(No Model.)

R. W. PAIN.

MECHANICAL MUSICAL INSTRUMENT.

No. 335,534. Patented Feb. 2, 1886.

Fig. 1.

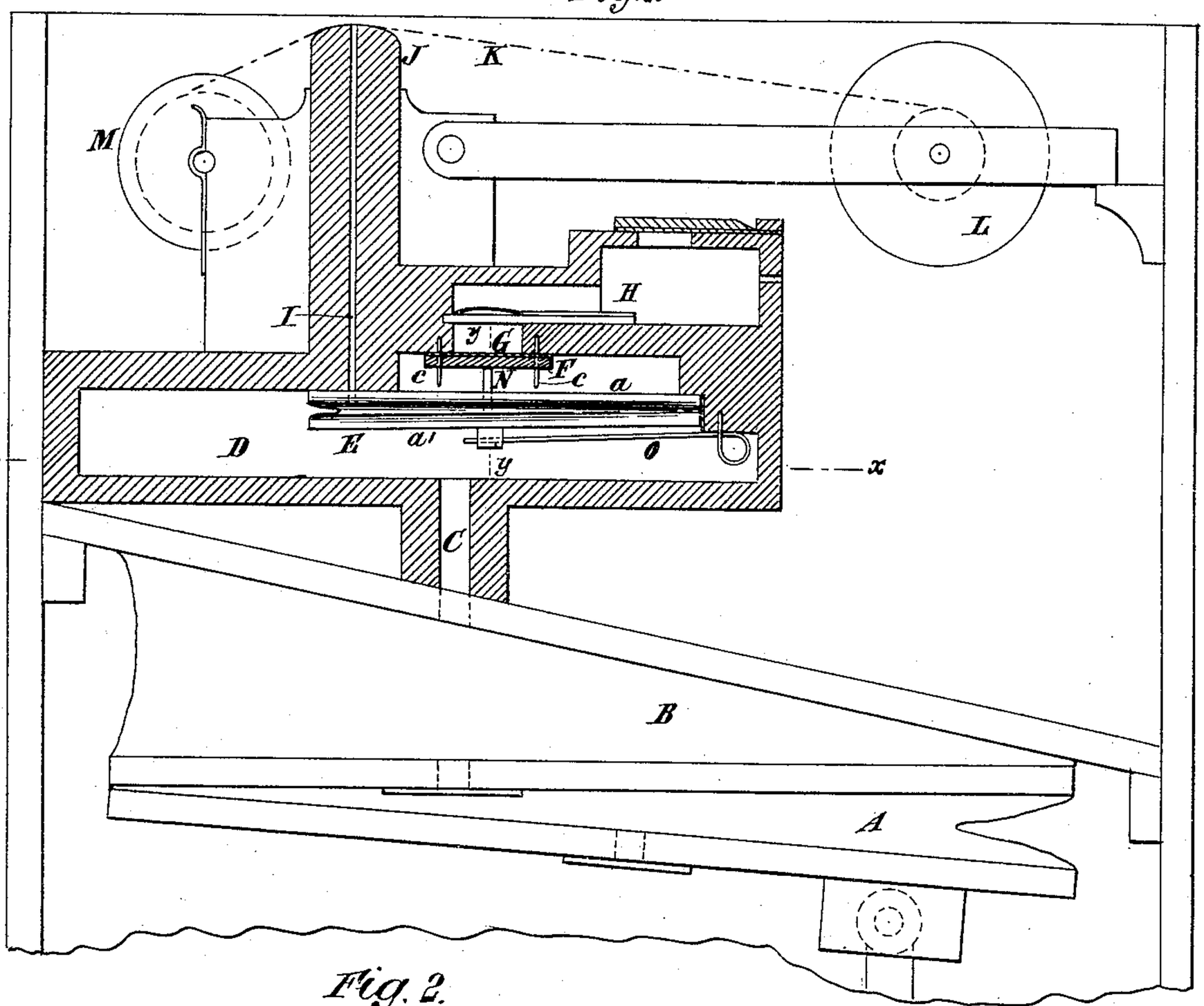


Fig. 2.

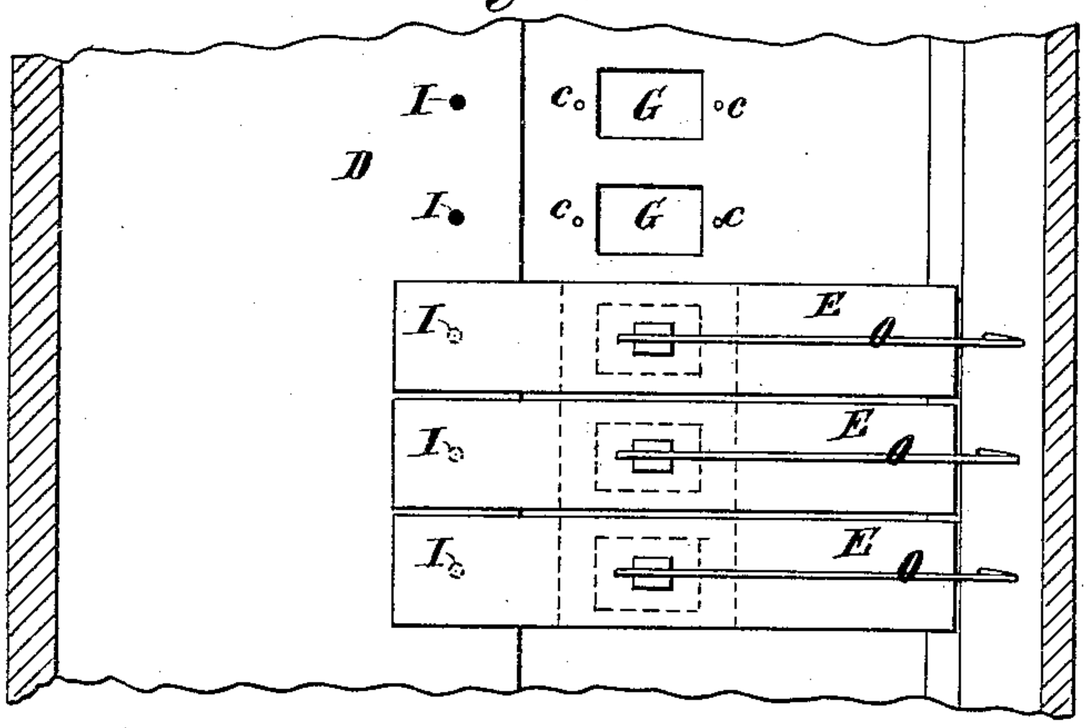
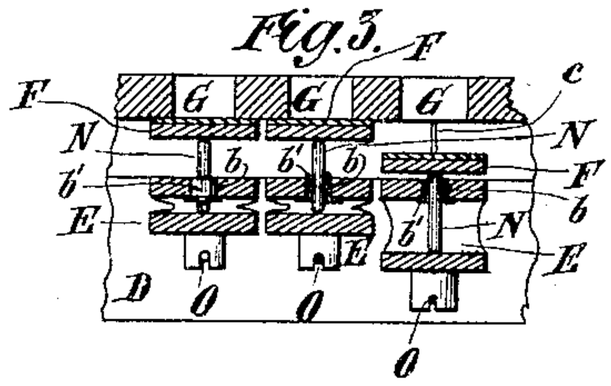


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

ROBERT W. PAIN, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE MECHANICAL ORGUINETTE COMPANY, OF SAME PLACE.

MECHANICAL MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 335,534, dated February 2, 1886.

Application filed April 20, 1885. Serial No. 162,732. (No model.)

To all whom it may concern:

Be it known that I, ROBERT W. PAIN, of New York, in the county and State of New York, have invented a certain new and useful Improvement in Musical Instruments, of which the following is a specification.

My improvement relates to musical instruments of the kind wherein pneumatic motors are employed to operate the valves, whereby the speaking of the sound-producing devices is controlled; and it is particularly intended for application to such musical instruments of this kind as have a traveling music sheet or tablet for regulating the operation of the pneumatic motors.

I will describe a musical instrument embodying my improvement, and then point out the various features in a claim.

In the accompanying drawings, Figure 1 is a vertical section of a musical instrument embodying my improvement. Fig. 2 is an inverted horizontal section of the same, taken at the plane of the dotted line *x x*, Fig. 1. Fig. 3 is a vertical section of certain parts, taken at the plane of the dotted line *y y*, Fig. 1.

Similar letters of reference designate corresponding parts in all the figures.

A designates bellows, of which there may be any suitable number. I have shown the same as of the kind known as "suction-bellows." Any suitable means for operating the bellows may be employed. The bellows will preferably be combined with an equalizer, B. (Shown as of bellows-like construction.) The equalizer B communicates through a passage, C, with a chest, D. In the chest D are arranged a number of pneumatic motors, E, controlling the operation of valves or pallets F. These valves F are combined with a number of ports or passages, G, leading from the chest D to cells H, wherein reeds, which in the present example of my improvement constitute the sound-producing devices, are arranged.

Air is free to enter the reed-cells at all times from the external atmosphere; but it can only flow through the same so as to cause the speaking of the reeds when the valves F are lowered so as to uncover the ports or passages G.

Passages or ducts I extend from the interior of the pneumatic motors E through a rest, J, for a perforated traveling music-sheet, K. This music-sheet is attached at the ends to rollers L M. It is normally wound upon one and unwound therefrom and wound upon the other during the playing of the instrument. It controls the passage of air from the external atmosphere to the pneumatic motors.

The pneumatic motors are of bellows-like construction, having an upper immovable board, *a*, and a lower board, *a'*, hinged at one end to the upper board and connected to the upper board by flexible material a^2. They communicate with the passages or ducts I near the end, where the lower hinged board is capable of most motion. Their movable hinged boards operate about midway between their ends on the valves F through the agency of pins or rods N. As their movable hinged boards derive motion from air passing through the passages or ducts I, such movable boards act upon the valves F with a leverage. Springs O, fastened to a portion of the chest D and impinging upon the movable boards of the pneumatic motors, force the movable boards upward when not prevented by the flow of air into the motors, and normally hold the movable boards up close to the upper boards.

The upper boards of the pneumatic motors are provided with holes *b*, fitted with metal eyelets *b'*. The pins N extend through the eyelets *b'*. At the lower ends they rest upon the lower movable boards of the pneumatic motors, and at the upper ends they impinge against the valves F. The valves F consist of pieces of wood or analogous material faced on the upper surface with sheep-skin or other soft material and fitted to pins *c*, extending downwardly from the upper part of the chest D and serving as guides.

The pins N do not fit tightly in the eyelets *b'*, but are so much smaller that a small space is left between them and the eyelets.

When air is admitted through perforations in the music-sheet K to the passages or ducts I, the movable boards of the pneumatic motors will be depressed, whereupon the pins N will be allowed to descend, and will permit the valves F to uncover the passages G. Then the reeds will speak. As soon as imperforate portions of the music sheet close the passages or ducts I, the flow of air to the pneumatic motors will cease. Then the air within the

motors will be forced out around the pins N through the eyelets *b'*, the lower boards of the motors will rise, and the pins N will be made to close the valves F.

The eyelets *b'*, being made of metal, preserve a practically invariable air escape or vent. The pins N will be advantageously made of metal, so that they will not warp or vary in size through moisture or extreme dryness. The pins N, by working through the eyelets *b'*, keep them free and clear.

It will be observed that the pneumatic motors are arranged below the valves F.

What I claim as my invention, and desire to secure by Letters Patent, is—

In a musical instrument, the combination of valves for controlling the speaking of sound-producing devices, pneumatic motors having air-vents lined with metal, and metal pins extending through the air-vents from inside the motors to the valves, substantially as specified.

ROBERT W. PAIN.

Witnesses:
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