Jan. 22, 1963 R. F. JOYCE 3,074,511

CHECK-OUT COUNTER

Filed Dec. 4, 1961

3 Sheets-Sheet 1

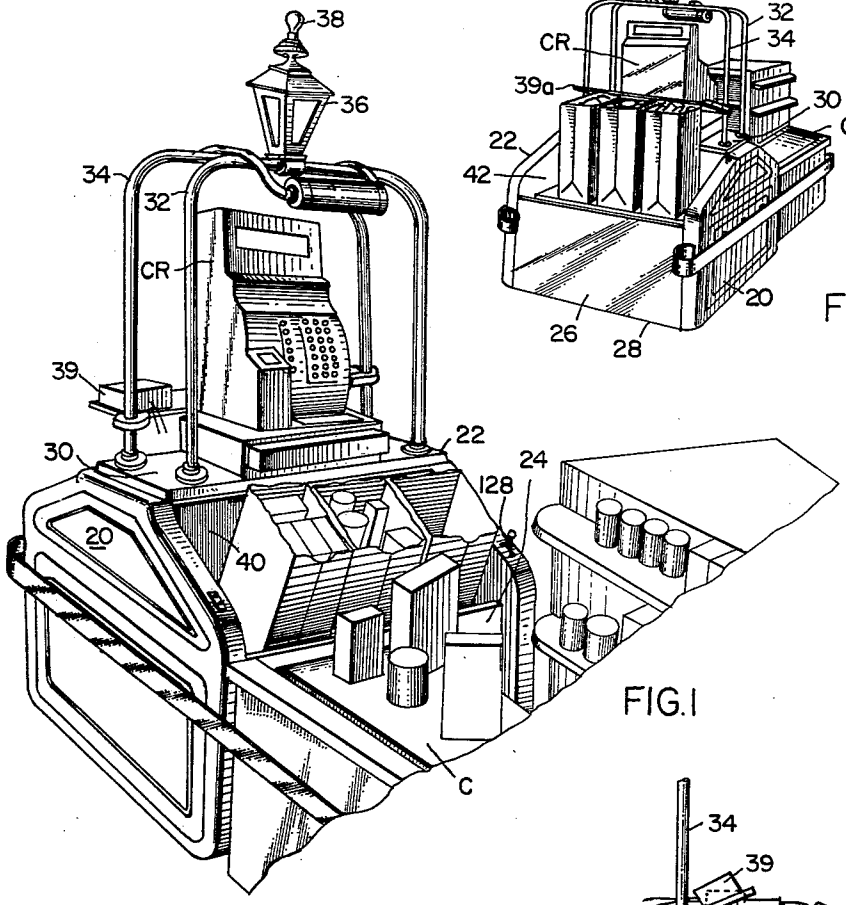


FIG.1

FIG.2

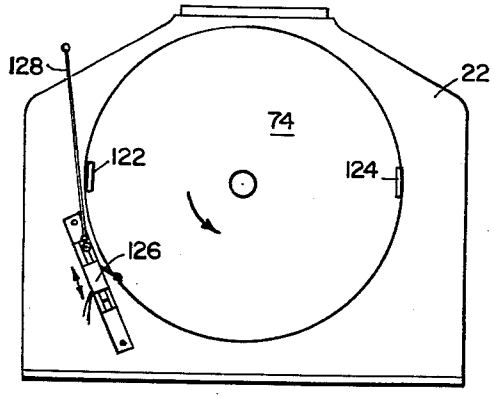


FIG.6

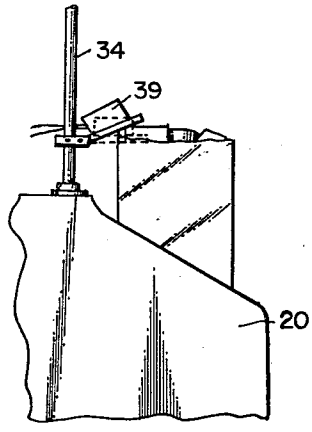


FIG.7

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CHECK-OUT COUNTER

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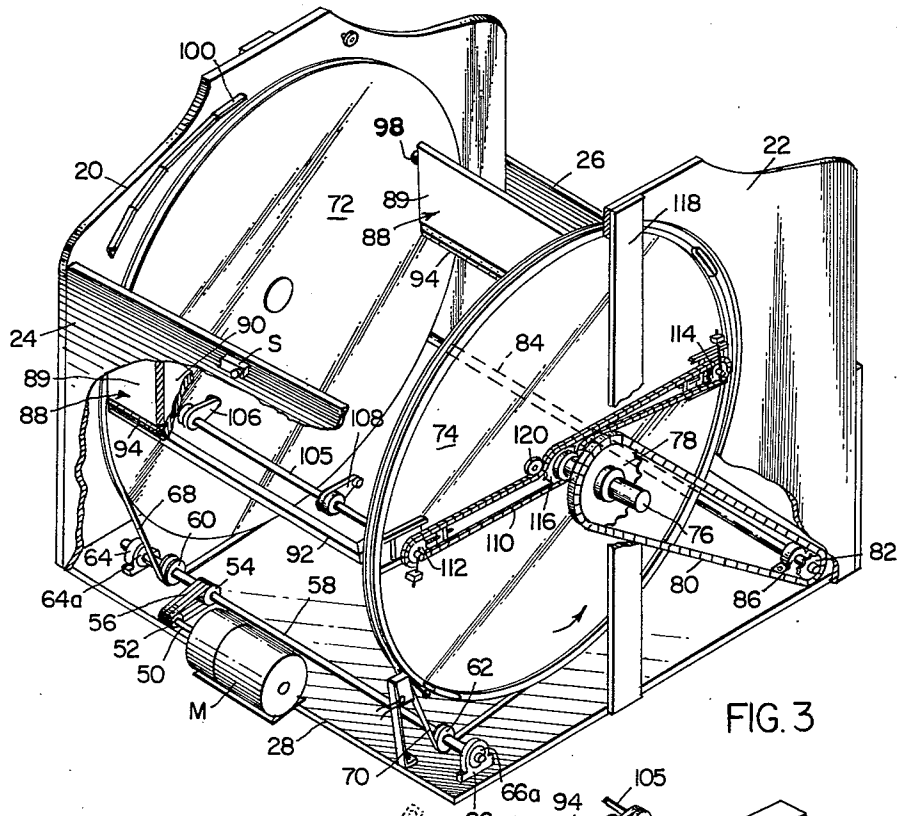


FIG. 3

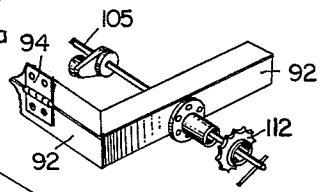


FIG. 4

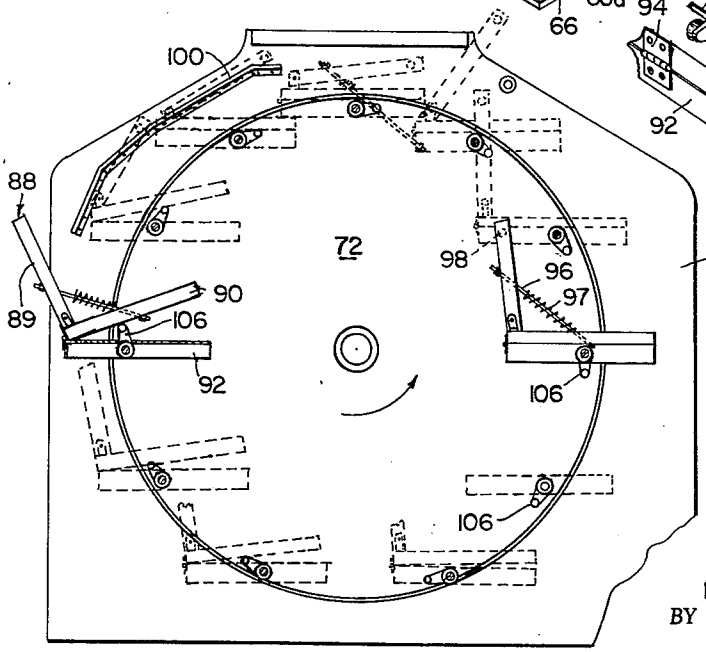


FIG. 5

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CHECK-OUT COUNTER

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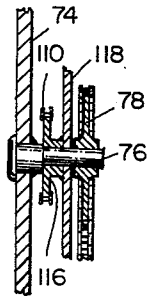


FIG.8

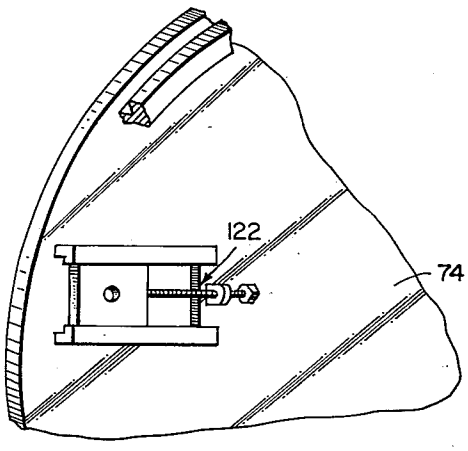


FIG.9

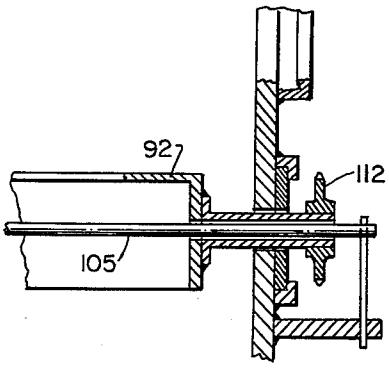


FIG.10

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3,074,511

CHECK-OUT COUNTER

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Filed Dec. 4, 1961, Ser. No. 156,633
5 Claims. (Cl. 186—1)

This invention relates to check-out counters, and particularly to a novel construction of check-out counters to be used in self-service stores and supermarkets.

One object of my invention is to reduce congestion and delay in supermarkets by speeding up the process in which the merchandise is checked out or tallied, and the customer pays for his merchandise while it is to be put into bags, cartons or boxes, to be carried from the store either by hand or by mechanical means.

Congestion takes place frequently in large supermarkets and other self-service stores while the customer waits in a line for his or her turn at the cashier's stand and while his merchandise is checked out and placed in bags. All stores, especially supermarkets, seek to speed up the check-out operation, and conveyor belts and rotary turntables used to move the items of merchandise more speedily are common.

The primary object of my invention is to reduce the handling of the items of merchandise and in this way to reduce the number of clerks required at a given cashier's stand, to handle the checking out operation. Usually a self-service store requires two employees at a single cashier's stand for this purpose. One employee serves as a cashier and adds up the customer's purchases and receive payment while the other employee puts the merchandise into bags.

Previously such devices as a circular table rotating in a horizontal plane have been used to speed up the bagging operation, but it does not eliminate the services of the second clerk who separately places packages of merchandise into the paper bags. Conveyor belts and mechanical rollers have been used but they also did not prove to operate efficiently nor did they tend to reduce labor and labor costs.

A further object of my invention is to drastically reduce the amount of time required to process a customer through the check-out counter. I accomplish this result by providing a check-out counter system and mechanism which permits the cashier while checking out each item of merchandise and adding up the prices on the cash register at the same time to place the merchandise in the paper bags or other suitable container whereby they are delivered mechanically to the delivery clerk, who in turn places them in carriages, or places them on a conveyor belt for outside delivery. Thereby a second separate handling of the items of merchandise is eliminated.

Because the delivery clerk does not have to handle the items of merchandise separately there is no further delay in this operation, and he can deliver the bags of merchandise immediately to the customer, or to the conveyor belt for outside delivery, and if desired, one delivery clerk can handle two check-out counters. Thus a single cashier with a check-out counter of my invention will be able to process more customers in the same amount of time as previously required merely to tally the items of merchandise, and thus be able to reduce lines in waiting for the cashier. Also due to multiple check-out machines if a large number of customers suddenly are in need of a cashier due to the increased speed of my invention this sudden large volume can be more easily serviced than with any previous method.

Briefly my invention comprises a housing having front, rear and side walls, and preferably a top shelf for supporting the cash register, which housing supports a cylindrical magazine rotating on a horizontal transverse axis, and carrying a pair of opposed pivotally supported shelves,

for receiving and supporting bags and cartons containing merchandise and delivering them in a half cycle of revolution to the delivery point station, and automatic leveling means for maintaining the pivoted shelves in a level position during the rotation of the magazine, and power means for rotating the magazine.

With these and other objects in view there is illustrated in the accompanying drawing a form in which my invention may be conveniently embodied in practice.

In the drawings:

FIG. 1 is a perspective view showing my invention from the front.

FIG. 2 is a perspective view showing my invention from the rear.

FIG. 3 is a perspective view with the walls partly broken away to show the interior.

FIG. 4 is a fragmentary perspective view of the shelf supporting bracket.

FIG. 5 is a vertical section showing the successive positions of the shelves as the magazine rotates.

FIG. 6 is a side elevation showing the adjustable stop switch at front of magazine.

FIG. 7 is a side elevation showing the automatic stop switch at the rear of the magazine.

FIG. 8 is a sectional view taken through the center hub.

FIG. 9 is a fragmentary perspective view showing means for maintaining tension of the shelf leveling chain.

FIG. 10 is a vertical sectional view taken through the shelf support bracket.

Referring in detail to the drawings, FIGS. 1 and 2 show a conventional conveyor C that is often found in supermarkets to carry merchandise automatically past the cashier. My check-out counter is preferably used in conjunction with and is placed adjacent to the conveyor C. But it will be understood that my device can be used without the conveyor C. The exterior of my check-out counter comprises opposing side walls **20** and **22** and front and rear walls **24** and **26** and flooring **28**. Top shelf **30** rests upon side walls **20** and **22** and is used to support a standard cash register CR, but it will be understood that top shelf **30** may be omitted. Standards or posts **32** and **34** are utilized for conduit wire that is used to carry electric current to lamp assemblies **36** and **38** that are supported by standards or posts **32** and **34**, and standard or post **34** acts as a mounting support for switch **39** which will be described below in greater detail. Open spaces or apertures **40** and **42** are present in both front and rear panels **24** and **26** to provide for access to the interior magazine.

FIG. 3 shows a perspective view of my check-out counter with walls **20** and **22** and front **24** and rear **26** panels broken away to show a detailed view of the interior portion. Electric motor M is located on floor **28** adjacent to front wall **24** and is utilized as the source of power necessary to operate my check-out counter.

Main drive shaft **50** extends distally from motor M and transmits the drive in standard fashion to fixedly attached pulley **52**. Pulley **52** transmits the drive to pulley **54** by means of V belts **56**. Pulley **54**, fixedly attached to shaft **58** which extends laterally across the front of my check-out counter further transmits the drive to pulleys **60** and **62** which are also fixedly attached to shaft **48**. The outer extremities of shaft **58** extend through and are supported by pillow blocks **64** and **66**. Bearings **64A** and **66A** centered in pillow blocks **64** and **66** reduce friction and therefore greatly aid the rotation of shaft **58**. Pulleys **60** and **62** transmit the drive through V belts **68** and **70** to multiple purpose pulleys or wheels **72** and **74**. Wheels **72** and **74** are utilized for several different uses. They rotate, in unison, from the drive from V belts **68** and **70** in a counter-clockwise direction. Unison of rotation is achieved by means of

a fixedly attached central hub shaft **76** extending distally from wheel **74** with fixedly attached drive sprocket **78**, driving link chain **80** in a counter-clockwise direction, in turn driving sprocket **82** which is secured to horizontal rear drive shaft **84** which is supported by standard pillow block and bearing assembly **86**. Drive shaft **84** extends horizontally across the rear of my counter and transmits the drive to an identical compound assembly that is complementary in every respect to the timing assembly on the right side of my check-out counter, as shown in FIG. 3. This drive assembly, driven by sprocket **78** keeps wheels **72** and **74** rotating in unison because it forces each wheel to rotate in the identical ratio of the identical sprocket teeth to the chain. Standard V belts such as belts **68** and **70** are known to slip and even though this slippage is often very negligible the handicap is overcome by the drive and timing assembly driven by sprocket **78**.

A pair of folding shelves **88** comprising pivoted side **89** and bottom shelf **90** are transversely mounted on cross-bars **92** pivotally mounted on wheels **72** and **74** and are used to receive the merchandise after it is tallied by the cashier. Bags or cartons may be placed upon the lower shelf **90** as shown in FIGS. 1 and 2 and when the operating cycle of my check-out counter commences they will be transported in a counter-clockwise direction from front to rear in a circular arc. The two pairs of folding shelves comprising portions **89** and **90** are diametrically mounted on the wheels **72** and **74**. A novel means of construction is used whereby during rotation, shelf parts **89** and **90** remain open in standard chair fashion during the lower part of the revolution when they serve as a receptacle for merchandise or bags. When the bags are removed from the rear aperture **40** the shelf collapses or folds down for the upper portion of the complete revolution and opens again as it is returned to its original starting position. This process is best shown in FIG. 5. The upper and lower portions **89** and **90** of shelves **88** are connected to hinges **94** as shown in FIG. 4 to cross-bar **92**. A limit rod **96** with spring **97** thereon is provided to control or limit the rearward movement of the upper portions of shelves **89** and **90** and also serve to guide them as the side **89** folds onto bottom shelf **90** as shelves **89** and **90** go through the upper portion of their revolution. The upper portion of shelves **89** and **90** automatically collapse when they strike top shelf **30** and said shelves remain in folded position until they reach the desired point where roller **98**, secured to the upper portion of shelf **89** is forced upon cam surface **100** extending upwardly from the inner surface of side **20**. Cam surface **100**, being a curved arcuate rib picks up and maintains contact with roller **98** and forces the upper portion of shelves **89** or **90** to open as a standard chair when it reaches the desired position for loading.

Means is provided for leveling shelf **92** by cam shaft **105** and cams **106** and **108**. As the shelf rotates cams **106** and **108** rotate fixedly with the wheels **72** and **74** and are so positioned as to maintain contact with shelf **90** during the lower portion of the rotation cycle. Cross-bar **92** is rotated by endless chain **110** turning sprockets **112** and **114**, and which rotates around fixed sprocket **116**. A novel means of construction is used in that sprocket **116** is fixedly attached to frame member **118** and idler **120** is utilized to insure contact between endless chain **110** and sprocket **116**. An adjustable tightening device of a conventional nature, as best shown in FIG. 9, is provided to insure the desired tension on chain **110**. As wheel **74** rotates, it in turn causes integral rotation of sprockets **112** and **114** and chain **110**. This cross-bar sprocket and chain assembly is so geared as to provide proper contact between cross-bar **92** and cams **106** and **108** at all times.

As shown in FIG. 6, contacts **122** and **124** are placed opposite each other on the outer surface of wheel **74**.

These contacts will strike adjustable switch **126** and cause my check-out counter to stop automatically in the same exact position every cycle. Handle **128** is provided to adjust switch **126** by either pulling or pushing to the desired position. Adjustable switch **126** is important to the cashier because he or she can adjust the position where the loading shelf stops and thereby reduce fatigue because the stopping point has been set at the exact point where it will be most comfortable to the individual.

Switch assembly **39** mounted upon pole or standard **34** at the rear or unloading end, will also automatically stop the operation of my check-out counter when anything strikes the switch. The bags or cartons of merchandise will come up through the rear aperture **42** and strike the switch, having extension **39A** that horizontally crosses aperture **42**, which will insure a positive contact. Light **36** is automatically illuminated to signal the store employees that my check-out counter is ready to be unloaded. The check-out counter will not start again until the cashier removes the bags and presses the main starter switch S that is placed on the front **24** of my check-out counter.

It is obvious that other modifications, variations and adaptations of my device may be provided without departing from my invention as described in the following claims:

I claim:

1. A check-out counter for self-service stores, comprising

a housing having front, rear and side walls, said housing being open at the top, front and rear,

a cylindrical magazine rotatably supported in side walls of said housing for rotation on a horizontal transverse axis, and movable to successive receiving and delivery stations, said cylindrical magazine having two end wheels, and

a pair of diametrically opposed shelves pivotally supported on said wheels for receiving and supporting bags or cartons of merchandise thereon,

power means for rotating said magazine, and

means for automatically maintaining the shelves in a level position during rotation of the magazine.

2. A check-out counter for self-service stores, comprising

a housing having front, rear, and side walls, said housing being open at the top, front and rear,

a cylindrical magazine rotatably supported in the side walls of said housing for rotation on a horizontal transverse axis and movable to successive receiving and delivery stations by intermittent motion, said cylindrical magazine having two end wheels, and

a pair of diametrically opposed shelves pivotally supported on said wheels for receiving and supporting bags or cartons of merchandise thereon,

power means for rotating said magazine,

means for automatically maintaining the shelves in a level position during rotation of the magazine,

and switch means for stopping rotation of said magazine as the shelves reach said receiving and delivery stations.

3. A check-out counter for self-service stores, comprising

a housing having front, rear, and side walls, said housing being open at the top, front and rear,

a cylindrical magazine rotatably supported in the side walls of said housing for rotation on a horizontal transverse axis and movable to successive receiving and delivery stations by intermittent motion, said cylindrical magazine having two end wheels, and

a pair of diametrically opposed shelves pivotally supported on said wheels for receiving and supporting bags or cartons of merchandise thereon,

a power means for rotating said magazine,

means for automatically maintaining the shelves in a level position during rotation of the magazine,

switch means for stopping rotation of said magazine as the shelves reach said receiving and delivery stations,

and cam means for tilting said shelves forwardly at the receiving station.

4. A check-out counter for self-service stores, comprising

a housing having front, rear and side walls, said housing being open at the top, front and rear,

a cylindrical magazine rotatably supported in the side walls of said housing for rotation on a horizontal transverse axis and movable successively to a receiving station at the front and a delivery station at the rear of the counter, having

two spaced wheels at the ends thereof,

a pair of opposed brackets connecting said wheels and pivotally mounted therein,

a shelf having a bottom and a pivotally connected rear side hinged to each of said brackets for receiving and supporting bags or cartons of merchandise thereon,

power means for rotating said magazine,

belt means for automatically maintaining said shelf-supporting brackets in level position during rotation of the magazine,

and switch means for stopping rotation of said magazine as the shelves reach said receiving and delivery stations.

5. A check-out counter for self-service stores, comprising

a housing having front, rear and side walls, said housing being open at the top, front and rear,

a cylindrical magazine rotatably supported in the side walls of said housing for rotation on a horizontal transverse axis and movable successively to a receiving station at the front and a delivery station at the rear of the counter, having

two spaced wheels at the ends thereof,

a pair of opposed brackets connecting said wheels and pivotally mounted therein,

a shelf having a bottom and a pivotally connected rear side hinged to each of said brackets for receiving and supporting bags or cartons of merchandise thereon,

power means for rotating said magazine,

belt means for automatically maintaining said shelf-supporting brackets in level position during rotation of the magazine,

switch means for stopping rotation of said magazine as the shelves reach said receiving and delivery stations,

and cam means for tilting said shelves forwardly at the receiving station.

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