

UNITED STATES PATENT OFFICE.

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MECHANICAL MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 335,272, dated February 2, 1886.

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To all whom it may concern:

Be it known that I, J. HERBERT CHASE, of Brooklyn, in the county of Kings and State of New York, have invented a certain new and useful Improvement in Musical Instruments, of which the following is a specification.

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

In the accompanying drawings, Figure 1 is a vertical section of a mechanical musical instrument embodying my improvement. Fig. 2 is a horizontal section of the same on the line $x x$, Fig. 1, looking upward. Fig. 3 is a transverse section taken at the plane of the dotted line $x' x'$, Fig. 1. Fig. 4 is a transverse section of a pneumatic motor, taken at the dotted line $y y$, Fig. 1, or the dotted line $y' y'$, Fig. 1, looking in either case toward the adjacent end of such motor.

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

A designates bellows, of which there may be any suitable number, operated in any desirable manner.

B designates an equalizer of bellows-like construction, communicating with the bellows, and also with a chest, D.

C designates a reed-cell, arranged, as here shown, over the chest D. There may be any desirable number of reed-cells similarly arranged. The reed-cells communicate with the chest D through passages a , and under control of valves E. These valves E severally consist of a lever fitted at or near one end to pins b , and held upon them by abutments c . These levers are faced with leather or analogous material opposite the passages a , so as to be capable of effectually closing the latter. The free ends of the levers are guided by pins d .

G designates a number of pneumatic motors, whereby the opening and closing of the valves E are controlled. They communicate internally with ducts e in a rest, H, over which a music-sheet, I, which is perforated to effect the playing of a tune, passes. As shown, the bellows are suction-bellows. They cause air to pass through the ducts e when the perfora-

tions in the music-sheet permit it to do so. The air thus passing through the ducts enters the pneumatic motors, expands them, and thereby causes the opening of the valves E. When the passage of air into the ducts e is prevented by the imperforate portion of the music-sheet, the pneumatic motors will collapse and close the passages a .

Having given a general description of the instrument, I will now describe the features which constitute my present improvement. Each of the pneumatic motors consists of a strip of wood, g , having projections g' near the ends on one side, another strip of wood, g'' , and a flexible material, g''' —such as sheep-skin—connecting the latter to the former. The strips of wood g are secured to the under side of a downward projection, h , in the upper part of the chest D. The ducts e of the rest H extend through this projection h , and through the strips of wood g to the interior of the pneumatic motors. The projections g' are preferably made by attaching separate blocks or pieces to the strips g through the agency of glue or other adhesive substance. The flexible material g''' is secured by glue or other suitable adhesive substance to the sides of the strips g , the sides of the projections g' , and across the under side of the said projections. The strips g'' are secured by glue or like material to the flexible material g''' . These strips g'' are shorter than the distance between the projections g' ; hence when the motors are collapsed the strips g'' are moved between said projections and close against the strips g .

J designates pins passing through holes in the strips g'' and strips g and impinging against the valves E. At the lower ends, below the strips g'' , they have heads, against which bear springs K. Preferably these heads are provided with notches receiving the springs. The springs are fastened to a rail, N , on the projection h .

The holes in the strips g'' and strips g , through which the pins J pass, are sufficiently large to allow of the passage of air between them and the pins.

Whenever air is admitted through any of the ducts e , the corresponding motors are expanded. Then the pins are drawn down

the valves E open. When the passage of air is prevented by the mperforate portions of the music-sheet from passing through the ducts, the air within the motors, which are in communication with such ducts, escapes, the springs collapse the motors, and the latter close the valves E.

It will be observed that the strips g^2 of the pneumatic motors are in effect free moving diaphragms, having a bodily movement, and not merely a swinging movement.

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

1. In a musical instrument, the combination of a valve for controlling a sound-producing device, a pneumatic motor comprising a fixed portion and a strip bodily movable in one plane, a pin passing entirely through the motor and impinging against the valve, and a spring bearing directly on the pin, so that it may through it exert a force against the valve, substantially as specified.

2. In a musical instrument, the combination of a valve for controlling a sound-producing device, a pneumatic motor comprising a fixed portion and a strip bodily movable in one plane, and a pin engaged with the movable strip and drawn away thereby to cause the opening of the valve, substantially as specified.

3. A pneumatic motor consisting of the fixed strip g , having projections g' secured thereto near the ends on one side, a strip of wood, g^2 , shorter than the distance between the projections g' , united to the strip g by flexible material g^3 , secured to the sides of the strip g , the sides of the projections g' across the under sides of said projections, and the side of the strip g^2 , substantially as specified.

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Witnesses:

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