Aug. 18, 1953 L. P. SHIELD 2,649,207

DISPLAY AND DELIVERY DEVICE

Filed May 7, 1949 2 Sheets-Sheet 1

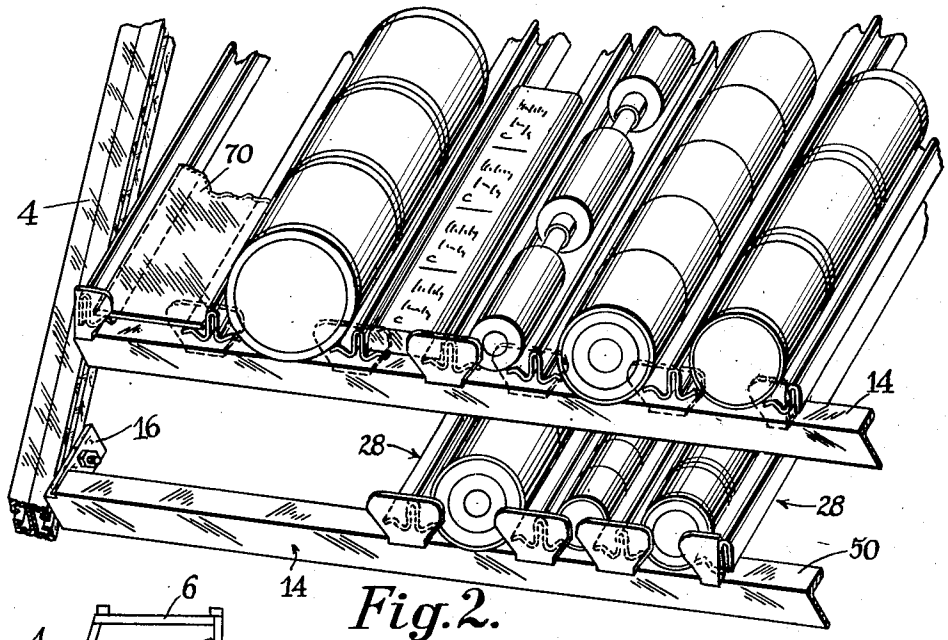


Fig. 2.

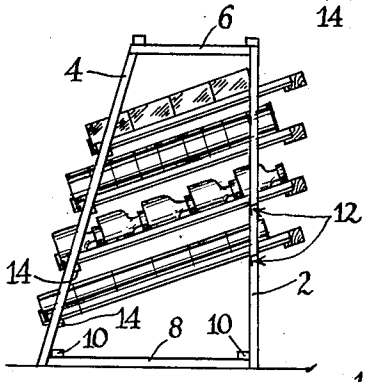


Fig. 1.

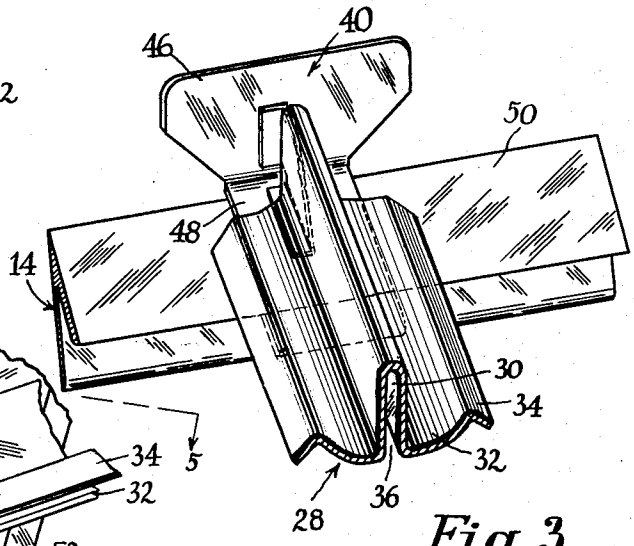


Fig. 3.

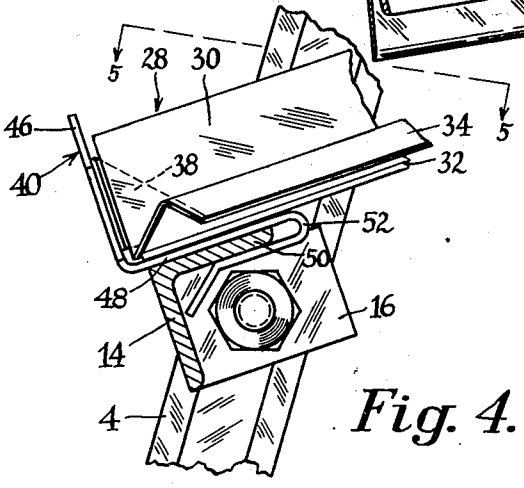


Fig. 4.

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DISPLAY AND DELIVERY DEVICE

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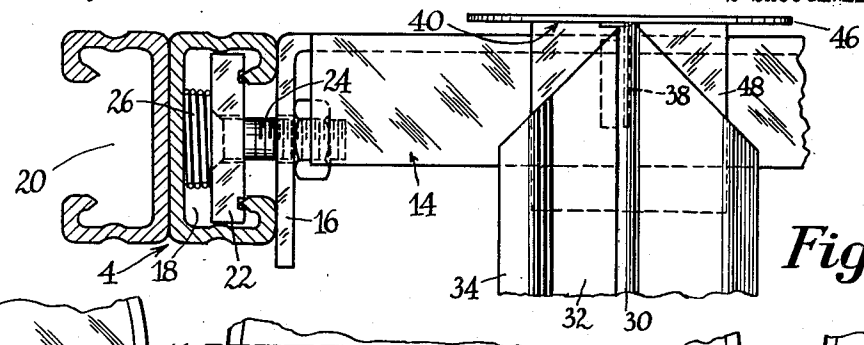


Fig. 5.

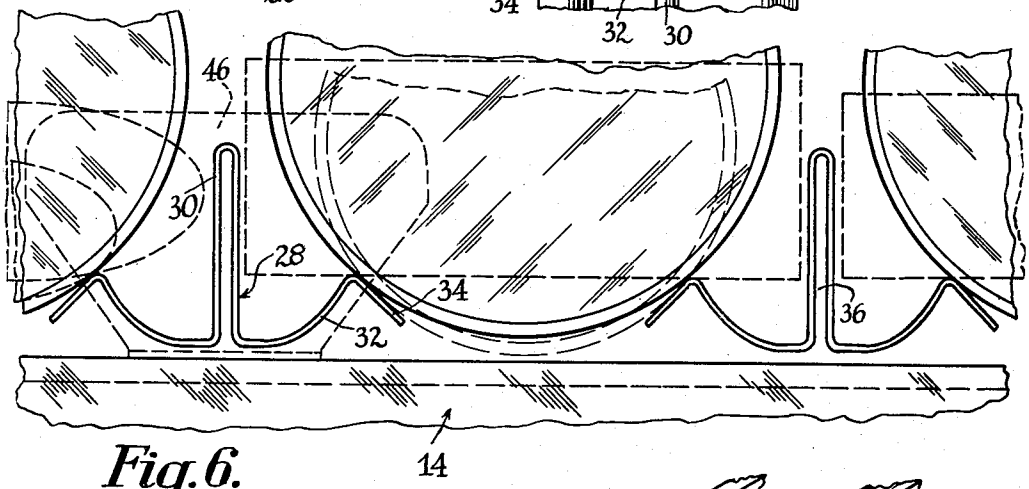


Fig. 6.

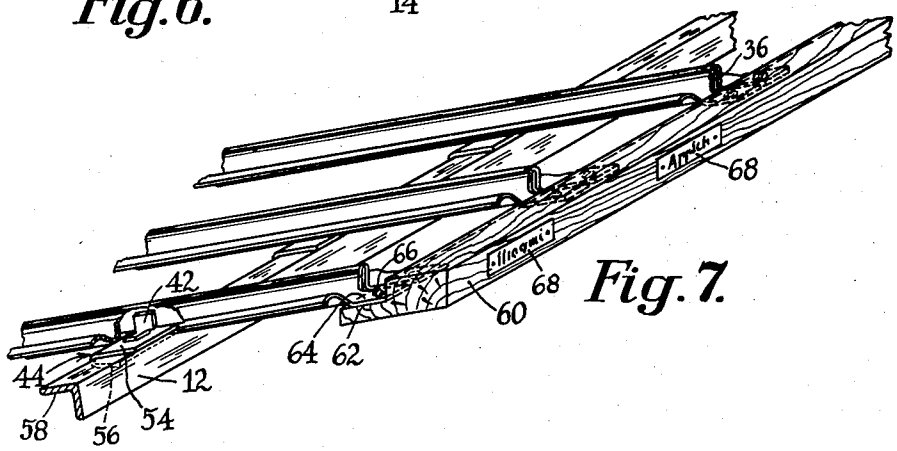


Fig. 7.

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UNITED STATES PATENT OFFICE

2,649,207

DISPLAY AND DELIVERY DEVICE

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5 Claims. (Cl. 211—49)

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This invention relates to display and delivery stands for use in self-service stores and is directed particularly to improved means for supporting and guiding articles handled by such equipment.

The most successful display and delivery stands have been those in which there are a plurality of shelves or supports arranged one above another and in inclined positions so that articles may be placed on the shelves by clerks stationed at the rear of the stand and will move by gravity to the lower front ends of the shelves into position for easy removal by customers at the front of the stand. The shelves are generally composed of or provided with tracks, guides or dividers for directing the articles and holding them in line as they move downward on the shelves to the front of the stand. In some instances the shelves embody spaced parallel tracks engaged by opposite sides or ends of cans, bottles, packages or other articles being displayed and delivered. However, if the articles project downward between such spaced tracks, they sometimes engage transverse supporting means for the tracks and interfere with proper delivery of the articles by gravity. On the other hand if the tracks are positioned sufficiently close together to hold the articles suitably elevated above transverse supports it is sometimes found that large cans or bottles project outward above the tracks so as to rub against articles on adjacent tracks. Under such circumstances the articles not only interfere with the movement of adjacent articles but are positioned so close together in adjacent channels that customers cannot grasp the cans or bottles easily for removing them from the shelves.

When the shelves have fillers or sheet portions extending between the guide members for supporting the articles, lateral movement of the articles can take place and they sometimes turn or become twisted so as to jam or move irregularly on the shelves. Moreover, cylindrical articles may still project laterally above the guides or dividers to interfere with movement in adjacent channels and render removal of the articles difficult.

In accordance with the present invention problems which may be encountered with prior constructions are overcome and means are provided which support and guide the articles in a manner to insure uninterrupted movement of articles in display and delivery stands. At the same time the articles are positioned so as to permit easy removal thereof from the shelves. These advantages are attained by providing a novel type of

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track, chute or shelf forming means which guides the articles and yet holds them in such spaced relation as to insure freedom of movement. The tracks also serve to strengthen and reinforce the structure in such a way as to render the use of extra supporting means unnecessary.

One of the objects of the present invention is to provide improved shelves or channel forming means for display and delivery stands.

Another object of the invention is to provide novel types of guide means for display and delivery stands whereby interference with movement of articles by gravity is reduced to a minimum.

A further object of the invention is to provide novel means for holding articles in laterally spaced relation during movement thereof on the shelves of display and delivery stands.

Another object of the present invention is to provide means for holding articles on a display and delivery stand in position for easy removal by a customer.

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

In the drawing:

Fig. 1 is a diagrammatic vertical sectional view of a typical display and delivery stand embodying the present invention;

Fig. 2 is an enlarged perspective view of a portion of the display and delivery stand illustrated in Fig. 1;

Fig. 3 is a further enlarged perspective view of a portion of one channel forming member and stop means embodied in the construction shown in Fig. 2 as seen from the rear of the stand;

Fig. 4 is a vertical sectional view through that portion of the construction illustrated in Fig. 3 showing the front end of a delivery channel;

Fig. 5 is a horizontal sectional view taken on the line 5—5 of Fig. 4;

Fig. 6 is an enlarged vertical sectional view through two channel forming members of the type shown in Figs. 1 to 5; and

Fig. 7 is a perspective showing a portion of the upper rear end of a pair of channel forming members.

In that form of the invention shown in the drawings, the display and delivery stand is provided with rear framework members 2 which extend upward from the floor to a point above the shelves of the stand and a front framework member 4 which is inclined rearwardly. The members 2 and 4 are secured together at the top by suitable bracing means 6 and are secured together

at the bottom by the bracing means 8. Other intermediate bracing means for the members 2 and 4 may be provided, but are omitted from the drawings to simplify the illustration. The framework members 2 and 4 are arranged in pairs and spaced apart longitudinally of the stand to divide the stand into a series of bays. Longitudinally extending bracing members 10 are connected to the framework members 2 and 4 to strengthen the whole structure.

The framework is further strengthened by the horizontal shelf supporting members 12 which extend between the framework members 2 at the rear of each bay and the shelf supporting members 14 which extend between the inclined framework members at the front of each bay. The number of shelf supporting members 12 and 14 employed in any particular bay will depend upon the number of shelves desired in that bay. There is of course one front shelf supporting member 14 and one rear shelf supporting member 12 for each shelf and these supporting members are connected at their opposite ends to the framework members 2 and 4 at suitable elevations to support the shelves in an inclined position so that articles on the shelves will move by gravity from the rear to the front of the stand. The shelf supporting members are preferably formed of angle members and are provided at their opposite ends with inwardly turned portions 16 formed by bending the lower flange of the angle member inward as shown in Figs. 2, 4 and 5.

The framework members 2 and 4 may be of any suitable or preferred construction. As shown in Fig. 5 they are provided with oppositely facing channels 18 and 20. Each channel is designed to receive a clamping block 22 engageable by a bolt 24 which extends through the rearwardly turned portion 16 on the end of the length of angle member of which the shelf supporting members 12 and 14 are formed. A spring 26 is located in the channel 18 behind the clamping block 22 so as to cooperate with the bolt 24 in securing the shelf supporting member firmly in place on the framework. However, the shelf supporting members may be moved from one position to another by loosening the bolts 24, whereby the angle member supporting members 12 and 14 can be elevated or lowered on the framework members 2 and 4. The pitch of the shelves can therefore be varied to insure proper movement of articles along the shelves and to add or remove shelves in any bay of the assembly.

The shelves supported by the members 12 and 14 preferably consist of or include channel forming means which serve as guides or dividers defining a plurality of separate chutes or channels so that articles placed on the shelves will be held in alignment in each chute or channel but will be spaced apart from those in adjacent channels during their movement by gravity from the rear to the front of the stand. As shown in Figs. 2, 3 and 6, the shelves embody track members 28 which are supported adjacent their opposite ends by the front and rear supporting members 14 and 12 respectively. The members 28 are preferably formed of sheet metal and shaped so as to provide a central vertical dividing fin 30, upwardly and outwardly inclined spacing portions 32 and marginal bearing portions 34 which are inclined outwardly and downwardly from the spacing portions 32. The central fin 30 has a slot 36 in the lower surface thereof for engagement with a positioning element 38 carried by a stop member 40 located on the front shelf supporting member 14. The slot 36 also serves to receive the positioning element 42 carried by a positioning member 44 mounted on the rear shelf supporting member 12 as shown in Fig. 7.

The stop members and positioning members may be of any suitable or preferred construction. However, that form of stop member illustrated in Figs. 2, 3 and 4 includes an upwardly extending front element 46 having a rearwardly extending base 48 which rests upon the upper surface of the rearwardly extending flange 50 of the angle member of which the front shelf supporting member is formed. A retaining clip 52 is carried by the base of the stop member and extends about the free edge of flange 50 to hold the stop member in place. The positioning element 38 extends from the front element 46 to the base 48 and projects into slot 36 in the central fin of the track member to hold the latter in position. The positioning member 44 carried by the rear shelf supporting member 12 has a base 54 to which the upwardly projecting positioning element 42 is secured so as to extend into the slot 36 in the track member. A clip 56 is carried by the base 54 and extends about the flange 58 of the angle member of which the shelf supporting member 12 is formed.

Packaged articles such as rectangular boxes of soap chips or crackers rest upon the upper edges of the spacing portions 32 as shown in dotted lines in Fig. 6. They move easily along the track members while being guided and spaced from articles in an adjacent channel by the dividing fins 30. On the other hand bottles, cans and cylindrical articles engage the bearing portions 34 which extend along the opposite edges of the track members 28. The portions 34 of the tracks thus serve to guide and center such rounded or cylindrical articles in each article delivery channel of the shelf. The raised position of the bearing portions 34 also serves to hold the cans, bottles, cartons or other articles in a relatively elevated position so that they do not project downward between the tracks far enough to engage the shelf supporting members 12 or 14 even though they vary considerably in size and shape. As shown in Figs. 2 and 6 the construction of the track members is such that cans or bottles and packages which differ greatly in diameter or in shape may be supplied to the channels or chutes without changing the position of the track members and yet the articles will be supported and centered in the channels so as to insure proper movement thereof from the rear to the front of the stand. By this construction it is possible to avoid the frequent adjustments and changes in position of the track members which would otherwise be necessary when it is desired to supply a different size or shape of article to any particular channel.

The spaced arrangement of the bearing portions 34 also serves to hold cylindrical articles in adjacent channels in spaced arrangement so that they do not project beyond the central dividing fin 30 and therefore cannot engage or rub against each other or otherwise interfere with the movement of the articles in another channel. Furthermore, when the articles reach the front of the stand they are held in such spaced relation that they may be easily grasped by the customer for removal from the stand. The bearing portions 34 which extend along both marginal edges of the tracks have a further important function in that their angular form in cross section greatly increases the strength of the track

members and prevents bending or lateral displacement of the members under load. In fact the central dividing fin 30 and the angularly disposed bearing portions 34 render the tracks sufficiently stiff and rigid to permit all intermediate transverse supports between the front and rear shelf supports 14 and 12 to be eliminated. The oppositely inclined positions of the bearing portions 34 on the opposite edges of the track members further result in a balancing of the transversely directed forces applied to the track members by articles in adjacent tracks. Therefore the whole assembly is strengthened and reinforced by the use of the form of track members herein shown and described.

In most installations the upper ends of the track members project rearwardly beyond the rear supporting member 12. Since clerks move about the rear of the stand and may brush against the tracks in passing or in moving cartons or cases of goods to be supplied to the shelves, there is danger of injury to the clerks and the projecting ends of the tracks may become twisted. For this reason it is preferable to provide a finishing strip for securing the rear ends of the tracks in place and to protect such ends. As shown in Figs. 1 and 7 the finishing strip 60 is recessed at 62 to receive a flattened extension 64 on each track. The tracks are secured to the finishing strip by screws 66 or other suitable means. If desired tags may be mounted on the finishing strip as shown at 68 to indicate the type of goods to be supplied to each channel.

The shelves mounted on the shelf supports 12 and 14 may of course have various forms. As described above the shelves consist of a series of spaced track members. However, filler strips may be inserted between the track members as shown at 70 in Fig. 2. Such filler strips are supported on the laterally projecting spacing and bearing portions of the track members and preferably present a smooth or polished upper surface over which bags or sacks of sugar, salt, flour or the like will slide easily so as to move by gravity from the rear to the front of the stand.

The form of track members or channels making up the shelves of the stand may obviously take other forms not shown and the construction and arrangement of the framework members and shelf supports may also be varied. It should therefore be understood that the particular constructions herein shown and described are intended to be illustrative only and are not intended to limit the scope of the invention.

I claim:

1. A display and delivery stand comprising a framework, a horizontally extending shelf support secured to said framework adjacent the front of said stand, another horizontally extending shelf support secured to said framework adjacent the rear of the stand at a higher elevation than the front shelf support, a shelf mounted on said supports embodying a plurality of track members each provided with a central divider in the form of a vertically projecting fin provided along its lower edges with oppositely and upwardly extending spacing portions extending longitudinally on opposite sides of said central divider, and means adjacent the front ends of said tracks for retaining articles in place thereon.

2. A display and delivery stand comprising a framework, a horizontally extending shelf support secured to said framework adjacent the front of said stand, another horizontally extending shelf support secured to said framework adjacent the rear of the stand at a higher elevation than the front shelf support, a shelf mounted on said supports embodying a plurality of track members each provided with a central divider in the form of a vertically projecting fin from the lower edge of which spacing portions extend upwardly and outwardly on opposite sides of the divider, said spacing portions each having a bearing portion projecting outwardly and downwardly therefrom and extending substantially the entire length of the track member, and means adjacent the front ends of said tracks for retaining articles in place thereon.

3. A shelf for a display and delivery stand including a track member with a central divider in the form of a vertically projecting fin extending longitudinally of the track member and oppositely and upwardly extending spacing portions having marginal downwardly and outwardly inclined bearing portions extending longitudinally on opposite sides of said central divider.

4. A shelf for a display and delivery stand including a track member with a central divider in the form of a vertically projecting fin extending longitudinally of the track member from the lower edge of which spacing portions extend upwardly and outwardly on opposite sides of the divider, said spacing portions each having a bearing portion projecting outwardly and downwardly therefrom and extending substantially the entire length of the track member.

5. A display and delivery stand having horizontally extending front and rear supports positioned at different elevations, a plurality of horizontally spaced parallel track forming members located on said supports and inclined downward from the rear toward the front of the stand to receive articles and deliver them by gravity from the rear to the front of the stand, said track forming members each having a central upwardly projecting fin from the lower edge of which there are opposite outwardly and upwardly inclined spacing portions extending lengthwise of the track forming member, the spacing portions having marginal outwardly and downwardly inclined bearing portions extending throughout the length thereof, the bearing portions on adjacent sides of each pair of track members cooperating to define an article receiving channel and to engage the sides of rounded articles spanning the space between the track forming members and positioned to support the articles thereon elevated above the horizontally extending supports so that free movement of the articles along the tracks by gravity is assured, and means adjacent the lower ends of said track forming members for holding articles in place in said channels.

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