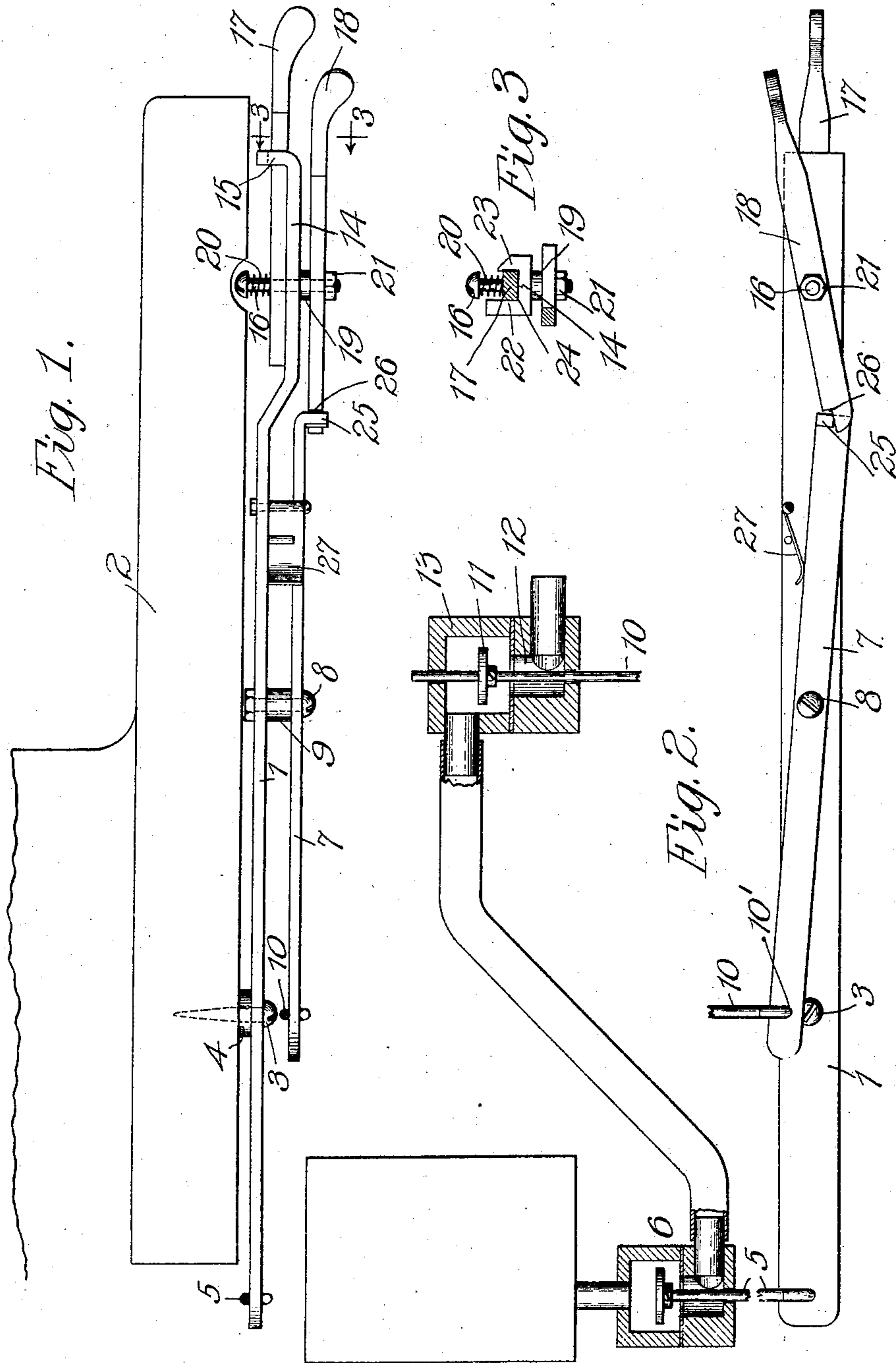


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AUTOMATIC PNEUMATIC PIANO.
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915,366.

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AUTOMATIC PNEUMATIC PIANO.

No. 915,366.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, AXEL F. LARSON and KARL O. OSTERGREN, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Automatic Pneumatic Pianos, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

Our invention relates to automatic pneumatic pianos and contemplates an improved arrangement of lever mechanism for controlling the operation of pneumatic mechanisms.

In instruments of the class referred to lever mechanism is usually provided for controlling the general operation of pneumatic mechanisms and auxiliary lever mechanism is associated with the general lever mechanism to control special operations of the pneumatic mechanisms, and the object of our invention is to provide improved construction and arrangement of such controlling lever mechanisms.

Our invention is clearly illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of controlling lever mechanism mounted on the under side of a piano keyboard. Fig. 2 is a plan view looking at the lever mechanism from below and showing also more or less diagrammatically the valve mechanisms controlled by the levers; and Fig. 3 is a sectional view taken on plane 3, 3 Fig. 1.

The main controlling lever 1 is pivoted at an intermediary point to the under side of the keyboard shelf 2 of a piano or other instrument, a screw 3 serving as a pivot means and a washer 4 being inserted between the lever and the support 2. The rear end of this lever is connected by means of connecting rod 5 with valve mechanism 6, which may control some pneumatic mechanism, as for example, the motor driving the music sheet over the trackerboard. By moving the front end of the lever in a lateral plane, this valve mechanism is adjusted to determine the speed of the motor. It is very desirable, however, to be able to give a general setting of the valve mechanism for a general operation of the motor and of the music sheet and to have in addition some auxiliary means for causing a special change in the

operation of the controlled pneumatic mechanism without disturbing the setting for the general operation thereof. For example, it is desirable to be able to set the speed of the music sheet motor for a general tempo and to provide auxiliary easily operated controlling mechanism for producing variations in this speed without disturbing the setting of the main controlling mechanism. If the main controlling mechanism were actuated for these special adjustments, it would require considerable care to bring the main controlling mechanism back to the desired general tempo. However, by having this auxiliary adjusting mechanism the general tempo setting can be permanent and special adjustments made independently. We obtain this auxiliary adjustment by means of an auxiliary lever 7 pivoted at an intermediary point to the main lever 1 as by means of a screw or bolt 8 and a washer 9 interposed between the levers. A connecting rod 10 is pivoted at 10' to the rear end of the auxiliary lever and lies in a plane which is perpendicular to the main lever and which passes through the center of pivot 3 of this main lever. The other end of the connecting rod mounts a valve 11 for controlling a passageway 12 through the valve frame 13. This valve frame is interposed in the exhaust supply path from the motor, that is, it controls the air flow through the main valve 6. The auxiliary lever is bodily carried by the main lever and owing to the pivot arrangements described, the main lever may be rotated about the pivot 3 without causing perceptible movement of the valve 11, which may be normally open, as shown, to allow for passageway to the main valve 6. The auxiliary lever may, however, be rotated independently of the main lever to cause operation of the valve 11 to control the passageway to the main valve, the usual mode of operation being to set the main lever to adjust the main valve 5 for a desired general tempo and thereafter to actuate the auxiliary lever to cause the valve 11 to effect special adjustments of the tempo. The main lever remaining stationary after an initial setting, the maintenance of the general tempo is assured.

The front section 14 of the main lever bends down and has its end 15 turned upwardly. Pivoted to the end section 14 by means of

a screw 16 is the grip lever 17. Pivoted to the under side of the section 14 by means of screw 16 is the grip lever 18 for the auxiliary lever, a washer 19 being interposed between the lever 18 and the section 14, and a spring 20 being interposed between the head of screw 16 and the lever 17, nut 21 engaging the lower end of the screw. The up-turned end 15 is cut away, as shown in Fig. 3 to leave an abutment wall 22 and an entrance wall 23, between which is the retaining pocket 24, which normally receives the lever 17. The front end 25 of auxiliary lever 7 is turned down for engaging in the notch 26 cut in the rear edge of the grip lever 18. A spring 27 engages the auxiliary lever 7 and tends to rotate it to the position shown in Fig. 2, with the pivot 10' a slight distance from the pivot 3, in which position the valve 11 is open. In this position of the auxiliary lever the grip lever 18 is in inclined position, as shown. By moving the outer end of lever 18 toward the lever 17, the auxiliary lever will be rotated in counter-clockwise direction and valve 11 moved to close passageway 12. Upon release of lever 18 this lever and the auxiliary lever will be returned to their normal position by the spring 27. By the arrangement of the grip levers as shown, these levers, which normally extend beyond the front edge of the piano keyboard, can be rotated to a position within said edge. By first raising the end of lever 17, it will clear the wall 23 and both levers can then be swung together to a position underneath the keyboard. When it is desired to use the levers they are swung to their operative position, lever 17 passing over the beveled approach wall 23 to be locked in its pocket 24 by the spring 20. The end of lever 17 can then be held between the thumb and middle finger and the lever 18 controlled by the index finger.

The arrangement of main and auxiliary lever mechanisms as above described is very simple, yet very effective. All the parts can be made of wood and placed in positions where other mechanisms will not be interfered with.

We desire to secure the following claims by Letters Patent:

1. In automatic pneumatically operated instruments, the combination of pneumatic mechanism to be controlled, main lever mechanism, means to be actuated by said main lever mechanism for controlling the passageway of air to the pneumatic mechanism, an auxiliary lever mechanism, means to be actuated by said auxiliary lever mechanism for controlling the flow of air to the pneumatic mechanism, said auxiliary lever mechanism being carried by the main lever mechanism, said main lever mechanism being pivoted and said auxiliary lever mechanism having pivotal connection with the means to be actuated

by said lever, said pivotal connections being close together so that movement of the main lever mechanism can be independent of movement of the means to be actuated by the auxiliary lever mechanism.

2. In a pneumatic playing instrument, the combination of pneumatic mechanism to be controlled, valve mechanism for controlling said pneumatic mechanism, a main lever pivoted at an intermediary point and connected at one end with said valve mechanism whereby rotation of said main lever will cause adjustment of the valve mechanism and thereby adjustment of air flow for the pneumatic mechanism, an auxiliary lever pivoted to the main lever, additional valve mechanism for controlling the flow of air for the pneumatic mechanism through the first-mentioned valve mechanism, a connecting rod connecting one end of the auxiliary lever with the additional valve mechanism and lying in a plane normally at right angles with the main lever and passing through the pivot axis of said main lever whereby rotation of said main lever can result without causing appreciable movement of the additional valve mechanism.

3. In a pneumatically operated instrument, the combination of a main lever and an auxiliary lever running in the same general direction, said main lever being pivoted at an intermediary point to the frame of the instrument, said auxiliary lever being pivoted to the main lever to be rotated in a plane parallel with that of the main lever, pneumatic mechanism, controlling mechanism for controlling the flow of air for said pneumatic mechanism, one end of said main lever being connected with said controlling mechanism, additional controlling mechanism for controlling the flow of air for the pneumatic mechanism, connecting mechanism between one end of the auxiliary lever and said additional controlling mechanism, the connection of such connecting mechanism with the auxiliary lever being such that effective operation of the additional controlling mechanism is prevented upon rotation of the main controlling lever, rotation of the auxiliary lever causing effective operation of the additional controlling mechanism.

4. In a pneumatically operated piano, the combination of the keyboard supporting shelf, pneumatic mechanism within the piano, valve mechanism for said pneumatic mechanism, a main controlling lever extending rearwardly from the front edge of the shelf and pivoted at an intermediary point to said shelf, the rear end of said lever being connected with said valve mechanism, an auxiliary controlling mechanism pivoted to the main lever at a point between the pivot of the main lever and its front end, auxiliary valve mechanism for the pneumatic mechanism connected with the rear end of said auxiliary lever, the rear end of said auxiliary

lever being adjacent to the pivot point of the main lever whereby movements of the main lever will be independent of the auxiliary valve mechanism.

- 5 5. In a pneumatically operated piano, the combination of the keyboard supporting shelf, pneumatic mechanism within the piano, valve mechanism for said pneumatic mechanism, a main controlling lever extending
10 rearwardly from the front edge of the shelf and pivoted at an intermediary point to said shelf, the rear end of said lever being connected with said valve mechanism, an auxiliary controlling mechanism pivoted to the
15 main lever at a point between the pivot of the main lever and its front end, auxiliary valve mechanism for the pneumatic mechanism

connected with the rear end of said auxiliary lever, the rear end of said auxiliary lever being adjacent to the pivot point of the main 20 lever whereby movements of the main lever will be independent of the auxiliary valve mechanism, and pivoted ends for said levers normally extending beyond the front edge of the shelf and adapted to be forwarded to a 25 position within the front edge.

In witness whereof, we hereunto subscribe our names this 7th day of November A. D. 1908.

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KARL O. OSTERGREN.

Witnesses:

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