No. 839,558.

PATENTED DEC. 25, 1906.

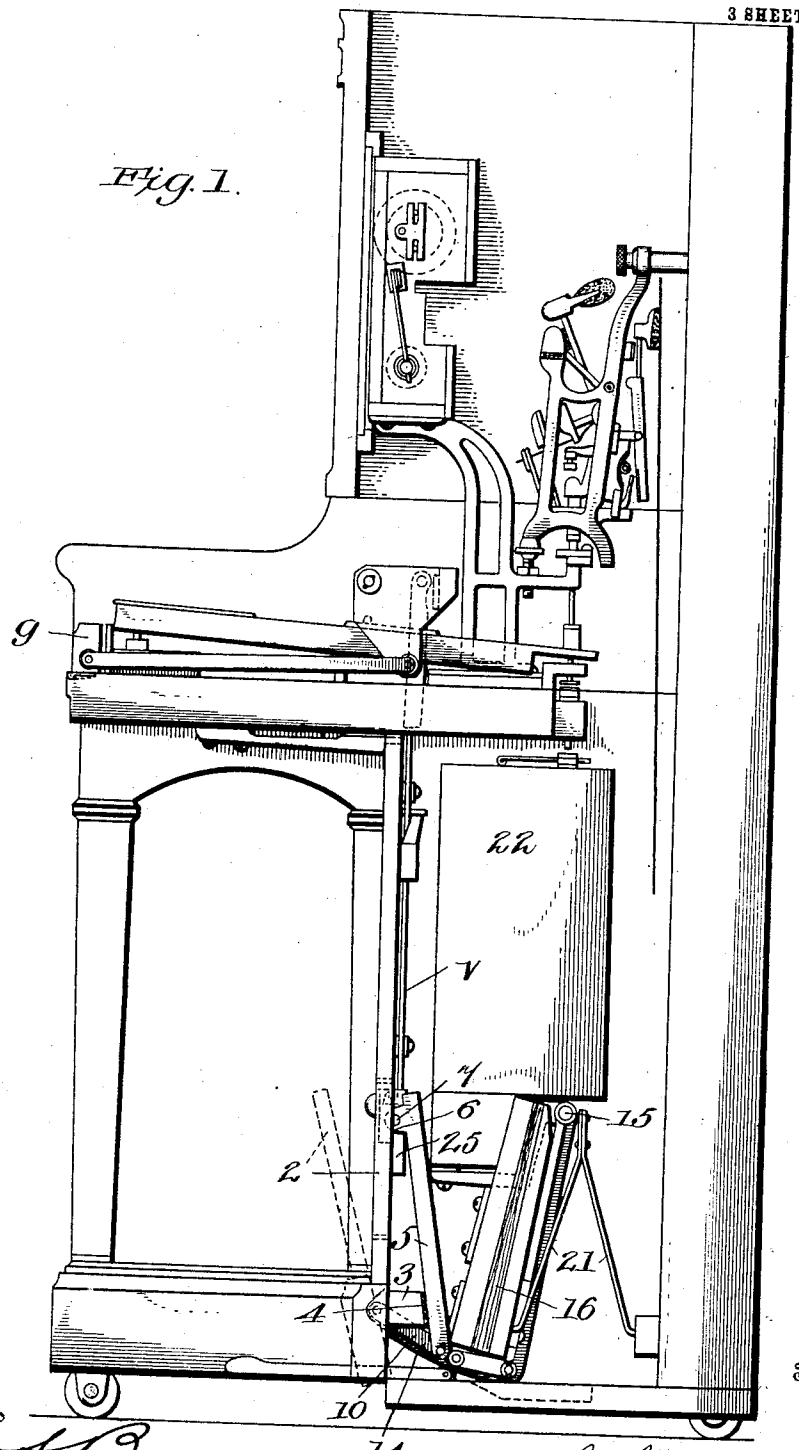
J. W. DARLEY, JR.

SELF PLAYING PIANO.

APPLICATION FILED OCT. 14, 1905.

3 SHEETS—SHEET 1.

Fig. 1.



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3 SHEETS—SHEET 2.

Fig. 2.

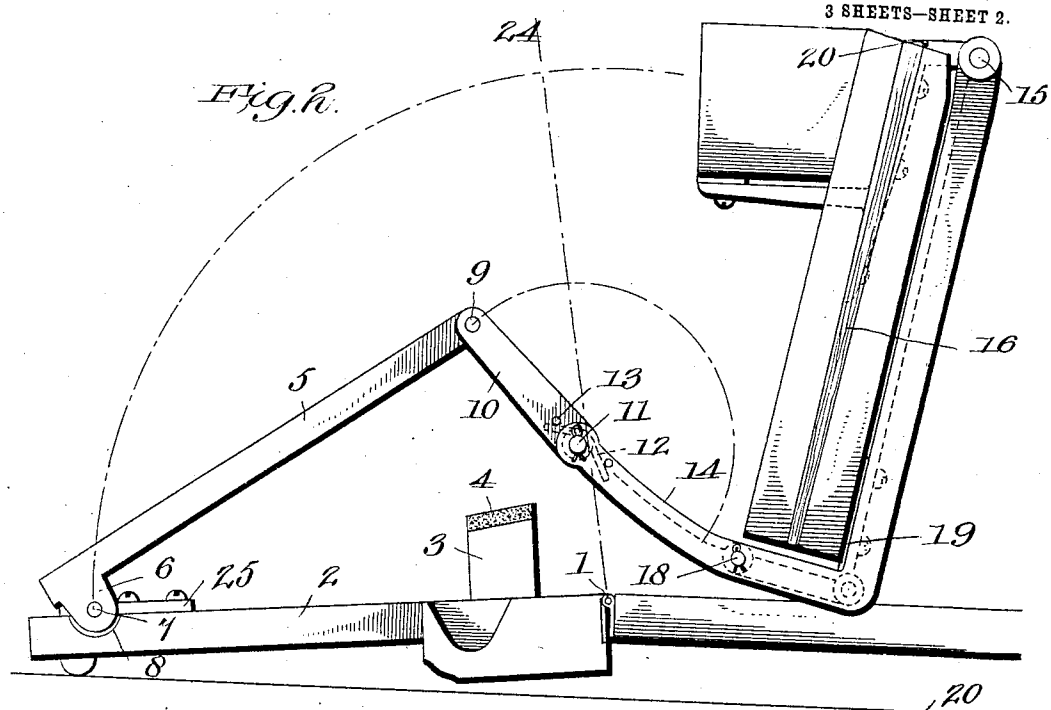
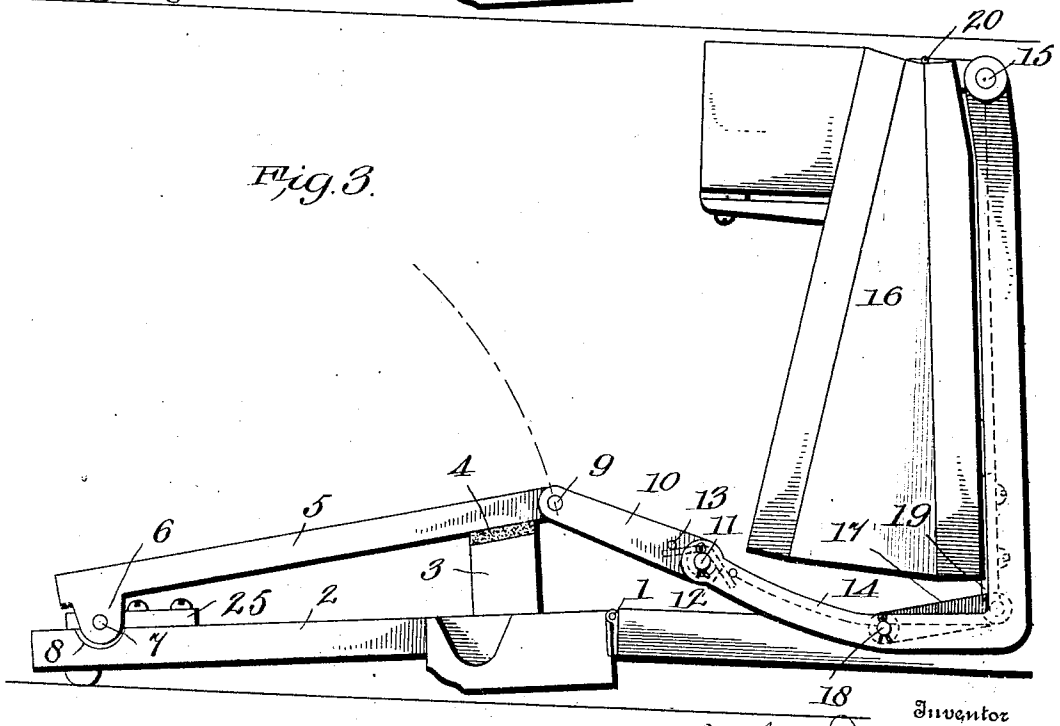


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 4.

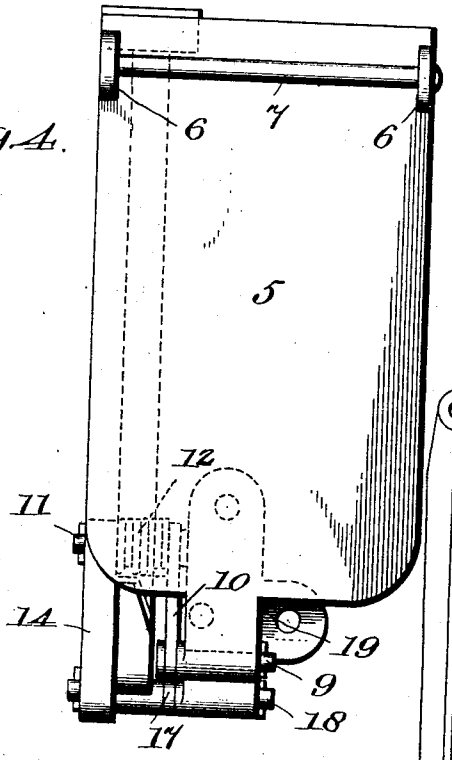


Fig. 6.

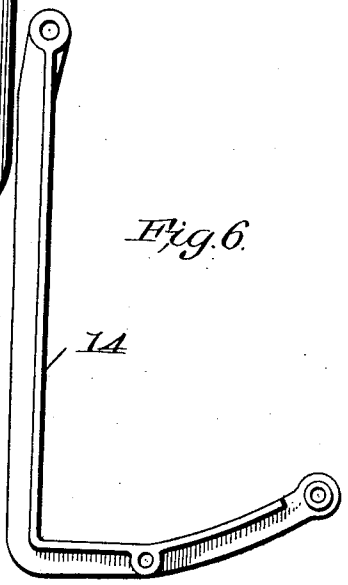


Fig. 5.

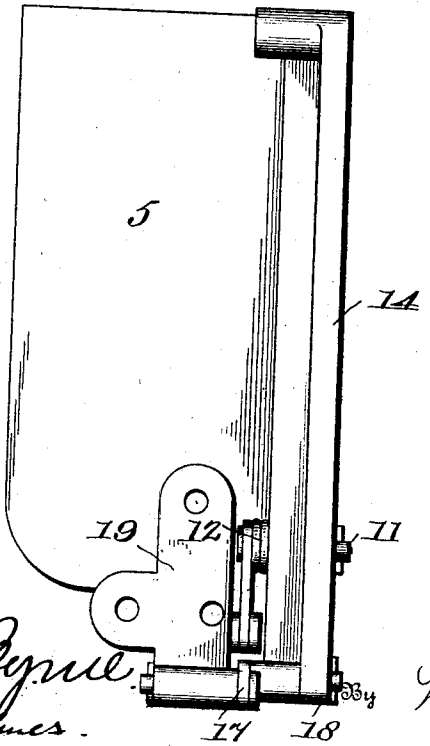


Fig. 7.

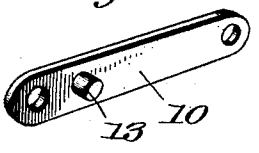
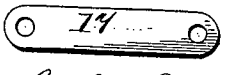


Fig. 8.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN W. DARLEY, JR., OF BALTIMORE, MARYLAND, ASSIGNOR TO WILLIAM KNABE & COMPANY MANUFACTURING COMPANY, OF BALTIMORE, MARYLAND, A CORPORATION OF MARYLAND.

SELF-PLAYING PIANO.

No. 839,558. Specification of Letters Patent. Patented Dec. 25, 1906.

Original application filed July 24, 1905, Serial No. 271,050. Divided and this application filed October 14, 1905. Serial No. 282,800.

To all whom it may concern:

Be it known that I, JOHN W. DARLEY, Jr., a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Self-Playing 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 self-playing pianos or pianos of that class which may be played in the usual way by an operator or in which the notes may be produced by the use of a traveling perforated sheet of paper, this application being a division of my former application, Serial No. 271,050, filed July 24, 1905.

The objects of my invention are to provide a hinged footboard normally locked to the piano-frame, means for locking and unlocking said footboard, means for positively forcing said footboard outward when it is unlocked, and means for wholly or partially counterbalancing the same after it is unlocked.

Other objects and advantages will appear from the detailed description.

In the accompanying drawings, Figure 1 is an end elevation of my improved piano with the end casing removed. Figs. 2 and 3 represent the foot-operated pneumatic means in two positions, and Figs. 4, 5, 6, 7, and 8 represent details of the pneumatic apparatus.

The means for locking and unlocking the keys of the piano, the pivoted hand-rest, the compound bracket, and the pneumatic portions of the instrument are the same as those described in my prior application referred to above and need not be specifically described here, this application being restricted to the pedal action.

Pivoted on the base-piece of the piano by means of hinges 1 is the swinging foot 2 of the shape shown in Fig. 1 with its center cut away for the reception of a support for the ordinary pedals. This footboard is adapted when fully swung down to strike the floor, as shown in Figs. 2 and 3, and is provided with two upwardly-projecting stops 3, having felt or similar cushioning material 4 thereon, which stops limit the downward movement of the pedals 5. Each of these pedals is provided with a pair of rounded ears 6, passing loosely around the bar 7, which ears fit in a corresponding depression 8 in the footboard 2. The bar 7 is supported in bearings 25 on one edge of the footboard 2.

At its rear each of the pedals is provided with an extension fitting over a pin 9, and on this pin is pivoted a rearwardly-extending arm or link 10, the rear end of which is pivoted on a pin 11, around which is coiled a spring 12, one end of which rests against a stop 13 on the arm 10 and the other end of which is confined in any suitable way, as by a projection on the bell-crank lever 14.

The bell-crank lever 14 is pivoted at one end to a pin 15, permanently fastened to the frame of the piano, and the other end is pivoted on the pin 11.

16 represents a bellows of any desired type operated by the movement of the lever 14 by the following means: A link 17 is fastened on a pin 18 in the lever 14, and the other end of said link 17 is fastened to a bar or rod 19, which is permanently fastened to the movable side of the bellows, which is supported on the hinge 20. A spring 21 tends to normally hold the bellows in the position shown in Fig. 1.

22 represents the pneumatic-action case, which operates the piano-action in the usual manner. The upper part of the footboard 2 is provided with a hook portion with which a hook on the rod *v* engages, these parts being the same as described in my former application. Folding down the hand-rest *g* disengages this hook, whereupon the spring 21 forces said footboard out into the position shown in dotted lines in Fig. 1 or out to the dotted line 24 of Fig. 2. The strength of the spring 12 may be adjusted in any usual way or springs of different strength may be substituted, the result being that the weight of the footboard 2 may be either exactly balanced by the spring 12 or that the weight of said footboard being slightly greater than that required to overcome the tension of the spring 12 the footboard 2 after assuming the position shown in Fig. 1 will slowly fall to the floor, thus obviating the necessity of forcibly pulling the foot-

board down, or the strength of the spring may be such that when the operator removes his feet from the pedals said spring will slowly lift the footboard into the position shown in Fig. 1, thus obviating the necessity of lifting up the footboard by hand. Different operators prefer different strengths of spring; but it is obvious that my invention covers all three forms. In any case the footboard is not liable to suddenly drop upon the feet of the operator, which is a serious objection to most, if not all, of the footboards now in use on self-playing pianos.

Any one of the three constructions described may be used, but in the preferred form the pedals 5 are exactly balanced. As the operator presses the pedal down from the position shown in Fig. 2 to that shown in Fig. 3 he compresses the spring 12, which of course offers resistance. This resistance, together with the fact that the spring 12 has a longer leverage on the pedal 5 and footboard 2 when in the position shown in Fig. 3 than it has when in the position shown in dotted lines in Fig. 1, balances the effect of gravity on those parts and causes them to remain in any position in which they may be placed, this description of course referring to the preferred form. This is necessary, as it is evident that the effect of gravity on these parts will increase as they are moved from the position shown in dotted lines in Fig. 1 to the position shown in Fig. 2. The parts being in the position shown in Fig. 2, the pedal is depressed by the foot to the position shown in Fig. 3, and during this motion of the pedal the leverage of the foot upon the bellows will increase, as will be evident from the construction of the pedal 5, link 10, and bell-crank lever 14.

Having thus described my invention, what I claim as new is—

1. In a self-playing piano, the combination of a piano-frame, a key-slip thereon, a movable footboard, means for locking said footboard and connections whereby the movement of said key-slip unlocks said footboard, substantially as described.

2. In a self-playing piano, the combination of a piano-frame, a key-slip pivoted thereon, a swinging footboard hinged to said frame, means for locking said footboard and connections whereby the swinging down of said key-slip unlocks said footboard, substantially as described.

3. In a self-playing piano, the combination with the piano-frame, of a key-slip pivoted to the front of said frame, a footboard hinged to said frame, means for locking said footboard, connections whereby the movement of said key-slip unlocks said footboard, and means for moving said footboard outward when it is unlocked, substantially as described.

4. In a self-playing piano, the combination of pneumatic devices for operating said piano without the use of the keys, a swinging footboard carrying pedals, connections between said pedals and said pneumatic devices for operating the latter, a lock for holding said footboard up against the piano-frame, and means for balancing said pedals in every position that they may assume when said footboard is unlocked and swung out, substantially as described.

5. In a self-playing piano, the combination of a swinging footboard hinged to the piano-frame, pedals pivoted at one end on said footboard, bellows, pivoted connections between said pedals and said bellows, and a spring, said connections and spring being so arranged that the pedal is balanced in every position it can assume when the footboard has been swung out, substantially as described.

6. In a self-playing piano, the combination of pneumatic devices, a swinging footboard carrying pedals, connections between said pedals and said pneumatic devices for operating the latter, a lock for holding said footboard against the piano-frame, means for swinging said footboard outwardly and a spring for counterbalancing said footboard and pedals in any position they may assume when said footboard is unlocked and swung out, substantially as described.

7. In a self-playing piano, the combination of a bellows, a spring normally holding said bellows closed, a swinging footboard pivoted near the front of the piano, means for locking said footboard in position, pedals connected at one end to said footboard, pivoted connections between the other end of each of said pedals and said bellows, and a spring attached to said connections, the parts being so arranged that the pedals are balanced in every position they can assume after the footboard has been swung out, substantially as described.

8. In a self-playing piano, the combination of the piano-frame, a swinging footboard hinged thereto and provided with cushioned stops, means for locking said footboard to said frame, pedals each attached at one end to said footboard, a bellows, and pivoted connections between the other end of each of said foot-pedals and said bellows, and a spring associated with said connections, the parts being so arranged that the pedals are preferably balanced in every position they can assume after the footboard has been swung down, substantially as described.

9. In a self-playing piano, the combination of the frame thereof, a footboard hinged to said frame, means for locking said footboard to said frame, pedals pivoted to said footboard at one end, connections between the other end of each of said pedals and the frame of the piano, and a spring associated with said connections, the parts being so arranged that when the footboard is unlocked

it will automatically swing outwardly a short distance from the piano-frame until it is stopped by said spring, substantially as described.

10. In a self-playing piano, the combination of the frame thereof, a footboard hinged thereto, pedals pivoted at one end to said footboard, links pivoted to the other ends of said pedals respectively, each of said links being provided with a stop, a bell-crank lever pivoted to each of said links, a spring operatively connected with said stop and with said lever, and a bellows operated by said bell-crank lever, substantially as described.

11. In a self-playing piano, the combination of a swinging footboard provided with cushioned stops, pedals each having one end secured to said footboard, links each provided with a stop secured to the other ends of said pedals, and to a bell-crank lever, springs bearing against said stop and said lever, bellows, and a link connection between said bell-crank lever and said bellows, substantially as described.

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

JOHN W. DARLEY, JR.

Witnesses:
JNO. H. STEVERS,
JOHN CRAMBLITT.