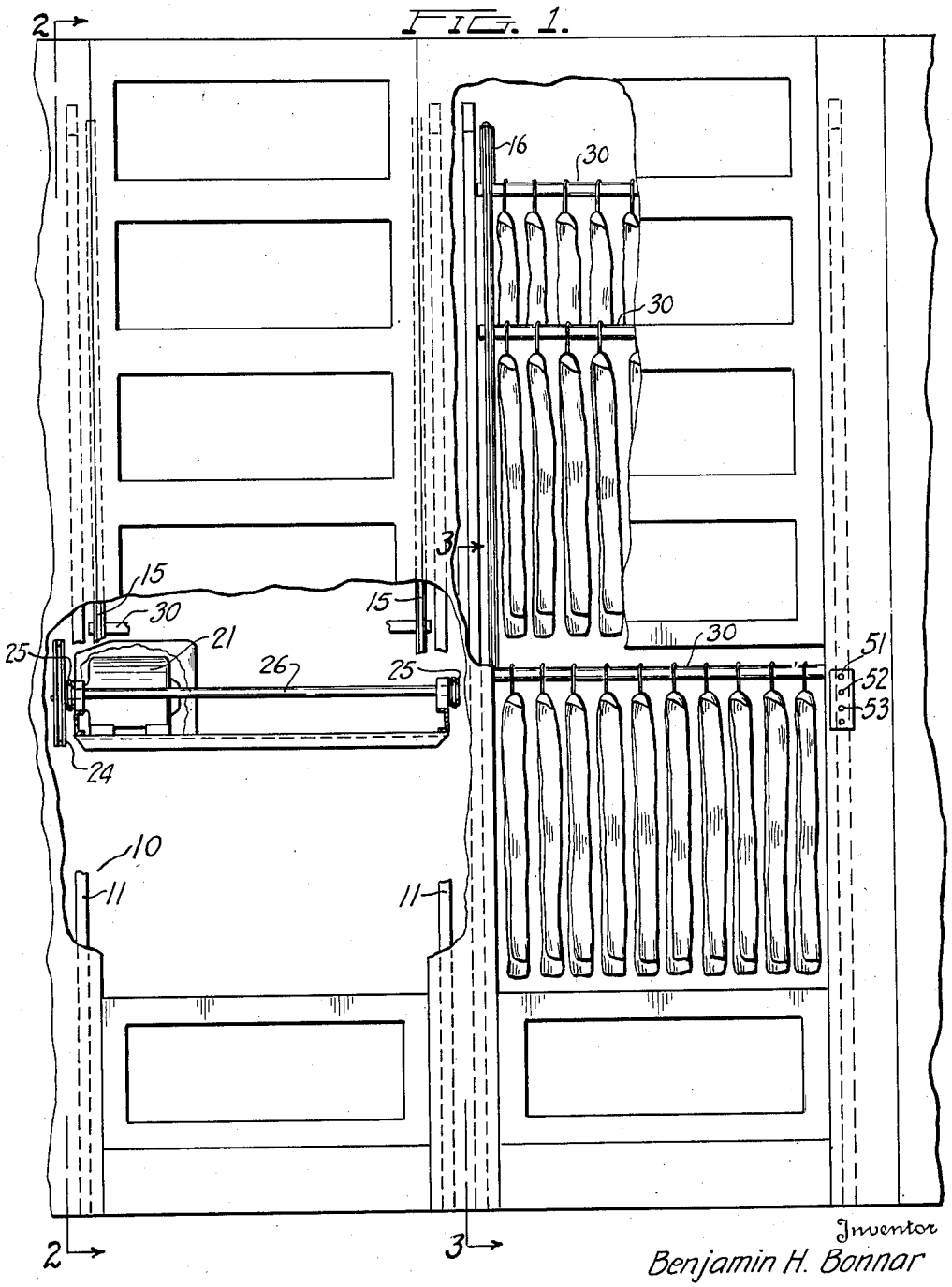
April 25, 1939. B. H. BONNAR 2,155,583

MERCHANDISE DISPLAY APPARATUS

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FIG. 1.



Inventor
Benjamin H. Bonnar

By Owen & Owen

Attorneys.

April 25, 1939. B. H. BONNAR 2,155,583

MERCHANDISE DISPLAY APPARATUS

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FIG. 2.

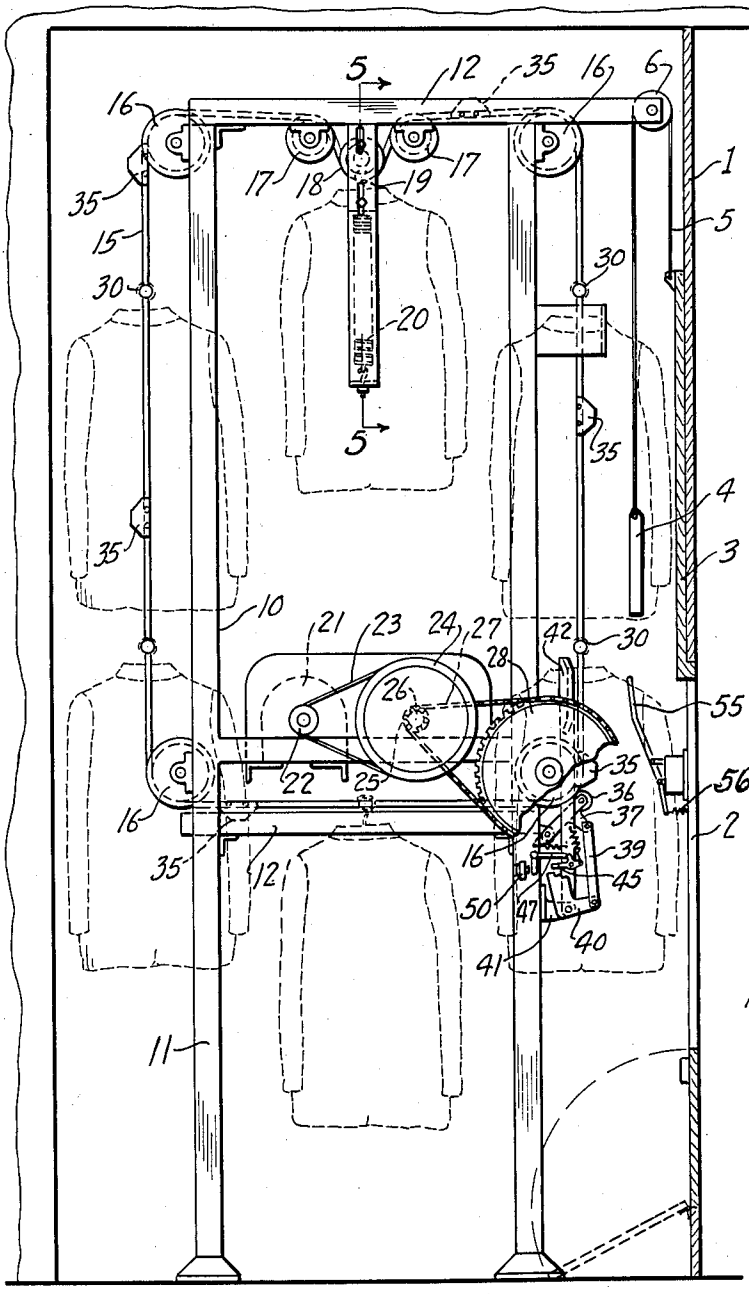
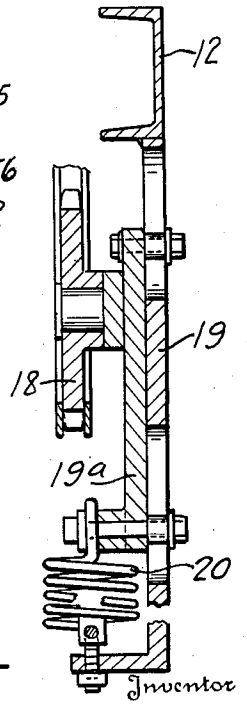


FIG. 5.



Inventor

Benjamin H. Bonnar

By Owen & Owen

Attorneys.

April 25, 1939. B. H. BONNAR 2,155,583

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FIG. 3.

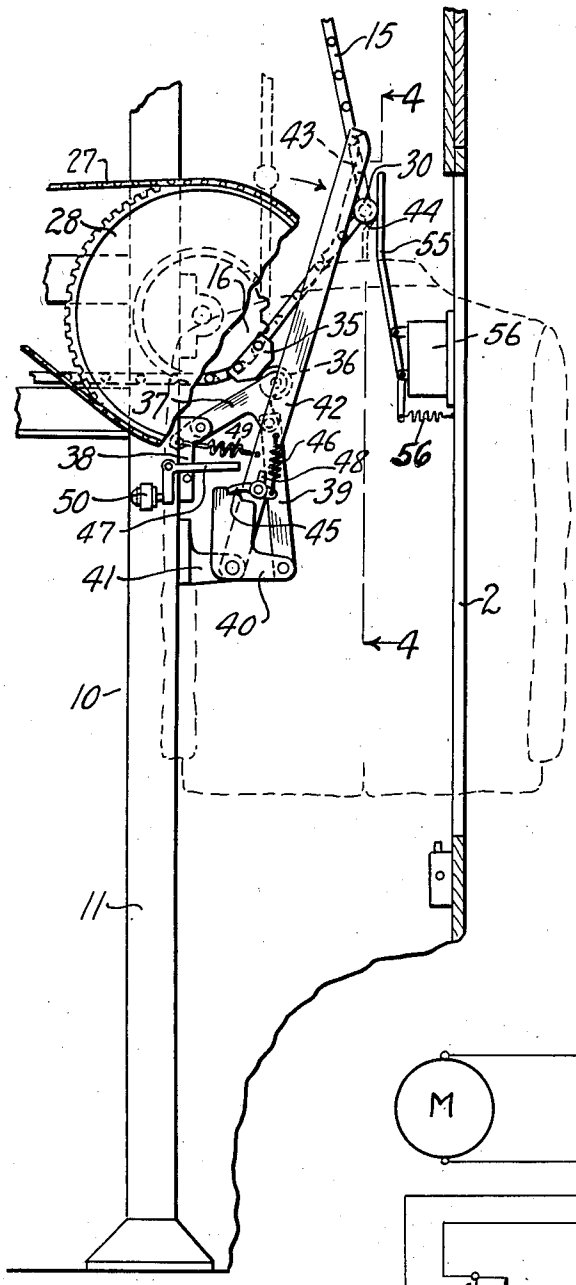


FIG. 4.

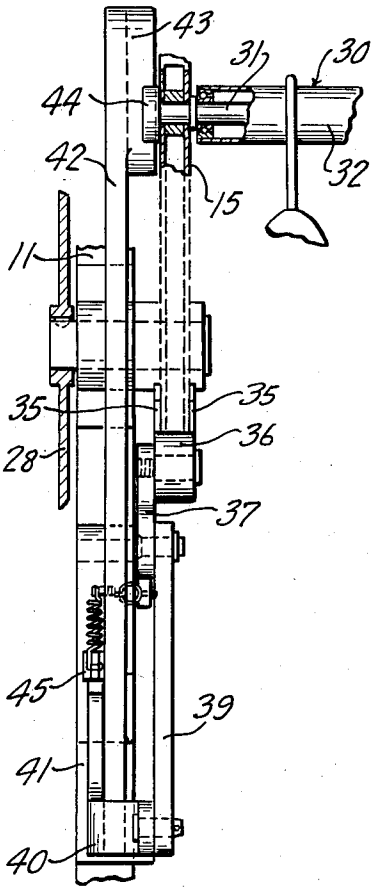
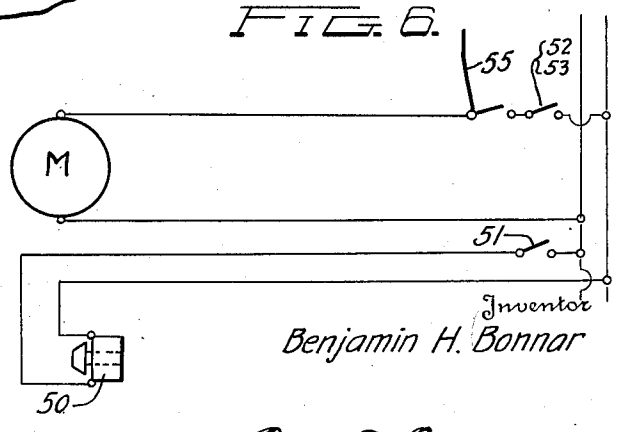


FIG. 6.



Inventor
Benjamin H. Bonnar

By Owen & Owen,

Attorneys.

Patented Apr. 25, 1939

2,155,583

UNITED STATES PATENT OFFICE

2,155,583

MERCHANDISE DISPLAY APPARATUS

Benjamin H. Bonnar, Toledo, Ohio; Alys E. Bonnar, Toledo, Ohio, executrix of Benjamin H. Bonnar, deceased, assignor to Alys E. Bonnar, Toledo, Ohio

Application February 9, 1938, Serial No. 189,640

11 Claims. (Cl. 211—1.5)

This invention relates to merchandise storing and display means, and particularly to such means adapted for use in the compact storing and the presenting for display of clothing or similar merchandise.

An important object of the invention is the provision, in a cabinet, of an endless type of conveyor from which successive rows of clothes are suspended and which is operable to move the rows of clothes past a display opening in the cabinet, and also to stop any desired row in register with such opening and to advance it laterally from its main line of travel to a convenient position for display and removal.

Another object of the invention is the provision, in such an apparatus, of means which is automatically operable by the clothes advancing or "presenting" action of the conveyor to shut off power and stop the conveyor in predetermined position.

Other objects and advantages of the invention will be apparent from the following detailed description, and from the accompanying drawings, illustrating one embodiment of the invention, and in which—

Figure 1 is a front elevation of a portion of a row of cabinets embodying the invention, with the display doors open and portions of the cabinet fronts broken away; Fig. 2 is a section on the line 2—2 in Fig. 1, with a part broken away and with the row of clothes adjacent to the display opening in retracted or travel position; Fig. 3 is an enlarged fragmentary section on the line 3—3 in Fig. 1, with a part broken away and with a row of clothes shown advanced to display position; Fig. 4 is an enlarged fragmentary section on the line 4—4 in Fig. 3; Fig. 5 is a section on the line 5—5 in Fig. 2, and Fig. 6 is a diagram of the electric wiring and control.

Referring to the drawings, 1 designates a cabinet, one or more of which may be conveniently arranged in a room, as for instance along a side wall thereof, and which has a display opening 2 in the lower portion of its front side adapted to be closed by a door 3. This door, in the present instance, is of the vertical sliding type and its weight is counterbalanced by one or more weights 4 attached to its upper end by cords 5 passing over guide sheaves 6.

Within the cabinet in suitably spaced relation to its front and back is a frame 10 comprising four rectangularly arranged uprights 11 rising from the cabinet floor to near its top and rigidly connected by suitable cross members 12 with those which extend crosswise of the frame, as distinguished from front to back, spaced inwardly a suitable distance from the front and back sides of the frame so as not to interfere with the travel of the clothes carried by the conveyor as hereinafter described.

The conveyor comprises two endless chains 15, one disposed at each side of the frame within the respective side uprights 11 and guided for substantially a rectangular course of movement by four corner sheaves 16 mounted in suitable bearings secured to the frame, as best shown in Fig. 2. The front and back vertical runs of the chains are preferably disposed in outwardly spaced relation to the frame 10. Each chain 15 at its top cross run passes over a pair of spaced guide sheaves 17, and intermediate such sheaves is looped down under a slack take-up sheave 18 which has its carrying block 19 guided for limited vertical sliding movements by a bracket arm 19a projecting downwardly from the respective top cross member 12 of the frame. The bearing block of the pulley 18 is connected by a coiled contractile spring 20 to the lower end of the bracket arm 19a, such spring acting through the sheave to normally take up slack in the chain.

The drive means for the conveyor chains 15 includes an electric motor 21 mounted on certain of the lower cross members 12 of the frame, which motor has a small pulley 22 in driving connection through a belt 23 with a larger pulley 24 mounted on a cross shaft 25 extending from one side to the other of the frame. This cross shaft at each end has a small sprocket 26 in driving connection through a chain 27 with a large sprocket 28 mounted on the shaft with the lower front corner sheave 16, so that the drive for each chain is through such lower front sheave.

The two chains 15 are connected at predetermined spaced intervals by cross bars 30 from which merchandise to be displayed, such for instance as clothes, may be hung, each bar supporting a row of such merchandise. Each bar 30, in the present instance, is shown as comprising a cross shaft 31 (Fig. 4) fixed at its ends to the respective chains and having mounted thereon intermediate the chains a freely rotatable sleeve 32.

It is desirable in practice to have the merchandise travel with the conveyor chains in retracted relation to the display opening 2, except when a desired row of clothes is to be displayed, and to then have such row "presented" or advanced into convenient display and removal position in or adjacent to the display opening of the cabinet. To accomplish this, each chain is

provided below each cross bar **30** in predetermined spaced relation thereto with a pair of cam plates **35**, which, in the present instance, when traveling around the respective lower front drive sheave or sprocket **16**, by which they are backed, engage a cam roll **36** on a rocker-arm **37** and effect a predetermined forward and downward rocking of such arm, as best shown in Figs. 3 and 4. The rocker-arm **37** is pivoted to a bracket **38** on the respective front frame upright **11**, and it is pivotally connected near its outer end to a link **39** which extends downward and is pivoted at its lower end to the forwardly extending arm of an L-shaped rocker member **40** pivoted to a bracket **41** on said frame upright. An advancing arm **42** pivotally rises from the same pivot on the bracket **41** as the rocker **40** and extends upward at the side of the respective chain **15** and has an inwardly extending cam flange **43** at its upper end disposed rearwardly of but in the path of movement of rollers **44** mounted on the outer ends of the bars **30** at the outer sides of the chains **15**. It is thus apparent that when the end rolls **44** of a cross bar **30** are disposed in advance of the cam flanges **43** of the rocker-arm **42**, one of which is disposed at each side of the frame **10**, and such arms are swung forward, the engaged bar and the portions of the conveyor chains adjacent thereto will be moved forward therewith to display or "presenting" position, as shown in Fig. 3. Such advancing of a cross bar causes a lengthening of the chains which is compensated for by an upward movement of the two idler sheaves **18** against the tension of the springs **20**.

The rocker **40** is adapted to have rocking movements relative to the advancing arm **42**, and such movements are only communicated to the latter from the former when a catch means carried by one is in engagement with the other. Such catch means, in the present instance, comprises a catch dog **45** pivoted to the arm **42** and normally held in catch engagement with a shouldered portion of the upwardly extending arm of the rocker **40** by a coiled contractile spring **46**. An L-shaped trip finger **47** is pivoted to the adjacent frame upright **11**, as shown in Fig. 3, and has its forwardly extending end normally in register with and engaging a lug **48** on the upper side of the catch dog **45** to hold such dog released from the rocker **40** when the arm **42** is in normal rearward position, as shown in Fig. 2. When the dog **45** is thus released from the rocker **40**, the latter may have repeated rocking movements imparted thereto as successive cam plates **35** on the chain pass in engagement with the rocker rolls **36** without imparting any movement to the chain advancing arms **42**. A spring **49** connects the lower extended end of the arm **37** and the arm **42** to yieldingly retain them in the positions shown in Fig. 2.

The trip finger **47** is solenoid actuated to release the catch dog **45** and permit its engagement with the rocker **40**, such solenoid being shown at **50** (Fig. 3). The solenoid is controlled by a push button **51** (Fig. 1) in convenient reach of the operator, and when such button is pushed the solenoid is energized to move the trip finger **47** to released position, as shown in Fig. 3. It will be understood that the chain bar advancing means and the trip means therefor are in duplicate for each chain of a unit, and the solenoids **50** thereof controlled by a single push button or other suitable control **51**. It is also apparent that when the solenoid circuit is opened, the trip fingers **47** drop to dog engaging position, so that upon a return of the arms **42** to normal retracted position, the respective dogs **45** engage the trip fingers and are released from engagement with the rockers **40**.

The main control switch for the chain driving motor **21**, in the present instance, is manually controlled by two push buttons **52** and **53** (Fig. 1), one of which may be operated to close the motor circuit and effect a movement of the conveyor chains and the other may be operated to effect an opening of the motor circuit and a stopping of the movement of the chains. So long as the motor circuit is closed and the circuit of the solenoids **50** is open, the conveyor chains will continue to operate and the rows of clothes or other merchandise carried thereby successively moved past the display opening. When the advancing means has been actuated and an engaged conveyor **30** thereby advanced a predetermined distance by the forward rocking action of the advancing arms **42**, an end of the bar, in the present instance, will engage a switch arm **55** (Fig. 3) and move it forward to effect an opening of a switch in the motor circuit, thus stopping a further movement of the conveyor. The arm **55** is normally retracted to open switch position by a spring **56**.

It is apparent in the use of the invention that a movement of the conveyor is effected by pressing the starter button **52** to close the motor circuit, the rows of clothes or other merchandise carried by the conveyor bars **30** being then successively moved past the display opening **2** of the cabinet. When a row of clothes which it is desired to display to a customer is near the display opening, the operator presses the trip button **51**, thereby energizing the solenoid **50** and effecting release of the trip finger **47** from the catch dog **45**, permitting the latter to drop into catch engagement with the rocker. After the trip finger **47** has been released, the cam plates **35**, associated with or in advance of the bar **30** carrying the clothes to be displayed, engage the rolls **36** on the rocker-arms **37** and effect a downward movement of said rocker-arms together with the connected rockers **40** and thereby effect a forward rocking of the arms **42** carrying the catch dogs **45**. The forward swinging movement of the arms **42** is timed to take place when the cross bar **30** to be advanced is in register with the cam flanges **43** of such arms, thereby causing said flanges to engage the ends of said bars and advance the bar and connected portion of the conveyor chains to "presenting" or displaying position, as shown in Fig. 3. As the conveyor bar **30** is moved to such position, it strikes the switch arm **55** and moves it to open the associated motor circuit switch to effect a stopping of the conveyor. A manual stopping of the conveyor may be effected at any time by pressing the stop button **53** to open the motor circuit switch associated therewith.

I wish it understood that my invention is not limited to any specific construction, arrangement or form of the parts, as it is capable of numerous modifications and changes without departing from the spirit of the claim.

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

1. In a display apparatus of the class described, an endless conveyor having provision for carrying a plurality of sets of merchandise in predetermined spaced relation therearound, means guiding the movement of said conveyor, means for

driving the conveyor, control means for said driving means, and manually controlled mechanism automatically operable at a predetermined point in a movement of the conveyor to effect a predetermined advancing of a predetermined portion of the conveyor and an associated merchandise set to display position laterally of the normal path of movement of the associated portion of the conveyor.

2. In a display apparatus of the class described, an endless conveyor having provision for carrying a plurality of sets of merchandise in predetermined spaced relation therearound, means guiding the movement of said conveyor, means for driving the conveyor, control means for said driving means, manually controlled mechanism automatically operable at a predetermined point in a movement of the conveyor to effect a predetermined advancing of an adjacent portion of the conveyor and an associated merchandise set to display position, said mechanism including a primary rocker means having rocking movements imparted thereto by the conveyor at predetermined points in its movement, a secondary rocker means normally disengaged from the first rocker means and operable when engaged to rock with said first rocker means and effect an advancing of a display portion of the conveyor, and a trip normally retaining said first and second rocker means disengaged and movable to permit such engagement.

3. In a display apparatus of the class described, an endless conveyor having a plurality of merchandise carrying cross bars in predetermined spaced relation therearound, means for driving and guiding said conveyor, cam means on the conveyor in association with each cross bar, and bar advancing mechanism normally inoperative and manually controlled to be operated by a selected cam means at a predetermined point in a movement of the conveyor to effect a predetermined movement of the associated cross bar laterally of the path of travel of the conveyor to "presenting" position.

4. In a display apparatus of the class described, an endless conveyor having a plurality of merchandise carrying cross bars in predetermined spaced relation therearound, means for driving and guiding said conveyor, cam means on the conveyor in association with each cross bar, means movable by each of said cam means as it passes a predetermined point in its travel, advancing means movable to advance a cross bar to merchandise presenting position when said last means is moved by an associated cam means, catch means between said cam moved means and said advancing means to cause them to impart movement from one to the other, and means normally retaining said catch means disengaged and materially operable to permit engagement thereof.

5. In a display apparatus of the class described, an endless conveyor having provision for carrying a plurality of sets of merchandise in predetermined spaced relation therearound, means guiding the movement of said conveyor, means for driving the conveyor, control means for said driving means, manually controlled mechanism automatically operable at a predetermined point in a movement of the conveyor to effect a predetermined advancing of an adjacent portion of the conveyor and an associated merchandise set to display position, and means operated by a "presenting" movement of the conveyor to effect a stopping of the driving of the conveyor.

6. In a display apparatus of the class described, an endless conveyor having a plurality of merchandise carrying cross bars in predetermined spaced relation therearound, means for driving and guiding said conveyor, cam means on the conveyor in association with each cross bar, bar advancing mechanism normally inoperative and manually controlled to be operated by a selected cam means at a predetermined point in a movement of the conveyor to effect a predetermined movement of the associated cross bar laterally of the path of travel of the conveyor to "presenting" position, and means automatically operable to stop the driving action of the conveyor when a display portion of the conveyor has been advanced to display position by said advancing mechanism.

7. In a display apparatus of the class described, an endless conveyor including article carrying portions in predetermined spaced relation thereon, means for driving and guiding said conveyor, means for yieldingly taking up slack in the conveyor, and mechanism actuated at predetermined points in a movement of the conveyor to advance article carrying portions thereof to "presenting" position laterally of the conveyor travel, and means normally rendering said mechanism inoperative and manually controlled to permit an operation thereof.

8. In a display apparatus of the class described, an endless conveyor including article carrying display portions in predetermined spaced relation thereon, means for driving and guiding said conveyor, means for yieldingly taking up slack in the conveyor, cam means carried by the conveyor in association with each display portion, an arm rockable to engage the conveyor and effect a lateral movement of a selected display portion thereof to "presenting" position, actuating means operable by the associated cam means to effect a rocking of said rocker-arm and normally disengage therefrom, and manually controlled means operable to permit an engagement of said actuating means and arm.

9. In a display apparatus of the class described, an endless conveyor having an article carrying portion and a cam portion in association with said carrying portion, means for driving and guiding the movement of said conveyor, mechanism operable by coaction therewith of said cam portion to effect a predetermined advancing of said article carrying portion laterally of its guided path of movement to "presenting" position, said mechanism being normally inoperative for such purpose, and means operable to render said mechanism operable for said purpose.

10. In a display apparatus of the class described, an endless conveyor having an article carrying portion and a cam portion in association with said carrying portion, means for driving and guiding the movement of said conveyor, mechanism operable by coaction therewith of said cam portion to effect a predetermined advancing of said article carrying portion laterally of its guided path of movement to "presenting" position, said mechanism being normally inoperative for such purpose, means operable to render said mechanism operable for said purpose, and means automatically operable by movement of said carrying portion to "presenting" position to stop the driving of the conveyor.

11. In a display apparatus of the class described, an endless conveyor having an article carrying portion and an associated cam portion, means for driving and guiding said conveyor and permitting it to have a looped portion, yielding

slack take-up means engaging the looped portion of said conveyor, means disposed in the path of travel of said cam portion and rockable by engagement therewith, a conveyor advancing member operable to engage the conveyor and advance said article carrying portion to "presenting" position laterally of the path of travel thereof, and means for connecting said last two means for imparting advancing movements to one from cam actuated rocking movements of the other, said connecting means being normally broken and manually controlled to effect an operating connection of said rocker and advancing means.

BENJAMIN H. BONNAR.