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SOUND REPRODUCING DEVICE USING ENDLESS RECORDING TAPES

Filed Dec. 20, 1949

2 SHEETS—SHEET 1

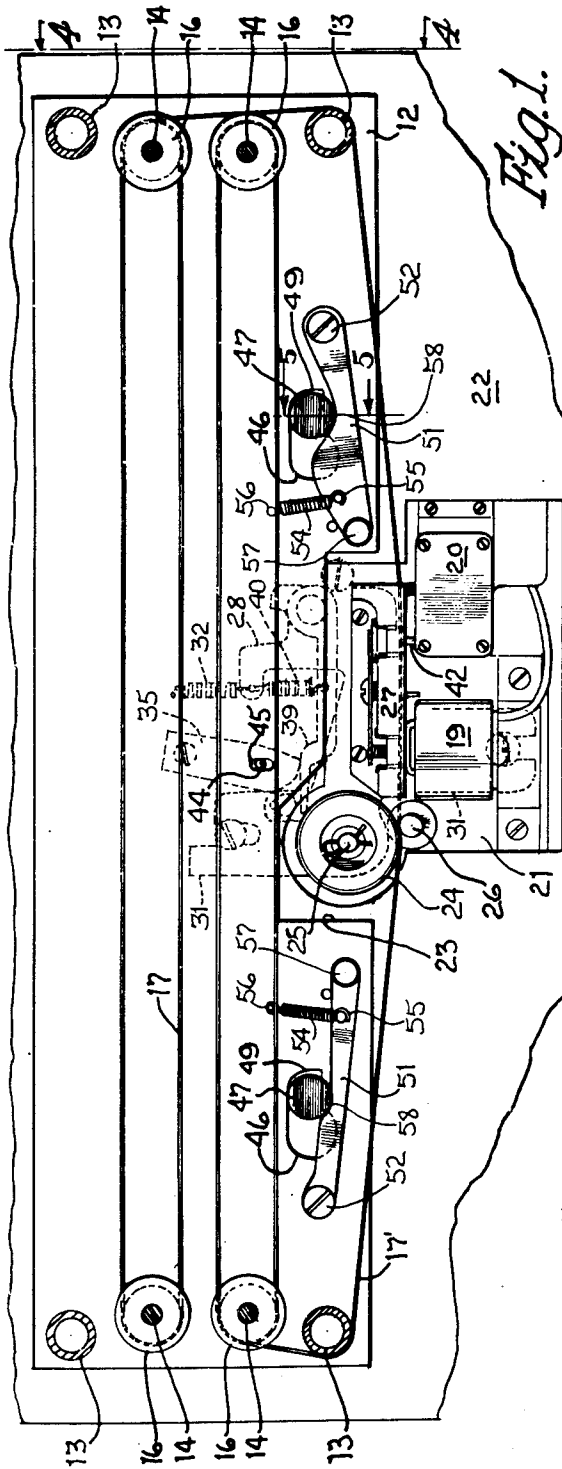


Fig. 1.

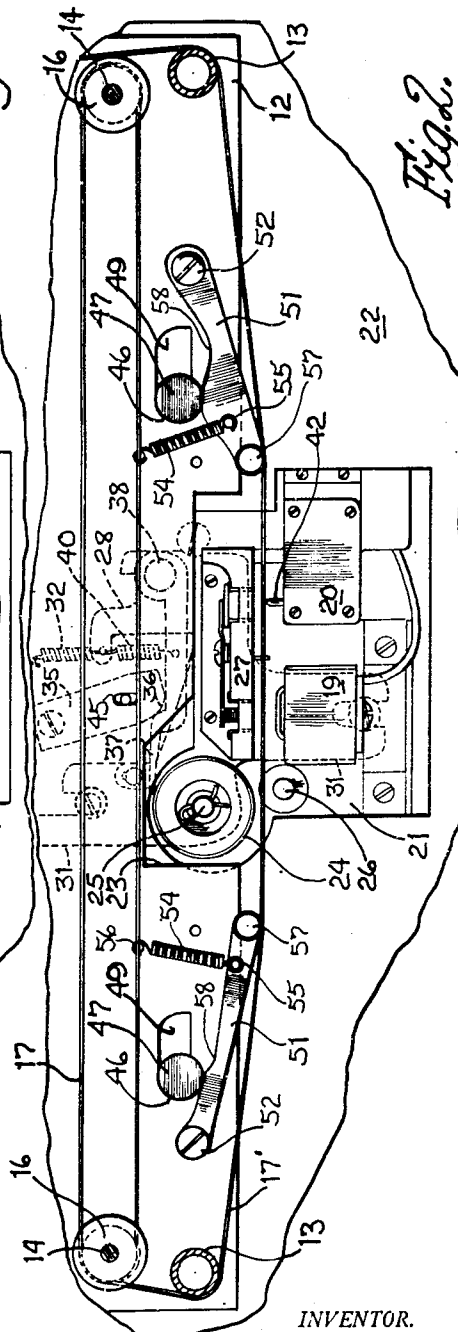


Fig. 2.

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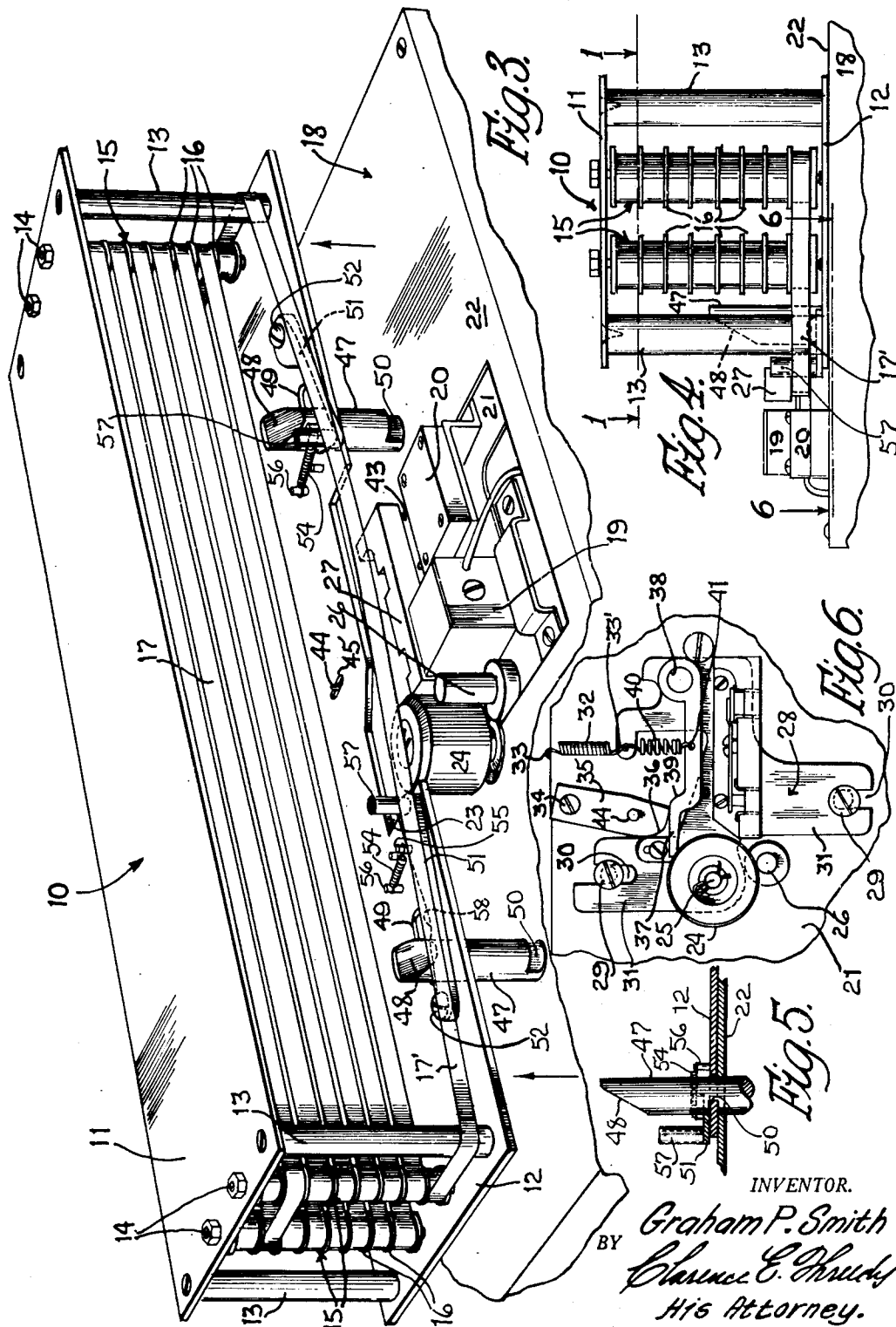
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2 SHEETS—SHEET 2



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UNITED STATES PATENT OFFICE

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SOUND REPRODUCING DEVICE USING
ENDLESS RECORDING TAPESGraham P. Smith, Chicago, Ill., assignor to Powell
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4 Claims. (Cl. 274-11)

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This invention relates to certain new and useful improvements in sound reproducing devices using endless recording tapes for reproducing sound from recording tapes and the like and has for its principal object the provision of an improved construction of this character which will be highly efficient in use and economical in manufacture.

An object of this invention is to provide a device of this character adaptable for many uses, such for example, announcing the sale of merchandise or the like in order to stimulate the sale of the merchandise.

Another object of the invention is to provide in such a device a carriage for the sound tape which is removably mounted in sound reproducing position with respect to the sound drum in a manner such that the carriage when mounted in such position will automatically thread the tape in operative relation to the sound drum and close a switch to energize the apparatus for operation.

Another and equally important object of the invention is to provide a carriage for the sound tape of a construction such as will permit a considerable length of tape to be mounted on the carriage.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings showing the preferred form of construction, and in which:

Fig. 1 is a fragmentary sectional detail view of the invention taken substantially on line 1-1 of Fig. 4;

Fig. 2 is a view similar to Fig. 1, but showing the parts thereof in different positions;

Fig. 3 is a fragmentary perspective view of the invention showing the carriage embodied in the invention in a partially removed position;

Fig. 4 is a side elevational view taken substantially on line 4-4 of Fig. 1;

Fig. 5 is a fragmentary sectional detail view taken substantially on line 5-5 of Fig. 1; and

Fig. 6 is a fragmentary sectional detail view taken substantially on line 6-6 of Fig. 4.

My invention is adaptable to many uses. One of the many uses of my invention is that of repeatedly announcing and describing a certain food product or other merchandise thereby to not only call the attention of prospective buyers to the particular merchandise announced but to encourage a purchaser to buy the merchandise.

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To accomplish this object and other objects of the invention it is desirable that the sound tape be supported by a carriage for removable attachment in operative position with respect to the sound drum so that sound carriages of like construction with different sound tapes may be interchanged therefor to announce a different food product or other merchandise.

To accomplish this object it is desirable that the interchangeability be made by one other than a mechanic. To the accomplishment of these ends, I have provided not only a carriage which may be easily and quickly detached and removed for interchangeability with a carriage of like construction but having a different sound tape, but I also have provided an arrangement whereby the sound tape is automatically threaded into position with respect to the sound drum during the mounting operation of the carriage. I have also provided an arrangement whereby the mounting of the carriage will close a switch to condition the sound reproducing apparatus for operation.

To accomplish these and other objects of the invention my sound tape carriage is indicated at 10. It comprises a top wall 11 and a bottom wall 12 of flat elongated formation and spaced from each other by opposite posts 13.

At opposite ends of the walls 11 and 12 are arranged spindles 14 and rotatably mounted on each of these spindles 14 is a sleeve 15 divided into a plurality of integrally formed spools 16.

Reversely threaded upon these spools 16 is the continuous sound tape 17, a web portion 17' of which is threaded over opposite corresponding posts 13 for reasons which will be hereinafter apparent.

The sound reproducing mechanism includes a cabinet 18 and this sound reproducing mechanism may be of any standard construction including a sound head 19 and a control switch 20. This sound head 19 and control switch are mounted upon a mounting plate 21 arranged beneath the cover plate 22 of the house 18.

The bottom wall plate 12 has a cut-out portion 23 to accommodate a guide roller 24 mounted on a stud shaft 25. This guide roller 24 cooperates with a vertical post 26 to guide the tape between a gate 27 and the sound head 19. This gate 27 and stud shaft 25 are carried by a mounting plate 28. On the plate 21 are mounted screws 29, the shanks of which pass through the slots 30 of opposed fingers 31 provided by the mounting plate 28. The mounting plate 28, being by the screws 29 and slots 30, slidably connected to the

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plate 21, is normally held in a position with the gate in spaced relation to the sound head 19 when the tape carriage is moved by means of a spring 32 one end of which is connected as at 33 to the plate 21 and an opposite end to the mounting plate 28 as at 33'. On the plate 21 is pivoted as at 34 an arm 35 having a cam 36 which engages a latch arm 37 pivoted to the plate 28 as at 38.

This latch arm 37 provides a grooved intermittent portion 39 which is adapted to be engaged by the cam 36 as shown in Fig. 2, when the arm 35 is pivoted in a clockwise direction as shown in Fig. 6, to slide the plate 28 upon the mounting plate 21 to move the gate 27 into tape holding position with respect to the sound head 19, this movement being accomplished in a manner hereinafter more fully explained. The arm 35 is held in the latched position shown in Fig. 6 by means of a spring 40, one end of which is connected to the plate 28 as at 33' and the opposite end to the arm 37 as at 41.

The switch 20 includes a shaft 42 which when moved inwardly with respect to the switch housing closes the switch contacts (not shown) within that housing. When the plate 28 is moved to dispose the gate in film retaining position with respect to the sound head, a wall 43 of the gate will engage the shaft 42 as shown in Fig. 1, and thus close the switch to energize the sound reproducing mechanism contained within the housing 18.

On the arm 35 and extending upwardly therefrom is a pin 44 (Figs. 1 to 3 inclusive and Fig. 6). This pin 44 projects into an elongated slot 45 formed in the wall plate 12 whereby when the carriage 10 is shifted to the right as viewed in Fig. 3, the latch arm 35 will be pivoted to latched position with respect to the latch arm 37, thus shifting the plate 28 upon the plate 21 to dispose the film gate into film retaining position with respect to the sound head 19. The carriage 10 is provided in its wall plate 12 adjacent the opposite ends thereof with openings 46 of a diameter to receive posts 47 carried by the plate 21. The upper end portions of these posts 47 are tapered as at 48 to facilitate the projection of these posts 47 into the openings 46. Communicating with these openings 46 are elongated slots 49 of a width less than the diameter of the openings 46 whereby when the carriage is in mounted position as shown in Fig. 4, with the gate disposed in film holding position with respect to the sound head 19, the reduced portion 50 of the posts will be confined within the slots 49, with the wall plate 12 latched to the posts 47 by means of latch arms 51 pivotally connected as at 52 to the wall plate 12 and yieldably held in latched position against the posts 47 by means of springs 54, these springs having corresponding end portions connected as at 55 to the arms 51 and to stud pins 56 carried by the wall plate 12.

The arrangement is such that upon entrance of the tapered end portions 48 into the openings 46, the tapered ends of the posts 47 will pivot the arms 51 outwardly with respect to the plate 12.

On the outer end portions of these arms 51 are laterally extending fingers 57. These fingers 57 bear against the web portion 17' of the sound tape and, as the latch arms 51 ride upon the posts 47, these fingers 57 will move the web portion 17' of the sound tape in a position for placement between the sound head and the gate 27 and between the roller 24 and the post 26. Upon placement of the carriage with the posts extending

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through the openings 46, the carriage is then shifted to the left as viewed in Fig. 1, to move the reduced portions 50 of the posts 47 into slots 49, in which position the arms 51 are permitted to pivot inwardly to withdraw the fingers 57 from engagement with the sound tape, this inward pivotal movement being permitted by reason of cut-out portions 58 formed in the arms, as best shown in Figs. 1 and 2.

As before stated, when the carriage is moved to the left as viewed in Fig. 1, the pin 44 being engaged in the slot 45 will transmit pivotal movement to the arm 35 (Fig. 6) to pivot the arm in a position to latch the gate in film retaining position with respect to the sound head and to close the switch to energize the sound reproducing mechanism.

By this simple arrangement the carriage may be easily and quickly removed to permit replacement of a similar carriage with a tape impressed with different sound elements. This may be done by one other than a skilled mechanic.

My improved sound reproducing apparatus has many uses and may be used in any place where it is desirable that there be a repetition at predetermined intervals of an announcement.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

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

1. For a combination comprising a main mounting plate, a second mounting plate upon said main plate, means connecting the second plate to the main plate for slidable movement upon said main plate, a film gate carried by and movable with the second plate, a sound head carried by the main plate, a sound tape carriage, means removably connecting the carriage to the main plate for slidable movement upon said main plate, means providing a connection between the carriage and the second plate whereby upon slidable movement of the carriage in one direction relative to the main plate said second plate will be moved relative to the main plate in a direction to dispose the gate in tape retaining position with respect to the head, latch means pivotally carried by said carriage adjacent said removable connecting means and actuated thereby to latch said carriage upon said main plate, said latching means having vertical tape engaging fingers adapted to engage a web portion of sound tape carried by said carriage to disposed said tape from between said gate and said sound head when said carriage is in unlatched position, said fingers adapted to be pivoted out of engagement with said tape to position the same between said gate and said sound head by slidable movement of the carriage relative to said main plate and in latched position with respect thereto.

2. For a combination comprising a main mounting plate, a second mounting plate upon said main plate, means connecting the second plate to the main plate for slidable movement upon said main plate, a film gate carried by and movable with the second plate, a sound head carried by the main plate, a sound tape carriage, slot and pin means movably connecting the car-

riage to the main plate for slidable movement upon said main plate, means providing a connection between the carriage and the second plate whereby upon slidable movement of the carriage in one direction relative to the main plate said second plate will be moved relative to the main plate in a direction to dispose the gate in tape retaining position with respect to the head, latch means pivotally carried by said carriage adjacent said removable connecting means and actuated thereby to latch said carriage upon said main plate, said latching means having vertical tape engaging fingers adapted to engage a web portion of sound tape carried by said carriage to dispose said tape from between said gate and said sound head when said carriage is in unlatched position, said fingers adapted to be pivoted out of engagement with said tape to position the same between said gate and said sound head by slidable movement of the carriage relative to said main plate and in latched position with respect thereto.

3. For a combination comprising a main mounting plate, a second mounting plate upon said main plate, means connecting the second plate to the main plate for slidable movement upon said main plate, a film gate carried by and movable with the second plate, a sound head carried by the main plate, a sound tape carriage, means removably connecting the carriage to the main plate for slidable movement upon said main plate, means providing a connection between the carriage and the second plate whereby upon slidable movement of the carriage in one direction relative to the main plate said second plate will be moved relative to the main plate in a direction to dispose the gate in tape retaining position with respect to the head, latch means pivotally carried by said carriage adjacent said removable connecting means and actuated thereby to latch said carriage upon said main plate, said latching means having vertical tape engaging fingers adapted to engage a web portion of sound tape carried by said carriage to dispose said tape from between said gate and said sound head when said carriage is in unlatched position, said fingers adapted to be pivoted out of engagement with

said tape to position the same between said gate and said sound head by slidable movement of the carriage relative to said main plate and in latched position with respect thereto.

4. For a combination comprising a main mounting plate, a second mounting plate upon said main plate, means connecting the second plate to the main plate for slidable movement upon said main plate, a film gate carried by and movable with the second plate, a sound head carried by the main plate, a sound tape carriage, slot and pin means removably connecting the carriage to the main plate for slidable movement upon said main plate, means providing a connection between the carriage and the second plate whereby upon slidable movement of the carriage in one direction relative to the main plate said second plate will be moved relative to the main plate in a direction to dispose the gate in tape retaining position with respect to the head, latch means pivotally carried by said carriage adjacent said removable connecting means and actuated thereby to latch said carriage upon said main plate, said latching means having vertical tape engaging fingers adapted to engage a web portion of sound tape carried by said carriage to dispose said tape from between said gate and said sound head when said carriage is in unlatched position, said fingers adapted to be pivoted out of engagement with said tape to position the same between said gate and said sound head by slidable movement of the carriage relative to said main plate and in latched position with respect thereto.

GRAHAM P. SMITH.

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