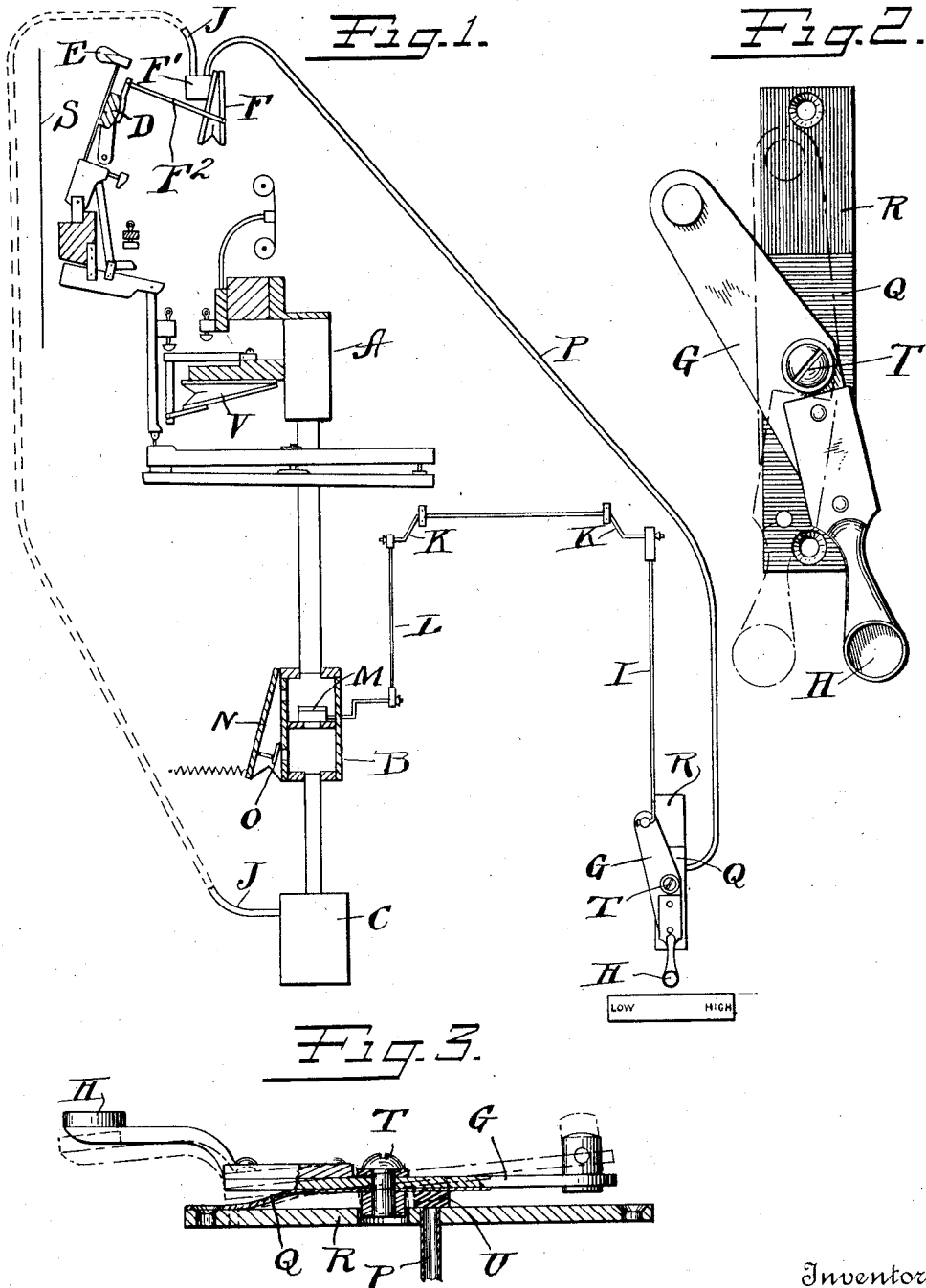


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CONTROLLING DEVICE FOR PLAYER PIANOS.
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UNITED STATES PATENT OFFICE.

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CONTROLLING DEVICE FOR PLAYER-PIANOS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK C. WHITE, a citizen of the United States, residing at Meriden, New Haven county, State of Connecticut, have invented certain new and useful Improvements in Controlling Devices for Player-Pianos, of which the following is a full, clear, and exact description.

10 My invention relates to improvements in mechanical piano playing instruments, the object being to provide certain improvements in the controlling mechanism therefor as will hereinafter be fully explained.

15 In the drawings Figure 1 shows, by means of a view diagrammatic in character, those features of construction essential to a clear understanding of my invention. Figs. 2 and 3 are detail views relatively enlarged.

20 In said drawings, A represents an action chest; B represents conventionally, and in section, a choker box containing a valve for varying the tension within the action chest A; C conventionally represents an exhaustor; D represents a movable hammer rest rail which may be moved to and fro relatively to the stringed portion S of the instrument, the position of said hammer rail determining the starting position of the hammers E.

F represents a pneumatic.

25 F' conventionally represents a box having therein a primary and secondary valve of ordinary construction. When the secondary valve is controlled, it opens the interior of the pneumatic F to the exhaustor C through the pipe J, thus causing said pneumatic F to collapse. The movable element of the pneumatic F is operatively connected through the medium of a link F² with the hammer rest rail D so that by means of said pneumatic F, the position of said hammer rail may be shifted.

45 It is my purpose to combine the controlling device for the pneumatic F with one of the finger controlled devices by which the instrument is otherwise manually controlled, so that said device will perform the double function of controlling said hammer rail as well as doing its other duty. In this particular system which I have illustrated herein, I have associated the hammer rail control with the same manually

controllable lever which is employed for controlling the tension in the action chest A. G represents this lever, the same being mounted so that its outer end H is readily accessible for finger control. This lever, in the particular form I have shown, swings in a horizontal plane. It is connected through the medium of a link I, crank K and link L with a choker valve M, the latter being located in the circuit leading from the action chest A to the exhaustor C. N is the usual tension regulator pneumatic normally in said circuit for governing the tension thereof through the medium of the valve O, said regulator, if desirable, being of the well-known "Parker" type. With the lever G in the position shown in solid lines (Fig. 2), the valve M stands in a position to permit high tension in the action chest A. When the lever G is swung to the position indicated in dotted lines, the valve M is closed to reduce the tension within the action chest A.

P is a duct leading from the primary pneumatic in the box F' to a point conveniently near the controlling lever G. In this particular case, the controlling lever G not only has a swinging movement in a horizontal plane, but also has a tilting movement in another plane. Normally the position of the lever G is such that the adjacent end of the duct P is closed. If the lever G is tilted at any time, it opens the end of the duct P and admits air at atmosphere to the primary valve in the box F', opening the secondary valve and putting the interior of the pneumatic F in circuit with the exhaustor C, causing the collapse of said pneumatic F and the consequent shifting of the hammer rest rail D toward the strings, bringing the hammers thereby closer to the strings S for softer playing. In the system as I have illustrated the same herein, it will be observed that this hammer rail control is associated with a controlling member G, which, itself, is employed in controlling the volume of sound by controlling the tension in the action chest, hence there is embodied in one device an ingenious cooperation of elements by which the choker system is caused to coact with the hammer rail controlling system so that both systems are mutually cooperative and controlled by a single finger piece.

In the detail views 2 and 3, I have shown one successful embodiment of a means for manual operation in which G is the lever, in this instance being mounted upon a spring Q, upon which it may be tilted. The rear end of said spring Q is secured on a base R, the mid portion of the lever G being pivotally mounted at T on said spring so as to be practically a part thereof and yet so as to be capable of a horizontal swinging movement on said spring and on said pivotal center. In this particular instance, the duct P extends up through the base R, and U represents a valve carried by the forward end of the spring Q and overstanding the entrance to the duct P so that normally said valve U will close said duct.

In operation, the swinging of the lever G in a horizontal plane upon the center T and in one direction or the other will cause a corresponding movement of the choker valve M, so that by this said horizontal movement, the degree of tension in the action chest A may be varied for the purpose of operating the hammers E with more or less vigor, dependent upon said degree of tension. By pressing down upon the finger piece H, the lever G and the outer end of the spring Q will be lifted, together with the valve U, thereby opening the duct P, releasing the primary valve in the box F', and, in turn, the secondary valve therein, at which instant the pneumatic F will operate to shift the hammer rail D and hammers E nearer to the strings S for the purpose described.

V conventionally represents the action or striker pneumatic, which is connected in any appropriate way with the hammer E, whereby the latter may be mechanically actuated in the manner customary in mechanical playing instruments.

From the foregoing, it will be seen that the operator has it within his power, by the manipulation of a single element, the lever G, to control in two different ways, independently or conjointly, the force or power with which the string is vibrated, thereby controlling the volume of sound, thus simplifying and rendering more easy of control the operation of any instrument with which said apparatus is associated.

While I have shown my invention as applied to a lever for controlling the tension of air in the action chest, it is not necessarily limited thereto, but might be associated with any other controlling lever manipulated by the operator in performing upon the instrument.

I have refrained from showing in the diagrammatic view the two or more divisions in the action chest such as commonly employed, it being understood that as to all features not specifically illustrated or described, I may make use of any well-known

apparatus, or parts thereof, suitable for association with those elements which I have illustrated and described.

What I claim is:

1. In a mechanical music playing instrument, a string, a power actuated hammer, a movable hammer rest rail for holding said hammer at different distances relatively to said string, means for moving said rail, and a single manually operable device for controlling both the power for actuating the hammer and the means for shifting the rail, said controlling device being movable horizontally and vertically, and a source of power.

2. In a mechanical music playing instrument, a string, a power actuated hammer, a movable hammer rest rail for holding said hammer at different distances relatively to said string, means for moving said rail, and a single controlling device for controlling independently the power for actuating the hammer and the means for shifting the rail, said controlling device being movable horizontally and vertically and a source of power.

3. In a mechanical music playing instrument, a string, a mechanically actuated hammer and means for actuating the same, a movable hammer rest rail for holding said hammer at different distances relatively to said string, means for moving said rail, and a single controlling lever for independently controlling both the mechanism for actuating the hammer and also the means for shifting the rail.

4. In a mechanical music playing instrument, a string, a hammer, a hammer rest rail movable to and fro for holding said hammer at different distances from the rail, a pneumatic for actuating the hammer, a pneumatic for actuating said rail, an exhaustor, a connection from said exhaustor to said hammer rest rail pneumatic, a valve therein, another connection from said exhaustor to said action pneumatic, a valve therein, and a single lever for controlling both of said valves independently.

5. In a mechanical music playing instrument, a string, a hammer, a hammer rest rail movable to and fro for holding said hammer at different distances from the rail, a pneumatic for actuating the hammer, a pneumatic for actuating said rail, an exhaustor, a connection from said exhaustor to said hammer rest rail pneumatic, a valve therein, another connection from said exhaustor to said action pneumatic, a valve therein, and a single means for controlling both of said valves independently, said single means comprising a lever mechanically connected with one of said valves and pneumatically connected with another of said valves, and mechanical and pneumatic connections therefor.

6. In an auto-pneumatic musical instrument, two expression controlling means, manual means comprising a lever arranged to swing in a horizontal plane for actuating
5 one of said controlling means and arranged to tilt in a different plane for actuating the other of said controlling means, a spring supporting said lever, said spring being rigidly mounted at one end, a pivotal connection between said spring and lever at a 10 point forward of the fixed end of the spring, and a valve carried by said spring.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."