

June 8, 1965

J. G. FONTAINE
CHANGEABLE EXHIBITOR

3,187,451

Filed July 1, 1963

3 Sheets-Sheet 1

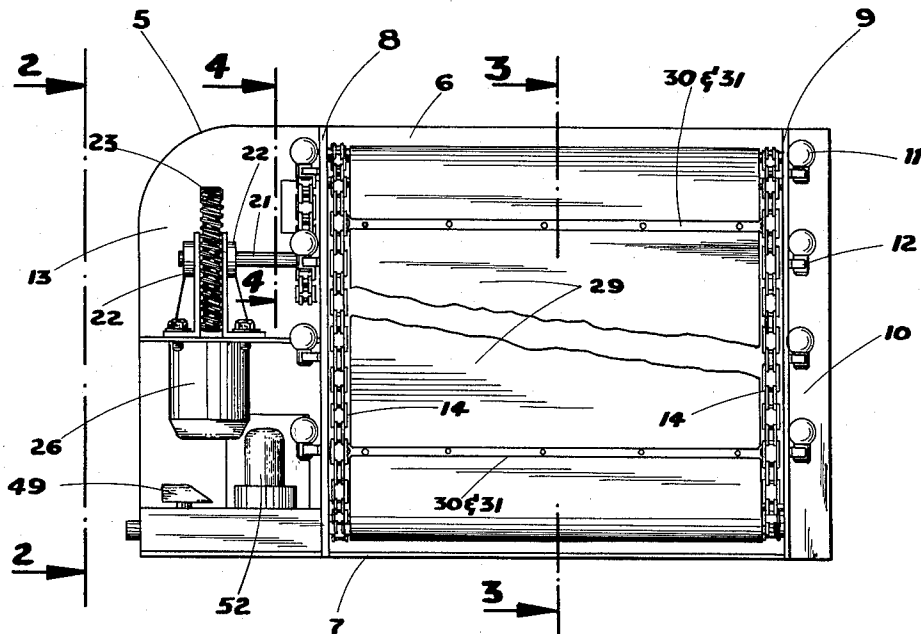


FIGURE 1

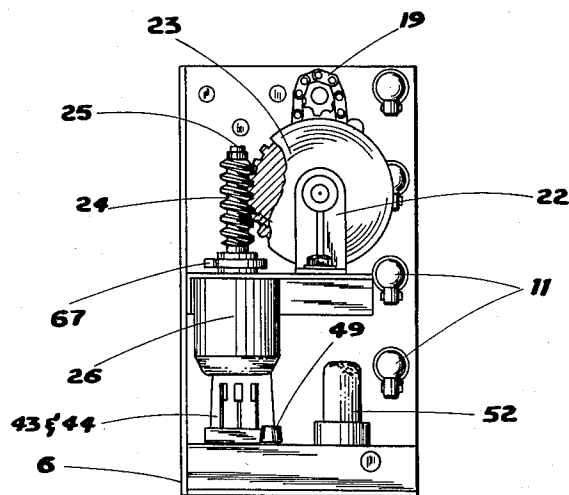


FIGURE 2

INVENTOR.
JOHN G. FONTAINE
BY
ATTORNEY
James W. Gles

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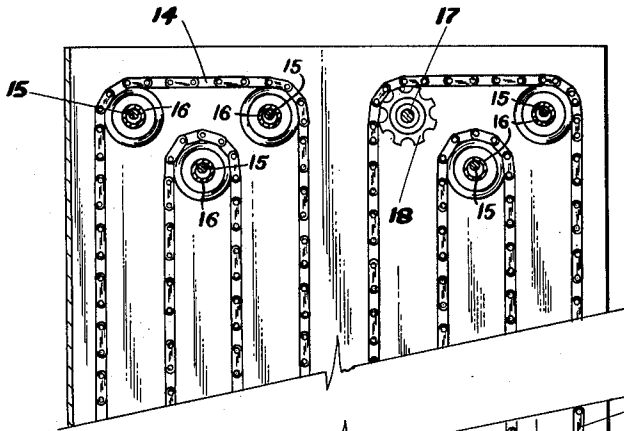
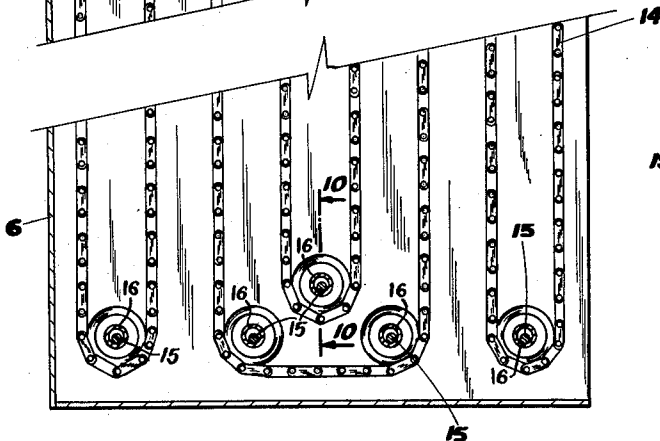


FIGURE 3

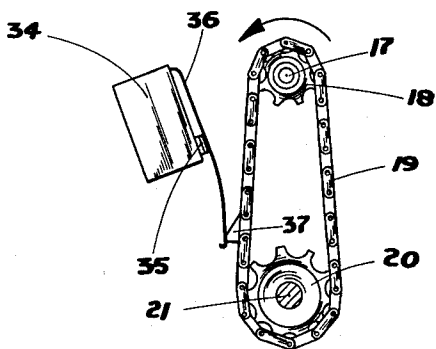


FIGURE 4

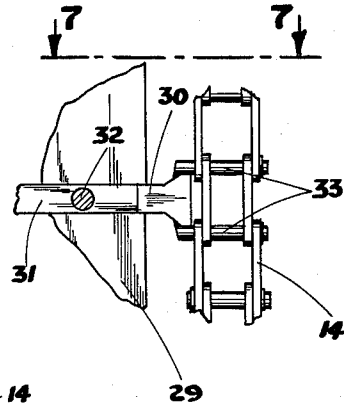


FIGURE 5

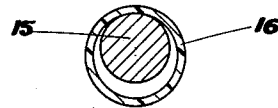


FIGURE 6

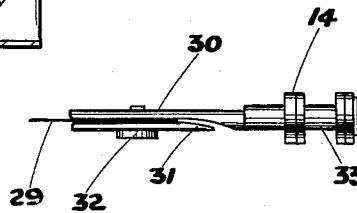


FIGURE 7

INVENTOR.
JOHN G. FONTAINE
BY
ATTORNEY
James H. Glee

J. G. FONTAINE
CHANGEABLE EXHIBITOR

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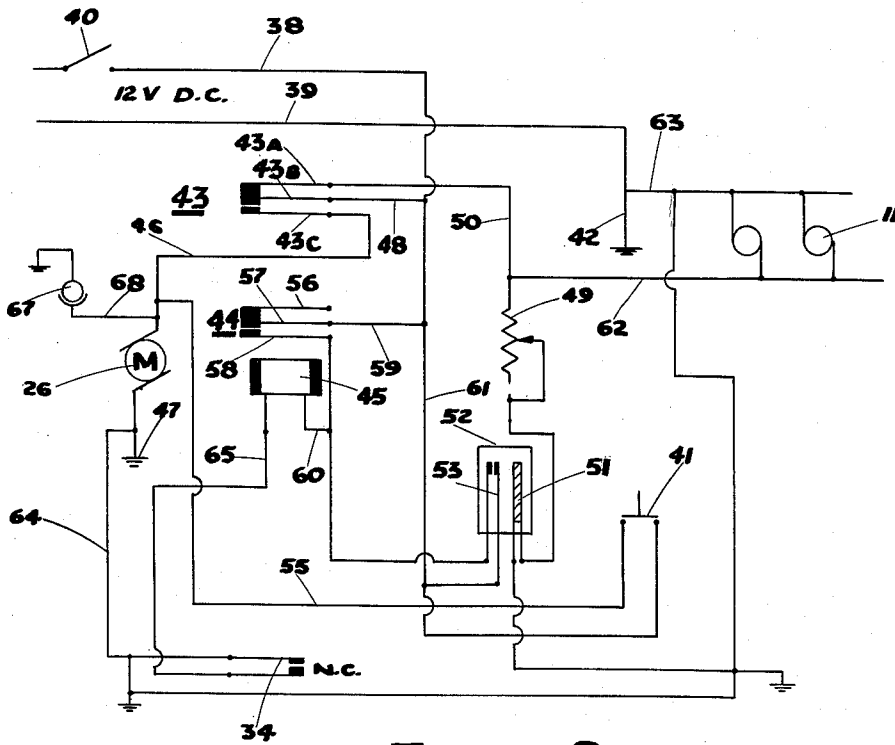
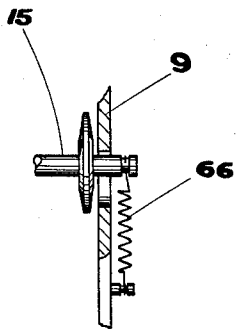
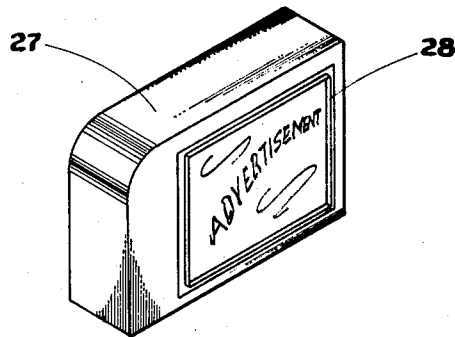


FIGURE 8

**FIGURE 10****FIGURE 9**

INVENTOR
JOHN G. FONTAINE
BY
ATTORNEY
James H. Gyles

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3,187,451

CHANGEABLE EXHIBITOR

John Garfield Fontaine, 2817 NE. 26th Court,
Fort Lauderdale, Fla.

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1 Claim. (Cl. 40—32)

This invention relates to a changeable exhibitor and has particular reference to a changeable exhibitor having an endless conveyor upon which is supported transparencies or opaque panels in spaced apart relation to the conveyor and that are conducted in timed sequence to a sight opening within a casing in which the device is disposed.

The invention contemplates a casing having a cover plate that is provided with a sight opening and with the casing having a pair of endless chains upon which display panels are connected at predetermined positions and whereby the panels are conducted in a timed sequence to be observed through the sight opening for a predetermined length of time after which, the chains are activated to move another panel into position to be observed through the sight opening and with mechanical and electrical means for driving the chains in a stepped motion and so timed that the display panels coincide with the sight opening and with the electrical means embodying illuminating lamps, a driving electric motor and with means in the electrical circuit whereby, when a panel is aligned with the sight opening, the drive means will be interrupted for a predetermined time to permit visibility of the panels.

A further object of the invention is to provide an endless conveyor for supporting spaced apart panels that are alternately aligned with a sight opening and means connected with the chains whereby to quickly and easily connect the several panels for their movement through the machine.

Novel features of construction and operation of the device will be more clearly apparent during the course of the following description, reference being had to the accompanying drawings wherein has been illustrated a preferred form of the device and wherein like characters of reference are employed to denote like parts throughout the several figures.

In the drawings:

FIGURE 1 is a side elevation of a changeable exhibitor constructed in accordance with the invention and with a cover plate being removed,

FIGURE 2 is a left end view of the device of FIGURE 1,

FIGURE 3 is a transverse vertical section taken substantially on line 3—3 of FIGURE 1,

FIGURE 4 is a view illustrating a driving means for endless chain conveyors and a circuit interrupting device,

FIGURE 5 is an enlarged fragmentary view of a connecting bar for supporting display panels,

FIGURE 6 is a fragmentary sectional view through a supporting shaft for endless conveyor and an anti-friction supporting tube,

FIGURE 7 is a section taken substantially on line 7—7 of FIGURE 5,

FIGURE 8 is a diagrammatic illustration of a circuit embodied in the device, and

FIGURE 9 is a perspective view of the exhibitor in the fully assembled relation.

FIGURE 10 is a fragmentary sectional view illustrating tension means for certain of the shafts.

Referring specifically to the drawings, there has been provided a housing 5, including a back plate 6 and a bottom 7. The back plate 6 carries a pair of forwardly extending partition plates 8 and 9. The partition plate 9 is spaced slightly inwardly from the adjacent end of the

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plate 6 to form housing 10 for the reception of lamps 11, carried by brackets 12. The partition 8 is spaced a considerable distance inwardly from the opposite end of the back 6 to provide a housing 13 for operative mechanism for driving a pair of endless chain devices 14. The chain devices 14 are supported upon cross shafts 15 that are journaled in the partitions 8 and 9. Each of the shafts 15 carry tubular anti-friction sleeve 16. One shaft 17 extends outwardly beyond a partition 8 and is provided upon its extended end with a sprocket 18. The sprocket 18 is driven by a chain 19, engaging a sprocket 20 that is fixed upon a short shaft section 21, journaled in bearings 22. The shaft 21 at its opposite end carries a worm wheel 23, that is driven by a short worm 24, fast upon a shaft 25, driven by an electric motor 26. The worm wheel, the worm and the motor are disposed within the housing 13. Adapted to have fitting engagement over the housing 5, is a cover plate 27. The cover plate 27 is provided with a sight opening 28 and the cover plate is connected to the housing in any desirable manner and with the sight opening being disposed in overlying relation to display panels, to be hereinafter described. The panels are indicated at 29 and are equidistantly spaced upon the conveyor chain 14. The panels may contain advertising matter, pictorial illustrations and other information that will attract persons to the display device and it is contemplated that the device shall be mounted in the forward end of vehicles, such as buses, railway trains or the like. Each of the panels 29 have their upper and lower marginal portions clamped against a flat side of a bar 30, by an overlying bar 31, the two bars having clamping relation with the marginal edge of the panel by screws or like fastenings 32. Each of the bars 30 have their end portions bifurcated, forming cylindrical pins 33 that have fitting engagement as pivotal members for the links of the chains 14. As the chains are driven by the shaft 17, they merely have overriding engagement with the several tubes 16 upon the shafts 15, there being only one driving sprocket for the chains. As shown in FIGURE 3, the chains have a plurality of flights all in parallel relation and carry the panels 29 over the tubes 16 where they will freely ride without abrupt bending of the panels. The panels are therefore quickly interchanged by merely removing the bar 31 after removal of the screws 32.

Means are provided adjacent to the drive chain 19 for interrupting the movement of the panels so that the entire mechanism is stopped when a panel 29 becomes aligned with the sight opening 28. For this purpose, there has been provided a switch 34 having a depressible button 35 that is actuated by a spring tongue 36. The tongue 36 is disposed in alignment with the chain 19 and the chain 19 is provided with a lug 37 so that the chain in making one complete revolution, will actuate the switch 34 to interrupt the flow of current to the motor 26. As the lug 37 overrides the spring tongue 36, the coasting of the chains and the panels will be sufficient to cause the lug 37 to move slightly beyond the tongue 36 to permit the switch 34 to be again activated.

One effective electrical system has been indicated in FIGURE 8 whereby to activate and interrupt the circuit for a predetermined number of seconds to permit a particular panel to be adequately displayed. The circuit includes a pair of conductors 38 and 39 leading from a source of electrical energy and the conductor 38 is provided with a switch 40. The conductor 38 has connection with a push button switch 41 while the conductor 39 is grounded at 42. The conductor 38 is also connected to a pair of relays 43 and 44 energized by a solenoid magnet 45. One leg of the relay 43 is connected to the motor 26 by a conductor 46, while the motor upon its opposite side is grounded at 47. The relay 43 has three metallic tongues

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43a, 43b and 43c. The tongues 43a and 43b are normally biased together and the tongue 43b is connected to the conductor 38 by a conductor 48 while the tongue 43a is connected to a resistor 49 by a conductor 50. The resistor 49 is connected to a heater element 51 disposed within a shell 52, see FIGURE 2 of the drawings. The heater element 51 functions to heat a pair of bi-metallic elements 53 constituting a circuit maker and the elements 53 are connected to the conductor 38 and also to the motor by conductors 54 and 55. Relay 44 is provided with tongues 56, 57 and 58. The tongues 56 and 57 are normally biased together and the tongue 57 is connected to the conductor 38 by a conductor 59. The tongue 58 is connected to the solenoid 45 and to one tongue of the connector 53 by conductors 60 and 61. The push button switch 41 is connected to the conductor 38 and to the conductor 55 and serves to energize the system for an initial operation of the mechanism. The lamps 11 are energized by a circuit that includes the circuit 38, conductor 48, tongues 43a and 43b to the conductor 50 and through a conductor 62, to the lamps 11 and through a common conductor 63, to the ground 42. The switch 34 is connected to the ground side of the motor 26 by a conductor 64. The switch 34 is further connected to the solenoid 45 by a conductor 65. The switch 41 is connected to the conductor 38 and a conductor 55 that leads to the positive side of the motor 26. The motor 26 may be provided with a brake device 67.

Referring now to FIGURE 10, there has been illustrated a tension means for the lower group of shafts 15. The lower group of shafts 15 extend through slots formed in the partitions 8 and 9 and are connected to springs 66 to bias the shafts 15 downwardly and to maintain sufficient tension upon the chains 14 in their overriding movement. The springs 66 are connected to lugs at their opposite ends, fixed to the partitions 8 and 9.

With respect to FIGURE 6 of the drawings, showing an overriding tubular sleeve 16, FIGURE 3 will be corrected accordingly to show the sleeve 16 eccentric with respect to the shafts 15.

With respect to FIGURE 7, elements 30 and 31 are fragmentarily illustrated in both FIGURES 5 and 7. The description of the bars 30 and 31 are fully described in column 2, lines 29-36, and the bars 30 are bifurcated, forming pins 33 that constitute link connecting means for the chains 14 and the bars 30 and 31, in FIGURE 1 have been illustrated as extending from one chain to the other.

Operation of the device is as follows:

With the several display panels 29 clamped between the bars 30 and 31 for the full length of the conveyor chains 14, the cover 27 is fitted over the housing 5 and secured by such convenient means that the cover can be easily removed for the interchange of panels. With the cover in position, the sight opening 28 will be properly aligned with a panel. The conveyor chain will be progressively moved after a predetermined rest period a distance equal to one panel and the movement is such as to align the next adjacent panel with the opening 28 and this step by step movement is continuous so long as the actuating mechanism is energized.

Now, connection is made with a source of energy by the switch 40. To start the machine, the switch 41 is actuated causing a flow of energy through conductors 38 and 55 to energize the motor 26. Energy also flows through tongues 43a and 43b of relay 43, conductor 50, resistor 49, to heater element 51 and thence to the ground. The flow of energy through conductor 50 also energizes the several lamps 11 for illuminating each panel during such time as the machine is inactivated as to permit viewing of the subject matter of the panel. When the bi-metallic tongues 53 are closed by the heater 51, solenoid magnet 45 is energized by conductors 60 and 61, closing relay tongues 57 and 58 and 43b and 43c, deenergizing the lamps 11, interrupting the flow of current to the heater

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and permitting the opening of the tongues 53. Current will then flow from conductor 38, through tongues 43b and 43c, conductor 46 and causing the motor 26 to drive the chains through the worm and worm wheels 24 and 23 and through the shaft 21 to the chain drive shaft 17 through the medium of the sprockets 18 and 20 and sprocket chain 19. The chains 14 are thus set in motion and when a next panel is moved into position, lug 37 strikes the tongue 36 of switch 34, opening the switch and stopping the motor. Simultaneously the magnet 45 is de-energized and permits the relays 43 and 44 to assume their initial position and the circuit again set for a delay action and to energize the lamps 11.

It may be found necessary to place a magnetic brake 67 upon the motor shaft, such brake being energized by a conductor 68 from the conductor 46 to prevent an override of the motor when de-energized and whereby to assure that each panel will be properly aligned with the opening 28.

It will be apparent from the foregoing that a very novel form of changeable display device has been provided. The relatively long conveyor chains make it possible to clamp a considerable number of panels thereon and the several panels are aligned with a sight opening in successive order and the panels are displayed and illuminated within a predetermined number of seconds. Novel means have been provided to electrically drive the display device and during the change from one panel to another the lights are extinguished until the panel has been brought into view. Novel electrical means has been illustrated so that the mechanism is started and runs for a predetermined period of time to change from one panel to another at which time the lamps are illuminated for a predetermined number of seconds and then the electrical system deactivated and driven for such a period of time to change from one panel to another. While an operative electrical system has been displayed, it will follow that other means may be employed to alternately activate the change mechanism. The structure is simple, has relatively few parts and is cheap to manufacture.

It is to be understood that the invention is not limited to the precise construction shown, but that changes are contemplated as readily fall within the spirit of the invention as shall be determined by the scope of the subjoined claim.

I claim:

An automatic display device that comprises a housing having a rear wall, a base plate and inwardly positioned forwardly projecting partitions, a multiplicity of parallel shafts journaled in the partitions and with one shaft constituting a drive shaft being provided with sprockets inwardly of the partitions and with the shaft extending beyond the partition and provided with a sprocket gear, a pair of endless chains disposed within the housing adjacent the inner sides of the partitions, the chains having a plurality of parallel loops, clamping bars extending between the chains upon which is clamped a plurality of rectangular panels, the bars being equidistantly spaced throughout the length of the chains, the bars at their opposite ends being bifurcated and with the bifurcations being cylindrical to form connecting links in the chains, a clamp strip fixed to each bar for clamping engagement with the upper and lower marginal edges of the panels and screw devices extending through the strips and the bars and through apertures formed in the marginal edges of the panels, all of the lower shafts with the exception of the drive shaft extending through slots formed in the partitions and spring devices connected to the extended ends of each of the non-driven shafts whereby the non-driven shafts are tensioned in a vertical direction, each of the non-driven shafts being provided with a freely rotatable cylindrical sleeve that is relatively larger than the shafts whereby to anti-frictionally support the panels as they override each of the shafts, each of the non-driven shafts being provided with rollers that are in alignment

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with the movement of the chains, the partitions being provided with a plurality of openings adjacent the forward flight of the chains, lamp bulbs fixed to brackets adjacent the openings and whereby to illuminate a properly positioned panel, a cover for the housing that is provided with a rectangular sight opening and with the sight opening being substantially co-extensive with the panels, an electric motor having a shaft that is vertically disposed and with the shaft having a worm fixed thereon, a worm wheel driven by the worm and with the worm wheel being fixed to a stub shaft, the stub shaft having a sprocket gear upon its inner end portion that is in alignment with the sprocket gear fixed upon the drive shaft for the chains, means for energizing the motor to drive the chains a distance equal to the height of one panel so that the panels are progressively moved into position behind the sight opening of the cover, the said motor being interrupted when a panel is in position for a predetermined number of seconds and then again energized for moving a next successive panel into position behind the sight opening, a circuit to the several lamps and means to interrupt the circuit to the lamps during the driving condition of the motor and then to again become illuminated after a panel

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has been shifted to a sight position, the two last named sprockets being driven by an endless sprocket chain, a lug fixed upon the chain and a switch element fixed upon the partition adjacent to the chain and whereby the lug will actuate the switch at each partial revolution of the drive shaft for moving a next adjacent panel into the line of the sight opening, for deactivating the motor and means in the circuit for again energizing the motor for moving a next adjacent panel to a position behind the sight opening.

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JEROME SCHNALL, *Primary Examiner*.

LEONARD W. VARNER, JR., *Examiner*.