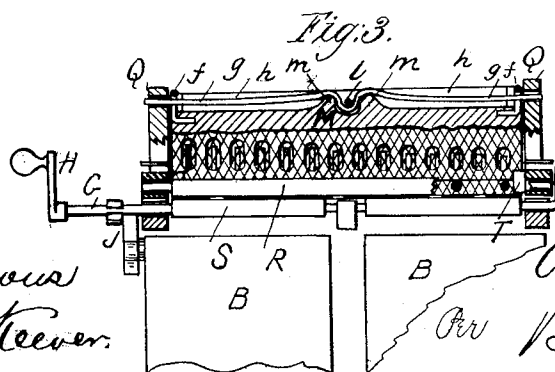
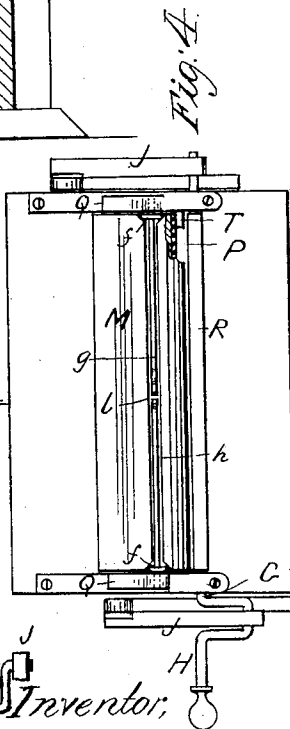
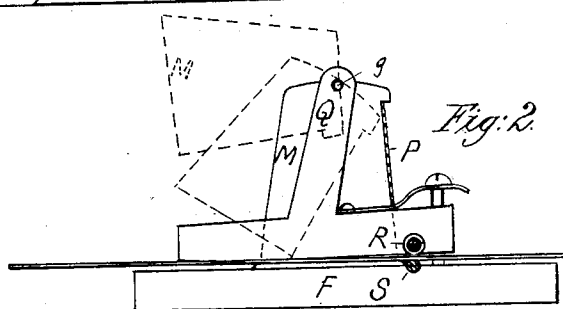
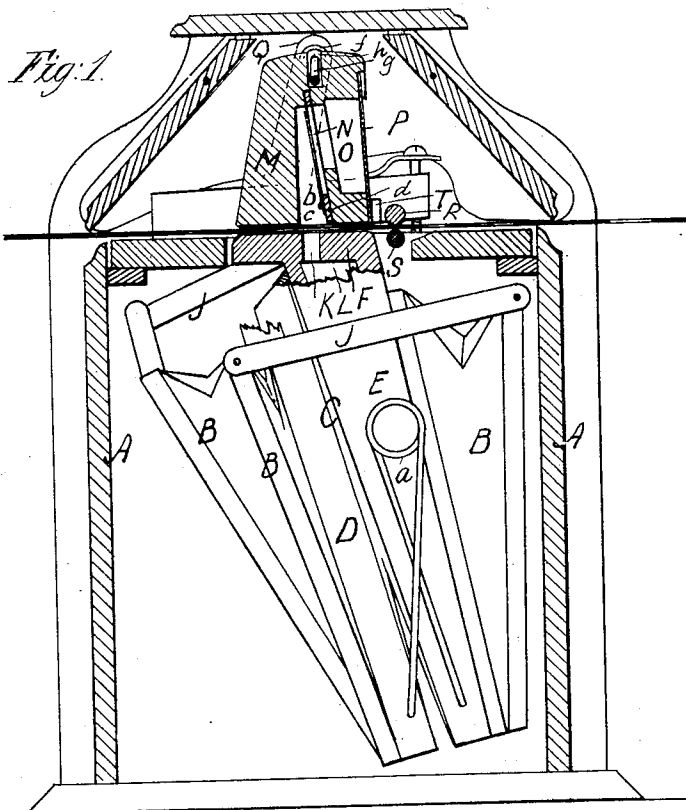


(No Model.)

O. H. ARNO.
 Mechanical Musical Instrument.
 No. 242,857. Patented June 14, 1881.



Witnesses
Wm. S. Bellows
H. J. M. Keever.

Inventor,
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UNITED STATES PATENT OFFICE.

OLIVER H. ARNO, OF WILMINGTON, ASSIGNOR TO AMERICAN AUTOMATIC ORGAN COMPANY, OF BOSTON, MASSACHUSETTS.

MECHANICAL MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 242,857, dated June 14, 1881.

Application filed February 23, 1881. (No model.)

To all whom it may concern:

Be it known that I, OLIVER H. ARNO, of Wilmington, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Mechanical Musical Instruments, of which the following is a full, clear, and exact description.

This invention relates to improvements in mechanical musical instruments in which a strip of perforated paper, as it is caused to be moved along in any suitable manner, opens and closes, or causes to be opened and closed, air-passages connecting musical reeds with the bellows, whereby the reeds are caused to sound according to the perforations of said strip.

The manner of carrying out my invention will be fully hereinafter described in detail, and specifically pointed out in the claims.

In the accompanying plate of drawings this invention is illustrated, Figure 1 being a vertical transverse section of a mechanical musical instrument constructed according to this invention and as inclosed in a casing; Fig. 2, an end view of the reed-block and frame to which it is hinged. Fig. 3 is a detail front view and partial section of the reed-block and the working parts of the instrument on a smaller scale. Fig. 4 is a plan view of the same.

In the drawings, A represents a box or casing inclosing the working parts of this invention. The construction of this casing forms no part of this invention.

B B are vertical feed-bellows, arranged in pairs side by side and against each side of a force-bellows, C, one part, D, of which is arranged to open from and close upon the other part, E, in the operation of the bellows, the part E being stationary, and at its upper end is attached to a horizontal board, F, fastened by screws to the inside of the box A. The several feed-bellows at each end are driven from a common driving-shaft, G, by means of a crank-arm, H, and connecting-rods J, severally arranged together as ordinarily, and the force-bellows opens against a spring, a, at each end thereof.

K is an elongated slot in the board F, opening into the chamber L of the force-bellows, and M a block, which covers the open slot K from end to end. This block M has a series of

vertical chambers, b, arranged side by side and in a vertical plane coincident with the plane of the open slot K, and at their lower ends, c, they severally open and communicate with the said open slot K leading to the chamber of the force-bellows. Each chamber b is provided with a reed, N, the heel d of which reed is at or toward the open lower end, c, of the chamber b, and these reeds open to a common chamber, O, of the block, covered by a sheet, P, of wire-gauze, tacked or otherwise suitably secured in place. The block M is hung at each end by an elongated ear-piece or loop, f, upon a wire rod, g, which runs lengthwise of the block, and is within a groove, h, thereof, and at each end is hung to an upright, Q, of the board F. This wire rod, intermediate of its length, passes under a cross-pin, l, and thence over raised surfaces or rests m in the block-groove h, and between such cross-pin, in either one or both directions, it is bent or otherwise shaped to exert a yielding and elastic pressure in a downward direction upon the block, and thus hold it in close contact with the face of the board F, about the slotted opening K thereof. The perforated paper strip passes between this block M and the board F, and thus rows of perforations and unperforated portions are made to pass between the slotted passage K for the air from the force-bellows to pass to the reed-openings thereto, securing thereby the sounding of the reeds in accordance with said rows of perforations in the strip. This travel of the paper strip is secured by the rotation of the feed-rollers R S, of which S is on the driving-shaft G, and at the same time the bellows are operated. This hanging of the reed-block M, herein described, enables the reed-block to be swung into and out of its position over the air-passage leading from the force-bellows, and when in position over the said air-passage, because of the described arrangement of the spring-rod g, it is caused to press with a yielding and elastic pressure upon the paper strip passing under and between it and the said air-passage.

The hanging of the reed-block M, as above described, obviously is not dependent upon the arrangement of one part of the hinge to exert a yielding pressure, but it is preferable

to adapt the parts to exert a yielding pressure, as stated.

The swinging of the reed-block enables the paper strip to be readily placed in position over the air-passage K, between the feed-rolls, when, if the block be at rest upon the paper strip, the forward movement of the paper will draw it into its position over the air-passage, where, under the continued movement of the paper, it will remain, because of the then abutting of the block against stationary blocks T, suitably located therefor.

The wire-gauze P protects the reeds against the entrance of dust and otherwise guards them against injury, while at the same time it offers no obstruction to the passage of the sound of the reeds; and, in lieu of wire-gauze, any material suitably perforated can be used, wire-gauze, however, being preferable for obvious reasons.

The placing of the reeds with their heels toward the open lower ends, *c*, of their respective chambers secures to the reeds, in the passage of the air from the bellows through them, better, freer, and stronger vibrations.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a mechanical musical instrument, the reed-block provided with air-chambers and reeds, and having its upper longitudinal end suspended on suitable pivots arranged and adapted to operate substantially as described, whereby said reed-block can be freely swung laterally and entirely disengaged or removed

from the music-sheet and the rest on which the latter travels without disturbing any portion of the apparatus, for the purpose of bringing the air-chambers of the reed-block into and out of line with the air-passage leading to the bellows.

2. In a mechanical musical instrument, the reed-block provided with air-chambers and reeds, and having its upper longitudinal edge suspended upon a longitudinal spring which exerts a downward pressure on the block, and on which the latter can be freely swung laterally and entirely disengaged or removed from the music-sheet and the rest on which the latter travels without disturbing any part of the apparatus, for the purpose of bringing the air-chambers of the reed-block into and out of line with the passage leading to the bellows, as set forth.

3. The reed-block M, having air-chambers *b* and reeds N, and hung by hinges to suitable supports, in combination with abutments T, arranged as described, whereby the block can be swung into and out of position in relation to an air-passage, K, and when in its normal position rest against said abutments, substantially as and for the purpose described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

OLIVER H. ARNO.

Witnesses:

EDWIN W. BROWN,
WILLIAM S. BELLOWS.