(No Model.)

G. H. IRELAND.

Mechanical Musical Instrument.

No. 231,323. Patented Aug. 17, 1880.

Fig 1

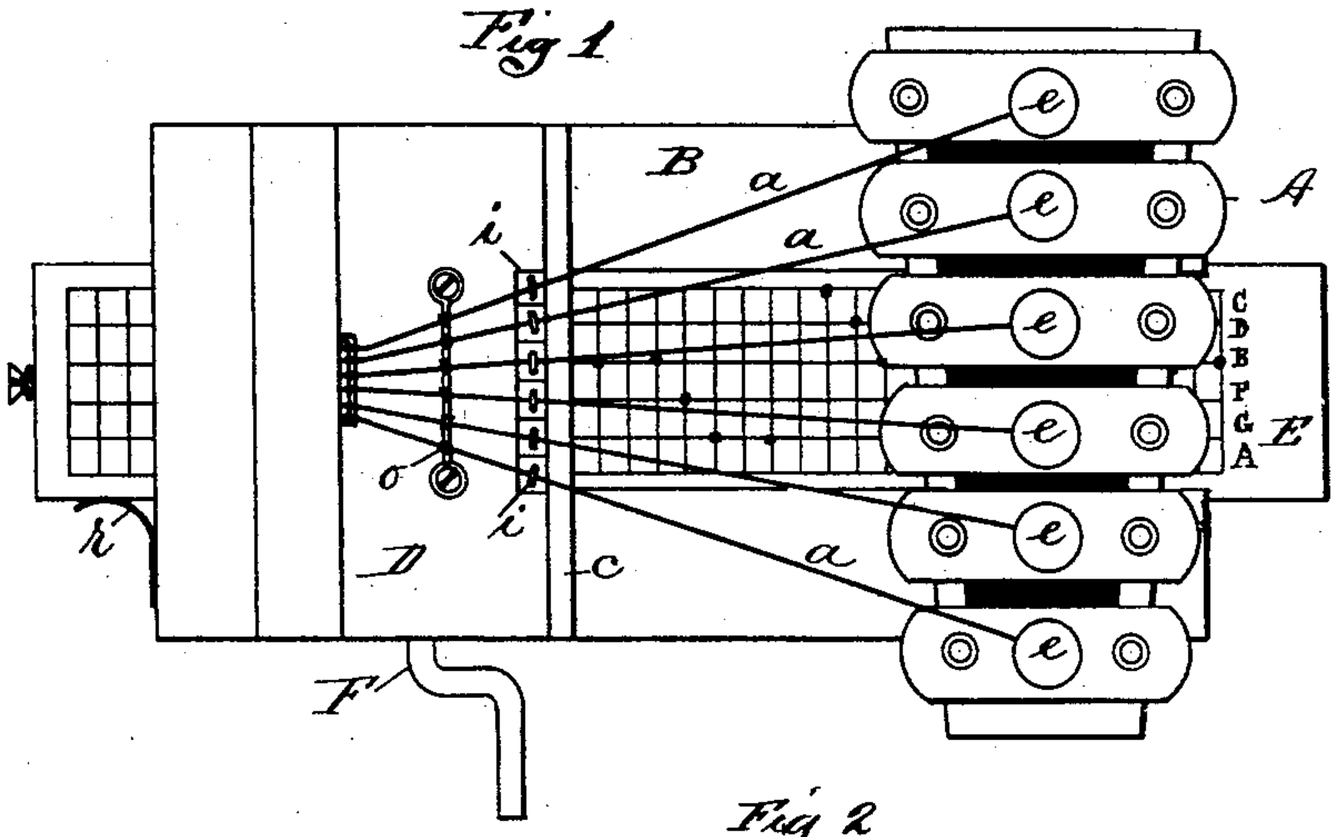


Fig 2

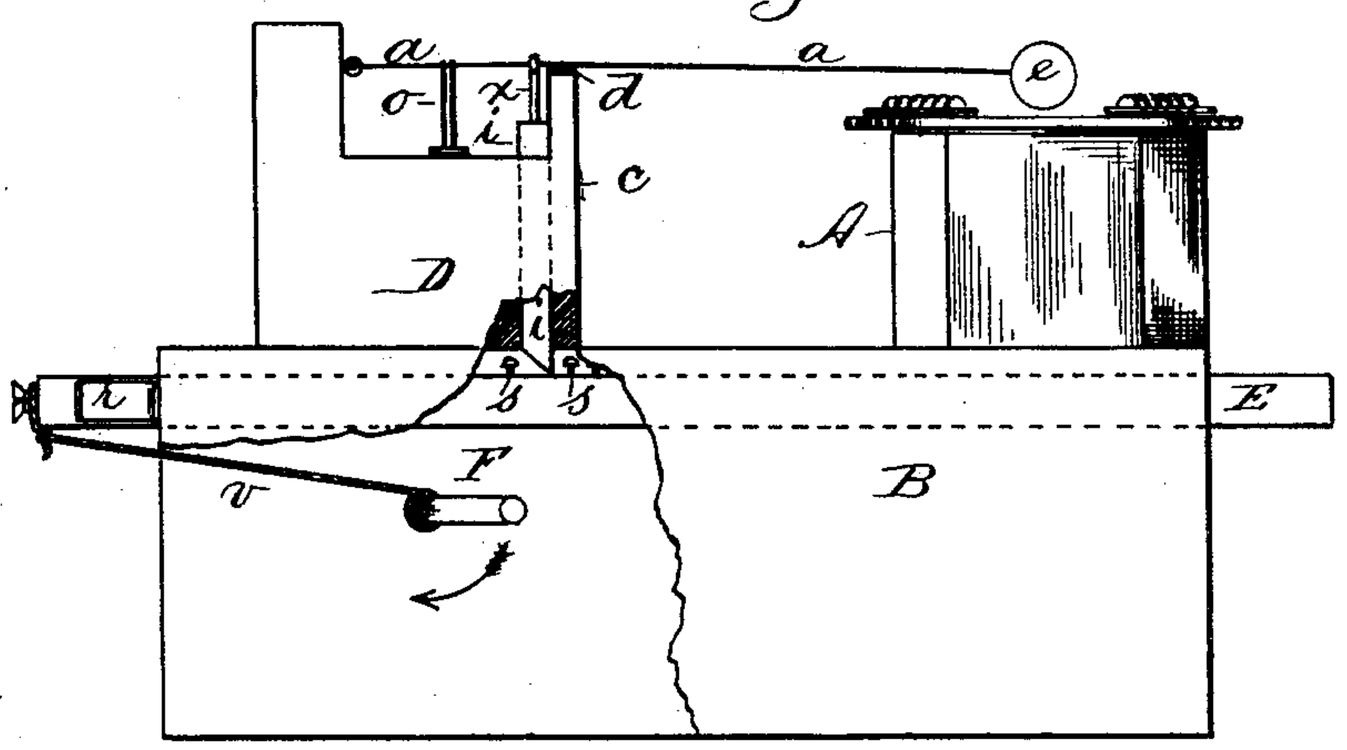
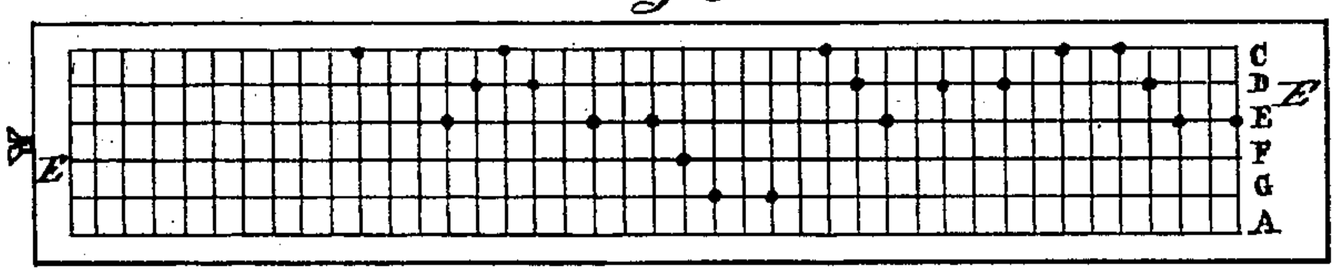


Fig 3



s.

Witnesses
Wm H Chapin.
Chas H Bill

Inventor
George H Ireland
By Henry A Chapin
Atty.

UNITED STATES PATENT OFFICE.

GEORGE H. IRELAND, OF SPRINGFIELD, MASSACHUSETTS.

MECHANICAL MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 231,323, dated August 17, 1880.

Application filed April 2, 1880. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. IRELAND, a citizen of the United States, residing at Springfield, county of Hampden, and State of Massachusetts, have invented new and useful Improvements in Mechanical Musical Instruments, of which the following is a specification.

My invention relates to that class of mechanical musical instruments known as "toy" instruments; and my object is to provide an amusing toy, and one which will assist children in the study of notation.

I attain the above object by the construction and use of the devices illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of my instrument. Fig. 2 is a side elevation, partly in section, with a portion of the side broken away. Fig. 3 is a plan view of the pin-board.

The musical instrument which I use in connection with my mechanical devices is one commonly called the "dulcimer," and is represented in the drawings by A. A series of properly-adapted strings may be substituted for the dulcimer.

I secure the dulcimer on the top of a suitably-constructed frame, B, on the top of which I secure a standard, D. I hinge to one side of standard D, as shown, a series of arms, *a*, each one of which reaches out over the face of one of the metallic plates upon the dulcimer A. The ends of said arms *a* over said metallic plates are provided with balls of wood or other similar material.

Between the hinged ends of the arms *a* and the dulcimer is interposed a standard, *c*, having upon its upper edge an elastic cushion, *d*, upon which the arms *a* rest, as seen in Fig. 2, causing the balls *e* on the ends of said arms to be lifted clear from the face of the metallic plates on the dulcimer A.

Just back of the standard *c*, I arrange a series of vertically-operating posts, *i*, one for each of the arms *a*, which run across the top of said posts. In the tops of said posts I insert eyed pins *x*, through the tops of which said arms run. Said posts *i* are beveled off on their bottom ends, as shown in Fig. 2.

Between the aforesaid hinged connection of arms *a* to standard D and pins *x*, I attach a rubber or other suitable spring, *o*, to each of said arms and to said standard D.

In suitable guideways in frame A, under the lower beveled ends of posts *i*, I insert a pin-table, E, adapted to move longitudinally in said frame, actuated by a crank-shaft, F, and a cord, *v*, attached one end to said table and one end to said crank-shaft, as seen in Fig. 2.

The pin-table E has marked upon its face a series of longitudinal and transverse lines, as seen in Fig. 3. The longitudinal lines may be increased in number, according to the number of hammers employed in the instrument, and each of the lines represents one note of the musical scale. The said board E is provided at the intersection of the said horizontal and transverse lines with holes for the reception of the pins *s*, and said pins are movable to form such combinations upon table E as may be required to cause the instrument to play a certain tune or melody, and when said table is in its place in frame B one of the longitudinal lines thereon is under the end of each one of the posts *i*. A steady-spring, *r*, is attached to frame B, and adapted to bear against the edge of table E to cause it to move at a steady rate of speed under the posts *i*.

The operation of my instrument is as follows: The table E is drawn out of frame B and pins *s* are inserted in the requisite positions in the table to operate upon posts *i* at such intervals as to produce a certain melody. The care required of the operator to properly set the pins in the table demands a certain study of a printed copy of music, in order to transfer it properly to the table, and this practice helps materially to familiarize the operator with music-reading. After the pins have been so arranged upon the table said table is entered between its ways in frame B to the left of crank-shaft F, and cord *v* is attached to the end of it, as shown. Upon turning the crank-shaft F in the direction indicated by the arrow table E is caused to move longitudinally in frame B, carrying the projecting ends of pins *s* against the beveled ends of posts *i*, and as they pass under said posts the latter are lifted up, carrying with them arms *a* and the balls *e* against the restraining power of springs *o*. Pins *s* pass suddenly by the ends of posts

i, allowing them and arms *a* to drop, forced down by springs *o*, and causing balls *e* to strike sharply upon the plates of the dulcimer A, thus producing musical sounds. When arms *a* are thus forced down they first strike against the flexibly-cushioned upper edge of standard *c*, and the elastic nature of the arms allows sufficient deflection thereof to let balls *e* strike against the plates, but causes them to be at once lifted off from them, so that they may vibrate and sound each its musical note.

What I claim as my invention is—

1. The combination, with the arms *a*, of the posts *i*, springs *o*, and the table E, adapted to receive the movable pins *s* and to be moved under said posts, substantially as and for the purpose set forth.

2. The table E, having holes in its surface to receive a series of pins, *s*, in combination with the posts *i*, springs *o*, and arms *a*, adapted to act upon a suitable musical instrument, substantially as and for the purpose set forth.

3. In combination, the table E, provided with the movable pins *s* and adapted to be moved longitudinally in frame B, posts *i*, springs *o*, arms *a*, and the dulcimer A, substantially as and for the purpose set forth.

In presence of— GEO. H. IRELAND.

CHAS. BILL,

WM. H. CHAPIN.