

June 22, 1948.

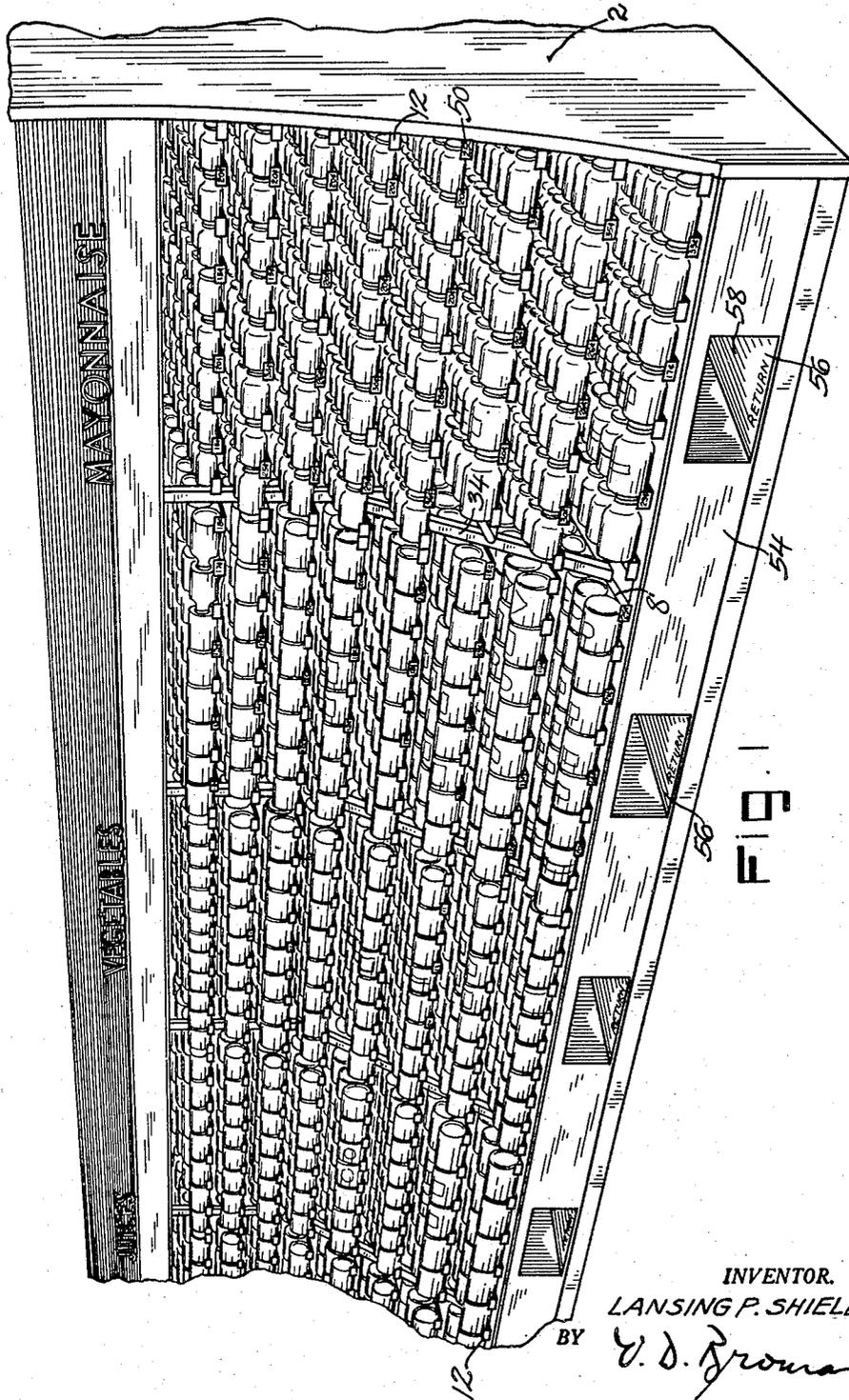
L. P. SHIELD

2,443,871

DISPLAY AND DELIVERY DEVICE

Filed June 15, 1945

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

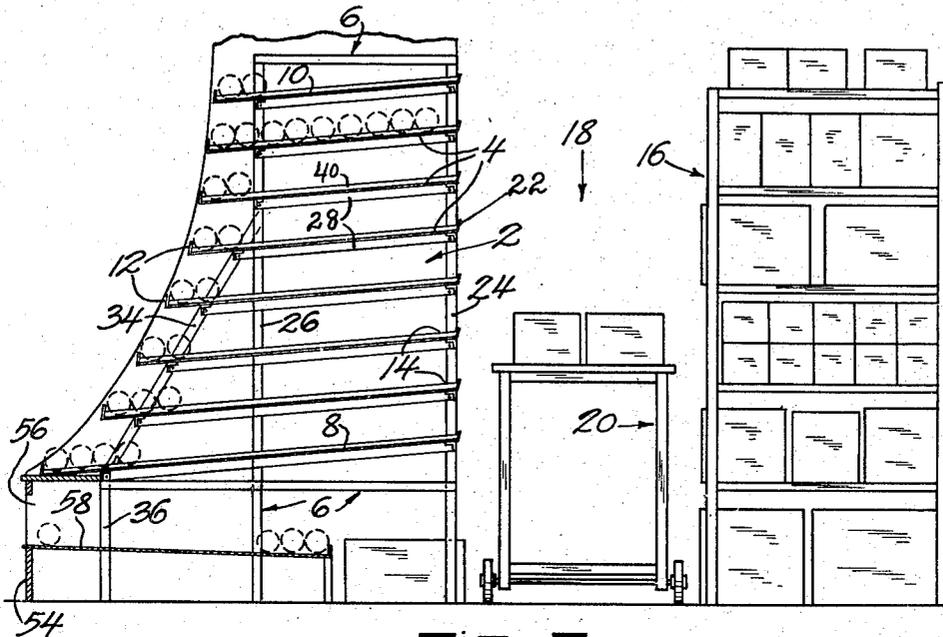


FIG. 2.

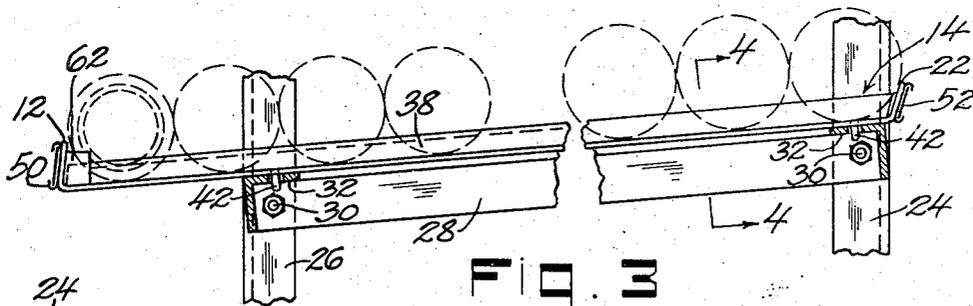


FIG. 3.

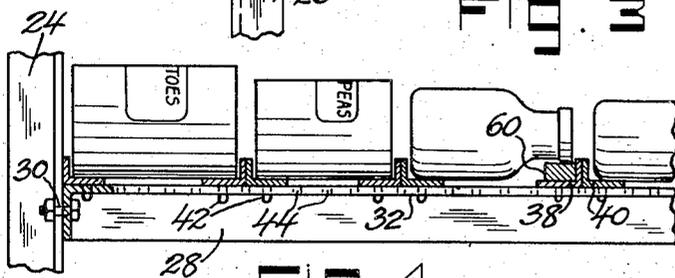


FIG. 4.

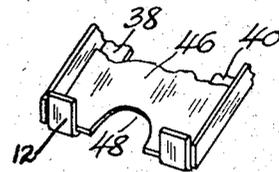


FIG. 5.

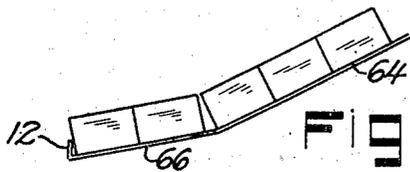


FIG. 6.

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DISPLAY AND DELIVERY DEVICE

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5 Claims. (Cl. 211-71)

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My invention relates to display and delivery means for self-service stores and particularly to constructions whereby a wide variety of articles may be presented in an attractive and convenient manner and continuously maintained available to the customers with a material saving in time and labor on the part of both the clerks and the customers.

It is usual in self-service stores to provide a series of stands or shelves arranged to form aisles along which the customers pass to help themselves to the articles they wish to purchase. However, in order to replenish the shelves with goods the clerks also have to pass up and down the aisles with cartons or trucks, stacking and arranging the stock to replenish the goods purchased. The busier the store the more frequently the stock has to be replenished and as a result the clerks often block the aisles and the customers interfere with the clerks and may be injured in stepping around or over obstructions in the aisles. The aisles also tend to become littered with paper or wrappings from the articles taken from the packages or cartons in arranging the goods and the store soon presents a dirty and unattractive appearance.

A further and important objection to present constructions and arrangements of shelves and display means used in self-service stores resides in the limited number and variety of articles which may be presented in a given space. Thus, for example, the space necessary to present three or four varieties of one commodity in sufficient numbers to meet the demands of the trade may require one whole section of shelving. On the other hand, if an effort is made to save space and present a greater variety of articles on the shelves by placing only a few cans or packages of each brand on the shelves, the clerks have to replenish the shelves more often and the interference and annoyance to the customers is increased.

I have discovered that these and numerous other objections and limitations in constructions heretofore employed in self-service stores can be overcome by providing a novel type and arrangement of shelves and stands which serve to deliver articles automatically into position for convenient removal by the customers. With this construction only one package or container need be presented to the customer at a time, whereas others will be supplied as needed. A great variety of articles and numerous brands of the same articles can be presented in a limited space for ease in selection and handling. At the same time the articles are replenished by clerks on the opposite

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side of the shelves or stand and they too can handle the goods more readily without waste of time and without interference with the customers.

In accordance with my invention these results are preferably attained by employing stands upon which shelves are arranged in inclined positions with the lower front edges of the shelves terminating in an outwardly and downwardly inclined display of articles which are conveniently accessible to the customers and with the upper rear edges of the shelves conveniently accessible at the rear of the stand for charging the shelves with articles so that they will move by gravity to the lower front edges of the shelves. By arranging the shelves so that they extend progressively farther outward from the top toward the bottom of the stand, the articles may be lifted upward so that they can be removed from the shelves without difficulty and each article is prominently and separately displayed to the customers. Moreover, none of the papers or wrappings from the cartons and packages are dropped in the aisles and therefore the whole store presents a neat, clean and attractive appearance and the customers are not inconvenienced by the movement of the clerks through the aisles.

One of the objects of my invention is to reduce the time and labor necessary to maintain a supply of goods available to customers in self-service stores.

Another object of my invention is to provide improved means for the display and handling of articles in self-service stores.

A further object of the invention is to provide stands and shelves for self-service stores whereby a greater variety of articles may be made available to the customers within a limited space.

Another object of my invention is to provide constructions whereby self-service stores may be maintained in a neat, clean and attractive condition and interference with customers is reduced to a minimum.

These and other objects and features of my invention will appear from the following descriptions thereof in which reference is made to the figures of the accompanying drawing.

In the drawing:

Fig. 1 is a perspective of a portion of a typical display and delivery device embodying my invention.

Fig. 2 is a vertical sectional view of the construction illustrated in Fig. 1.

Fig. 3 is an enlarged vertical sectional view

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through one shelf of the construction illustrated in Figs. 1 and 2.

Fig. 4 is a vertical sectional view taken on the line 4-4 of Fig. 3.

Fig. 5 is a perspective of a portion of an alternative construction which may be embodied in the display and delivery device of Fig. 1, and

Fig. 6 is a diagrammatic side elevation of an alternative form of shelf construction.

In that form of my invention illustrated in Figs. 1 to 4 the stand 2 embodies a plurality of shelves 4 which are supported by a framework 6 and held in inclined positions at an angle of about 6°. The lower ends of the shelves are accessible from the front of the stand and are stepped back from one another in passing from the lowermost shelf 8 to the uppermost shelf 10, so that the shelves combine to present an arcuate, or sloping front to the construction and provide an attractive forwardly and downwardly sloping display of articles.

Each shelf, or each section of a shelf, is supplied with a single type and brand of article and the articles move forward by gravity along the sloping shelves from the rear to the front of the stand. The front end of each shelf is provided with upwardly projecting stop means 12 which serve to hold the series of containers on the shelf, but as soon as the foremost container is removed, the others move forward by gravity to present another identical article to the customer. In this way the display of articles and the supply thereof are maintained continuously and automatically as long as the shelf is charged with containers.

The upper rear ends 14 of the shelves are accessible from the rear of the stand for charging articles onto the shelves and the stand itself is spaced from complementary shelving or other storage means 16 which may be located adjacent a wall of the store building. With this construction an aisle 18 is formed between the storage means and the stand 2 so that clerks may pass back and forth with trucks or cartons and may charge articles into the rear ends of the shelves without interference with the customers. By arranging cartons or cases of articles on the storage shelving 16 opposite those shelves in the stand 2 which are to be charged with those articles much time can be saved in keeping the shelves supplied with articles.

A wheeled support 20 is generally used by the clerks in loading the articles onto the shelves since it is then possible to transfer a carton from the storage means to the support and to transfer the articles directly from the carton to the shelves with a minimum of movement and loss of time. When the shelf being charged is filled with articles the carton can be returned to the storage means 16 and the support moved to a new position so that another carton can be placed on the support for charging another shelf.

The rear end of each shelf preferably is formed with an upwardly turned portion 22 which serves to hold the rearmost container on the shelf and prevents it from being brushed off as the clerks move about or pass each other in the aisle 18. This arrangement of the stand and storage means serves to confine the movements of the clerks and trucks to areas which are not used by the customers so that there is no confusion or interference between the clerks and customers and danger of injury to customers in stepping around and over cartons and trucks is eliminated. Moreover, papers, wrappings or litter from the cartons and packages are not scattered about the

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store so that it is much easier to maintain the store in a clean, tidy and attractive condition.

The construction and arrangement of the shelves and framework are, of course, capable of many variations. In that form of my invention illustrated the framework indicated generally at 6 embodies vertical supports 24 and 26 to which rectangular frames 28 are secured by means of bolts 30. The frames 28 are formed of angle iron and present inwardly facing flanges 32. The frames vary in size so as to extend from the vertical element 24 at the rear of the stand to the vertical element 26 at the front of the stand in the upper shelves whereas the frames 28 in the lower portion of the stand extend forward beyond the vertical element 26 to the inclined element 34 which is supported by a vertical leg 36. In this way the frames 28 provide for each shelf a strong support. The frames 28 are mounted on the vertical supports in the desired inclined positions and although the frames are of equal width in the construction shown in Fig. 1, certain vertically arranged groups of frames may be wider or narrower than other vertically arranged groups of frames to form sections or banks of shelves of any desired width.

The shelves themselves, as shown in Figs. 3 and 4, consist of tracks 38 and 40 formed of angle members which face toward each other and are spaced apart distances corresponding to the lengths of the containers they are to receive. The tracks are held in place on the frames 28 by retaining means which, as shown in Fig. 4, consist of pins 42 which are carried by the tracks 38 and 40 and extend downward therefrom through openings 44 in the flanges 32 of the frames 28. The frames 28 may be provided with any desired number of openings 44 to permit the tracks 38 and 40 to be moved or adjusted in position to receive and support cans, bottles or packages of any desired length.

As shown in Fig. 5 the shelf may include a sheet of plywood or other material 46 supported on the rails 38 and 40 if it is desired to close or cover the space between the rails. As further shown in Fig. 5 the sheet 46 is formed with a cut out or hand opening 48 in the lower front edge thereof so that articles may be easily grasped to remove them from the shelf. When only the spaced rails are used as shown in Fig. 4, the articles are similarly free to be grasped readily so that they are available for easy removal from the shelves of the stand. Furthermore, the stepped arrangement of the front ends of the shelves renders it possible to lift the articles from the shelves easily and without interference from the shelf above.

The lower front ends of the rails 38 and 40 are preferably turned upward as shown most clearly in Figs. 3 and 5 to form the stops 12 for holding articles in position on the shelves. The stops 12 also serve as support holders 50 for receiving tags, cards, signs or similar means for indicating the prices and the numbers and kinds of ration points required for the articles or for giving other information regarding the articles supplied to that shelf. The upwardly turned portions 22 at the upper rear ends of the shelves also may be provided with holders 52 for receiving cards or tags to indicate to the clerks the kind and brand of articles which the shelf contains. In this way the clerks can be sure to charge the articles onto the right shelves to maintain a continuous supply of the same article available to the customers.

In using the stand described the customers may remove articles from the shelves for inspection

or may decide that they do not wish to purchase an article after it has been removed from the shelf. Since the space occupied by an article which has been removed is immediately taken up by other articles moving forward on the inclined shelf it is desirable to provide means for receiving undesired articles so that they can be returned to the clerks for redistribution to the proper shelves. In the construction illustrated the article receiving means serves to return the undesired articles automatically to the rear of the stand so that the clerks do not have to go around to the front of the stand to collect the returned goods. As shown, the base 54 of the stand is formed with openings 56 below the lowermost shelf 8 so that the customers can place the unwanted articles in the openings and on an inclined surface 58 which serves to cause the articles thus returned to move by gravity to the rear of the stand where they are accessible to the clerks in the aisle 18. The clerks can then sort out the accumulation of returned articles and restore them to the proper shelves or to the stock of goods maintained on the shelving 16. These return channels may of course be located at any convenient points or places in the construction, and the space between the return channels and below the lowermost shelf 8 can be used for the storage of additional goods.

In employing the present invention in self-service stores for groceries or other commodities the stock to be handled usually includes cans, bottles, jars, packages or other containers or articles of various sizes and shapes. Those containers and articles which are cylindrical in shape, such as cans and most bottles and jars, will roll easily and in a straight line along the inclined shelves. Similarly, spherical articles such as apples, oranges, grapefruit and the like may be charged onto the shelves and automatically delivered thereby.

However, my invention is by no means limited to the handling of cylindrical or spherical containers and objects. Thus as shown in Fig. 4 a filler or guide strip 60 may be located adjacent one or both of the tracks 38 and 40 or on other shelving used to support and guide tapered, conical or other irregularly shaped containers which are circular in cross section. In actual practice it is found that such filler strips serve to overcome the tendency of tapered containers to travel or roll in an arcuate path and as a result they can be handled just as effectively as cans or articles of a strictly cylindrical shape. As shown in Fig. 3, extra stop means 62 may be located adjacent the stops 12 when necessary to hold the lowermost tapered or irregularly shaped containers in the desired positions on the shelves.

It is also possible to deliver other articles or packages of irregular shape in constructions embodying my invention. Thus, as shown in Fig. 6, shelving may be provided which has at least a portion thereof located at a relatively steep angle as indicated by the shelf 64. The lower front edge of the shelf preferably has a portion 66 which is inclined at a smaller angle so as to break the fall or movement of the articles charged onto the shelf and to take at least part of the weight from the foremost article so that it can be easily removed from the shelf by the customer. The weight of the following articles will then force the next article forward into position adjacent the stop means 12 just as in the case of cylindrical or spherical objects.

In this way bags of flour, salt, sugar and pack-

ages of potatoes or the like can be handled by means of the present invention, and boxes of tea, sugar, cereals or soap flakes, as well as cakes of soap and other articles, can be presented continuously and automatically for purchase by customers in front of the stand. Moreover, when handling such articles the containers or packages can be arranged on the shelves by the clerks in position to cause the front, trade-mark or other portion of the package to be displayed prominently and in a predetermined position when delivered to the lower end of the shelf.

Experience with equipment of the type illustrated and described has demonstrated numerous other advantages of very practical value. The clerks and customers do not have to travel so far to fill their orders and replenish the stock so that both the customers and the clerks save a great deal of time and up to 80% of the travel which is usually necessary in self-service stores. The customers are also assured of receiving fresh stock since the new supply is not placed in front of or does not cover up the remnants of a preceding supply so that no goods are left on the shelves for long periods of time.

It is also found that constructions embodying my invention render it much easier to take inventory and keep track of the stock on hand. This results from the fact that the number and kind of articles carried by each pair of tracks on the stand when fully stocked is fixed or can be readily determined and will not vary as long as the arrangement of the articles on the stand remains the same. Then it is only necessary to take an accounting of the stock remaining on the shelving 16 and to add that to the known quantities of the fully charged stand.

These and other advantages are attained when using display and delivery devices embodying my invention although the form, arrangement and constructions of the equipment may be varied considerably. In view thereof it should be understood that the embodiments of my invention shown in the drawings and described above are intended to be illustrative only and are not intended to limit the scope of the following claims.

I claim:

1. Merchandise display and delivery means for self-service stores comprising a stand having a plurality of vertically extending supports, a plurality of inclined shelves arranged one above the other and inclined from the rear toward the front of the stand, the upper ends of the inclined shelves being in substantial alignment and accessible at the rear of the stand for charging articles onto the shelves, the lower ends of said shelves projecting progressively farther forward from the upper to the lower portion of the stand and having means at the lower front end of each shelf for holding articles in place on the shelf to present an inclined display of articles at the front of the stand in position to be raised from the shelves by customers, a rigid rectangular frame for each shelf secured to said supports and presenting horizontally extending opposite end portions adjacent the opposite ends of said shelves, and means on said shelves releasably engaging said portions for holding the shelves in place.

2. Merchandise display and delivery means comprising a stand having vertically extending supports, rectangular frames secured in inclined positions to said supports and having opposite horizontally extending portions, a plurality of inclined pairs of tracks positioned to support arti-

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cles to be displayed and delivered, said tracks being supported adjacent the opposite ends thereof by the horizontally extending portions of said rectangular frames, and means for releasably holding said tracks in position on said frames, the tracks combining to form channels which are accessible at the rear of the stand for receiving articles and accessible at the front of the stand for the removal of articles.

3. Merchandise display and delivery means comprising a stand having upwardly extending supports, rectangular frames secured in inclined positions to said supports, a plurality of inclined pairs of tracks on said frames positioned to support the opposite ends of articles to be displayed and delivered, and means for releasably holding said tracks in position on said frames, the tracks combining to form channels which are accessible at the rear of the stand for receiving articles and accessible at the front of the stand for the delivery of articles, certain of said tracks having means thereon for supporting and guiding the smaller ends of articles which are of different sizes at the opposite ends thereof.

4. Merchandise display and delivery means for self service stores comprising a stand having two upwardly extending supports at the rear thereof and two upwardly extending supports near the front of the stand, a plurality of rigid rectangular frames connected to said front and rear supports and arranged in vertically spaced relation and in inclined positions with respect to said supports, shelves in the form of pairs of spaced tracks arranged in parallel relation and adapted to receive and guide articles of predetermined sizes, said tracks being adjustably secured to opposite portions of said frames by interengaging means on said tracks and frames formed to permit movement of said tracks to different positions to receive and guide different sizes of articles, said tracks extending in downwardly inclined positions from the rear toward the front of the stand so as to cause articles placed thereon to move forward by gravity toward the lower front ends of said shelves, and an abutment member at the lower ends of said tracks for retaining articles in place on said tracks, the frames and tracks in the lower portion of the stand being longer and projecting outward below the frames and tracks in the upper portion of the stand to present articles in position to be raised vertically from the tracks.

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5. A merchandise display and delivery stand comprising upwardly extending supports, rectangular frames secured in vertically spaced relation and in inclined positions on said supports and each having opposite horizontally extending portions, a plurality of inclined shelf forming means supported adjacent their opposite ends by the horizontal portions of said frames, each of said shelf forming means including article supporting means and a pair of spaced article guiding elements cooperating with said article supporting means to form parallel inclined channels for maintaining articles in alignment during movement thereof from the rear to the front of said shelf forming means, said shelf forming means being adjustably secured to said frames by interengaging parts movable to hold said article guiding elements in various predetermined positions with respect to each other to guide articles of predetermined sizes, said channels being accessible at the rear of said stand for receiving articles and accessible at the front of said stand for the removal of articles from said channels, the front ends of said channels extending progressively farther forward from the upper to the lower portion of the stand and means engageable by the foremost article in each channel for holding articles in place in said channels.

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