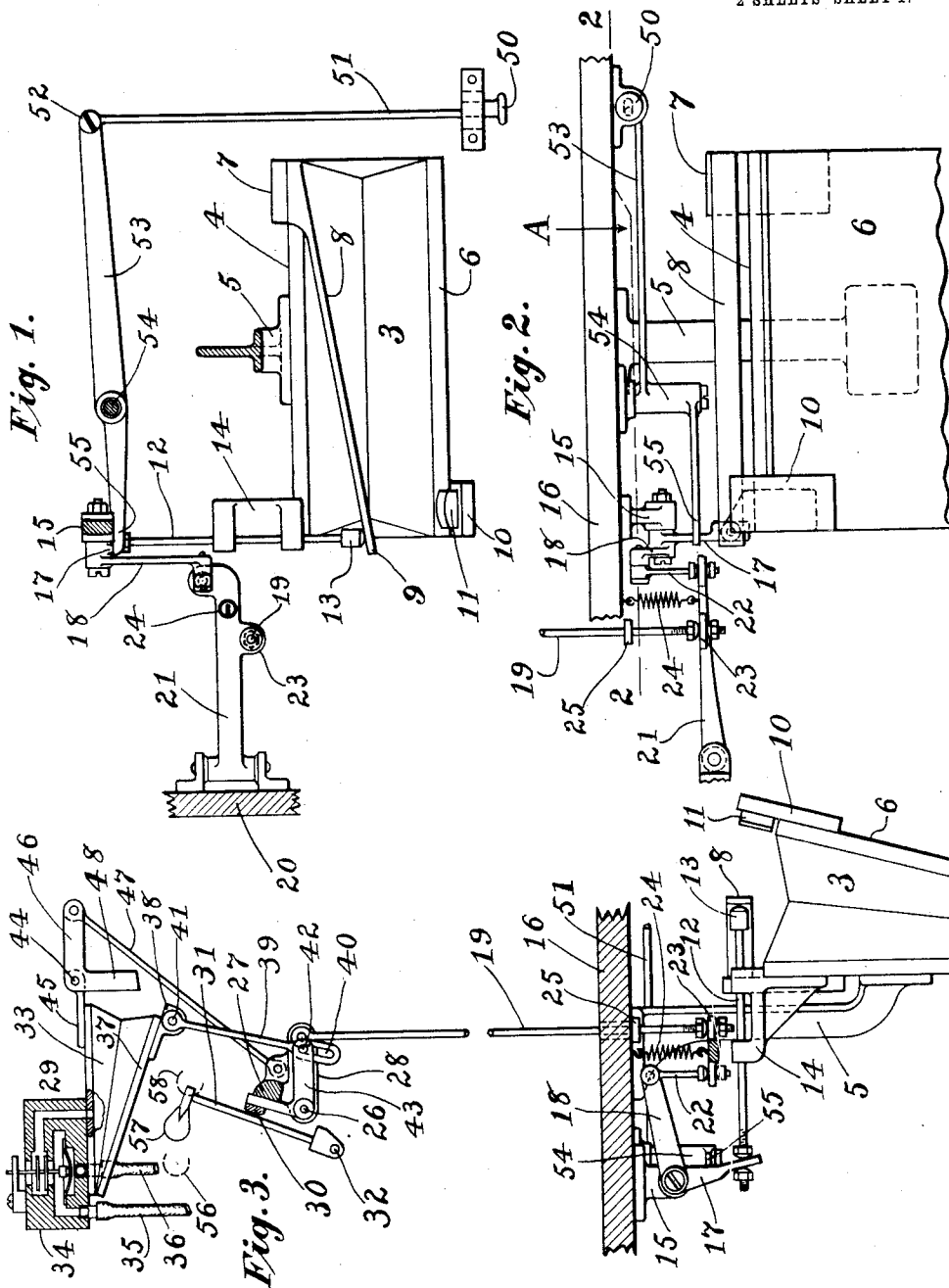


F. O. GAMBLE.
ACTION CONTROLLER FOR AUTOMATIC PIANOS.
APPLICATION FILED AUG. 19, 1911.

1,041,063.

Patented Oct. 15, 1912.

2 SHEETS—SHEET 1.



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Fig. 6.

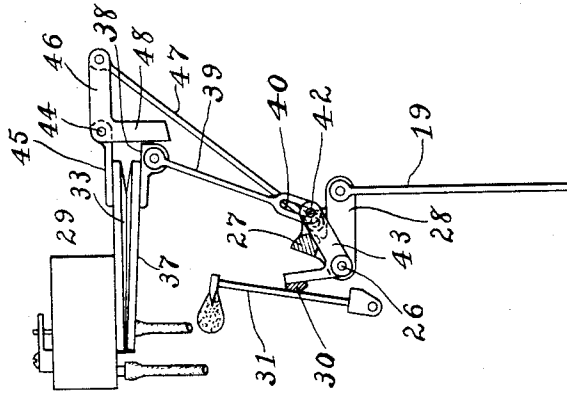


Fig. 5.

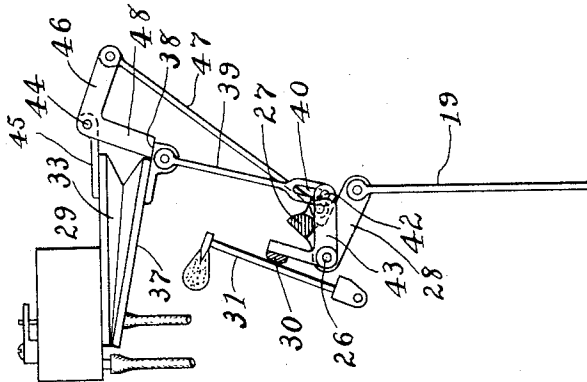
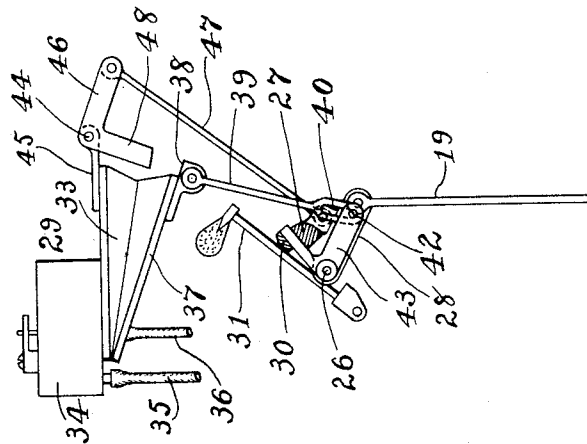


Fig. 4.



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UNITED STATES PATENT OFFICE.

FREDERICK O. GAMBLE, OF FORT WAYNE, INDIANA, ASSIGNOR TO THE PACKARD COMPANY, OF FORT WAYNE, INDIANA, A CORPORATION OF INDIANA.

ACTION-CONTROLLER FOR AUTOMATIC PIANOS.

1,041,063.

Specification of Letters Patent.

Patented Oct. 15, 1912.

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To all whom it may concern:

Be it known that I, FREDERICK O. GAMBLE, a citizen of the United States, and a resident of Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Action-Controllers for Automatic Pianos, of which the following is a specification.

This invention relates to action controlling means for pneumatically actuated automatic pianos.

The object of the invention is to provide automatically operable means governed by the amount of collapse or tension on the reservoir bellows for controlling the operation of the action of the piano.

To these ends my improvements comprise means illustrated in the drawings accompanying this specification wherein—

Figure 1 is a plan view of a portion of an automatic player piano to which my improvements are applied. Said plan view is looking in the direction of arrow A in Fig. 2 and with the parts above line 2, 2 removed. Fig. 2 is a front elevation corresponding with Fig. 1 and Fig. 3 is a side elevation in which are shown the connections to the piano action. Figs. 4 to 6 inclusive illustrate different positions in the operation of a portion of my improved device.

The usual tension or reservoir bellows 3 has back 4 thereof fixed relatively to the case of the instrument, as by bracket 5, and front 6 is hinged to back 4 in the usual manner not shown. Fixed to upwardly extending ear 7 of back 4 or to any other suitable fixed support, is spring 8, the free end 9 thereof extending diagonally across the head of said bellows, Fig. 1, for engagement with ear 10 of bellows front 6 on one side and with head 13 of plunger 12 on the other side. Said ear 10 may be provided with bearing block 11 for rolling contact with said spring 8. Said plunger 12 is slidably mounted in bracket 14 attached to bellows back 4 or to some other convenient fixed portion of the instrument. Pivotally mounted in bracket 15 depending from keybed 16 is a bell-crank lever, arm 17 of which reaches downwardly for engagement with the inner portion of plunger 12 and the other arm 18 thereof extends outwardly in a general horizontal direction for connection with vertical rod 19. Said arm

18 and rod 19 might well be directly connected but to obviate material changes in the established arrangement of the parts of the player piano I have introduced several connecting members between said arm and rod, as follows. Pivoted to side 20 of the instrument case is lever 21, the outer end of which is connected by link 22 with arm 18 and rod 19 is flexibly connected to ear 23 of lever 21. Spring 24 connects lever 21 with the underside of keybed 16 and rod 19 has stop collar 25 thereon in engagement with said underside of keybed 16.

Pivoted in suitable position at 26 above keybed 16 is the usual continuous hammer rest rail 27. Extending forwardly from said hammer rest rail is arm 28 to the outer end of which is pivotally attached the upper end of rod 19. Pivoted coaxially at 26 with main hammer rest rail 27 and resting against said rail as a backing, is divided hammer rest rail 30. Against said divided rail 30 rest the usual hammers as 31 pivoted at 32 to the usual support not shown.

By 29 is indicated in a general way one of a pair of the usual pneumatics for throwing upwardly and rearwardly the two portions respectively, as 30 of the divided hammer rail. Said pneumatic 29 comprises the usual bellows 33 fixed to the under side of valve box 34. Said valve box 34 is provided with pipe 35 leading from the exhaust chest not shown and pipe 36 leading from the usual key operated air admission valve not shown. Bottom 37 of bellows 33 has ear 38 fixed to its movable end and the upper end of link 39 is pivoted to said ear at 41. Link 39 has slot 40 in its lower end in sliding engagement with pivot 42 fixed in the outer end of arm 43 of one section of divided rest rail 30.

Pivotally mounted at 44 in ear 45 outstanding from a fixed portion of pneumatic 29 is a bell-crank having its horizontal arm 46 connected by link 47 to hammer rest rail 27 and having its depending arm 48 movable into and out of the upward path of ear 38 on bottom 37 of bellows 33. It will be understood that the other section of divided rest rail 30 is provided with a pneumatic corresponding with pneumatic 29 and its adjuncts including links 39 and 47 and the parts connected with the lower ends of those links. I have also provided manually operable means for increasing the force of the

strokes of the hammers as 31 by increasing the length of those strokes. This means comprises pull rod 51 having handle 50 on the forward end thereof and having its rearward end pivotally connected at 52 with lever 53 pivoted at 54 to the underside of key-bed 16. The other end 55 of said lever 53 engages the front side of arm 17 of bell-crank 17, 18.

10 The operation of my improved controller is as follows: The several parts being at rest as shown in Fig. 3, either section of divided rest rail 30 may be thrown backwardly to shorten the strokes of those hammers 31 which it controls, by causing bellows 33 of pneumatic 29 to collapse as in Fig. 6. Bottom 37 is thereby swung upwardly its full stroke, the slack of slot 40 taken up and arm 43 and its section of divided rail 30 swung on pivot 26, thereby moving hammers as 31 from position 57 to dotted position 56, Fig. 3 (see also Fig. 6). Again, assuming that the several parts are in the positions of Fig. 3 and that by vigorous pumping, bellows 3 is collapsed so far as to cause ear 10 to engage spring 8 and through said spring to move plunger 12 endwise and through the several described connections to pull rod 19 downwardly and thus rock main hammer rest rail 27 to the position of Fig. 4. Both sections of divided hammer rest rail 30 will follow said main rest rail, pivot 42 of arm 43 moving freely downwardly in slot 40 of link 39, and hammers 31 will swing forwardly to positions corresponding with dotted position 58, Fig. 3. At the same time, bell-crank 46, 48 connected to main hammer rest rail 27 by link 47, will be swung on its pivot 44 and arm 48 thereof moved into the upward path of ear 38 of bottom 37 of bellows 33, all as shown in Fig. 4. If now, the several parts being in the positions of Fig. 4, pneumatic 29 be operated, ear 38 thereof will be stopped in its upward movement by arm 48 and that section of divided hammer rest rail 30 linked thereto will be swung backwardly only a portion of its maximum stroke thereby moving its hammers 31 back to their normal positions corresponding with position 57 of Fig. 3 all as shown in Fig. 5. By this arrangement, it will be seen that it is possible

to produce the normal difference of accentuation between the bass and treble notes irrespective of the degree of general accentuation. 55

In view of the foregoing description of operation the action of the manually operated pull rod 51 will be easily understood. When said rod 51 is pulled forwardly by button 50 lever 53 is swung on pivot 54 and end 55 of said arm swings arm 17 backwardly and through the connecting parts, pulls rod 19 downwardly, in every respect the same as that rod is pulled downwardly from the maximum collapse of bellows 3 and producing the same results as described above herein. 60 65

I claim:—

1. An action controller for automatic pianos including in combination, a reservoir bellows, a pivotally mounted main hammer rest rail, a pivotally mounted divided hammer rest rail, a divided hammer rest rail actuating pneumatic and means actuated by the swinging of the main hammer rest rail for limiting the collapse of the divided hammer rest rail actuating pneumatic. 70 75

2. An action controller for automatic pianos including in combination, a pivotally mounted main hammer rest rail, a pivotally mounted divided hammer rest rail actuating pneumatic and means actuated by the swinging of the main hammer rest rail for limiting the collapse of the divided hammer rest rail actuating pneumatic. 80 85

3. An action controller for automatic pianos including in combination, a reservoir bellows, a pivotally mounted main hammer rest rail, a pivotally mounted divided hammer rest rail, means actuated by the collapse of said bellows for swinging the main hammer rest rail and means operatively connected with the main hammer rest rail for limiting the stroke of the divided hammer rest rail actuating pneumatic. 90 95

Signed this 10th day of Aug. 1911 before two subscribing witnesses.

FREDERICK O. GAMBLE.

Witnesses:

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J. M. KUHN.