(No Model.) 2 Sheets—Sheet 1.

D. L. RICE.

MECHANICAL TOY.

No. 302,523. Patented July 22, 1884.

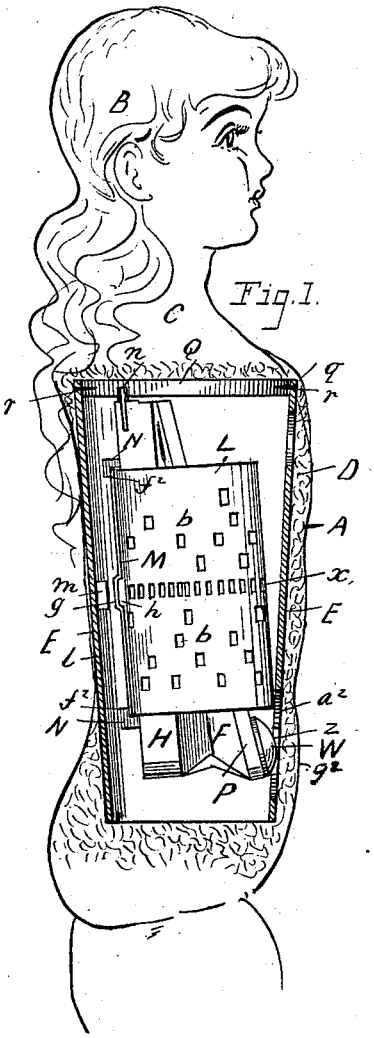

Fig. 1.

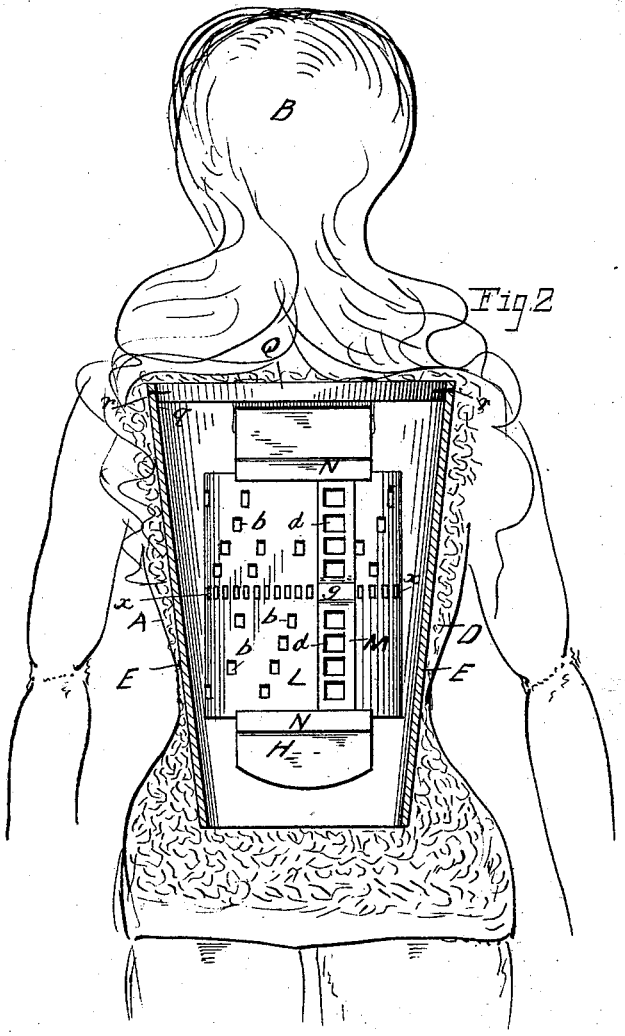

Fig. 2.

Witnesses:
Wm. S. Bellows.
H. M. Coney

Inventor,
Duane L. Rice,
per Brown Bros.
Attorneys.

(No Model.) 2 Sheets—Sheet 2.

D. L. RICE.

MECHANICAL TOY.

No. 302,523. Patented July 22, 1884.

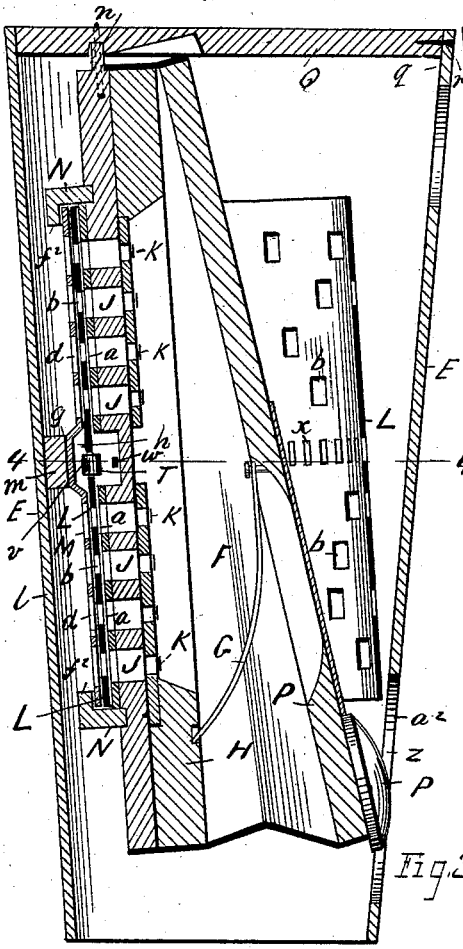

Fig. 3.

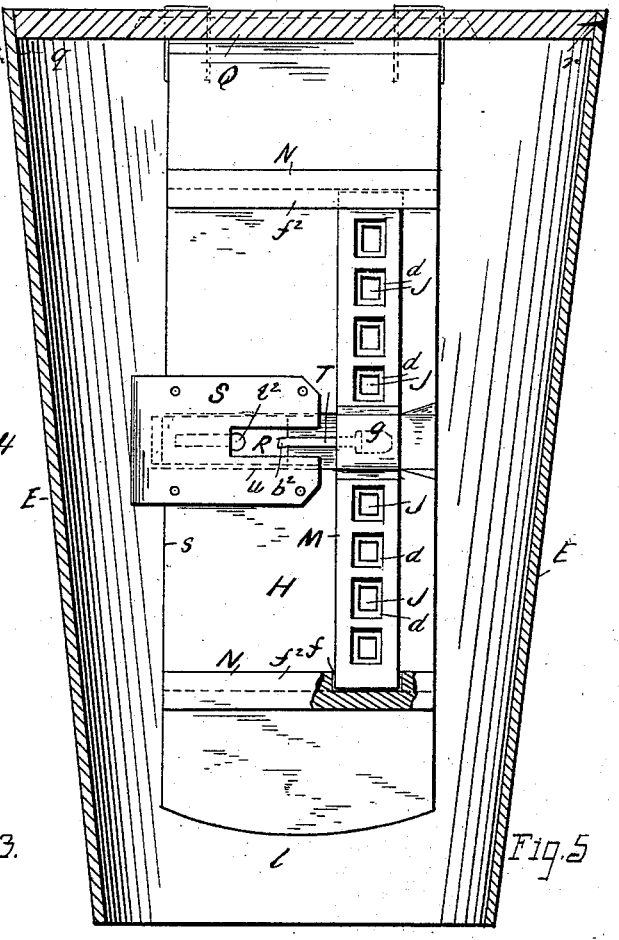

Fig. 5.

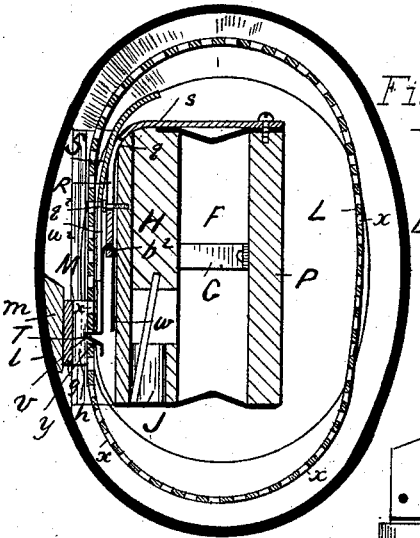

Fig. 4.

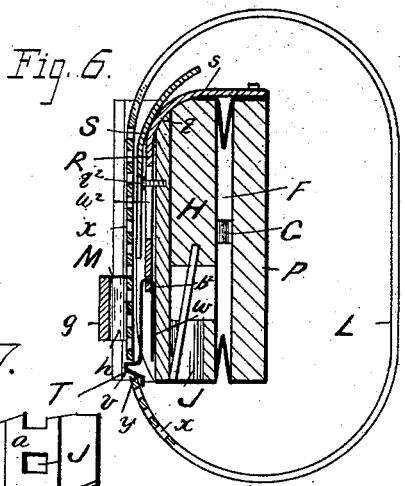

Fig. 6.

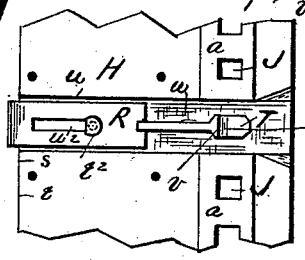

Fig. 7.

Witnesses:
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UNITED STATES PATENT OFFICE.

DUANE L. RICE, OF CAMBRIDGE, ASSIGNOR TO THE WEBBER DOLL COMPANY, OF BOSTON, MASSACHUSETTS.

MECHANICAL TOY.

SPECIFICATION forming part of Letters Patent No. 302,523, dated July 22, 1884.

Application filed April 10, 1884. (No model.)

To all whom it may concern:

Be it known that I, DUANE L. RICE, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Mechanical Toys, of which the following is a full, clear, and exact description.

This invention relates to improvements upon the mechanical toy described and shown in Letters Patent of the United States issued to W. A. Webber, No. 257,112, dated April 25, 1882, and J. L. Given, No. 258,743, dated May 30, 1882; and the invention consists in the combination, with a doll or other image in the representation of a living being, of music-producing mechanism constructed and arranged for operation therein, all substantially as hereinafter fully described and shown.

In the accompanying plates of drawings this invention is illustrated in connection with a doll.

In Plate 1, Figure 1 is a side view of a doll above the hips, and showing the body as in vertical section at that portion which incloses the casing for the music-producing mechanism, which is shown in side elevation. Fig. 2 is a rear view of a doll and its music-producing mechanism, instead of a side view, as shown in Fig. 1. In Plate 2, Fig. 3 is a vertical section enlarged of the music-producing mechanism with its casing as detached from the doll. Fig. 4 is a cross-section on line 4 4, Fig. 3, showing the bellows closed. Fig. 5 is a rear view enlarged of the music-producing mechanism with the perforated strip or sheet removed. Fig. 6 is a cross-section on line 6 6, Fig. 3, and Fig. 7 is a detail plan view.

In the drawings, A represents the body portion above the hips, B the head, C the neck, of a doll, all as to such features as dolls are usually made. The body A has a chamber, D, of suitable form and size to receive a casing, E, in which casing E is located the music-producing mechanism for the same, to operate and to be operated as hereinafter described. This chamber D is closed on all sides by any suitable material, preferably at the front of the body, of a material such as cloth, on account of its flexibility. The casing E is preferably made of some rigid material—such as pasteboard or other suitable material to properly support and protect the music-producing mechanism—and it is secured within and to the body of the doll in the chamber D by any suitable means.

F is a force-bellows, constructed and arranged for its parts to be pressed together against a spring, G, and to open from each other by the reaction of such spring, and for air to be received within it and to be forced out of it through air-passages in one of its boards H to the musical reeds, as usual in force-bellows.

J are air-passages arranged in a row lengthwise in the board H, and extending through the same from the inside of the bellows F to the outside surface, *a*, of the board H, which surface is preferably covered with leather or similar flexible material. Each one of these passages has a musical reed, K, so that air passing from the bellows through each air-passage will pass through its respective reed and sound the same.

L is a strip or sheet of paper or other suitable sheet material having its ends joined together and forming an endless band, and shown as surrounding the bellows. This strip or sheet of paper L has parallel rows of perforations *b* extending around the same, which rows correspond transversely with the air-passages J in the board H. The perforations are arranged in accordance with a musical scale, and there is a row of perforations for each air-passage and its reed.

M is a flat bar, preferably of metal, extending partially the length of the board H, and arranged to lie on the surface *a* of the board over the row of air-passages, and having openings *d*, corresponding to and over said air-passages J, said bar being held in such position loosely in sockets *f* of cross-rails N, secured to the board H, such sockets preventing lateral movement of the bar and its detachment when the paper is in its place, said rails N, with their flanges f^2, also serving as a guide to the paper as it moves over the surface *a* in the operation of the music-producing mechanism. The bar is bent outward at its middle portion, *g*, leaving an enlarged opening, *h*, between it and the board H. When the music-producing

mechanism is secured within the casing, this central portion, *g*, will be opposite to a projection, *m*, on the inside of the back *l* of casing, to abut against it, for the purpose as will be hereinafter described. The bellows F, by its board H, is attached by a hinge-joint, *n*, to the end board, Q, for it to swing forward and backward thereon within the casing, which board Q closely fits within the larger end *q* of the casing, being secured therein by pins *r*, all in any suitable manner, and when so secured it supports the bellows and other connecting parts within the casing.

In operating the bellows to sound a reed with the perforated music-sheet in place and the music-producing mechanism within its casing, with a perforation, *b*, in the music-sheet L over its corresponding air-passage, J, if, then, the board P of the bellows be pushed by the hand—for which purpose a knob, W, is provided—the bellows will be forced back and the portion *g* of the bar M will strike and bear against the projection *m*, which, from the pressure exerted on the board P, will then press and closely hold the bar against the perforated music-sheet, and thus the sheet closely against its seat over the air-passage, and then by the continued movement of the board P it will close upon its other board, H, forcing air through an air-passage J and its reed K, corresponding to the perforation in the strip that is over an air-passage J, thus sounding the reed. The bar thus being held against the perforated sheet, and thus the sheet closely against its seat at the air-passages, prevents the air from the bellows passing through any of the air-passages J, except where a perforation, *b*, of the strip L is over its respective air-passage, and also prevents air escaping from under the music-sheet to interfere with the proper sounding of the reed. Releasing the pressure upon the board P, the bellows-spring G forces it back, ready for another sounding of a reed in a similar manner.

To cause the perforated music-sheet to travel along and over the board H, so that the perforations arranged therein can come in succession, one after another, over the air-passages J, and thus cause the musical tune arranged thereon to be played when the bellows are operated, mechanism is provided as follows: Attached to the edge of the board P is a strip of leather, R, or any suitable flexible material, which extends across the side *s* of the bellows and around the edge *t* of and part way across the board H, within a transverse groove, *u*, in the board H, and being held from escape by a plate, S. This strip R has a longitudinal slot, u^2, through which projects a guide-pin, t^2, of the board H. Attached to the end of this strip R is a pawl, T, having a hook end, *v*, projecting outward, which end *v* is held up against the music-sheet by a spring, *w*, to engage, when desired, with a row of perforations, *x*, in the middle of the strip L, which perforations are equidistant from each other and extending around the endless strip parallel to the other rows of perforations. As the board P is pressed toward its other board, H, to sound a reed, as described, it pushes the spring-pawl T by its leather strip forward to the position shown in Fig. 4, the bevel portion *y* of the hook *v* freely sliding by and over the perforations *x;* but as the board P moves back, the spring-pawl T, by the reaction of its spring, engages with a perforation, *x*, and pulls the strip L with it for another of its perforations, *b*, to come over its respective air-passage. Pressing the board P to sound the reed moves the bellows back so that the bar M will bear against the projection *m* on the casing E, whereby the bar is held firmly against the music-sheet and said sheet to its seat, the bellows will move back, relieving said bar from its bearing *m* and pressure against the music-sheet, whereby it is free to be moved forward in the return movement of the board by the action of the spring-pawl T. Thus with each movement of the board P forward a reed will be sounded, according to which perforation *b* is over an air-passage, and with each backward movement the strip will be moved forward for the next perforation *b* to come over its respective air-passage, and so on, and thus the musical tune arranged upon the strip will be played. The pawl T, with its spring, lies within the space *h* of the bar M.

The mechanism herein described is placed within the casing E, which casing is secured within the chamber of the doll in any suitable manner, and so that the board P will be at the front and its knob W in proper position to be operated from the outside of the doll, the cloth g^2 at such portion being arranged to allow of such movement, and the casing having an opening, Z, in its front a^2, through which the knob W can be reached to operate the bellows.

The casing can be dispensed with and the music-producing mechanism placed within the chamber without it; but in such the projection *m* must be attached directly to the back of the doll. It is preferable to use a casing, as the parts can be all constructed and arranged together separate from the doll, and all that is then necessary is to secure the casing in the doll.

The pawl and its spring, in the present instance, is made in one piece, being secured to the strip R at its bent portion b^2, as shown, one arm serving for a spring to keep the other arm in proper position for operation; but, as is obvious, it can have an independent spring either attached to the arm or to the board H in the groove, but as shown is very desirable, as it is simple, cheap, and practical in its operation.

The perforated music-sheet need not be in the form of an endless sheet, as it can be in a strip, and thus with an opening in the doll and casing a number of strips can be used and a variety of tunes played; also, instead of pressing from the front of the doll, the bellows can

be arranged to be operated from the back as well; also, in lieu of having the sliding spring-pawl catch T attached to one of the bellows-boards, it can be operated by an independent operating device, if desired.

Having thus described my invention, what I claim is—

1. A mechanical toy made in imitation of a living being, and within it bellows having air-passages communicating therewith, provided with reeds, a perforated music sheet or strip, and a spring-pawl catch attached to and operated by the movement of the bellows, and adapted to engage by its free end with perforations in said music-sheet, for operation substantially as and for the purpose specified.

2. The combination, with a bellows, reeds, and air-passages communicating with said bellows, of a perforated music-sheet arranged to travel over and between said air-passages, and a bar, M, having openings corresponding with said air-passages, which bar is held firmly against said perforated music-sheet at and over said air-passages when pressure is exerted on said bellows to sound the reeds, and is released therefrom when said pressure is relieved, substantially as and for the purpose specified.

3. The combination, with a bellows having air-passages communicating therewith and provided with reeds, and a perforated music-sheet arranged to travel over said air-passages, of a spring-pawl catch connected with a suitable operating-lever, and by its free end arranged to engage with perforations in said music-sheet, substantially as and for the purpose specified.

4. The combination, with a bellows hinged at one end to a support or casing provided with an abutment, *m*, of a bar, M, located over a series of air-passages communicating with said bellows, and provided with reeds, and a perforated sheet arranged to travel between said bar and said air-passages and to be held closely to its seat at said air-passages when said bar bears against said abutment, and to be released therefrom when said bar is relieved from said abutment in the operation of the bellows, substantially as and for the purposes specified.

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

DUANE L. RICE.

Witnesses:
EDWIN W. BROWN,
WM. S. BELLOWS.