April 8, 1958 L. H. BOOR 2,829,780

PRODUCT STORING AND DISPLAYING APPARATUS

Filed July 18, 1955 5 Sheets-Sheet 1

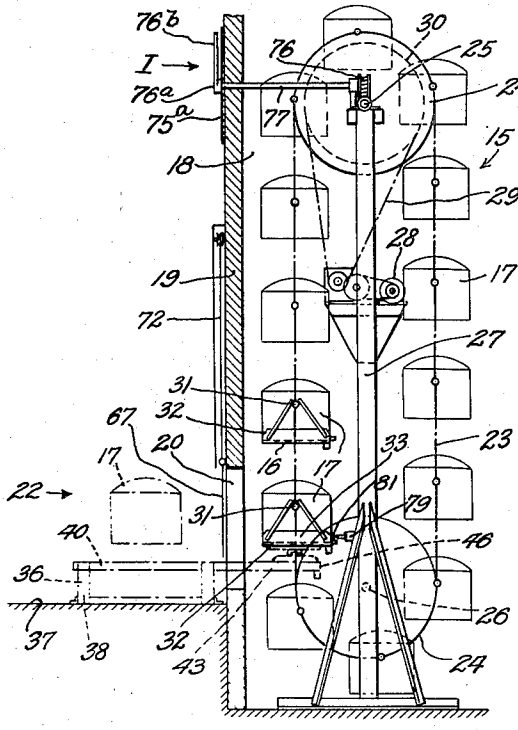


FIG. 1.

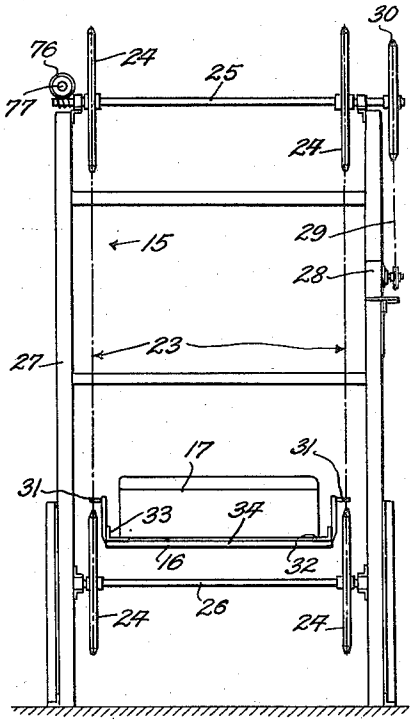


FIG. 2.

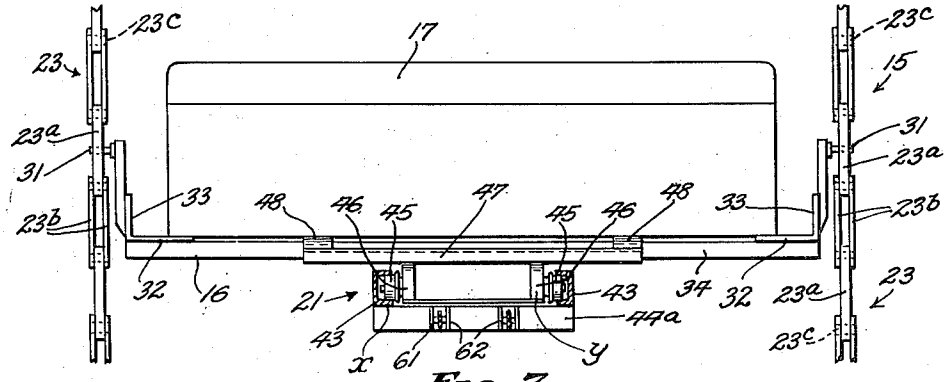


FIG. 7.

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April 8, 1958 L. H. BOOR 2,829,780

PRODUCT STORING AND DISPLAYING APPARATUS

Filed July 18, 1955 5 Sheets-Sheet 2

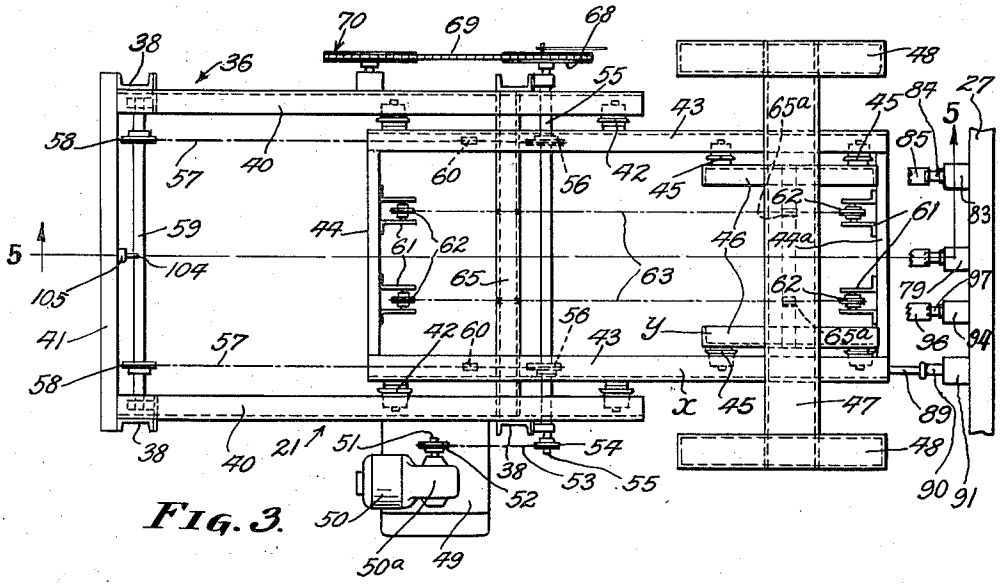


FIG. 3.

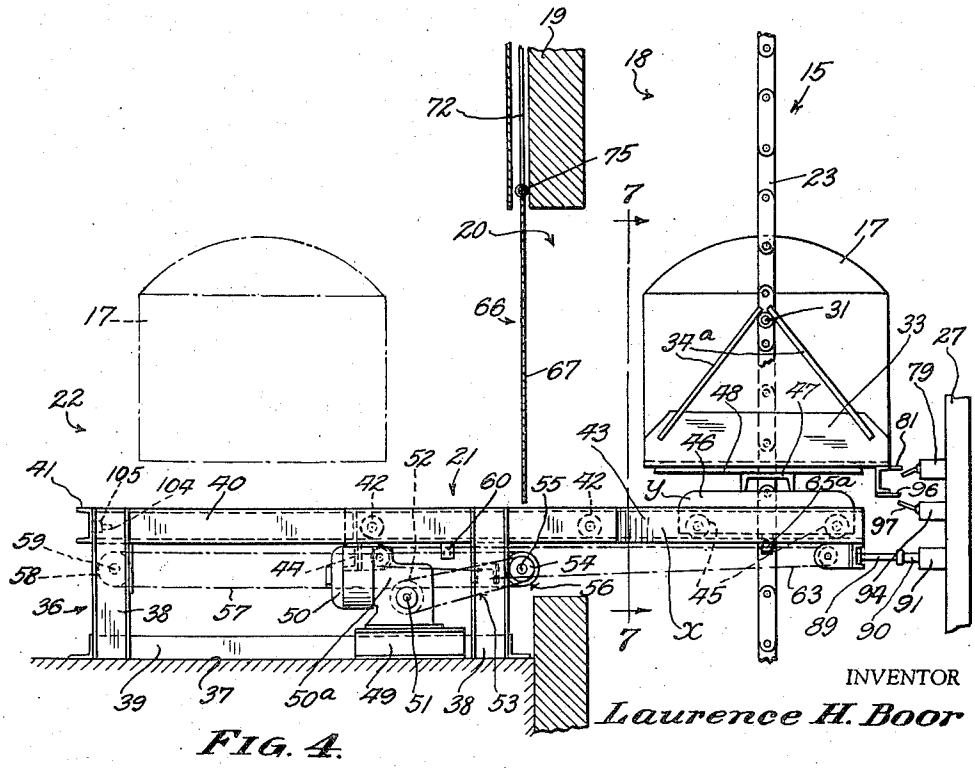


FIG. 4.

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April 8, 1958 L. H. BOOR 2,829,780

PRODUCT STORING AND DISPLAYING APPARATUS

Filed July 18, 1955 5 Sheets-Sheet 3

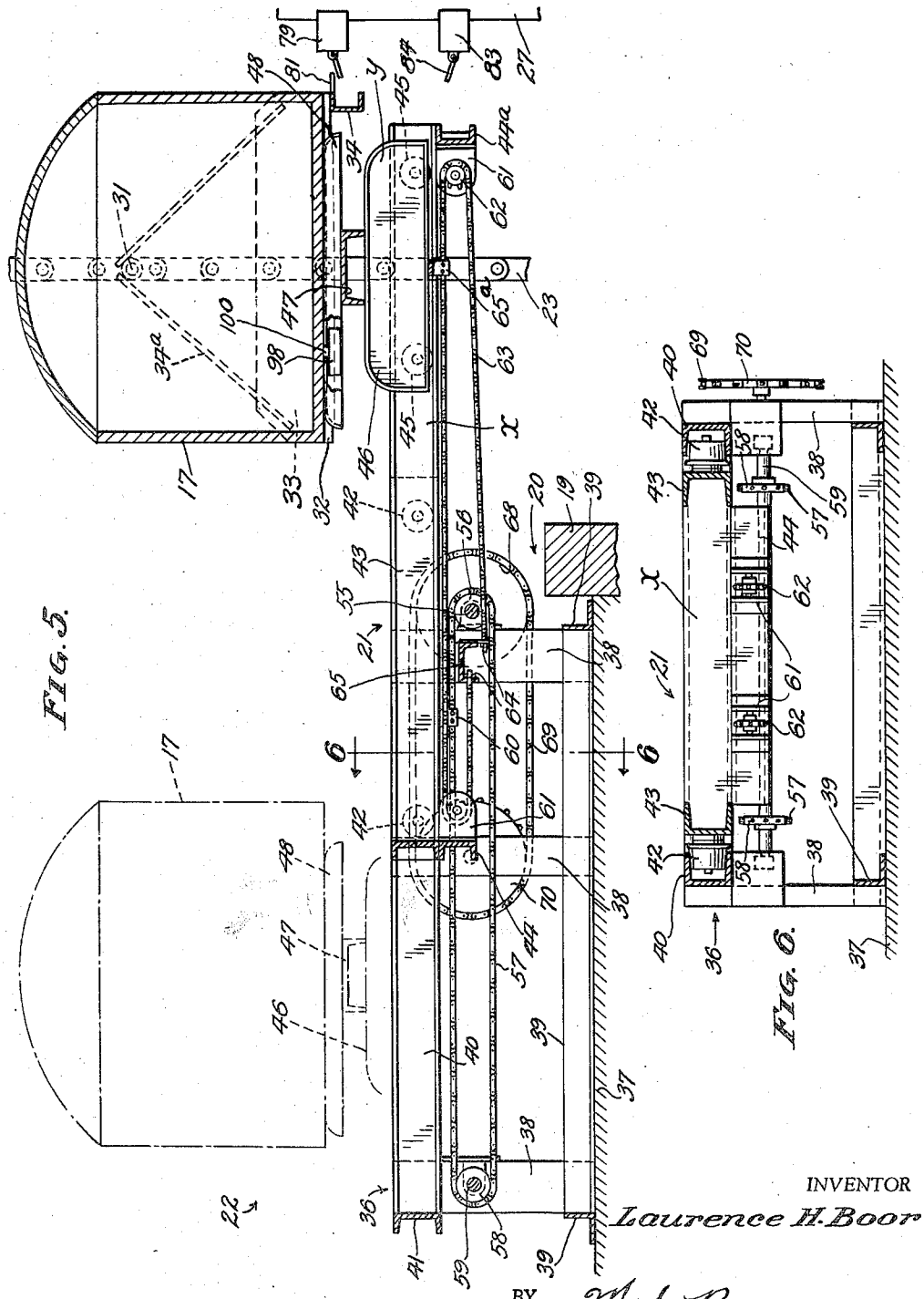


FIG. 5.

FIG. 6.

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April 8, 1958 L. H. BOOR 2,829,780

PRODUCT STORING AND DISPLAYING APPARATUS

Filed July 18, 1955 5 Sheets-Sheet 4

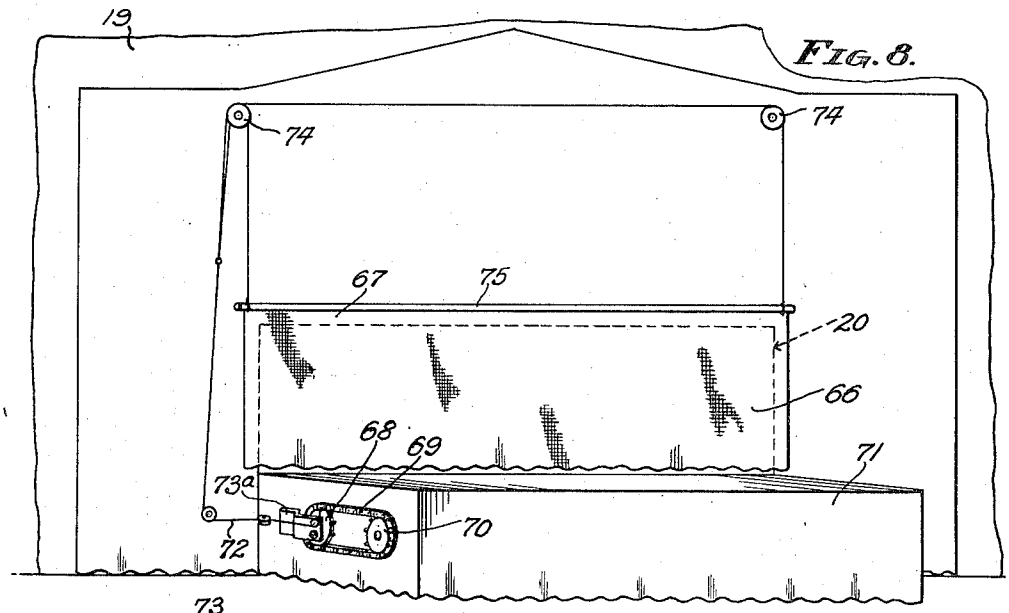


FIG. 8.

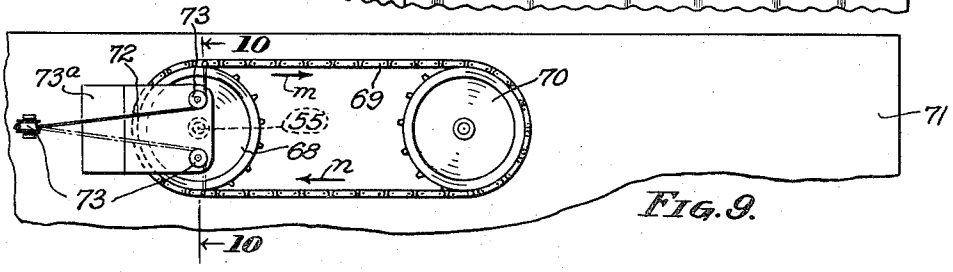


FIG. 9.

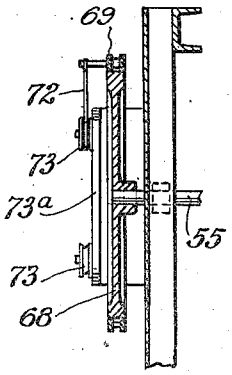


FIG. 10.

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PRODUCT STORING AND DISPLAYING APPARATUS

Filed July 18, 1955 5 Sheets-Sheet 5

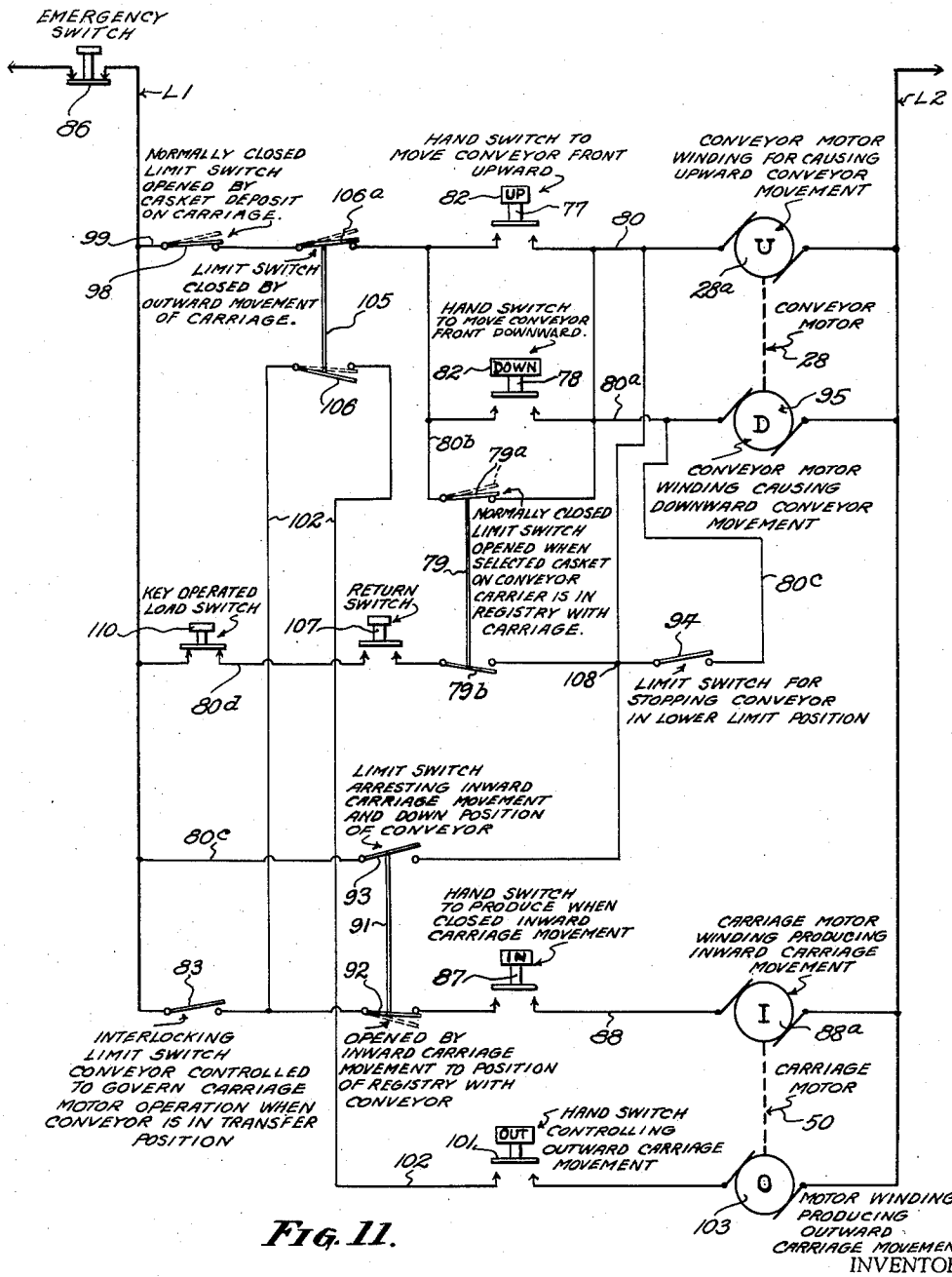


FIG. 11.

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2,829,780

PRODUCT STORING AND DISPLAYING APPARATUS

Laurence H. Boor, Bowerston, Ohio

Application July 18, 1955, Serial No. 522,744
3 Claims. (Cl. 211—121)

This invention relates to product-storing and displaying apparatus, and has for a primary object to provide apparatus of this character wherein the products handled thereby are supported in multiple stored order by an endless, vertically movable conveyor, and wherein the construction of the apparatus is such that provision is made for effecting a selective removal of such products from the storage conveyor and depositing the same on a cooperative, horizontal carriage, the latter being movable laterally from the zone occupied by the conveyor to a relatively remote position of product display.

Another object of this invention is to provide novel storing and displaying apparatus adapted for employment in mortuary establishments in providing an effective and conveniently controlled, space-saving means for compactly storing and individually displaying burial caskets.

Usually, in such establishments it is a common practice to provide one or more large display rooms in which the caskets are disposed for inspection and sales purposes. When so arranged, the considerable number of caskets which funeral directors are required to handle presents a problem in providing adequate floor space and racks for the support thereof in display positions, and, moreover, the storage and display rooms are often bare and uninviting and arranged on upper floors of a building or other location relatively remote from the attractively furnished rooms or parlors ordinarily present in such establishments for use by their patrons.

It is, therefore, a further object of the invention to provide apparatus in which a plurality of caskets, comprising a complete line of different kinds, styles, and prices, are mounted on carrier devices provided on a vertically travelling, endless belt conveyor, and wherein a novel transfer mechanism is provided in conjunction with the conveyor by which a selected casket, positioned on any one of said carrier devices, is adapted to be aligned with and bodily deposited on the transfer mechanism and removed thereby from the conveyor area, whereby to admit of the placement of such a removed casket in a display area having attractive surroundings and disposed remotely from the conveyor area.

An additional object of the invention is to provide the storage conveyor and casket transfer mechanism of such apparatus with electric operating motors, and, further, to provide control circuits for these motors having interrelated, manual and automatic switch devices, whereby through the use of said switch devices, proper sequential operation of the apparatus may be conveniently and safely effected in depositing and removing selected caskets on and from the transfer mechanism while the storage conveyor occupies a predetermined location with respect thereto.

For a further understanding of the invention, including additional objects, structural features, and advantages thereof, reference is to be had to the following detailed description and the accompanying drawings, wherein:

Fig. 1 is a side elevational view, partly in vertical section, disclosing generally the combined casket-storing and displaying apparatus of the present invention;

Fig. 2 is a front elevational view of the vertical storage conveyor;

Fig. 3 is a top plan view of the transfer mechanism of the apparatus, disclosing the carriage frames thereof in retracted positions for the deposit thereon of a casket from the associated storage conveyor;

Fig. 4 is a vertical longitudinal sectional view taken through a building wall, and disclosing on opposite sides of the wall the storage and display areas of the building in which are contained, respectively, the conveyor and transfer mechanism of the apparatus of the present invention;

Fig. 5 is an enlarged vertical longitudinal sectional view taken on the plane indicated by the line 5—5 of Fig. 3;

Fig. 6 is a vertical transverse sectional view taken on the line 6—6 of Fig. 5;

Fig. 7 is a similar view on the line 7—7 of Fig. 4;

Fig. 8 is a detail perspective view disclosing the curtain-raising and lowering device employed by the present invention for opening and closing an access opening formed in the wall of a building separating the storage and display mechanisms of the apparatus of the present invention;

Fig. 9 is an enlarged side elevational view of the endless chain means utilized by the curtain-raising and lowering means;

Fig. 10 is a vertical, transverse, sectional view taken on the line 10—10 of Fig. 9;

Fig. 11 is a schematic view of the electrical apparatus utilized by the apparatus of the present invention for driving and governing the sequence of operation of the storage and display mechanisms.

Referring more particularly to the drawings, the improved product-storing and displaying apparatus of the present invention comprises, in a practical embodiment thereof, an elongated, vertically disposed, endless belt-type storage conveyor or elevator, as indicated at 15 in said drawings. The conveyor or elevator is formed to receive and support at uniformly spaced intervals in its length a plurality of platforms or carriers 16 which are formed for the reception of various products to be stored and individually positioned for display by the operation of the apparatus. Such products, of course, may be widely varied. In this instance, the conveyor 15 has been shown as supporting in spaced order a plurality of burial caskets 17 or other interment receptacles, for example, grave vaults or the like. In this respect, it will be understood that the apparatus of the present invention is adapted for storing and selectively displaying various products of manufacture, including motor vehicles, kitchen appliances, furniture, and other relatively large and heavy appliances which are awkward and difficult to handle and require under present conditions considerable floor space when grouped in substantial numbers.

Advantageously, the conveyor 15 may be positioned in a storage area in the form of a vertical shaft 18 formed within or, as shown, exteriorly of a primary building wall 19. Provided in this wall, at a desired horizontal floor level, is an opening 20 through which the caskets or other products 17 are caused to pass by the operation of a horizontally disposed, longitudinally shiftable carriage or transfer mechanism 21. This mechanism serves to transfer a casket from a storage position, in which it is supported by a platform or carrier 16 of the conveyor 15 and arranged in horizontal registry with the opening 20, by moving the same from the area 18 to a display room 22 disposed within the associated building on the opposite side of the wall 19 from the shaft or storage area 18. Following a desired period of display, the product, by the operation of the carriage or transfer mechanism, is returned to its supported position on the vertical storage conveyor. This is done in order that other products on said conveyor may be brought, as desired, into the display area. In this manner a relatively large number of products having differentiating characteristics may be compactly stored in an out-of-the-way manner and yet rendered readily ac-

cessible when needed for individual attention-inviting display or other inspection.

To this and other ends, the vertical storage conveyor **15**, when used in the support of the caskets **17**, or other similar relatively heavy and bulky products, may be formed to include a pair of vertically disposed, parallel, transversely spaced, endless chains **23**. As shown, each chain is composed of alternate single and paired links **23***a* and **23***b*, respectively, having their ends articulately joined by pins **23***c*. These chains at their upper and lower ends pass around vertically spaced, aligned sets of sprocket wheels **24** fixed to end portions of transversely disposed upper and lower shafts **25** and **26**, respectively. These shafts are journaled for rotation in appropriate bearings carried by a vertical, stationary, frame structure **27**. In this instance, the frame structure is shown as supporting an electric motor **28** of a conventional reversible type. The armature shaft of this motor drives a sprocket around which passes an endless drive chain **29**, the latter also passing over a relatively enlarged, overhead, sprocket **30** fixed on one end of the upper shaft **25**. By this construction the conveyor **15** is supported in a vertical position, and motion-transmitting means is provided for driving the conveyor chains in opposite or desired directions of movement, as will be readily understood.

As illustrated, certain of the single links **23***a* of the chains **23**, at regular intervals in the length of said chains, are provided with transversely aligned pairs of openings for the reception of trunnion studs **31** projecting horizontally and outwardly from the upper ends of swinging product carriers or platforms **16**. Each of these carriers or platforms is formed to include a pair of spaced angle brackets **33**. The horizontal flanges **32** of these brackets are spaced to have the ends of the bottom surfaces of the caskets **17** deposited on their upper surfaces, while the under surfaces of said horizontal flanges are united by and rigidly joined with the opposite end portions of a tie bar or channel **34**. The upstanding flanges of the brackets **33** are rigidly united, as shown in Fig. 4, with upwardly converging side bars **34***a* and to the united apex-forming portions of these bars there are rigidly secured the trunnion studs **31**. With this arrangement, each casket rests on a platform or carrier having its upper portions united for swinging movement about horizontal trunnions joined with the elevator chains **23** of the conveyor **15**, the carriers and the products supported thereon maintaining vertical stability as the chains pass around the end-positioned sprocket wheels **24** of the conveyor **15**. It will be noted that the caskets are supported at their ends on the upper surfaces of the horizontal flanges of the carrier brackets **33**. By being so supported the base surfaces of the caskets between said brackets remain open and accessible for engagement with the carriage or transfer mechanism **21** in the operation of removing the caskets from the conveyor for transference to the display position and the return thereof from such latter positions to the conveyor.

The carriage or transfer mechanism **21**, employed in effecting such transference, comprises in the specific form thereof illustrated, a stationary frame structure **36** stationarily mounted on the floor **37** of the display room or area **22**. The frame structure may be formed to include a plurality of spaced uprights **38** which are joined at their lower ends by means of floor angles **39** and are attached at their upper ends to a pair of spaced, longitudinally extending, horizontally disposed channel members **40**, the latter having their open channel faces arranged in opposed inwardly facing order. Also, the upper, front part of the frame structure **36** may be rigidly united by a transversely extending channel member shown at **41**. The inner ends of the longitudinal channel members **40** project in a cantilever manner through the wall opening **20** and into the conveyor shaft **18**.

The channels formed by the members **40** receive rollers **42** positioned on stud axles which project outwardly and laterally from the opposite sides of a pair of spaced, longitudinally extending, channel members **43**. These members, in conjunction with rigidly united transverse members **44** and **44***a*, form the slidably and horizontally movable intermediate frame X of the carriage or transfer mechanism. The members **43**, like the members **40**, have the open channel-forming sides thereof disposed to face inwardly in relatively opposed order to receive for longitudinal movement therein supporting rollers **45** mounted on stud axles projecting outwardly and laterally from the end regions of a pair of spaced longitudinally extending members **46** of a second movable, or dolly frame of the carriage or transfer mechanism, as shown at Y.

The members **46** of the dolly frame are united with an inverted, transversely extending, channel member **47**. This member at its ends carries a pair of transversely spaced, longitudinally extending rest plates **48**. The latter are so arranged on the dolly frame that when the latter is moved to an extreme position of inward movement, as shown in Figs. 3, 4 and 5, the plates will be disposed for contact with the base surfaces of a casket resting on the angle brackets **33** of a carrier frame **32**, so that the casket so engaged may be transferred from the storage conveyor to the dolly of the carriage mechanism when the carrier frame is slightly lowered. It will be noted by reference to Fig. 5 that the tie bar **34** of each carrier **16** is disposed at one side thereof and in spaced relation to the dolly frame members when the dolly frame Y occupies its extreme position of inward movement.

In order to control the movement of the sliding frames X and Y, the stationary part of the frame structure **36** includes a laterally disposed base extension **49** on which is mounted a reversible type, electric motor **50**, the latter being joined with a speed-reducing, drive unit **50***a*. The driven shaft **51** of this unit carries a sprocket **52** around which passes an endless drive chain **53**, the latter being also trained over a drive sprocket **54** mounted on one end of a horizontally and transversely extending, carriage mechanism-operating shaft **55**. The latter is journaled in suitable bearings supported in connection with the rear pair of frame uprights **38**.

As shown in Figs. 3 and 5, the shaft **55** carries a pair of fixed sprockets **56** around which pass a pair of endless chains **57**, the latter being also trained around a pair of sprockets **58** fixed to a shaft **59** journaled in bearings provided in connection with the forward pair of uprights **38** of the stationary frame structure **36**. Intermediately of their lengths the chains **57** carry brackets **60** by which the chains are united with the longitudinal member **43** of the movable frame X, whereby upon operation of the motor **50** and drive unit **50***a*, to produce back and forth sliding movement of the frame X in its horizontal plane of support on the stationary channel members **40**.

To impart horizontal sliding movement to the dolly frame Y at approximately double the rate of linear travel of the intermediate frame X, the longitudinally spaced cross members **44** and **44***a* of the frame X carry aligned inwardly projecting brackets **61** (see Figs. 3 and 5). Each of these brackets carries a short axle on which is rotatably fixed a sprocket wheel **62** around which pass a pair of transversely spaced, longitudinally extending chains **63**. These chains, as shown in Fig. 5, are formed with spaced ends which are stationarily anchored at **64** on a transverse channel member **65** forming a part of the frame structure **36**. The intermediate portions of the upper lengths of the chains **63** are attached by the use of brackets **65***a* (see Fig. 5) to the members **46** of the dolly frame.

By virtue of this construction it will be evident that as the intermediate carriage or transfer frame X moves outwardly in a horizontal plane on the longitudinal guides provided therefor by the stationary frame **36**, the dolly

frame moves with it. Due, however, to the accelerated linear speed of travel of the chains **63** relative to the rate of linear travel of the frame X, a ratio of approximately 2 to 1, the dolly frame Y, when so moved outwardly from its full line position shown at the right of Fig. 5, in which the dolly frame is arranged immediately beneath a casket **17**, to its fully projected display position, as indicated by broken lines at the left of Fig. 5, said dolly frame will have traveled approximately twice the distance traversed in the same time as the frame X. This results in positioning a casket or other product resting on the dolly frame Y in the display area **22**, where the particular product so positioned may be advantageously shown in an individual manner and without confusing customers with other models or products contained on the conveyor **15**.

To conceal normally the conveyor **15** from customer viewing, I provide the opening **20** with an automatically operated closure means **66** therefor. As shown more particularly in Figs. 8 and 9, this closure means includes among other features a curtain **67**, preferably in the form of an attractive woven fabric, the curtain being raised at the time a casket or other product is passing through the wall opening **20** when travelling toward or withdrawing from the display position.

The shaft **55** is provided at the end thereof opposite to that carrying the sprocket **54** with a fixed sprocket **68** of comparatively large diameter and passing around this sprocket is an endless chain **69** which is also trained around a correspondingly proportioned sprocket **70** rotatably supported in connection with the frame structure **36**. The latter, in Figs. 8 and 9, is shown as being encased in a mechanism-concealing housing **71**.

Connected fixedly with the chain **69** is one end of a cable **72**. This cable is trained over a set of lower guide pulleys **73** positioned on a bracket **73***a* and over another set of upper pulleys **74** arranged above the wall opening **20**. The depending branches of the cable **72**, following cable passage over the upper pulleys **74**, have their lower ends secured to the opposite ends of a horizontal pole **75** from which the curtain **67** hangs. When the shaft **55** is rotated to produce outward movement of the dolly frame to move a product to be displaced from the storage area of the apparatus, as provided by the conveyor **15**, to the display position within the room area **22**, the shaft **55** turns to move the upper length of the chain **69** in the direction indicated by the arrow *m* in Fig. 9. By reason of the large sprockets **68** and **70** the linear movement of the upper length of the chain is such as to completely raise the curtain **67** before the dolly frame Y and the product to be displayed mounted thereon reach the wall opening **20** in their outward movement.

After the dolly frame and the product have passed through the wall opening, the anchored end of the cable **72** on the chain **69** will have passed around the outer guide sprocket **70**, so that said anchored end will then move with the lower length of the chain **69**, as indicated by the arrow *n* in Fig. 9, such movement being continued until the dolly frame and product thereon reach the outer limit of travel of frames X and Y, causing the product to occupy the display position. When in this position the curtain **67** will have been lowered to conceal the opening **20** and the conveyor structure **15**. When the dolly frame is next actuated to return the displayed product to the storage conveyor, the direction of rotation of the shaft **55** and the sprockets **68** and **70** is reversed to again raise and lower the curtain with each operating stroke of the transfer mechanism frames.

An electrical control system suitable for governing the operation of the apparatus is schematically illustrated in Fig. 11. The arrangement shown in this figure provides, in the interest of simplicity, for manual operation of certain circuit-controlling switch devices. However, the system is interlocked by means of auxiliary contacts and limit switches, hereinafter defined, which are so disposed and operated that the caskets, or other products, handled by the apparatus will not be damaged in the event the operator of the system should, through inadvertence or carelessness, operate switches or other controls in an out-of-sequence or improper manner.

In conjunction with the elevator or storage conveyor **15**, the apparatus includes an indicator I by which one operating the apparatus from within the display room of a building housing the same, may by observing the indicator determine quickly and accurately which of the product carriers is in an unloading position of horizontal registry with the wall opening **20**. As here disclosed, the indicator may be mounted on the display room side of the wall **19** and formed to include a stationary dial *75a* bearing circumferentially thereof uniformly spaced numerals corresponding to the number of the casket carriers or platforms **32** positioned on the chains **23**. As here shown, fourteen of such carriers or platforms are used, and the dial is graduated accordingly. Suitable motion-transmitting means **76** in this instance worm gearing, is driven by the upper shaft **25** in a manner producing one complete revolution of the indicator shaft *76a* and the hand *76b* thereon for each complete cycle of travel of the conveyor chains **23**.

In the circuit arrangement, as illustrated in Fig. 11, the reversible electric motors **28** and **50** employed in driving, respectively, the elevator or storage conveyor **15** and the carriage **21** are, for clearness in illustration, separately developed in their dual capacities. Thus the part bearing the legend U designates the windings of the motor **28** which when energized produce motor rotation in a direction causing the front side of the conveyor **15** to ascend, while the showing of the motor **28** bearing the legend D designates the windings of the motor when operated in a reverse direction to cause the front side of the conveyor to descend. For similar reasons, the reversible motor **50** used in sliding the carriage **21** in and out of product-transferring relation with the conveyor **15** is separately shown at I and O to disclose the circuits for producing sliding movement of the carriage in inward and outward directions, as will be readily understood.

Thus, an operator in producing desired operation of the apparatus will normally first look at the indicating device to ascertain which carrier or platform **16** is in the "transfer" position of horizontal registry with the carriage or transfer mechanism. From this inspection, the operator can determine whether he should operate the "up" switch **77**, disposed in the "up" branch **80** of the circuit of the conveyor motor **28**, or the "down" switch **78** disposed in the "down" branch **80***a* of the motor circuit employed in controlling the direction of rotation of the motor **28** to produce downward movement of the products contained on the front run or length of the conveyor **15**. Usually, in this connection the operator actuates the switch **77** or **78** depending upon the nearness of the casket or product desired to be displayed with relation to the carriage transfer position, so that the conveyor may travel the shortest distance possible to bring the desired carrier to the transfer point.

The conveyor frame structure **27** has fixedly mounted thereon a stationary limit switch **79** disposed in the shunt branch **80***b* of the operating circuit for the motor **28**. The operating element of the switch **79** is adapted to be engaged by a stop **81** (Fig. 4) on each of the carriers as the latter pass successively into the carriage transfer position. The limit switch **79** is normally closed and is operated to open automatically the circuit **80***b* each time a carrier or platform passes the transfer station, whereby to stop the movement of the conveyor with a carrier in registry with said station. If it is desired that certain carriers be allowed to pass the transfer station without interruption in conveyor operation, it is merely necessary for the operator to continue to maintain manual

pressure on the push button controls 82 of one or the other of the manual switches 77 or 78, to maintain the engaged switch in a position of circuit closure, thereby by-passing the limit switch 79. This operation is continued until the conveyor 15 progresses to the point where the carrier or platform just ahead of the one the operator wishes to stop passes the transfer station. At that time, the operator releases the held push button of switch 77 or 78 and the conveyor will continue to move until the desired carrier or platform engages and trips the limit switch 79 to cause its contacts 79*a* to open the branch 80*b* of the circuit 80, stopping the conveyor in what may be referred to as an "upper limit" position of transfer registry.

When the conveyor movement is stopped by the operation of the limit switch 79, with a desired product on the conveyor in the upper limit transfer position, an interlocking limit switch, shown at 83, is operated to permit the carriage motor 50 to be energized. The switch 83 is stationarily mounted on the supporting frame of the conveyor and its movable control arm 84 is engaged by a shoe 85 on each of the carriers or platforms 16 while the latter are disposed in or between the upper and lower limits of vertical movement in the transfer position. The closing of the normally open limit switch admits of the operation of the carriage motor 50; otherwise, the switch 83 is open to preclude such motor operation. A main circuit lead L1 extends to the switch 83 and also to the circuits 80, 80*a* and 80*b* of the conveyor motor. A normally closed, manually opened, cut-out or emergency switch 86 is disposed in a primary position in the line L1 to enable all circuits of the apparatus to be opened simultaneously when necessary.

Upon the closing of the switch 83, and with an empty or unloaded dolly frame in the outward or display position, the manually operated switch shown at 87, and bearing the legend "In," is operated to close a circuit branch 88 which leads from the switch 83 to the windings 88*a* of the carriage motor 50 and to the return lead L2 causing the motor 50 to rotate in a direction producing inward movement of the carriage.

When the empty dolly frame of the carriage or transfer mechanism, with the switch 87 maintained in its position of closure, reaches a position of transfer registry beneath a casket-containing carrier or platform disposed in an "upper limit" position, as effected by the stopping of the conveyor 15 through the operation of the switch 79, the inward movement of the carriage or dolly frame is automatically terminated, independently of switch 87, by the engagement of the shoe 89 on the intermediate frame with the movable control arm 90 of the stationary, limit switch 91. The latter carries a pair of spaced contacts 92 and 93, which when the switch 91 is first engaged by the shoe 89 of the intermediate frame adjacent the end of its inward stroke, the first set of contacts 92 of the switch 91 are moved to open the branch circuit 88 and thereby arrest operation of the motor 50. However, when the dolly frame reaches its extreme position of inward movement, the switch 91 is actuated by the intermediate frame to cause the second set of contacts 93 of the switch 91 to assume positions closing the branch circuit 80*c*.

The branch circuit 80*c* extends from the line L1, through contacts 93 of switch 91, thence through a limit switch 94 to the "down" windings 95 of the conveyor motor 28. When the windings 95 are energized, the motor 28 is rotated in a direction producing downward movement of the front length of the conveyor 15. Therefore, when the carrier or platform 16 containing a casket to be transferred to the dolly frame is in an upper limit position of transfer registry, which enables the dolly frame to advance without interference to its extreme inward position in causing closure of the contacts 93 of the switch 91, the windings 95 of the motor 28 are energized to cause motor rotation in a direction moving the front length of the conveyor automatically in a downward direction from its upper to its lower limit of registry with the carriage mechanism. When the conveyor reaches the lower limit position, it is automatically stopped by the engagement of a shoe 96 on the casket carrier with the movable actuating control 97 of the conveyor frame-mounted switch 94. In this limited downward movement of the forward run of the conveyor, a casket on the carrier is transferred to the dolly frame for outward withdrawal by the latter from the conveyor zone to the display position, leaving the conveyor 15 stationary in the lower limit position specified.

The dolly frame carries a weigh limit switch 98 which is disposed in a conductor 99 extending from the lead L1 to the branch conductor 80. The switch 98 serves to preclude operation of the conveyor motor 28 when a casket is mounted on the dolly frame, the interlocking switches provided by the system being such as to enable but one motor to be operated at any given time. The switch 98 includes a movable control 100 which is adapted to be engaged by the base of a casket deposited on the dolly frame to move the pole of the switch to a position preventing transmission of current to the motor 28 through the switches 77, 78 and 79.

Following deposit of a casket on the dolly frame, the manual switch 101, arranged in the branch 102 of the operating circuit for the motor 50, is moved to a position providing for current flow therethrough from the trunk conductor L1, the switch 83 to the windings 103 of the motor 50, thereby producing rotation of the armature of the motor 50 in a direction causing outward travel of the carriage or transfer mechanism and the moving of the casket to an outward position of display while it is retained on the dolly frame.

This outward movement of the casket to the display position is terminated automatically by the engagement of the movable intermediate frame of the casket carriage with the movable operating element 104 of a stationary limit switch 105 mounted on a forwardly disposed member of the stationary frame 36. The switch 105 includes in this instance a double set of contacts, shown at 106 and 106A. When the carriage reaches substantially its limit of outward movement, with the switch 101 held in its manually depressed position of circuit closure, the switch 105 is automatically actuated to separate the contacts 106 thereof and to thereby interrupt the branch circuit 102 of the carriage motor. At the same time, the contacts 106*a* close in permitting the passage of current to the conveyor motor 28 when the dolly frame is empty, that is, without having a casket disposed thereon, since the presence of a casket on the dolly frame opens and precludes conveyor motor operation through switch 98, as previously explained.

After a casket has remained in the outwardly disposed position of display or inspection for a necessary period of time, and it is desired to return the same to its position on a carrier of the conveyor or elevator 15, the manually operated switch 87 bearing the designation "In" is actuated to close the branch circuit 88 of the carriage motor. In this regard it will be noted that the contacts 92 of the switch 91 were moved to positions of circuit closure, in providing for current flow through the branch circuit 88, when the carriage was moved outwardly away from the stationary switch 91 in transferring the casket to an outward display position. The carriage moves inwardly with a casket thereon until its inward movement is arrested by the separation of the contacts 92 of the switch 91. Such inward movement places the casket on the dolly frame above the horizontal flanges 32 of the angle brackets 33 of the carrier 16 in registry with the carriage mechanism and in the lower limit of the transfer position. To return this carrier to the upper limit position so that the casket may be lifted from the dolly frame of the carriage and transferred to the carrier, I make use of a manually operated return switch 107.

The switch **107** is located in a branch circuit **80***d* joined at **108** with the branch circuit **80***c*, the latter containing the contacts **93** of the switch **91**. The closing of the contacts **93** by the extreme inward movement of the carriage does not close the circuit **80***c* since the limit switch **94** is already held open by the "down limit" position occupied by the carrier **16**. To move the carrier to the "upper limit" position in which it supports the casket, the circuit **80***d* includes the switch **107**, which when closed enables current to flow through the windings **28***a* of the motor **28** causing upward movement of the front length of the conveyor to restore the conveyor and the returned casket thereon to assume the upper limit position of transfer registery. When such position is reached, the switch **79** is engaged so that a second set of contacts **79***b* thereon may be moved by the carrier effected operation of the conveyor to a position opening the circuit **80***d* independently of the manual switch **107**.

Upon the redeposit of the casket on its conveyor-mounted carrier and the return of the conveyor to its upper limit position, the carriage or transfer mechanism is freed thereof and is returned to its normal outward position by actuating the switch **101**. When the outward position is reached, the carriage engages the limit switch **105** to open the contacts **106** thereof. Thus, the operation of the carriage motor **50** is precluded, but the contacts **106***a* of the switch **105** are closed to enable the conveyor motor to be energized, thus completing the operating cycle. Preferably, the branch circuit **80***d* includes a key-actuated, lock-type of switch **110** by which an experienced operator, without the protection of interlocking ocntrols, may operate the apparatus, as in the loading of the conveyor **15**, when empty, with caskets.

In view of the foregoing, it is believed that the construction, operation and advantages of the apparatus comprising the present invention will be readily understood and, therefore, a more extended explanation or description has been accordingly omitted. It will, also, be appreciated that while I have set forth and described in detail a single practical embodiment of the present invention, nevertheless the specific features of construction defined are subject to certain variation or modification falling properly within the spirit and scope of the invention set forth by the following claims.

I claim:

1. Article-handling apparatus comprising: a stationary bed structure; an extension frame having rollered support on said bed structure for longitudinal movement in a substantially horizontal plane thereon; a dolly frame having rollered support on said extension frame for longitudinal movement thereon; shaft means journaled in said bed structure; sprockets carried by said shaft means; a first endless chain means passing around said sprockets and connected with said extension frame for imparting longitudinal movement thereto on the bed structure; a reversible electric drive motor on said bed structure, said drive motor including an operating circuit; power-transmitting means driven by said motor for rotating said shaft means to impart back and forth movement to said extension frame; a second chain means connected with said dolly frame and having adjoining ends anchored to said bed structure, said second chain means passing around sprockets carried by the end portions of said extension frame and serving to produce a higher rate of linear travel on the part of said dolly frame than that imparted to the extension frame by said motor and power-transmitting means; normally open, individually operable, switch devices connected in the operating circuit of said drive motor and selectively operable to produce circuit closure effecting rotation of said motor in a direction causing sliding movement of said frames in a desired direction of inward or outward travel on said bed structure; and normally closed, automatic limit switches connected in the operating circuit of said motor and operative to interrupt said circuit to arrest frame travel at the ends of the inward and outward strokes thereof.

2. Article-handling apparatus comprising: a stationary bed structure; an extension frame having rollered support on said bed structure for longitudinal movement in a substantially horizontal plane thereon; a dolly frame having rollered support on said extension frame for longitudinal movement thereon; shaft means journaled in said bed structure; sprockets carried by said shaft means; a first endless chain means passing around said sprockets and connected with said extension frame for imparting longitudinal movement thereto on the bed structure; a reversible electric drive motor on said bed structure, said drive motor including an operating circuit; power-transmitting means driven by said motor for rotating said shaft means to impart back and forth movement to said extension frame; a second chain means connected with said dolly frame and having adjoining ends anchored to said bed structure, said second chain means passing around sprockets carried by the end portions of said extension frame and serving to produce a higher rate of linear travel on the part of said dolly frame than that imparted to the extension frame by said motor and power-transmitting means; a vertically movable, endless conveyor having removably supported at spaced intervals thereon a plurality of articles; and electric motor-driven means for moving said vertically movable conveyor to align a selected article thereon substantially horizontally with said dolly frame, so that upon movement of said extension and dolly frames to a limit position in one direction, said dolly frame will have deposited thereon for movement in unison therewith the selected article.

3. Article-handling apparatus comprising: a stationary bed structure; an extension frame having rollered support on said bed structure for longitudinal movement in a substantially horizontal plane thereon; a dolly frame having rollered support on said extension frame for longitudinal movement thereon; shaft means journaled in said bed structure; sprockets carried by said shaft means; a first endless chain means passing around said sprockets and connected with said extension frame for imparting longitudinal movement thereto on the bed structure; a reversible electric drive motor on said bed structure, said drive motor including an operating circuit; power-transmitting means driven by said motor for rotating said shaft means to impart back and forth movement to said extension frame; a second chain means connected with said dolly frame and having adjoining ends anchored to said bed structure, said second chain means passing around sprockets carried by the end portions of said extension frame and serving to produce a higher rate of linear travel on the part of said dolly frame than that imparted to the extension frame by said motor and power-transmitting means; a vertically movable, endless conveyor having removably supported at spaced intervals thereon a plurality of articles; electric motor-driven means for moving said conveyor to align a selected article thereon substantially horizontally with said dolly frame, so that upon movement of said extension and dolly frames to a limit position said dolly frame will have deposited thereon for movement in unison therewith the selected article; and interlocking means precluding operation of said vertically movable conveyor when said dolly frame occupies an article-transferring position of registry with said conveyor.

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