on a fixed pivot, but is carried by the free end of the link frame, 12, which, as soon as the pedal-positioning frame, 10, is lifted from the floor and thereby lifted off the upper edge of the bottom rail, 2, swings downward under the weight of the parts, and ultimately passes to the position shown in dotted line in Fig. 1, thus lowering the pivoted inner end of the frame, 10, sufficiently to permit it with the pedal to swing in through the opening, 4.

Upon considering the structure shown and described, it will be observed that when the pedal is folded back into the case the entire structure thus folded is positioned substantially rearward of the pivots on which it is carried in thus shifting its position, and it therefore tends to stay thus folded back into the case without requiring any means for retaining it. And this, it will be observed, is largely because the pedal proper is folded to the rear and is thus behind the vertical planes of the supporting pivots. Upon further considering, it will be observed that this manner of folding results from mere lifting of the device by the operator engaging his toe under the heel end of the pedal, because of the relative lengths of the link connections from the heel and toe respectively of the pedal,—that is, of the relative lengths of the pedal-positioning bar, 10, and bellows-operating link, 11, the position of their respective pivotal connections being considered and being as shown; for it will be seen that if the link, 11, were, for example, as long as the pedal-positioning bar, 10, from pivot to pivot, or, if the entire length of the pedal-positioning bar, 10, from its pivot at the heel of the pedal to the pivot about which it swings in folding up the pedal, were no greater than the length of the link, 11, the lifting of the heel of the pedal by the toe of the operator, as described, would cause the device to fold up with the pedal facing outward and standing in front of its connections, instead of swinging over behind them as in the construction shown. Upon further consideration, it will be seen that in order to obtain the proper relative length of the pedal link connections mentioned,—that is, to make the link, 11, as much shorter than the pedal-positioning bar, 10, as it should be in order to produce the folding action described,—and at the same time properly position the pedal and the bellows with respect to the case and preserve proper room for the backward swing of the movable bellows member, 6, it is necessary to provide for locating the pivot of the rear end of the link, 11, farther forward in the case than it could be if it were pivoted directly to the moving bellows member, 6, which it actuates. And it will be seen, therefore, that the manner of folding described and shown,—that is, the folding so that the pedal is at the rear when the device is folded,—involves, in order to obtain the proper relative length of the pedal-positioning bar, 10, and link, 11, the provision of the lever, 8, and its connection by the link, 7, to the moving bellows member, 6, so that the bellows-operating link, 11, obtains its pivotal connection for operating the bellows at a point well toward the front of the case instead of near the rear of the case. And it will be seen further that, in view of the shortness of the link, 11, relatively to the length of the pedal-positioning bar, 10, and the necessary relative positions of the rear end pivots of these parts, the movement described requires provision for the downward movement of the rear end pivot of said pedal-positioning bar in the folding movement of the entire pedal-supporting structure, and that the essential function of the link frame, 12, is to provide for and guide this downward movement of said rear end of the pedal-positioning bar.

I claim:—

1. In combination with a case, a fixed member and a moving member, both within the case; a link pivoted to the fixed member; a pedal-positioning bar pivoted to said link, the pivot being within the case at the operative position of the pedal and the link, extending out thence forwardly from the case and downwardly to the floor; an operating link pivotally connected in the case for operating the moving member, and a pedal pivotally connected at its toe-end with said operating link, and fulcrumed at its heel-end on said pedal-positioning bar.

2. In combination with a case having the bottom rail at its forward side; a moving bellows member within the case; a link pivoted in the rear part of the case at a position near the level of the top edge of the bottom rail, and extending thence forward toward said bottom rail; a pedal-positioning bar pivotally connected to the forward end of said link, the pivot being within the case at the operative position of the pedal and the link, extending thence out over the bottom of the rail and downward to the floor; a link connected within the case for operating said moving bellows member, and a pedal connected at its toe-end with said link and fulcrumed at its heel-end on the forward end of the pedal-positioning bar.

3. In combination with a case having a bottom rail at its forward side; a moving bellows member extending up and down and hinged at its upper end; a fixed bellows member in front of said moving bellows member; a lever pivoted to said fixed bellows member and a link extending from said lever back past said fixed member for operating connection with the moving bellows member; a link mounted on the case at the rear part thereof, and extending forward from its pivot and terminating within the case; a pedal positioning bar having one end pivotally connected to the forward end of said link within the case and adapted to swing from a position entirely within the case to a position at which it extends out above the bottom rail and thence down forwardly to the floor; a second link having one end connected to the lever mentioned, and a pedal having its toe-end pivoted to the other end of said last mentioned link, the heel-end of the pedal being fulcrumed upon the floor-supported end of said pedal-positioning bar.

4. In combination with a case, a fixed member and a moving member, both within the case, a link pivoted at its rear end to the fixed member and terminating at its forward end within the case; a pedal-positioning bar pivoted to the forward end of said link and adapted to extend therefrom out forwardly from the case and downwardly to the floor; an operating link pivotally connected within the case for operating the moving member, and a pedal pivotally connected at its toe end with said operating link and at its heel end fulcrumed on said pedal-positioning bar, the length of said operating link being considerably less than the length of the pedal-positioning bar, whereby the pedal is infolded and faced rearward when the structure is folded back and up into the case.

5. In combination with a case, a moving bellows member within the case at the rear part thereof, extending up and down and hinged at its upper end for moving back and forth at its lower end; means extending forward from said lower end of said moving bellows member for operating connection therewith; a bellows-operating link pivotally connected to said forwardly-extending means for operating the bellows; a link mounted in the case at the rear part thereof and extending forward from its pivot and terminating within the case; a pedal-positioning bar pivoted to the forward end of said link, and adapted to extend therefrom out forward from the case and downwardly to the floor; a pedal having its toe-end connected with said operating link and its heel-end fulcrumed on the forward end of said pedal positioning bar, the length of said bellows-operating link being considerably less than the length of the pedal-positioning bar from pivot to pivot.

In testimony whereof, I have hereunto set my hand, at Steger, Illinois, this 22nd day of March, 1913.

EMIL SWANSON.

Witnesses:
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J. N. GANSEN, Jr.