

Nov. 23, 1965

H. J. GRANT
STORAGE COUNTER

3,219,205

Filed Jan. 14, 1963

2 Sheets-Sheet 1

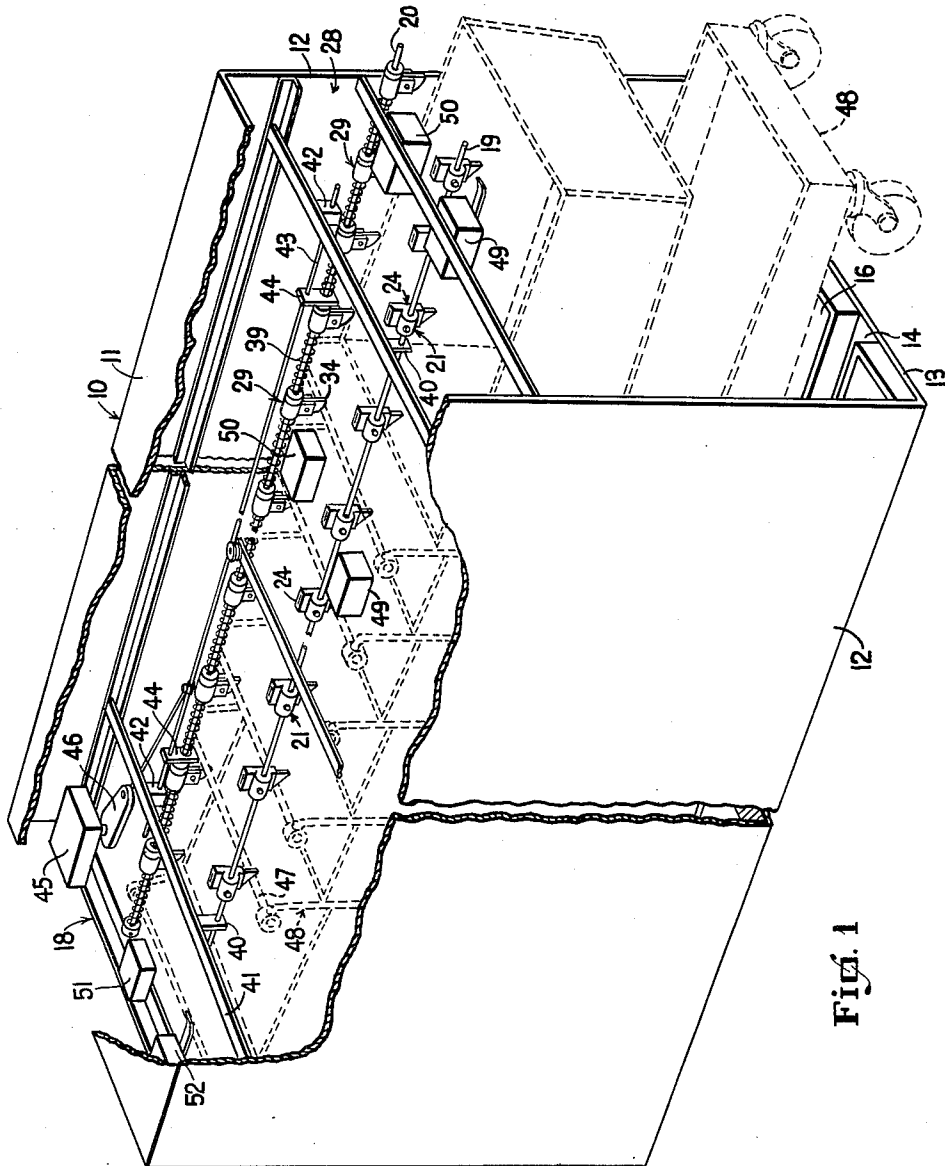


Fig. 1

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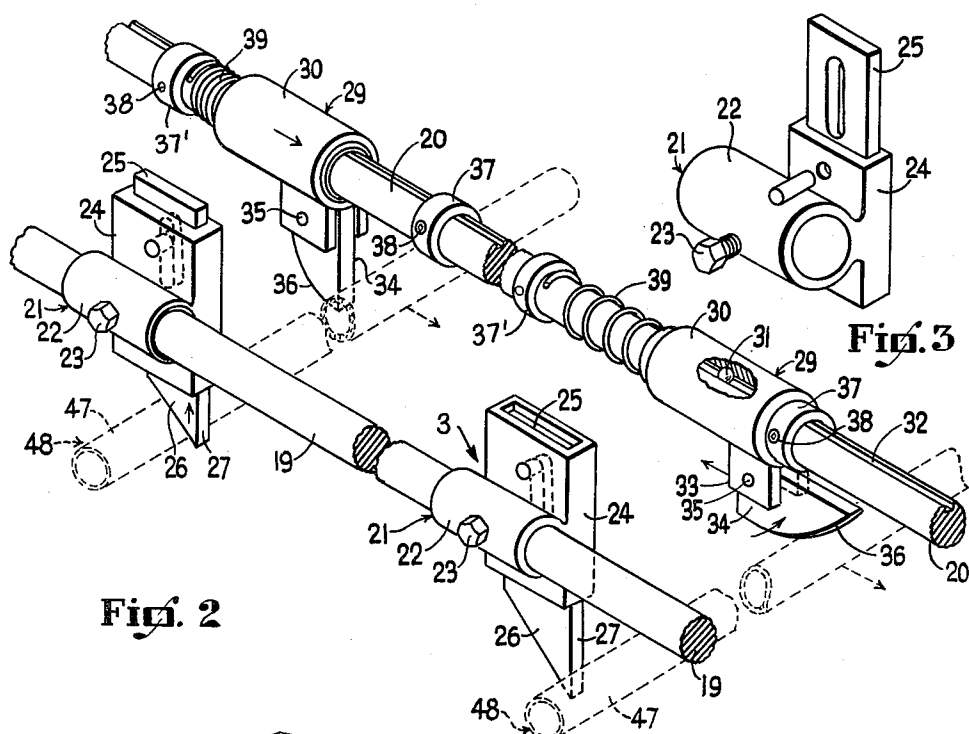


Fig. 2

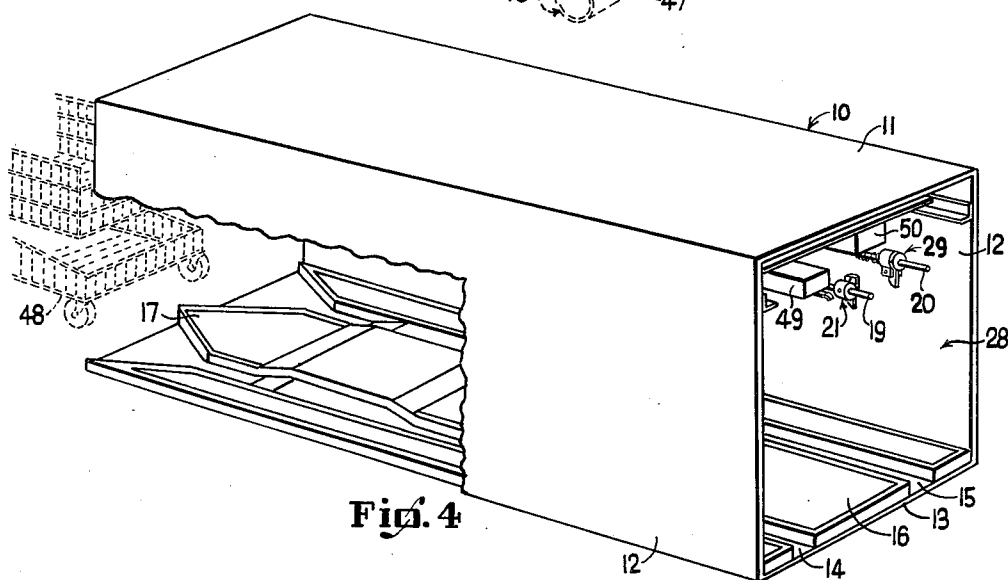


Fig. 4

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STORAGE COUNTER

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8 Claims. (Cl. 214-16.1)

This invention relates to store fixtures, and more particularly to that store fixture known as a counter. It also relates to the carts used in modern supermarkets, self-service drug, and other retail stores.

Unfortunately, no matter how well a self-service type of store may be designed, or how large it may be, there is nearly always some confusion resulting in lack of moving space at the check-out counter by reason of an accumulation of unused carts that tend to block one's passage. This is particularly true when the store is full of people, like on a Friday or Saturday night. This confusion not only irritates the customers, but cannot help but cause a certain amount of errors by the checkers who are bound to answer the customers sharply, all of which does the business anything but good.

It is, therefore, the principal object of this invention to provide what I call a storage counter that completely eliminates the lost time and motion and raw nerves caused by continually pushing self-service carts out of the way at the check-out counter.

Another object of this invention is to provide a storage counter with under-counter mechanism that will automatically move the self-service carts from their point of emptying at one end of the counter to the other end where they are ready to be used again.

Another object of this invention is to provide a storage counter that automatically stores any desired number of self-service carts as herein described and yet does not take up any more room than any other check-out counter now in use in self-service stores.

Another object of this invention is to provide a storage counter having self-service cart moving mechanism that is fully accessible for any necessary adjustments or repairs.

Another object of this invention is to provide a storage counter that can be manufactured in any desired quantity by a single company for sale and distribution to any type of self-service store no matter where it may be located.

Another object of this invention is to provide a storage counter that can be installed in place of any check-out counter already in use in a self-service store by anyone having normal mechanical and carpentry skills.

Another object of this invention is to provide a storage counter that will increase the useful product space in any self-service store where the same is installed.

Still another object of this invention is to provide a storage counter that will automatically permit more self-service carts to be used in a store having limited space in which the merchandise must naturally take up the major portion of floor area.

These and other objects and advantages of the present invention will be fully apparent from the following description when taken in conjunction with the annexed drawings, in which:

FIGURE 1 is a perspective view of this invention partly broken open to show the assembly of the internal cart moving mechanism. Self-service carts are shown in dash lines.

FIGURE 2 is a perspective view of one unit of the self-service cart moving mechanism.

FIGURE 3 is a perspective view of that detail of this invention indicated by the line, arrow, and numeral 3 on FIGURE 2.

FIGURE 4 is a perspective view of this invention with

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one side broken open to show the tracks on which the service carts run in passing under the counter. A portion of one self-service cart is shown in dash lines to the left of the figure.

Similar reference characters refer to similar parts throughout the several views of the drawing.

Having reference now to the drawing in detail, there is generally indicated by the character 10, a storage counter for self-service carts. The counter is a hollow rectangular box that embodies a flat top 11, sides 12, and a bottom 13, on the inside of which is located tracks 14 and 15 that are formed from sheet metal or by any other desired means of construction. A center portion 16 that terminates in a V-shaped configuration 17 at the receiving end of the aforesaid storage counter 10, is located on the inside of the bottom 13 and centrally between the two parallel vertical sides 12, thereby contributing to the aforesaid track formation portion of this invention of a storage counter.

The self-service cart moving mechanism which is characterized in its entirety in FIGURE 1 of the accompanying drawings by the reference numeral 18, consists of a longitudinal spacer bar 19 and a longitudinal stacker bar 20 that is in parallel spaced relation to the aforesaid spacer bar 19, on which is located a plurality of equally spaced stay mechanisms 21 that embody a tubular member 22, that is slipped over the aforesaid spacer bar 19, to which it is adjustably secured by means of a set screw 23, and a hollow rectangular holder 24 that is at right angles to the aforesaid spacer bar 19. A stay pawl 25 has its lower end terminated in a side configuration of a right angle triangle 26, having its vertical edge 27 facing the outlet end 28 of the aforesaid storage counter 10. The stacker bar 20 is provided with a plurality of stacker mechanisms 29 that are also in equal spaced relation to one another and directly opposite the aforesaid stay mechanisms 21 on the aforesaid spacer bar 19. Each one of the stacker mechanisms 29 embodies a tubular member 30, in which is located a ball bearing 31 that rolls in the recess 32 that is U-shaped when viewed from either end of the aforesaid stacker bar 20 in the top of which it is located. A pair of spaced rectangular lugs 33 extend down from the underside of each aforesaid tubular member 30. The lugs swingably support a stacker pawl 34 by means of a pin 35 as best shown in FIGURE 2 of the accompanying drawings. The stacker pawls 34 have the basic configuration of a right angle triangle with a curved hypotenuse 36 that normally rides on the handle of the self-service cart, as will be hereinafter described in that part of this specification that deals with the operation of this storage counter I have invented. Collars 37 and 37¹ are firmly secured to the aforesaid stacker bar 20 by means of set screws 38. A coil compression spring 39 is located between each collar 37¹ and each tubular member 30 of the stacker mechanism 29. The spring is, of course, on the aforesaid stacker bar 20 as clearly shown in FIGURES 1 and 2 of the accompanying drawings.

Looking now at FIGURE 1 of the accompanying drawings, it will be seen that the aforesaid spacer bar 19 is held in place under the flat top 11 of the aforesaid storage counter 10 by the lower end of a vertical spacer bar support 40, that has its upper end fixed to the underside of the cross bar 41, that extends between and is secured to the aforesaid sides 12 of the storage counter 10. A lug 42 extends downward from the underside of each aforesaid cross bar 41 in order to provide slidable support for the stacker guide bar 43, which is mounted directly above and parallel to the aforesaid stacker bar 20, which it supports by means of the two vertically disposed hangers 44, one of which is located near each end of the aforesaid storage counter 10 in the manner shown in FIGURE 1

of the accompanying drawings, where it is also seen on examination of the same FIGURE 1 that an electric motor 45 is mounted underneath the flat top 11 of the aforesaid storage counter 10. A part that I personally call a turning crank 46 secures the shaft of the aforesaid electric motor 45 to the aforesaid stacker guide bar 43, in a way that will provide the stacker guide bar with longitudinal reciprocating motion, as will hereinafter be described in that part of this specification that describes the operation of this novel invention, which will also contain electric components that have not been described in the construction of this invention.

When the stacker mechanisms 29 are assembled on the stacker bar 20 at the correct spacing for stacked carts and are kept from rotating out of line by the ball bearing 31 rolling in recess 32 in the stacker bar 20, they are pulled toward the rear by collar 37 and pushed forward by compression spring 39 that is held in position by collar 37'. This compression spring 39 acts as a cushion to the forward movement of a cart being stacked and as a means of allowing the stacker bar 20 to pull other carts up to the stack without damaging the self-service carts 48 already stacked by compressing the spring 39 rather than moving the stacker mechanism.

The actual operation of this novel invention of a storage counter is divided into two separate parts, first, the continuous cart service to customers; and second, the loading sequence, both of which are given in detail as follows.

Continuous cart service to customers.—When a grocery cart 48 is removed from the front of the rack, it releases a spring switch 49 which operates a solenoid activated stop 50 releasing the next cart in line, and the stack is moved forward by the continuously operated electric motor 45 turning crank 46 thus pulling the stacker guide bar 43 and stacker bar 20 that is attached to it by vertically disposed hangers 44. This pulls stacker mechanism 29 back so that stacker pawl 34 is lifted over the handle 47 of the self-service cart 48. The aforesaid handle 47 is in turn held in place by the position stay mechanism 21 that is attached to a spacer bar 19. As the crank 46 rotates, the stacker pawl 34 drops behind the next cart 48 handle pushes the self-service cart 48 forward and in doing so lifts the position stay pawl 25 over the cart handle, which in turn drops behind the cart handle 47, which is thus held in place for the next operation.

Loading sequence.—When a grocery cart is pushed into the loading (rear) end of the rack, a solenoid activated stop 51 closes the child seat by stopping the seat rack and closing same as the cart moves forward. Then just before the seat rack folds against the cart 48 handle, the cart handle activates a spring switch 52 which activates the stop 51 lifting said stop over the cart handle 48 (this feature is required to keep the stacker mechanism 29 from damaging the seat rack on the cart) then as additional carts are pushed into the rack. The first described operation (continuous cart service to customers) gradually works the self-service carts 48 through the entire length of the aforesaid storage counter 10.

It may be well to note at this point, that, since all of the positioning and stacker pawls 34 are weight loaded, as many self-service carts 48 as required can be pushed into position in the rack.

When the carts have worked their way thru the stacker to a solenoid activated stop 50 (one located at each 5th cart in stacker) it is held in position by this stop until 5 carts are stacked then the stop is released by a spring activated switch 49 (one at each 5th cart), and the total stack moves forward to the next stop 50 until the stacker is completely loaded.

From the foregoing, it will now be seen that there is herein provided a storage counter which accomplishes all of the objects of this invention, and others, including many advantages of great practical utility and commercial importance.

As many embodiments may be made of this inventive concept, and as many modifications may be made in the embodiment hereinbefore shown and described, it will be understood that all matter herein is to be interpreted merely as illustrative, and not in a limiting sense.

In accordance with the provisions of the United States patent statutes, as stated in the United States Code Title 35, Patents, I have now described the principle of construction and operation of my invention of a storage counter in the form which I personally consider the best embodiment thereof, and what I now claim as my invention and desire to secure by Letters Patent is:

1. A storage counter of the character described, comprising a hollow rectangular counter having electro-mechanical mechanism, the said electro-mechanical mechanism comprising a longitudinally disposed spacer bar and a longitudinally disposed stacker bar that is in parallel spaced relation to the said spacer bar, and the said stacker bar having spring loaded stacker mechanism embodying a plurality of equally spaced tubular members, each one of which has a stacker cam swingably mounted on the under side thereof, each said cam having a side viewed configuration of a right angle triangle having a curved hypotenuse thereon adapted to push the handle of a self-service cart longitudinally through the said storage counter, the spacer bar having spaced stay mechanism, an electric motor, means connecting the motor to the said stacker bar to provide reciprocating motion to the said stacker bar adapted to push a plurality of wheeled self-service carts therethrough from one end to the other at predetermined intervals.

2. A storage counter of the character described, comprising a hollow rectangular counter having electro-mechanical mechanism, the said electro-mechanical mechanism comprising a longitudinally disposed spacer bar and a longitudinally disposed stacker bar that is in parallel spaced relation to the said spacer bar, and the said stacker bar having spring loaded stacker mechanism embodying a plurality of equally spaced tubular members, each one of which has a stacker cam swingably mounted on the underside thereof, each said cam having a side viewed configuration of a right angle triangle having a curved hypotenuse thereon adapted to push the handle of a self-service cart longitudinally through the said storage counter, and an electric motor connected to the said stacker bar by means of a turning crank that has one end connected to the said electric motor, a stacker guide bar that is above and parallel to the said stacker bar, said stacker guide bar connected to the other end of said turning crank, two vertically disposed hangers which have their lower end supporting and secured to the said stacker bar and their upper end secured to said stacker guide bar, there being one hanger near each end of the said stacker guide bar, a crossbar at the back end of the said storage counter, a lug extending downward from the underside of said crossbar and supporting one end of the stacker guide bar, and like lug and crossbar at the front end of the said storage counter, the said stacker bar providing reciprocating motion adapted to push a plurality of wheeled self-service carts therethrough from one end to the other at predetermined intervals.

3. A storage counter of the character described, comprising a hollow rectangular counter having electro-mechanical mechanism, the said electro-mechanical mechanism comprising a longitudinally disposed spacer bar and a longitudinally disposed stacker bar that is in parallel spaced relation to the said spacer bar, and the said spacer bar having a plurality of equally spaced stay mechanisms secured in longitudinal spaced relation thereon, and the said stacker bar having spring loaded stacker mechanism embodying a plurality of equally spaced tubular members, each one of which has a stacker cam swingably mounted on the underside thereof, each said cam having a side viewed configuration of a right angle triangle having a curved hypotenuse thereon adapted to

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push the handle of a self-service cart longitudinally through the said storage counter, and an electric motor connected to the said stacker bar by means of a turning crank that has one end connected to the said electric motor, a stacker guide bar that is above and parallel to the said stacker bar, said stacker guide bar connected to the other end of said turning crank, two vertically disposed hangers which have their lower end supporting and secured to the said stacker bar and their upper end secured to said stacker guide bar, a crossbar at the back end of the said storage counter, a lug extending downward from the underside of said crossbar and supporting one end of said stacker guide bar, and like lug and crossbar at the front end of the said storage counter, the said stacker bar providing reciprocating motion adapted to push a plurality of wheeled self-service carts therethrough from one end to the other at predetermined intervals.

4. A storage counter of the character described, comprising a hollow rectangular counter having electro-mechanical mechanism, the said electro-mechanical mechanism comprising a longitudinally disposed spacer bar and a longitudinally disposed stacker bar that is in parallel spaced relation to the said spacer bar, and the said spacer bar having a plurality of equally spaced stay mechanisms secured in longitudinal spaced relation thereon, and each one of the said stay mechanisms embodying a tubular member secured to the said spacer bar by means of a set screw, and a hollow rectangular member secured to each one of the said tubular members on the inward side of the said storage counter, and a stay pawl slidably mounted within the said rectangular member which is vertical and at right angle to the said spacer bar, the lower end of the said stay pawl terminating in a right angle triangle configuration when viewed from the side, the forward and lower edge of the said stay pawl being in a vertical position in order to rest against the back of the handle of a self-service cart, and the outer side of the said rectangular member having a vertically disposed elongated recess therein through which projects a cantilever mounted pin, the outer end of which may rest on the said tubular member under certain operating conditions of the said spacer bar thereby lifting the said stay cam so that its lower edge is clear of the handle of the said self-service cart, and the said stacker bar having spring loaded stacker mechanism embodying a plurality of equally spaced tubular members, each one of which has a stacker cam swingably mounted on the underside thereof, each said cam having a side viewed configuration of a right angle triangle having a curved hypotenuse thereon adapted to push the handle of a self-service cart longitudinally through the said storage counter, and an electric motor connected to the said stacker bar by means of a turning crank that has one end connected to the said electric motor, a stacker guide bar that is above and parallel to the said stacker bar, said stacker guide bar connected to the other end of said turning crank, two vertically disposed hangers which have their lower end supporting and secured to the said stacker bar and their upper ends secured to said stacker guide bar, there being one hanger near each end of the said stacker guide bar, a crossbar at the back end of the said storage counter, a lug extending downward from the underside of said crossbar and supporting one end of said stacker guide bar, and like lug and crossbar at the front end of the said storage counter, the said stacker bar providing reciprocating motion adapted to push a plurality of wheeled self-service carts therethrough from one end to the other at predetermined intervals.

5. A storage counter of the character described, comprising a hollow rectangular counter having electro-mechanical mechanism, the said electro-mechanical mechanism comprising a longitudinally disposed spacer bar and a longitudinally disposed stacker bar that is in parallel spaced relation to the said spacer bar, and the said spacer bar having a plurality of equally spaced stay

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mechanisms secured in longitudinal spaced relation thereon, and each one of the said stay mechanisms embodying a tubular member secured to the said spacer bar by means of a set screw, and a hollow rectangular member secured to each one of the said tubular members on the inward side of the said storage counter, and a stay pawl slidably mounted within the said rectangular member which is vertical and at right angle to the said spacer bar, the lower end of the said stay pawl terminating in a right angle triangle configuration when viewed from the side, the forward and lower edge of the said stay pawl being in a vertical position in order to rest against the back of the handle of a self-service cart, and the outer side of the said rectangular member having a vertically disposed elongated recess therein through which projects a cantilever mounted pin, the outer end of which may rest on the said tubular member under certain operating conditions of the said spacer bar thereby lifting the said stay cam so that its lower edge is clear of the handle of the said self-service cart, and the said stacker bar having spring loaded stacker mechanism embodying a plurality of equally spaced tubular members, each one of which has a stacker cam swingably mounted on the underside thereof, each said cam having a side viewed configuration of a right angle triangle having a curved hypotenuse thereon adapted to push the handle of a self-service cart longitudinally through the said storage counter, and an electric motor connected to the said stacker bar by means of a turning crank that has one end connected to the said electric motor, a stacker guide bar that is above and parallel to the said stacker bar, said stacker guide bar connected to the other end of said turning crank, two vertically disposed hangers which have their lower end supporting and secured to the said stacker bar and their upper ends secured to said stacker guide bar, there being one hanger near each end of the said stacker guide bar, a crossbar at the back end of the said storage counter, a lug extending downward from the underside of said crossbar and supporting one end of said stacker guide bar, and like lug and crossbar at the front end of the said storage counter, the said stacker bar providing reciprocating motion adapted to push a plurality of wheeled self-service carts therethrough from one end to the other at predetermined intervals, a spring switch and solenoid activated stop at the rear end of the said storage counter, and like spring switch and solenoid activated stop located near the front end of the said storage counter.

6. A storage counter of the character described, comprising a hollow rectangular counter having electro-mechanical mechanism, the said electro-mechanical mechanism comprising a longitudinally disposed spacer bar and a longitudinally disposed stacker bar that is in parallel spaced relation to the said spacer bar, and the said spacer bar having a plurality of equally spaced stay mechanisms secured in longitudinal spaced relation thereon, and each one of the said stay mechanisms embodying a tubular member secured to the said spacer bar by means of a set screw, and a hollow rectangular member secured to each one of the said tubular members on the inward side of the said storage counter, and a stay pawl slidably mounted within the said rectangular member which is vertical and at a right angle to the said spacer bar, the lower end of the said stay pawl terminating in a right angle triangle configuration when viewed from the side, the forward and lower edge of the said stay pawl being in a vertical position in order to rest against the back of the handle of a self-service cart, and the outer side of the said rectangular member having a vertically disposed elongated recess therein through which projects a cantilever mounted pin, the outer end of which may rest on the said tubular member under certain operating conditions of the said spacer bar thereby lifting the said stay cam so that its lower edge is clear of the handle of the said self-service cart, and the said stacker bar having spring loaded stacker mechanism embodying a plurality

of equally spaced tubular members, each one of which has a stacker cam swingably mounted on the underside thereof, each said cam having a side viewed configuration of a right angle triangle having a curved hypotenuse thereon adapted to push the handle of a self-service cart longitudinally through the said storage counter, and an electric motor connected to the said stacker bar by means of a turning crank that has one end connected to the said electric motor, a stacker guide bar that is above and parallel to the said stacker bar, said stacker guide bar connected to the other end of said turning crank, two vertically disposed hangers which have their lower end supporting and secured to the said stacker bar and their upper ends secured to said stacker guide bar, there being one hanger near each end of the said stacker guide bar, a crossbar at the back end of the said storage counter, a lug extending downward from the underside of said crossbar and supporting one end of said stacker guide bar, and like lug and crossbar at the front end of the said storage counter, the said stacker bar providing reciprocating motion adapted to push a plurality of wheeled self-service carts therethrough from one end to the other at predetermined intervals, a spring switch and solenoid activated stop at the rear end of the said storage counter, and like spring switch and solenoid activated stop located near the front end of the said storage counter, and a pair of parallel tracks in the bottom of the said storage counter adapted to receive the wheels of the said self-service carts that are manually pushed into the said storage counter and under the said flat top.

7. A storage counter of the character described, comprising a hollow rectangular counter having electro-mechanical mechanism, the said electro-mechanical mechanism comprising a longitudinally disposed spacer bar and a longitudinally disposed stacker bar that is in parallel spaced relation to the said spacer bar, and the said spacer bar having a plurality of equally spaced stay mechanisms secured in longitudinal spaced relation thereon, and each one of the said stay mechanisms embodying a tubular member secured to the said spacer bar by means of a set screw, and a hollow rectangular member secured to each one of the said tubular members on the inward side of the said storage counter, and a stay pawl slidably mounted within the said rectangular member which is vertical and at a right angle to the said spacer bar, the lower end of the said stay pawl terminating in a right angle triangle configuration when viewed from the side, the forward and lower edge of the said stay pawl being in a vertical position in order to rest against the back of the handle of a self-service cart, and the outer side of the said rectangular member having a vertically disposed elongated recess therein through which projects a cantilever mounted pin, the outer end of which may rest on the said tubular member under certain operating conditions of the said spacer bar thereby lifting the said stay cam so that its lower edge is clear of the handle of the said self-service cart, and the said stacker bar having spring loaded stacker mechanism embodying a plurality of equally spaced tubular members, each one of which has a stacker cam swingably mounted on the underside thereof, each said cam having a side viewed configuration of a right angle triangle having a curved hypotenuse, each said tubular member having a ball bearing therein and resting in a U-shaped recess in the top of the said stacker bar, the U-shaped recess extending the full length of the said stacker bar thereon adapted to push the handle of a self-service cart longitudinally through the said storage counter, and an electric motor connected to the said stacker bar by means of a turning crank that has one end connected to the said electric motor, a stacker guide bar that is above and parallel to the said stacker bar, said stacker guide bar connected to the other end of said turning crank, two vertically disposed hangers which have their lower end supporting and secured to the said stacker bar and their upper ends secured to

said stacker guide bar, there being one hanger near each end of the said stacker guide bar, a crossbar at the back end of the said storage counter, a lug extending downward from the underside of said crossbar and supporting one end of said stacker guide bar, and like lug and crossbar at the front end of the said storage counter, the said stacker bar providing reciprocating motion adapted to push a plurality of wheeled self-service carts therethrough from one end to the other at predetermined intervals, a spring switch and solenoid activated stop at the rear end of the said storage counter, and like spring switch and solenoid activated stop located near the front end of the said storage counter, and a pair of parallel tracks in the bottom of the said storage counter adapted to receive the wheels of the said self-service carts that are manually pushed into the said storage counter and under the said flat top.

8. A storage counter of the character described, comprising a hollow rectangular counter having electro-mechanical mechanism, the said electro-mechanical mechanism comprising a longitudinally disposed spacer bar and a longitudinally disposed stacker bar that is in parallel spaced relation to the said spacer bar, and the said spacer bar having a plurality of equally spaced stay mechanisms secured in longitudinal spaced relation thereon, and each one of the said stay mechanisms embodying a tubular member secured to the said spacer bar by means of a set screw, and a hollow rectangular member secured to each one of the said tubular members on the inward side of the said storage counter, and a stay pawl slidably mounted within the said rectangular member which is vertical and at a right angle to the said spacer bar, the lower end of the said stay pawl terminating in a right angle triangle configuration when viewed from the side, the forward and lower edge of the said stay pawl being in a vertical position in order to rest against the back of the handle of a self-service cart, and the outer side of the said rectangular member having a vertically disposed elongated recess therein through which projects a cantilever mounted pin, the outer end of which may rest on the said tubular member under certain operating conditions of the said spacer bar thereby lifting the said stay cam so that its lower edge is clear of the handle of the said self-service cart, and the said stacker bar having spring loaded stacker mechanism embodying a plurality of equally spaced tubular members, each one of which has a stacker cam swingably mounted on the underside thereof, each said cam having a side viewed configuration of a right angle triangle having a curved hypotenuse, each said tubular member having a ball bearing therein and resting in a U-shaped recess in the top of the said stacker bar, the U-shaped recess extending the full length of the said stacker bar and a plurality of collars secured on the said stacker bar at predetermined intervals by means of a set screw, thereby controlling the longitudinal movement of the said stacker mechanisms thereon adapted to push the handle of a self-service cart longitudinally through the said storage counter, and an electric motor connected to the said stacker bar by means of a turning crank that has one end connected to the said electric motor, a stacker guide bar that is above and parallel to the said stacker bar, said stacker guide bar connected to the other end of said turning crank, two vertically disposed hangers which have their lower end supporting and secured to the said stacker bar and their upper ends secured to the said stacker guide bar, there being one hanger near each end of the said stacker guide bar, a crossbar at the back end of the said storage counter, a lug extending downward from the underside of said crossbar and supporting one end of said stacker guide bar, and like lug and crossbar at the front end of the said storage counter, the said stacker bar providing reciprocating motion

adapted to push a plurality of wheeled self-service carts therethrough from one end to the other at predetermined intervals, a spring switch and solenoid activated stop at the rear end of the said storage counter, and like spring switch and solenoid activated stop located near the front 5 end of the said storage counter, and a pair of parallel tracks in the bottom of the said storage counter adapted to receive the wheels of the said self-service carts that are manually pushed into the said storage counter and under 10 the said flat top.

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