

**No. 647,308.**

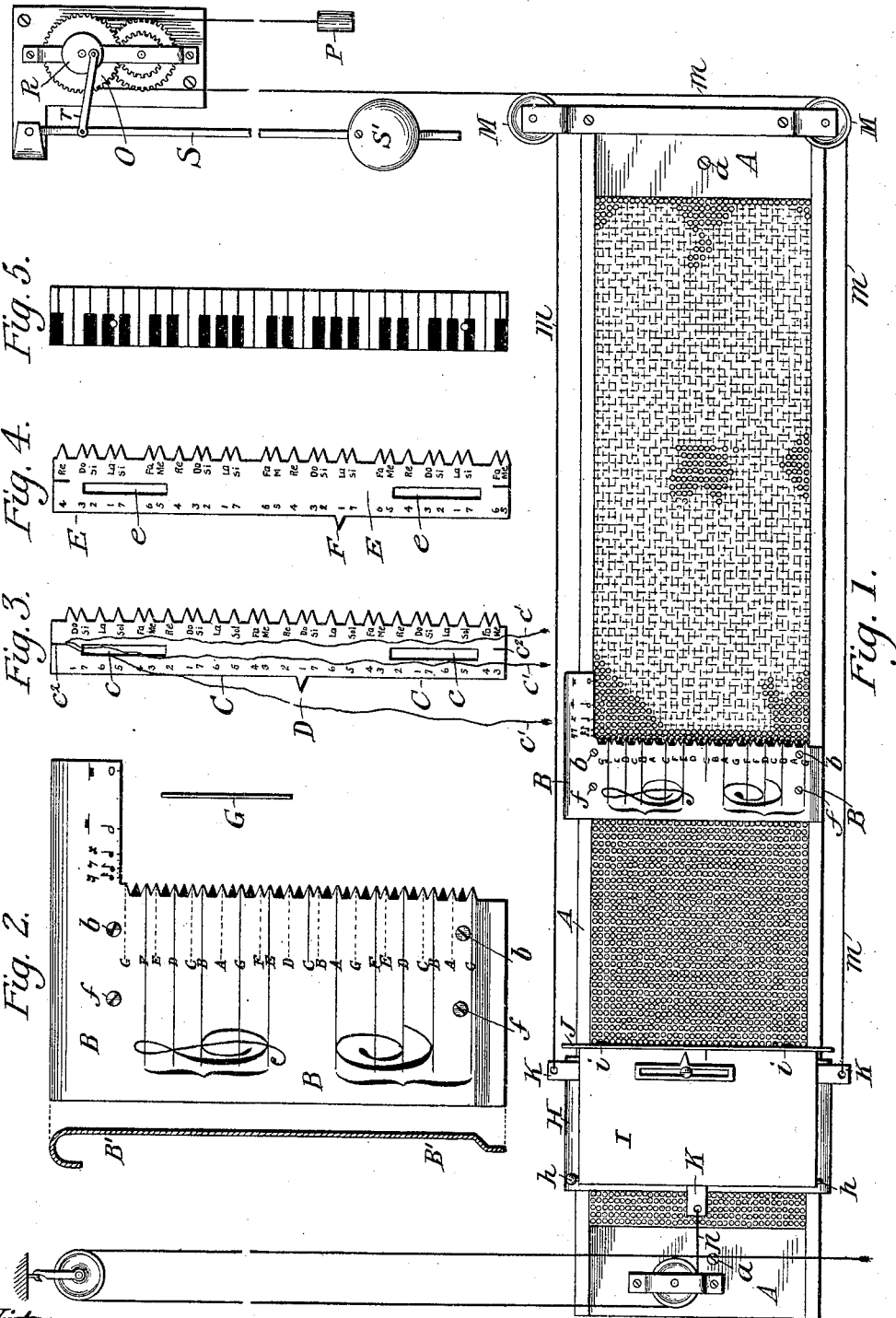
Patented Apr. 10, 1900.

**M. S. LOGAN.**  
**MUSICAL INSTRUMENT.**

(Application filed Oct. 2, 1899.)

. (No Model.)

2 Sheets—Sheet 1.



Witnesses.

Thomas K. Barley

*Inventor.*

Maurice Samuel Logan

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2 Sheets—Sheet 2.

Fig. 6.

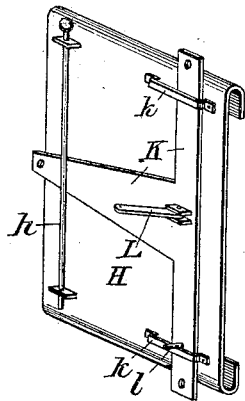


Fig. 7.

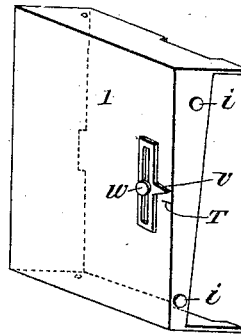


Fig. 8.

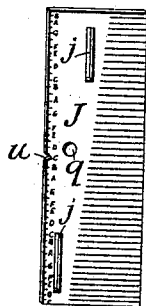


Fig. 9.

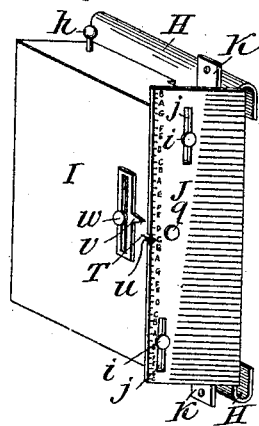


Fig. 10.

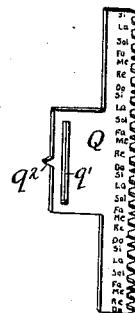
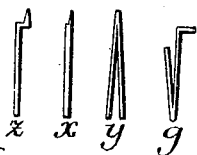


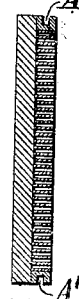
Fig. 11.



Witnesses.

Thomas H. Barley

Fig. 12.



Inventor.

Maurice Samuel Logan

# UNITED STATES PATENT OFFICE.

MAURICE SAMUEL LOGAN, OF SEDALIA, MISSOURI.

## MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 647,308, dated April 10, 1900.

Application filed October 2, 1899. Serial No. 732,396. (No model.)

*To all whom it may concern:*

Be it known that I, MAURICE SAMUEL LOGAN, a citizen of the United States, residing at Sedalia, in the county of Pettis and State of Missouri, have invented a new Musical Instrument, of which the following is a specification.

My invention relates to that class of musical instruments in which the music is produced by means of a set of keys coming in contact with a series of pins or projections which are so arranged as to engage the proper keys at the proper intervals.

The objects of my invention are, first, to make the music changeable at will by means of movable pins or picks, so as to do away with the expense of obtaining specially-prepared plates or rolls for each piece of music; second, to assist persons unable to read music to learn tunes by ear, and, third, to illustrate the principles of music by means of a ruler and attachments, making the instrument a musical self-instructor. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a general view. Fig. 2 is the ruler or guide for setting up the picks. Fig. 3 is the major-key attachment. Fig. 4 is the minor-key attachment. Fig. 5 is the keyboard attachment. Figs. 6, 7, and 8 show the parts of the music-box separately. Fig. 9 shows the same combined. Fig. 10 is the note-reading attachment. Fig. 11 shows several forms of picks that may be used. Fig. 12 is a cross-section of the music-board.

Similar letters refer to similar parts throughout the several views.

A A, Fig. 1, is the music board or plate, which may be secured to the wall of a room or to a frame by means of the screws *a a*. The face of said board is provided with numerous small holes or recesses adapted for the insertion of small pins. The music is set up on the board by means of pins inserted into said holes, so that the ends of said pins project slightly above the face of the board.

B B, Fig. 1, is the ruler or guide for locating the pins in setting up the music. The same is also shown in Fig. 2 enlarged. Said ruler has the musical staff represented on its vertical face and has the kinds of notes and rests represented on its horizontal arm. The

tooth-like projections or pointers on the inner vertical edge represent the half-steps or intervals in the musical scale and are painted white or black, according as they represent the white or black keys on an organ or piano keyboard. When the ruler is placed in position on the music-board, as shown in Fig. 1, every tooth points to a corresponding longitudinal row of holes on the music-board.

C C, Fig. 3, is a plate which represents by its tooth-like projections the major-key combination of intervals. The key-syllables and also the key-numerals are marked on its face. It may be attached to the ruler B B, Figs. 1 and 2, by means of the set-screws *b b*, the slots *c c*, Fig. 3, enabling it to be shifted up or down. The pointer D is made to point to the desired key-letter, and the set-screws *b b* are then tightened to hold it in position. If the pointer D is made to point to middle C, then the teeth on the plate C C will coincide with the white teeth on the ruler B B; but if the pointer D is made to point to any other letter then the teeth on the plate C C will point to one or more of the black teeth on the ruler B B, thus indicating the letters that are to be sharpened or flatted, as the case may be.

E E, Fig. 4, is a plate which represents, by its tooth-like projections, the minor-key combination of intervals. It is also marked with the key syllables and numerals and provided with slots *e e* and pointer F and may be attached to the ruler B B and operated similarly to the plate C C, as already explained.

Fig. 5 represents a miniature organ or piano keyboard and may be attached to the ruler B B by means of the set-screws *f f*, Fig. 2, and may be used to illustrate the relation between the keyboard and the musical staff, &c.

To set up the music on the music-board, the ruler B B is placed in position on the music-board A A, as shown in Fig. 1. Insert a pin in the music-board opposite the letter on the ruler that the first note is intended to represent. Then insert the guide-pin G, Fig. 2, into the music-board just under the note on the horizontal arm of the ruler which represents the time of the given note. Then push the ruler forward till it is stopped by the said guide-pin G. Set the next note in the same manner, and so on to the end of the music.

If rests occur, after determining the time of the note, as already explained, then set the pin G under the given rest and move the ruler forward, as before. Short pins may be used to represent the rests. The key-plate C C, Fig. 3, or E E, Fig. 4, is not shown in Fig. 1, but should be used whenever sharps or flats occur in the signature of the piece of music to indicate what letters are to be sharpened or flattened. After the music is set up the ruler B B is removed. The music may be set up one part at a time or all the parts may be set up at the same time.

B' B', Fig. 2, show a cross-section or edge-wise view of the ruler B B and show how the upper edge of said ruler is bent backward and downward, so as to fit in the longitudinal groove or guideway A', Fig. 12, on the upper edge of the music-board. The lower edge of the said ruler is bent backward and downward and rests against the face of the music-board, so that when the ruler B B is in position on the music-board, as shown in Fig. 1, the face of said ruler stands out from the surface of said music-board, so that it passes freely over the pins that have been inserted in the board.

Figs. 6, 7, and 8 show the parts of the music-box in perspective. Fig. 9 shows the same combined, and at I, Fig. 1, the same is shown in position on the music-board.

H H, Figs. 1, 6, and 9, show the base-plate, the upper and lower edges of which are bent backward and inward, as shown in Figs. 6 and 9, so as to fit in the longitudinal grooves or guideways A' A', Fig. 12, in the upper and lower edges of the music-board.

I, Figs. 1, 7, and 9, is a box-like frame and is pivotally attached to the base H H by means of the rod h, Figs. 6 and 9.

J, Fig. 8, is the music-comb and is attached to the frame I by means of the set-screws *i i*, as shown in Fig. 9, the slots *j j* admitting of its being shifted up and down.

K, Fig. 6, is a plate having arms projecting upward, downward, and backward and is held in place by the staples *k k*, which admit of a slight forward-and-backward movement of the plate K, the nipple *l* keeping it from dropping down. It will be seen in Fig. 1 that the cords *m m* for pulling the music-box forward are attached to the ends of the upper and lower arms of the plate K, and the cord *n* for pulling the music-box back is attached to the end of the rear arm of the plate K.

L, Fig. 6, is a link, one end of which is attached to the plate K and the other end attached to the inner side of the box-like frame I, Fig. 7, when in position, so that when the plate K is pulled forward by the cords *m m*, Fig. 1, the link L, Fig. 6, acting like a toggle-joint, pulls the forward part of said frame I down against the base-plate H H. The music-comb J, being attached to the frame I, is brought down so that the teeth of said comb will strike the projecting pins which have been inserted in the music-board; but when

the plate K is pulled back by the cord *n*, Fig. 1, the said link L, Fig. 6, lifts the front part of said frame I and the comb J, so that the said comb J passes backward over the projecting pins on the music-board without striking them.

When the notch *u* on the back of the comb J, Figs. 8 and 9, is made to correspond with the line T on the frame I, then the musical scale shown on the back of the comb J will correspond to the scale on the ruler B B, Fig. 2; but if it is desired to play the music in a higher or lower key than the one in which it is written or set up, first set the pointer *v*, Figs. 7 and 9, to point to the key-letter on the comb J indicating the key in which the music has been set up on the peg-board, and then shift the comb J up or down, as desired, and the pointer *v* will point to the new key-letter.

Q, Fig. 10, is the note-reading attachment. It has the key-syllables represented on its face and is provided with pointers similar to the plate C C, Fig. 3. It may be attached to the music-comb J, Figs. 8 and 9, by the set-screw *q*, the slot *q'*, Fig. 10, enabling it to be shifted up or down, so that the pointer *q'* may be made to point to any desired key-letter on the back of the comb J. When attached thus, it will give the key-name of each note just before it is struck, thus enabling the learner to read the music readily.

The weight P, Fig. 1, draws the music-box I forward by means of the cords *m m*, which pass under the pulleys M M and over the combined pulley and gear-wheel O. The motion of said combined pulley and gear-wheel O is communicated through a train of gear-wheels to the crank-head R. Said crank-head R is connected by the crank-arm *r* to the pendulum S. The action of said pendulum is to retard the motion of said train of gear-wheels. The pendulum-bob S' may be adjusted up and down on the stem, so as to make the time faster or slower, as may be desired. When the music-box I has traveled over the music-board A A to the end of the piece of music, it is pulled back to the starting-point by means of the cord *n*.

Fig. 11 shows several forms of pins or picks that may be used in setting up the music, (enlarged to about natural size.) The form *x* shows the upper end cut away at one side, so that the point is one side of the center. It will be seen in Fig. 2 that the smallest note represented on the horizontal arm of the ruler is a sixteenth note. To obtain the time of a thirty-second note, the pin *x*, Fig. 11, is simply turned around, so that the point will be thrown forward. The form *y* has spring-arms which tend to hold it securely in position when inserted in the board.

In case of triplets and other notes of embellishment special picks of the form of *z* are provided, in which the upper end is bent to one side more or less, as may be required. The form of the pick will also depend somewhat on the shape of the holes or recesses in

the board A A, Fig. 1, which may be round, square, or any other suitable shape desired.

The form *g*, Fig. 11, may be used to represent the rests. Also the form *g* may be used to indicate the proper accompaniment for guitar or other instrument by inserting a pin of the form *g* in the music-board near the bottom whenever the prevailing harmony changes, the different chords being represented by different-colored pins or by some mark or character on said pins.

The threads *c' c' c'*, Fig. 3, are of different colors and are fastened at one end in the slit *c*<sup>2</sup> at the upper end of the plate C C. They may then be woven about the teeth on said plate in such a way as to represent the different chord families by the different colors of thread. The threads shown in Fig. 3 represent the three principal chords. Other threads may be added to represent other chords in common use. These colored threads also assist the learner in locating the colored pins *g*, Fig. 11, to show when the prevailing harmony changes.

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

1. A musical instrument consisting of the combination of a music board or plate having its face provided with numerous holes or recesses arranged uniformly in rows both longitudinally and transversely, a number of suitable pins or picks capable of being inserted in said holes, said holes or recesses being so arranged as to admit of the said pins being so distributed over the face of said music-board as to give the correct tone and time of the notes of a tune, and to admit also of said pins being removed and rearranged at will for different tunes, a set of musical keys attached to a traveling frame, and means by which said keys are made to travel over the face of the music-board longitudinally from one end to the other, so as to come in contact with the pins that have been inserted in the music-board, all substantially as shown and described.

2. The combination of a set of musical keys attached to a traveling frame, and a music-board provided with guideways on its upper and lower longitudinal edges for said traveling frame, said music-board being also provided with numerous holes or recesses capable of holding suitable pins or picks, and so arranged over the face of said music-board as to admit of said pins being so distributed as to engage the proper keys at the proper intervals to give the correct tone and time of the notes of a tune, and also to admit of said pins being removed and rearranged at will for different tunes, substantially as and for the purpose set forth.

3. The combination of a traveling frame carrying a set of musical keys, a music-board provided with numerous small holes or recesses, a number of suitable pins or picks capable of being inserted in said holes or re-

cesses so as to project slightly above the surface, said holes or recesses being so arranged over the face of said music-board as to admit of said pins being so distributed as to give the correct tone and time of the notes of a tune, and also of being removed and rearranged at will for different tunes, means by which said musical keys are made to travel over the face of said music-board so as to engage the projecting ends of the pins that have been inserted in the said music-board, and means for drawing said keys back to the starting-point after each trip, and means for automatically lifting said keys while they are being drawn back, all substantially as and for the purpose set forth.

4. The combination of the music-board A A, suitable pins or picks capable of being inserted into the holes or recesses in the face of said music-board, the music-comb J, attached to a traveling frame, the cord or cords *m*, attached to said frame, the weight P, attached to the end of said cord, a train of wheels set in motion by said weight, the pendulum S, the cord or cords *n*, and the pulleys M, all substantially as shown and for the purpose set forth.

5. An adjustable note-reader Q, in combination with the music-comb J attached to a traveling frame, the music-board A A, and movable pins or picks for representing the notes, all substantially as and for the purpose set forth.

6. The adjustable pointer *v*, in combination with the adjustable music-comb J, having the musical scale represented on its face, and attached to a traveling frame, the music-board A A, and movable pins or picks for representing the notes, substantially as and for the purpose set forth.

7. In combination with the music-board A A, and movable pins or picks for representing the notes, the ruler or guide B B, to be used in setting up the music, said ruler or guide having the musical staff represented on its face, and having pointers along its edge corresponding to the different tones of the musical scale, and having also an arm projecting at a right angle, on which are represented the kinds of notes and rests as regards time, substantially as shown and described.

8. The combination of the music-board A A, the movable pins for representing the notes, the ruler or guide B B, the plates C C and E E, representing respectively the major and minor key combination of intervals by means of suitable pointers, and having the key numerals and syllables represented on their faces, and means for attaching said plates to the ruler B B, so as to admit of their being adjusted up or down to correspond to any desired key, substantially as shown and described.

9. The combination of the music-board A A, the movable pins for representing the notes, the ruler or guide B B, the plates C C and E E, the different-colored threads *c' c' c'*,

fastened to one end of the plate C C or E E, whereby they may be wound about the pointers on said plate, in such a way as to represent the different chords by the different colors, and different-colored pegs, for the purpose of being inserted in said music-board, whenever the prevailing chord changes, so as

to show by the color the prevailing harmony, and therefore the proper accompaniment, substantially as shown and described.

MAURICE SAMUEL LOGAN.

Witnesses:

D. P. BERRY,

J. H. ROBINSON.