

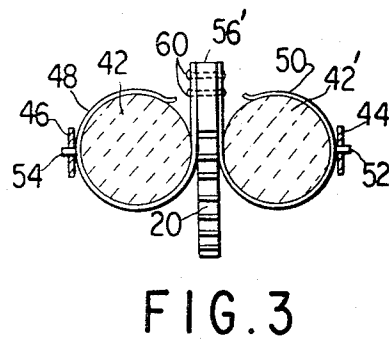
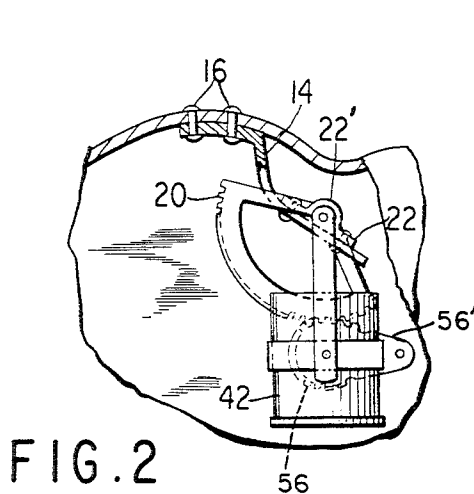
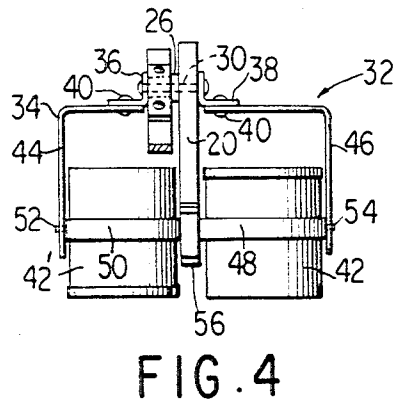
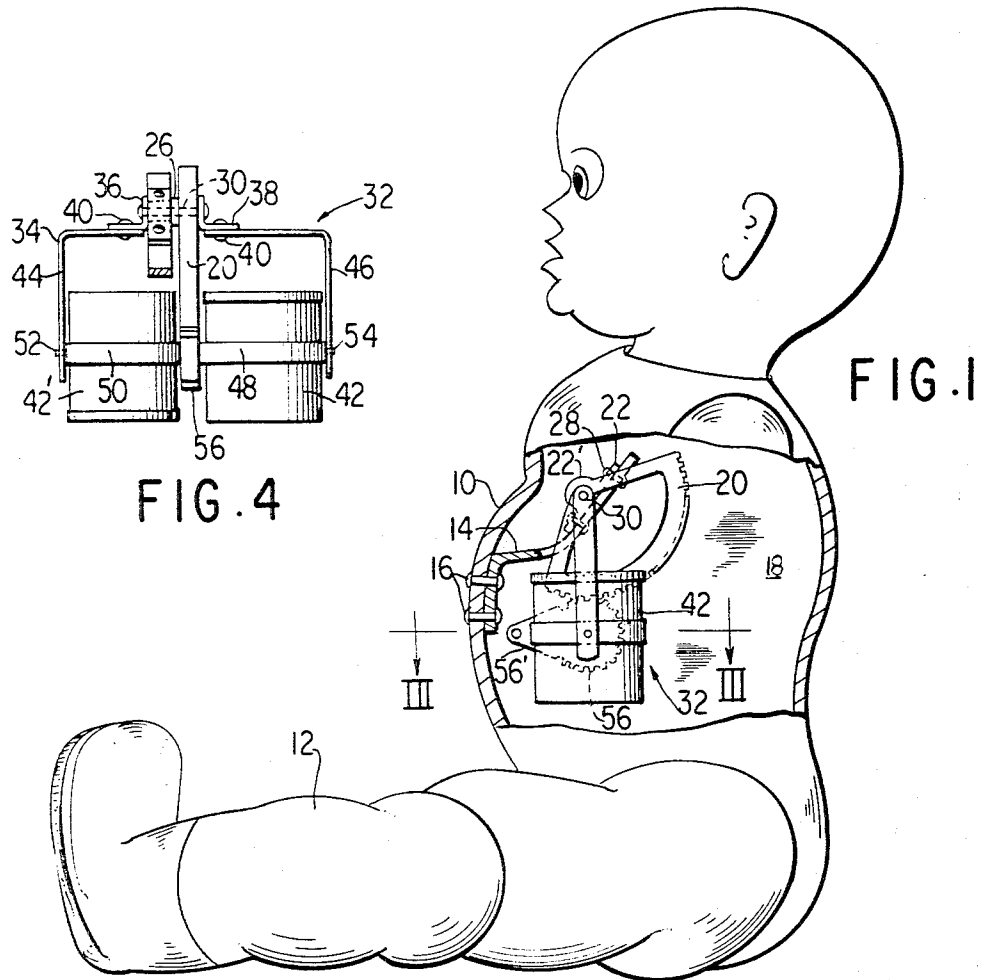
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3,413,756

SOUND-PRODUCING DEVICE FOR A TOY FIGURE

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3,413,756
SOUND-PRODUCING DEVICE FOR A TOY FIGURE
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ABSTRACT OF THE DISCLOSURE

A sound-producing mechanism for a doll or the like in which a pair of gravity actuated sound devices are mounted on a support for rotation around a common axis, the devices being oriented differently, e.g., oppositely, with respect to the axis, and the support being pivotally hung from an axis fixed in the doll's torso, the support being operatively connected to the torso through a connection such that movement of the support through a given arc rotates the sound devices through a multiple of said arc; thus the support and sound devices carried thereby may swing through 90° with respect to the doll torso while the sound devices are rotated through 180°, characteristic sounds being emitted with each such rotation in either direction.

This invention relates to a sound-producing toy figure, particularly a doll.

An object of the invention is to provide a sound-producing mechanism for a doll or the like which is operable by gravity actuation upon a change of position of the doll body.

Another object is to provide, in a doll or the like, a mechanism for inverting a sound device without requiring inversion of the doll.

A further object is to provide, in one embodiment, a mechanism in a doll or the like for producing a sound when the doll's body is changed from erect to reclining and also when it is changed from reclining to erect.

A further object is to provide certain improvements in the form, construction, arrangement and material of the several elements whereby the above and other objects may efficiently be attained.

Other objects and features of the invention will appear as the description of the particular physical embodiment selected to illustrate the invention progresses.

A practical embodiment of the invention is shown in the accompanying drawings wherein:

FIG. 1 is an elevational view, partly in section, of a doll in a sitting position with its body erect.

FIG. 2 is a partial sectional view of the body in a reclining position.

FIG. 3 is a sectional view taken along the line III—III of FIG. 1.

FIG. 4 is a front view of the internal operating mechanism shown in FIG. 1.

Referring to the drawings, FIG. 1 shows a doll body 10 having legs (only one shown) pivotally supported thereto by conventional means. A mounting bracket 14 fixed to the body 10 by the fastening means 16 extends into a void space 18 in the body. A gear element or sector gear 20 is secured to the bracket 14 by means of a strap 22 having a semicircular mid-section 22' passing over a laterally extending hub 26 on the sector gear 20, the strap 22 being secured to the bracket 14 as by the rivets 28, and the hub 26 being gripped firmly so that the gear 20 is fixed with respect to the bracket 14.

A central opening in the sector gear hub 26 receives a shaft 30 rotatably supporting an actuating mechanism, indicated generally at 32, which is gravity operated to rotate or swing relative to the sector gear 20 and doll body 10 as will be described. The actuating mechanism 32

comprises a U-shaped member 34 mounting L-shaped brackets 36, 38 by means of rivets or the like 40, the L-shaped brackets 36, 38 having openings for receiving the shaft 30.

A pair of sound-producing devices 42, 42' are supported between the two legs 44, 46 of the U-shaped member 36 by means of the straps 48, 50, the latter having stub shafts 52, 54 rotatably received in openings in the legs 44, 46 of the U-shaped member 36. Between the two sound devices 42, 42', the straps 48, 50 extend tangentially (best shown in FIG. 3) in spaced relationship and mount a gear element or member 56 therebetween. The gear member 56 has a circular portion with gear teeth extending over at least a 180° arc and an extension 56' received and secured to the aforesaid tangential strap portions by the fastening members 60. The gear teeth on the gear member 56 mesh with the teeth on sector gear 20.

The above described apparatus operates as follows. With the doll body 10 in an erect position, the actuating mechanism 32 will be in the position shown in FIG. 1. When the body is placed in a reclining position, the actuating mechanism 32 will be acted upon by gravity to rotate or swing approximately 90° about the shaft 30 to the new position shown in FIG. 2. As the actuating mechanism 32 swings, the sector gear 20 meshing with the gear member 56 causes rotation of the latter. By providing a 2:1 gear ratio of sector gear 20 to a gear member 56, it will be apparent that the 90° swinging movement of the actuating mechanism 32 will cause the gear member 56 to rotate 180° about an axis coincident with the stub shafts 52, 54. Since the gear member 56, straps 48, 50 and sound devices 42, 42' are mounted for rotation as a unit about the stub shafts 52, 54, the aforesaid 180° rotation is effective to invert the sound devices 42, 42' as will be seen in comparing FIGS. 1 and 2. Moving the body from a reclining position to an erect position will rotate the sound devices 180° in an opposite direction to return them to their initial position.

The sound devices 42, 42' are not illustrated in detail as they are conventional and well known to those skilled in the art. They may be, for example, of the type disclosed in U.S. Patents 2,558,237 or 2,583,402. Briefly these sound devices are gravity actuated whereby, in one axially vertical position, a weight (not shown) moves by gravity from an initial preset position to actuate a vibrating mechanism (not shown) to emit a sound and in the other axially vertical position, the weight returns (without causing emission of a sound) to its initial preset position ready to repeat the cycle. It will be observed, therefore, that with the sound device 42 in FIG. 1 in its preset position, inverting it to the position of FIG. 2 by moving the doll body from an erect to a reclining position will cause a sound to be emitted. Returning the body to its erect position will rotate said sound device 180° in an opposite direction (without emitting a sound) to preset the weight as it is returned to its initial position.

From the above description, it will be apparent that by arranging the two sound devices 42, 42' in the actuating means oppositely, i.e. so that one emits sound while the other returns to its preset position, a sound will be emitted by one sound device when the body is moved from an erect to a reclining position and by the other sound devices when the body is returned to an erect position. By using two sound devices each of which produces a different type of sound, a child may manipulate the doll body from erect to reclining, or vice versa, and obtain two separate distinguishable sounds.

As an alternate arrangement, the operating mechanism may be turned 90° and mounted in the doll body so that the sector gear 20 is in a plane extending from side to side of the doll body (instead of front to rear as in the illustrated embodiment) so that the sounds will be emitted

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as the doll is rolled on its side. Also two operating mechanisms may be used, one of which is actuated when the doll body is rolled to the side and the other actuated as in the illustrated embodiment.

Both sound devices 42, 42', may, of course, also be arranged with their weights operating in unison to emit sounds simultaneously. The gear member 56 may be provided with just enough gear teeth to limit the rotation thereof to approximately 180°. Alternatively, a gear member having teeth extending about a circular arc substantially greater than 180° may be employed and suitable stops, such as a piece of wire, may be disposed in the appropriate dwell between two adjacent teeth to limit the rotation to 180°.

It will be understood that various changes may be made in the form, construction and arrangement of the several parts without departing from the spirit and scope of the invention, and hence we do not intend to be limited to the details shown or described herein except as the same are included in the claims or may be required by disclosures of the prior art.

What we claim is:

1. Sound producing apparatus for a doll or the like, comprising supporting means pivotally mounted to the doll's torso, a sound device mounted for rotation about an axis carried by said supporting means, engageable means having one element fixed to said torso and another element fixed for rotation with said sound device about said axis, said engageable means being operable to rotate the sound device as the supporting means swings about its pivot in response to the force of gravity upon a change in position of the doll's torso.

2. Sound producing apparatus according to claim 1 wherein said sound device is of the type requiring an approximately 180° inversion to emit a sound, said engageable means being operable to invert said sound device upon a change of position of the doll which is effective

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to cause said supporting means to swing through a 90° arc.

3. Sound producing apparatus according to claim 1 wherein said elements comprise meshing gears having a gear ratio of approximately two to one whereby the sound device is substantially inverted.

4. Sound producing apparatus according to claim 1 wherein there are two sound devices arranged oppositely so that swinging motion of the supporting means in one direction will invert one sound device to produce a sound and swinging motion thereof in an opposite direction will invert the other sound device to produce a sound.

5. Sound producing apparatus according to claim 1 wherein said one engageable element comprises gear teeth arranged in a circular arc, the center of radius of said arc being coincident with the pivot axis of said supporting means.

6. Sound producing apparatus according to claim 1 wherein said other element is a gear, and means are provided to limit the rotation of said gear to approximately 180°.

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