Jan. 15, 1963 C. A. MENNIE 3,073,605

SOUND REPRODUCING DEVICE

Filed Dec. 22, 1958 2 Sheets-Sheet 1

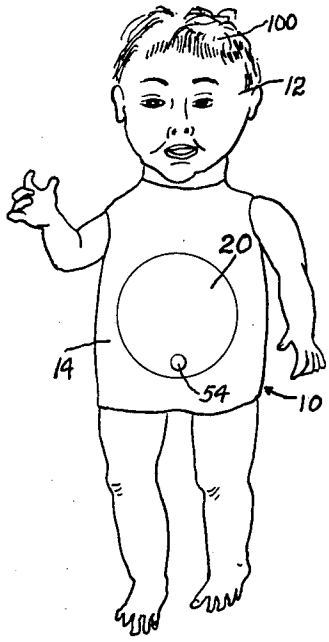


Fig. 1

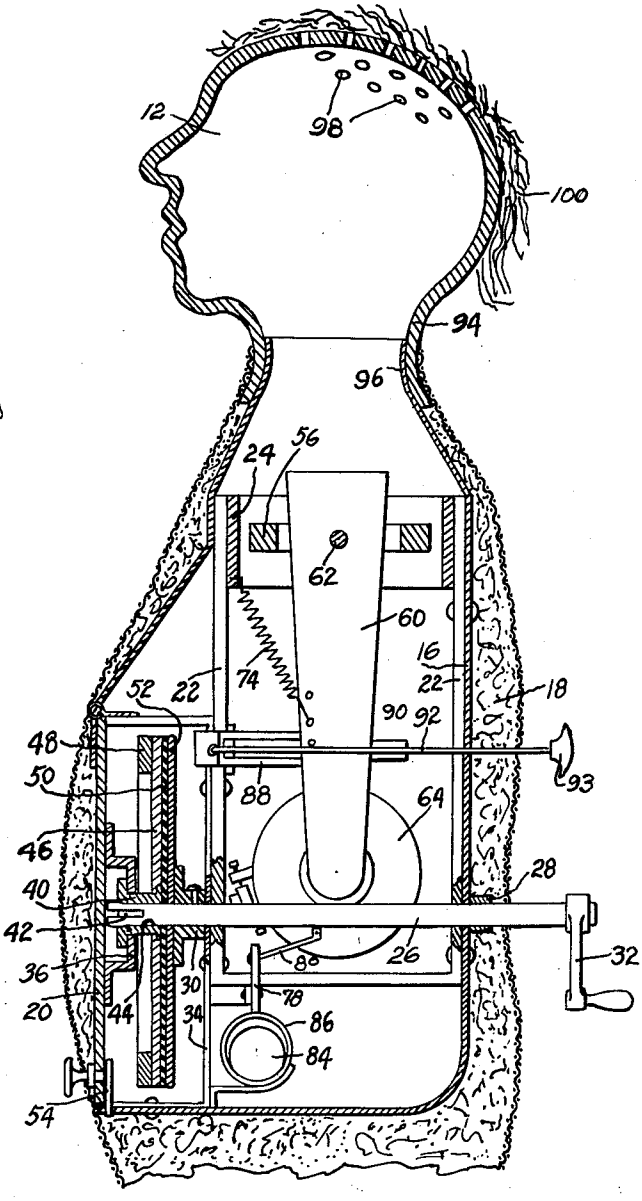


Fig. 2

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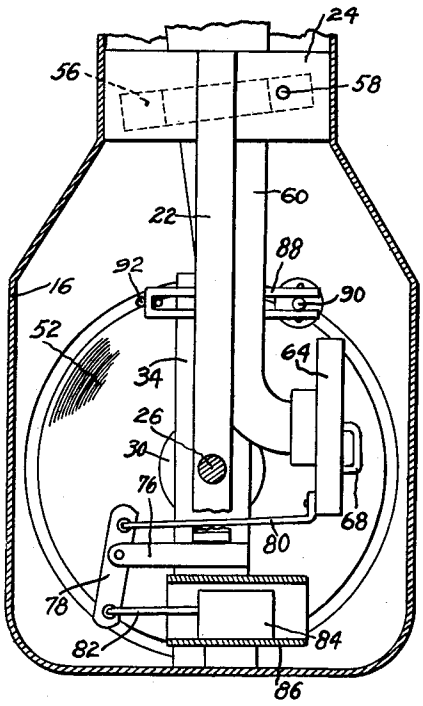


Fig. 3

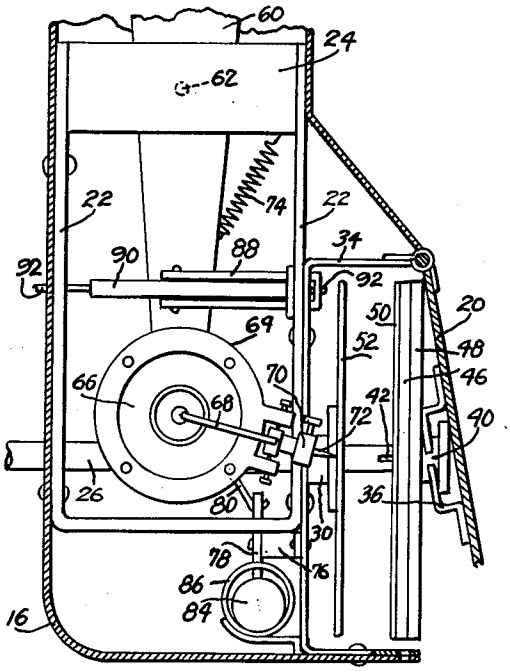


Fig. 4

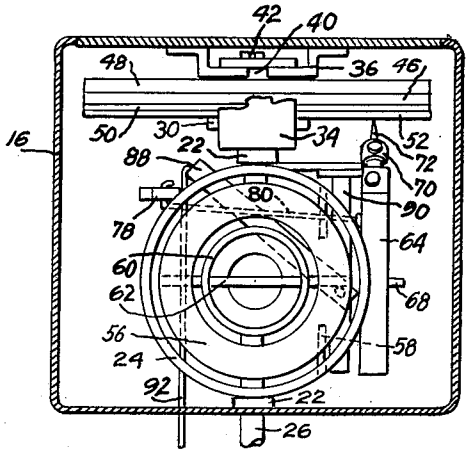


Fig. 5

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SOUND REPRODUCING DEVICE

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2 Claims. (Cl. 274—25)

This invention relates to talking doll and more particularly to a phonograph mechanism for use in the body of the doll.

It is an object of the invention to provide a housing for the mechanism which encloses the operating parts, including a phonograph record, and to provide the housing with a swinging door which permits removal of the record.

Another object of the invention is to provide a counterbalance for the tone pick up member so that it will follow the sound track of the record when the record and mechanism are in any position, as in tipping from side to side.

A further object of the invention is to provide means for disengaging the tone pick up member from the record after it has reached the end of the sound track, and which will return it to its starting position at the beginning of the sound track.

Other objects and advantages of the invention will more fully appear from the following description taken in connection with the accompanying drawings in which:

FIG. 1 is a front view of a doll;

FIG. 2 is a cross sectional view through the doll, phonograph housing and a portion of the mechanism, other portions of the mechanism being shown in elevation;

FIG. 3 is a cross sectional view through the phonograph housing showing the mechanism in front elevation and taken at right angle to FIG. 2.

FIG. 4 is a sectional view through the housing showing the mechanism in side elevation; and

FIG. 5 is a top plan view of the mechanism.

Referring to the drawings I have shown a doll 10 having a hollow head portion 12 and a hollow body portion 14. The housing 16 of the phonograph is received in the body portion 14 with suitable padding material 18 between the housing 16 and the outer covering of the body 14. The front of the housing 16 is provided with a door 20 which opens through the body 14 and forms a part thereof.

The housing 16 supports a U frame having vertical straplike members 22 which have their outer ends secured to a circular band 24. A rotatable shaft 26 is supported in the members 22 and is axially positioned by collars 28 and 30. The rear end of the shaft 26 projects through the body 14 and is provided with a crank 32 for turning the shaft.

An auxiliary frame 34 is provided on the forward side of the frame 22 and supports the hinged door 20. Mounted on the inside of the door is a bracket 36 which loosely receives a flanged bushing 40. The flanged bushing 40 is received on the forwardly projecting shaft 26. The forward end of the shaft 26 is split longitudinally as at 42. The shaft has a slightly larger diameter at its forward end adjacent the split. The bushing 40 has an opening 44 therethrough which has a diameter slightly less than the outer diameter of the forward end of the shaft but substantially equal to the diameter of the major portion of the shaft 26. When the bushing 40 is slid over the end of the shaft the sides of the shaft are sprung inwardly imparting a frictional resistance to the bushing 40 so that it is rotated with the shaft. The bushing 40 carries a disc 46 provided with a weight ring 48. A friction pad 50 of felt, rubber or like material, is carried by the

disc 46 and frictionally rotates a disc record 52 when the shaft 26 is rotated. The collar 30 limits the inward movement of the disc record. The door 20 is provided with a latch 54 which engages the auxiliary frame and housing.

When it is desired to insert a disc record, the door 20 is unlatched and swung upwardly which action causes the disc 46 to slide forwardly on the shaft 26 with the door, as shown in FIG. 4. The disc record 52 is then slipped on the shaft 26 and the door is closed holding the rotatable disc 46 into frictional driving engagement with the disc record 52. By this operation the disc record may be quickly and easily changed.

The circular band 24 pivotally supports a ring 56 by a pin 58. The pin is preferably located off center on the band 24 and ring 56. A tapered tone conductor tube 60 is pivotally supported in the center of the ring 56 by a pin 62 projecting through the larger end of the tone tube 60 and the ring 56. The tone tube 60 has its smaller end projecting downwardly and carries a tone pick up member 64 which is of the usual construction, comprising a diaphragm 66, vibration arm 68, needle holder 70 and needle 72. The tone pick up member, carried by the swinging tone tube 60, is free for movement in two directions, across the plane of the disc record 52 and toward and away from the plane of the record 52. This movement is permitted by the location of the pivot pins 58 and 62. A tension spring 74 acting between the band 24 and the tone tube 60 urges the tone pick up member 64 toward the record with the needle 72 in contact with the sound grooves in the record.

Since the mechanism is intended to operate, for example, in the body of a doll which is tipped from side to side positions, it is desirable to provide a balancing means for the tone pick up member 64. This means comprises an arm 76 having one end secured to the frame 22 with its outer end pivotally supporting a link 78 at an intermediate point of the link. One end of the link 78 is pivotally connected to an arm 80 which is attached to the body of the tone pick up member 64. The opposite end of the link 78 is pivotally connected to a link 82 secured to a weight 84 slidably mounted in a cylinder 86. By this means the tone pick up member 64 is in balance and will operate successfully when the mechanism is in a sidewise tilted position. If the doll is tilted to the left, the weight 84 is urged to the left so that the weight and movement of the pick up member 64 to the left. It has the reverse action when the doll is tilted to the right. The forward and backward tilting of the doll has little effect on the movement of the pick up member 64 because of the spring 74 urging the pick up member toward the record.

When it is desired to repeat the sounds of the record, I have provided mechanism for first, moving the tone pick up member away from the record, and then moving it radially over the record to the beginning of the sound track in the record; it being understood that movement of the tone pick up member moves radially inwardly of the record during its rotation, caused by the needle following the sound track. Such a mechanism is disclosed as comprising an arm 88 pivotally supported on a rod 90 carried by the frame 22. The arm 88 extends in a plane at right angles to the axis of the tone tube 60 and in its normal position substantially at right angles to the axis of the rod 90; the rod 90 extending at one side of the tone tube 60 and serving as a stop for limiting the swinging movement of the tone tube and tone pick up member to a position at the starting point of the sound track. The arm 88 extends between the record 52 and the tone tube 60 and has a control link 92 connected to its outer free end. The link 92 extends through the body of the doll and has a knob 94 for push and pull movement.

When the arm 88 is in its normal position, with the link 92 pushed in, the tone tube and tone pickup member 64 are free for radial movement across the face of the record following the sound track. When the link 92 is pulled outwardly the arm 88 contacts the wall of the tone tube 60 forcing the latter and needle 72 away from the record and out of the sound track. Continued pull on the link 92 changes the angular position of the arm 88 so that the tone tube 60 and needle 72 slide on the arm 88 to the stop rod 90 positioning the needle 72 at the beginning of the sound track. When the link 92 is pushed inwardly the spring 74 returns the needle to the sound track.

The housing 16 and its mechanism are placed in the body of the doll and the neck 94 of the doll 10 is fitted to a neck portion 96 of the housing. The neck 94 is hollow and is adjacent the outer open end of the tone tube 60 so that the sound is conducted to the hollow head 12. Openings 98 are provided in the top of the head 12 through which the sound travels. The openings are not visible because they are covered by the loose hair 100 on the doll head.

The illustrated embodiment and description of the invention shows a preferred form, but it is to be understood that various changes including the size, shape and arrangement of parts may be made without departing from the spirit thereof, and it is my intention to include such changes as may be reasonably expected within the meaning of the terms in the appended claims.

I claim:

1. A phonograph mechanism comprising, a frame, a rotatable shaft supported by said frame, a disc rotatable with said shaft, a disc record rotatable with said disc, a tone pick up member supported by said frame for movement toward and away from said record and radially across said disc record, a tone tube carried by said tone pick up member, resilient means for urging said tone pick up member toward said disc record, and a counter weight for said tone pick up member for balancing its radial movement across said disc record.

2. A phonograph mechanism comprising, a frame, a rotatable shaft supported by said frame, a disc rotatable with said shaft, a disc record rotatable with said disc, a tone pick up member and a tone tube supported by said frame for movement toward and away from said record and radially across said record, resilient means for urging said tone pick up member toward said record, a movable weight connected to said tone pick up member for counter balancing the movement of said tone pick up member radially across said record, an arm pivotally supported on said frame at one side of said tone tube, said arm extending at right angles to the axis of said tone tube, a stop for limiting the radial movement of said tone tube, said arm extending between said record and said tone arm, and a control link connected to the outer free end of said arm at the opposite side of said tone tube.

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