M. J. MATTHEWS.

Mechanical Musical-Instrument.

No. 211,634. Patented Jan. 28, 1879.

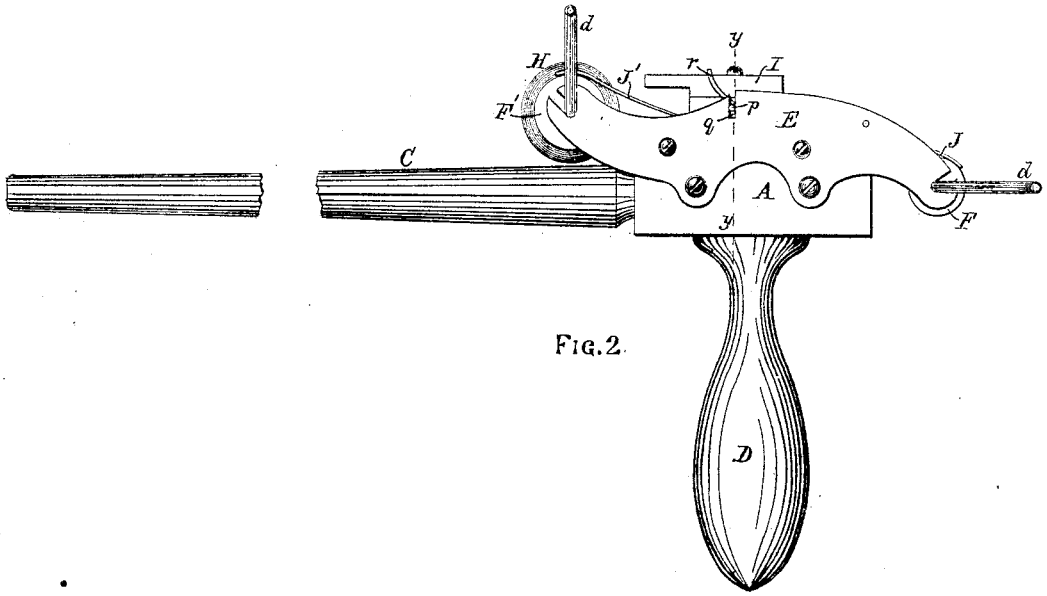

FIG. 2.

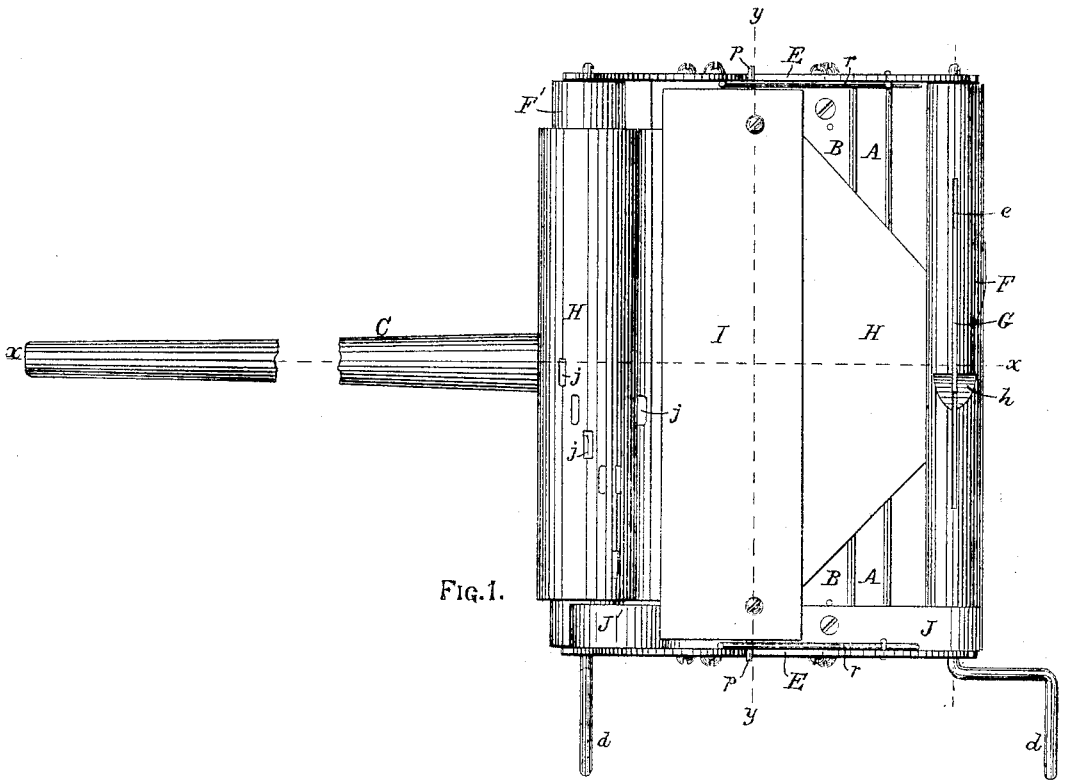

FIG. 1.

WITNESSES:

E. A. Hemmenway.

C. H. Dodd.

INVENTOR:

Mason J. Matthews

BY N. C. Lombard,

ATTORNEY.

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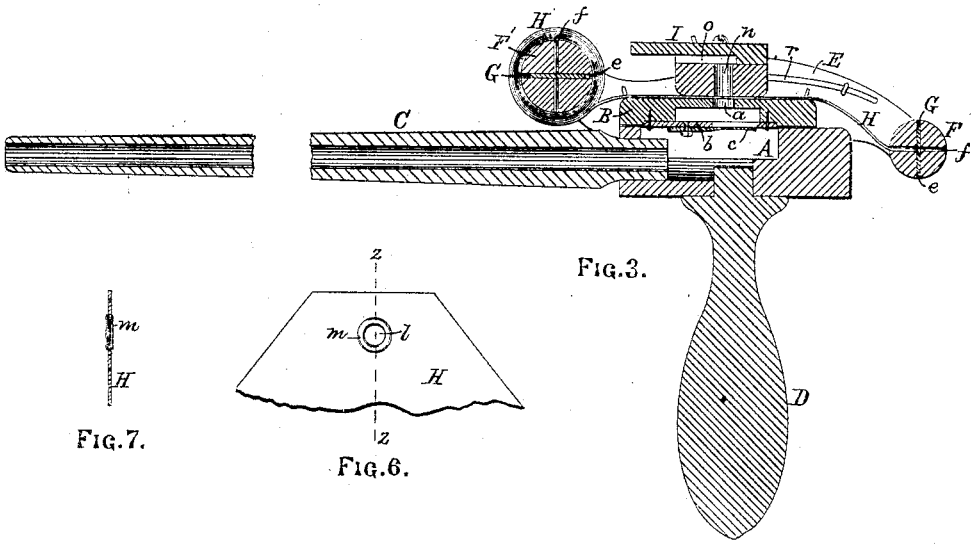

FIG. 3.

FIG. 6.

FIG. 7.

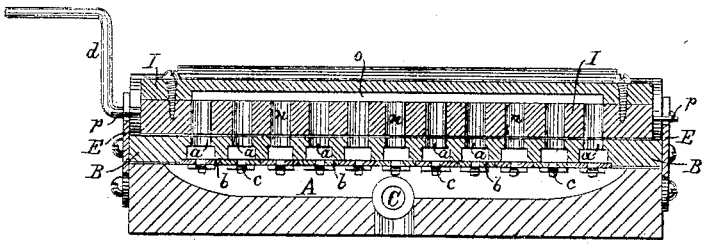

FIG. 4.

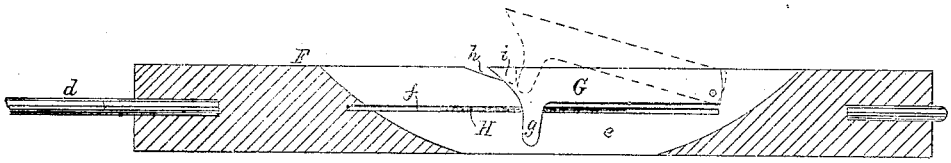

FIG. 5.

WITNESSES:

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UNITED STATES PATENT OFFICE.

MASON J. MATTHEWS, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN MECHANICAL MUSICAL INSTRUMENTS.

Specification forming part of Letters Patent No. **211,634**, dated January 28, 1879; application filed November 15, 1878.

To all whom it may concern:

Be it known that I, MASON J. MATTHEWS, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Mechanical Musical Instruments, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to that class of musical instruments in which a sheet of perforated paper or other thin flexible material is used to control the passage of air through the reeds; and it consists, first, in the combination, with a wind-chest, a reed-box provided with a series of reeds, and a sheet of paper or other thin flexible material having formed therein a series of perforations of different sizes, and arranged in regular order to represent the various notes of a tune, and adapted to be moved over the reeds and control the passage of wind through the same, of a pair of thin arms secured one to each end of the wind-chest, reed-box, or to both the reed-box and wind-chest, and projecting beyond the front and rear edges of the wind-chest, and adapted to support in said projecting ends a pair of paper-carrying rolls, as will be further described.

It further consists in the combination, with a wind-chest and a reed-box provided with a series of reeds, of a strip or sheet of paper or other thin flexible material having formed therein a series of perforations arranged in regular order to represent the various notes of a tune, and also provided at each end thereof with a single perforation having set therein a metallic eyelet or other suitable re-enforcing device as a means of attaching said perforated strip or sheet to the rolls or cylinders upon which it is to be wound.

It further consists in the combination, with a wind-chest, a reed-box, a series of reeds, and a moving strip or sheet of perforated paper or other thin flexible material adapted to control the passage of wind through the reeds, of a pair of rolls or cylinders, arranged one in front and the other in the rear of the wind-chest and reed-box, each provided with means for attaching one end of said strip or sheet of perforated paper or other flexible material thereto, and each provided with a crank, all so arranged that the strip of perforated paper may be alternately moved in opposite directions and wound upon either of said rolls or cylinders, as and for the purposes to be hereinafter described.

It further consists of a paper-carrying roll or cylinder having formed therein near the middle of its length two longitudinal slits extending through, or nearly through, the greatest diameter of said roll at right angles, or nearly so, to each other, one of said slits being adapted to receive the end of the strip of paper or other thin flexible material, and the other slit having pivoted therein a lever provided with a hook or pin adapted to enter the re-enforced opening in the end of said paper, and thus attach said paper to the roll.

Figure 1 of the drawings is a plan of an instrument adapted to be supplied with wind from the lungs of the operator and embodying my invention. Fig. 2 is a side elevation. Fig. 3 is a vertical section on line *x x* on Fig. 1. Fig. 4 is a vertical section on line *y y* on Figs. 1 and 2. Fig. 5 is a central longitudinal section of one of the paper-carrying rolls. Fig. 6 is a plan of a portion of one end of the paper strip, showing the re-enforced opening for securing it to the roll, and Fig. 7 is a section of the same on line *z z* on Fig. 6.

A is the wind-chest, having secured upon its upper side the reed-box B, having formed therein a series of wind-passages, *a a*, directly beneath each of which is secured to the under side of the reed-box B a reed-frame, *b*, each provided with a reed, *c*, tuned to a different pitch.

C is a pipe through which wind is supplied to the wind-chest from the lungs of the operator, and D is a handle by which the instrument is held in the left hand of the operator.

E E are two thin metal bars or plates secured one to each end of the wind-chest A and reed-box B, and each extending beyond the front and rear edges thereof, and having mounted in suitable bearings formed therein the paper-carrying rolls or cylinders F and F′, as shown in Figs. 1 and 2.

Each of the rolls F and F′ is provided with a crank, *d*, by which it may be revolved, and also has formed therein, near the middle of its length, two longitudinal slits, *e* and *f*, extending

through, or nearly through, said roll at right angles, or nearly so, to each other. In the slit *e* is pivoted the lever or arm G, provided at its movable end with the projection *g*, as shown in Fig. 5. The rolls F and F′ each have a notch, *h*, cut in one side of its periphery, to enable the operator to place his thumb or finger nail, or any suitable tool, under the pointed end *i* of the lever G to raise it when it is desired to remove the strip of perforated paper from the instrument.

H is a strip or sheet of paper or other flexible material having formed therein a series of perforations, *j j*, arranged in regular order to represent the various notes of a tune, and of varying lengths, according to the length of tone it is desired to produce. The extreme ends of the strip or sheet of paper or other thin flexible material H are reduced in width by cutting off the corners, as shown in Figs. 1 and 6, and each of said ends has formed therein a single perforation, *l*, the material around said perforation being re-enforced or strengthened by inserting therein a metallic eyelet, *m*, as shown in Figs. 6 and 7. The end of the strip of paper is inserted in the slit *f* in the roll F or F′, when the lever G is in the position indicated in dotted lines in Fig. 5, till the eyeleted hole *l* is directly under the projection *g*, when the lever G is pressed down into the position shown in full lines in Fig. 5, with the pin *g* passing through the hole *l*.

I is a pressure-bar, provided with a series of wind-passages, *n*, corresponding to those in the reed-box B, and opening into the longitudinal slit *o*, and also provided at each end with a journal-pin, *p*, which has a bearing in the slot *q*, formed in the upper edge of the bar or plate E.

The paper H rests upon the upper surface of the reed-box B, and the pressure-bar I rests upon the paper and is pressed with considerable force downward to hold the paper closely upon the reed-box by the tension of the springs *r r*, which are attached to the inner sides of the bars or plates E E, and press at their movable ends upon the journal-pins *p* of the bar I.

J and J′ are spring-brakes bearing at their movable ends upon the rolls F and F′, respectively, to prevent the elasticity of the coil of paper, when wound onto either of said rolls, from turning said roll backward and partially unwinding the paper therefrom.

The operation of my improved instrument is as follows: The parts being in the positions shown in Figs. 1, 2, and 3, with the bulk of the paper H wound upon the roll F′, the operator takes the instrument by the handle D in his left hand, places the end of the pipe C in his mouth, and blows into said pipe, and at the same time turns the crank *d* of the roll F, so as to draw the paper H off from the roll F′ and wind it onto the roll F, during which movement of the paper the perforations *j j* are each brought successively over a reed and wind is permitted to pass through the wind-passages and cause the reed to vibrate, and thus produce the desired tone.

When the paper has all been wound onto the roll F, if it is desired to repeat the same tune, the paper is rewound onto the roll F without supplying the wind-chest and reeds with wind, when the operation may be repeated.

If, however, it is desired to change the tune, the pressure-bar I is removed, the end of the paper is detached from the roll F, and it is then unwound and detached from the roll F′. Another strip is then connected at each end to one of the rolls F and F′ and wound upon the roll F′, when the pressure-bar I is again placed in position, and the instrument is again ready for use.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In combination with a wind-chest, a reed-box provided with a series of reeds, each tuned to a different pitch, and a strip or sheet of paper or other thin flexible material having formed therein a series of perforations arranged to represent the various notes of a tune, the bars or plates E E, secured one to each end of the wind-chest, reed-box, or wind-chest and reed-box, and adapted to support a paper-carrying roll at either end thereof, substantially as described.

2. The combination of the wind-chest A, reed-box B, provided with a series of reeds, the bars or plates E E, rolls F and F′, a strip or sheet of perforated paper, H, connected at each end to one of said rolls, and the spring-brakes J and J′, all arranged and adapted to operate substantially as and for the purposes described.

3. A strip or sheet of paper or other thin flexible material having formed therein a series of perforations arranged in the proper order to represent the various notes of a tune, and also having formed in each end thereof a single perforation, the edge of which is re-enforced or strengthened, as set forth, as a means, in combination with a pin, of securing said strip or sheet of flexible material to the feed or carrying rolls, substantially as described.

4. The combination of the wind-chest A, reed-box B, provided with a series of reeds, a strip or sheet of perforated paper or other flexible material, H, and the two rolls or cylinders F and F′, each provided with a crank, *d*, and with means for readily attaching one end of said strip or sheet of paper or other flexible material thereto, all arranged and adapted to operate substantially as and for the purposes described.

5. The roll F or F′, having formed therein the two longitudinal slits *e* and *f*, extending through, or nearly through, the same at right angles, or nearly so, to each other, and having pivoted in one of said slits the lever G, provided with the angular projection *g*, substantially as described.

6. The two rolls F and F′, each provided with a crank, and having formed therein the two longitudinal slits *e* and *f*, in one of which is pivoted the lever-hook G *g*, in combination with a wind-chest, suitable means of supplying wind thereto, a reed-box provided with a series of reeds, and a strip or sheet of paper or other thin flexible material having formed therein a series of perforations, *j j*, and two re-enforced openings, *l l*, all arranged and adapted to operate substantially as and for the purposes described.

Executed at Boston, Massachusetts, this 12th day of November, A. D. 1878.

MASON J. MATTHEWS.

Witnesses:

N. C. LOMBARD,

E. A. HEMMENWAY.