April 7, 1970 R. GARDEL ETAL 3,504,455

SOUNDING MECHANISM FOR TOY FIGURES

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FIG. 1

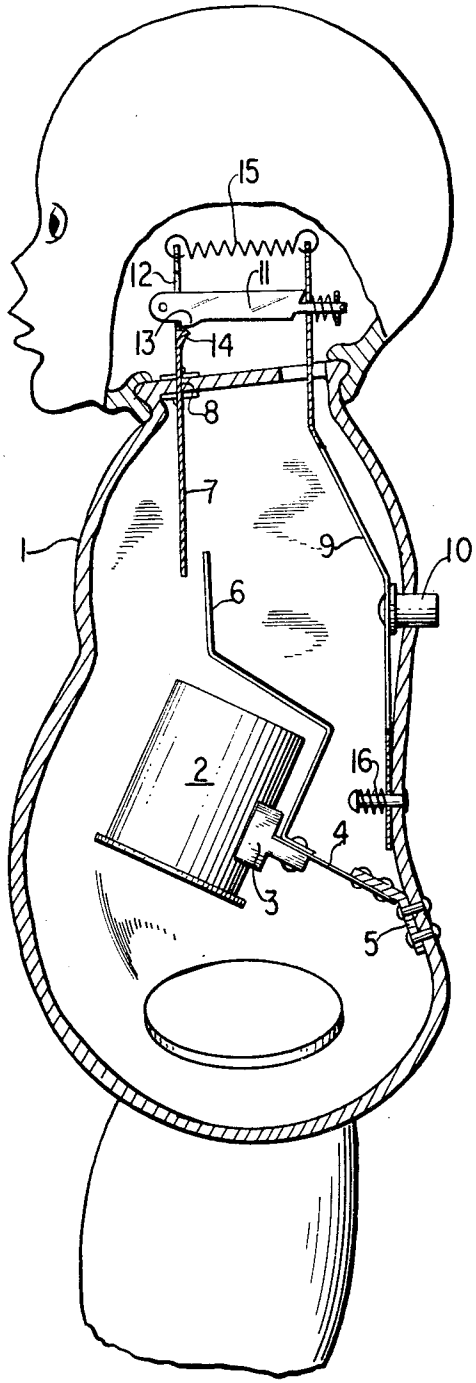
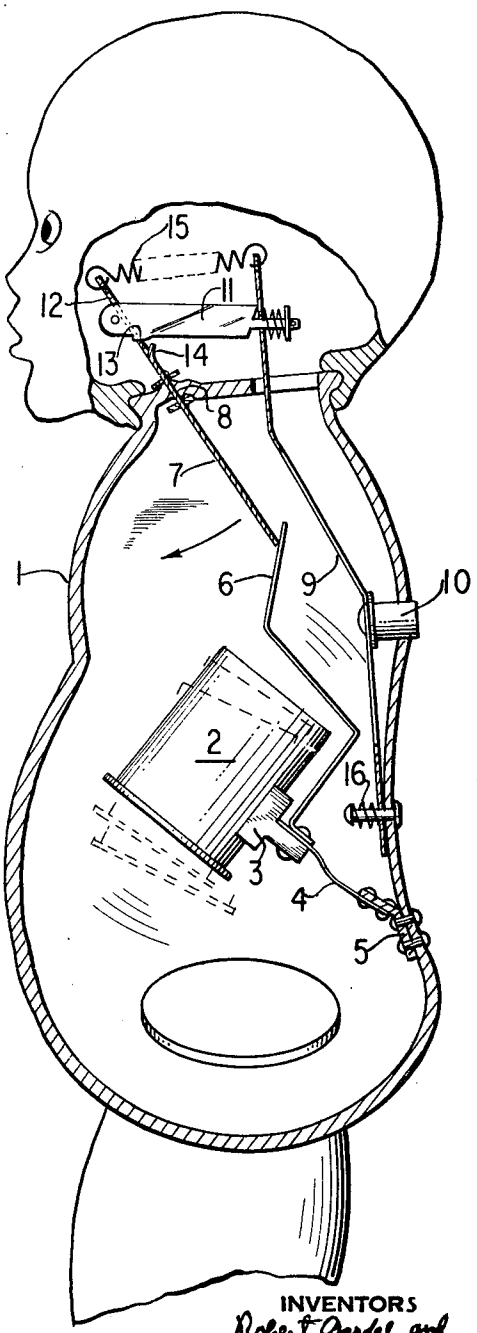


FIG. 2



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SOUNDING MECHANISM FOR TOY FIGURES

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FIG. 3

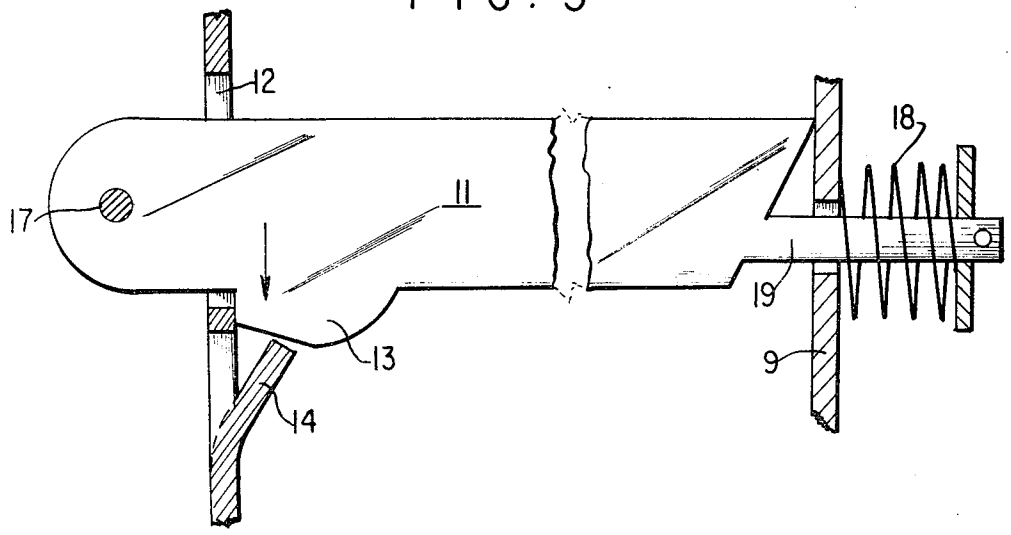
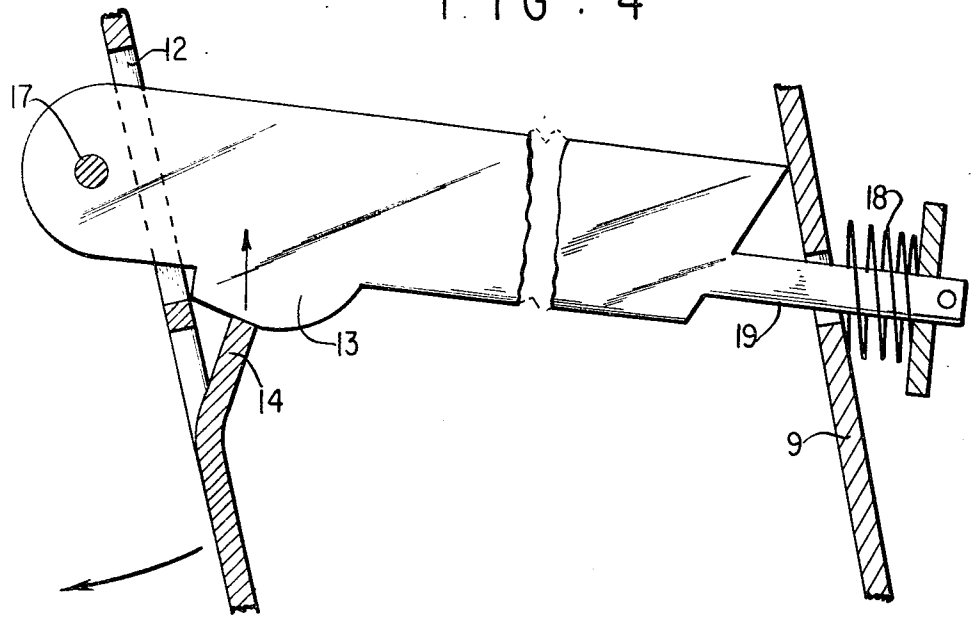


FIG. 4



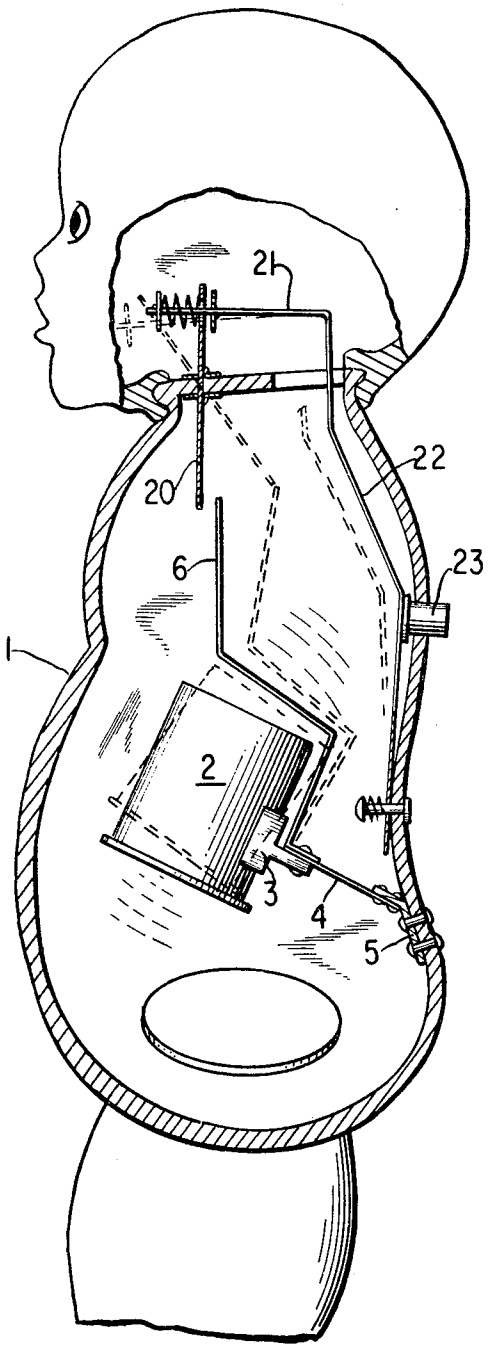
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SOUNDING MECHANISM FOR TOY FIGURES

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FIG. 5



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3,504,455

SOUNDING MECHANISM FOR TOY FIGURES

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Int. Cl. A63h 3/33
U.S. Cl. 46—117 6 Claims

ABSTRACT OF THE DISCLOSURE

A sounding mechanism for toy figures such as dolls in which a sound device is mounted on a spring, is moved a certain distance to load the spring and is then suddenly released to vibrate rapidly and to emit a rapid succession of sounds as long as the vibration continues with sufficient amplitude, suitable means being provided for moving and releasing the sound device.

FIELD OF INVENTION

Doll voice mechanisms are well known in which a change in the position of the doll causes a sound device to emit a crying sound or a "ma-ma" sound, for instance. Modifications of this basic arrangement include mounting the sound device for rotation independently of the position of the doll, as exemplified by Bornn Patent No. 3,230,664, Jan. 25, 1966, and Katz Patent No. 3,298,129, Jan. 17, 1967, the sound device in each instance including a gravity actuated piston in a cylinder. Such motor driven sound devices repeat the same sound over and over in a regular cycle so long as the motor is running, but no device of this type is able to emit more than two syllables (e.g., "ma-ma") in closely related sequence.

SUMMARY

The mechanism comprises a sound device in which a part such as a piston has sufficient weight and inertia to move with respect to another part in such a manner as to make sounds when the device is shaken, independently of the normal actuation by gravity upon changes of position of the figure. The sound device is mounted on a spring, such as a leaf spring, and means are provided for moving the sound device a certain distance to load the spring and for then suddenly releasing the device so that it may vibrate rapidly and emit a rapid succession of sounds which may simulate laughter ("ha-ha-ha-ha-ha") or crying, depending on the specific design of the sound device. Actuation may result from movement of a part of the figure, as by raising one or both arms, or from movement of a lever or button specially provided for this purpose.

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

FIG. 1 represents a vertical front-to-rear section through a doll torso, showing the sounding mechanism at rest, parts being in elevation;

FIG. 2 represents a similar section showing the sounding mechanism in operation;

FIG. 3 represents a detail elevation of the tripper in set position, associated parts being in section;

FIG. 4 represents a similar elevation showing the tripper at the instant of release; and

FIG. 5 represents a vertical front-to-rear section through a doll torso, showing an alternative form of sounding mechanism at rest (in full lines) and in operation (in broken lines).

Referring to the drawings, a doll torso **1** of relatively stiff or rigid plastic is provided with a sound device **2** of the known type in which a weighted piston moves axially of a cylinder to force ar past one or more reeds to produce a sound (see, for instance the voice or crying mechanisms in the Bornn et al. and Katz patents cited above). The sound device **2** is securely fixed, through its mounting bracket **3**, to one end of a highly resilient leaf spring **4** and the other end of which is attached to a bracket **5** firmly riveted to the torso **1**, conveniently at a point in the lower back portion thereof. A lever **6** extends from the mounting bracket **3** around the sound device and upward to a point above said device.

The actuating mechanism includes a lever **7** pivotally supported at **8** in the neck portion of the torso for movement in a front-to-back vertical plane, a rod **9** loosely secured to the torso at a point somewhat above the bracket **5**, a pushbutton **10** on the rod **9**, extending through a hole in the back of the torso, and a sear **11** loosely attached to the rod **9** near its upper end and extending through a vertical slot **12** in the upper portion of the lever **7**. The sear **11** is provided with a downward projection **13** adapted to engage the bottom edge of the slot **12** when the parts are at rest (FIGS. 1 and 3), and the lever **7** is formed with an inwardly offset sear tripper **14** immediately below the slot **12**, so disposed as to lift the sear out of engagement with the lever **7** when the button **10** is pushed to move the rod **9** and advance the sear, thus rocking the lever **7**, as in FIGS. 2 and 4. The lower end of the lever **7** overlaps the upper end of the lever **6** so that rocking of the former forces the sound device assembly to move upward and rearward against the force of the leaf spring **4**. When the sear is tripped out of engagement with the lever **7** this lever swings instantly (in response to the action of spring **15** connecting the upper ends of lever **7** and rod **9**) clear of the lever **6** and the sound device vibrates rapidly for at least several seconds with the natural frequency of the leaf spring and parts attached thereto.

The parts are returned to the "at rest" position by contraction of the spring **15** and by the pressure of the spring **16** on the lower end of rod **9** at its point of attachement. The sear may be prevented from slipping out of the slot **12** by the provision of a transverse pin **17** in the end of the sear. The beveling of the end of the sear adjacent rod **9** and the provision of a spring **18** on the extension **19** serves both to ensure engagement of the projection **13** with the edge of slot **12** and to aid in returning the parts to the position of rest.

In the modified form shown in FIG. 5 the sound device assembly is the same as in FIGS. 1 to 4. A lever **20** (corresponding to lever **7**) is directly engaged by the extension **21** of a rod **22** (corresponding to rod **9**) and is of such a length that, when rocked around its pivotal mounting in the neck of the doll, in response to pushing of the button **23**, its lower end will force the sound device assembly to the spring-loaded position (broken lines in FIG. 5) and then will snap past the end of the lever **6**, instantly releasing the latter and permitting vibration of the sound device as described above.

The levers **7** and **20** (of the first kind) and rods **9** and **22** (levers of the second or third kind) could evidently be rearranged as levers of other kinds, if desired, in accordance with well understood principles of mechanics.

The leaf spring is a simple and effective form or resilient support for the sound device but other types of springs or other resilient supports might be used if found to give satisfactory vibratory effects. The necessary rapid vibration can also be produced by simple motor-driven mechanical means, without the resilient support, or a motor-driven cam or the like may be arranged to load and release the spring mounted sound device in a manner similar to the action of the hand operated mechanism shown herein.

By disposing the sound device at an angle to the vertical axis of the torso the doll may be caused to emit

sounds upon changes of position between lying and standing or sitting, independently of the repetitive sounds caused by actuating the mechanism. It is customary and convenient to locate buttons or the like for moving internal mechanism in the back of the torso as shown herein but the mechanism is adaptable for operation by buttons or levers or depressable areas at other locations, if desired, and it could also be activated simply and effectively by suitable linkage with a movable body part such as an arm or the head.

The mechanism is described in terms of its installation in a doll but it is apparent that the toy figures could as well represent an animal, with the sound device adapted to simulate barking or other animal sounds instead of laughing or crying.

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. A sounding mechanism in combination with a toy figure having a hollow torso, comprising a sound device adapted to emit sounds repetitively when oscillated, an oscillatable support for said device attached to said torso, and means for causing said device to oscillate rapidly relatively to said torso in a manner to emit sounds repetitively, the means for causing oscillation including a lever having one end engageable with and releasable from an element associated with the sound device, for moving the sound device against the resilient bias of said support, manually actuated means for moving said lever to load the resilient support, and automatic means for releasing instantly said moving means to permit recovery of said resiliently biased support and oscillation of said device.

2. A combination according to claim 1 in which the means for moving the lever includes a sear adapted to engage a part of said lever for movement in the support-loading direction and in which the automatic releasing means comprises a sear tripper positioned to disengage the sear from the lever at a predetermined point of release.

3. A combination according to claim 1 in which the automatic releasing means comprises means for correlating the length of the lever to the path of movement of the element associated with the sound device such that said lever disengages itself from said element at a predetermined point of release.

4. A sounding mechanism in combination with a toy figure having a hollow torso, comprising a sound device adapted to emit sounds repetitively when oscillated, an oscillatable support for said device attached to said torso, and means for causing said device to oscillate rapidly relatively to said torso in a manner to emit sounds repetitively, the means for causing oscillation including means for moving the sound device against the resilient bias of said support and means for releasing instantly said moving means to permit recovery of said resiliently biased support and oscillation of said device, the support being a leaf spring fixed at one end to a mounting within the torso of the figure and having the sound device fixed to its other end, in which the means for moving the sound device includes a lever pivotally mounted at a fixed point in the torso of the figure and having one end in a position to move into engagement with an element associated with the sound device, and in which the means for releasing the moving means is adapted to act automatically at a predetermined point of release.

5. A combination according to claim 4 in which the means for moving the lever includes a sear adapted to engage a part of said lever for movement in the support-loading direction and in which the automatic releasing means comprises a sear tripper positioned to disengage the sear from the lever at a predetermined point of release.

6. A combination according to claim 4 in which the automatic releasing means comprises means for correlating the length of the lever to the path of movement of the element associated with the sound device such that said lever disengages itself from said element at a predetermined point of release.

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