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A. J. P. VAN DEN HURK

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SOUND REPRODUCING DEVICE FOR DOLLS AND THE LIKE

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2 Sheets-Sheet 1

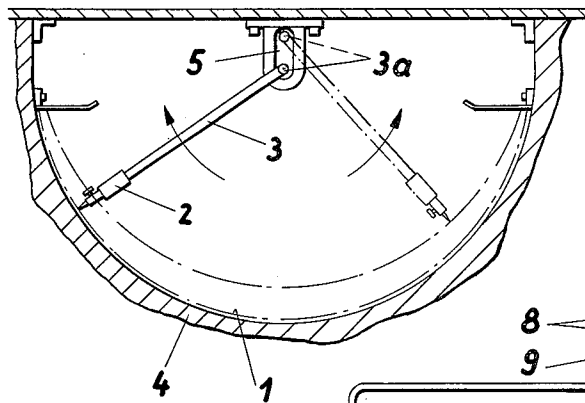


Fig. 1

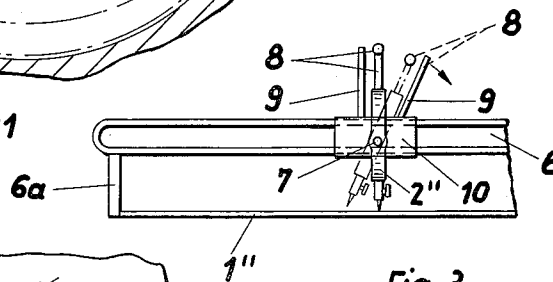


Fig. 3

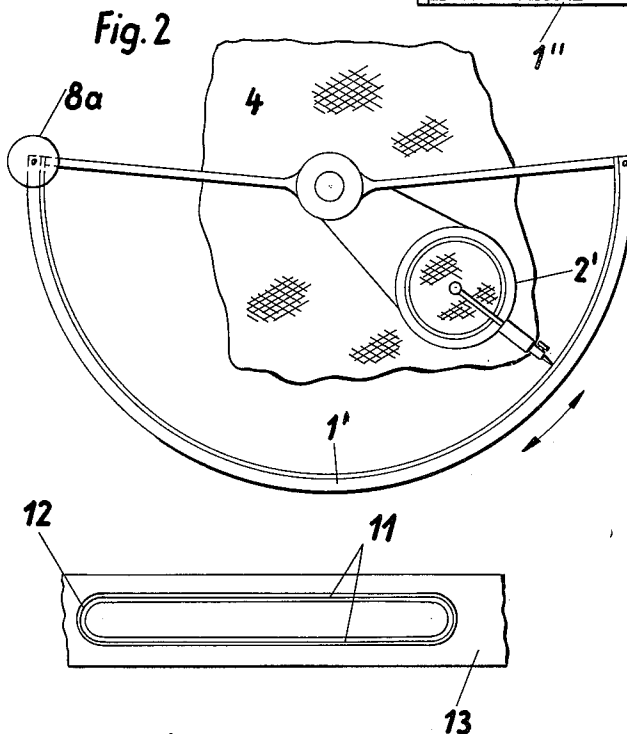


Fig. 2

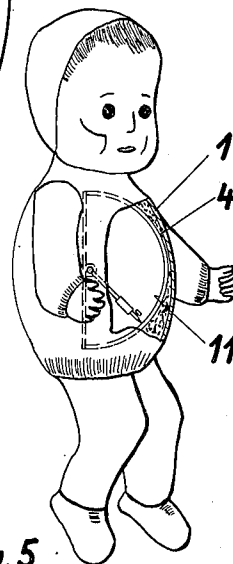


Fig. 5

INVENTOR:
Adrian J. P. van den Hurk
BY *Richard & Geier*
ATTORNEYS

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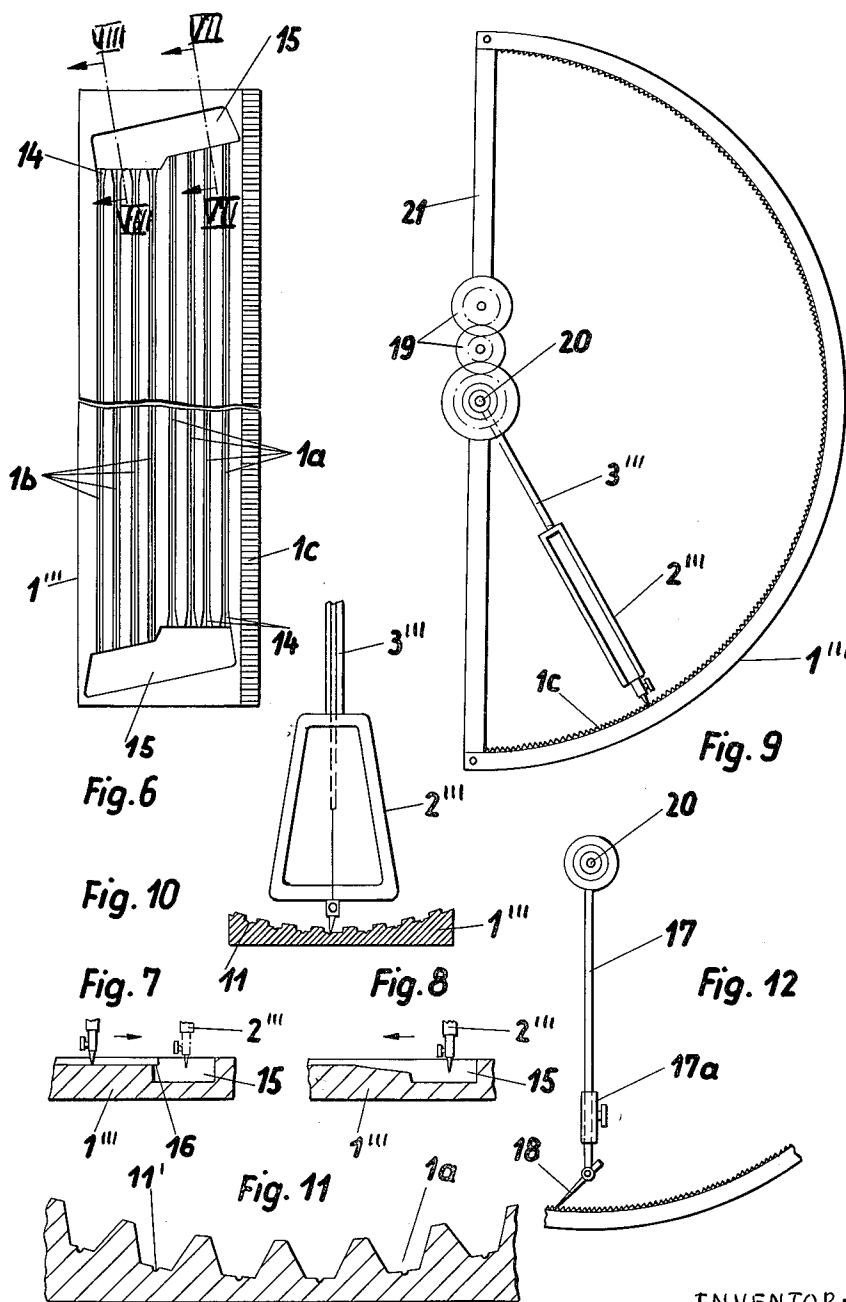
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INVENTOR:

Adrian J. P. van den Hurk

BY

Richard G. Geier

ATTORNEYS

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SOUND REPRODUCING DEVICE FOR DOLLS AND THE LIKE

Adrian J. P. van den Hurk, Berlin, Germany; Ida Schael, sole heir of said Adrian J. P. van den Hurk, deceased, assignor of one-half to Waldemar Hiller, Cologne, Germany

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This invention relates to a device for reproducing sound and/or speech for use in dolls, figures, bodies and other objects.

Prior art dolls and toys contain in their heads or torsos tuning or sound producing devices, including devices capable of producing speech.

Most sound producing devices are comparatively simple in construction and, as a rule, can produce words of only one or two syllables; on the other hand dolls with mechanical or electrical speech-producing devices are of complicated structure, expensive to manufacture and easily breakable.

An object of the present invention is to provide a sound and/or speech reproducing device which is simple in construction and inexpensive to manufacture, which can be effectively used in conjunction with dolls, figures and other objects of any desired type and which will reproduce a voice speaking at least one complete sentence in a most natural manner.

Other objects of the present invention will become apparent in the course of the following specification.

The sound and speech reproducing device of the present invention which is intended for use in dolls, figures, bodies and other objects, is characterized by the provision of a sound carrier and a swingable sound pick up engaging the sound grooves of the sound carrier, whereby one of these devices is firmly mounted in the doll body while the other is movably supported therein in such manner that when the body is tilted in one direction the sound pick up is directed into a sound groove, while when the body is tilted in the opposite direction the sound pick up is swung out of that groove.

In accordance with one of the embodiments of the present invention, the sound carrier is firmly mounted in the body and has a semi-circular or circular form, while a sound pick up arm is swingably mounted in the imaginary center of the sound carrier and extends radially; the arm carries a sound box upon its outer end. The swingable suspension of the sound pick up arm consists of a pin extending through an elongated slot in such manner that in one tilting direction of the body the sound pick up moves into engagement with the sound carrier, while it moves out of engagement with the sound carrier when the body is tilted in the opposite direction.

According to another embodiment of the inventive idea the sound pick up is firmly mounted in the body, while a circular or semi-circular sound carrier is provided with a weight and swings relatively to the pick up. According to a further embodiment, the sound pick up is made movable along a flat sound carrier which is tiltable transversely to its length; the sound pick up can consist of a sound box and be guided in a fork carried by supports. This guided sound box is rotatable about its axis and is under the action of a weight-loaded arm constituting an extension of the pick up needle. This arm is movable between two stops fixed upon a slide mounted upon the fork and carrying the sound box.

The sound grooves can be cut, pressed or formed in any other suitable manner in the doll body itself. However, a sound carrier can be used consisting of a foil

carrying the sound grooves and replaceably mounted inside the doll body. The sound pick up can consist of a mechanical or electrical sound box.

In accordance with a further feature of the present invention a secure movement of the sound pick up without any danger of interruptions or damage is provided by constructing the sound carrier in the form of a semi-spherical bowl or in the form of an elongated section of a sphere with rectangular edges; the sound carrier is provided upon its inner surface with several guide grooves extending in opposite directions and receiving the sound pick up, having an arm which is mounted in the center of the sphere formed by an outline of the sound carrier. The guide grooves are U-shaped in cross-section and a sound track is provided upon the bottoms of the grooves. There are several guide grooves extending in one direction and next to them there is the same number of guide grooves extending in the opposite direction with inlets located at the beginning of each guide groove. However, at the end of the guide grooves there is a return trough for securely guiding the sound pick up into the inlets of guide grooves extending in the opposite direction. In order to prevent the sound pick up from sliding back upon the groove through which it had just passed, the connections of the guide grooves with the return trough are shaped in the form of steps or projections from which the sound pick up drops, so that it is prevented from moving backwards. On the other hand, the inlets of adjacent guide grooves are upwardly inclined to facilitate entry.

In accordance with a further feature of the present invention the sound pick up is moved by means of a swinging arm firmly connected with the axis of the sound pick up arm and provided with a stop pawl. The outer edge of the sound carrier is provided with teeth which mesh with the stop pawl of the swinging arm and thereby prevent the sound pick up from moving back while it passes through a sound groove. This arrangement effectively prevents possible damages to the sound carrier or the sound pick up. The swinging arm is also provided with an adjustable weight for regulating the movement of the sound pick up.

Finally, the common axle of the swinging arm and sound pick up arm may be placed under the action of a braking element consisting of a gear drive, brushes or the like and mounted upon a support to provide further regulation of the movement of the sound pick up.

The present invention provides a device reproducing sound or speech for dolls, figures and other objects wherein mere tipping produces a natural reproduction of speech.

The device of the present invention operates effectively even if it is actuated by pushing. The sound carrier consisting, for example, of a foil with sound track, can be replaced and exchanged at will, so that the widest range of sound recordings can be reproduced.

The invention will appear more clearly from the following detailed description when taken in connection with the accompanying drawing showing, by way of example, preferred embodiments of the inventive idea.

In the drawings:

FIGURE 1 is a section illustrating a semi-circular sound carrier provided with a swingable sound pick up arm and firmly fixed inside a body.

FIGURE 2 illustrates a sound pick up fixed inside a body and a sound carrier which is swingable relatively to the sound pick up.

FIGURE 3 is a side view showing a flat sound carrier.

FIGURE 4 is a partial plan view showing a sound carrier provided with guiding grooves for the forward and return movement of the sound pick up.

FIGURE 5 is a perspective view, partly in section, on

a smaller scale, of a doll provided with the device shown in FIG. 1.

FIGURE 6 is a top view of a sound carrier of semi-spherical sectional shape having several opposed guide grooves.

FIGURE 7 is a section along the line VII—VII of FIG. 6 on a larger scale.

FIGURE 8 is a section along the line VIII—VIII of FIG. 6 on a larger scale.

FIGURE 9 is a side view of the sound carrier of FIG. 6.

FIGURE 10 is a top view, partly in section, illustrating the sound pick up with the sound box, on an enlarged scale.

FIGURE 11 is a partial section through the sound carrier on a greatly enlarged scale.

FIGURE 12 shows the swinging arm provided with a stop pawl.

The sound and speech reproducing device of the present invention for use in dolls, figures and other objects, is illustrated in FIG. 1 as comprising a sound carrier 1 and a swingable sound pick up 2 adapted to engage the grooves of the sound carrier 1 and carried by a pick up arm 3. In the construction of FIG. 1, the sound carrier 1 is firmly mounted within a doll or similar object 4 and has substantially a semi-circular form. The pick up arm 3 is swingably mounted in the center thereof by means of a pin 3a located in an elongated slot 5; the arm 3 extends radially and carries the sound box at its other end.

The slot 5 is so directed that, in operation, when the doll 4 is tipped in one direction the sound pick up 2 with its arm 3 will engage the sound carrier 1; when the doll 4 is tipped in an opposite direction, the sound pick up 2 with its arm 3 will move out of engagement with the sound carrier 1. The weight of the sound pick up fixes its position upon the sound carrier.

FIGURE 2 illustrates another construction wherein the sound pick up 2' is firmly mounted inside the body 4 while the semi-circular sound carrier 1' is provided with a weight 8a and is swingable in the body 4 so that it will swing to and from the sound pick up 2'. The operation of the device is the same as that of FIG. 1.

FIGURE 3 illustrates yet another construction wherein a sound pick up 2'' is guided longitudinally in a fork 6 which is carried by supports 6a along a flat sound carrier 1'' which is swingable about a longitudinal axis. The sound pick up 2'' includes the sound box and is rotatably mounted upon a pivot 7 carried by a slide 10. The slide 10 is guidably mounted upon the fork 6. The sound pick up carries an arm 8 provided with a weight and extending in a direction away from the needle of the sound box.

In operation, the sound pick up 2'' is swing by tipping the doll body from a position in which it is out of engagement with the sound carrier 1'' to a position in which it engages the sound carrier and vice versa. During this movement the arm 8 moves between two stops 9 which are mounted upon the slide 10. The weight of the sound pick up fixes its position upon the sound carrier.

In accordance with the present invention the sound carrier 1, 1' or 1'' may consist of a foil or sheet 13 (FIG. 4) which is removably and replaceably mounted within the doll body. The sheet 13 carries sound grooves 11.

Furthermore, in accordance with the present invention, the sound carrier may have a plurality of sound grooves 11 (FIG. 4) which are joined by connecting and guiding grooves 12, so that during forward, return and turning movements the sound pick up remains in engagement with the sound grooves. Thus it is not necessary to provide a device for raising and switching the sound pick up.

Instead of providing the sound grooves in a sound carrier, the sound grooves 11 may be formed directly upon an inner surface of the doll body 4 (FIG. 5).

Any known means may be used to provide the sound grooves, namely, they may be formed by cutting, pressing or in any other suitable manner.

The sound pick up 2, 2' or 2'' may have a mechanical

or electrical sound box and may be combined with suitable sound transmitting means.

FIGS. 6 to 12 illustrate a construction wherein the sound carrier 1''' has the shape of an elongated rectangular cut out of a semi-spherical body, as shown in FIG. 6.

However, the sound carrier may also have the shape of a complete semi-spherical body.

The inner surface of the sound carrier 1''' is provided with several guiding grooves 1a and 1b extending in opposite directions and used for guiding a sound pick up 2''' carried by a pick up arm 3''' which is swingably mounted in the imaginary center of the sphere by means of a disc 20. The grooves 1a and 1b are embedded in the sound carrier and are U-shaped in cross-section. The bottom of each groove carries a sound track 11'.

As best shown in FIG. 6, there are several guiding grooves 1a extending in one direction and an equal number of grooves 1b extending in the opposite direction and located adjacent the grooves 1a. At the beginning of each groove 1a and 1b there is an inlet 14, while at the ends of the grooves 1a and 1b there are return troughs 15 for securely guiding the sound pick up 2''' into the inlets 14 of adjacent guide grooves 1a or 1b in the opposite direction. At one end of a guide groove there is a step 16 or projection from which the sound carrier drops into the trough 15 so that it is prevented from returning upon the same groove (FIG. 7). On the other hand, at the inlet, the trough 15 merges with a groove 1a or 1b along an inclined upwardly directed surface to facilitate entry of the pick up into that groove (FIG. 8).

As shown in FIG. 12, the disc 20, in addition to being connected with the sound pick up arm 3''', is also connected with a swinging arm 17 which actuates the sound pick up. The arm 17 carries a stop pawl 18. The outer end of the sound carrier 1''' is provided with teeth 1c which are engaged by the stop pawl 18 of the arm 17. The arm 17 carries an adjustable weight 17a used to regulate the movement of the sound pick up. The disc 20 constituting the common axis of the arm 17 and the sound pick up arm 3''', is connected with a braking device consisting of meshing gears 19 and carried by a support 21.

Obviously, the meshing gears 19 may be replaced by any other suitable braking means, including grinding brushes, fly wheels, etc.

It is apparent from the described constructions of the present invention that they all provide a safe movement of the sound pick up through the sound grooves with the required speed and without any danger that the sound pick up will move backwards, or of any other disturbances. This is of particular importance in the case of dolls which are often pushed or moved irregularly.

The possibility of damages to the sound pick up or to the sound grooves is effectively avoided so that the devices have a long life.

It is further apparent that the embodiments shown above have been given solely by way of illustration and not by way of limitation and that they are subject to many variations and modifications within the scope of the present invention. All such variations and modifications are to be included within the scope of the present invention.

What is claimed is:

1. In combination with a body, a sound reproducing device comprising a sound carrier of half-circular shape fixed within said body, a sound pick up comprising an arm, a sound box carried by one end of said arm and adapted to engage said sound carrier, said arm extending radially relatively to said sound carrier, and means swingably supporting the other end of said arm substantially in the center of said half-circular shape.

2. A sound reproducing device in accordance with claim 1, wherein said means comprise a pin carried by said other end of the arm and a slot receiving said pin and directed so that when the body is tipped in one di-

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rection the sound box will engage the sound carrier while when the body is tipped in the opposite direction the sound box will move out of engagement with the sound carrier.

3. In combination with a body, a sound reproducing device comprising a sound carrier having the shape of a rectangular section of a sphere and fixed within said body, said sound carrier having a plurality of guiding grooves formed upon a surface of the sound carrier and extending in opposite directions, each of said guiding grooves being U-shaped in cross-section and having a sound track upon the bottom thereof, a sound pick up having an arm, a sound box carried upon one end of said arm and adapted to engage said guiding grooves, and means swingably supporting the other end of said arm substantially in the center of said sphere.

4. A sound reproducing device in accordance with claim 3, wherein an equal number of guiding grooves extends in one direction and in the opposite direction, each of said guiding grooves having an inlet at the beginning thereof, said sound carrier further having troughs connected with the ends of said guiding grooves for guiding the sound box from the end of one groove into the inlet of another groove.

5. A sound reproducing device in accordance with claim 4, wherein each guiding groove has a step at the end thereof adjacent a trough to prevent a return movement of the sound box along the same groove, and wherein each guiding groove has an upwardly inclined surface at the beginning thereof to facilitate entry of the sound box.

6. In combination with a body, a sound reproducing

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device comprising a sound carrier having the shape of a rectangular section of a sphere and fixed within said body, said sound carrier having a plurality of guiding grooves formed upon a surface of the sound carrier and extending in opposite directions, each of said guiding grooves being U-shaped in cross-section and having a sound track upon the bottom thereof, a sound pick up having an arm, a sound box carried upon one end of said arm and adapted to engage said guiding grooves, a disc connected with the other end of said arm and swingably supporting said arm substantially in the center of said sphere, another swinging arm firmly connected with said disc, and a stop pawl carried by the second-mentioned arm.

7. A sound reproducing device in accordance with claim 6, wherein said sound carrier comprises a plurality of teeth, said stop pawl engaging said teeth.

8. A sound reproducing device in accordance with claim 7, comprising an adjustable weight carried by the second-mentioned arm.

9. A sound reproducing device in accordance with claim 8, comprising a braking device engaging said disc.

10. A sound reproducing device in accordance with claim 9, wherein said braking device consists of intermeshing gears.

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RICHARD C. PINKHAM, *Primary Examiner.*