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REVERSIBLE RUG DISPLAY CABINET

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REVERSIBLE RUG DISPLAY CABINET

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10 Claims. (Cl. 211—121)

This invention relates to display cabinets and particularly cabinets for displaying rugs which are relatively large, and because the prospective purchaser prefers to see the rug in a horizontal position as it would be on the floor, this invention contemplates a frame adapted to accommodate a plurality of rug trays and means for raising and lowering the trays.

The rug cabinet of this invention is an improvement over the rug cabinet of my prior Patent Number 2,347,139, dated April 18, 1944, in that means is provided for readily reversing the instrumentalities so that a rug tray may readily be stopped and the mechanism reversed to move the tray in the opposite direction.

Various other improvements in the structural elements and operation will become apparent as the description proceeds.

The purpose of this invention is to provide a rug display cabinet wherein a plurality of trays having rugs therein may be moved one at a time upward to the upper end of the cabinet, and then downward, and in which the direction of travel of the trays may be reversed at any time.

With these and other objects in view the invention embodies a rectangular shaped frame, a plurality of horizontally positioned trays suspended at the four corners in said frame, conveying chains in the corners to which the trays are removable attached, motive means for operating the chains in opposite directions, and means readily attaching and releasing the trays to and from the chains.

Other features and advantages of the invention will be readily understood from the following description taken in connection with the drawings, wherein:

Figure 1 is a view showing the rug display cabinet with part broken away showing the operating gears at the upper end thereof.

Figure 2 is a front elevation showing a post at one corner of the cabinet with part broken away illustrating the mechanism therefor.

Figure 3 is a sectional plan through one corner of the frame with parts of the frame and also part of one of the trays broken away.

Figure 4 is a detail on line 4—4 of Figure 5 showing a section through one of the tray operating carriages with parts broken away.

Figure 5 is a view showing a side elevation of one of the tray holding carriages with parts broken away.

Figure 6 is a detail showing an end view of one of the carriages with parts broken away.

Referring now to the drawings wherein like reference characters indicate corresponding parts the rug cabinet of this invention includes a frame 10 having corner posts 11 and carriages 12.

The improvement of this invention includes means for reversing the mechanism at any point. To accomplish this the carriages 12 are provided with two rollers 13 and 14 positioned to contact lugs 15 on the trays 16 and also stationary lugs 17 at the upper end and lugs 18 at the lower end, wherein the rollers will engage the lugs before the carriage reaches the end of its travel. The roller 13 is rotatably mounted on a link 19 and the roller 14 is mounted on a similar link 20, the link 19 being pivotally mounted on the frame 21 of the carriage through a pin 22, and the link 20 similarly mounted on a pin 23. The upper end of the link 19 is pivotally attached to an S-shaped lever 24 through a connecting link 25 with pins 26 and 27, and the lower end of the link 20 is connected to the lower end of the lever 24 through a connecting link 28 and pins 29 and 30. The lever 24 is pivotally and slidably mounted on the carriage frame 21 through a shaft 31 and a roller 32 in a slot 33 in the frame.

The operating element, or gear segment 34 is fixedly mounted on the shaft 31 and another lever 35 is also fixedly mounted on the shaft and the end thereof is connected by a link 36 to an arm 37 through pins 38 and 39. The arm 37 is fixedly attached to a pin 40 pivotally mounted in the frame 21, and on the other end of the pin 40 is an L-shaped lever 41 on the upper end of which are two rollers 42 and 43 which engage and operate the latch 44 pivotally mounted on a bracket 45 extending outward from each corner of the trays, which are indicated by the numeral 46.

A spring 47 is provided in a recess 48 in the lever 35, and positioned around the shaft 31 to frictionally hold the levers to prevent movement thereof further than the positive actuation of the gear segment 34. Compression springs 49 and 50 on studs 51 and 52 are attached through connectors 53 and 54 to the opposite ends of the lever 24 for normally restrain-
ing the lever so that it may remain in the neutral position as illustrated.

The carriage frame 21 is provided with four flanged rollers 55 and 56, on one side and 57 and 58 on the other. These rollers contact opposite edges of continuous tracks 59 upon which the carriages travel, and the outer rollers 55 and 56 are spaced further apart than the inner rollers 51 and 58 to facilitate travel thereof around the spoke wheel formations at the upper and lower ends of the track. The carriages are also provided with extending lugs 60 by which they are pivotally attached to continuous chains 61 traveling over sprockets 62 and 63 on shafts 64 and 65, and the upper shaft 64 at the opposite ends of the frame are rotated by gears 66 at the respective ends of a motor shaft 67 having a motor 68 associated therewith through suitable reduction gears. The motor may be controlled by buttons 69 and 70 at a convenient point on the frame whereby they may be readily activated by an operator to raise or lower the trays as desired.

In operation, assuming that the carriage 12 is moving upward from the position shown in Figure 2, the upper roller 13 will ride upward along the row of lugs 15 on the trays above, thereby moving the roller and lever 24 outward toward the upper rack 71 so that a notch in the end of the segment 34 will mesh with one of the teeth 72 of the rack 71. Then as the carriage continues to travel upward the tooth will rotate the segment 34 thereby through the associated levers causing the L-shaped lever 41 to move the rollers 42 and 43 outward from the position shown in Figure 3, wherein a projection 74 on the latch 44 will move into an opening 19 in a supporting angle 16, and at the same time moving a projection 77 on the opposite side of the latch out of an opening 76 in an arm 79 of the carriage, thereby releasing the carriage. The lower roller 17 then contacts the opposite sides of the lugs 15 and moves the lower end of the lever 24 outward, away from the rack 71, thereby releasing the segment 34 from the rack, so that the carriage is free to travel upward over the upper sprocket and down the other side. In the normal operation of the cabinet two carriages are used, and these are equally spaced on the chain and track.

When the carriage is moving downward the lower roller 16 will ride on the lugs 15 of the trays below and this will actuate the lower end of the lever 24 so that the gear segment will be moved to operative position wherein the tooth 88 will mesh with the teeth 81 of the lower rack 32, and as the downward movement of the carriage continues the segment 34 will operate the L-shaped lever 41 which will actuate the latch 44 to release the carriage. The upper roller 13 then rides on the lugs 16 and actuates the lever 24 which will cause the upper end to move away from the rack 82 thereby disengaging the segment 34 from the teeth of the rack. The additional lugs 17 and 18, which are stationary, are provided at the upper and lower ends for latching and unlatching the top tray and the next to the lowest tray. The bottom tray 45 is stationary.

To pick up one of the trays at the lower part of the cabinet the "up" button 69 is pressed and the carriages travel around the track 59 in a counterclockwise direction, and as a carriage passes the trays the roller 13 rides off of the lug 15 of the uppermost tray allowing the spring 49 to swing the lever 24 so that the segment 34 meshes with the teeth 81 of the rack 52 moving the projection 77 of the latch 44 through the opening 76 in the arm 79 of the carriage so that the tray is picked up and travels upward with the carriage. Then as the lower roller 16 rides off of the lugs 15 of the adjoining tray the spring 59 will move the lever 24 back, thereby moving the segment 34 out of engagement with the teeth of the rack. The tray may be stopped at any point, and as it reaches the upper trays it is automatically released from the carriages as hereinbefore described.

To return a tray from the trays in the upper part of the cabinet the movement is reversed. In the "down" button 10 is pressed, and as the carriage passes the upper trays the roller 16 rides off of the last lug 15 allowing the spring 59 to swing the lever 24 so that the segment 34 meshes with the teeth 72 of the rack 11 moving the projection 17 of the latch 44 through the opening 18 in the arm 79 of the carriage so that the tray is picked up and travels downward with the carriage. Then as the upper roller 13 rides off of the lugs 15 of the last tray above the spring 49 will move the lever 24 back, thereby moving the segment 34 out of engagement with the teeth of the rack.

The movement of the tray may be stopped at any point, and the direction of travel thereof may be reversed at any time as desired. The tray is always carried in the central part of the carriage and in using the two rollers 12 and 14, one above and one below the tray it is possible to actuate the mechanism for latching or unlatching the tray before the tray reaches the end of its travel, regardless of the direction of travel.

In the cabinets of this design only one operating gear 24 is required at each end, whereas in the cabinet of my patent two such racks were required. The instrumentality is now so arranged that the operating gear segment 34 is only in engagement with the rack long enough to latch or unlatch the tray, and after the tray is latched or unlatched it is moved out of engagement therewith. The latches 44 have a rotating movement in a vertical plane thereby allowing for the vertical movement of the tray in latching and unlatching. The guide rollers of the carriage travel around a single bar 50, and with this design it is possible to use comparatively small sprockets at each end, over which the chain travels.

The frame may be of any type or design, and the motor may be located at any point, or as many motors as may be desired may be used. It will be understood that other changes may be made in the design and construction without departing from the spirit of the invention.

Having thus fully described the invention what is claimed as new and desired to be protected by Letters Patent, is:

1. In a rug display cabinet, the combination which comprises a rectangular shaped frame having four substantially hollow corner posts connected at the upper ends thereof by hollow side and end beams, a plurality of rug carrying trays positioned for vertically sliding travel within the cabinet, lugs positioned on the sides of the trays and spaced from the ends thereof, upwardly extended T-shaped latches pivotally
mounted on the sides of the trays and also spaced from the ends thereof, said latches providing carrying elements of the trays, transversely disposed shafts journaled in the ends thereof, said latches being provided with carrying elements of the trays, and also spaced from the ends thereof, said latches extending through the slot in the intermediate part of the frame, means operatively connecting the said L-shaped lever to the shaft, an S-shaped lever fixedly mounted on said shaft, and also means operatively connected to the said S-shaped lever, and pivotally connected to the S-shaped lever, said springs positioned to urge the ends of the S-shaped lever away from the frame, links pivotally mounted on the frame, positioned on opposite sides of the S-shaped lever and shaft, and extended upwardly and downwardly from the intermediate part of the frame, means connecting the ends of the S-shaped lever, a gear segment having notches in the ends carried by an extended end of said shaft, rollers carried by said links and extended from the frame for engaging fixed elements to actuate the S-shaped lever for rotating the gear segment whereby the gear segment actuates the L-shaped lever for moving the latching rollers.

2. In a rug display cabinet, the combination which comprises a frame having vertically positioned substantially hollow corner posts connected by longitudinally and transversely disposed members, vertically disposed endless chains mounted in each of said corner posts, continuous bars mounted in the posts and positioned in planes parallel to and spaced from the chains, carriage parts carried by the chains and extending therefrom, spaced pairs of flanged wheels journaled on the carriages and positioned to travel on opposite edges of said continuous bars, transversely positioned shafts journaled in the carriages, gear segments having gear teeth receiving notches in the ends mounted on said shafts, gear racks in the posts positioned to be engaged by said gear segments, substantially S-shaped levers also mounted on said shafts and adapted to be actuated by said gear segments, a plurality of horizontally disposed trays positioned in an area defined by said corner posts, brackets having lugs on extended ends thereof mounted on the sides of the trays and spaced from the ends thereof, latches pivotally mounted on said brackets, a tray supporting angle having spaced openings therein mounted in each of said corner posts and positioned to contact with said latches for holding the trays in stationary positions in the frame, and means actuated by said S-shaped levers of the carriages for moving said latches into engagement with the carriages for raising and lowering the trays and into engagement with said supporting angles for retaining the trays in stationary positions.

3. A traveling carriage comprising a frame having a lug on one side adapted to attach the frame to a chain, said frame having an elongated horizontally disposed slot in the intermediate part thereof, spaced pairs of flanged rollers journaled on the frame and positioned to guide the frame on a track, an L-shaped lever pivotally mounted on said frame, spaced latching rollers carried by said L-shaped lever, a shaft extended through the slot in the intermediate part of the frame, means operatively connecting the said L-shaped lever to the shaft, an S-shaped lever fixedly mounted on said shaft, and also means operatively connected to the said S-shaped lever, and pivotally connected to the S-shaped lever, said springs positioned to urge the ends of the S-shaped lever away from the frame, links pivotally mounted on the frame, positioned on opposite sides of the S-shaped lever and shaft, and extended upwardly and downwardly from the intermediate part of the frame, means connecting the ends of the S-shaped lever, a gear segment having notches in the ends carried by an extended end of said shaft, rollers carried by said links and extended from the frame for engaging fixed elements to actuate the S-shaped lever for rotating the gear segment whereby the gear segment actuates the L-shaped lever for moving the latching rollers.

5. A rug display cabinet as described in claim 4, wherein rollers are provided on the sides of the carriages for engaging the lugs on the brackets of the tray for holding the gear segments in spaced relation to the gear racks until the rollers pass over the lugs of the last tray in a plurality of trays.

6. A rug display cabinet as described in claim 4, wherein springs are provided in the carriages for engaging the lugs on the brackets of the tray for holding the gear segments in spaced relation to the gear racks until the rollers pass over the lugs of the last tray in a plurality of trays.

7. A rug display cabinet as described in claim 4, wherein the said latches are S-shaped having stems with arms extended from the upper ends and the arms on one side are positioned to engage the spaced openings of the supporting arms with the arms on the opposite sides positioned to engage parts of the carriages for moving the trays.

8. A rug display cabinet as described in claim 4,
7 wherein springs are provided on the transversely positioned shafts of the carriages to prevent rotation of the shafts except when rollers of the carriages engage the lugs on said brackets or the gear segments engage said gear racks.

9. A rug display cabinet as described in claim 4, wherein levers having rollers thereon are pivotally mounted on the sides of said carriages and the ends of the levers are connected by links to the S-shaped levers to provide the said means for actuating the S-shaped levers by the lugs of the brackets extended from the trays.

10. A display cabinet as described in claim 4, wherein said S-shaped levers are in the form of yokes having open sockets in the centers with forks on the ends, and said open sockets providing spaced bearings for said transverse shafts journaled therein.

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

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<thead>
<tr>
<th>Number</th>
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