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3 Sheets-Sheet 1

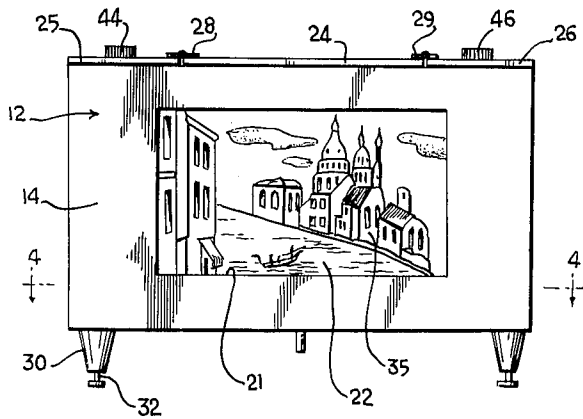


Fig. I.

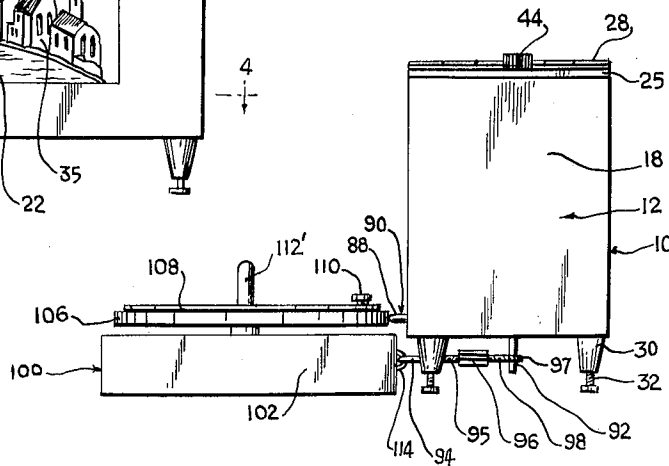


Fig. 2.

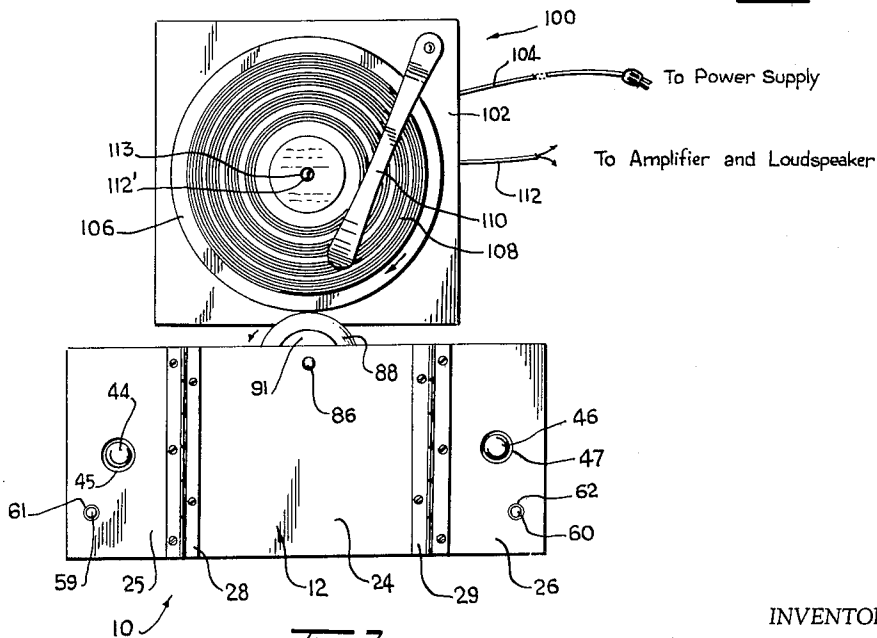


Fig. 3.

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SYNCHRONIZED PICTURE ATTACHMENT FOR PHONOGRAPH RECORDS

Filed Sept. 23, 1963

3 Sheets-Sheet 2

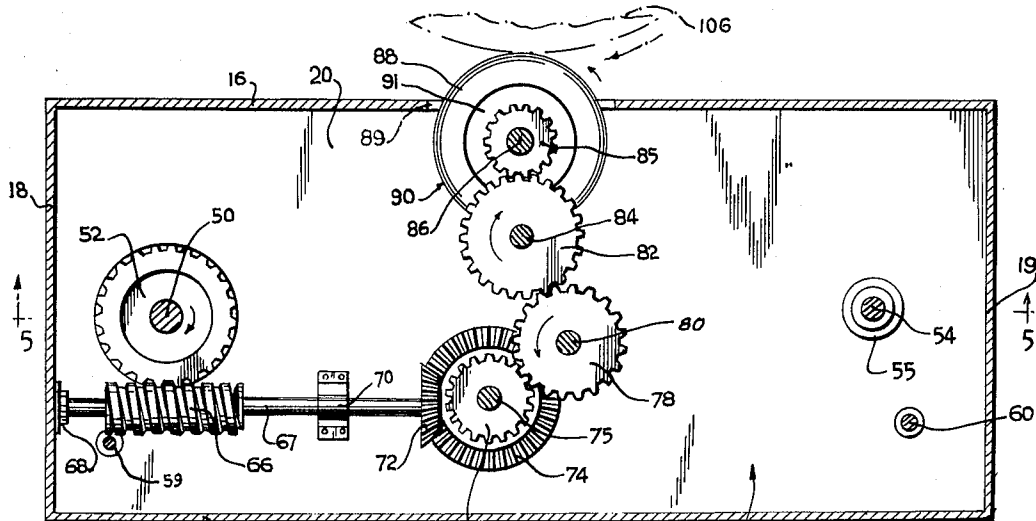


Fig. 4.

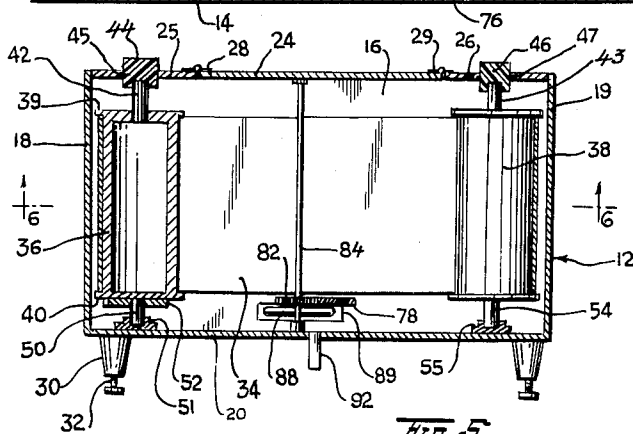


Fig. 5.

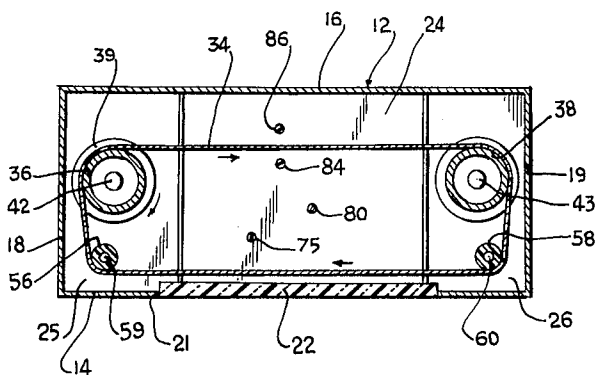
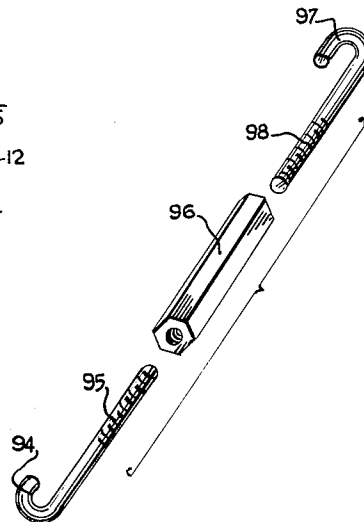


Fig. E.

Fig. 7.

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SYNCHRONIZED PICTURE ATTACHMENT FOR PHONOGRAPH RECORDS

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3 Sheets-Sheet 3

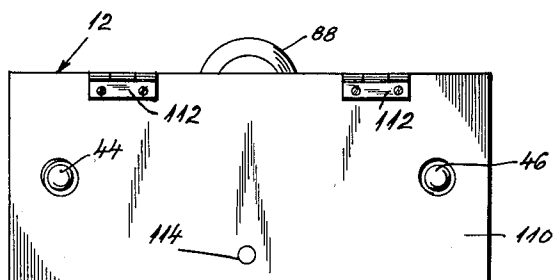


Fig. 10.

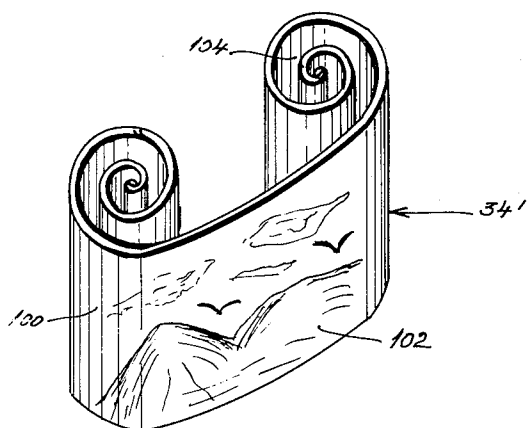


Fig. 8.

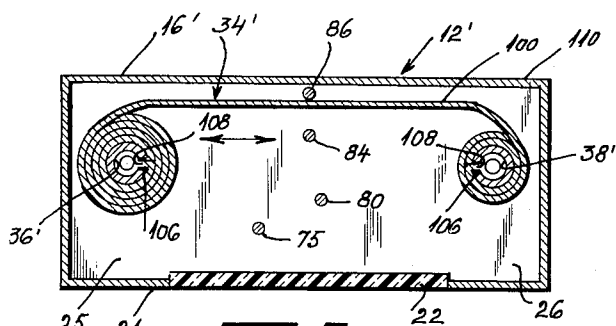


Fig. 9.

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SYNCHRONIZED PICTURE ATTACHMENT FOR PHONOGRAPH RECORDS

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4 Claims. (Cl. 40—28.2)

This invention concerns a moving picture display device.

The invention is particularly intended for operation in conjunction with a phonograph which will provide a spoken or musical accompaniment to the moving picture. The device includes an endless band or a scroll or roll on which is carried a continuously changing scene, as the band or scroll is driven by a gear train which is operatively arranged to be driven by the turntable of the phonograph. The motion of the picture band is coordinated with the turning of the turntable and with the playing of a phonograph record on the turntable.

It is therefore one object of the invention to provide a device including a casing having a window through which is viewed a constantly changing scene carried on a moving picture band, the band being driven via a gear train adapted to be driven by a turntable of a phonograph.

Another object is to provide a device as described, wherein the gear train includes a drive wheel or roller extending outwardly of the casing and contacting the periphery of a rotating phonograph turntable, so that the turntable turns the roller and the movement of the picture band is coordinated with playing of a record on the turntable.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

FIG. 1 is a front elevational view of a display device embodying the invention.

FIG. 2 is a side elevational view of the display device with an associated phonograph.

FIG. 3 is a top plan view of the device and phonograph on an enlarged scale.

FIG. 4 is a horizontal sectional view on an enlarged scale taken on line 4—4 of FIG. 1.

FIG. 5 is a horizontal sectional view on a reduced scale taken on line 5—5 of FIG. 4.

FIG. 6 is a horizontal sectional view taken on line 6—6 of FIG. 5.

FIG. 7 is an exploded perspective view of a turnbuckle assembly employed in the device.

FIG. 8 is a perspective view of a modified form of picture band.

FIG. 9 is a view similar to FIG. 6 with the picture band of FIG. 8 mounted therein.

FIG. 10 is a view similar to FIG. 3 of the casing of FIG. 8.

Referring first to FIGS. 1—6, there is shown the display device 10 including a generally rectangular casing 12 having a front wall 14, rear wall 16, side or end walls 18, 19, and bottom wall or panel 20. The front wall is provided with a large rectangular opening 21 in which is set a transparent plastic or glass plate 22 to serve as a viewing window. The top of the casing is closed by a fixed top wall 24 provided with two end doors 25, 26 pivotally secured by hinges 28, 29 to the central top wall 24. Legs 30 are provided at the corners of bottom wall 20 to elevate the casing above a supporting surface. The legs have adjustment screws 32 for adjustably elevating the casing.

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Inside the casing is an endless belt or band 34 on the outer side of which is a continuous pictured scene 35. The band is carried upon two axially vertical drums 36, 38 located near opposite end walls of the casing; see FIGS. 5 and 6. The drums have upper and lower annular flanges 39, 40 which keep the band entrained on the drums. Drum 36 has an upper axial shaft 42 engaged in a bearing head 44 which is removably disposed in an aperture 45 in door 25. The head 44 extends above the door and can be manually removed to release shaft 42. Drum 38 has an upper shaft 43 engaged in bearing head 46 extending through aperture 47 in door 26. At the bottom of drum 36 is an axial shaft 50 journaled in a bearing 51 on bottom wall 20. Shaft 50 carries a worm gear 52. At the bottom of drum 38 is a shaft 54 journaled in a bearing 55 on wall 20. Two idler rollers 56, 58 are located near front corners of the casing. These rollers are axially vertical and carried by shafts 59, 60 journaled in holes 61, 62 in the doors 25, 26 and bottom wall 20.

The band 34 passes in a straight course between rollers 56, 58 behind and parallel to window 22 so that a clear and undistorted view is provided of the picture on the band through the window. The band is continuously driven by a gear train which includes gear 52. Drum 36 is the drive drum for the band driven by any suitable means while drum 38 is an idler drum.

Gear 52 is engaged with and is driven by a worm 66 carried by a shaft 67 journaled at one end in a bearing 68 on end wall 18 and at an intermediate point in bearing 70 on bottom wall 20. At the other end of shaft 67 is a beveled gear 72 meshed with a beveled gear 74 carried by a vertical shaft 75 journaled in bearings at the top and bottom walls 24 and 20, respectively.

Shaft 75 also carries a spur gear 76 meshed with another spur gear 78 carried by a vertical shaft 80 journaled in bearings at the top and bottom walls of the casing. Gear 78 meshes with a spur gear 82 carried by a vertical shaft 84 journaled in bearings at the top and bottom walls of the casing. Gear 82 meshes with a spur gear 85 carried by a shaft 86 also journaled in bearings at the top and bottom walls near rear wall 16. Shaft 86 carries a drive wheel 90. This wheel includes a hub 91 engaged with shaft 86 and a resilient rubber or plastic tire 88. Tire 88 extends outwardly of the rear wall of the casing through slot 89. At the bottom of the casing is a depending stationary pin 92.

Phonograph 100 is shown associated with the display device 10. This phonograph includes a base 102 in which is a suitable motor (not shown) energized via power cable 104. The motor drives a flat circular turntable 106 on which a phonograph record 108 can be disposed for tracking by phonograph pickup 110. Audio signals are transmitted by audio cable 112 to a remote amplifier and loudspeaker (not shown). The turntable has a central spindle 112' extending through central hole 113 in the record 108.

On the front wall of the base 102 is an eye 114 in which may be engaged a hook 94. This hook has a threaded shank 95 engaged in a turnbuckle coupling nut 96; see FIG. 7. Another hook 97 is engaged on pin 92 and the threaded shank 98 of the hook engages in the threaded nut 96. By turning the nut, the hooks 94, 97 can be adjustably drawn together for adjusting the contact between tire 88 and the rim of turntable 106.

By inspection of the drawing, particularly FIG. 4, it will be apparent that drum 36 will be driven in exact coordination with the turntable 106 as the tire 88 rolls in frictional contact with the turntable. Thus the picture band 34 will move continuously while the turntable rotates.

The picture band 34 can be changed or turned inside

out by removing heads 44, 46 to loosen the drums. The doors 25, 26 can then be opened. The rollers 56, 58 will remain in place while the doors are opened to remove the band from the drums.

In FIG. 8 a modified form of picture band 34' is shown in the form of a scroll or roll 34'. This scroll or roll comprises an elongated rectangular shaped film 100 on both surfaces of which are pictured scenes 102 and 104. The film 100 is shown on drums 36' and 38' in FIG. 9. The drums are similar in construction to drums 36 and 38 except that slots 106 are formed in the walls of the drums to receive the ends 108 of the film. The casing 16' is similar to casing 16 except there is no need for the rollers 56 and 58.

The film 100 is driven by the mechanism shown in FIGS. 4 and 5 for driving the endless band 34. In this form, the film 100 is wound around the roller 38' which becomes the supply roller and is driven to and around the roller 35' which is the take-up roller and the drive roller. When moving from one roller to the other, the pictured scene on one surface of the film is exposed and seen through the window 22.

Mechanism, such as the mechanism shown in FIGS. 4 and 5 for driving the endless band 34 is used for driving the film 100 from drum 36' to drum 38'. When the film is completely wound on drum 38', and the pictured scenes on one surface viewed in its entirety, the full or loaded drum 38' is removed, turned upside down and mounted between bearings 55' and 46' and the free end of the film is then manually pulled to the other side of the casing and placed in the slot of drum 36' with the reverse surface of the film exposed and facing window 22. Continued rotation of the drum 36' will display the scenes on the reverse surface or side of the film.

The display device is driven entirely mechanically. It will operate even though no phonograph record is on the turntable, but if a record is being played, then the moving scene is accompanied by the spoken or musical accompaniment of the played record. The bands 34 and 100 are moved rather slowly while the wheel 90 turns rapidly, because of the provision of the worm and worm wheel in the gear train.

The device thus provides an interesting and entertaining continuously changing scenic display with or without an audible accompaniment. In any case the turntable of the phonograph provides the necessary mechanical driving power.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise construction herein disclosed and that various changes and modifications may be made within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. A moving picture display device, comprising a closed rectangular casing having opposing front and rear walls, opposing end walls and opposing top and bottom walls, said front wall having a window opening therein providing a view into the interior of the casing, an endless picture band inside the casing, axially vertical rollers journaled between the top and bottom walls movably supporting the band in a straight, flat course extending across said window opening so that the picture is visible through said window opening, axially vertical drums movably supporting looped end of the band near said end walls, a gear train in the casing operatively connected to one of the bands for driving the same so that said picture moves continuously past said window opening and presents a continually changing scene, said rear wall having a slot therein, said gear train including a drive wheel having a tire extending outwardly through said slot to engage with rolling friction the rim of a phonograph turntable for driving said gear train

and picture band, a turnbuckle, and means for engaging opposite ends of the turnbuckle at the casing and phonograph for adjusting frictional contact between said tire and turntable.

2. A moving picture display device, comprising a closed rectangular casing having opposing front and rear walls, opposing end walls and opposing top and bottom walls, said front wall having a window opening therein providing a view into the interior of the casing, an endless picture band inside the casing, axially vertical rollers journaled between the top and bottom walls movably supporting the band in a straight, flat course extending across said window opening so that the picture is visible through said window opening, axially vertical drums movably supporting looped ends of the band near said end walls, and a gear train in the casing operatively connected to one of the bands for driving the same so that said picture moves continuously past said window opening and presents a continually changing scene, said rear wall having a slot therein, said gear train including a drive wheel having a tire extending outwardly through said slot to engage the rim of a phonograph turntable for driving said gear train and picture band, said gear train further including a worm wheel and worm engaged with the worm wheel for reducing speed of movement of the band relative to speed of said drive wheel, a turnbuckle, and means for engaging opposite ends of the turnbuckle at the casing and phonograph for adjusting frictional contact between said tire and turntable.

3. A moving picture display device, comprising a closed rectangular casing having opposing front and rear walls, opposing end walls and opposing top and bottom walls, said front wall having a window opening therein providing a view into the interior of the casing, an endless picture band inside the casing, axially vertical rollers journaled between the top and bottom walls movably supporting the band in a straight, flat course extending across said window opening so that the picture is visible through said window opening, axially vertical drums movably supporting looped ends of the band near said end walls, and a gear train in the casing operatively connected to one of the bands for driving the same so that said picture moves continuously past said window opening and presents a continually changing scene, said rear wall having a slot therein, said gear train including a drive wheel having a tire extending outwardly through said slot to engage the rim of a phonograph turntable for driving said gear train and picture band, said gear train further including a worm wheel and worm engaged with the worm wheel for reducing speed of movement of the band relative to speed of said drive wheel, a turnbuckle, and means for engaging opposite ends of the turnbuckle at the casing and phonograph for adjusting frictional contact between said tire and turntable, said top wall having a pair of hinged doors at opposite ends providing access into the interior of the casing for replacing the picture band on the drums and rollers.

4. A moving picture display device, comprising a closed rectangular casing having opposing front and rear walls, opposing end walls, a bottom wall and a top, said front wall having a window opening therein providing a view into the interior of the casing, a picture roll inside the casing, axially vertical drums journaled between the top and bottom wall movably supporting the picture roll in a straight flat course extending across said window opening so that the picture is visible through said window opening, a gear train in the casing operatively connected to one of the drums for driving the same so that the picture roll moves continuously past said window opening and presents a continually changing scene, said rear wall having a slot therein, said gear train including a drive wheel having a tire extending outwardly through said slot to engage with rolling friction the rim of a phonograph turntable for driving said gear train and picture roll, a turnbuckle, and means for engaging opposite ends

of the turntable at the casing and phonograph for adjusting frictional contact between said tire and turntable.

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