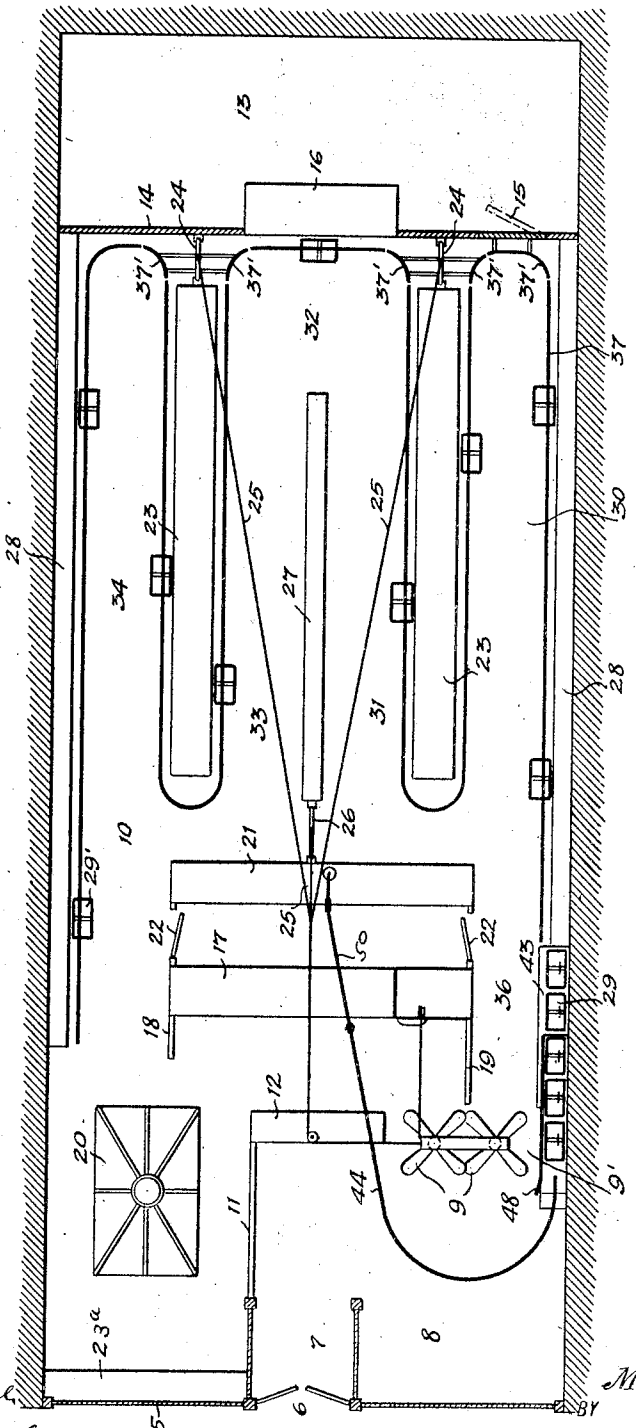
Dec. 11, 1923. 1,477,495

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MONORAIL SYSTEM FOR STORES

Filed Jan. 23, 1923 2 Sheets-Sheet 1

Fig. 1.



WITNESSES

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MONORAIL SYSTEM FOR STORES

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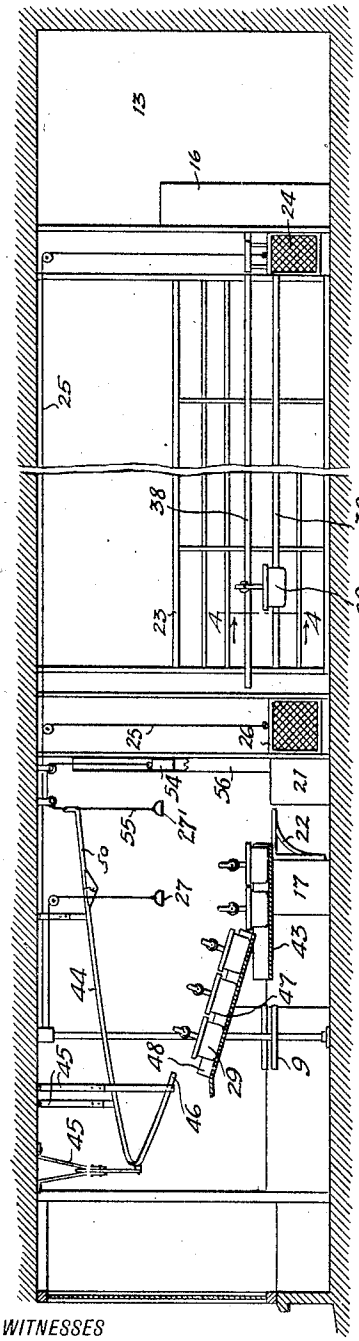


Fig. 2.

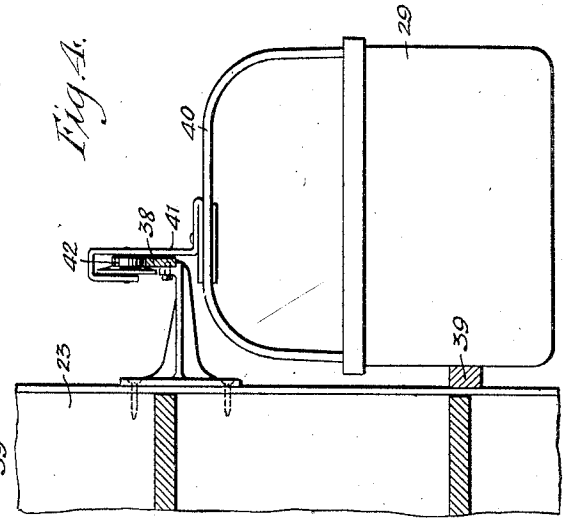


Fig. 4.

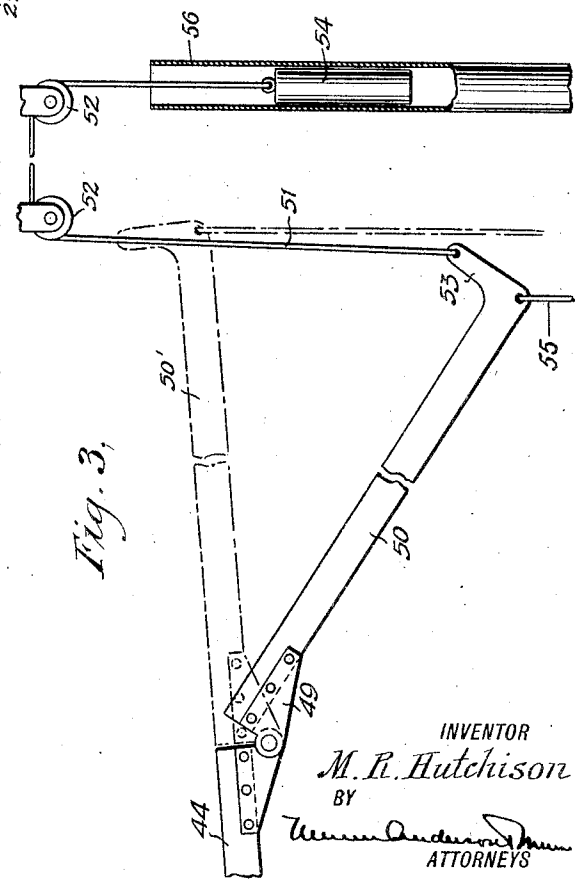


Fig. 3.

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UNITED STATES PATENT OFFICE.

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MONORAIL SYSTEM FOR STORES.

Application filed January 23, 1923. Serial No. 614,469.

To all whom it may concern:

Be it known that I, MILLER REESE HUTCHISON, a citizen of the United States, and a resident of Orange, in the county of Essex and State of New Jersey, have invented a new and Improved Monorail System for Stores, of which the following is a full, clear, and exact description.

This invention relates to self-service stores for the merchandising of commodities of different kinds, and has reference more particularly to a store of this kind, in which means are provided for enabling the customer readily and easily to transport, on his way through the store, the merchandise which he has selected to take with him.

The invention particularly relates, as preferably carried out, to a self-service store of the kind just indicated and such as disclosed in my co-pending application Serial No. 566,607, wherein the customer is afforded convenient means for aiding him in the transport of the selected merchandise and at the same time predetermining his course through the store. As indicated in my co-pending application just identified, such means may very well be and preferably is a track running adjacent to merchandise holders and predetermining such course, in combination with a receptor for the selected merchandise adapted to travel along the track with the customer while he is covering such course. According to said co-pending application, such carrier, conveniently a basket the bail of which carries a track-engaging means, is readily detachably carried by the track, that is to say, each customer on entering the store and on receiving at a predetermined advance station one of the carriers, may hang such carrier on the track and then, when the customer has completed his course and the carrier has traveled along the track to another predetermined point, the carrier may be detached from the track, the contents thereof checked and the cost thereof totalled, the merchandise delivered to the customer on payment by him of his bill, and the carrier thus made available for similar use by a subsequent customer.

A particular object of the invention is to provide simple, inexpensive, efficient, reliable and expeditious means for conveying a carrier thus left at the cashier's or checker's station or the like, or some similar station, to another station convenient as a carrier-supply station relative to customers subsequently entering the store. These two stations will be respectively referred to hereinafter, generally, as the pre-exit station and the carrier-supply station.

Preferably, the object just stated is accomplished by providing a carrier-guiding means along which the carrier may be advanced from a point near the pre-exit station to a point near the place of entrance of new customers, preferably by gravity, and in combination therewith a carrier-transporting means, conveniently operable from near the pre-exit station, whereby a just-emptied carrier may be thrown up instantly to take an elevated portion of the gravity track just mentioned.

Another object of the invention is to provide a track-taking device to be preferably permanently carried by each carrier and preferably to constitute an anti-friction device, and in combination therewith to provide the gravity track and the track for predetermining the course of a customer through the store, such that the carrier, or rather its track-engaging device, similarly takes either track, and also to provide means for conveying an emptied carrier to the elevated end of the gravity track, in the nature of a movable track continuation relative to the latter.

With these and other objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings,

Fig. 1 is a diagrammatic plan view of a self-service store incorporating an embodiment of the monorail system of the present invention;

Fig. 2 is a vertical longitudinal section through the store of Fig. 1;

Fig. 3 is an enlarged detail view, partially broken away and partially in section, of a part of the carrier-transporting means adjacent the cashier's station as shown in Fig. 2; and

Fig. 4 is an enlarged detail view, taken on line 4—4 of Fig. 2, and showing a carrier in end elevation.

Before proceeding to a more detailed explanation of my invention, it should be understood that my self-service store may be

used for the merchandising of any desired commodities; and while of the type of store particularly adapted for so-called "chain store systems" it may also be used as an individual or single store.

In establishments of this kind the merchandise is arranged on display in suitable merchandise holders or containers, as on shelves or the like, so that the customer who enters passes through the store and selects from these holders the goods which he desires to purchase. As in my said co-pending application Serial No. 566,607, the customer on entering the store is furnished with a carrier for the merchandise he is to select, and this carrier is adapted to be supported on a monorail track and travel along this track, thereby to direct and predetermine the course of the customer through the establishment so that he is conveyed past practically all the merchandise on display. It will be understood, then, that many of the details of the construction which I have shown and described, for example, herein, from no part of this invention and may be varied in accordance with individual preference or special conditions without departing from the spirit of the invention.

Referring more particularly to the drawings, my self-service store is located in any building, of any form and having the customary store-front 5 while affording an entrance 6. I prefer to employ a vestibule 7 leading into a lobby 8. On one side of the lobby is a portal, passage through which is controlled by suitable mechanism, such as a pair of turn-stiles 9. The lobby is divided from the salesroom 10 of the store by a partition or rail 11 and a counter 12 at an angle to the rail.

At the rear the salesroom 10 is separated from a store-room 13 by means of a wall or partition 14, having at one side a door 15 for intercommunication with the salesroom. A part of partition 14 includes a refrigerator 16 for perishable goods.

Arranged within the salesroom and extending transversely thereof is a checking counter 17. This is disposed parallel to the counter 12 but spaced therefrom. At its ends the counter 17 is equipped with projecting rails 18 and 19. Of these the latter terminates at a point substantially central with respect to turn-stiles 9. The rail 18 extends to a point so that its free end is somewhat spaced from a fitting 20, which may represent a table with center fountain for the display of fresh vegetables, such fitting in turn being spaced somewhat from rail 11.

An additional counter 21 is located within the salesroom parallel to the counter 17 but spaced therefrom.

Swinging gates 22 are hung at the ends of counter 17 and extend to the counter 21 to prevent customers entering between these two counters.

Positioned within the salesroom and extending longitudinally thereof are two parallel merchandise holders 23. These may consist of cabinets, shelves, bins, or any other suitable fittings for the purpose. The merchandise holders may be provided in any number, of course. The two holders shown are spaced at their ends, not only from counter 21, but also from partition 14. Between the ends of these holders 23 and said partition are gates or barriers 24 of any suitable construction, mounted to slide vertically in guides provided for the purpose. These gates, when in normal positions, are lowered, but are adapted to be raised to inoperative position in an emergency or when otherwise desired by means of suitably guided cables 25, as is also a normally lowered but vertically slidable barrier 26 between a central longitudinal partition 27 and counter 21, as the result of an attendant between or near counters 17 and 21 pulling down on a handle marked 27 in Fig. 2; all as fully described and claimed in my co-pending application Serial No 568,536.

Extending along the side walls of the building are shelves, cabinets, bins or the like 28 constituting merchandise holders of any suitable type. A similar merchandise holder may conveniently be positioned as indicated at 23^a in Fig. 1.

It will be understood that a customer entering the lobby 8 passes through gate 9', takes one of the carriers 29, and in combination with such carrier passes along the first encountered shelves 28 to the end of the aisle 30, then retraverses said aisle along holder 23, then through aisles 31, 32 and 33 around partition 27, then to the far end and back through aisle 34, until finally the customer and his basket reach a point approximately that indicated at 29'. Thereupon the customer, after having added to his selected commodities other articles from table 20 and shelf 23^a if desired, passes with his basket around rail 18 to enter between counters 12 and 17 and with the carrier on counter 17.

The space between counters 17 and 21 may conveniently be the pre-exit or cashier's station hereinabove mentioned. And the short alley 36 in effect established along the side railing 19 and gate 22, here constitute the carrier-supply station.

As fully described in my said co-pending application serial No. 566,607 aforesaid, a carrier or basket accompanying a customer over his predetermined course through the salesroom from point 43 to point 29' is supported by and slid along a monorail 37 mounted in any suitable manner upon the various fittings along which the rail extends, such as the merchandise holders 23. The monorail may be of any suitable construc-

tion, and consists, for example, as best shown in Fig. 4, of a flat bar-rail 38, screwed, nailed or otherwise attached to its supports. Co-operating with the monorail and mounted upon the supports, below and parallel with the monorail, is a guide rail 39, for a purpose to be spoken of in a moment.

As also fully described in said co-pending application, Serial No. 566,607, the carrier used with the track system just described may be of any suitable type or construction. I prefer, however, to use carriers 29 such as are shown best in Figs. 2 and 4 consisting of elongated substantially rectangular baskets of reticulate or other material. Referring to Fig. 4, each basket has a substantially central transverse bail or handle 40 by means of which the basket may be readily carried by the customer when detached from the rails. The downwardly extending sides of the handle are secured to the corresponding sides of the basket in any suitable manner. Mounted on the basket, in the present case on bail 40, but always preferably to one side of the longitudinal center line of the basket, is a fixture 41 constituting a transverse support for a grooved wheel 42 constructed to rest and roll upon monorail 38. Each basket on the side most adjacent to the fixture 41 and grooved wheel 42, has a longitudinal wear strip (not shown here, but pursuant to said co-pending application) which contacts with the guide rail 39 when the carrier is supported by and travels upon the rail 38.

As fully disclosed and claimed in my said co-pending application Serial No. 566,607, the following construction is also preferably provided: Whenever the monorail 38 passes a door, barrier or the like, as for example indicated in Fig. 1 at 37', such section 37' of the track is attached to and movable with the door or barrier, so that the track and carrier system will not interfere with the normal functioning of say the door 15 or with the emergency exits intended to be provided by elevating barriers 24.

The preferred form of construction of a self-service store according to my invention will be clearly understood from the foregoing, and furthermore a better appreciation will be had of the preferred structural characteristics and practical utility of the means provided by the present invention for furnishing a means as hereinabove characterized for handling a basket 29 left emptied at the pre-exit station after a customer passes through the turn-stile alongside counter 12 for exit through the store. It will of course be understood that it is the object instantaneously, unobtrusively, and non-interferently (relative to the rather congested neighborhood of the turn-stiles 9) to transfer said carrier to the carrier-supply station inside the salesroom just beyond the entrance turn-stile and preferably opposite railing 19.

To these ends, the following provisions are made:

I provide a carrier receptacle or table 43 adapted preferably to support merely by gravity a plurality of sequentially arriving carriers and to maintain such carriers in columnar relation. In order to transfer each carrier as it is emptied at the pre-exit station, from such station to table 43, I preferably employ a carrier-supply track 44, of such a cross-sectional shape as to take the wheel 42 of each carrier 29, and preferably hung in place by a suitable number of hangers marked 45 in Fig. 2. Carrier-supply track 44 is inclined along its length as shown so as to cause each carrier engaged with its more elevated end to travel by gravity along and down the track toward the point marked 46 in Fig. 2. It will be noted that this generally spiral setting of track 44 attains the purpose intended and yet maintains all parts of the track non-interferent with the head of a customer traversing any of the permitted areas of the salesroom.

In connection with such track 44 and table 43, there is also preferably provided an interposed gravity conveyer means for a plurality of baskets 29 arranged in column; which means may conveniently be an inclined shelf 47 having at its outer edge a retaining and guiding wall 48, desirably flared at its upper end as shown in Fig. 1.

In order to provide a means for transporting an emptied carrier from say counter 17 to the elevated end of track 44, that is to say, for elevating such carrier, and for thereupon automatically transferring the carrier to track 44, the following parts are provided. Hingedly connected as shown best at 49 in Fig. 3, to the elevated end of track 44, is a track member 50 normally held in smooth prolongation of track 44, that is, normally held at the dot-and-dash location 50', by means of a cable 51 passing over pulleys 52 and engaging at one end the free end of a claw-terminus 53 at the swinging end of track-member 50, and connected to and pulled on at its other end by a cylindrical weight 54 guided in a vertical sleeve 56. Connected to the lower corner of track member 50 is the upper end of a pull-cord 55 the lower end of which carries a handle 27'.

In operation, when an emptied carrier 29 is left behind at the pre-exit station by a customer leaving the store, an attendant at said station pulls downward on handle 27', throwing track member 50 to the full line position of Fig. 3. With his other hand the attendant takes hold of the bail 40 of the

carrier and hooks wheel 42 over the upper edge of track member 50. In this connection it will be noted that claw 53 precludes any possibility whatever of accidental loss of the carrier from track member 50 while the latter is held in its full line position or is moving from such position toward its normal elevated one. Having thus hooked the carrier onto the track member 50, the attendant releases handle 27', track member 50 is swung up into prolongation of track 44, by means of weight 54, and thereupon gravity acts to cause the carrier to pass smoothly along the track structure 44—50 until discharged downwardly beyond the point marked 46 in Fig. 2, thereupon to add itself to the rear of the column of carriers on inclined shelf 23a or on table 43.

I claim:

1. In a self-service store having a salesroom, said salesroom including a pre-exit station to serve as a checking station for merchandise selected by a customer, and said salesroom further including means for assisting the customer in transporting merchandise through the store, said means including a guide rail for a readily detachable carrier, said store further including a carrier supply station for an incoming customer, and said rail extending from a point near the carrier supply station to a point near the pre-exit station,—the combination of a carrier supply track extending from a point near the pre-exit station to a point near the carrier supply station, a track-engaging device on the carrier adapted detachably to take either track, and means including the last-mentioned track for transporting a carrier taken thereby near the pre-exit station, along said track and toward the carrier supply station.

2. The self-service store defined in claim 1, wherein the carrier supply track has an elevated end above a point near the pre-exit station, and there is provided means for transporting a carrier from a lower level to said track near its elevated end.

3. The self-service store defined in claim 1, wherein the carrier supply track has an elevated end above a point near the pre-exit station, and there is provided means for transporting a carrier from a lower level to said track near its elevated end, and for thereupon automatically transferring said carrier from the transporting means to said track.

4. The self-service store defined in claim 1, wherein the carrier supply track has an elevated end above a point near the pre-exit station, and there is provided means for transporting a carrier from a lower level to said track near its elevated end, said transporting means including a track for also detachably taking a carrier's track-engaging device.

5. The self-service store defined in claim 1, wherein the carrier supply track has an elevated end above a point near the pre-exit station, and there is provided means for transporting a carrier from a lower level to said track near its elevated end, said transporting means including a track for also detachably taking a carrier's track-engaging device, and the track last-mentioned being pivotally mounted.

6. The self-service store defined in claim 1, wherein the carrier supply track has an elevated end above a point near the pre-exit station, and there is provided means for transporting a carrier from a lower level to said track near its elevated end, said transporting means including a track movable relative to the carrier supply track and shaped for also detachably taking a carrier's track-engaging device, there being further provided means for normally holding the track of the transporting means in a predetermined position relative to the carrier supply track.

7. The self-service store defined in claim 1, wherein the carrier supply track has an elevated end above a point near the pre-exit station, and there is provided means for transporting a carrier from a lower level to said track near its elevated end, said transporting means including a pivotally mounted track prolongation of the carrier supply track.

8. The self-service store defined in claim 1, wherein the carrier supply track has an elevated end above a point near the pre-exit station, and there is provided means for transporting a carrier from a lower level to said track near its elevated end, said transporting means including a pivotally mounted track prolongation of the carrier supply track, the two tracks last-mentioned being normally in mutual prolongation, together to establish a fraction of a non-uniplanar spiral struck on a substantially vertical axis and with the track of said transporting means at the more elevated end thereof.

9. The self-service store defined in claim 1, wherein the carrier supply track has an elevated end above a point near the pre-exit station, and there is provided means for transporting a carrier from a lower level to said track near its elevated end, said transporting means including a pivotally mounted track prolongation of the carrier supply track, the two tracks last-mentioned being normally in mutual prolongation, together to establish a fraction of a non-uniplanar spiral struck on a substantially vertical axis and with the track of said transporting means at the more elevated end thereof, there being further provided means for normally holding the track of said transporting means thus in prolongation of the carrier supply

track, and manual means for rocking the track of said transporting means downward to take a carrier for transport.

10. The self-service store defined in claim 1, wherein the carrier supply track has an elevated end above a point near the pre-exit station, and there is provided means for transporting a carrier from a lower level to said track near its elevated end, said transporting means including a pivotally mounted track prolongation of the carrier supply track, the two tracks last-mentioned being normally in mutual prolongation, together to establish a fraction of a non-uniplanar spiral struck on a substantially vertical axis and with the track of said transporting means at the more elevated end thereof, said store having a portal, and the carrier supply track being so arranged as to be non-interferent with a standee's head in the vicinity of such portal.

11. The self-service store defined in claim 1, wherein there is provided a guiding and supporting means for holding in column a plurality of carriers discharged from the carrier supply track.

12. The self-service store defined in claim 1, wherein the carrier supply track has an elevated end above a point near the pre-exit station, and there is provided means for transporting a carrier from a lower level to said track near its elevated end, said transporting means including a pivotally mounted track prolongation of the carrier supply track, and also having means for at all times preventing the movement of a carrier along said prolongation except toward the carrier supply station.

13. In a self-service store having a salesroom, said salesroom including a pre-exit station to serve as a checking station for merchandise selected by a customer, and said salesroom further including means for assisting the customer in transporting merchandise through the store, said means including a guide rail for a readily detachable carrier, said store further including a carrier supply station for an incoming customer, and said rail extending from a point near the carrier supply station to a point near the pre-exit station, the combination of a carrier supply track extending from a point near the pre-exit station to a point near the carrier supply station, and a track-engaging device on the carrier adapted detachably to take each track, the first-mentioned track being in the main at a height above the floor below the shoulder of a customer of average height, and the second-mentioned track including a portion above the head of such customer.

14. The self-service store defined in claim 13, wherein the carrier supply track includes a length inclined to the horizontal to advance a carrier thereon, along the same by gravity.

15. The self-service store defined in claim 13, wherein the carrier supply track includes a major length which is curvilinear in extension.

16. The self-service store defined in claim 13, wherein the carrier supply track includes a major length which is curvilinear in extension, said length being inclined to the horizontal.

MILLER REESE HUTCHISON.