

Nov. 6, 1956

A. WEINSTEIN
MUSICAL DEVICES

2,769,362

Filed March 29, 1954

2 Sheets-Sheet 1

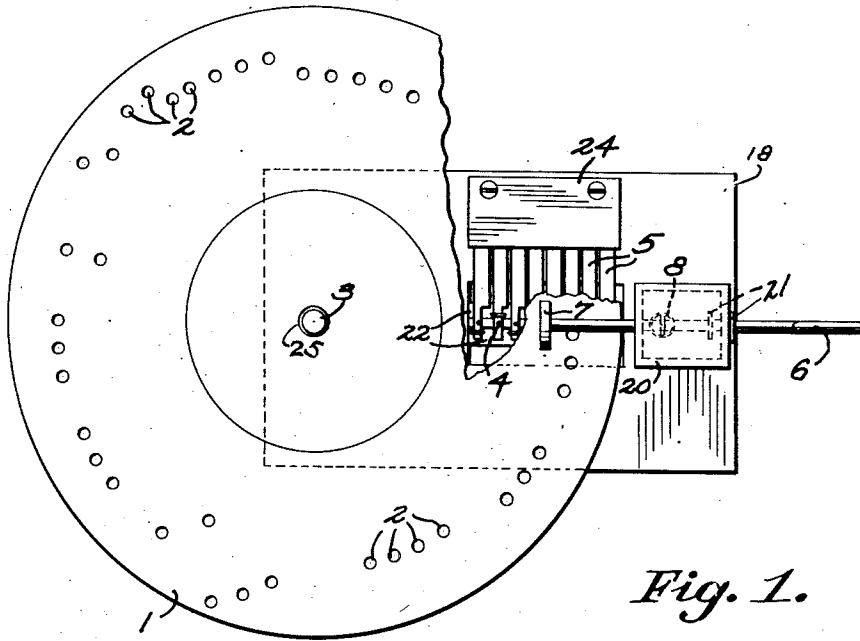


Fig. 1.

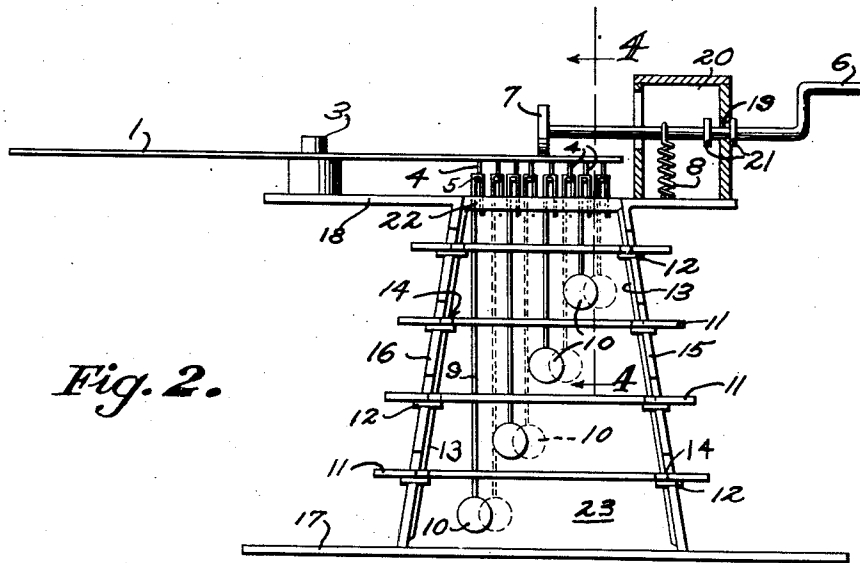


Fig. 2.

INVENTOR.
Albert Weinstein
BY
Albert Weinstein

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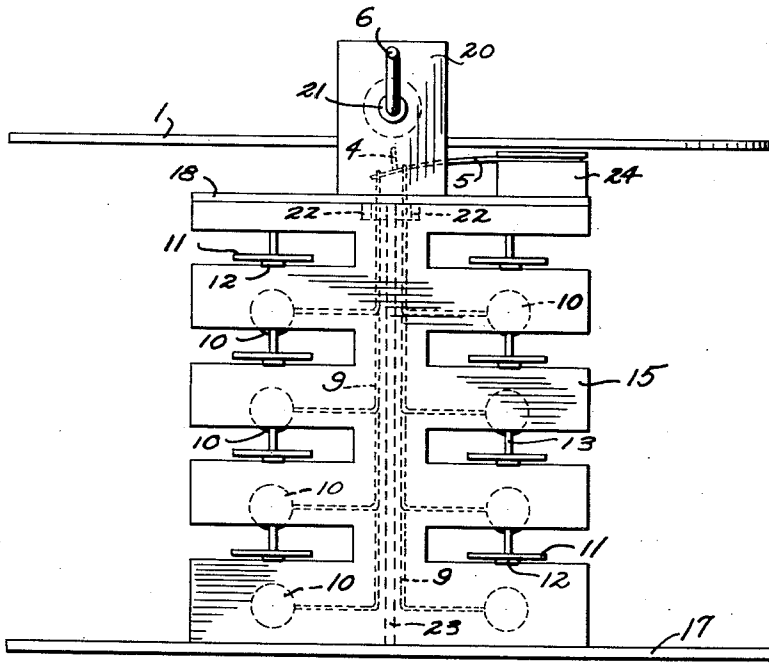


Fig. 3.

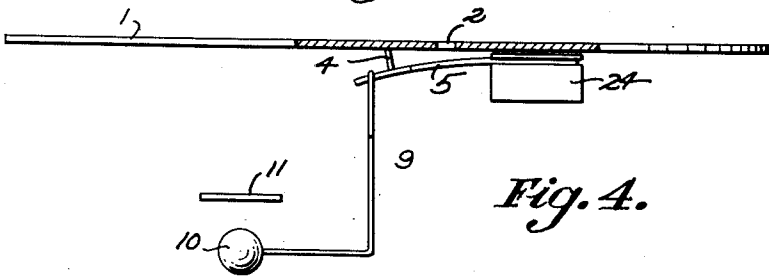


Fig. 4.

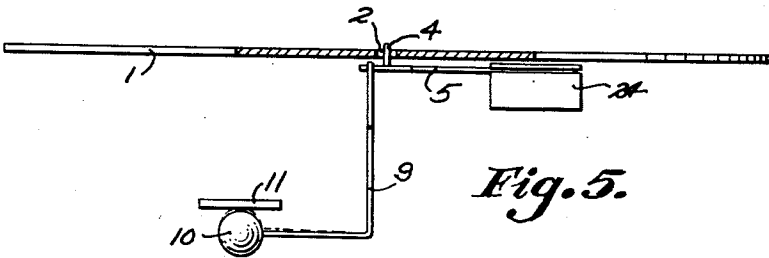


Fig. 5.

INVENTOR.
Albert Weinstein
BY
Albert Weinstein

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MUSICAL DEVICES

Albert Weinstein, Wilton Woods, Va.

Application March 29, 1954, Serial No. 419,143

1 Claim. (Cl. 84—97)

This invention relates to a musical device having readily changeable tunes.

Various music boxes employ music combs that are set into vibration by being plucked. The plucking elements that determine the tune to be played are not easily changed.

It is the object of this invention to produce an inexpensive musical toy wherein the tunes can be easily changed by the operator of the toy.

It is a further object of this invention to employ disks similar to the normal record on which the musical tune is recorded. The changing of the tune therefore closely simulates for the child the changing of records of the normal record playing device.

It is a further object of this invention to employ music bars, as in a xylophone, as the tone producing elements and to strike these music bars in a manner that is visually intriguing to the operator.

Further objectives and advantages will become apparent from the particular design shown in the accompanying drawings where:

Fig. 1 is a plan view showing the record disk and a sectional view of the leaf spring assembly.

Fig. 2 is a front elevation view of the entire assembly.

Fig. 3 is a side elevation view of the entire assembly.

Fig. 4 is an enlarged view taken along section 4—4 of Fig. 2 showing the note striking mechanism just prior to the note being struck.

Fig. 5 is an enlarged view taken along section 4—4 of Fig. 2 showing the note striking mechanism just after the note has been struck.

Referring to Fig. 1 it is seen that record disk 1, made of plastic, metal or cardboard, has a series of music holes 2 that are molded or stamped into the record and are spaced radially from the center of the disk. It is the geometric spacing of said music holes that establishes the tune to be played. Each of said holes is spaced an increasing distance from the center of the record for each note of a musical octave. The spacing of said holes along the circumference, at the radius established for the particular tone, is in accordance with the time sequence of the notes in the selected tune to be played. Thus, the particular holes shown would produce the tune "Jingle Bells" as said record is rotated. The record disk 1 is removable and readily mounted at its mounting hole 25 on supporting spindle 3 in a manner to be hereinafter described.

Also shown in Fig. 1 is an assembly of eight leaf springs 5 which is fixed and supported at one end by clamping unit 24. These leaf springs 5 are identical and can be stamped from a spring material such as spring steel or beryllium copper. Each of said leaf springs is spaced radially from the center of spindle 3 at a length corresponding to the radial distance of the music holes 2 for each of the musical tones.

Referring to Fig. 2 it is seen that the record disk 1 rests along its radius on vertical pins 4 which are fixed to the free ends of leaf springs 5. Hand crank 6 is pivoted at

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hole 19 of supporting box 20 and has a rubber wheel 7 that rests on top of record disk 1. Thrust bearing 21 prevents horizontal movement of hand crank 6. To mount the record disk 1 in playing position, the hand crank 6 is pushed down at its handle end. This action lifts rubber wheel 7 and permits removing or inserting record disk 1 on spindle 3. Tension spring 8 pulls down on the shaft of hand crank 6 and presses rubber wheel 7 down on said record disk which depresses leaf springs 5. Leaf springs 5 support suspension wires 9 which hold striking beads 10 below music bars 11, said music bars being made of metal or wood. Each of said music bars is of increasing length corresponding to the tones of a musical octave as in a xylophone. Said music bars have holes 14 at their nodal points and rest on felt washers 12. Pins 13 go through said holes 14 and keep music bars 11 from lateral movement. The assembly of music bars as well as plate 18 is supported by end plates 15 and 16 which are secured to bottom plate 17.

As the handle of hand crank 6 is turned, the friction between rubber wheel 7 and record disk 1 causes the record disk to rotate about its spindle 3 which successively aligns music holes 2 with vertical pins 4. The resulting action can be seen in Figs. 4 and 5.

Fig. 4 shows record disk 1 pressing down on vertical pin 4 and depressing leaf spring 5. Said record disk is being rotated in such direction that hole 2 is approaching vertical pin 4 with which it will become aligned. As shown in Fig. 5, as said hole and said vertical pin become aligned, leaf spring 5 snaps upward and flips bead 10 against music bar 11 setting said music bar into vibration and producing a musical tone. The dotted line position of bead 10 shows the bead 10 at the instant it strikes music bar 11 and the solid line shows said bead after having bounced back. This bouncing action is essential to the quality of the tone produced since if the bead 10 continued to touch music bar 11 after striking, the vibrations of the music bar would be damped. As record disk 1 continues to rotate, the edge of hole 2 presses against the vertical edge of pin 4 producing a movement that depresses leaf spring 5 and places said leaf spring again under tension.

Referring now to Fig. 3 it is seen that four of said music bars are on one side of supporting partition 23 and four are on the opposite side. Aligning bars 22 at the top of partition 23 prevent suspension wires 9 from rotating about their long axis.

Referring again to Fig. 2 it can be seen that as each hole 2 of record disk 1 becomes aligned with its associated vertical pin 4, the resulting action causes music bars 11 to be progressively struck and set into vibration, the sequence of notes playing a musical tune as determined by the geometrical spacing of the holes. The action of the beads, as the tune is played, in striking the music bars has proven to be highly intriguing to observe. After being played, each record disk 1 can be removed in a manner previously described, and another record with a different tune set in place and played.

I claim:

A musical unit comprising a xylophone with vertically stacked music bars, a leaf spring unit consisting of a plurality of leaf spring fingers stamped from a single piece of spring material, said leaf spring unit being fixed at one end and said leaf spring fingers having vertical projections at the opposite end free to be vertically deflected independently of each other, vertical suspension wires hung on each of said leaf spring fingers and supporting a bead under each of said music bars, a removable record disk with radially spaced holes that form a musical pattern, said record disk being mounted on a spindle at its center and being supported along its radius by said leaf spring fingers' vertical projections, said record disk

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depressing and placing in tension said leaf spring fingers, a hand crank that is pivoted at one end and has a rubber wheel at the other end, said rubber wheel frictionally engaging the periphery of said record disk, a spiral spring that engages the shaft of said hand crank and holds said rubber wheel down on said record disk thus depressing said leaf spring fingers, whereby rotation of said hand crank rotates said record disk around its spindle causing said holes to become successively aligned with said leaf spring fingers' vertical projections permitting said leaf

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spring fingers to flip said beads up and against said music bars in appropriate sequence to play a musical tune.

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