

936,763.

2 SHEETS—SHEET 1.



Witnesses
C. Estabbs.
L. E. Williams

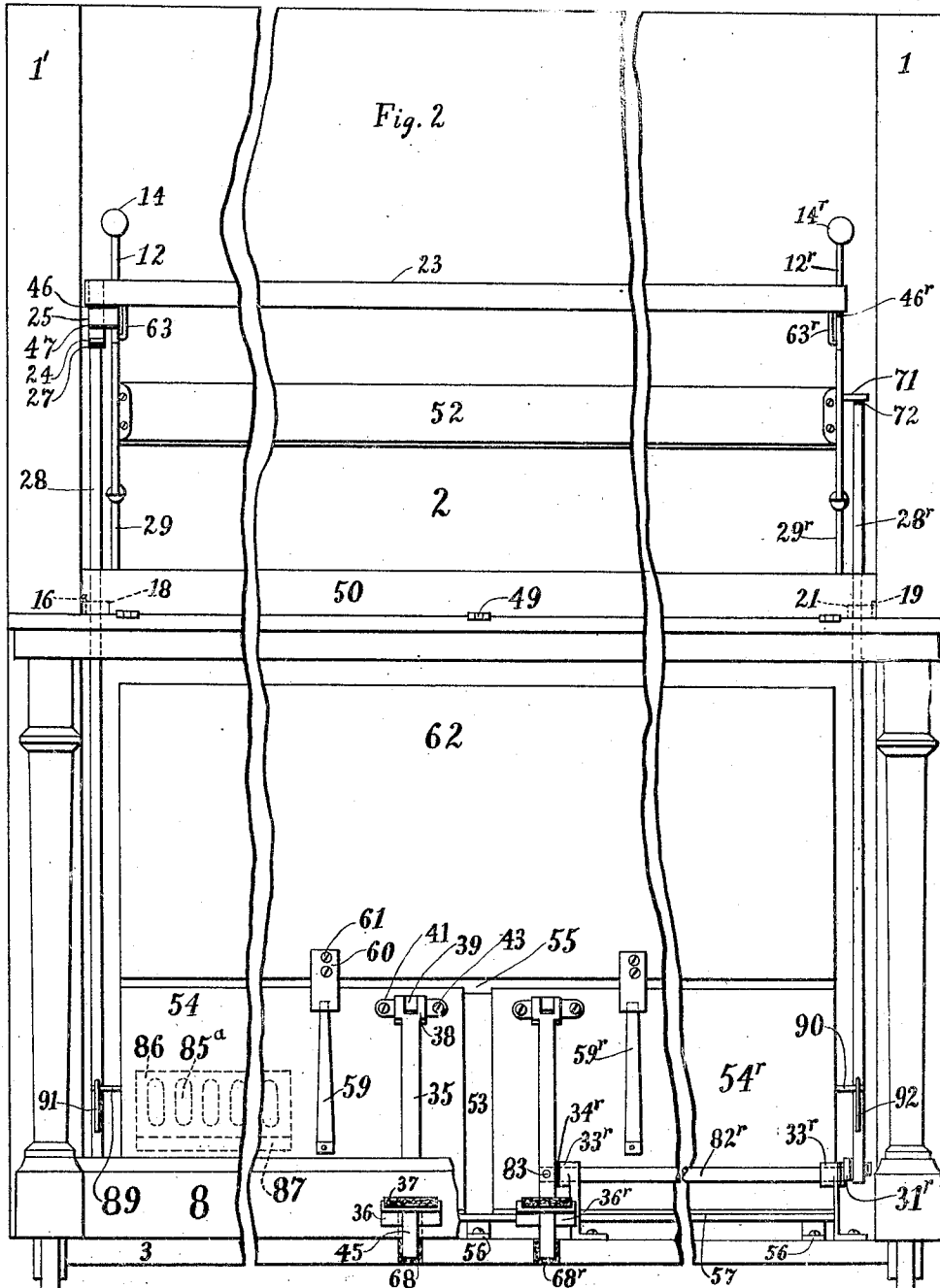
John W. Harley Jr

J. W. DARLEY, JR.
 PEDAL FOR AUTOMATIC PIANOS.
 APPLICATION FILED FEB. 17, 1908.

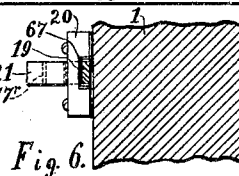
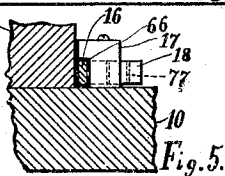
936,763.

Patented Oct. 12, 1909.

2 SHEETS—SHEET 2.



Witnesses
G. Estabbe
L. E. Williams



Inventor
J. W. Darley Jr.

UNITED STATES PATENT OFFICE.

JOHN W. DARLEY, JR., OF BALTIMORE, MARYLAND.

PEDAL FOR AUTOMATIC PIANOS.

936,763.

Specification of Letters Patent.

Patented Oct. 12, 1909.

Application filed February 17, 1908. Serial No. 416,226.

To all whom it may concern:

Be it known that I, JOHN W. DARLEY, JR., a citizen of the United States, residing at 1518 North Broadway, in the city of Baltimore, State of Maryland, have invented certain new and useful Improvements in Pedals for Automatic 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 same.

My invention relates to improvements in pedals for automatic pianos, and the objects of my invention are to simplify the general construction thereof, to avoid the necessity of forming small panels in the lower panel of the piano, and to avoid the necessity of having to open and close said small panel at the beginning and end respectively, of the operation of playing the piano automatically.

Heretofore, automatic pianos have been equipped with the usual loud and soft pedals for use in controlling the expression when the piano is being played manually, and with a pair of operating pedals which constituted the means by which the operator applied power to the mechanism when playing the piano automatically.

In carrying out my invention I dispense with the ordinary loud and soft pedals, and arrange the operating pedals so that they can be caused to perform either the functions of the loud and soft pedals, or the function of the operating pedals at the will of the operator.

Without limitation to the particular illustrated construction, representing one form of my invention, which is susceptible of many modifications, the said invention will be described with reference to the accompanying drawings, forming a part of this specification, and will then be pointed out in the claims.

Figure 1 is an end view looking toward the right, of a piano embodying my invention, the left hand side of the piano case being removed and parts being omitted for the sake of clearness. Fig. 2 is a front view of same, some of the parts shown in Fig. 1 being omitted for the sake of clearness. Fig. 3 is a fragmentary view, looking toward the left of the piano, of some of the parts shown in Fig. 1. Fig. 4 is a view of the parts shown in Fig. 3, looking in the direction of the arrow 4. Fig. 5 is an enlarged frag-

mentary sectional view along the line 5-6 in Fig. 1, looking in the direction of the arrow 7, of the bar 16, block 17 and guide 18. Fig. 6 is a view, similar to Fig. 5, of the bar 19, block 20, and guide 21. Fig. 7 is a fragmentary view, looking toward the left, of the right hand pumper and some of the connected parts.

1 represents the right hand side of the piano, the left hand side 1' similar thereto being removed in Fig. 1, 2 the rear of the piano, 3 the bottom, 8 the pedal strip, 9 the lower panel, which is removably supported in the position shown in Fig. 1 by a fastening, not shown.

10 is the key bottom, the key frame being omitted, and all parts of the keys, except the front of one of the natural keys which is shown at 11 in Fig. 1.

12 and 12^r are the left and right hand end brackets of the action, secured to posts fixed in the back 2 by screws 14 and 14^r, one of said posts being shown at 13; the lower forward extremities of the brackets 12 and 12^r resting upon posts 29 and 29^r secured in the key bottom 10. There may be as many intermediate brackets similar to 12, with its supporting parts, as is desired. The brackets 12, 12^r and the intermediate brackets support the spring rail 70 carrying the hammer springs, not shown; the hammer rest rail 23 in which are secured the wires 63 and 63^r the latter having lateral extensions which pass into bushed holes 79 and 79^r of the brackets 12 and 12^r and thus cause the hammer rest rail 23 to move in a circular path. The hammer rest rail 23 is provided with a cushion 78^a against which rest the shanks of the hammers 22.

Cushions 46 and 46^r attached to the brackets 12 and 12^r serve to limit the downward movement of the hammer rest rail 23, and consequently the greatest distance of the hammer 22 from the string 15. The brackets 12 and 12^r also support the action rail 52, which supports the hammer 22, wippen 48, damper lever 78 and their cooperating parts. All of the above parts being of the usual well known construction will not be further described.

62 represents the usual pneumatic box supported in the piano in any suitable manner, and having mechanism for forcing up the pusher 81 (shown only in Fig. 1), when the corresponding tracker hole is uncovered by the paper during the operation of playing,

and any suitable mechanism can be used for transmitting motion from the pusher 81 and the key 11 to the wippen 48. This mechanism, with the tracker, paper rolls and means
5 for winding and unwinding same, the equalizer, and the handles for controlling the various functions of the pneumatic mechanism not being part of the present invention will not be illustrated or described.

10 In order to operate the pneumatic mechanism, I provide the following wind inducing means, in which 53 is a backboard supported on the bottom 3 by the knee pieces 56, and having secured near its top and running
15 parallel thereto its whole length, the air trunk 55 which communicates in any approved manner with the pneumatic box 62 and the other pneumatic mechanism, which connections being old in the art will not be illustrated or described. Hinged to the bot-
20 tom of 53 as at 57 are the boards 54 and 54^r, each of said boards having secured to its edges a strip of leather or rubber cloth 58, which being of the proper shape, and extending to and being secured to the back-
25 board 53, there are thus formed two pumpers of a well known type, having for movable members the boards 54 and 54^r, adapted to be operated by pedals 36 and 36^r. The mode of
30 operation being similar in both cases will be described with reference to 54 only. To the bottom 3 are secured two brackets 33, similar in front elevation to the two brackets 33^r, which are also secured to said bottom, and in
35 said brackets are revolubly mounted the shafts 82 and 82^r. The said shafts have at one end rearwardly extending lever arms 31 and 31^r, respectively, for a purpose hereinafter described, and at the other end there
40 are secured to said shafts the pedals 36 and 36^r by pins, one of which is shown at 83. The pedals 36 and 36^r are similar. The pedal 36 is provided with a rubber tread 37, and from its bottom side there extends down-
45 wardly and rearwardly the lever arm 45, which bends upwardly and rearwardly at 44 and terminates in an extension 35, provided at its upper end with a fork 38 in which is freely mounted the link 39 on the pin 40, the
50 other end of said link being freely mounted on the pin 42 in a fork provided on the bracket 41, which is secured to the board 54 by the screws 43. A spring 59, having one end secured in the board 54 and the other
55 end secured in the block 60 attached to the pneumatic box by the screws 61, serves to return the board 54 to the position shown in Fig. 1 after each displacement therefrom, and thus normally keeps the pedal 36 in the
60 position shown in Fig. 1, with the arm to the rear of 44 resting against the pad 69 which is secured in a groove provided in the pedal strip 8. Felt washers 34 and 34^r prevent lateral motion of the shafts 82 and 82^r
65 in their bearings in the brackets 33 and 33^r,

and said bearings are bushed with cloth to obviate noise.

The stick 28 passes freely through a hole in guide 18, provided with the bushing 77, and has its lower end attached to the lever
31 by the screw 30, a felt washer 32 being 70 interposed. At its upper end the stick 28 is shod with the cushion 27, which rests under the arm 24 rigidly attached to the hammer rest rail 23. The stick 28^r in a similar
75 manner is attached to the lever 31^r, passes loosely through the hole in the guide 21 provided with a bushing 77^r, and has its upper end shod with a cushion 72 which rests under the extension 71 formed integral
80 with the damper lifter bar 81. Said lifter bar consists of the cylindrical portion 81 extending parallel to the action rail 52, but separated therefrom by the cushion 84. Short arms 79^a revolubly support the bar 81
85 from bearings 80 attached to the action rail 52. The bar 81 being arranged in the ordinary manner, except that the lever arm for the operation thereof is at the right hand side of the action rail 52, and is provided
90 with the extension 71.

The guides 18 and 21 are attached respectively to the bars 16 and 19 by screws 65 and 64, and said bars near said guides are supported in bearing blocks 17 and 20 pro-
95 vided with bushings 66 and 67, block 17 being secured to the key bottom 10 and block 20 to the side 1. The outer ends of the bars 16 and 19 are revolubly attached by screws, one of which is shown at 84^a, to one end of
100 the strip 50, which is foldably attached by the hinges 49 to the key bottom 10. Clearance spaces 85 are provided in the ends of the strip 50 for the bars 16 and 19. The strip 50 serves to cover the controlling
105 handles mounted on the key bottom 10. Said handles being of well known construction are not illustrated or described.

Holes 85^a are provided in the backboard 53 to vent the left hand pumper, and these
110 holes are controlled by the valve 86 which is hinged to the strip 87 secured to the backboard 53, and said valve is pressed toward said backboard by the spring 88. Similar holes and a similar valve are provided for
115 the right hand pumper, see Fig. 7. The pin 89 is fastened in the left hand valve 86, and a similar pin 90 is fastened in the right hand valve.

Wires 91 and 92 are secured in the sticks
120 28 and 28^r respectively, bend downwardly, and, passing in front of the pins 89 and 90, hold their respective valves in the open position as shown in Fig. 1, when the sticks 28 and 28^r are in the position shown in full
125 lines.

The operation of my improved pedal is as follows: The strip 50 being in the position shown in full lines in Fig. 1, the guides
130 13 and 21 will hold the sticks 28 and 28^r

in the position shown by full lines in said figure, and the parts are arranged for playing manually, the pedals 36 and 36^r being then merely the ordinary soft and loud pedals, for if 36 is depressed the stick 28 will push the arm 24 upward, and thus move the hammer 22 toward the string, thus shortening the stroke. The upward movement of the arm 24 is limited by the pad 47, attached to the block 25 which is secured to the bracket 12 by the screws 26. In the position of parts just described, the valve 86, shown in Fig. 1 and the valve similar thereto shown in Fig. 7 are held open by the wires 91 and 92 respectively. If 36^r is depressed the stick 28^r will push the extension 71 upward, thus moving the rod 81 to push the lower end of the damper lever 78 toward the string and thereby lift the damper 93 from the string. The upper movement of the extension 71 is limited by the pad 73 attached to the block 74 which is secured to the extension 75 of the bracket 12^r by the screws 76. During this operation of the parts the exterior valves are held open by the wires 91 and 92, and hence the pumpers are rendered inoperative as such. This retention of the valves can be dispensed with if desired, for the movement of the pedals is so slight that the effect of the pumpers is almost negligible. When it is desired to play the piano automatically, the strip 50 is folded to the position shown in dotted lines in Fig. 1, the strip 51 remaining in place as a guard for the keys; this brings the stick 28 to the position shown in dotted lines in Fig. 1, and the stick 28^r to the position shown in dotted lines in Fig. 3, thus allowing the springs 88 and 88^r to force their respective valves against the backboard 53. Valves of the usual construction lead from the air trunk 55 into each pumper, and hence operation of the pedals can now move the boards 54 and 54^r to their limit of outward movement, and they being forced inward by the springs 59 and 59^r, the ordinary operation of a pumper is obtained. The downward movement of the pedals is limited by pads 68 and 68^r secured in slots provided in the bottom 3.

While I have shown the slip 50 as the means for changing the pedals from pumping pedals to ordinary loud and soft pedals, I do not desire to be limited to this construction nor to any of the various details herein shown.

What I claim and desire to secure by Letters Patent of the United States is:

1. In an automatic piano, the combination with pneumatic mechanism including wind inducing means, and pedals for operating said wind inducing means, of a piano action including devices adapted to be operated by said pedals, and means for causing the operation of said pedals to produce a wind cur-

rent in said pneumatic mechanism, or to operate said devices.

2. In an automatic piano, the combination with pneumatic mechanism including wind inducing means and means for operating said wind inducing means, of a piano action including expression modifying means, and means for operating said expression modifying means by said operating means.

3. In a piano, the combination with automatic playing mechanism of means acting as a source of power for said mechanism, means for operating said means, a piano action including expression modifying means and means for operating said expression modifying means by said operating means.

4. In a musical instrument, the combination with sound producing means, mechanism for modifying the operation of said sound producing means and means for applying power to said sound producing means, of actuating means for said power applying means and means for operating said modifying mechanism by said actuating means.

5. In a musical instrument, the combination of sound producing means including modifying means, means for operating said sound producing means mechanically and means for operating said sound producing means manually, said first named operating means including means adapted to apply power thereto or to operate said modifying means when said sound producing means is operated by said second named operating means.

6. In an automatic piano, the combination of a pedal, a piano action, means for mechanically and manually operating said action and means for causing said pedal to transmit power to said action when operated mechanically, or to control the operation of said action when operated manually.

7. In an automatic piano, the combination with pumpers and means for operating the same, of a piano action including devices adapted for operation by said operating means, and means for limiting the movement of said operating means to either the movement required by said pumpers or by said devices.

8. In an automatic piano, the combination of pedals, a piano action including a damper lifter bar and a hammer rest rail, wind inducing means operated by said pedals, and means for operating said damper lifter bar and said hammer rest rail, at will by said pedals.

9. In an automatic piano, the combination of pedals, a piano action including a damper lifter bar and a hammer rest rail, pneumatic mechanism including pumpers for inducing a wind current therein, and means for causing at will the operation of said damper lifter bar and said hammer rest rail by said pedals, and for preventing the induction of

a wind current in said pneumatic mechanism by said pumps.

10. In an automatic piano, the combination of pedals, a piano action including a damper lifter bar and a hammer rest rail, means for operating said damper lifter bar and hammer rest rail by said pedals, pneumatic mechanism including pumps for inducing a wind current therein, and means for causing at will the induction of a wind current in said pneumatic mechanism by the operation of said pedals, and for preventing the operation of said damper lifter bar and said hammer rest rail by said pedals.

11. In an automatic piano, the combination of pedals, a piano action including expression modifying means operated by said pedals, wind inducing means connected to said pedals and means for connecting or disconnecting at will said pedals and said expression modifying means.

12. In a piano, the combination with automatic playing mechanism of means acting as a source of power for said mechanism, operating means therefor, a piano action including a damper lifter bar and means for operating said damper lifter bar by said operating means.

13. In a piano, the combination with automatic playing mechanism, of means acting as a source of power for said mechanism, operating means therefor, a piano action including a hammer rest rail and means for operating said hammer rest rail by said operating means.

14. In a musical instrument, the combination of sound producing means, a source of power therefor, an actuator for said source of power, expression modifying means, and means for operating said modifying means by said actuator.

15. In an automatic piano, the combination with a piano action including expression modifying means, an air trunk, pumps and pedals for operating said pumps and said modifying means, of means for terminating the production in the air trunk of an air current by said pumps when the modifying means is operated by said pedals.

16. In an automatic piano, the combination with pneumatic mechanism including wind inducing means and a pedal for operating said means, of a piano action including a device adapted to be operated by said pedal and means for causing the operation of said pedal to induce an air current in said pneumatic mechanism or to operate said device.

17. In an automatic piano, the combination with pumps and means for operating the same, of a piano action including devices adapted for operation by said operating means.

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

JOHN W. DARLEY, JR.

Witnesses:

THEO. SCHEFFER,
JNO. H. STEVENS.