United States Patent

[11] 3,561,567

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[54] **STORAGE AND DISPENSING SYSTEM FOR SHOPPING CARTS**
5 Claims, 4 Drawing Figs.

[52] **U.S. Cl.** **186/1,** 214/16.1
[51] **Int. Cl.** **E04h 3/04**
[50] **Field of Search** ..... 186/1, 1.1, 1.1C; 214/16.1, 16.16A&B, 16.16; 198/37; 221/13

[56] **References Cited**

UNITED STATES PATENTS

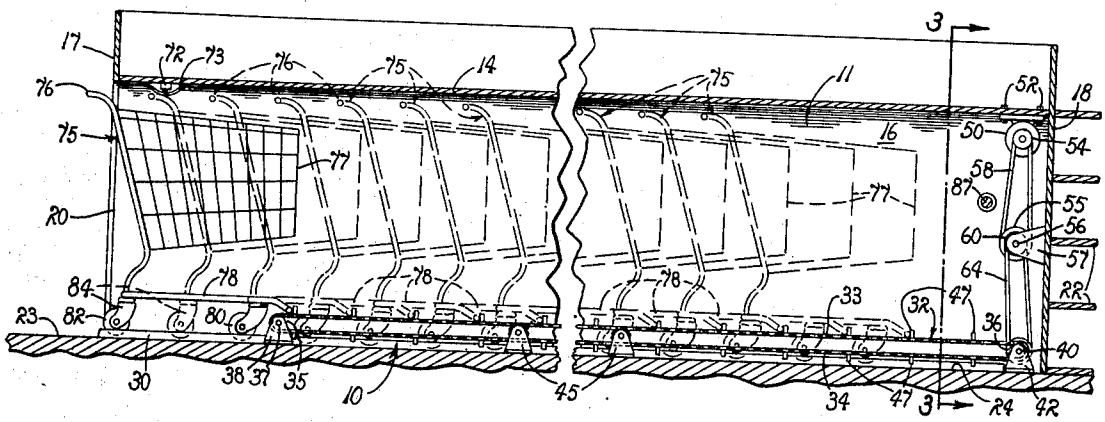
2,743,827	5/1956	Winokur	186/1
2,791,291	5/1957	Grondona	186/1
3,219,205	11/1965	Grant	214/16.1

FOREIGN PATENTS

403,244	6/1966	Switzerland	186/1

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ABSTRACT: A storage and dispensing system for shopping carts which utilizes an elongated product display shelf gondola of the type found in supermarkets and the like modified to include opposite open and closed ends and an elongated inner compartment therein for receiving a plurality of such shopping carts through said open end with powered conveyor means disposed within the gondola having spaced drive portions individually engageable with the shopping carts and including control means operationally associated with the conveyor means for dispensing said shopping carts one at a time from the open end of the gondola incident to the actuation of the control means.



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SHEET 1 OF 2

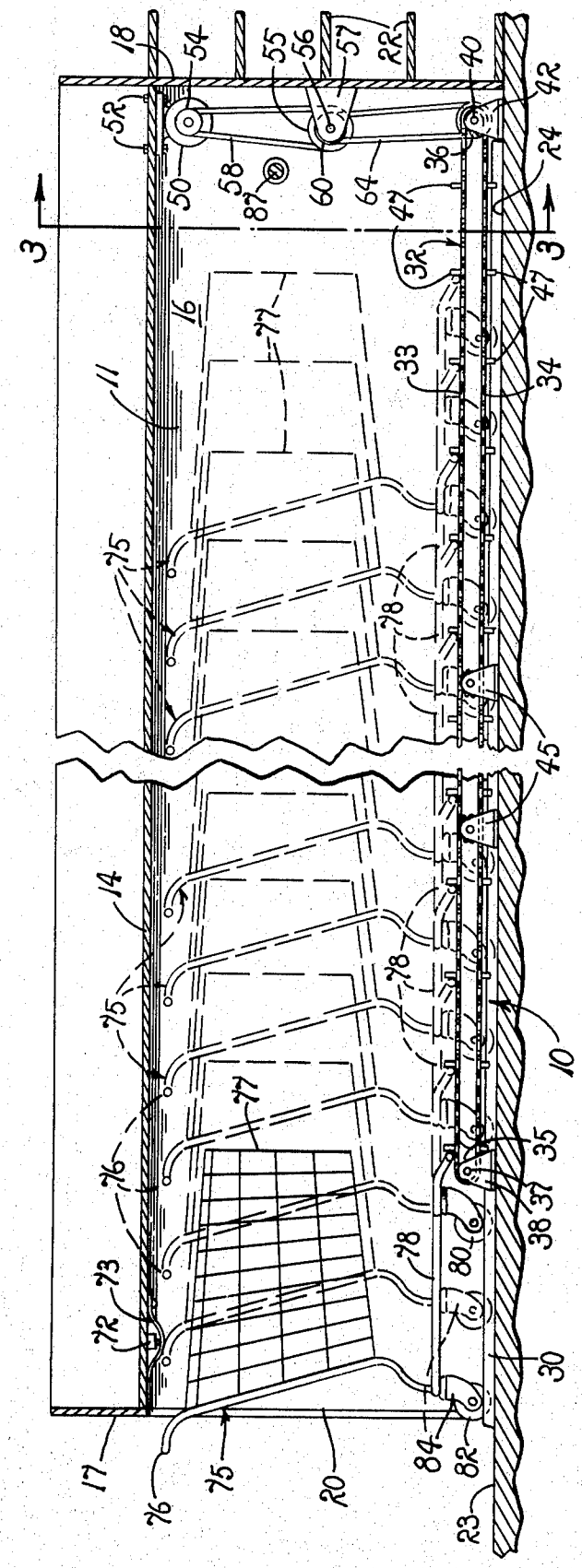


FIG. 2.

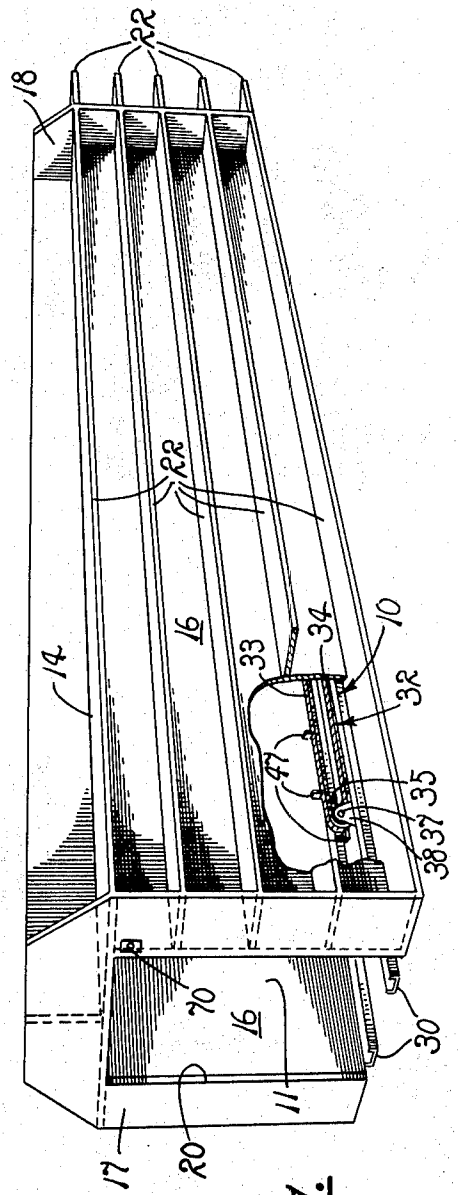


FIG. 1.

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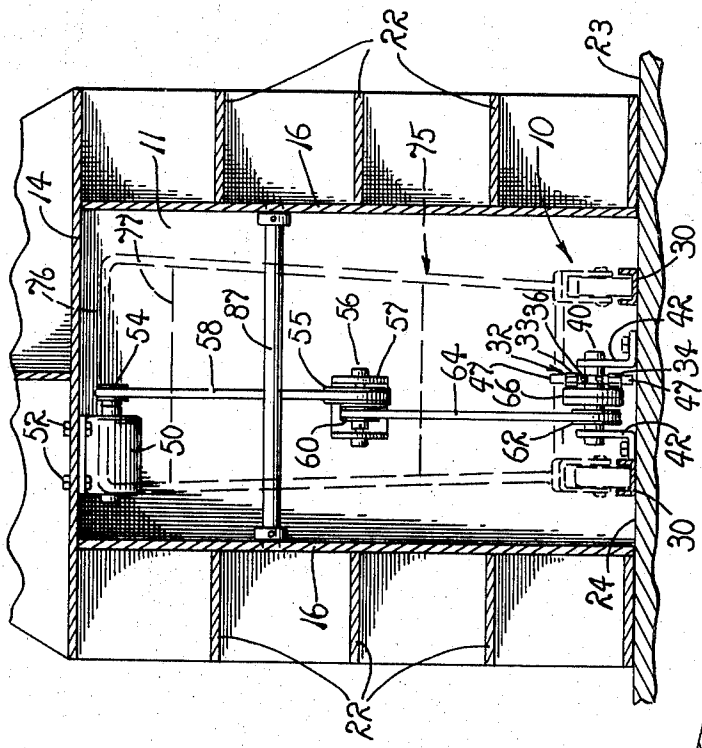


FIG. 3.

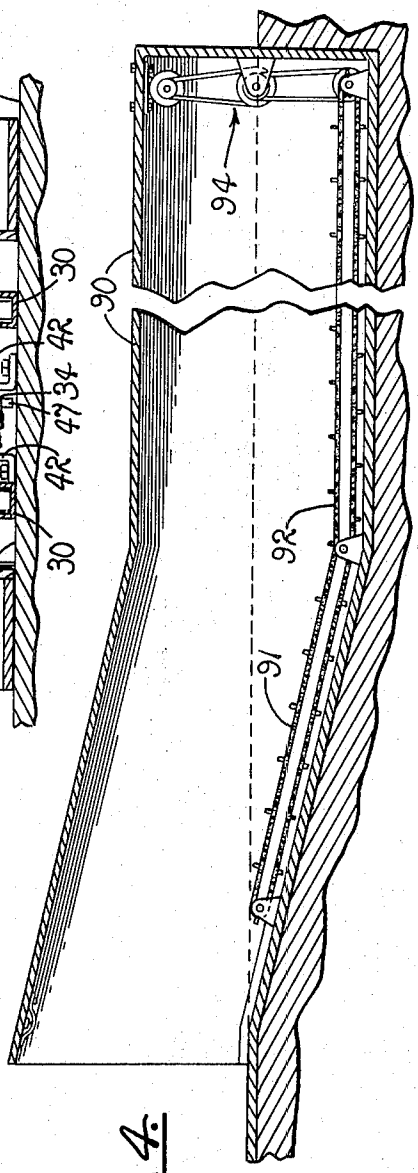


FIG. 4.

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STORAGE AND DISPENSING SYSTEM FOR SHOPPING CARTS

BACKGROUND OF THE INVENTION

The mobile shopping baskets or carts commonly employed in supermarkets and other retail stores have presented onerous problems in storing and conveniently dispensing such baskets and carts to individual customers. Usually, the carts are merely parked in the aisles between the product display islands or gondolas near the entrance of the stores which consume valuable floor space that could be more profitably employed for additional products, displays or the like. The carts present a safety hazard by their obstruction of the aisles to customer traffic and require continual attention by the store's employees to maintain them in some semblance of ordered arrangement. The carts are disposed in successively longitudinally nested relation in order to conserve space but frequently become so tightly wedged that separation is virtually impossible without the use of appropriate prying tools.

SUMMARY OF THE INVENTION

Accordingly, it is an object of the present invention to provide an improved storage and dispensing system for shopping carts.

Another object is to provide such an improved storage and dispensing system which enables a plurality of shopping carts to be stored without consuming any usable floor space within the store so as to maintain the aisles completely free of obstructions to customer traffic.

Another object is to provide a storage and dispensing system for shopping carts of the character described which utilizes the compartment within the existing product shelf display islands or gondolas within the store.

Another object is to provide a storage and dispensing system for shopping carts which is capable of automatically dispensing one cart at a time from the product display gondola.

Another object is to provide a storage and dispensing system for shopping carts which stores the carts in longitudinally closely spaced nonwedging relation to insure their individual discharge from the gondola.

Another object is to provide a storage and dispensing system for shopping carts wherein the storage compartment within the gondola may be easily and conveniently loaded with a plurality of carts and which requires only a minimum of attention until the compartment is emptied and ready for reloading.

Another object is to provide a storage and dispensing system for shopping carts which employs an endless power-driven conveyor within the gondola having a plurality of spaced drive fingers individually engageable with the shopping carts disposed therein and a control mechanism operationally associated therewith which is actuatable by the customers successively to dispense the carts one at a time from the storage gondola.

Other objects and advantages of the present invention will subsequently become more clearly apparent upon reference to the following description and accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of an elongated product display shelf, island or gondola in an existing installation modified to include the shopping cart storage and dispensing system of the present invention.

FIG. 2 is a somewhat enlarged longitudinal vertical section, taken centrally through the gondola and storage and dispensing system of FIG. 1, showing a plurality of shopping carts disposed therein with portions broken away for illustrative convenience.

Fig. 3 is a somewhat enlarged transverse vertical section through the gondola and storage and dispensing system, taken generally along the line 3–3 of FIG. 2, showing the drive mechanism for the cart discharge conveyor.

FIG. 4 is a somewhat reduced longitudinal vertical section through a modified form of the storage and dispensing system of the present invention which is partially recessed within the floor in order further to conserve space within the shelf gondola and which is particularly adapted for new store installations.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring more particularly to the drawings, a storage and dispensing system for shopping carts is generally indicated by the reference numeral **10** and is disposed within the inner compartment **11** of an elongated product display shelf, island or gondola **12** of the type found in most supermarkets, retail stores and the like. The gondola provides an upper wall **14** which is supported by spaced substantially upright parallel sidewalls **16** which circumscribe the storage compartment **11**. The gondola further includes opposite open and closed ends **17** and **18**, respectively, with the open end having a substantially rectangular cart loading and discharge opening **20** formed therein. A plurality of product display shelves **22** are supported by the side, end and upper walls of the gondola with the gondola modified from its usual form by the removal of the shelves at the open end **17** thereof to provide access to the cart storage compartment **11**. The gondola is disposed upon a support surface **23** which provides a floor portion **24** for the storage compartment.

The storage and dispensing system **10** of the present invention provides a pair of elongated channular cart wheel guide tracks **30** which are mounted by suitable fasteners, not shown, in spaced substantially parallel relation upon the floor **24** of the storage compartment **11** within the shelf gondola **12**. An elongated cart discharge conveyor chain **32** having upper and lower runs **33** and **34**, respectively, is disposed substantially centrally of the guide tracks in spaced parallel relation therewith immediately above the floor **24** of the storage compartment. The conveyor chain is mounted for circuitous movement about a pair of oppositely spaced forward and rearward guide sprockets **35** and **36**, respectively. The forward sprocket is mounted for rotation on a shaft **37** supported by a pair of spaced brackets **38** secured to the floor closely adjacent to the cart loading and discharge opening **20** of the gondola. The rearward guide sprocket **36** is similarly mounted on one-half of an axially divided rotatable shaft **40** journaled in a pair of spaced brackets **42** secured to the floor adjacent to the closed end **18** of the gondola. A plurality of idler sprockets and supporting bracket assemblies **45** are mounted on the floor in longitudinally spaced relation between the opposite ends of the gondola in supporting relation to the upper run **33** of the conveyor chain **32**. The chain further includes a plurality of spaced, outwardly extended cart driving fingers **47**.

The conveyor chain **32** is driven by an electric motor **50** which is mounted in suspended relation from the upper wall **14** of the gondola **12** by a plurality of mounting bolts **52**. The motor has a drive pulley **54** disposed in coplanar relation with a somewhat larger diameter speed reducing pulley **55** mounted on a shaft **56**. The shaft is rotatably journaled in a bracket **57** secured to the closed end wall **18** of the gondola substantially midway between the floor **24** and the upper wall **14**. A V-belt **58** is trained about the pulleys **54** and **55**. A substantially smaller diameter pulley **60** is mounted in axially spaced relation to the pulley **55** on the mounting shaft **56**. The pulley **60** is disposed in coplanar relation with a larger diameter further speed reducing pulley **62** mounted in axially spaced relation with respect to the rearward guide sprocket **36** on the other half of the drive shaft **40**. A V-belt **64** is trained about the pulleys **60** and **62** to continue transmission of the drive from the motor **50**. A magnetic clutch **66** is mounted on the shaft **40** between the drive pulley **62** and the drive sprocket **36** and is normally held in an open position to interrupt the drive from the pulley **62** to the sprocket **36**.

The electric motor **50** is continually running during operation of the storage and dispensing system with the magnetic

clutch 66 being operated to actuate the conveyor chain 32 to discharge shopping carts from the gondola. An electrical circuit is provided between a customer actuating switch 70 mounted on the open end 17 of the gondola adjacent to the cart loading and discharge opening 20. Such switch is connected to the magnetic clutch 66 initially to energize the same for connecting the drive from the motor to the drive sprocket 36. A limit switch 72 is provided in the circuit and is mounted on the upper wall 14 of the gondola in depending relation within the storage compartment 11 for engagement by the next succeeding shopping cart to be dispensed for deenergizing the magnetic clutch to insure that only one cart at a time is dispensed from the gondola. A flexible camming strap 73 is disposed in covering relation to the limit switch for sliding engagement with the carts during their travel past the switch for discharge through the opening 20 in the gondola.

As best shown in FIG. 2, a plurality of conventional shopping carts 75 are adapted to be disposed within the storage compartment 11 of the shelf gondola 12. The carts individually include an upper handle portion 76, a forwardly tapering basket portion 77, and a lower support frame 78 having sets of forwardly and rearwardly disposed wheels 80 and 82, respectively. The forward wheels are conventionally of the swiveling caster type whereas the rear wheels are rotatably mounted on rigid brackets 85 secured to the frame. A cart bumper bar 87 is transversely extended across the storage compartment 11 immediately ahead of the conveyor drive belts 58 and 64 and their respective mounting pulleys in order to preclude engagement of the carts with the drive mechanism from the motor 50.

A second form of the storage and dispensing system is shown in FIG. 4. This form is particularly adapted to original installation into a new store where the storage compartment can be initially recessed into the floor to conserve additional space within the gondola. As shown, this form has a lower partially recessed storage compartment 90 with an upwardly inclined cart delivery portion 91. A conveyor chain 92 and a motor-driven reduction drive mechanism 94 are provided which are substantially identical to that of the first form except for the need of dividing the conveyor chain into two segments individual to the angularly related portions of the storage compartment.

OPERATION

The operation of the described embodiments of the subject invention is believed to be clearly apparent and is briefly summarized at this point. The storage compartment 11 of the shelf gondola 12 is manually loaded by successively inserting the shopping carts 75 through the cart loading and discharge opening 20 in the open end 17 thereof. During such loading, the wheels 80 and 82 of the carts are received and guided through the channular guide tracks 30 with the front end of their frame 78 engaging the fingers 47 on the upper run 33 of the conveyor chain 32. During such insertion of the carts, the conveyor chain is permitted to freewheel and the upper run thereof motivated in a direction from left to right, as viewed in FIG. 2. The fingers are spaced to insure nesting of the successively inserted shopping carts but preclude wedging of the carts to insure ease of separation and subsequent individual discharge from the gondola.

After the storage compartment 11 is completely filled with the shopping carts 75, the electric motor 50 is energized by a conventional "on," "off" switch, not shown, and is permitted continually to run throughout the dispensing operation. Inasmuch as the magnetic clutch 66 is normally open, the motor can, of course, be initially energized at any time prior to or during the loading operation since the magnetic clutch permits the described freewheeling of the conveyor chain for unrestricted loading and reverse movement of the chain toward the closed end wall 18 of the gondola.

When a customer desires to have a shopping cart discharged from the gondola, the customer switch 70 on the open end 17 of the gondola is pressed to energize the magnetic clutch 66 for transmitting the drive from the electric motor 50 to the drive sprocket 36. Upon such actuation, the upper run 33 of the conveyor chain 32 is motivated in a direction from right to left, as viewed in FIG. 2, with the fingers 47 thereon carrying the shopping carts toward the open end 17 of the gondola. The outermost cart is discharged outwardly through the discharge opening 20 so that the handle portion 76 thereof is conveniently accessible to the customer for full extraction of the cart from the storage compartment. Concurrently, the next succeeding cart is motivated toward the opening until its handle portion 76 engages the camming strap 73 and the limit switch 72 which is depressed thereby to deenergize the magnetic clutch 66 for interrupting the drive from the motor to the conveyor chain 32. The momentum of the drive mechanism and the conveyor chain carries the succeeding cart past the limit switch so that the electrical system is preconditioned for a subsequent cart discharging sequence upon reactivation of the customer switch 70.

In view of the foregoing, it is readily apparent that the structure of the present invention provides an improved storage and dispensing system for shopping carts which, by its utilization of the compartment within the existing shelf gondolas, does not consume any usable floor space within the store and which is capable of automatically dispensing one cart at a time from the gondola to the customers. The shopping carts are conveniently manually loaded within the gondola in closely spaced, nonwedging relation with the system requiring a minimum of attention between the loading operations. The system is readily adapted to existing shelf gondolas and alternatively may be recessed beneath the floor of the store in new store installations.

Although the invention has been herein shown and described in what are conceived to be the most practical and preferred embodiments, it is recognized that departures may be made therefrom within the scope of the invention, which is not to be limited to the details disclosed herein but is to be accorded the full scope of the claims so as to embrace any and all equivalent devices and apparatus.

I claim:

1. A storage and dispensing system for shopping carts comprising an elongated product display shelf gondola as utilized in supermarkets and the like having opposite open and closed ends and an elongated inner compartment extended therebetween for receiving a plurality of such shopping carts therein through said open end of the gondola; a conveyor disposed within the gondola having an elongated endless chain providing predetermined upper and lower runs; a plurality of longitudinally spaced fingers on said chain individually engageable with said carts within the gondola so as to space the carts in longitudinally nested relation without wedging; a pair of spaced rotatable support members respectively disposed adjacent to said ends of the gondola mounting said chain for circuitous movement between the ends; power means disposed within the gondola; drive means drivingly interconnecting said power means and said rotatable support member adjacent to the closed end of the gondola motivating the upper run of said chain in a direction toward said open end of the gondola successively individually to discharge said carts one at a time from the gondola; and clutch means disposed between said drive means and said support member at the closed end of the gondola for interrupting said drive to the support member permitting unrestricted movement of said upper run of the chain away from said open end of the gondola incident to the loading of the compartment with shopping carts with the carts engaging successive fingers on the chain.

2. The system of claim 1 wherein said power means is a continuously driven electric motor, said clutch means is a normally open magnetic clutch, and said control means includes a customer actuating switch disposed externally upon said open end of the gondola having operating connection to said magnetic clutch for activating the same to transmit the drive from the motor to the conveyor chain for dispensing said carts from the gondola.

3. The system of claim 2 including a limit switch in said control system disposed within the gondola for engagement by succeeding carts during movement toward said discharge opening and connected to said magnetic clutch to deenergize the same for limiting the discharge to only one cart at a time from the gondola.

4. A storage and dispensing system for shopping carts comprising a display shelf gondola in a retail store or the like providing an elongated compartment therein adapted to receive a plurality of shopping carts in longitudinally extended nested relation and including a floor, a closed end wall, and an opposite open end wall having a cart discharge opening therethrough; an elongated endless conveyor chain having predetermined upper and lower runs longitudinally extended between said end walls of the gondola and including a plurality of spaced fingers individually engageable with said carts to space them within the gondola in said nested relation without wedging; a pair of spaced rotatable sprockets respectively disposed adjacent to said end walls of the gondola supporting said chain for circuitous movement therebetween immediately above said floor; a continuously driven electric motor

mounted within the gondola; a speed-reducing drive mechanism interconnecting said motor and said sprocket at the closed end of the gondola; a magnetic clutch interposed said sprocket and said speed-reducing drive mechanism; a customer actuating switch disposed exteriorly upon said open end wall of the gondola and connected to said clutch to energize the same to travel said upper run of the chain toward said discharge opening to carry the carts toward and outwardly through the discharge opening; and a limit switch disposed within the gondola engageable by succeeding carts and having electrical connection to said magnetic clutch to deenergize the same upon such engagement of the limit switch to interrupt the drive to the conveyor chain until a subsequent actuation of the customer actuating switch.

5. The system of claim 4 including a pair of elongated laterally spaced substantially parallel cart wheel guide tracks disposed in longitudinally extended relation upon the floor within the gondola with said conveyor chain disposed substantially centrally therebetween in cart-engaging relation.