April 27, 1943. H. N. BRADLEY 2,317,438

CHECKING STATION FOR SELF-SERVICE STORES

Filed March 22, 1940 3 Sheets-Sheet 1

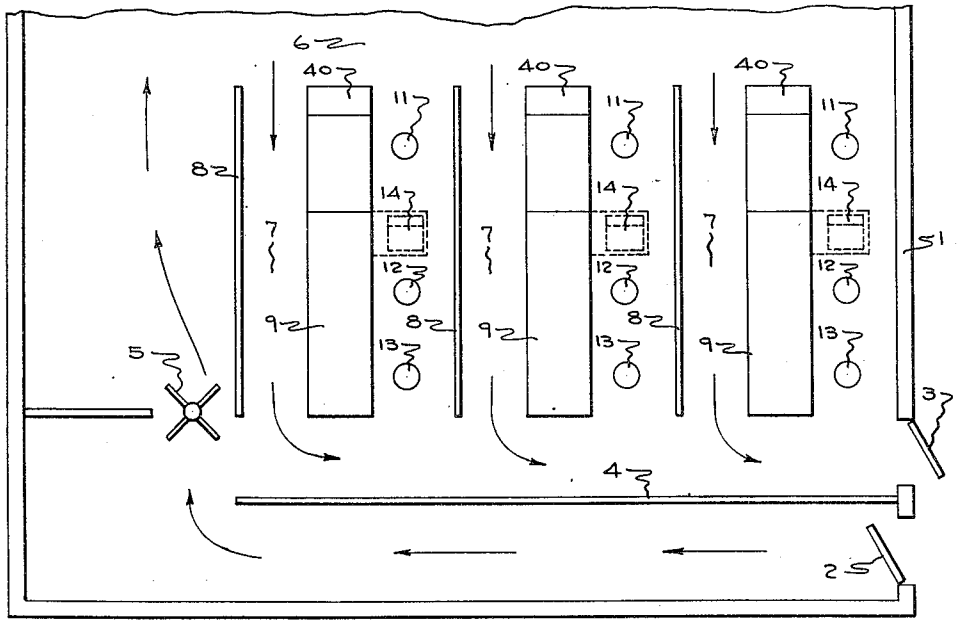


Fig. 1

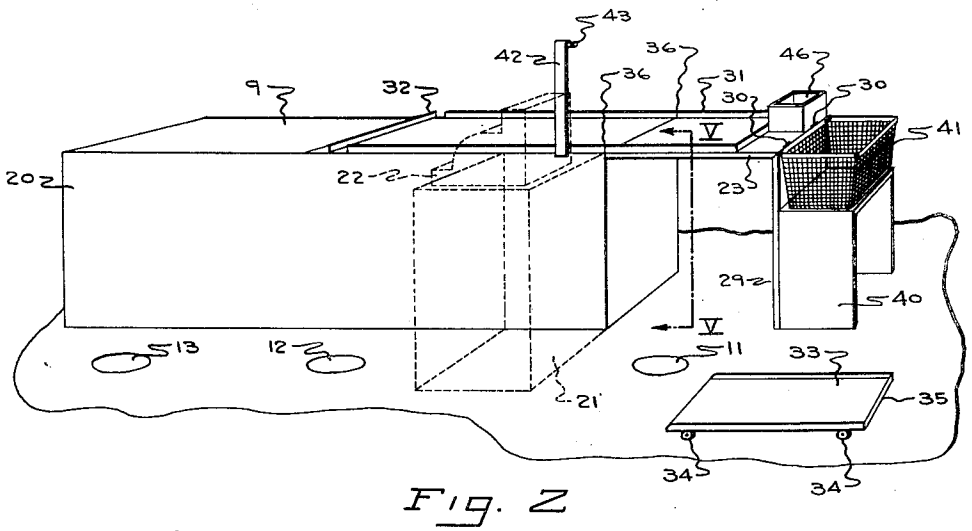


Fig. 2

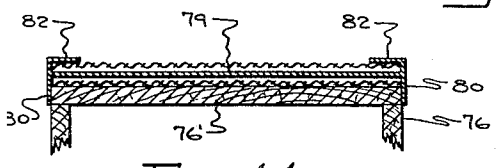


Fig. 11

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CHECKING STATION FOR SELF-SERVICE STORES

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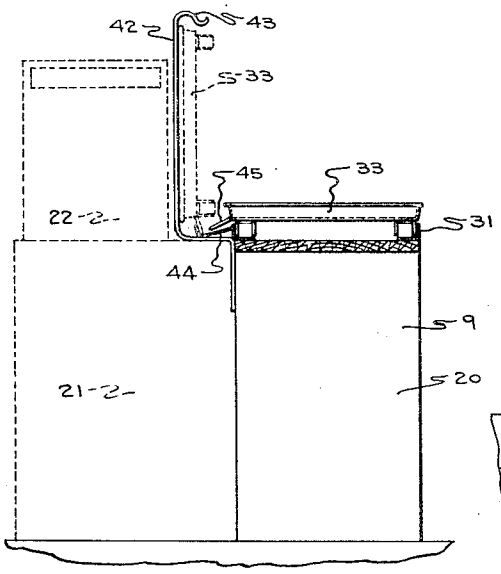


Fig. 5

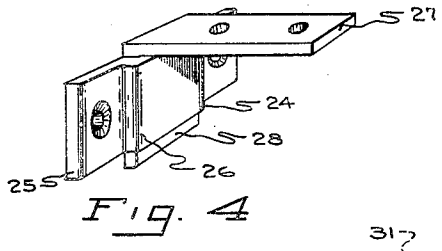


Fig. 4

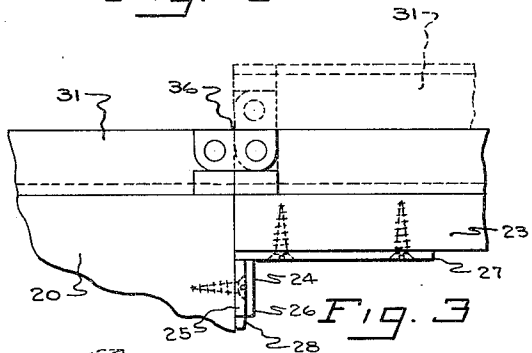


Fig. 3

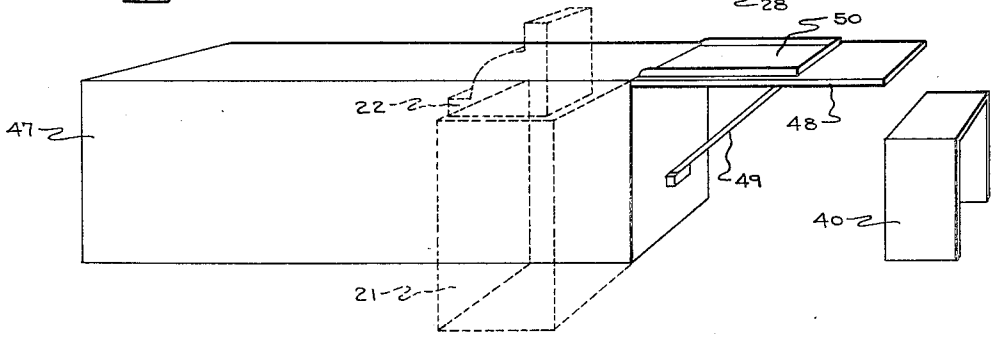


Fig. 6

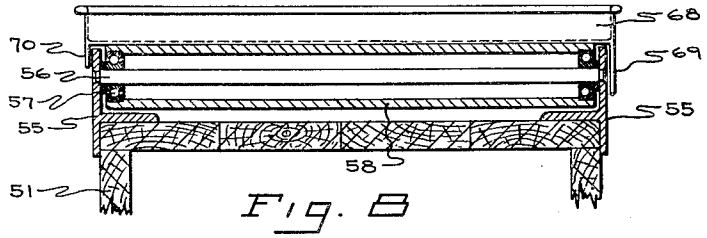


Fig. 8

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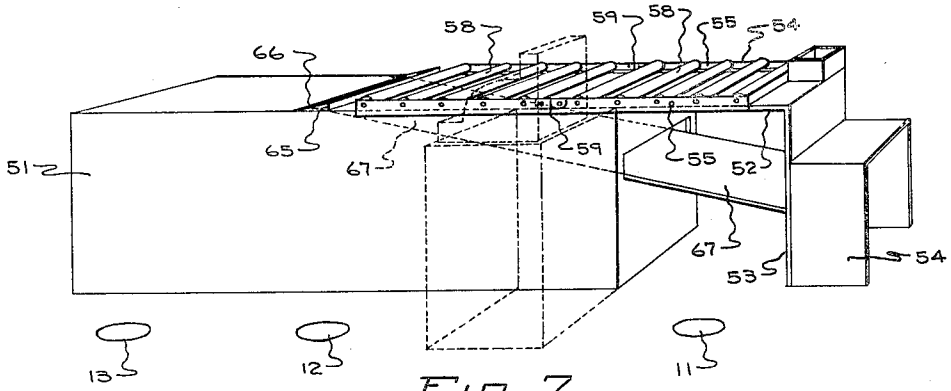


Fig. 7

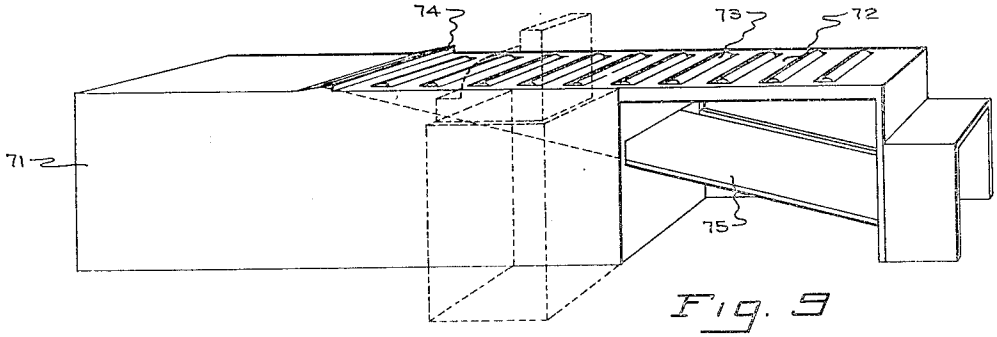


Fig. 9

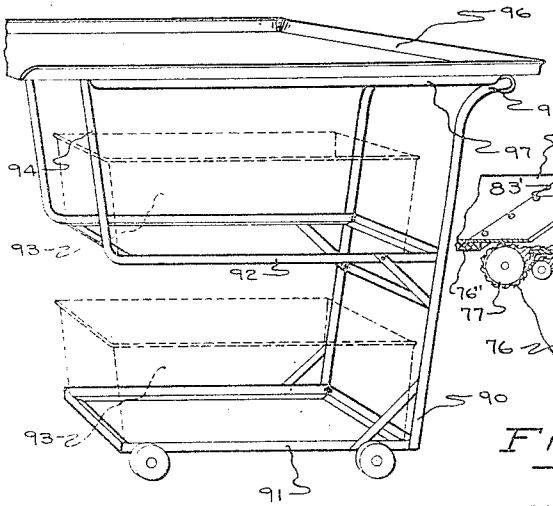


Fig. 12

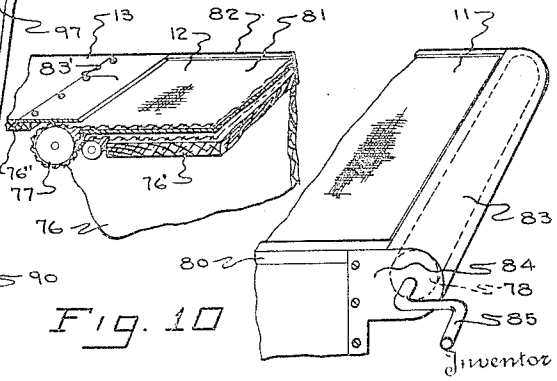


Fig. 10

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UNITED STATES PATENT OFFICE

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CHECKING STATION FOR SELF-SERVICE STORES

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Application March 22, 1940, Serial No. 325,352

8 Claims. (Cl. 186—1)

The present invention relates to checking stands or stations for self-service stores and more particularly to an arrangement for efficiently expediting flow of traffic therethrough.

In one widely used system employed in self-service grocery stores, customers select the merchandise desired from shelves and place it in baskets, which are supported by wheeled carriages pushed by the customers. When each customer has selected as much merchandise as he wants, he wheels his carriage to the checking stand. The checking stand consists of a bench, on one side of which a checker and a bagger stand, at a checking station and a bagging station respectively, and on the other side of which is a passageway for the customer with his carriage. The checker reaches across the bench, lifts the customer's baskets of merchandise from the carriage, places them on the bench, unloads them, checks them and receives payment therefor from the customer. The bagger then takes the merchandise and places it in bags ready to be taken out of the store.

This system is not satisfactory for the reason that the checkers in reaching over the benches at the checking stands in order to lift the customers' baskets of merchandise from their carriages often physically injure themselves. Furthermore, when the capacity of a checking stand is not sufficient to handle the traffic that must pass through it, it is necessary to add one or more checking stands. In actual practice, there are usually several. However, as each checking stand is added, it is necessary to add an additional cash register for the use of the checker. Additional cash registers are not only expensive, but also the adding of additional cash registers requires additions to the number of men which must handle money and increases the bookkeeping which must be done, not only in the store but in the main offices of the region in which the store is located, when the store is of a chain type.

According to the present invention, which is particularly adaptable to, but not limited to, grocery stores, the foregoing objectionable features of the stands now largely in use as explained above are eliminated by adding to each stand an unloading station at the opposite side of the checking station from the bagging station, with the result that the flow of traffic through each station as a whole may be materially increased without the necessity of resorting to additional cash registers and men handling money and at the same time, the possibility of physical injury to men leaning over the benches at the checking stations to lift customers' baskets from their carriages is eliminated.

An object of the present invention is to provide a checking stand for self service stores, provided with an unloading station, a checking station and a bagging station.

Another object of the invention is to provide a checking stand of the character described having mobile means for moving merchandise from an unloading station to a checking station.

A still further object of the invention is to provide a checking stand of the character described having a buggy for moving merchandise from an unloading station to a checking station and means for supporting the buggy in inoperative position adjacent the checking station.

A still further object of the invention is to provide a checking stand of the character described having a bench with a detachable extension comprising an unloading station.

A still further object of the invention is to provide a checking stand of the character described provided with means for automatically returning the merchandise moving means to the unloading station.

A still further object of the invention is to provide a checking stand of the character described with a support adjacent the unloading station for receiving merchandise containers prior to the unloading thereof.

A still further object of the invention is to provide a checking stand of the character described comprising a bench having antifriction means on the top thereof, and a carrier supported by said anti-friction means for movement thereover.

These and other objects will be apparent from the following specification when taken with the accompanying drawings in which:

Fig. 1 is a plan view of a portion of a self-service store illustrating the present invention,

Fig. 2 is a perspective view of one of the checking stands, according to the present invention,

Fig. 3 is an enlarged view of a detail of the construction disclosed in Fig. 2,

Fig. 4 is a perspective view of a connector employed in the construction of Fig. 2,

Fig. 5 is a cross-sectional view of a portion of the construction disclosed in Fig. 2 taken in the direction of the arrows V—V of Fig. 2,

Fig. 6 is a perspective view of another form of the invention,

Fig. 7 is a perspective view of still another form of the invention,

Fig. 8 is a cross-sectional view disclosing the

form of the invention disclosed in Fig. 7 together with a buggy resting on the top of the rollers thereof,

Fig. 9 is a perspective view of another form of the invention similar to that disclosed in Fig. 7,

Fig. 10 is a partial sectional perspective view of another form of the invention,

Fig. 11 is a vertical section taken transversely across the bench of the construction disclosed in Fig. 10 showing details thereof, and

Fig. 12 is a perspective view of still another form of the invention.

Referring particularly to Fig. 1 of the drawings in which is shown a plan view of a portion of a store illustrating the present invention, the reference character 1 indicates the store frame having an inlet door 2 and an outlet door 3. A partition or fence 4 is provided to divide incoming and outgoing traffic. Customers entering the store obtain a wheeled carriage supporting two or more baskets, not shown, either just before or just after they pass through a turnstile 5. After passing the turnstile 5, customers go into the rear portion 6 of the store, most of which is not shown in the drawing, where are located shelves and bins (not shown) from which they select the merchandise they desire to purchase.

Before leaving the store, customers must pass through one of the passageways 7. The passageways 7 are each defined on one side by a fence 8 and on the other side by a bench 9. Behind each bench 9 from its passageway 7 is an unloading station 11, a checking station 12 and a bagging station 13. Adjacent the checking station 12 is a cash register 14. The system described thus far is similar to systems now in use, with the exception that the present systems are not provided with the unloading station 11 nor with the portion of the bench 9 in front of the unloading station 11.

In Fig. 2 is shown, more in detail, one of the checking stands, disclosed in Fig. 1. The bench 9 consists of a main body portion 20, adjacent one end of which is provided a supplementary bench 21 on which is disposed a cash register 22. To the end of the main body portion 20, adjacent the cash register 22 is detachably connected a leaf extension 23 by one or more connectors 24 of the character disclosed in Figs. 3 and 4. Each connector 24 consists of a plate 25 provided with an off-set portion 26, connected to the main bench portion 20. The leaf extension 23 has connected to it a plate 27 to which is connected a tongue 28 which is disposed between the main bench portion 20 and the off-set portion 26 of the plate 25. At the opposite end of the leaf extension 23 from the connector 24 is connected a support 29, the connection preferably consisting of hinges 30, so that when the leaf extension 23 is separated from the main bench portion 20, the support 29 and the leaf extension 23 may be folded together to facilitate storage.

Secured to the top of the leaf extension 23 and resting on the main bench portion 20 is a guiding structure 31, preferably in the form of angle bars. On the top of the main bench portion 20 adjacent the ends of the guiding member 31, which terminates substantially midway between the ends of the main bench portion 20, is a ramp 32.

The purpose of the ramp 32 and the guiding members 31 is to confine the movement of a buggy 33, shown on the floor adjacent the bench 9 in Fig. 2. The buggy 33 is provided with wheels 34 and is adapted to move longitudinally on the top of the bench portion 20 and the leaf extension 23. Movement toward one end of the bench 9 is limited by the ramp 32 and toward the other end of the bench is limited by the end guiding member 31. As shown, the buggy 33 is provided with side walls 35, except on the end thereof toward the ramp 32. The height of the buggy 33 and the ramp 32 should be such that the upper end of the ramp 32 is level with the floor portion of the buggy 33.

It is preferred that the guiding members 31 be hinged at some point such as at the junction between the main bench portion 20 and the leaf extension 23, as shown particularly in Fig. 3. Connecting hinges 36 are provided and are so arranged that the portions of the guiding members 31 on the top of the main bench portion 20 may be folded back over the portions of the guiding member 31 on the leaf extension 23 for facilitating storage of the extension leaf 23 and its associated parts when disconnected from the main bench portion 20.

Adjacent the support 29 for the leaf extension 23 is provided a bench 40 on which may be supported baskets 41 in which customers have collected the merchandise they desire to purchase. The bench 40 may be connected to the support 29 or not as desired.

In operating the checking stand of the character disclosed in Fig. 2, a customer either carries his basket 41 or wheels his carriage supporting his basket 41 to the bench 40 which is adjacent the entrance of the passageway 7, as shown in Fig. 1. The clerk at the station 11, known as the unloader, places the basket 41 on the bench 40, takes merchandise from the basket 41 and deposits it on the buggy 33 positioned on the leaf extension 23. As is usual, the merchandise is unloaded into several groups, according to classification of merchandise, such as, produce, staples, and meats. When all the merchandise of one customer has been placed on the buggy 33, the buggy 33 is moved between the side guiding members 31 to the section of the main bench portion 20 at the checking station 12. A clerk standing at the checking station 12, known as the checker, tabulates the prices of the items carried by the buggy 33, on the cash register 22, presents the bill to the customer and receives payment. It will be understood that merchandise unloaded onto the buggy in separate classifications may be tabulated in separate totals of selling prices for the different groups of merchandise in order to check the sales of the store by departments. As the checker tabulates the price of each item, he slides each item tabulated from the buggy 33 onto the main bench portion 20 at the bagging station 13. The clerk at the bagging station 13, known as the bagger, then bags the items as they are moved to his station. By the time that the checker has presented the bill and received payment for the merchandise purchased by the customer, the bagger has placed all of the merchandise in bags to be carried out of the store by the customer.

In order to facilitate the returning of the buggies 33 by the checker to the unloader, there is provided, as shown particularly in Figs. 2 and 5, a support for holding buggies 33 out of position after they have been finished with by the checker and while another buggy 33 carrying merchandise of another customer is being moved by the unloader from the unloading station 11 to

the checking station 12. The support consists of a standard 42, secured to the supplementary bench 21 and provided at the top with a spring clip 43. At the foot of the standard 42 is provided a ramp 44, preferably connected to one of the guiding members 31 and descending from the guiding member 31 with which it is associated toward the foot of the standard 42. Each buggy 33 is provided with a skid 45. As shown particularly in Fig. 2 the standard 42 should be disposed adjacent the cash register 22. When the checker has removed the merchandise from a buggy 33 to in front of the bagger, the checker lifts the buggy 33 so as to rotate the outer edge thereof past the spring clip 43. As the buggy 33 rotates upwardly, the skid 45 slides down the ramp 44. Thus when the buggy 33 is in the position as shown in dotted outline in Fig. 5, the spring clip 43 and the ramp 44 maintain the buggy 33 in an upright position on one edge. The unloader may then move a second buggy from the unloading station 11 to the checking station 12 and slide the first buggy along the ramp 44 to the unloading station 11 where it is removed from its upright position into a position on the leaf extension 23 in front of the unloading station 11.

From the foregoing description, it will be clear that the conventional type of checking stand consisting of the main bench portion 20, supplementary bench 21, together with the cash register 22, and only the checking and bagging stations, may be readily converted into a checking stand according to the present invention by providing the leaf extension 23 together with its support 29, the guiding members 31, the buggy 33, and bench 40. However, it will be appreciated that under some circumstances, the bench 40 might be dispensed with and the merchandise unloaded from the baskets 41 while directly supported on the wheeled carriage, not shown.

As an additional refinement, the leaf extension 23 may be provided with a box 46 disposed on the outer edge thereof for the purpose of displaying some item of merchandise as a "Special". With such an item of merchandise prominently displayed at the unloading station, the unloader will have an opportunity to urge the sale of this item to customers waiting their turn to move to the checking station.

A simplified form of the checking stand disclosed in Fig. 2 is disclosed in Fig. 6 wherein the main bench portion 47 is provided with an extension leaf 48. The extension leaf 48 is preferably detachably secured to the main bench portion 47 as by connectors 24, disclosed in Fig. 4, and is supported by a prop 49 of conventional character. The buggy or carrier 50 for sliding along the top of the extension leaf 48 and the main counter portion 47 is disclosed in the form of a tray 50 without wheels. In its simplest form, the carrier 50 could be in the form of a flat board-like member.

Another form of the invention is disclosed in Fig. 7 wherein there is provided a main bench portion 51, having a leaf extension 52, preferably detachably secured to the main counter portion 51 and provided with a hinged support 53, adjacent which is disposed a bench 54, similar to the bench 40, disclosed in Fig. 2. Disposed on the top of the main counter portion 51 and the leaf extension 52 is a roller anti-friction member 54, which preferably is secured to the leaf extension 52 and rests on the top of the main counter portion 51. The member 54 consists of side members 55, shown more clearly in Fig. 8, between which there is supported a pin 56 carrying through bearings 57, rollers 58. The side members 55 have depending portions overlapping the sides of the leaf extension 52 and the main bench portion 51, as shown particularly in Fig. 8 to prevent lateral displacement. Also the side members 55 are provided with hinges 59 so that the left portion of the member 54 may be rotated about the hinges 59 to dispose it on the top of the right portion for facilitating storage when removed from the main bench portion 51 together with the leaf extension 52. Adjacent the end portion of the member 54 on the main bench portion 51 is a ramp 65, similar to the ramp 32, disclosed in Fig. 2 and for the same purpose.

To the left of the ramp 65, as viewed in Fig. 7, and in the top of the main bench portion 51, is a slot 66, communicating with a ramp 67 within the main bench portion 51 and projecting outwardly into the space beneath the leaf extension 52. The purpose of the slot 66 which extends across the main bench portion 51 is to receive a carrier, not shown, which is adapted to move over the rollers 58 from the unloading station 11 to the checking station 12 after merchandise has been removed therefrom by the checker to the bagging station 13. When the carrier is placed in the slot 66, it slides down the ramp 67 to position at the unloading station 11 where it may be withdrawn by the unloader and reused by him.

A form of the buggy particularly adapted for use with the antifriction member 54 disclosed in Fig. 7, is disclosed in Fig. 8 and consists of a tray 68, resting on the rollers 58 and having depending side flanges 69 and 70, engaging with the outside faces of the members 55 to guide the tray 68 against lateral displacement. It will be observed that the depending flange 69 is longer than the flange 70. The flange 69 is on the customer's side of the checking stand and is arranged to depend sufficiently far to cover the ends of the pins 56. The flange 70, however, is on the clerk's side of the checking unit and therefore need not depend any farther than is sufficient to prevent lateral displacement.

Still another form of the invention is disclosed in Fig. 9. This form of the invention is somewhat similar to the form disclosed in Fig. 7 with the exception that the main bench portion 71 and the leaf extension portion 72 are permanently secured together and are provided as shown with built-in rollers 73. The rollers 73 are for the purpose of carrying a buggy or a carrier, preferably similar to the type disclosed in Fig. 6. A bench top ramp 74 and built-in ramp 75 are similar to the corresponding parts shown in Fig. 7.

Still another form of the invention is disclosed in Figs. 10 and 11, wherein the buggy or tray type of moving means for merchandise is displaced by a conveyor belt for providing means for conveying merchandise from the unloading station to the checking station. As shown in Fig. 10, the checking stand consists of a bench 76, having conveyor belt rollers mounted thereon by suitable brackets not shown, one roller 77 being mounted between the checking and bagging stations 12 and 13 and the other roller 78 at the outer end of the unloading station 11. The top 76' of the bench 76 opposite the unloading station 11 and checking station 12 is below the level of the top 76'' of the bench 76 opposite the bagging station 13. As shown particularly in Fig. 11, there is supported directly over the surface of the

bench top 76' a platform 79, supported by bars 80, overlapping the sides of the bench 76 and secured thereto. An endless belt 81 is disposed over the rollers 77 and 78, the portion thereof traveling in one direction sliding on the top of the platform 79 and the portion going in the other direction being beneath the platform 79 but sliding across the top of the bench 76. The edges of the belt 81 are covered by a border band 82 comprising an integral portion of the bars 80.

The roller 78 is provided with a shielding housing 83, supported from the end of the bench 76. A cover plate 83' is connected to the bench top 76'' over the roller 77. The inner edges of the housing 83 and plate 83' are similar in form to the border bands 82 and complete with the bands 82 a frame for the exposed portion of the endless belt 81. Suitable cover plates 84, secured to the bench 76, cover the ends of the housing 83 and the roller 78.

It will be understood that in the use of a checking stand of the character disclosed in Figs. 10 and 11, merchandise will be unloaded at the unloading station 11, (not shown as such in Fig. 10) on the belt 81, and moved by the belt to the checking station 12 (not shown as such in Fig. 10). The belt is moved around the rollers in a counter-clockwise direction as shown in Fig. 10 by means of a crank 85 connected to the roller 78 for rotating the same. However, in place of moving the belt 81 by means of the crank 85, other mechanical or electrical apparatus may be provided. If desired, such apparatus may be arranged to automatically move the belt 81 a predetermined distance upon the actuating of a control mechanism. Such an arrangement would permit the automatic moving of merchandise on the belt 81 from the unloading station 11 to the checking station 12.

Another and simplified form that the invention might take is disclosed particularly in Fig. 12. In this form, the wheeled carriage 90, having shelves 91 and 92 for supporting the merchandise baskets 93, in which customers collect the merchandise they desire to purchase, is provided with a bracket 94, having a portion extending across the carriage at the level of the handle 95. In using this form of the invention, when the customer brings the wheeled carriage 90 to adjacent the checking stand, a tray or carrier 96 is disposed on the top of the wheeled carriage 90 resting on the bracket 94 and the handle 95. To the underside of the tray 96 is secured a member 97 for engaging on the inside of the bracket 94 and of the handle 95 to prevent relative longitudinal movement between the tray 96 and the wheeled carriage 90. At the checking stand, the bench for the use by the unloader, the checker and the bagger may be extremely narrow or even entirely eliminated. When the customer reaches the unloading station, the unloader unloads the merchandise from the basket 93 onto the tray 96, which he has placed on the carriage 90 and then passes the carriage to the checker, who checks the merchandise, presents a bill for the same to the customer, and receives payment. As in the other forms of the invention, at the same time as the checker is presenting his bill and receiving payment, the bagger is placing the merchandise moved from the tray 96 into bags for taking out of the store by the customer. The bagger may then remove the tray 96, placing it in a convenient position for re-use by the unloader and quickly push the carriage 90 to a location where it may be taken by an incoming customer for re-use.

In using the form of the invention disclosed in Fig. 12, instead of unloading the merchandise directly from the baskets 93, while disposed on their shelves 91 and 92 of the carriage 90, the baskets 93 may be first placed on a bench similar to the bench 40 disclosed in Fig. 2 and then unloaded from this position onto the board 96.

In considering the checking stands disclosed herein, it is to be understood that the proportions of the various parts thereof may be selected for the requirements of the stores in which they are used. However, it has been found to be satisfactory to make the portion of the bench in front of the unloading station about equal in length to one-half of the main bench portion, that is, the bench in front of the combined checking and bagging stations. Referring to the spring clip 43, disclosed particularly in Figs. 2 and 5, it has been found while a spring clip type of latch is particularly satisfactory and simplified in form, that other types of latches for retaining the upper edge of the carrier may be employed. Also it is contemplated that while all of the carriers disclosed are movable on the top of the benches, the benches could be suitably recessed to receive the carriers to support them substantially flush with the bench tops.

The foregoing description of the forms of the invention are illustrative of the broad invention, and accordingly I do not wish to be limited except by the scope of the following claims.

I claim:

1. In a store or the like wherein articles of merchandise of different classifications are selected by customers and loaded by customers into carrying devices, a counter, movable merchandise conveying means on said counter, said counter having a checking station at which a checking clerk is positioned to check the articles of merchandise, an unloading station at one side of said checking station at which an unloading and classifying clerk unloads articles of merchandise from the carrying devices into association with said conveying means to be conveyed thereby, said merchandise being separable, when in said association, into various classifications so that they may be checked according to their respective classifications, whereby merchandise may be conveyed by said conveying means from said unloading station to said checking station, and a bagging station at the other side of said checking station at which a bagging clerk is positioned to bag merchandise after it has been checked by the checking clerk, said checking and bagging stations being clear to permit the passage of merchandise thereover from the checking station to the bagging station as it is checked.

2. In a store or the like wherein articles of merchandise of different classifications are selected by customers and loaded by customers into carrying devices, a counter, mobile means on said counter, said counter having a checking station at which a checking clerk is positioned to check the articles of merchandise, an unloading station at one side of said checking station at which an unloading and classifying clerk unloads articles of merchandise from the carrying devices on to said mobile means, said merchandise being separable when on said mobile means into various classifications so that they may be checked according to their respective classifications, whereby merchandise may be conveyed by said mobile means from said unloading station to said check-

ing station, and a bagging station at the other side of said checking station at which a bagging clerk is positioned to bag merchandise after it has been checked by the checking clerk, said checking and bagging stations being clear to permit the passage of merchandise thereover from the checking station to the bagging station as it is checked.

3. The invention as defined in claim 2, wherein the mobile means to convey the merchandise from said unloading station to said checking station, comprises an endless conveyor belt running from the unloading station to the checking station, and means to index the conveyor belt to move the portion thereof at the unloading station to the checking station.

4. The invention as defined in claim 1 wherein the movable merchandise conveying means comprises a buggy.

5. The invention as defined in claim 1 wherein the movable merchandise conveying means comprises a plurality of antifriction rollers at the unloading and checking stations, and a carrier movable on said rollers.

6. The invention as defined in claim 1 wherein there is provided means at one side of the path of movement of said conveying means for receiving and retaining said conveying means when moved from operative relation with said station.

7. The invention as defined in claim 1 wherein the checking station and unloading station have a slot therebetween, and there is provided a ramp associated with said slot, whereby the conveying means may be inserted in said slot and returned by said ramp to the unloading station.

8. The invention as defined in claim 1 wherein the movable merchandise conveying means is in the form of a carrier oscillatable about one edge of itself, and there is provided means at one side of the path of movement of the carrier for receiving and retaining said carrier when the same is oscillated about one edge thereof into an upwardly extending position.

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