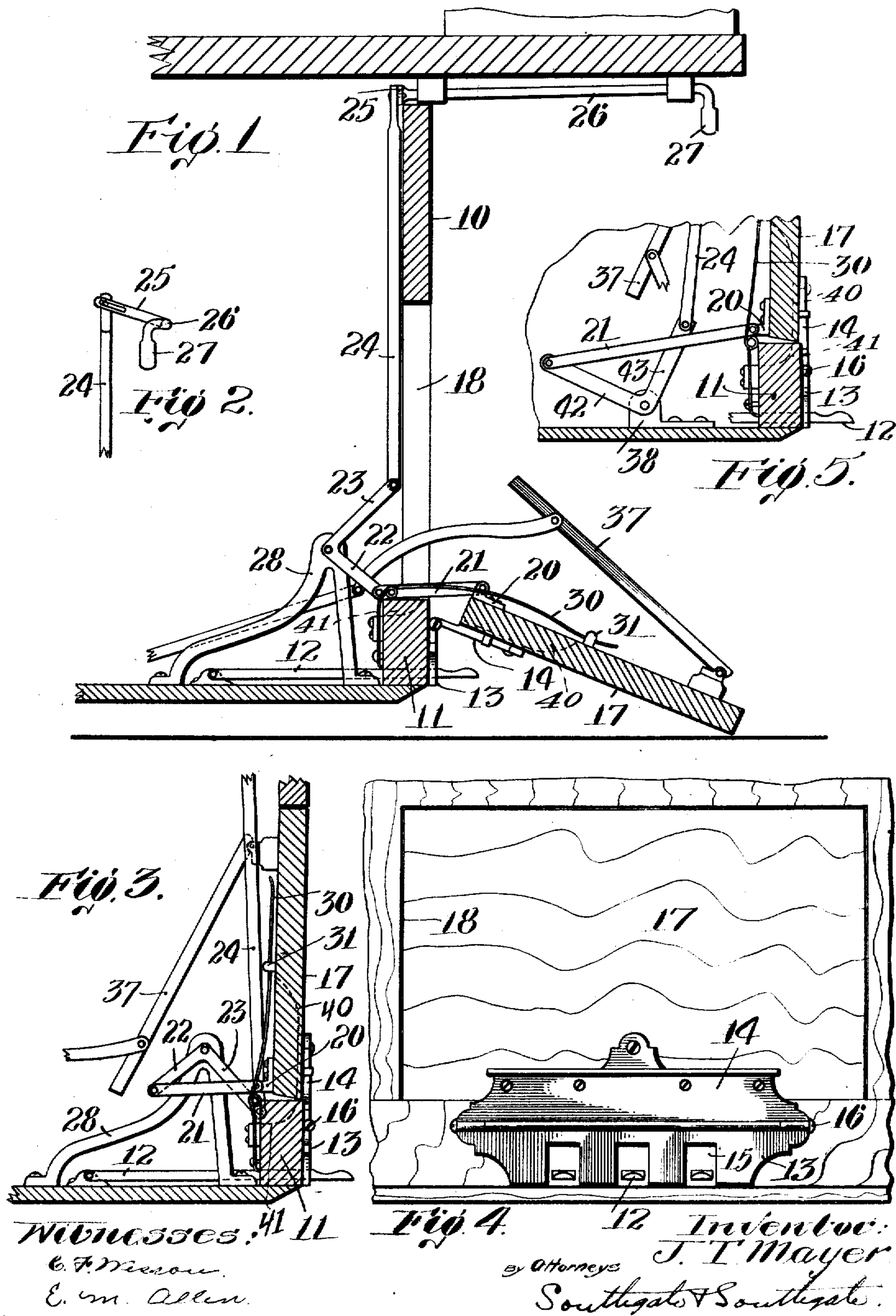


J. T. MAYER.  
COMBINATION MUSICAL INSTRUMENT.  
APPLICATION FILED MAR. 16, 1908.

915,870.

Patented Mar. 23, 1909.





# UNITED STATES PATENT OFFICE.

JULIAN T. MAYER, OF NEW YORK, N. Y., ASSIGNOR TO J. & C. FISCHER, A CORPORATION OF NEW YORK.

## COMBINATION MUSICAL INSTRUMENT.

No. 915,870.

Specification of Letters Patent.

Patented March 23, 1909.

Application filed March 16, 1908. Serial No. 421,284.

*To all whom it may concern:*

Be it known that I, JULIAN T. MAYER, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Combination Musical Instrument, of which the following is a specification.

This invention relates to means for mounting and operating a door or panel for supporting the operating pedals for a mechanical or combination musical instrument.

The principal objects of the invention are to provide simple and inexpensive means for operating the swinging door or panel so constructed that when it is operated to open the door the force will be exerted directly against the latter; also to provide a single spring or set of springs which will cushion the motion of the door both when it falls open and when it is closed by the operating means; and also to provide a construction of pedal guard to which the door or panel may be pivoted so that the device will appear like an ordinary instrument when used in connection with a combination instrument.

Further objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings which show a preferred form of the invention, and in which—

Figure 1 is a transverse sectional view of the lower part of a combination musical instrument with said preferred form applied thereto; Fig. 2 is an elevation of certain features thereof; Fig. 3 is a view similar to Fig. 1 showing the parts in closed position; Fig. 4 is a front elevation of the same, and Fig. 5 is a sectional view of a modification.

The invention is shown as applied to the lower part of the case of an ordinary upright combination piano, but it is to be understood that it is applicable to other types of instruments.

The case 10 is shown as provided with a lower rail 11 having perforations through which the pedals 12 which control the loudness project. On the front of the lower rail is mounted a pedal guard which consists of two pieces 13 and 14 each preferably formed of metal and the former fixed to the lower rail as usual and having perforations 15 for the pedals 12. The piece 14 is hinged to the stationary piece 13 by means of a hinge-pin 16 which is shown below the top of the front of the bottom rail. The door or panel 17

is fixed to the hinged piece 14 and swings therewith about the pin 16 as an axis carrying with it the pedals 37 for mechanically operating the instrument. The casing as usual is provided with an opening 18 for receiving the door, and by reference to Fig. 3 it will be understood that when the door is closed its weight acts at the rear of its pivot in such a way as to tend to keep it closed, the back of the plate 14 bearing against the front of the lower rail of the casing so as to limit the inward motion of the door. The guard thus serves its usual purpose and in addition acts as a hinge for the door.

For the purpose of operating the door it is provided with a bracket 20 near its lower or hinged side to which is pivoted a link 21. This link is connected with the short arm 22 of a bell-crank, the long arm 23 of which is connected with a sliding rod 24. This rod is movably connected with the end of an arm 25 mounted on a shaft 26 supported in any convenient position on the casing. An arm 27 on the shaft is employed for operating it. The bell-crank is pivoted on a bracket 28 which is fixed to the inside of the casing, the pivoted point being located a little above the bottom of the door and at the rear thereof. From a consideration of Fig. 3 it will be seen that these parts are so constructed that when the door is closed the link 21 will be substantially horizontal. Therefore any operation of the shaft 26 to open the door will act on the door along a line perpendicular thereto, thus having a great efficiency for opening the door. On the other hand when the door has to be closed the first motion of the shaft 26 for closing it will exert a pull on the outer in a direction almost perpendicular to a line connecting the hinge-pin 16 with the point at which the link 21 is pivoted to the door. It will be seen, therefore, that the parts are so arranged on account of the location, construction and arrangement of the bell-crank that a maximum efficiency of the link 21 both in the closing and opening operations is secured especially at the commencement of these motions.

In order properly to cushion the closing and opening motions of the door and to assist both when the shaft 26 is first started in either direction, a spring 30 is provided. This spring is fixed to the inside of the lower rail 11 and normally projects outwardly from the upper edge thereof at an angle midway



between the positions of the spring shown in Figs. 1 and 3. On account of this construction of the spring and of the fact that it is passed freely through a staple or the like 31 on the inside of the door so that it has a sliding connection therewith, it will be seen that the spring operates to check the last part of the opening motion of the door, and also to check the last part of the closing motion thereof. The tendency of the spring is always to return to an intermediate position, and consequently it assists in starting the door from either of its extreme positions. This with the arrangement of levers renders the door very easy to start in either direction, but after considerable momentum is secured the momentum is checked by the spring and the effectiveness of the levers is reduced. It will be seen therefore that this spring has a double effect, and that its efficiency in the several ways mentioned is secured in a most simple and inexpensive manner.

In order to permit the links to operate in the manner above described, the panel is provided with a cut-out place 40 and the bottom rail with a similar cut-out place 41.

Substantially the same principles are shown in Fig. 5, but the bracket 38 is located below the top of the lower rail and the arms 42 and 43 of the bell-crank extend upwardly from the pivoted point instead of downwardly. The link is substantially horizontal when the door is closed.

While I have illustrated and described preferred embodiments of the invention, I am aware that many modifications may be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited to the particular details of construction shown, but

What I do claim is:—

1. In a musical instrument, the combination with a swinging door or panel, of a link pivoted to the door or panel near its point of pivoted support, a sliding rod, and a bell-crank pivoted to the rod and link and located in such position back of the door or panel that when the same is closed the link will be substantially perpendicular thereto.

2. In a musical instrument, the combination with a swinging door or panel, of a link pivoted thereto near the lower portion thereof, an operating rod, and a bell-crank having a long and a short arm, one arm being connected with said rod and the other arm with said link, said bell-crank being pivoted behind the panel and at a point near the bottom thereof.

3. In a musical instrument, the combination with a swinging door or panel of an operating device therefor comprising a link pivoted to the door near the bottom thereof, a rod for operating the door, a bracket located inside the casing of the instrument, and

a bell-crank pivoted to said bracket at a point near the bottom of the door, said bell-crank being connected with said link and rod.

4. In a musical instrument, the combination with a swinging door or panel, of a link pivoted to the door or panel near its point of pivotal support, a sliding rod, a bell-crank pivoted to the rod and link and located in such position back of the door or panel that when the same is closed the link will be substantially perpendicular thereto, and a spring fixed to the inside of said casing below the door or panel and having sliding connection with the door or panel, said spring being normally of a shape intermediate between the forms which it assumes in the two positions of the door or panel, whereby it will cushion the swinging thereof in both directions.

5. In a musical instrument, the combination with a musical instrument case having a bottom rail of a swinging door, pivoted near said rail means for opening and closing it having a substantially direct normal action on the door during the commencement of the motion of the door in one direction, and resilient means for assisting in moving the door during the first part of its motion in either direction and for checking it during the last part.

6. The combination with a musical instrument case having a bottom rail, of a swinging door or panel, pivoted near said rail means for operating it, and a spring having one end fixed to the casing and the other end having a sliding connection with the door or panel, the normal shape of said spring being intermediate between the two positions which it assumes in the open and closed positions of the panel, whereby the spring will cushion both the opening and closing motion of the door or panel.

7. The combination with a musical instrument case having a bottom rail, of a door or panel pivoted at its lower side thereto below the top of the outer surface thereof, a spring fixed to the inner side of said bottom rail and having a sliding engagement with the door or panel, and means inside the casing for operating the door or panel.

8. In a musical instrument, the combination with the bottom rail having perforations therethrough and pedals extending through said perforations, of a pedal guard located on the front of said bottom rail and having perforations for said pedals, said pedal guard being in two pieces, the bottom piece being fixed to the lower rail, and the upper piece pivoted to the bottom piece below the top of the rail, a door or panel fixed to the upper piece of said pedal guard, and means inside the casing for operating the door or panel.

9. A pedal guard for a musical instrument consisting of a plate having perforations for the pedals, and a second plate hinged to the

first plate along a horizontal line, said second plate having means by which a door or panel may be secured thereto, whereby said door or panel will be pivoted to the lower piece of  
5 said pedal guard.

10. The combination with a musical instrument case having a bottom rail, of a swinging door or panel pivoted near said rail, means for operating the door or panel, and  
10 means fixed to the casing and having a slid-

ing connection with the door or panel for cushioning both the opening and closing motion thereof.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing  
witnesses. 15

JULIAN T. MAYER.

Witnesses:

THOMAS McCONKEY,  
E. J. PRINGLE.