Feb. 23, 1954 R. D. WELLS 2,669,790

AUTOMATIC PRODUCT DISPLAY DEVICE

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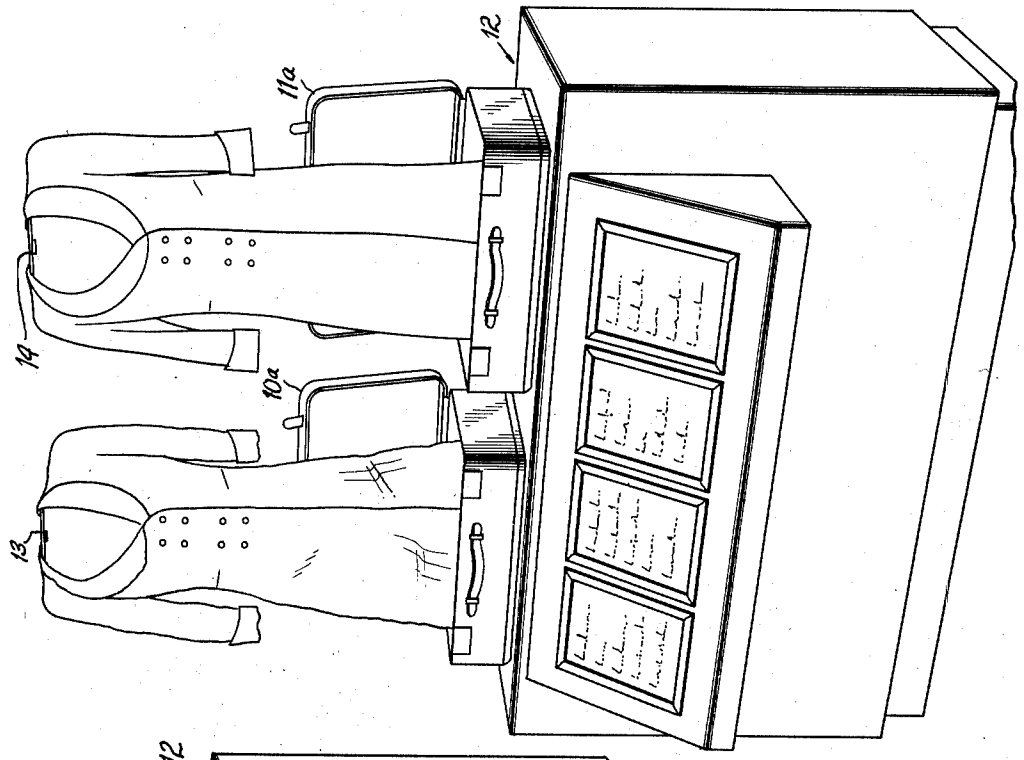

Fig. 2.

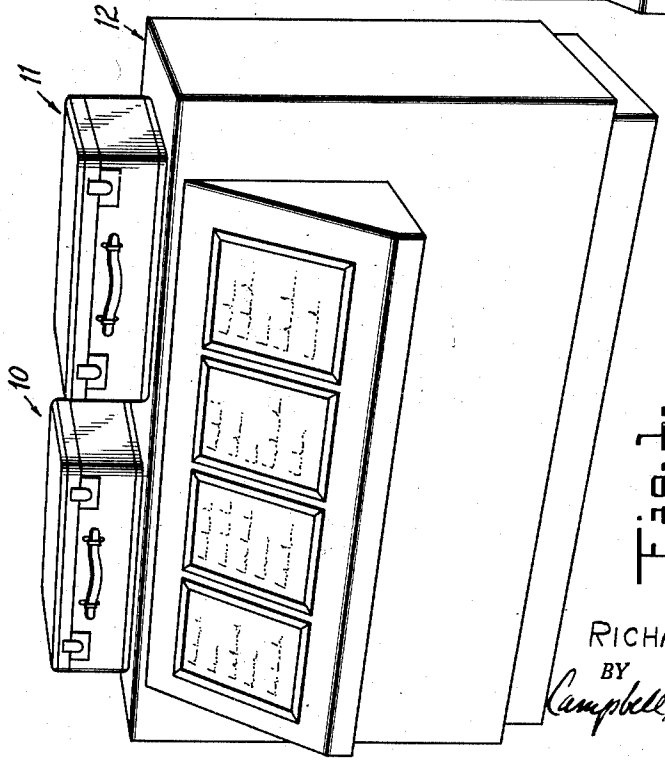

Fig. 1.

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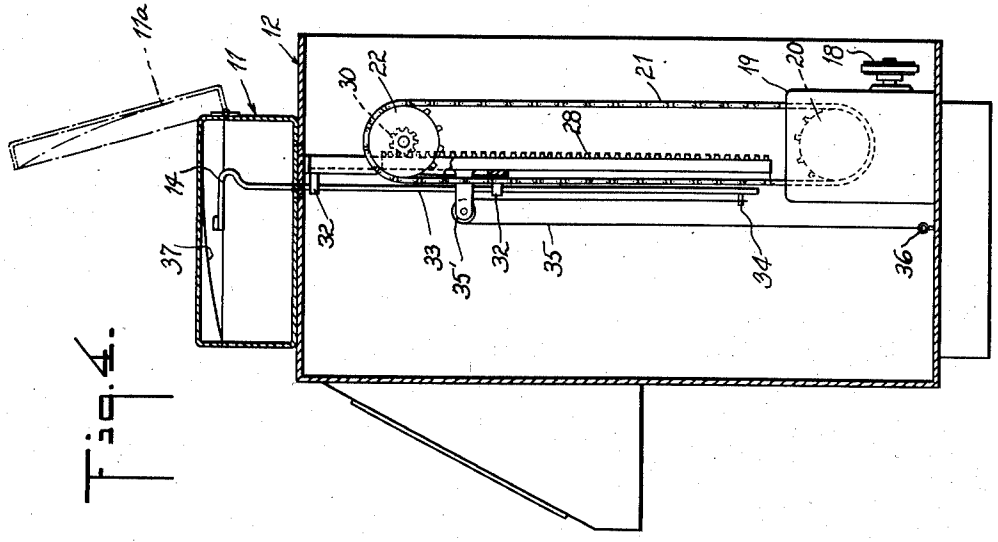

Fig. 4.

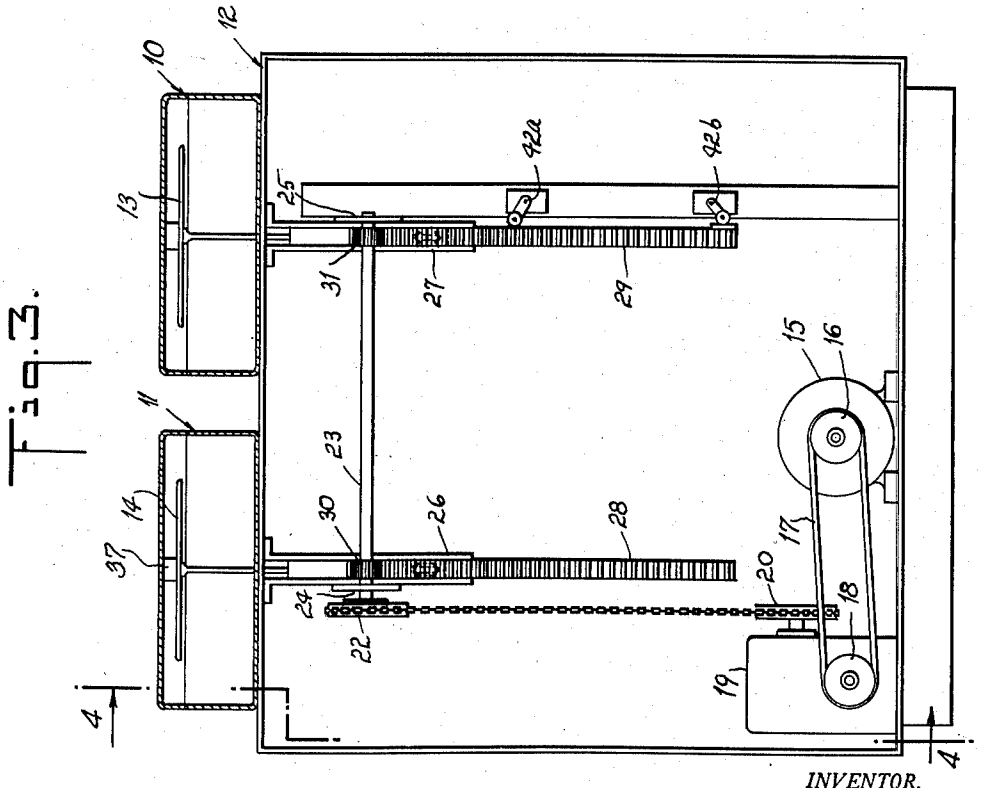

Fig. 3.

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Filed Dec. 13, 1950 3 Sheets-Sheet 3

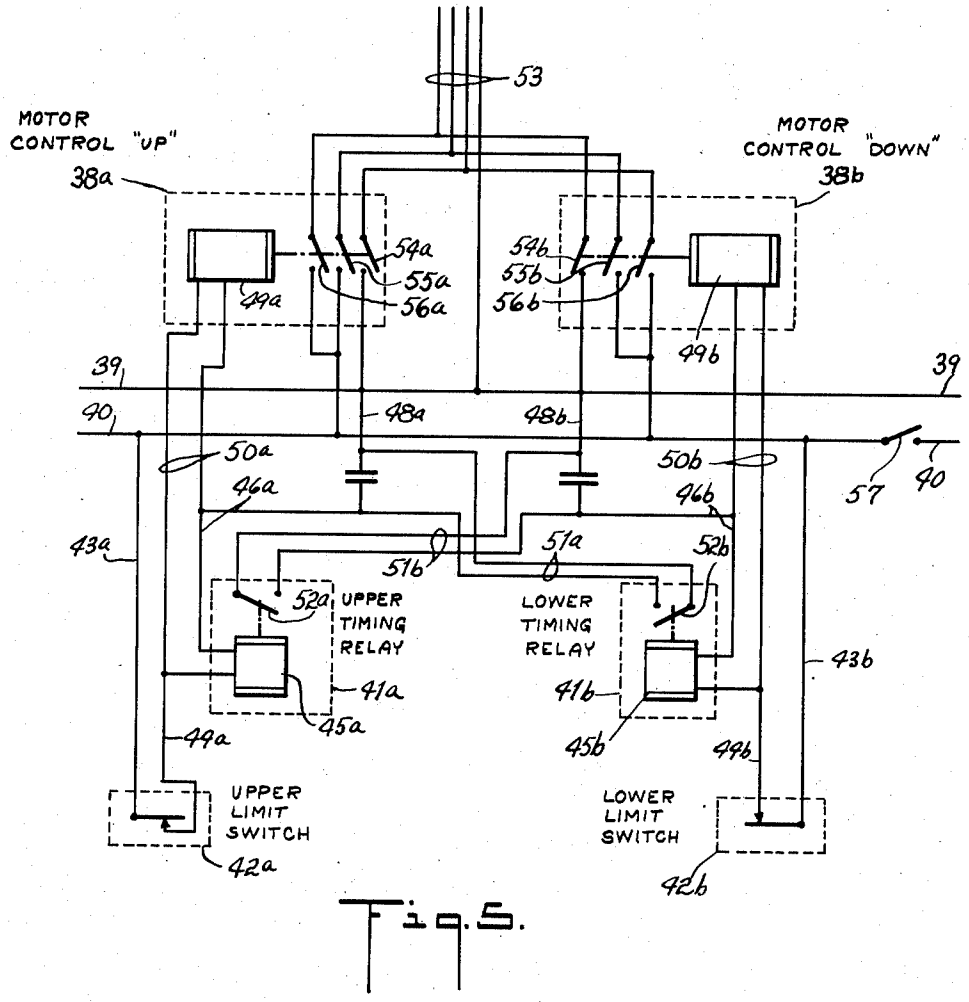

Fig. 5.

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UNITED STATES PATENT OFFICE

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AUTOMATIC PRODUCT DISPLAY DEVICE

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Application December 13, 1950, Serial No. 200,544

5 Claims. (Cl. 35—50)

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This invention relates to display devices. More particularly the invention is concerned with automatic display devices adapted to exhibit products at periodic intervals, between which the products may be subjected to certain operations simulating or duplicating the conditions under which the products are normally used.

It frequently happens that new or improved products are developed which afford certain advantages over competing products. In such cases it is advantageous to display the product in a manner which makes apparent to the observer in an incisive manner the improved characteristics of the product.

It is, therefore, an object of this invention to provide an animated display device for showing products in a manner which clearly indicates the improved characteristics thereof.

It is another object of the invention to provide a display device for periodically exposing two or more products to view for comparison for brief intervals, between which intervals the products are subjected to treatment simulating or duplicating that which the products would normally receive.

These and other features and objects of the invention may be attained by providing a display unit comprising, for example, a pair of suit-cases disposed side-by-side on a viewing counter and adapted to receive garments to be contrasted or compared. Means are provided for periodically raising the lids of the suit-cases and lifting the garments from the suit-cases so that they become completely unfolded, after which the garments are lowered into the suit-cases and the lids closed. The cycle may be made to repeat itself at any suitable frequency. A preferred embodiment of the invention is described below referring to the accompanying drawings in which:

Fig. 1 is a front view in perspective of a display device formed according to the invention;

Fig. 2 is a view similar to Fig. 1 showing the unit in operation;

Fig. 3 is a rear view of the display device with the back cover removed to show the operating mechanism in elevation, the suit-cases being shown in section;

Fig. 4 is a view in transverse section taken on the line 4—4 of Fig. 3; and

Fig. 5 is a circuit diagram of the control circuit for operating the mechanism of Figs. 3 and 4.

Referring to Figs. 1 and 2, the invention is shown as embodied in a display device including a pair of suit-cases 10 and 11 resting side-

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by-side on the top shelf of a display box 12 which may, if desired, have incorporated on its front surface a sequence of pictures and other matter explaining the significance of the display. Periodically and under the control of mechanism described below, the lids 10*a* and 11*a* of each of the suit-cases 10 and 11 open and supporting devices 13 and 14 which may be in the form of clothing hangers, for example, are carried upwardly for a distance suitable to display a garment full length. After a suitable interval the supporting devices 13 and 14 are simultaneously lowered so that the garments are placed in the suit-cases in random fashion, and the lids close thereupon to complete the cycle. The garment on one of the supports may be formed of a material which is to be contrasted in appearance or other characteristic to that on the other support. Thus, for example, the garment on the support 13 may be formed of conventional material and the garment on the support 14 may be formed of a crease-resistant material which may be packed in a suit-case more or less indiscriminately without harmful results.

In order to raise and lower the supports 13 and 14 and to open and close the lids 10*a* and 11*a* in continuous cycles, the driving mechanism as shown in Fig. 3 may be provided. A motor 15 having a pulley 16 is connected by means of the belt 17 to a pulley 18 on the input drive shaft of a step-down gear-box 19, the output shaft of which carries a sprocket 20. This sprocket 20 is connected by means of a chain 21 to a sprocket 22 on a shaft 23 rotatively journalled in bearings 24 and 25 rigidly affixed to guideways 26 and 27 respectively. Slidably received in the guideways 26 and 27 are a pair of racks 28 and 29 which are engaged by pinion gears 30 and 31, respectively, carried by the shaft 23.

Slidably journalled in suitable guide bearings 32 formed on the rack 28 (Fig. 4) is a telescoping shaft 33 carrying at its upper end the supporting device 14. Attached to the lower end of the telescoping shaft 33 at a junction 34 is a flexible cable or tape 35 which passes upwardly to a pulley 35′ carried by the movable rack 28 on its upper end. The other end of the cable 35 is attached to a stationary support by any suitable means such as a cleat 36, which may be secured to the floor portion of the display case. It will be apparent that as the rack 28 is raised from its lowered position as shown in Fig. 4 by means of the driving pinion 30, the telescoping shaft 33 will carry the supporting device 14 upwardly at twice

the rate by virtue of the pulley arrangement described. The supporting device 13 is similiarly mounted on the rack 29.

The under surfaces of the suit-cases 10 and 11 and the opposing top surface of the box 12 are formed with enlarged openings which receive the racks 28 and 29 respectively when the latter are raised. Secured to the inner surface of each of the lids in a track 37 which is adapted to be engaged by the upper end of the rising telescoping shaft on each of the racks. When the telescoping shafts are extended to full length, such as shown in Fig. 2, the suit-case lids are held open, and as the shafts are retracted the lids are allowed to fall closed.

The operation of the electric motor 15 to drive the rack assemblies 28 and 29 in their up and down movements as described above, is controlled by the electrical system shown schematically in Fig. 5. Broadly, the motor 15 is under the control of "up" control means 38*a*, and "down" control means 38*b*, which are connected by a conduit 53 to energize the appropriate motor windings. In the illustrated embodiment of the invention, the control means are adapted to energize both starting and running windings (not shown) in the motor 15 in the proper sequence.

The timing of the rack movement is under the control of upper and lower conventional timing or delayed action relays 41*a* and 41*b*, respectively, and upper and lower normally-closed limit switches 42*a* and 42*b*, respectively. The upper limit switch 42*a* is connected by a conductor 43*a* to the supply main 40, and by a circuit including conductor 44*a*, electromagnetic coil 45*a* in the relay 41*a*, conductor 43*a*, conduit 51*a* including switch 52*b* of relay 41*b*, and conductor 48*a* to the supply main 39. Actuating coil 49*a* of the "up" motor control means 38*a* is connected in shunt across the coil 45*a* by means of conduit 50*a*.

In a like manner the lower limit switch 42*b* is connected to the supply main 40 by means of a conductor 43*b* and to the supply main 39 by means of a circuit including conductor 44*b*, coil 45*b* of the lower timing relay 41*b*, conductor 46*b*, conduit 51*b* including switch 52*a* of relay 41*a*, and conductor 48*b*. Actuating coil 49*b* of the "down" motor control means is connected in shunt across the relay coil 45*b* by means of a conduit 50*b*.

The "up" and "down" control means 38*a* and 38*b* include, respectively, switches 54*a*, 54*b* and 56*a*, 56*b* connected in the circuits of conduit 53 to energize the starting winding (not shown) of the motor for establishing the proper hand of rotation. Switches 55*a*, 55*b* are provided for energizing the running winding after the motor has started, all according to well known methods.

Starting switch 57 is provided in the power main 40, and to operate the device this switch is first closed. It is assumed for purposes of description that the racks are in an intermediate position and moving downwardly. The upper limit switch 42*a* and lower limit switch 42*b* are closed, as are the appropriate switches in the "down" control means 38*b*. Also closed is the switch 52*a* of the upper timing relay 41*a*. The switch 52*b* of the lower timing relay 41*b*, and the "up" control switches 54*a*, 55*a* and 56*a* are open.

The switches in the "down" control means are held closed by the coil 49*b* which is energized by a circuit including supply main 40, conductor 43*b*, closed lower limit switch 42*b*, conductor 44*b*, conduit 50*b*, conductor 46*b*, conduit 51*b*, including closed switch 52*a* in the upper timing relay 41*a*, and conductor 48*b* to supply main 39. As the rack reaches its lower position, the lower limit switch 42*b* is opened, thereby breaking the circuit described above, deenergizing coil 49*b*, causing the switches of control means 38*b* to open to deenergize the motor 15. This also deenergizes the lower timing relay 41*b* and after a preestablished interval, say ten seconds, switch 52*b* thereof automatically closes, thereby connecting the coil 49*a* of the "up" motor control means across the power lines 39 and 40, through the circuit including suppy main 40, conductor 43*a*, closed upper limit switch 42*a*, conductor 44*a*, coil 45*a*, conductor 46*a*, conduit 51*a* including the now closed switch 52*b*, and conductor 48*a* to the supply main 39. This causes the switches 54*a*, 56*a* in the "up" control means to close, energizing the starting windings in the motor to drive it in the appropriate direction of rotation to drive the racks upwardly. Subsequently switch 55*a* closes to energize the running windings. As the rack moves upwardly the bottom limit switch is permitted to close. The rack then continues to the top of this stroke where the upper limit switch is opened to deenergize the motor as described above. The upper timing relay is deenergized, and after a preestablished period, say ten seconds, the switch 52*a* thereof closes which again completes the circuit to energize the "down" control means. Also when the circuit is completed the lower timing relay 41*b* is energized to open its switch 52*b* and the rack starts down to repeat the cycle. Because switch 52*b* is open the "up" control means 38*a* cannot be energized.

It will be understood that various other circuit arrangements may be provided according to the type of motor used in order to achieve substantially similar results. The particular form of the invention here described and illustrated in the accompanying drawings is presented merely as an example of how the invention may be applied. Other forms, embodiments and applications of the invention coming within the proper scope of the claims will readily suggest themselves to those skilled in the art.

What is claimed is:

1. In a display device for providing a comparative visual indication of at least two products comprising housing means for receiving said products to represent a service condition for the products, carrier means for each of said products movable between extreme exposed positions spaced from said housing means and extreme positions within said housing means representative of a service condition for the products, actuating means for simultaneously displacing said carrier means between said extreme positions, limit means actuated by the carrier for terminating the operation of said actuating means upon arrival of said carrier means in either of its extreme positions, time delay means actuated by the limit means for re-initiating said actuating means a pre-established interval after actuation of said limit means to move said carrier to the opposite extreme position.

2. In a display device as set forth in claim 1, said carrier means including a telescoping shaft assembly comprising a first movable member and a second movable member mounted on the first member for movement relative thereto, and motion amplifying driving connections responsive to movement of said first member to displace said second member for a distance exceeding that of the first member, said product being carried by said second member.

3. In a display device as set forth in claim 1, said housing means comprising a container for each of said products, each container having a lid portion, said actuating means being adapted to raise simultaneously the lid portions of said containers and to move the products of display to the extreme exposed positions, and subsequently to move the products to their extreme concealed positions and to close the container lids thereupon.

4. In a display device as set forth in claim 1, said actuating means comprising an electric motor, control means for said motor including electrical circuit and switch means for energizing said motor for the appropriate direction of rotation to move the carrier means between the extreme exposed and concealed positions under the control of said limit means and time delay means, said time delay means comprising first and second time delay relays including switch means to close the circuits for energizing the motor.

5. In a display device for providing a comparative visual indication of at least two fabric products, a pair of suit-cases having hinged lid portions, a housing upon which both of said suit-cases are supported with lid portions on the top side, said suit-cases being formed with openings in their undersides in alignment with openings in the supporting housing, a pair of rack assemblies mounted in said housing for vertical movement between a lower extreme position beneath the lid portions and an upper extreme position above said

lid portions, motive means for driving said racks simultaneously upwardly and simultaneously downwardly between the upper and lower positions, said rack assemblies including rack portions and shaft portions mounted on the rack portions for movement relative thereto, and linkage means responsive to movement of said rack portions for moving said shaft portions relatively to said racks, support means on each of said shafts for carrying fabric display products, means carried by said shafts for engaging and raising the lids of the suit-cases on the upward stroke thereof, electrical circuit means for energizing said motive means to operate said rack assemblies, limit switch means operated by at least one of said rack assemblies in the respective upper and lower positions for deenergizing said motive means, and time delay relay means including switch means for energizing said motive means a preestablished interval after each extreme position is reached.

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