No. 858,263. PATENTED JUNE 25, 1907.

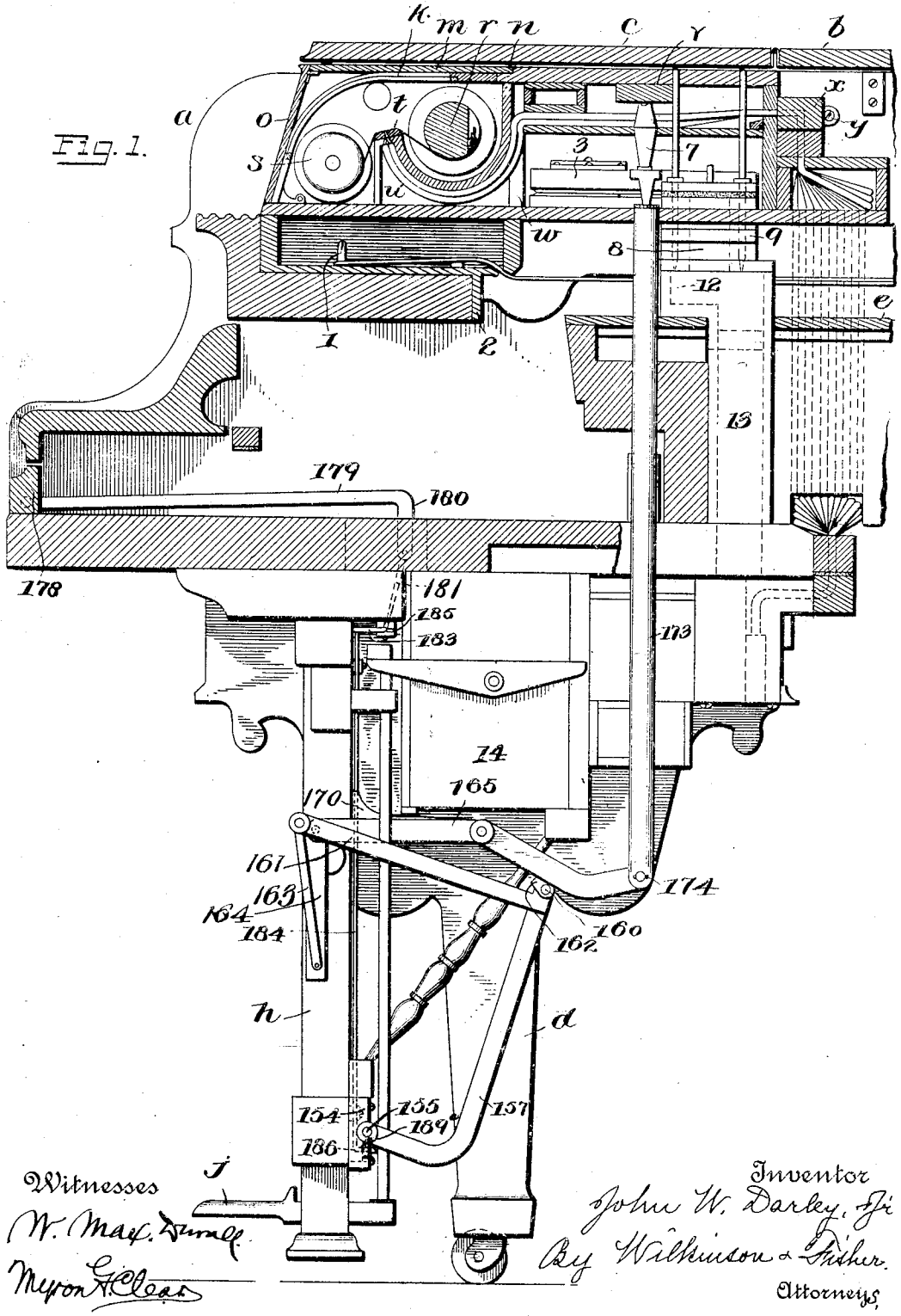
J. W. DARLEY, JR.

PEDAL FOR SELF PLAYING GRAND PIANOS.

APPLICATION FILED OCT. 19, 1906.

3 SHEETS—SHEET 1.

Fig. 1.



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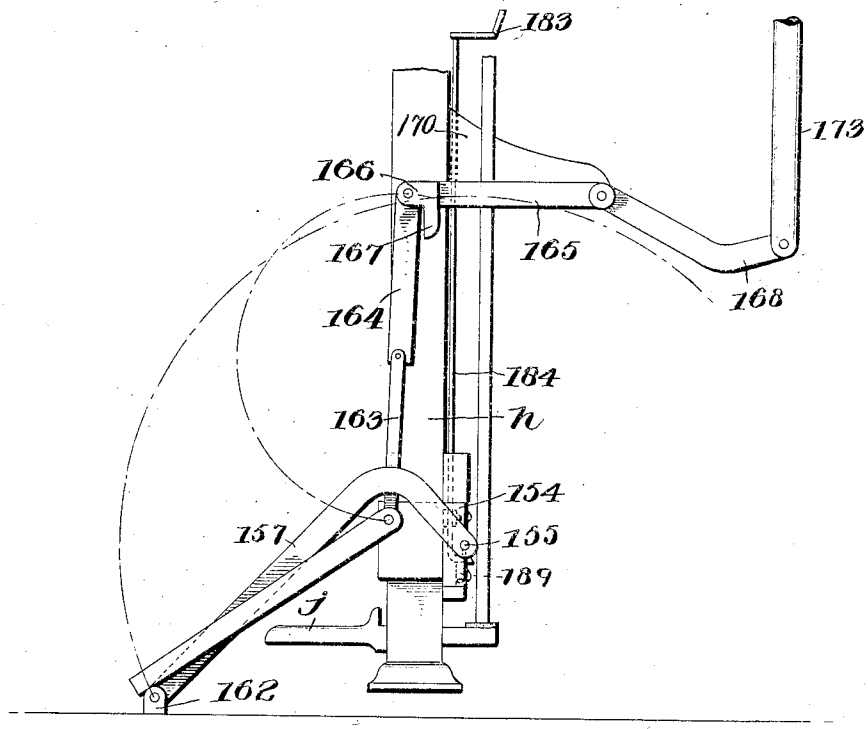
3 SHEETS—SHEET 2.

Fig. 2.



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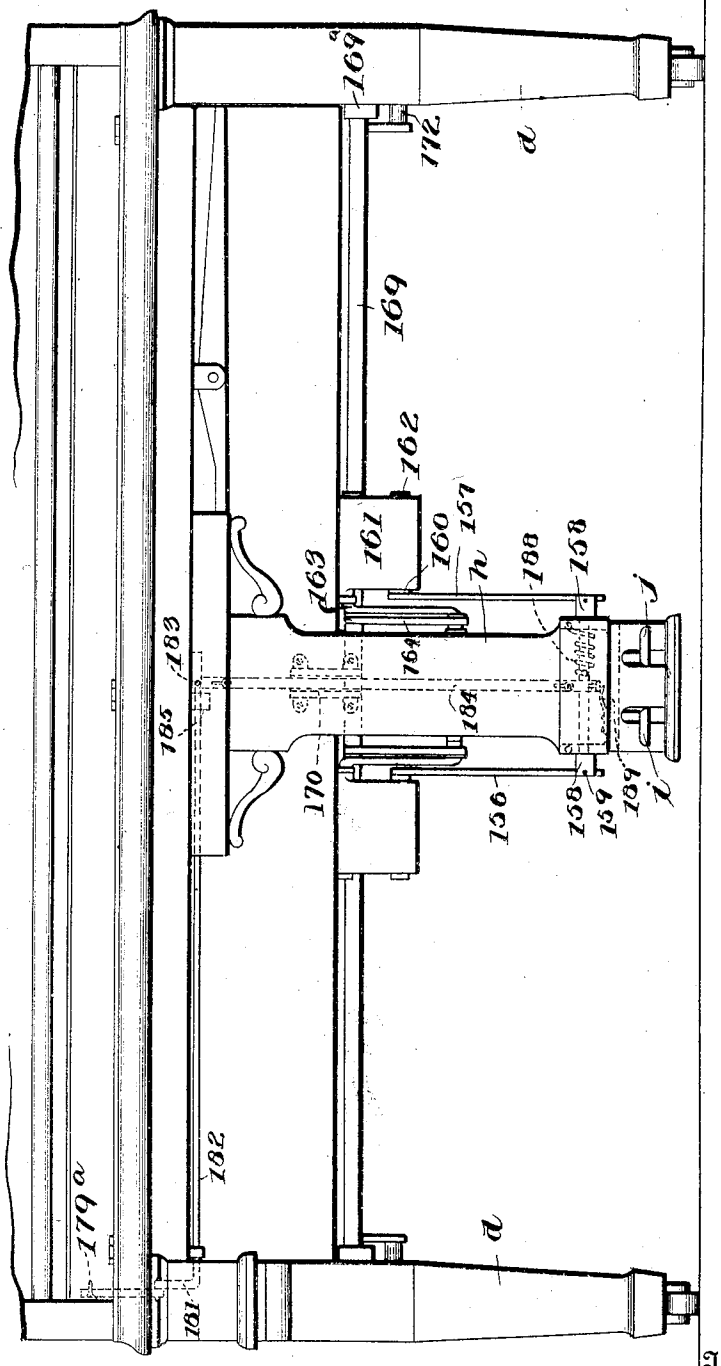

Fig. 3.

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UNITED STATES PATENT OFFICE.

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PEDAL FOR SELF-PLAYING GRAND PIANOS.

No. 858,263. Specification of Letters Patent. Patented June 25, 1907.

Original application filed July 9, 1906, Serial No. 325,409. Divided and this application filed October 19, 1906. Serial No. 339,712.

To all whom it may concern:

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

My invention relates to improvements in pedals for self-playing grand pianos, this application being a division of a former application Serial No. 325,409, filed July 9, 1906.

The object of my invention is to provide pumping pedals, which when not in use may be folded up completely out of the way, so that the piano may be played by hand in the ordinary manner.

With this object in view, my invention consists in the construction and combinations of parts as hereinafter described and claimed.

In the accompanying drawings—Figure 1 is a vertical central section of the front of a grand piano, parts being shown in dotted lines; Fig. 2 is a detail view showing the pedals and connected parts; and Fig. 3 is a partial front view of a grand piano.

a represents the case of a grand piano provided with a hinged lid *b*, the front part of which as shown at *c* is hinged to the rear part.

d represents the supporting leg.

The piano is also provided with the usual sound board *e*, and the ordinary keys, and any approved type of piano action. It is also provided with the usual lyre *h*, in which are carried the ordinary loud and soft pedals, the loud pedal being shown at *j*. The parts heretofore described are of the usual construction.

Underneath the folding lid *c* is arranged the box *k*, in which the music rolls are placed. This box is provided with a cover *m* hinged at *n*, and having a front *o* hinged to the cover *m*, so that it may fold entirely back, or may be folded up to form a music rest. Within the box *k* are located the music rolls *r* and *s*, and the tracker board *t*, connected by the tubes *u* with the pneumatic portion of the apparatus. The box *k* containing the music rolls, is only the front part of a larger box *v*, a partition *w* separating the music roll portion from the box proper. This box contains the tubes *u*, already referred to, leading to the tracker board. These tubes all run backward and pass into a header *x*, and this large box *v* is hinged at *y* to the piano case, so that the entire box *v* can fold backward about the hinges *y*, when the lid is open, so that access may be had to the tuning pins 1, for tuning the strings.

The pneumatic tubes converge together and run over a plate in the central part of the box *v* and underneath the tubes are the pumpers 3. These pumpers are provided with the usual discharge openings and valves, movable covers and suction openings and valves, which are no part of the present invention. Springs 7 attached to the top of the box and to the top of the pumpers, normally keep the pumpers closed, and by the use of the pedals, the movable members of the said pumpers are lifted against the tension of said springs.

2 represents the string supporting frame, provided with the usual tuning pins 1, to which the strings are secured.

To the pumpers 3 the air passes up through the passage 8 in the bracket 9. The air comes from the passage 12 through the air trunk 13. Provision is made to insure an air tight joint between the bracket 9 and the upper part of the air trunk 13.

14 represents the pneumatic box connected with the air trunk 13, so that there will be a free passage for the air from the box 14 to the pumpers. The pumpers are connected with the ordinary equalizer for maintaining a constant air pressure in the air trunks, and the main trunk is connected to the motor (not shown) for driving the rolls *r* and *s*, said connections having included therein the usual governor for controlling the speed of said motor,

j represents the loud pedal which operates in the usual manner. The ordinary soft pedal *i* operates to shift the key-board laterally in the usual manner. The lyre *h* has on its rear side, near the bottom thereof, a bracket 154, provided with bearings in which is mounted a shaft 155. 156 and 157 represent bent arms, one end of each of which is mounted on said shaft. 158 represent bosses made integral with said arms 156 and 157, and secured to said shaft by pins 159. The construction is substantially the same on

both sides, and, therefore, only one will be described. The arm 157 has at its other end a laterally extending cylindrical part 160, on which the pedal 161 is loosely mounted, the washer 162 keeping the pedal in place thereon. The washer 162 is arranged so that when the parts are folded down, as shown at Fig. 2, its flat portion will rest upon the floor, and the outer end of the arm 157 is similarly shaped, so as to afford a firm bearing on the floor. The pedal 161 is provided at its other end with a hole for the reception of one end of a bent link 163, the other end of said link passing through a hole in the end of a link 164, which, in turn, is pivoted in the forked end of the horizontal portion 166 on the lever 165. This lever consists of a horizontal portion 165 provided with a downwardly extending stop 167, adapted to prevent backward movement of the link 164 when the pedal is folded up, and an angled portion 168, and also with a long power transmitting portion 169, arranged at right angles to the parts 165 and 168. The part 169 is journaled at one end end in a bracket 170, which is bolted or otherwise secured to the rear of the lyre and extends backward about the center of the pneumatic box 14. The other end of said part 169 is pivoted in a bracket 169[a] on the right leg of the piano. The part 168 of the lever 165 is provided with a horizontal extension 172, on the reduced portion of which a vertical rod 173 is pivoted, being secured thereon by a pin 174. This rod 173 extends up through the casing and box and contacts with the under part of a projection on the pumper 3 to lift it against the tension of the spring 7. In the position shown in Fig. 3, the pedals are locked up and the means for releasing them will now be described.

178 represents the key slip hinged to the front of the key bottom of the piano and extending backwardly therefrom is the rod 179, the outer end of which is pivoted to said key slip as at 179[a] and the inner end of which is bent down, as shown at 180. The rod 179 is located at the left-hand end of the piano, and the lower down turned end of this arm is pivoted to the upwardly extending arm 181 on the shaft 182, which extends under the key bottom and terminates near the middle of the lyre in the outwardly projecting lever arm 183, the outer end of which is located immediately above the top of the vertical rod 184. The rod 182 is secured to the key bottom in suitable bearings, one of which is shown at 185. The rod 184 is slidable in suitable bearings secured on the rear of the lyre and terminates at its lower end in a hooked portion 186, which is adapted to be engaged by pin 189[a] secured on the shaft 155.

Obviously, as long as the hook 186 engages the pin 189[a], the pedals cannot be moved down, but when the rod 184 is moved downward, this locking engagement is broken, and the pedals are then positively forced outward by the tension of the spring 188, which is coiled around the shaft 155, and is fastened at one end to said shaft, and at the other end to the bracket 154. A spring 189 normally keeps the rod 184 in its upper position, that is, interlocked with the pin 187. The spring 188 performs two functions. As soon as the pedals are unlocked it forces them outwardly until the center of the bearing 160 is about in line vertically with the center of the shaft 155. Gravity then acts upon the pedals, drawing them down, and the spring then resists the action of gravity and allows the pedals to slowly drop to the floor into the position shown in Fig. 2. The arm 157 is bent as shown, in order to provide clearance around the inner end of the pedal 161, which connects with the link 163. The links 163 and 164, and the arm 157 have their bearing points so arranged, and their operative lengths so proportioned, that the pedals will automatically move from the folded position shown in Fig. 1 to the operative position shown in Fig. 3, the loci of the centers that move during this folding operation, being shown by broken lines in Fig. 2.

By the construction described, it is obvious that the depression of the pedal 161 will, through the connections described, operate the pumpers, thus operating the pneumatic portion of the piano.

The skeleton form of construction of the pedals and their location, as shown in Fig. 3, that is to say, practically under the pneumatic box, does not detract from the usual appearance of the piano when the pedals are folded up.

The operation of the pedal locking device is fully set forth in my application filed July 9, 1906, Serial No. 325,409, and it is unnecessary to describe it further in this application.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. In a self-playing grand piano, the combination with a horizontally disposed case, pneumatic mechanism and a depending pedal support, of pedals and connections for actuating the pneumatic mechanism, said pedals being foldably secured to said pedal support, substantially as described.

2. In a self-playing grand piano, the combination with a horizontally disposed case, pneumatic mechanism and a depending pedal support, of pedals and folding connections for actuating the pneumatic mechanism, said pedals being foldably secured to said pedal support, substantially as described.

3. In a self-playing grand piano, the combination with a horizontally disposed case, pneumatic mechanism and a depending

pedal support, of pedals and connections for actuating the pneumatic mechanism, said pedals being foldably secured to said pedal support, and means for supporting said pedals beneath the frame when folded up, substantially as described.

4. In a self-playing grand piano, the combination with a horizontally disposed case and a depending pedal support and pneumatic mechanism supported by said case, of pedals and connections for actuating the pneumatic mechanism, said pedals being foldably secured to said pedal support, and provided with folding connections, and means for supporting said pedals beneath the frame, substantially as described.

5. In a self-playing grand piano, a horizontally disposed case, strings and a string supporting frame a pedal support, a bellows mounted above the strings of said piano and overlying the front portion of the string supporting frame, a lever for operating said bellows extending forwardly beneath said case, a bellows pedal, and links connecting said pedals to said support and to said lever, whereby said pedals may have movement from an operative to a non-operative position, substantially as described.

6. In a self-playing grand piano, a horizontally disposed case, strings and a string supporting frame a pedal support, a bellows mounted above the strings of the piano and overlying the front portion of the string supporting frame, a lever for operating said bellows and extending forwardly beneath said case and links, one of which is jointed, connecting said pedals to said support and to said lever, whereby said pedals may have movement from an operative to a non-operative position, substantially as described.

7. In a self-playing grand piano, a horizontally disposed case, strings and a string supporting frame a pedal support, a bellows mounted above the strings of said piano and overlying the front portion of the string supporting frame, a lever for operating said bellows and extending forwardly beneath said case, a bellows pedal, a link connecting said pedal to said support, and a jointed link connecting said pedal to said lever, whereby said pedal may have movement from an operative to a non-operative position, substantially as described.

8. In a self-playing grand piano, a horizontally disposed case, strings and a string supporting frame a pedal support including two vertically disposed portions, a bellows mounted above the strings and overlying the front portion of the string supporting frame, a lever for operating said bellows, and extending forwardly beneath said case, a bellows pedal, a link connection from the rear end of said bellows pedal to said lever, and a second link connection from the forward end of said bellows pedal to said pedal support, whereby said bellows pedal may be moved downwardly into operative position, and upwardly and rearwardly into inverted position between said vertically disposed portions, substantially as described.

9. In a self-playing grand piano, the combination with a horizontally disposed case, pneumatic mechanism and a depending pedal support, of pedals and connections with actuating pneumatic mechanism, said pedals being foldably secured to said pedal support, means for locking said pedals when folded up, and means for resiliently resisting the action of gravity on said pedals when unlocked, substantially as described.

10. In a self-playing grand piano, the combination with a horizontally disposed case, pneumatic mechanism and a depending pedal support, of pedals and connections for actuating the pneumatic mechanism, said pedals being foldably secured to said pedal support, means for locking said pedals when folded up, and means for forcing out the said pedals from the piano case when unlocked, substantially as described.

11. In a self-playing grand piano, the combination with a horizontally disposed case, pneumatic mechanism and a depending pedal support, of pedals and connections for actuating the pneumatic mechanism, said pedals being foldably secured to said pedal support, means for locking said pedals when folded up, and a single means for throwing out said pedals a short distance when unlocked, and for then resisting the further opening movement of said pedals, substantially as described.

12. In a self-playing grand piano, the combination with a horizontally disposed case, pneumatic mechanism and a depending pedal support, of pedals and means for actuating the pneumatic mechanism, said pedals being foldably secured to said pedal support, means for locking said pedals when folded up, and a spring for forcing said pedals outward a short distance when unlocked, and for resisting the further opening movement of said pedals, substantially as described.

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

JOHN W. DARLEY, JR.

Witnesses:
W. MAX. DUVALL,
MYRON G. CLEAR.