

April 26, 1966

D. E. SPENGLER

3,247,614

CLOCK TOY AND SOUND MECHANISM THEREFOR

Filed Feb. 27, 1963

3 Sheets-Sheet 2

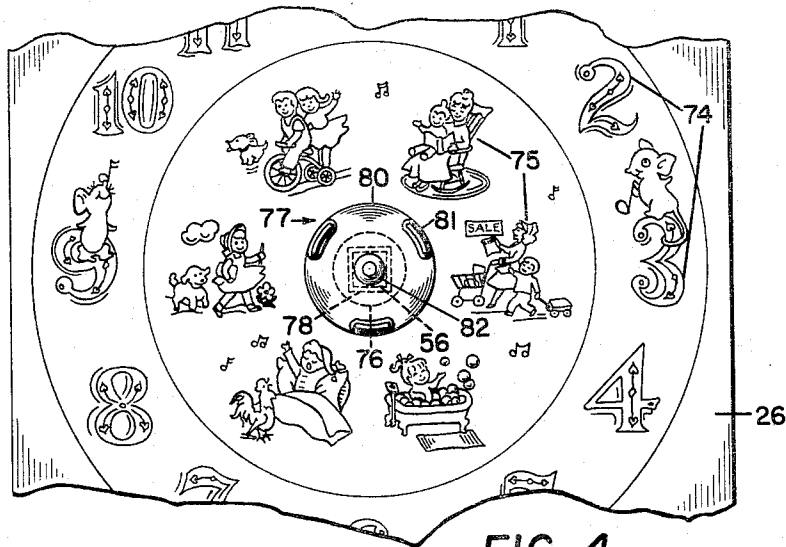


FIG. 4

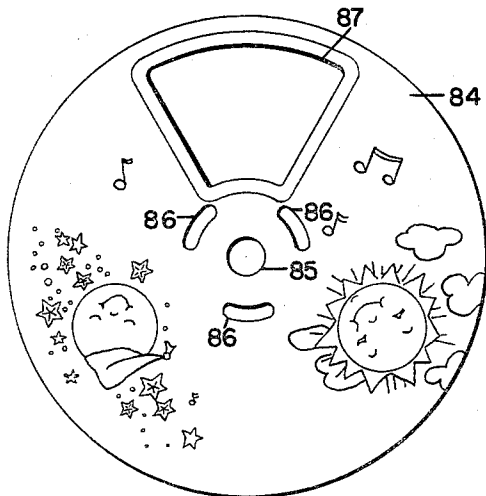


FIG. 5

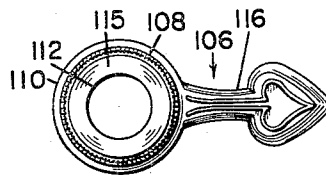


FIG. 6

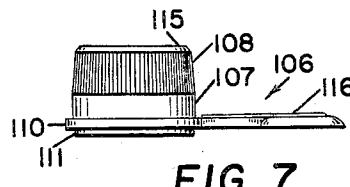


FIG. 7

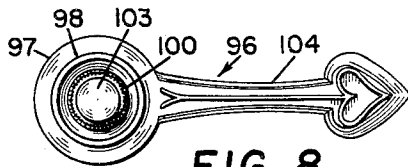


FIG. 8

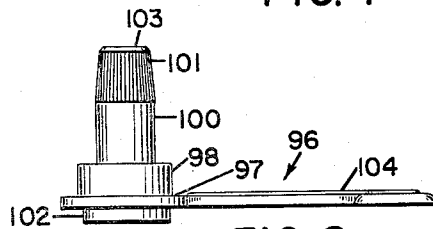


FIG. 9

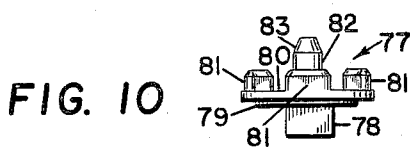


FIG. 10

INVENTOR.
DUANE E. SPENGLER

BY

Cumstone & Shaw
HIS ATTORNEYS.

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D. E. SPENGLER

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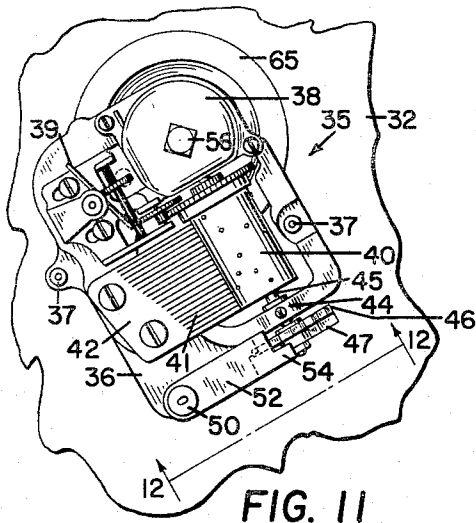


FIG. 11

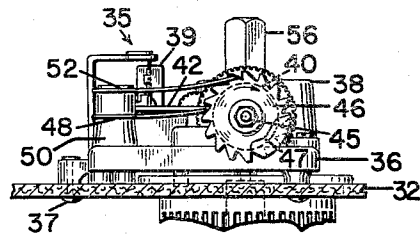


FIG. 12

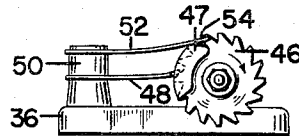


FIG. 13

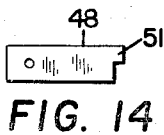


FIG. 14

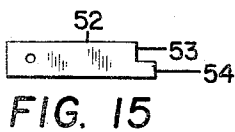


FIG. 15

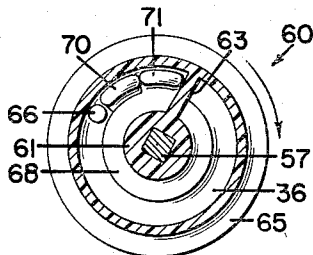


FIG. 16

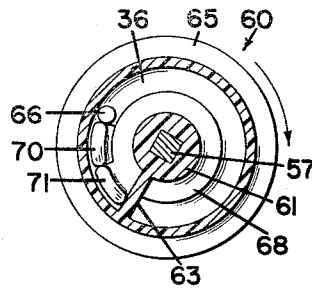


FIG. 17

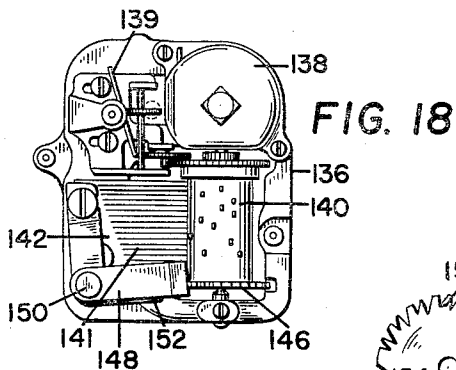


FIG. 18

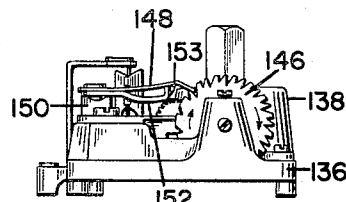


FIG. 19

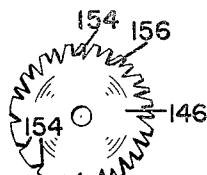


FIG. 20

INVENTOR
DUANE E. SPENGLER

BY

Compton & ...
HIS ATTORNEYS.

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3,247,614
**CLOCK TOY AND SOUND MECHANISM
 THEREFOR**

Duane E. Spengler, West Falls, N.Y., assignor to Fisher-Price Toys, Incorporated, East Aurora, N.Y., a corporation of New York

Filed Feb. 27, 1963, Ser. No. 261,368
 22 Claims. (Cl. 46-177)

This invention relates to educational toys for young children, especially children up to about 7 years of age. More particularly, the invention relates to a clock toy that is useful in teaching time concepts, and that is sufficiently attractive as a plaything to be desired by children as a toy.

A general object of the invention is to provide a safe, sturdy, educational toy that will aid in the mental and physical development of young children.

Another object of the present invention is to provide an educational device that is useful in teaching elementary time concepts and that is attractive to young children as a plaything.

A related object of the invention is to provide a device of the character described that is sturdy and rugged, so as to withstand handling by young children, and that is safe for use by young children.

Another object of the invention is to provide a novel noisemaking device for producing clock-like sounds, for use in a toy, in an educational device, with a clockwork music movement, and the like.

Another object of the invention is to provide a clockwork music movement that produces unusual and attractive tunes, and that is easy to operate, simple in structure, and rugged, to serve as a source of interesting sound effects.

A related object of the invention is to provide a simple and inexpensive rhythmic noisemaker, for use in a toy or educational device, that can be used to provide a simple beat rhythm that is easily remembered and catchy, and that will add interest to the toy or educational device.

Another and related object of the invention is to provide a noisemaking device of the character described, that has a simple construction, and that can produce a simple, rhythmic, syncopated beat.

A more specific object of the invention is to provide a simple device, that can be used in a timekeeper type of toy, for producing tick-tock, clock-like sounds. A related object of the invention is to provide a device of the character described that can produce regularly timed and syncopated clock-like sounds, for use in combination with a clockwork music movement.

Another object of the invention is to provide a clock toy that can be used in teaching time concepts to a young child, and that has animation and sound effects such as are attractive to and comprehensible by the child.

Another object of the invention is to provide a rugged educational toy, for use by a younger child, that will assist in teaching time concepts, and that has parts that can be manipulated by the child, to arouse the child's interest and to maintain a high attention level. A related object of the invention is to provide a toy of the character described that can withstand much mistreatment and abuse.

A further object of the invention is to provide a toy of the character described that has animation that will attract and maintain interest, that can also be manipulated by a child, and that can withstand the usually unintentional rough handling to which a young child would subject it.

Still another object of the invention is to provide a clock toy of the character described that emits music and noises that are interesting to a child and that will tend

to attract and hold attention. A related object of the invention is to provide a toy of the character described that will utilize a simple, familiar tune to attract and hold attention to a time-teaching device.

Yet another object of the invention is to provide a toy or educational device of the character described that has a minimum number of parts, that is simple in its construction, and that is inexpensive to manufacture.

Other objects of the invention will be apparent hereinafter from the specification and from the recital of the appended claims. To these and other ends, the invention resides in certain improvements and combinations of parts, all as will hereinafter be more fully described, the novel features being pointed out in the claims at the end of this specification.

In the drawings:

FIG. 1 is a front elevation of a clock toy that is constructed in accordance with a preferred embodiment of this invention;

FIG. 2 is a side elevation thereof;

FIG. 3 is a section, on an enlarged scale, taken on the line 3-3 of FIG. 1, looking in the direction of the arrows;

FIG. 4 is a fragmentary view, on an enlarged scale, of the front face of the clock toy, with all of the parts removed that are normally disposed on the front face of the clock toy;

FIG. 5 is a front elevation, on an enlarged scale, of a disc that is mounted on the front face of the clock toy;

FIG. 6 is a top plan view, on an enlarged scale, of one of the hands of the clock toy, simulating the hour hand of a clock;

FIG. 7 is a side elevation thereof on the same scale as FIG. 6;

FIG. 8 is a top plan view, on an enlarged scale, of the other of the hands of the clock toy, simulating the minute hand of a clock;

FIG. 9 is a side elevation thereof, on the same scale as FIG. 8;

FIG. 10 is a side elevation, on an enlarged scale, of the hub;

FIG. 11 is a fragmentary view, on an enlarged scale, taken on the line 11-11 of FIG. 3, looking in the direction of the arrows, and showing the clockwork music movement and its associated noisemaking device for producing clock-like sounds in time with the music;

FIG. 12 is a view taken on the line 12-12 of FIG. 11, looking in the direction of the arrows;

FIG. 13 is a view similar to FIG. 12 but with all parts omitted except the noisemaking device, and showing the device in a different position than in FIG. 12;

FIG. 14 is a top plan view of one of the flat spring cam followers of the noisemaking device;

FIG. 15 is a top plan view of the other of the flat spring cam followers of the noisemaking device;

FIG. 16 is a section, on an enlarged scale, such as would be taken on the line 16-16 of FIG. 3, looking in the direction of the arrows, with the clockwork music movement unwound to its limit of unwinding, and with the parts in position for winding to begin, and with the back cover of the toy removed;

FIG. 17 is a view similar to FIG. 16 but showing the fully wound position of the parts;

FIG. 18 is a top plan view of a clockwork music movement and an associated noisemaking device for simulating clock sounds, that are constructed in accordance with another embodiment of this invention;

FIG. 19 is a side elevation thereof, and

FIG. 20 is a side elevation, on an enlarged scale, of the toothed cam disc that is employed in the noise making device of FIGS. 18 and 19.

Referring now in detail to the drawings by numerals

of reference, the numeral 20 denotes generally the clock toy and time-teaching device. This toy 20 is formed with a base 21, a body 22 that is mounted on the base, a top part 24 that is secured on the upper end of the body, and a handle 25 that is secured on the top part 24 and that permits the toy to be carried about from place to place conveniently. The body 22 is generally rectangular in transverse section, and has a front face 26 and a rear face 27.

The body 22 is formed with a bore 30 (FIG. 3) that communicates with counterbore 31. The rear face 27 is formed with a recess 28, and a cover 32 is mounted in the recess, flush with the surrounding portions of the back face 27, and is held in place by a plurality of screws 34. A clockwork music movement, that is generally indicated by the numeral 35 (FIGS. 3, 11 and 12), is mounted on the inner face of the cover 32 and is disposed in the bore 30.

This musical movement has a base 36 that is secured to the cover by several rivets 37. A coil spring motor 38 mounted on the base 36 is connected to a speed governor 39. The motor 38 is mounted to drive a drum 40 that is formed with a plurality of radially projecting fingers or needles that are disposed at predetermined locations, to pluck the tines 41 of a tuned keyboard 42 that is rigidly mounted on the base 36.

The base 36 is formed with a pillow block 44, and a shaft 45, that is mounted to rotate upon rotation of the drum 40, is journaled in the block 44 and is formed with an extension that projects through the block 44. A toothed cam or ratchet wheel 46 is mounted on the end of the extended shaft 45, for rotation in a clockwise direction, referring to FIG. 12, upon rotation of the shaft. The teeth of the cam 46 are uniform in size and shape. The cam 46 is formed with an auxiliary cam member 47, that extends angularly about a part of the periphery of the cam, in juxtaposition with several of the teeth of the cam.

A first flat spring cam follower 48 is secured at one of its ends on a post 50 that projects upwardly from the base 36. The spring 48 is formed at its free end with an extension 51, of reduced width, that is disposed to ride on the teeth of the cam. A second flat spring cam follower 52 is also mounted on the post 50, spaced above the first spring. The spring 52 is formed at its free end with an extension 54 of reduced width, and the end 53 of the spring, that is disposed adjacent the extension 54, is disposed to ride on the teeth of the cam. The spring 48 is positioned so that, because of the shape of its free end, it never engages against the auxiliary cam 47. The spring 52 is positioned so that its reduced width extension 54 is always disposed in close juxtaposition to the teeth of the cam 46, as its free end 53 rides on the teeth, and the extension 54 is so positioned that it can engage against the cam surface of the auxiliary cam 47.

The motor 38 is coupled with a shaft 55 (FIG. 3) that projects axially therefrom in both directions. An adapter 56, that is substantially square in transverse section, is threaded over the forwardly projecting part of the shaft 55; and another adapter 57, that is also substantially square in transverse section, is threaded over the rearward projection of the shaft.

The base 36 of the music movement is formed with several bosses 58, that engage against the inner face of the cover 32, and space the base from the surface of the cover. A generally cylindrical knob 60, that is formed with a centrally disposed axially projecting sleeve 61 that has a substantially square socket 62, is disposed on the base 36 of the music movement, with the square adapter 57 seated within the socket 62, for rotation of the knob upon rotation of the adapter, and vice versa, but with sufficient clearance to permit relative axial movement between the parts. The knob 60 is formed with an axially- and radially-extending gusset 63 that interconnects the outer rim of the knob with its sleeve 61. The knob 60

is disposed to project through a circular opening 64 in the cover 32, and is formed with a flange 65 that is interposed between the base 36 and the cover.

The base 36 is formed with an upstanding stop 66 (FIGS. 3, 16, and 17). A pair of idler rings 67, 68 are interposed between the base 36 of the music movement and the free end of the sleeve 61 of the knob. These idler rings are mounted about the adapter 57 and are freely rotatable relative to the adapter. The ring 67 is formed with an axially extending lug 70, that is disposed to engage against the stop 66. The ring 68 is formed with an axially extending lug 71, that is disposed for engagement with the lug 70 of the other ring and also with the gusset 63 of the knob.

The body 22 of the toy has a plurality of numerals 74 arranged on its front face 26 in a generally circular, clock-like array. A generally circular array of pictures of play-scenes 75 (FIG. 4) is arranged within the array of numerals. These pictures are selected to represent scenes such as might occur during the day of a child.

The toy body 22 is formed in its front face with an aperture 76 that is located to be generally concentric relative to the circular array of pictures 75 and the circular array of numerals 74. The aperture 76 provides a communication between the front face 26 of the body and the bore 30. The adapter 56 is disposed to project into the aperture 76. A hub member, that is generally denoted by the numeral 77, is formed with a sleeve 78 that has a generally square-shaped socket in which the adapter 56 is seated, for rotary movement of the hub member upon rotation of the adapter 56. The hub member 77 is also formed with a radially-extending disc portion 80, that is formed on its rear face with a rearwardly-projecting circular ridge 79, and on its front face with three forwardly projecting, arcuate fingers 81 (FIG. 3). The hub member 77 is also formed with a forwardly-extending and axially-extending, generally cylindrical part 82 that has a conically-shaped forward end 83.

A disc 84 (FIGS. 1-3 and 5) is formed with a central opening 85 through which the hub extension 82 projects, and with three arcuate slots 86 in which the fingers 81 of the hub member engage and through which they project. The disc 84 is also formed with a large opening 87 that is approximately the same size as, or a little larger than, the individual pictures 75 on the front face of the clock body, as shown in FIG. 1.

A transparent plastic cover, that is generally indicated by the numeral 90, is secured over the simulated clock face by four screws 91, that are located at the four corners of the cover. The cover 90 is formed with a generally circular raised boss 92, that is bowed out a substantial distance from the face 26 of the body. The boss 92 is formed with a central opening 94 and with an inturned circular flange 95 that forms a neck inwardly of the opening.

The minute hand, that is indicated generally by the numeral 96, comprises a generally circular hub portion 97 that is formed on its front face with a forwardly projecting annulus 98, and with a cylindrical, forwardly projecting member 100 that is concentric with the annulus 98 and that is axially elongated and formed at its forward extremity with a knurled knob portion 101, that has a closed forward end 103. The minute hand is also formed on its rear face with a rearwardly projecting ring 102, that engages against the front face of the disc 84, between the three forwardly projecting fingers 81 of the hub member 77. The minute hand 96 is also formed with an elongate pointer portion 104.

The hour hand is designated generally by the numeral 106. It is formed with a cylindrical, forwardly projecting hub portion 107 that has a tapered, knurled front end portion 108 to serve as a knob. The cylindrical hub 107 is formed with a rim portion 110 that is engaged against the inner end of the neck 95 of the transparent plastic cover. The hub portion 107 is also formed with a rear-

wardly-extending ring 111, that is disposed to confront the ring portion 97 of the minute hand 96. The cylindrical hub 107 is formed, in its front end 115, with an opening 112, through which the knurled end 101 of the minute hand projects. A spring 114 is interposed between the front end 115 of the hour hand and the front face of the ring 97 of the minute hand, intermediate the forwardly projecting member 100 and the annulus 98, constantly to urge the rim 110 of the hour hand forward, to engage against the neck 95 of the transparent plastic cover, and constantly to urge the rear face of the ring 97 of the minute hand against the front ends of the fingers 81 on the hub member 77. The hour hand is also formed with a pointer portion 116.

To operate the clock toy, the knob 101 on the minute hand can be moved manually, to rotate the minute hand 96, to move its pointer 104 over the numerals on the clock face. The knob 108 on the hour hand can also be moved manually, to rotate the hour hand 106, to move the pointer 116 of the hour hand over the numerals.

Should pressure be applied to the minute hand 96, either accidentally, or intentionally, for example by the exertion of force on the knob 101 or on the end 103 of the knob, that force is transmitted through the cylindrical part 101 of the minute hand to its ring part 97, through its ring part 97 to the projecting fingers 81 of the hub member 77, and through the ridge 79 on the rear face of the ring portion 80 of the hub to the front face 26 of the body. Similarly, if an axial pressure is exerted on the knob 108 of the hour hand, the hour hand can be moved axially rearwardly, to compress the spring 114, until the ring 111 on the rear face of the hour hand engages against the front face of the rim 97 of the minute hand, from which the pressure is transmitted to the front face 26 of the body of the toy, as before.

These features serve to protect the clockwork music movement from damage by pressure exerted on either of the knobs at the front of the toy, whether accidental or intentional, since forces that are applied to the knobs of the clock hands are transmitted to the toy body and not transmitted to the adapter 56 or to the music movement.

To operate the music movement, the knob 60 is rotated to wind up the motor 38. The winding direction is clockwise relative to FIG. 16. When the knob has been rotated slightly less than a single complete revolution, its gusset 63 engages against the lug 71 on the idling ring 68, and during the second revolution of the knob 60, this ring is pushed or carried around by the knob. As the knob nears the end of its second revolution, the lug 71 engages against the lug 70 of the second idling ring 67, so that during the third revolution of the knob, both idling rings are carried around by the knob. Rotation of the knob can be continued until the lug 70 engages against the stop pin 66 that projects from the rear face of the base 36 in the music movement. The idling rings and their lugs thus act together with the stop pin 66 and the gusset 63 of the knob, to limit the extent to which the motor 38 of the music movement can be wound.

When the knob 60 is released, the motor 38 drives the drum 40 of the music movement, to produce musical sounds as the tines 41 of the keyboard 42 are plucked. At the same time, the shaft 45 is driven, to rotate the cam 46 in a clockwise direction relative to FIG. 12. As the cam is rotated, the flat spring cam followers 48 and 52 ride over the teeth of the cam and alternately produce percussion sounds as first one, then the other, drops off the peak of one tooth into the trough of the succeeding tooth. Because of the different lengths of the flat springs, different sounds are produced.

When the cam 46 has been rotated to bring the auxiliary cam 47 around to engage against the extension 54 on the spring 52, the spring 52 begins a dwell period during which it does not engage against the teeth of the cam.

In one preferred embodiment of the invention, the tune

on the music box is the well-known air, "Grandfather's Clock," and the cam 46 and its flat spring followers 48 and 52 are adjusted to produce tick-tock sounds in time with the music, and during the dwell period the beat produced by the percussion sounds is syncopated in the familiar way for the "Grandfather's Clock" tune. Since the rotary cam 46 is mounted on the shaft 45 independently of the drum 40, it can be adjusted angularly relative to the drum 40 to synchronize the sounds as desired. Other tunes can be used and the noisemaking device illustrated, that produces the tick-tock sounds, need not necessarily be used to provide a beat for the music but can be employed simply to produce a clock-like sound.

When the motor 38 unwinds to drive the music box and the noise making device, it simultaneously drives the shaft 55 and the two square-shaped adapters 56, 57, that are mounted on this shaft. As the motor unwinds, the adapter 56 is driven in a clockwise direction relative to FIGS. 1 and 4. As the adapter 56 is rotated, it drives the hub member 77, which in turn rotates the disc 84 in a clockwise direction, so that one of the pictures 75 after another is successively exposed through the opening 87 in the disc. Moreover, the pressure exerted by the spring 114 on the minute hand 96 causes a sufficient frictional engagement between rear face of the minute hand and the three forwardly projecting fingers 81 to cause the minute hand to be carried around at the same rate as the disc.

Thus, as the music box plays and the tick-tock sounds are produced, play-scenes on the clock face are revealed successively as the disc 84 and the minute hand revolve.

As the motor 38 unwinds, the knob 60 is rotated in a counterclockwise direction relative to FIGS. 16 and 17. From the initial, wound up position of FIG. 17, the knob rotates until, after slightly less than a single complete revolution, the gusset plate 63 engages against the lug 71 of the idling ring 68. During the second revolution of the knob, the idling ring 68 is then carried around ahead of the knob. As the knob nears completion of its second revolution, the lug 71 of the idling ring 68 engages against the lug 70 of the idling ring 67, and during the third revolution of the knob, both idling rings are carried around with the knob, until the lug 70 engages against the stop pin 66 on the base 36 of the music movement. This prevents further unwinding of the motor and stops the music box, the tick-tock mechanism, and the revolution of the disc and the minute hand.

Preferably, upon initial assembly of the toy, the several parts are adjusted so that when the knob 60 is in the position shown in FIG. 16, which is the unwound limit position, the music movement is at the end of a tune or part of a tune; and when the knob is in its fully wound position, shown in FIG. 17, the music box is at a position to begin a tune. With this adjustment, each winding of the knob 60 will cause a repetition of a particular tune or fragment of a tune. The angular extent to which the knob can be wound and unwound can be adjusted by adjusting the angular extent of the lugs on the idling rings, and also by adjusting the number of idling rings, so that the extent to which the motor of the music movement can be wound and unwound is susceptible of very close control and adjustment.

The minute hand is caused to rotate upon rotation of the hub member 77, because the minute hand is engaged against the fingers 81 of the hub member, under pressure of the spring 114. However, the minute hand nevertheless can be moved independently of the hub member 77 because the force of the spring 114, and the frictional engagement that it produces between the fingers 81 and the face of the minute hand, is not great enough to prevent movement of the minute hand independently when the knob portion 101 of the minute hand is rotated. Depending upon the strength of the spring 114, the hour hand may or may not be caused to rotate upon rotation of the minute hand, but it is preferred that the spring

be weak enough to permit manual revolution of the hour hand independently of the revolution of the minute hand.

The clockwork music movement that is illustrated in FIGS. 18, 19 and 20 represents an alternative kind of device for producing a clock-like sound in accordance with this invention. Referring now particularly to these figures, the numeral 136 denotes the base of the movement. The motor 138 is mounted on this base and is coupled with a governor 139. The motor is also coupled to a toothed drum 140 that is disposed so that, upon rotation, its teeth can pluck the tines 141 of a tuned keyboard 142. A toothed wheel 146 is secured to one end of the drum 140, for rotation upon rotation of the drum. A flat spring cam follower 148 is secured, at one of its ends, on a post 150 that is fixed relative to the base 136. The free end of the flat spring 148 is disposed to ride on the teeth of the toothed cam 146. An abutment member 152 is also secured to the post 150, and has a free end 153 that is disposed beneath the shank of the flat spring cam follower 148, adjacent but spaced from the free end of the cam follower and also spaced from the periphery of the toothed cam 146.

The teeth on the cam 146, as illustrated in FIG. 20, are arranged so that tick-tock noise will be produced with a beat and syncopation for use with a musical movement playing the "Grandfather's Clock" tune. The teeth are arranged with alternating deep and shallow troughs. When the spring 148 drops from a tooth crest into one of the shallow troughs, a "tick" noise is produced. When the spring 148 drops from a tooth crest into one of the deep troughs, it makes an impact not only against the trough, but also against the free end of the abutment member 152, to produce a deeper, more resounding, "tock" noise.

As shown in FIG. 20, there is one angular portion of the periphery of the cam 146 where only shallow troughs appear, and there are continuous lands rather than deep troughs. This produces the same dwell effect, with no "tock" sounds, as did the auxiliary cam and spring extension arrangement in the embodiment of the noise-making device previously described.

This clock toy is very useful as an educational device, since it readily attracts small children and holds their interest. For example, the scene of the boy awaking in the morning, adjacent the numeral 7 on the clock face, can be selectively exposed by the disc, and the child can be taught to associate arising with the hour of 7 or thereabouts very easily.

While the clock toy or educational device just described represents a preferred embodiment of the invention, many modifications of the device illustrated are contemplated, within the scope of the invention. For example, the clockwork music movement could be omitted, if desired, and the toy would still be educational, interesting, and attractive to children because of its clock-like noise, play-scenes or pictures, and its movable hands.

The simulated clock sounds are produced, preferably, by the use of a flat spring that is under tension and that is suddenly released and permitted to strike against an unyielding surface, either on a cam, or on an abutment member, or both. In the type of mechanism illustrated in FIGS. 18, 19 and 20, the clock-like noise is produced by the use of a cam that is permanently secured to the rotary drum of the music movement, so that the music and percussion sounds will always be properly synchronized, once they have been initially adjusted, assembled, and secured together. In the device illustrated in FIGS. 10 and 11, the rotary cam can be adjusted relative to the drum, which is an advantage where unusual effects and some flexibility are desired. In both mechanisms illustrated, only a single toothed cam is employed, however, several toothed cams, each with its own respective associated cam follower, can be used.

While the invention has been disclosed herein by reference to the details of preferred embodiments thereof,

therefore, it is to be understood that such disclosure is intended in an illustrative, rather than in a limiting sense, and it is contemplated that various modifications in the construction and arrangement of the parts will readily occur to those skilled in the art, within the spirit of the invention and the scope of the appended claims.

I claim:

1. A clock toy comprising a body having a face representing a generally circular clock face and having clock numerals arranged thereon in a generally circular array, and a series of pictures arranged on said face in a generally circular array within said array of numerals, a rotary drive shaft that is disposed centrally of said face, first and second simulated clock hands mounted for independent rotary movement relative to said shaft and over said face, means for independent manual operation of said hands to cause them to rotate over said face, contact means mounted for movement upon movement of said shaft and disposed for engagement with one of said hands, spring means mounted constantly to urge said one of said hands into engagement with said contact means but to permit movement of said one of said hands relative to said contact means upon manual operation to cause rotary movement of said one of said hands, a disc that is disposed over said face and that extends within said numerals and that is mounted for rotation relative to said body upon rotation of said shaft, said disc being formed with an opening that is at least the size of one of said pictures and that is disposed so that the pictures are displayed therethrough in succession upon rotation of the disc, a noise making device that is mounted in said body for producing a series of sequential percussion sounds like a clock and that comprises a cam that has a toothed cam surface, cam follower means mounted to be constantly urged into engagement with said cam surface, to ride on said toothed cam surface over said teeth and to make a percussion sound upon leaving one tooth and engaging against a succeeding tooth and means for simultaneously causing rotation of said cam to operate said device and driving said shaft.

2. A clock toy in accordance with claim 1 including a clock-work music movement that is mounted in said body for operation upon operation of said noise making device, said device being arranged to produce percussion sounds in time with the music produced by said music movement.

3. A clock toy comprising a body having a face representing a generally circular clock face and having clock numerals arranged thereon in a generally circular array, a series of pictures arranged on said face in a generally circular array within said array of numerals, a rotary drive shaft that is disposed centrally of said face, first and second simulated clock hands mounted for independent rotary movement relative to said shaft and over said face, means for independent manual operation of said hands to cause them to rotate over said face, contact means mounted for movement upon movement of said shaft and disposed for engagement with one of said hands, spring means mounted constantly to urge said one of said hands into engagement with said contact means but to permit movement of said one of said hands relative to said contact means upon manual operation thereof to cause rotary movement of said one of said hands, a disc that is disposed over said face and that extends within said array of numerals and that is mounted for rotation relative to said body upon rotation of said shaft, said disc being formed with an opening that is at least the size of one of said pictures and that is disposed so that the pictures are displayed therethrough in succession upon rotation of the disc, a clockwork music movement mounted in said body and comprising a comb and a rotary drum having fingers that are disposed to pluck selected tines of the comb, to produce music upon rotation of the drum, and a cam that is mounted for rotation upon rotation of the drum and that has a toothed cam surface, cam follower means mounted to be constantly

urged into engagement with said toothed cam surface, to ride on said toothed cam surface over said teeth upon rotation of the cam and to make a percussion sound upon leaving one tooth and engaging against a succeeding tooth, said cam and cam follower being arranged to produce percussion sounds in time with the music and that simulate the sound of a clock, and means for simultaneously causing rotation of said drum and driving said shaft.

4. A toy in accordance with claim 3 wherein said toothed cam surface is formed with at least some teeth that are of alternating different sizes to permit movement of said cam follower means through alternating different lengths of travel before successive impacts, to produce alternating, different, clock-like sounds.

5. A toy in accordance with claim 3 wherein said cam follower means comprises a pair of flat springs that are mounted respectively so that each has one of its ends fixed and its other end free, and so that the free end of each is engaged against the toothed cam surface in spaced relation to the free end of the other, said springs being disposed so their respective free ends are constantly urged against said cam surface to ride on said cam surface over the teeth thereof out of synchronism with each other, and wherein one of said flat springs is longer than the other, to make separate and different percussion sounds respectively upon leaving one tooth and engaging against a succeeding tooth.

6. A noise-making device for producing a series of differentiated sequential percussion sounds, said noise-making device comprising: a rotatable cam having a peripheral surface formed to provide teeth separated by notches of different depths; a spring mounted to engage said peripheral surface to make percussion sounds upon leaving one tooth, and falling into an adjacent notch to engage against a succeeding tooth in response to rotation of said cam, the difference in depth of said notches causing said spring to move through different lengths of travel before impact; and a stationary abutment member disposed adjacent said spring in a position to be struck by said spring substantially simultaneously with said spring's striking of said succeeding tooth on preselected impacts following longer lengths of travel by said spring, said abutment member being formed differently from said teeth so that the percussion sound produced by said spring engaging said abutment member is different in quality from the percussion sound produced by said spring engaging only one of said teeth on said cam without engaging said abutment member.

7. The noise maker of claim 6 including a music box movement comprising a comb and a rotary drum having fingers that are disposed to pluck selected tines of the comb to produce music upon rotation of the drum; and means for rotating said cam with said drum to synchronize said differential percussion sounds with said music.

8. A clock toy comprising: a body; a clock face; a pair of simulated clock hands independently movable over said face; and the noise maker of claim 6; and means for moving one of said hands upon rotation of said cam.

9. A clock toy in accordance with claim 8 including means for manually moving the other one of said simulated clock hands over said clock face.

10. In combination, a music box movement comprising: a comb; a rotary drum having fingers that are disposed to pluck selected tines of said comb to produce music upon rotation of said drum; a cam mounted for rotation with said drum and formed with a toothed cam surface; a pair of flat springs that are mounted respectively so that a free end of each respective spring is urged against said toothed cam surface in spaced relation to said free end of the other of said springs; said springs being of unequal length and disposed to ride over said teeth to make separate differential percussion sounds respectively upon leaving one tooth and engaging against a succeeding tooth; an auxiliary cam surface disposed adjacent

said toothed surface; a first one of said springs being disposed for engaging said auxiliary cam surface during a part of each rotation of said cam; said auxiliary cam surface being disposed, upon engagement with said first spring; to hold said first spring out of engagement with said teeth; and means for rotating said drum to synchronize said percussion sounds with said music.

11. The music box movement of claim 10 including a shaft; means for mounting said drum and said rotary cam on said shaft, and means for adjusting said cam on said shaft angularly relative to and independently of said drum.

12. A clock toy comprising: a body; a clock face; a pair of simulated clock hands independently movable over said face; and the music box movement of claim 10; means for moving one of said simulated clock hands over said clock face upon rotation of said cam; and means for manually moving the other one of said simulated clock hands over said clock face.

13. The clock toy of claim 12 including a disc paired with said clock face and arranged for rotation relative to and coaxially with said clock face; one element of said pair having a series of pictures arranged in a generally circular array, and the other element of said pair being formed to define an aperture at least the size of said pictures and overlying said pictures; and means for rotating an element of said pair with said cam so that said pictures are displayed successively through said opening.

14. A clock toy according to claim 12 including: drive means for rotating said cam; and clutch means interposed between said drive means and said drivable hand to permit manual rotation of said drivable hand independently of said drive means.

15. In a clock toy including a body having a face representing a generally circular clock face with clock numerals arranged around the periphery thereof in a generally circular array, the improvement comprising: a drive shaft disposed centrally of said face; a first simulated clock hand mounted for independent rotary movement over said face coaxially with said drive shaft; a first rotatable knob for independent manual operation of said first hand; a second simulated clock hand mounted for independent rotary movement over said face coaxially with said drive shaft; a second rotatable knob for independent manual operation of said second hand; contact means mounted for rotation upon rotation of said drive shaft and disposed for engaging said first hand; spring means mounted constantly to urge said first hand and said contact means together but to permit movement of said first hand relative to said contact means and said drive shaft upon manual rotation of said first knob; a noise making device mounted in said body for making simulated clock noises; and powered drive means for simultaneously operating said device and rotating said drive shaft.

16. The clock toy of claim 15 including: a disc paired with said clock face and arranged for rotation relative to and coaxially with said clock face; one of said paired discs having a series of pictures arranged in a generally circular array, and the other of said paired discs being formed to define an aperture at least the size of said pictures and overlying said pictures; and means for rotating said disc with said cam so that said pictures are displayed successively through said opening.

17. A clock toy in accordance with claim 15 wherein said noise making device comprises a rotatable cam having a peripheral surface formed to provide teeth separated by notches of different depths; a spring mounted to engage said peripheral surface to make percussion sounds upon leaving one tooth, and falling into an adjacent notch to engage against a succeeding tooth in response to rotation of said cam, the difference in depth of said notches causing said spring to move through different lengths of travel before impact; and a stationary abutment member disposed adjacent said spring in a position to be struck by said spring substantially simultaneously

11

with said spring's striking of said succeeding tooth on preselected impacts following longer lengths of travel by said spring, said abutment member being formed differently from said teeth so that the percussion sound produced by said spring engaging said abutment member is different in quality from the percussion sound produced by said spring engaging only one of said teeth on said cam without engaging said abutment member.

18. A clock toy in accordance with claim 15 wherein said noise making device comprises a comb; a rotary drum having fingers that are disposed to pluck selected tines of said comb to produce music upon rotation of said drum; a cam mounted for rotation with said drum and formed with a toothed cam surface; a pair of flat springs that are mounted respectively so that a free end of each respective spring is urged against said toothed cam surface in spaced relation to said free end of the other of said springs; said springs being of unequal length and disposed to ride over said teeth to make separate differential percussion sounds respectively upon leaving one tooth and engaging against a succeeding tooth; an auxiliary cam surface disposed adjacent said toothed surface; a first one of said springs being disposed for engaging said auxiliary cam surface during a part of each rotation of said cam; said auxiliary cam surface being disposed, upon engagement with said first spring, to hold said first spring out of engagement with said teeth; and means for rotating said drum to synchronize said percussion sounds with said music.

19. In a clock toy including a body having a clock face and a pair of hands mounted for movement over said face in clock-like fashion, the improvement comprising: a rotatable drive shaft disposed axially of said face; a first one of said hands being formed with a hub member extending axially outward from said face, said first hub member being manually rotatable for moving said first hand over said face; a second one of said hands being formed with a second hub member surrounding said first hub member and extending axially outward from said face to an extent less than said first hub member, said second hub member being manually rotatable for moving said second hand over said face; a contact clutch member rotatable with said drive shaft and engageable by said first hub member; and spring means for biasing said first hub member axially against said contact clutch member for rotating said first hand with said drive shaft.

20. A clock toy in accordance with claim 19 wherein each of said hub members are movable axially, and said spring bias means is disposed between said first and second hub members for urging said first and second hub members axially apart.

21. A clock toy in accordance with claim 19 including a noise-making device comprising: a rotatable cam having a peripheral surface formed to provide teeth separated by notches of different depths; a spring mounted to engage said peripheral surface to make percussion sounds upon leaving one tooth, and falling into an adjacent notch to

12

engage against a succeeding tooth in response to rotation of said cam, the difference in depth of said notches causing said spring to move through different lengths of travel before impact; a stationary abutment member disposed adjacent said spring in a position to be struck by said spring substantially simultaneously with said spring's striking of said succeeding tooth on preselected impacts following longer lengths of travel by said spring, said abutment member being formed differently from said teeth so that the percussion sound produced by said spring engaging said abutment member is different in quality from the percussion sound produced by said spring engaging only one of said teeth on said cam without engaging said abutment member; and wherein said cam is rotated with said drive shaft.

22. A clock toy in accordance with claim 19 including a music box movement comprising: a comb; a rotary drum having fingers that are disposed to pluck selected tines of said comb to produce music upon rotation of said drum; a cam mounted for rotation with said drum and formed with a toothed cam surface; a pair of flat springs that are mounted respectively so that a free end of each respective spring is urged against said toothed cam surface in spaced relation to said free end of the other of said springs; said springs being of unequal length and disposed to ride over said teeth to make separate differential percussion sounds respectively upon leaving one tooth and engaging against a succeeding tooth; an auxiliary cam surface disposed adjacent said toothed surface; a first one of said springs being disposed of engaging said auxiliary cam surface during a part of each rotation of said cam; said auxiliary cam surface being disposed, upon engagement with said first spring, to hold said first spring out of engagement with said teeth; means for rotating said drum to synchronize said percussion sounds with said music; and wherein said drum is rotated with said drive shaft.

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RICHARD C. PINKHAM, *Primary Examiner.*