

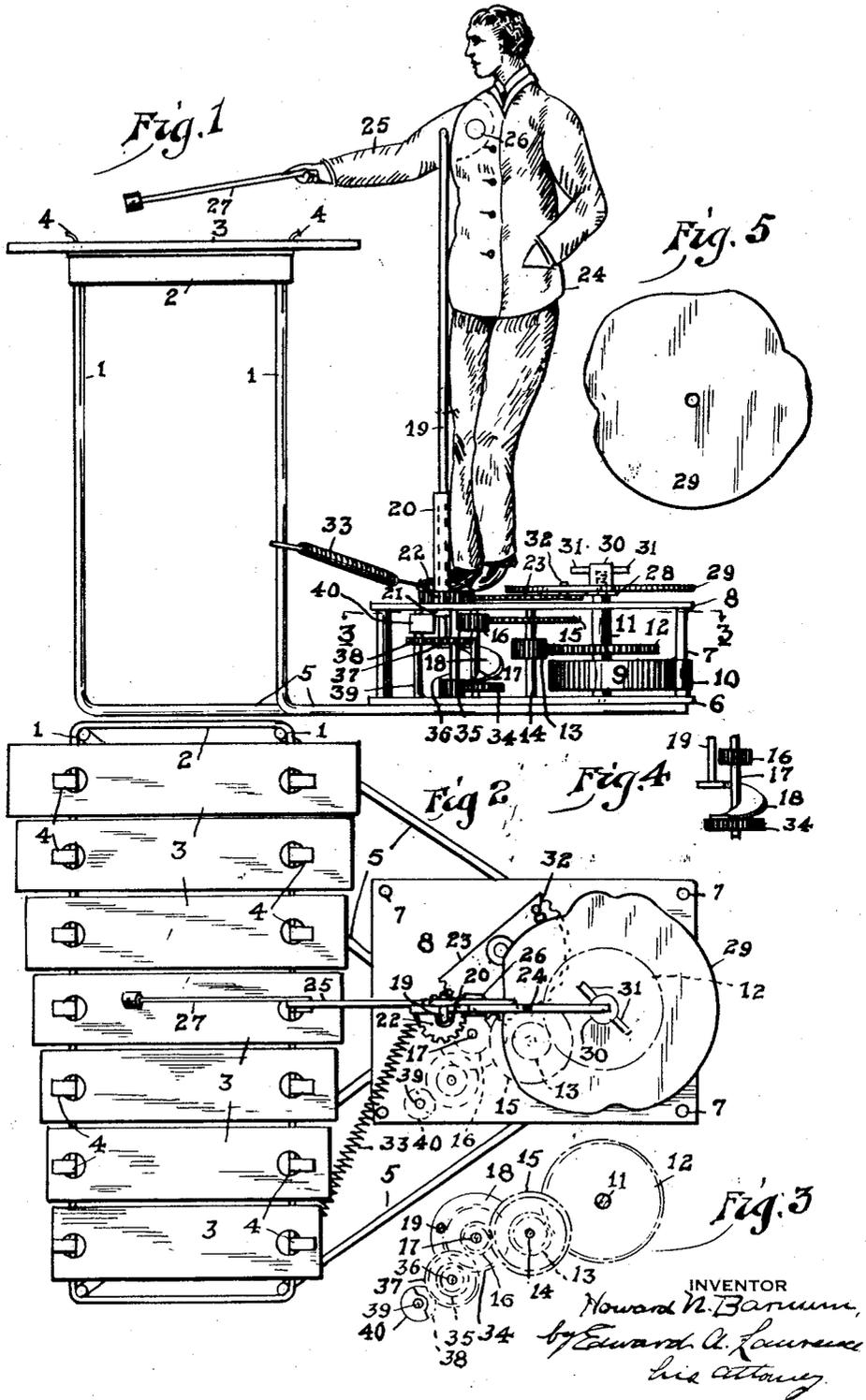
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MUSICAL TOY

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UNITED STATES PATENT OFFICE

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MUSICAL TOY

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One of the objects which I have in view is the provision of a toy representation of a person playing a xylophone or other musical instrument, the mechanism being arranged and actuated so that a predetermined sequence of musical notes may be struck and thus, if desired, a selected tune may be played.

Another object which I have in view is the provision of means whereby within reasonable limits any selected one of a plurality of tunes may be played by the toy.

For this and other purposes I have invented a toy, an embodiment of whose principles are hereinafter described.

In the accompanying drawings wherein I have illustrated a practical embodiment of the principles of my invention in a xylophone toy, Fig. 1 is a side elevation of the toy.

Fig. 2 is a plan view of the same, certain of the parts being shown in dotted line for the sake of clearness.

Fig. 3 is a plan view of the operating gear train looking downwardly from the line 3—3 in Fig. 1.

Fig. 4 is a detail showing the thrust rod and the cam track.

Fig. 5 is a plan view showing one of the tune cam plates.

Referring to the drawings, 1 represents four vertical legs which support an open table frame 2, which frame may be formed by bending up a strip of suitable material into rectangular form.

3 represents a series of musical bars graduated in length to the musical scale and which are supported transversely on said table and held against displacement as by the bent tongues 4 extending from the table and engaging holes in the bars.

The legs 1 may be formed by bending the end portion of a pair of lengths of wire whose intermediate portions 5 may be in the form of horizontally disposed V's which may be attached to the base plate 6 of a housing which also comprises the vertical posts 7 and the platform 8.

The driving mechanism of the toy is preferably a spring motor, whose spring is in-

dicated at 9, and has its outer end attached to one of the posts 7, as at 10. The central shaft 11 of the motor extends upwardly through the platform 8 and a gear 12 is mounted on said shaft below said platform.

The gear 12 meshes with a pinion 13 mounted on the shaft 14 which is journaled between the base 6 and the platform 8. The shaft 14 has mounted thereon a gear 15 which meshes with a pinion 16 mounted on a shaft 17 whose ends are also journaled in the base 6 and the platform 8.

The shaft 17 has fixed thereon a spiral cam track 18 upon which track is stepped the lower end of a thrust rod 19. The thrust rod is longitudinally slidable in a vertically disposed tubular sleeve 20 which extends down through a bearing hole in the platform 8 and has its lower end supported from below by the horizontal portion of a bracket 21 depending from the platform 8, the rod 19 extending downwardly through a hole in said bracket to engage the cam track.

Above the platform 8 a pinion 22 is mounted on the sleeve 20 and is in mesh with a segmental gear 23 which is mounted on a shaft journaled in a bearing in the platform.

24 represents a representation of a human figure which may be stamped or otherwise formed of metal and has its lower portion secured, as by soldering, to the side of the sleeve 20 above the gear 23. 25 represents an arm of the figure which is pivotally connected to the figure proper, as at 26, so as to swing on a horizontal axis. Fixed to the free end of the arm 25 is a hammer 27 which is caused to strike the musical bars 3. The upper end of the thrust rod 19 is pivotally connected to the arm 26 intermediate of the ends of the arm, so that the arm will be raised and lowered by the travel of the thrust rod relative to the spiral cam track. Thus the hammer is raised as the lower end of the thrust rod climbs the cam track and the hammer is dropped to strike a blow as the rod passes off the upper end of the cam track and drops on to the lower end of the latter.

The shaft 11 above the platform 8 is shouldered to support a washer 28 and the upper end of the shaft is threaded.

29 represents the tune cam plate which is provided with a central opening to permit it to be slid down over the end of the shaft 11 and rested upon the washer 28.

5 30 represents the binding nut which is screwed on to the end of the shaft against the cam plate 29 to clamp the cam plate rigidly to the shaft. The nut 30 is provided with radial handles 31 so that it may be used as a winding key for the motor spring.

10 The segmental gear 23 is provided with a post 32, which post is held in continuous contact with the perimetral edge of the cam plate 29, as by a spring 33 connecting the foot of the figure with one of the legs 1.

15 It is obvious that as the cam plate 29 is rotated by the motor, the segmental gear 23 will be rotated in either direction in accordance with the perimetral contour of the cam plate, thus swinging the figure 24 on a vertical axis and thus directing the blows of the hammer 27 against various of the musical bars 3.

25 Thus by providing a cam plate 29 with the proper perimetral contour the figure may be caused to strike any desired sequence of notes, thus, if desired, playing a selected tune.

The cam plate 29, illustrated in the drawing, has the perimetral contour to cause the figure to play the tune "Yankee Doodle" on the xylophone.

30 The cam plates are interchangeable so that a plurality of plates may be furnished with the toy, each having a contour which will cause the figure to play a given tune, so that by installing the proper cam plate on the toy any desired tune in the repertoire may be played.

35 A suitable governor mechanism should be provided for the motor. Thus, I have shown the shaft 17 provided with the gear 34 meshing with the pinion 35 on a shaft 36. The shaft 36 is also provided with the gear 37 which meshes with a pinion 38 on a shaft 39 which carries the eccentrically mounted weight 40.

What I desire to claim is:—

1. In a musical toy, the combination of a plurality of elements which upon impact produce different notes, an impact member arranged to deliver blows upon such elements, and means for directing such blows whereby a predetermined sequence of notes is produced.

55 2. In a musical toy, the combination of a plurality of elements which upon impact produce different notes, an impact member arranged to deliver blows upon such elements, and selective means for directing such blows whereby a predetermined sequence of notes is produced.

60 3. In a musical toy, the combination of a plurality of elements which upon impact produce different notes, an impact member arranged to deliver blows upon such elements,

selective means for directing such blows whereby a predetermined sequence of notes is produced, and means for varying such selective means.

4. In a musical toy, the combination of a plurality of xylophone bars arranged in series, a hammer arranged for imparting blows on said bars, means for moving the hammer relative to said bars for striking the blows, and means for shifting the path of movement of the hammer whereby the proper bars are struck to produce a predetermined sequence of notes.

5. In a musical toy, the combination of a plurality of xylophone bars arranged in series, a hammer arranged for imparting blows on said bars, means for moving the hammer relative to said bars for striking the blows, means for shifting the path of movement of the hammer whereby the proper bars are struck to produce a predetermined sequence of notes, and means for varying said means for shifting whereby such sequence may be changed.

6. In a musical toy, the combination of a plurality of xylophone bars arranged in series, a hammer arranged for movement in a plane angular to the plane of the bars whereby to strike blows on the bars, mechanical means for operating such hammer, and means for shifting the path of movement of the hammer whereby to strike various bars and thus produce a desired sequence of notes.

7. In a musical toy, the combination of a plurality of xylophone bars arranged in series, a hammer arranged for movement in a plane angular to the plane of the bars whereby to strike blows on the bars, mechanical means for operating such hammer, and means comprising a cam member for shifting the path of movement of the hammer whereby to strike various bars and thus produce a desired sequence of notes.

8. In a musical toy, the combination of a plurality of xylophone bars arranged in series, a hammer arranged for movement in a plane angular to the plane of the bars whereby to strike blows on the bars, mechanical means for operating such hammer, and means comprising a cam member for shifting the path of movement of the hammer whereby to strike various bars and thus produce a desired sequence of notes, said cam member being interchangeable whereby the sequence may be varied.

9. In a musical toy, the combination of a plurality of xylophone bars arranged in series, a hammer arranged for movement in a plane angular to the plane of the bars whereby to strike blows upon the latter, mechanical means to impart such movement to the hammer, and means to move the hammer in a plane substantially parallel to that of the bars whereby different bars may be struck to sound a sequence of notes.

10. In a musical toy, the combination of a plurality of xylophone bars arranged in series, a hammer arranged for movement in a plane angular to the plane of the bars whereby to strike blows upon the latter, mechanical means to impart such movement to the hammer, and selective means to move the hammer in a plane substantially parallel to that of the bars whereby different bars may be struck to sound a sequence of notes.
11. In a musical toy, the combination of a plurality of xylophone bars arranged in series, a hammer arranged for movement in a plane angular to the plane of the bars whereby to strike blows upon the latter, mechanical means to impart such movement to the hammer, and selective means to move the hammer in a plane substantially parallel to that of the bars whereby different bars may be struck to sound a sequence of notes, said selective means being interchangeable to vary such sequence.
12. In a mechanical toy, the combination of a plurality of xylophone bars arranged in horizontal series, a hammer, mechanical means to swing the hammer relative to a horizontal axis to strike blows on said bars, and means for swinging the hammer relative to a vertical axis so as to impart the blows on different bars.
13. In a mechanical toy, the combination of a plurality of xylophone bars arranged in horizontal series, a hammer, mechanical means to swing the hammer relative to a horizontal axis to strike blows on said bars, and selective means for swinging the hammer relative to a vertical axis so as to impart the blows on different bars.
14. In a mechanical toy, the combination of a plurality of xylophone bars arranged in horizontal series, a hammer, mechanical means to swing the hammer relative to a horizontal axis to strike blows on said bars, and means for swinging the hammer relative to a vertical axis so as to impart the blows on different bars, said means for swinging the hammer relative to a vertical axis comprising a cam member.
15. In a mechanical toy, the combination of a plurality of xylophone bars arranged in horizontal series, a hammer, mechanical means to swing the hammer relative to a horizontal axis to strike blows on said bars, and selective means for swinging the hammer relative to a vertical axis so as to impart the blows on different bars, said means for swinging the hammer relative to a vertical axis comprising a cam member.
16. In a mechanical toy, the combination of a plurality of xylophone bars arranged in horizontal series, a hammer, mechanical means to swing the hammer relative to a horizontal axis to strike blows on said bars, and means for swinging the hammer relative to a vertical axis so as to impart the blows on
- different bars, said means for swinging the hammer relative to a vertical axis comprising a cam member, and said cam member being interchangeable whereby to produce various sequences of musical notes.
17. In a mechanical toy, the combination of a plurality of xylophone bars arranged in horizontal series, a hammer, mechanical means to swing the hammer relative to a horizontal axis to strike blows on said bars, and selective means for swinging the hammer relative to a vertical axis so as to impart the blows on different bars, said means for swinging the hammer relative to a vertical axis comprising a cam member, and said cam member being interchangeable whereby to produce various sequences of musical notes.
- Signed at Cleveland, Ohio, this 7th day of November, 1929.
- HOWARD N. BARNUM.