June 23, 1942. E. L. GALLIER 2,287,377

PHONOGRAPHIC DEVICE

Filed July 22, 1940

Fig. 1.

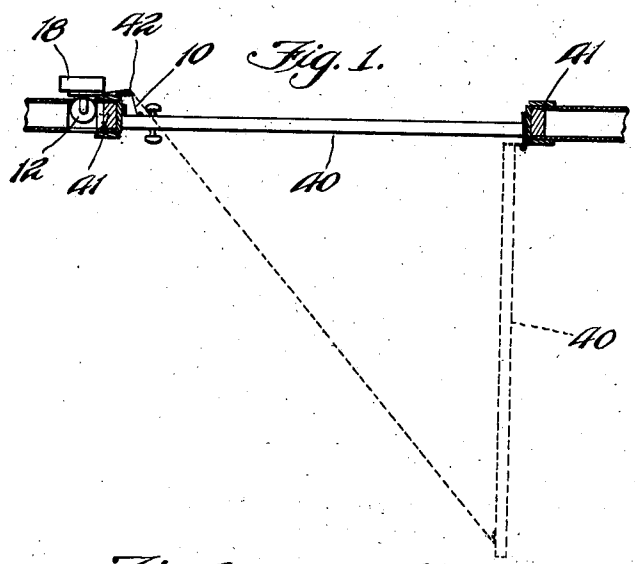


Fig. 4.

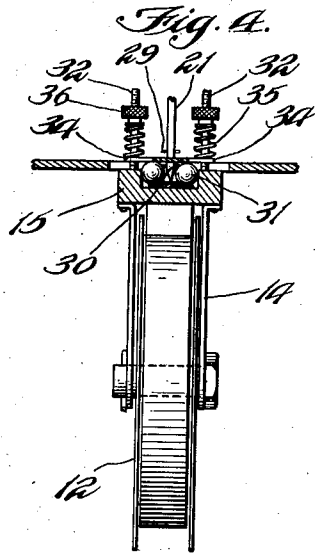


Fig. 3.

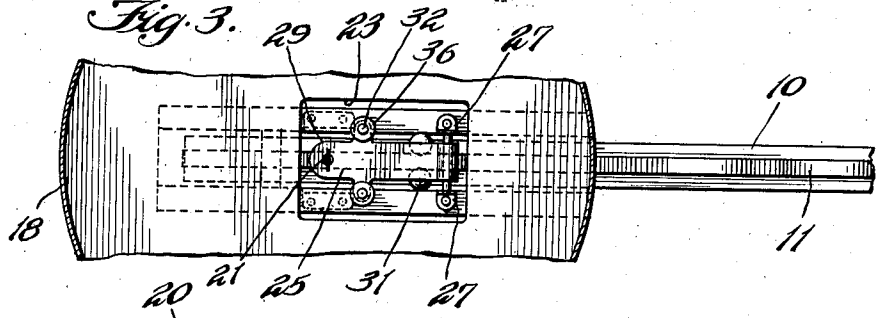


Fig. 2.

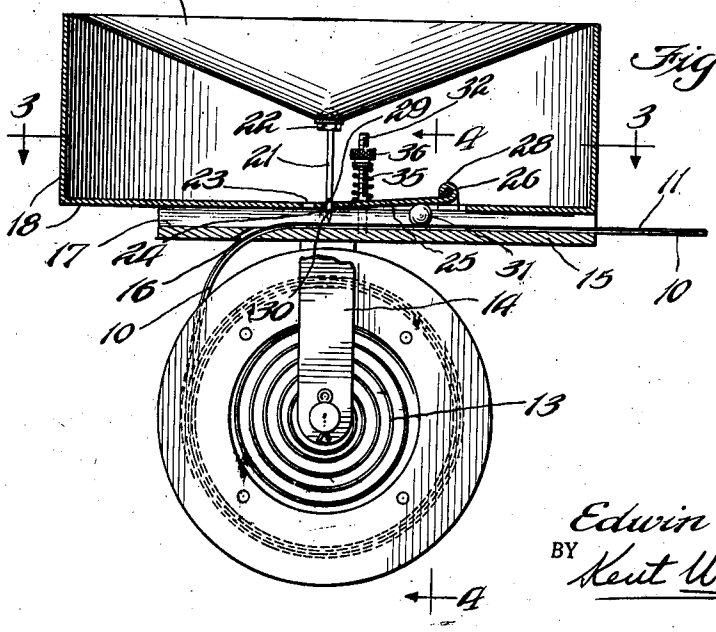


Fig. 5.



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UNITED STATES PATENT OFFICE

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PHONOGRAPHIC DEVICE

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Application July 22, 1940, Serial No. 346,789

7 Claims. (Cl. 274—11)

This invention relates in general to a talking device and is more particularly described as a commercial, advertising or novelty phonograph for repeating a message, warning, slogan, greeting or the like in the ordinary operation of some movable devices, such as a door, a lid or cover, or any member which is movable by hand sufficient to pull out a length of tape upon which a message is recorded.

An important object of the invention is in the provision of means for mounting a phonographic tape in such a manner that it may be pulled out and retracted with means for disconnecting a sound reproducer during the retracting movement of the tape.

A further object of the invention is in the provision of a sound reproducer, and means for lifting it from an engagement with a phonographic tape in one direction of movement thereof.

A still further object of the invention is in the provision of a mounting for a sound reproducer by which it is lifted from engagement with the tape in one direction of movement thereof and having means for pressing it variably against the tape to change the intensity of sound reproduced thereby.

Other objects of the invention will appear in the specification and will be apparent from the accompanying drawing in which

Fig. 1 is a sectional view illustrating the application of this invention to a door;

Fig. 2 is a sectional view of a device in accordance with this invention;

Fig. 3 is a partial plan view as taken on the line 3—3 of Fig. 2; and

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 2; and

Fig. 5 is a cross-section of the sound record tape.

A sound record tape has heretofore been used in connection with a card, box, or other vibratory diaphragms to reproduce the sound on the tape by vibrating a card or other device to which one end of the tape is usually attached. One objection to devices of this type is that the sound track engager is moved upon the sound track in both directions of movement, which distorts the sound producing projections, unduly wears them, resulting in a device of short life and temporary usefulness. For this reason, inexpensive sound tapes applied to card vibrators for simple greetings are used only as novelties such as greeting cards or for advertising purposes and are usually discarded after brief use.

The present invention overcomes these objections by providing a vibratory device which is movable to engage the tape in one direction of movement, and is withdrawn therefrom in the other direction of movement of the tape. In this manner, the tape is protected from wear and distortion and by making the tape in a more substantial manner, a talking device is produced which may be used in a variety of commercial ways for advertising different products in connection with doors, lids, and the like, to give a warning, or to repeat a direction or slogan, thereby saving time and service of an attendant. For example, in connection with a door, it might repeat the slogan to "Watch your step"; or in connection with lid or cover, "Drink grape juice" or some advertising slogan.

Referring now more particularly to the drawing, a flexible sound record tape 10 having a sound track 11 is adapted, to be wound upon a drum 12 by means of a spring 13. The drum and spring are suitably mounted upon brackets 14 extending from a support 15, having a slot 16 through which the tape extends from the drum, and is slidable in a groove 17 therein with the sound track outermost or uppermost.

Movably mounted in a casing or enclosure 18, secured to or above the support 15, is a sounding diaphragm 20 which may be of any suitable vibratory material, preferably somewhat cone-shaped and having a needle or stylus 21 at its apex, fixed in place by a fastening nut 22, or other suitable fastening means.

The tip of the needle or stylus is adapted to engage the sound track of the tape 10 and it is more loosely in engagement therewith in an opening 23 in the bottom of the casing 11, by extending loosely in a perforation 24 of a plate 25, positioned in the opening and hinged at one end upon a bearing pin 26, mounted at the ends in brackets 27, secured to the support 15 and engaging a curled end 28 of the plate to form a hinge therefor. Extending through the stylus above the point or extremity thereof is a cross pin 29 disposed above the plate 25 and below the plate is a cross pin 30.

When the stylus engages the sound record tape, the plate 25 is inclined from the stylus upwardly or away from the tape to its hinging pivot 26 and in the direction of movement of the tape outwardly to produce the desired sound. In order to raise the stylus from the tape in the reverse direction of movement, a pair of rollers or balls 31 are confined in the slot or groove 17 of the support 15, one on each side of the sound

track 11, engaging the tape at the side of the sound track and the under side of the plate 25 so that in the slightest reverse movement of the tape, balls or rollers 31 engage the under side of the plate and raise the free end together with the stylus 21 so that it no longer engages the sound track of the tape and the tape is rewound by the spring 13 upon the drum without damaging the sound track.

In order to press the stylus against the sound record tape, and to vary the pressure and sound produced thereby, tension means is applied to the upper side of the plate 25. This means preferably consists of threaded studs 32 inserted at the sides of the support 15 and extending loosely through perforations 33 in ears 34, extending laterally at both sides of the plate. An extended coil spring 35 is mounted upon each stud above the plate and an adjusting nut 36 is threaded on the stud to engage the upper end of the spring. Thus by varying the tension of the springs, the pressure of the plate is varied and likewise the pressure on the needle or stylus 21, which varies the intensity of the sound.

As the plate 25 is inclined upwardly from the needle to the hinge, the balls or rollers 31 will assume a position along the plate in one direction determined by the inclination of the plate, the balls or rollers being retained within the confines of the opening 23 and the grooves 17, and at the same time contacting with the tape on each side of the sound track 11, thereby keeping the balls in proper spaced relation.

In applying this device to manual or mechanical operation, the tape is pulled outwardly against the pressure of the rewinding spring 13 and is retracted by the spring. As the tape is slidable in the groove 17, a proper engagement of the sound reproducer is insured with the sound track of the tape at all times, and if the device is applied to a lid or a door 40 as shown in Fig. 1, hinged at one side in a frame 41, the end of the tape is connected to the other or free side of the door, at the top thereof and preferably extends over a roller 42 at the edge of the frame so that when the door is open, the tape will be drawn out over the roller, it will be kept taut and will be returned by the roller 13. The device and its mechanism is suitably mounted at the inside or at the outside of the door frame where it operates as explained above to reproduce any sound which may be recorded in the sound track of the tape.

It is apparent that this device may have many applications and uses and may be applied in a variety of ways for reproducing any desired message by a suitable movement of a member to which the tape is attached, or simply by the movement of the tape itself.

I claim:

1. In a phonographic device, the combination with a movable sound record tape, of a sound reproducer to engage the tape in one direction of movement, a spring for retracting the tape, and means comprising a roller device engaging the tape for moving the sound reproducer from engagement with the tape when it is retracted.

2. In a phonographic device, a sound reproducer having a record tape and a stylus to engage the tape movable to and from engagement therewith, the tape being movable in one direction for reproducing the record, spring means for retracting the tape, and means comprising a roller engaging the tape and an inclined plate engaged thereby for moving the tape and the sound reproducer out of engagement when the tape is retracted.

3. In a phonographic device, a sound record tape movable in one direction for reproducing the record, spring means for retracting the tape, a sound reproducer including a stylus to engage the sound record tape and means comprising an inclined plate engaging the stylus and a roller engaging the tape and plate and the roller operated by the movement of the tape in the retracting direction for raising the stylus from engagement with the tape.

4. In a phonographic device, a sound record tape movable in one direction for reproducing the record, and in the other direction for retracting the tape, a sound reproducer including a stylus to engage the tape, a spring pressed plate for maintaining the stylus in engagement with the tape and means comprising a roller operated by a movement of the tape in the retracting direction for moving the plate to lift the stylus from engagement with the tape.

5. In a phonographic device, a sound record tape, a sound reproducer including a stylus to engage the tape, a pivoted plate having one end to engage the stylus, the tape being movable in opposite directions with respect to the stylus and means comprising a roller mounted between the plate and the tape and operative by its engagement with the tape to raise the plate and the stylus from engagement with the tape when the latter is moving in one direction.

6. A phonographic structure in accordance with claim 5 in which the tape has a sound track in the middle and rollers at each side thereof engaging the tape but separated by the sound track and engaging the plate to raise the plate and the stylus from engagement with the sound tape when the tape is moved in one direction.

7. In a phonographic device, a sound record tape and means forming a slot in which it is movable in opposite directions, a sound reproducer including a stylus for engaging the tape, a supporting plate pivoted at one end and engaging the stylus at the other end, spring pressure means at opposite sides of the plate for adjustably holding the stylus in engagement with the tape and roller means disposed between the plate and engaging the tape and held in place by said slot, operative to raise the plate against the tension of the spring and thus providing means for lifting the stylus from the tape in one direction of movement thereof.

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