Jan. 11, 1949. J. H. McKNIGHT 2,459,038

COMBINED TOY RAILROAD AND SOUND PRODUCING MEANS THEREFOR

Filed Feb. 25, 1946 2 Sheets-Sheet 1

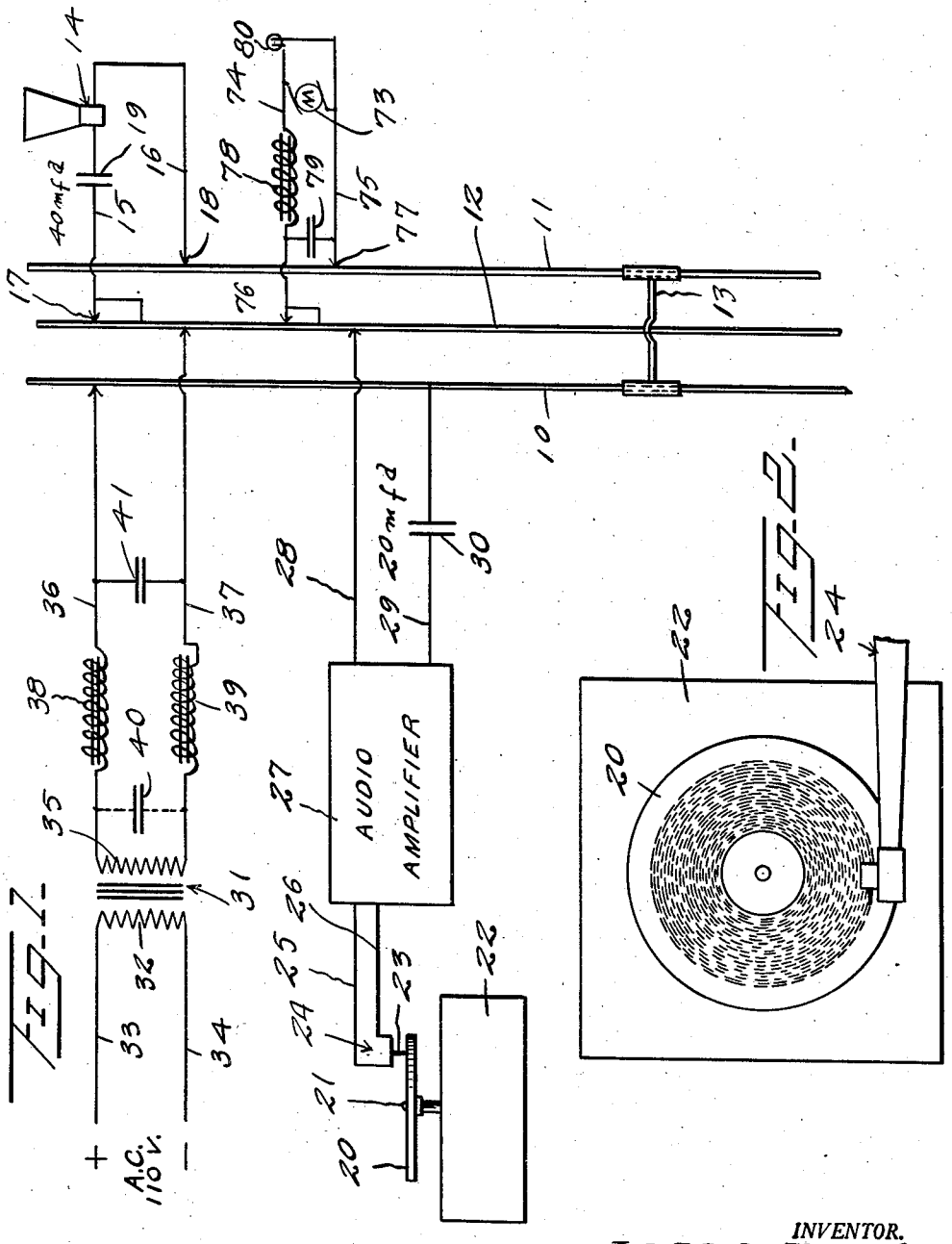


FIG. 1.

FIG. 2.

INVENTOR.
J. H. McKnight
BY
Kimmel & Crowell Attys

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FIG. 3.

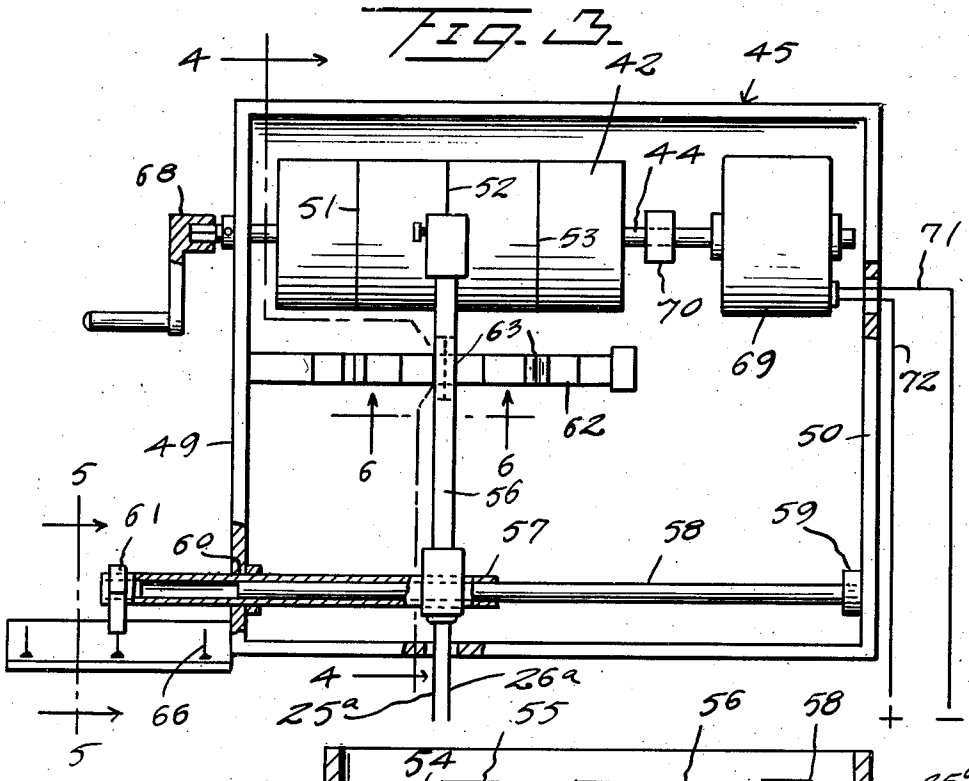


FIG. 4.

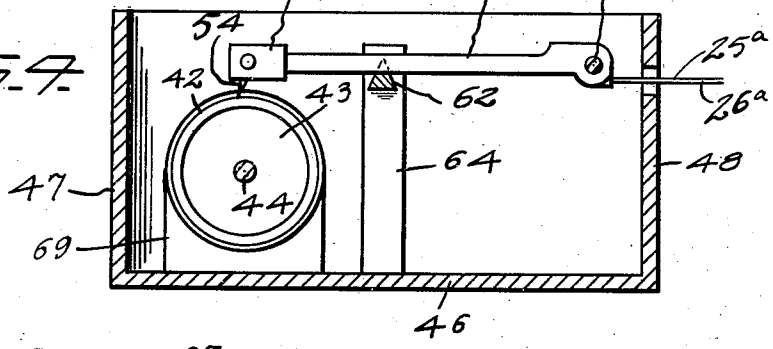


FIG. 5.

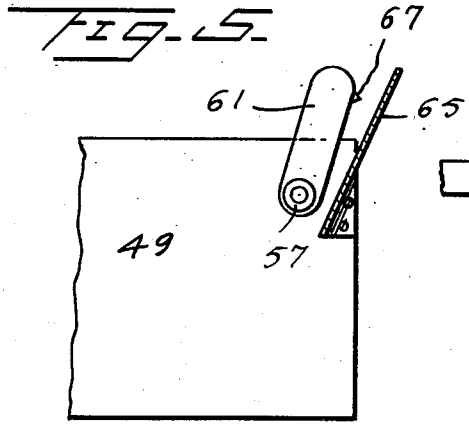
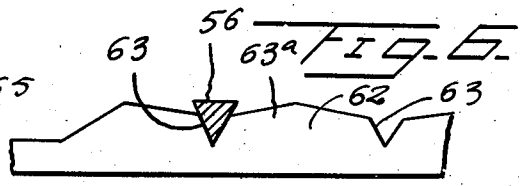


FIG. 6.



INVENTOR.
J. H. McKnight
BY
Kimmel & Crowell attys.

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COMBINED TOY RAILROAD AND SOUND PRODUCING MEANS THEREFOR

Joseph H. McKnight, Pittsburgh, Pa.

Application February 25, 1946, Serial No. 649,877

1 Claim. (Cl. 274—17)

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This invention relates to a sound producing means for use with toy railroads.

An object of this invention is to provide an electrical sound producing means whereby a loudspeaker may be placed in a moving car and different types of sound may be transmitted to the speaker as the car is moving over a track.

Another object of this invention is to provide a sound producing means of this type including a rotatable record having a sound track therein, and a pick up means for converting the sound track induced vibrations to electrical frequencies.

A further object of this invention is to provide in combination with a loudspeaker and an amplifier, an improved record and operator therefor which is so constructed and arranged that a child can manually operate the operator and produce selected sounds impressed or cut in the sound tracks of the record.

To the foregoing objects, and others which may hereinafter more fully appear, the invention consists of the novel construction, combination and arrangement of parts, as will be more specifically referred to and illustrated in the accompanying drawings, but it is to be understood that changes, variations, and modifications may be resorted to which fall within the scope of the invention as claimed.

In the drawing:

Figure 1 is a diagrammatic view of a device constructed according to an embodiment of this invention,

Figure 2 is a plan view of the record operator,

Figure 3 is a plan view partly broken away and in section of a modified form of the record operator.

Figure 4 is a sectional view taken on the line 4—4 of Figure 3,

Figure 5 is a fragmentary sectional view taken on the line 5—5 of Figure 3, and

Figure 6 is a fragmentary sectional view taken on the line 6—6 of Figure 3.

Referring to the drawing, the numerals 10 and 11 designate a pair of rails over which a toy train is adapted to engage and the rails 10 and 11 are connected together by one or more connecting members 13. In practice the connecting members 13 may constitute the ties for holding the rails 10 and 11 in spaced parallel relation and these rails 10 and 11 may be of the sectional and disconnectible type. A third or intermediate rail 12 is disposed between the two rails 10 and 11 and is electrically insulated from these two rails. A loud speaker 14 shown in the diagrammatic view of Figure 1 is adapted to be mounted on one

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of the cars or any element which is movable over the rails 10 and 11. The loud speaker 14 has connected thereto a pair of conductors 15 and 16 which are connected to rolling contacts 17 and 18 respectively which are engageable with the rails 11 and 12. An electrolytic condenser 19 is interposed in the conductors 15 and is preferably a condenser having a capacity of 40 mfd.

In order to provide a means whereby the loud speaker 14 may be energized and sound produced therefrom, I have provided a record 20. The record 20 in the present instance is in the form of a disk which is mounted on a rotatable spindle 21 operated by a conventional phonograph operating means 22. A needle 23 engages in the groove or grooves of the record 20 and is carried by an electrical pickup 24 which is of conventional construction and is connected by means of a pair of conductors 25 and 26 to an input side of audio amplifying unit 27. The amplifying unit 27 is of conventional construction and may embody one or more electronic tubes with associated apparatus. The output side of the amplifying unit 27 is connected by means of a pair of conductors 28 and 29 to the rails 10 and 12. A condenser 30 is interposed in the conductor 29 and is here shown as a condenser having a capacity of 20 mfd. The transformer 31 includes a primary 32 having the opposite ends thereof connected by conductors 33 and 34 to a source of alternating current supply. The transformer 31 also includes a secondary coil 35 which has the opposite ends thereof connected by means of conductors 36 and 37 to the rails 10 and 12. A choke coil 38 is interposed in conductor 36 and a second choke coil 39 is interposed in conductor 37. These choke coils 38 and 39 are designed for the purpose of preventing the audio frequency from feeding back into the secondary coil 35. If desired a condenser 40 may be interposed between the two conductors 36 and 37 and between the choke coils 38 and 39 and the secondary 35.

A second condenser 41 may be connected across the conductors 36 and 37 between the choke coils and the rails 10 and 12. A simplified form of audio frequency generation in the form of record and operator thereof has been disclosed in Figures 3 to 6. A cylindrical record 42 is mounted on a platen 43 carried by a shaft 44. The shaft 44 is rotatably mounted in a housing 45 which is here shown as a rectangular housing embodying a bottom wall 46, opposite side walls 47 and 48 and opposite end walls 49 and 50. The record 42 is provided with a plurality of circular grooves 51, 52 and 53, which are cut into the record 42

and which are designed for producing different types of sounds. In other words, groove 51 may be designed for producing the sound of a locomotive engine starting up, whereas groove 52 may have cut therein a sound track embodying a bell or other selected sound. It will be understood, of course, that there may be as many of these grooves as may be desired.

A needle 54 which is carried by an electrical pickup unit 55 mounted on an arm 56 is adapted to engage in a selected one of the sound grooves. The pickup unit 55 is adapted to be connected by means of conductors 25a and 26a to an amplifying unit for amplifying the sound to the desired amplitude. Arm 56 is carried by a sleeve 57 which is loosely mounted on a rod 58. The rod 58 is disposed in a horizontal position and is fixedly secured by means of a bushing 59 to the end wall 50. The sleeve is slidable and rotatable on the rod 58. The sleeve 57 engages through an opening 60 which is formed in the end wall 49 and has secured to the extended end thereof a handle or crank member 61 mounted at an angle calculated to partially balance the weight of the pickup arm 56. Rocking of the handle 61 in a clockwise direction as viewed in Figure 5 will raise the needle 54 from one sound track and endwise movement of the sleeve 57 will shift the pickup mechanism to another sound track. In order that a child may readily change the needle 54 from one sound track to another, I have provided a bar 62. The bar 62 is of triangular configuration and is formed with a plurality of V-shaped notches 63 and oppositely inclined ridges 63a between the notches. The bar 62 is supported at the opposite end by the end wall 49. The arm 56 which carries the electrical pickup member 55 is of triangular configuration so that this arm may readily engage in a selected one of the V-shaped notches 63.

In order that the user of this device may readily determine the position of the needle 54, I have provided a plate 65 which is secured to the outer side of the end wall 49 and is provided with indications 66 which are correlated with a pointer 67 carried by the handle 61. The indications 66 may be a point or graduation line and may also include a legend designating the particular sound track associated therewith. The indications 66 are spaced apart a distance equal to the spacing between the notches 63.

In order to provide for rotation of shaft 44 and platen 43, shaft 44 is extended through the end wall 49 and has a crank 68 secured to the extended portion thereof. In this manner a person can manually rotate the platen and record so as to produce the desired sound which is emitted from the loud speaker shown in Figure 1. The shaft 44 may also be optionally rotated by means of an electric motor 69 which is disposed in the housing 45. The motor 69 is connected to the shaft 44 by means of a coupling 70. The motor 69 has connected thereto a pair of conductors 71 and 72 which are connected to a supply source.

Transformer 31 is used for furnishing power to the engine motor 73. Motor 73 has a conductor 74 connected to one side thereof, and a conductor 75 connected to the opposite side thereof. Conductor 74 has a pair of rolling contacts 76 connected thereto which engage rail 12 and conductor 75 has a rolling contact 77 connected thereto which engages rail 11. An impedance choke 78 may be interposed in conductor 74 between motor 73 and contacts 76, and a condenser 79 is connected across conductors 74 and 75 between choke 78 and contacts 76 and 77. One or more train lights 80 may be connected between conductors 74 and 75.

In the use and operation of this device where a combination phonograph and radio is available, the record 20 is placed on the turn-table of the phonograph portion of the combination unit and the amplifier 27 will in this case be the amplifier which forms a part of the unit. The output side of the amplifier is connected in any suitable manner to rails 10 and 12 and the train supply source is connected through transformer 31 to rails 10 and 12. When the train or one or more cars thereof is moved over the tracks 10 and 11, the loud speaker 14 will be mounted on one of the cars and this speaker is electrically connected through appropriate shoes or wipers 17 and 18 to tracks 11 and 12. When record 20 is rotated the impressions in the track thereof will be converted by the needle 23, to motion and by the electrical pickup member 24 to audio frequency current and passed to the amplifier 27. The initial current passed to the amplifier 27 will then be raised in amplitude to the most satisfactory level and this amplified audio frequency will then be picked up by the wipers 17 and 18 and loud speaker 14 will then be energized and the sound reproduced from record 20 will be emitted from the loud speaker. It will, of course, be understood that the sound track of record 20 may be either a spiral sound track or may be of the continuous groove type, such as is shown in Figure 3 by the numerals 51, 52 and 53. The sound which is being reproduced in the loud speaker 14 is preferably a sound which will represent the conventional sounds of a steam locomotive as the locomotive is starting up, the sounds after the locomotive has been set in motion and also the sound of the locomotive stopping. In addition, the sound may be either a whistle or a bell, talking, singing, music, or a combination or succession of these sounds.

The exact configuration illustrated is regarded as the optimum, but some of the desirable results inherent in this disclosure may be obtained by various slight modifications including some departure from the exact configuration shown, and it is therefore requested that the scope of the invention should be regarded as limited only by the terms of the claim.

What I claim is:

A sound producing means comprising an enclosed housing including top, bottom, front, rear and side walls, a platen rotatably carried by said housing and having a driving connection with an electric motor mounted on said bottom wall, a record on said platen formed with a plurality of spaced apart sound tracks, a sound pickup means including an arm of triangular cross section for a portion of its length, a pickup member carried by said arm, and rockable supporting means for said arm, said supporting means including a supporting bar fixed relative to said housing and formed with a plurality of spaced notches, corresponding to the spaced apart sound tracks on said record, with oppositely inclined ridges between said notches in a selected one of which said triangular portion of said arm is adapted to engage, a pair of horizontally telescoping members, the inner member being fixedly carried by said housing and the outer member at one end thereof being fixed to said arm and having rotatable and slidable engagement with said inner member and said housing, the opposite end of said outer telescoping member extending through

a side wall of said housing and having a combined operating crank arm and indicating pointer fixedly attached thereto at right angles to said arm, a plate, having indicia corresponding to said spaced apart sound tracks, attached to the side wall through which said outer member extends and disposed substantially below said indicating pointer whereby an external indication is had of the sound track with which said pickup member is in engagement.

JOSEPH H. McKNIGHT.

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