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L. M. GRAVES ET AL

2,490,903

WINDOW DISPLAY CONVEYER APPARATUS

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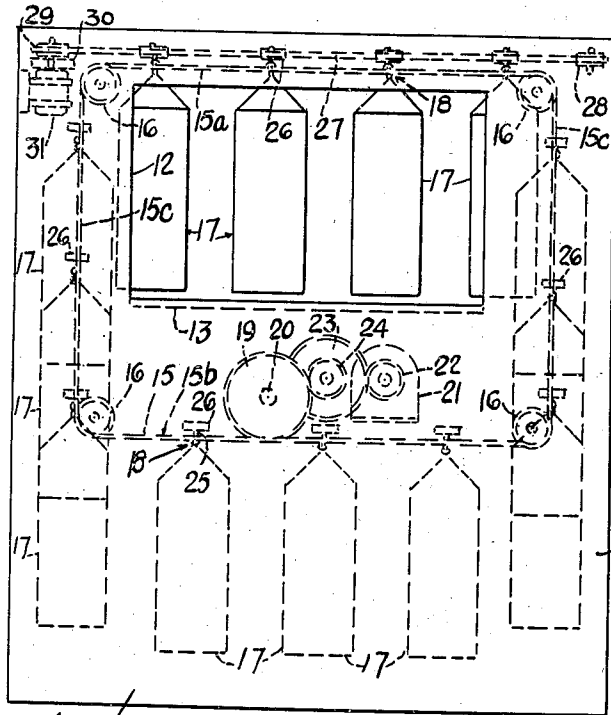


Fig. 1

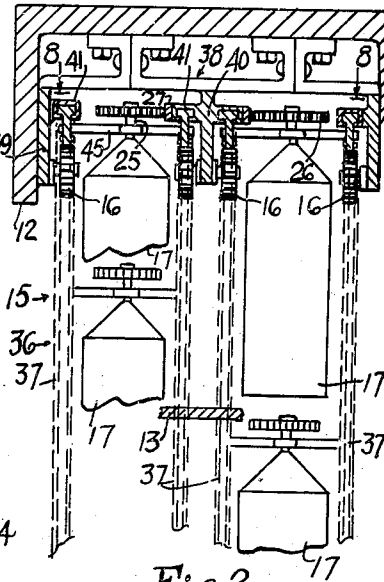


Fig. 2

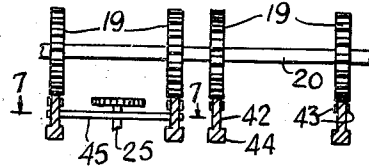


Fig. 3

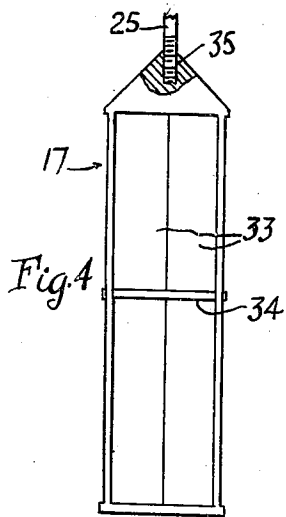


Fig. 4

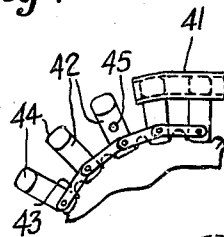
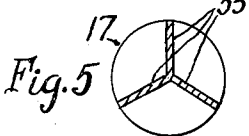


Fig. 5

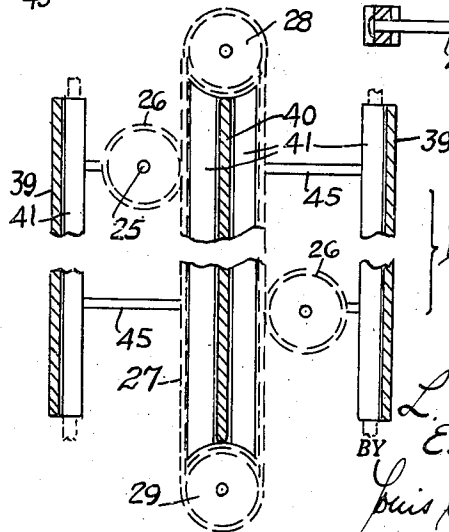


Fig. 6

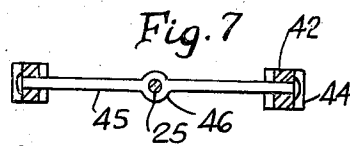


Fig. 7

Fig. 8

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WINDOW DISPLAY CONVEYER
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2 Claims. (Cl. 211—1.5)

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This invention relates to window display apparatus, and has particular reference to devices of this character in which the display is automatically continuously changed.

One object of the invention is to provide a window display apparatus having improved means whereby a store may exhibit much greater amount and variety of its merchandise than the capacity of its show window would normally permit.

Another object of the invention is to provide apparatus of the type mentioned having improved means wherein the moveable display may be changed out of sight while a portion of the display is on exhibit in the window.

Another object of the invention is the provision of apparatus of the nature set forth having improved conveyor means constructed and arranged so that a portion of the conveyor may be loaded, for instance in a basement beneath the show window or in some other concealed compartment which is easily accessible within the store, without disturbing that portion of the display that is being exhibited in the window, and even without stopping the movement of the conveyor.

Another object of the invention is to furnish display apparatus having improved means whereby an endless conveyor is furnished with a series of rotary display carrier units; and a supplemental object is to provide actuator means for causing rotation of the display units while the conveyor is in motion or even while the conveyor is stationary; and preferably the invention provides for rotation of the carrier display units along the exhibit portion of the conveyor path so that the display units may be changed or rearranged in a convenient manner at other portions of the path without interrupting the movement of the conveyor.

Other objects and advantages of the invention will become apparent as the specification proceeds.

With the aforesaid objects in view, the invention comprises the novel features, combinations and arrangements of parts hereinafter described in their preferred embodiments, pointed out in the subjoined claims, and illustrated in the annexed drawing, wherein like parts are designated by the same reference characters throughout the several views.

In the drawing:

Fig. 1 is a diagrammatic view and front elevation showing a window display apparatus embodying the invention.

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Fig. 2 is an enlarged transverse sectional view of the apparatus, with parts removed but showing additional details of the apparatus.

Fig. 3 is a fragmentary sectional view of a lower portion of the apparatus, showing a drive element therefor.

Fig. 4 is an enlarged view with parts in sections showing further details of a display carrier unit.

Fig. 5 is a horizontal section of the unit of Fig. 4.

Fig. 6 is an enlarged fragmentary view of a portion of the conveyor.

Fig. 7 is a sectional view taken on the line 7—7 of Fig. 3.

Fig. 8 is a fragmentary sectional view taken on the line 8—8 of Fig. 2.

The advantages of the invention as here outlined are best realized when all of its features and instrumentalities are combined, but, useful embodiments may be produced involving less than the whole.

It will be obvious to those skilled in the art to which the invention appertains, that the same may be incorporated in several different constructions. The accompanying drawing, therefore, is submitted merely as showing a preferred exemplification of the invention.

Referring in detail to the drawing, 10 denotes a window display apparatus embodying the invention. The part 11 may consist of a suitable casing or building provided with a display window 12 having a floor 13. The latter thus divides the casing 11 into an upper display section and into a lower concealing section 14, and the portions of the case 11 at the ends and at the top of the window may also serve to house and conceal portions of the conveyor apparatus. The latter preferably includes an endless flexible conveyor 15 which engages around appropriately mounted pulleys or sprockets 16, whereby the conveyor travels in a vertical plane with an upper run 15a at the top of the window and a lower run 15b below the floor 13. The vertical runs 15c are disposed laterally of the ends of the window. Mounted on the conveyor 15 is a series of carrier display units 17 which are so coordinated in arrangement with the conveyor that a relatively large number of said units can be carried thereby in relatively close relation to each other so that an appropriate number of the units may always be shown at the window 12 at any one time. Preferably the display units 17 are suspended on the conveyor 15 by any suitable means at 18 which permits rotation of the units about their

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vertical axes. Actuator means for the conveyor may include any suitable drive, for example toothed wheels 19 on a shaft 20 connected to a suitable source of power such as a motor 21, with the interposition of a speed reduction means such as toothed wheels 22, 23 and 24. The arrangement shown is considered to have certain advantages as against a drive directly connected to certain of the sprocket wheels 16. For causing rotation of the display units 17, the suspension shafts 25 of the latter may be provided with toothed wheels or sprockets 26 disposed so as to be engageable with a toothed member 27 that extends longitudinally of the upper run 15a of the conveyor. This member 27 is preferably an endless chain or other flexible member mounted on wheels or sprockets 28, 29, the latter connected through a speed reduction means 30 to a source of power such as a motor 31.

In operation, the conveyor 15 travels to carry the display units 17 continuously through the display casing 11, across the window 12 thereof. A plurality of these units are always shown at the window while other units are ascending and descending along the vertical runs 15c. Still other units are moving horizontally below the window floor 12 and through the basement section 14 of the casing. In the latter the arrangement of the displays carried by the units 17 may be changed or the units may be replaced by others. During this movement of the conveyor 15, those display units 17 which are at the window 12 are constantly rotated so that all parts and sides of a display or of articles exhibited may be easily observed. The members 25 come into and out of engagement with the flexible drive element in any suitable manner, and such engagement may be merely frictional such as that which occurs between a belt and a pulley. But this engagement occurs preferably only along the upper run 15a of the conveyor. Along the bottom run 15b the display units do not rotate, and hence the displays may be changed while the units are being carried by the moving conveyor. Because the members 15 and 27 are separately driven, the display units may be rotated while the conveyor is stationary. This is of advantage because it may be preferred to exhibit certain special articles for a prolonged period of time. Then again it will be possible by the use of a variable speed motor 31 to drive the member 27 at such a speed with relation to the moving conveyor that the display unit 17 will be non-rotating. Accordingly it is seen that the invention provides an apparatus which is highly flexible in operation for instant adjustability to a great variety of conditions.

The display units 17 may be of any desired arrangement and construction. For instance, as shown in Figures 4 and 5, each of them may include a plurality of angular upright walls 33 to furnish three (3) main compartments which may be further divided by a horizontal shelf 34. These units may be detachable as by providing a coupling or screw threaded connection 35 at the suspension shafts 25.

Referring now to Fig. 2, further details of the conveyor construction are shown, the latter being illustrated as included two (2) separate conveyors in order to permit a sufficient number of display units 17 to be simultaneously exhibited at the window, the units on one of these conveyors being staggered relative to those on the other. These separate conveyors 36 are identical in construction and each includes a pair of sep-

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arate flexible members or endless chains 37 on the sprocket wheels 16, the arrangement being in all respects like that described for Fig. 1 except for the introduction of additional details to show a complete arrangement. A bracket structure 38 secured to the ceiling of the show case may carry depending longitudinal flanges 39 and 40 for mounting the sprocket wheels 16 along the top run of the conveyor, and also for carrying channels 41 having longitudinally lipped flanges which engage the conveyor chains 37 to assume the weight of the display units and prevent sagging between the sprocket wheels 16. Each conveyor chain 37 is of any suitable construction and is formed with toothed elements 42 pivotably interconnected by links 43, and formed with headed portions 44 adapted to slideably engage in the tracks 41. Journaled in certain of the elements 42 are horizontal shafts or rungs 45 formed with hubs 46 in which are journaled the vertical shafts 25 on which the display units are suspended. Affixed on these shafts 25 are the drive wheels 26 engaging the chain or belt 27 which engages around the wheels 28, 29. The arrangement is clearly shown in Fig. 8, with the member 27 forming a loop horizontally extending around the flange 40 and the adjacent tracks 41. It is noted that the elements 28 are spaced sufficiently laterally of the sprockets 16 to avoid interference.

The operation of the apparatus in connection with the further details of construction just described will now be briefly explained. By the provision of a single rotating means 27 in the relationship shown, the display units on both conveyors 36 are simultaneously rotated along the upper run, and such rotation will occur in opposite directions, thus adding variety to the display effect. Since certain of the display units travel along the front of the display case and others along the rear thereof, an attractive effect in depth of display is obtained. By locating the display units between a pair of chains 37, interference with the latter is avoided, and likewise the members 26 will always be spaced away from those chains, and finally a balanced suspension effect is afforded. Details relating to the mounting of the lower run of the conveyor, for carrying the adjacent sprocket wheels and for avoiding sag are not specifically shown, being well within the knowledge of any one skilled in the art, but of course tracks such as 41 may also be provided along the lower run of the conveyor. The motor 21 and the reduction drive may be disposed in any suitable place inwardly of the casing 11 or within the store itself.

We claim:

1. A display device including a plurality of sprocket-mounted conveyors traveling side by side in vertical planes so as to provide vertical runs and horizontal upper and lower runs, a series of display carriers mounted on each conveyor, means for pivotally suspending the display carriers on the different conveyors including means for rotatably mounting the display carriers, comprising a rotary actuator portion connected to each display carrier, an endless flexible member having horizontal runs respectively engaging the actuator portions of the display carriers of the different conveyors along one of the horizontal runs and disengaging the actuator portions at an end of the said horizontal run of the conveyors, and means for moving the endless member and the conveyors.
2. A device including a sprocket-mounted end-

less conveyor having a horizontal run and a vertical run, a plurality of rungs spaced along and pivoted to the conveyor, a series of upright display carriers rotatably suspended on the rungs so that the carriers are maintained upright, the spacing between the rungs being sufficient to permit a display carrier to move between a pair of adjacent rungs along the vertical run of the conveyor, means for moving the conveyor, and means for rotating the display carriers along one of the runs independently of the movement of the conveyor.

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REFERENCES CITED

The following references are of record in the file of this patent:

Number	
746,717	
1,002,911	
1,389,887	
1,539,351	
1,984,948	
2,072,502	
2,165,727	
2,260,528	

15

Number	
25,940	

UNITED STATES PATENTS

Name	Date
Long -----	Dec. 15, 1903
Fuller -----	Sept. 12, 1911
Leyland et al. -----	Sept. 6, 1921
Deardurff -----	May 26, 1925
Sigsbee -----	Dec. 18, 1934
Haub -----	Mar. 2, 1937
Reymers -----	July 11, 1939
Levy et al. -----	Oct. 28, 1941

FOREIGN PATENTS

Country	Date
Great Britain -----	of 1901