

[54] SUPPORT MEANS FOR STACKS OF ARTICLES

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[51] Int. Cl.² B60R 7/00

[58] Field of Search 296/24 R, 1 R, 3; 108/107, 108/109; 248/239; 211/153; 214/75 R; 105/371, 370, 375

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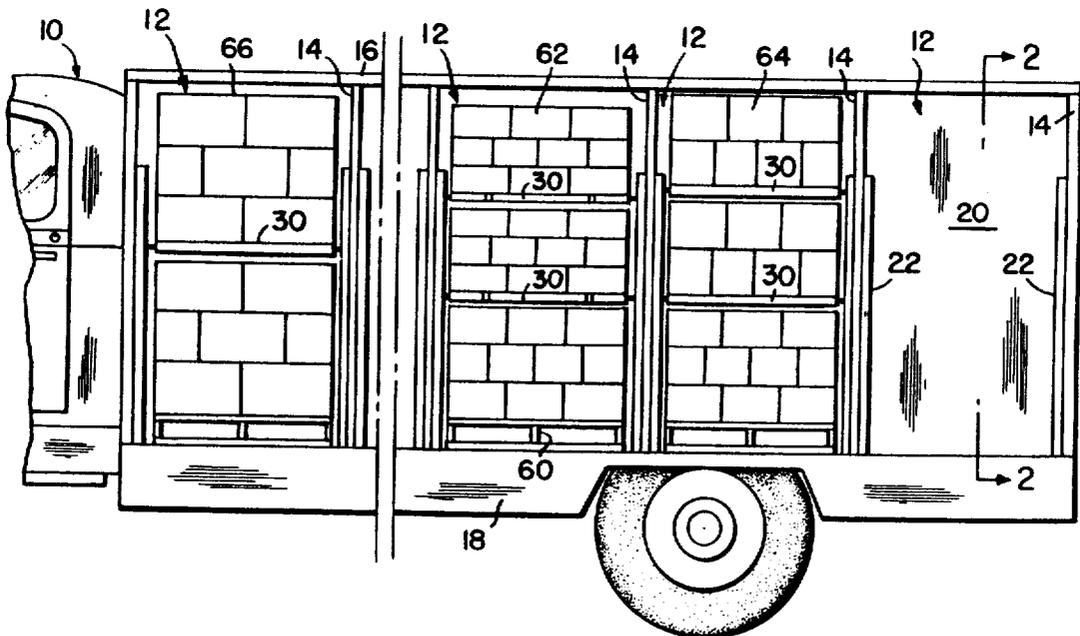
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[57] ABSTRACT

A support means for stacks of articles to be transported in vehicles having a plurality of bins for receiving a stack of articles. A shelf is placed between layers of the articles in a stack to divide the same into at least an upper and lower portion. The shelf is removably engageable with shelf supporting members which are adapted to be engaged by the shelf at various vertical locations so that a stack of articles may be positioned within a bin in a split condition.

5 Claims, 7 Drawing Figures



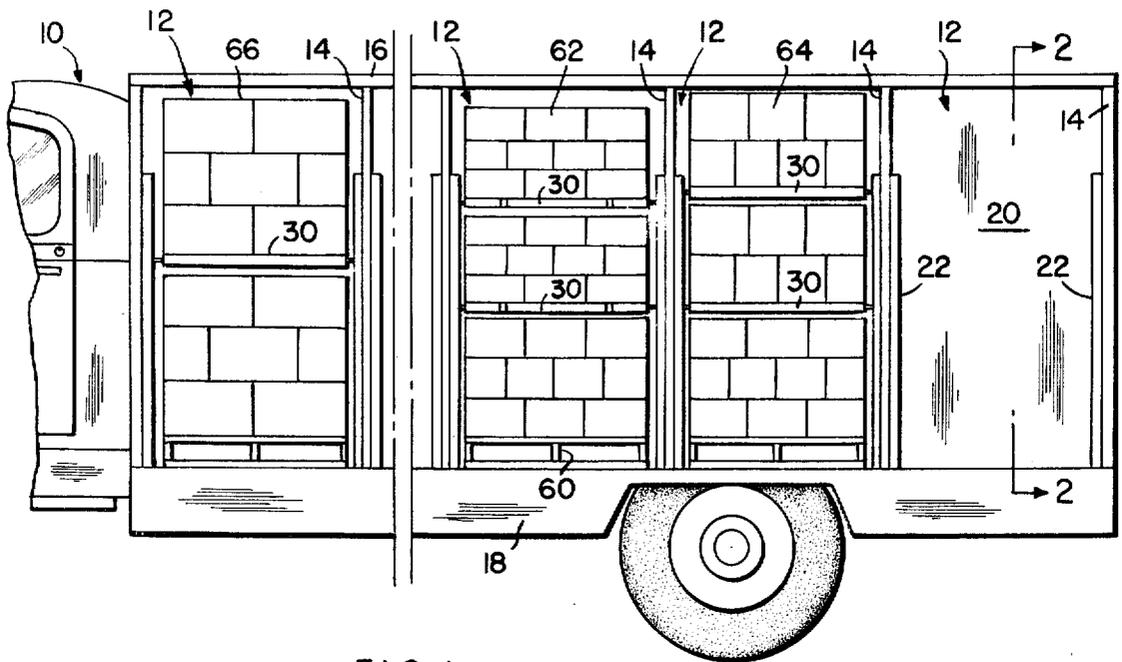


FIG. 1.

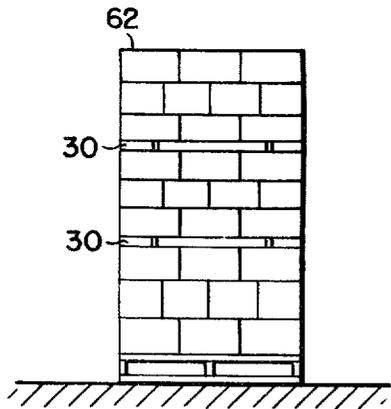


FIG. 3.

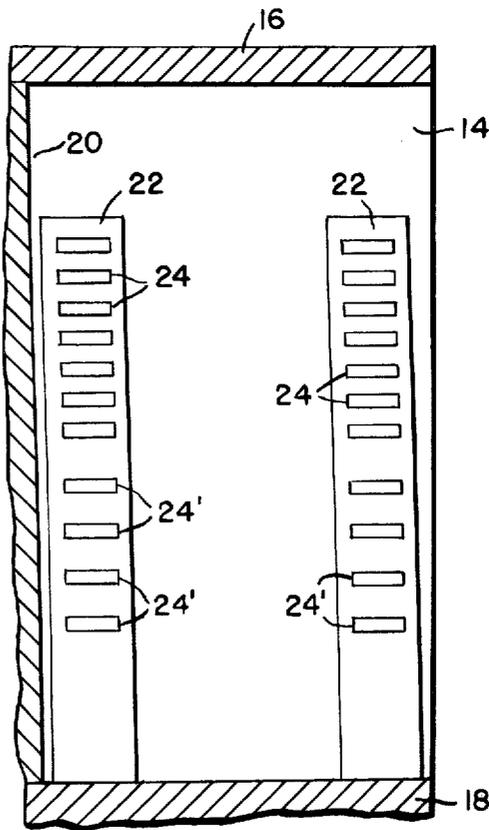


FIG. 2.

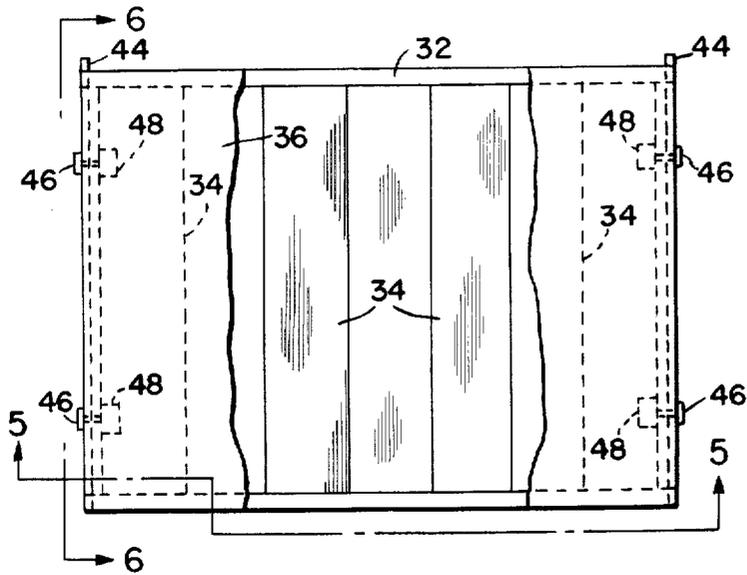


FIG. 4.

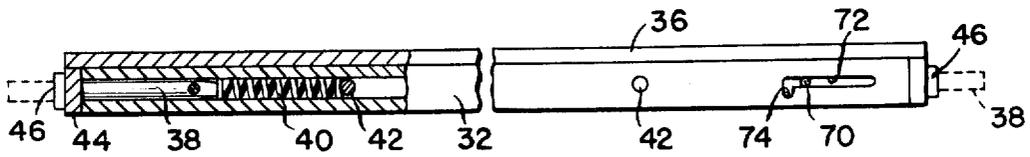


FIG. 5.

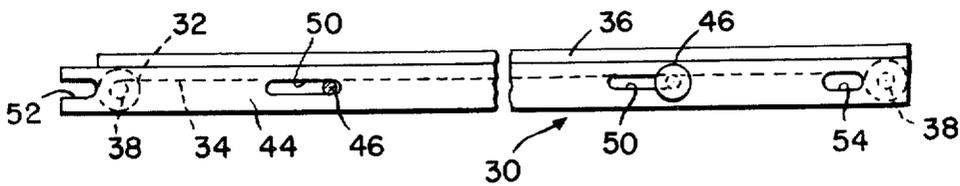


FIG. 6.

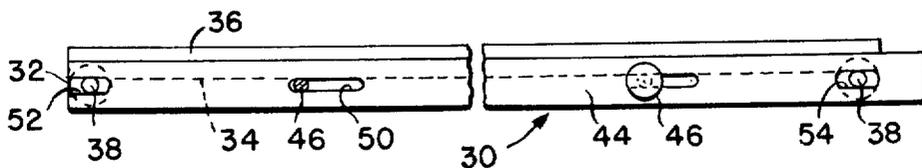


FIG. 7.

SUPPORT MEANS FOR STACKS OF ARTICLES

BACKGROUND OF THE INVENTION

This invention relates to support means for stacks of articles to be transported in vehicles such as delivery trucks provided with a plurality of bins each of which is adapted to receive a stack of articles, such as cases of beverages in cans or bottles.

The transportation of cases of beverage containers, such as soft drinks, beer or the like from a distribution point to the retail outlet has always been an expensive and time consuming procedure involving a large amount of manual labor. A beverage truck of the indicated type has six or more bins, each of which has the capacity of a pallet load of cases of beverage containers. A typical route involves about 25 deliveries of about 500 or more cases of beverage containers of a large number of different kinds. The present day procedure requires much double handling, searching for the desired product, and shifting of the cases in order to make the delivery.

The delivery trucks in most common use today are provided with bins which hold a pallet loaded with about sixty-six cases of beverage containers. The bins of the truck are equipped with laps or shelves for the purpose of supporting the cases in two portions. This design is inefficient since the laps make it difficult to load the trucks. Also, since the height of the cases is not standard, the lap often reduces the bin capacity by at least one layer of cases. Moreover, the laps require extra work when making up a bin load and often may become misaligned so as to be rendered useless.

SUMMARY OF THE INVENTION

It is the general object of the invention to provide an improved support means for stacks of articles to be transported in vehicles provided with bins. The support means of the invention permits the formation of a full pallet load of beverage containers and is adapted to support the load in a split condition within the bin. The arrangement makes it easier for the driver to deliver the cases of beverage containers since the product is more accessible requiring less time to locate the desired article and to remove it from the stack for delivery to the customer. Moreover, the support means in accordance with the invention permits the formation of a larger stack than those which can be received in a comparable bin of the prior art. Moreover, the support means in accordance with the invention permits the formation of the stack on a conventional pallet which can be loaded into the bin in a conventional manner by the use of a forklift-type of truck.

Briefly stated, the support means in accordance with the invention comprises a shelf means adapted to be placed between layers of articles in a stack to divide the stack into at least an upper and a lower portion and means for supporting the shelf means in a plurality of vertical positions within the bin of the delivery truck to achieve a split stack. The shelf means is removably engageable with the shelf supporting members for placement between layers of articles of a stack during the formation of the stack, such as on a pallet for use in transporting the stack into the bin. The split stacks within the bin make it easier for the truck delivery man to have access to different brands of goods.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an elevational view of a delivery truck provided with the stack support means in accordance with the invention;

FIG. 2 is a section taken on line 2—2 in FIG. 1;

FIG. 3 is a front view of a pallet load stack;

FIG. 4 is a top plan view, partly in section, of a shelf means employed in the stack means in accordance with the invention;

FIG. 5 is a front view of the shelf means taken on line 5—5 of FIG. 4;

FIG. 6 is a side view of the shelf means taken on line 6—6 of FIG. 4; and

FIG. 7 is a view similar to FIG. 6 with the parts shown in an alternative position.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1, there is shown a beverage delivery truck 10 provided with a plurality of stack receiving bins 12 extending along each side of the truck. The bins 12 are formed between a plurality of divider panels 14 which extend vertically between the roof 16 and the floor 18 of the truck 10. Each bin is closed at its inner end by a back wall 20 and is open at its outer end. As is conventional, the floor 18 and the back wall 20 are inclined rearwardly as is shown in FIG. 2. A similar arrangement of bins is provided on the other side of the delivery truck 10 as is conventional. The bins are large enough to receive a pallet size load of stacked cases of beverage containers such as the stack shown in FIG. 3.

Each of the bins 12 is provided with four shelf supporting brackets 22 best shown in FIG. 2. Two brackets 22 are mounted on each panel 14, one being located adjacent the open end of the bin 12 and the other being located adjacent the back wall 20. The brackets 22 on each panel 14 are arranged in opposed relation with respect to the brackets 22 on an opposite panel 14. The brackets 22 extend upwardly from the floor 18 parallel to the inclined back wall 20 and are provided with two groups of vertically spaced openings 24 and 24' adapted to receive engaging pins on the shelf means to be described hereafter. Preferably, the brackets 22 are made of a plate aluminum provided with slots for receiving the shelf pins. Typically, the slots 24 are spaced about one inch apart in a vertical direction, the spacing between slots 24' being larger, and the brackets 22 are about 5 feet in height and 8 inches in width.

There is provided shelf means adapted to be placed between layers of the cases of beverage containers in a stack to divide the stack into upper and lower portions. To this end, there is provided a generally rectangular shelf 30 comprised of a pair of heavy gauge aluminum pipes 32 joined together by four cross members 34, preferably made of aluminum channels. The cross members are spaced evenly along the length of each pipe 32 as is shown in FIG. 5. A top plate 36, preferably of a light gauge aluminum, extends across the top of the shelf 30 as is shown in FIG. 5.

The shelf 30 is provided with means for removably engaging the shelf supporting brackets 22. Such means comprises pins 38 slidably mounted in each end of the pipes 32, the arrangement of the pins being shown in detail in FIG. 5. Each pin 38 is biased outwardly by a spring 40 which is mounted in compression between the inner end of the pin 38 and a stop member 42

extending transversely across the interior of the pipe 32.

Means are provided for retaining the pins 38 in a retracted position within the pipes 32 and for permitting the pin 38 to move to an extended position projecting from the end of the pipe 32. The extended position of pins 38 is shown in dashed lines in FIG. 5. The retaining means comprises a slide bar 44 on each side of shelf 30 mounted on a pair of spaced guide members 46 which are secured to an adjacent cross member 34 by brackets 48. The guide members 46 extend through and cooperate with longitudinally spaced slots 50 in the slide bars 44 to guide bars 44 for movement across the ends of the pipes 32.

Each slide bar 44 is movable between the positions shown in FIGS. 7 and 8. In FIG. 7, the slide bar 44 is shown in the retaining position holding the pins 38 retracted within the pipes 32. In FIG. 8, the slide bar 44 is shown in the open position wherein the pins 38 are released so that they can move outwardly to an extended position in which they project outwardly from the ends of the pipes 32 for engagement within the openings 24 of brackets 22 as will be described hereafter.

In the retaining position, the slide bars close the ends of the pipe 32 and thereby hold the pins 38 within the pipes 32. When the slide bars 44 are moved from the retaining position to the open position as shown in FIG. 8, a cutout portion 52 in each slide bar 44 adjacent the rear end of the shelf 30 moves into alignment with the pins 38 in the rear pipe 32 and provides an opening through which these pins move to their extended position. Also, a cutout portion 54 in each slide bar 44 adjacent the front end of the shelf 30 moves into alignment with the pins 38 in the front pipe 32 and provides an opening through which these pins may move to their extended position.

The width of the shelf 30 is such that it fits between the opposed brackets 22 in the bin 12 with the side edges of the shelf 30 being close to the brackets 22 so that when the pins 38 are extended, they extend into the openings 24 or 24' of the brackets 22. The depth of the shelf 30 is such that it fits within the bin 12.

Means are provided for manually retracting the pins 38 from their extended position to a position within the pipe 32 permitting the return of the slide bars 46 to their pin retaining position. Such means is useful in withdrawing the pins 38 from engagement within the openings 24 or 24' of the brackets 22. To this end, each pin 38 comprises a small pin 70 which projects radially outwardly therefrom through a longitudinally extending slot 72 in the pipe 32 as is best shown in FIG. 5. The projecting end of the pin 70 is adapted to be grasped by hand for withdrawing the pin 70 from its extended position to a position within the pipe 32. The slot 72 is provided with a circumferentially extending portion 74 in which the pin 70 may be positioned temporarily to hold the pin 38 in its retracted position against the bias of the spring 40 urging the pin 38 toward an extended position.

In using the stack support means in accordance with the invention, a pallet 60 is loaded with layers of cases of beverage containers to a height less than the height of the bins 12, the horizontal extent of the stacked layers being within the confines of a shelf 30. As the stack is being built up, shelves 30 are placed between layers at appropriate locations such as is shown in FIG. 3 wherein the stack 62 is loaded onto a pallet 60 utiliz-

ing two shelves 30 which divide the stack into three portions of three layers each. When the shelves 34 are incorporated into a stack on a pallet, the slide bars 44 are maintained in their retaining position as shown in FIG. 7 to hold the pins 38 in a retracted condition.

The stack 62 is then picked up by a conventional forklift which engages the pallet 60. The forklift transports the stack 62 to the delivery truck and inserts it into an empty bin 12. In FIG. 1, the stack 62 is shown inserted in the bin 12 which is the third from the rear of the truck 10.

In loading the pallet 60 and the stack 62 into the bin 12, the pallet load is moved horizontally into the bin 12 with the bottom of the pallet 60 spaced above the floor 18. The pallet load is then moved downwardly until the upper shelf 30 is at a position in which its pins 38 are aligned with openings 24 in the brackets 22 whereupon the slide bars 44 are moved from the retaining position to the open position to release the pins 38 which move outwardly into the openings 24 for engagement with the brackets 22. Before placement of the shelf 30 on the stack, the pins 38 have been positioned as shown in FIG. 5 with the small pins in the longitudinally extending slot portion 72. The pallet load is then moved downwardly until the lower shelf 30 is in a position in which the pins 38 thereof are aligned with openings 24' in the brackets 22 whereupon the slide bars 44 of this shelf are moved to the open position to release the pins 38 thereof for movement into the slots 24. The pallet 60 is then lowered onto the floor of the bin 12. By this method of loading, the stack is split into three portions, the upper portion being supported by the upper shelf 30, the middle portion being supported by the lower shelf 30 and the bottom portion being supported on the pallet 60 on the floor 18 of the bin.

The operator of the forklift can achieve a loading of the pallet into a bin 12 automatically without leaving his operating position on the forklift. This is achieved by inserting the pallet load into the bin 12 a sufficient distance to cause the extended ends at the rear of the slide bars 46 to contact the back wall 20 of the bin 12 so as to be forced forwardly to a pin releasing position. This automatically releases the pins 38 which are inserted into the slots 24 or 24' when the shelves 30 become aligned therewith. When two shelves 30 are in a stack, the operator must maneuver the forklift to achieve the proper alignment of the shelves 30 so that the upper shelf is engaged prior to the lower shelf. The spacing of the lower slots 24' from the upper group of slots 24 assists the operator in achieving this desired sequence of operation.

The advantage of the stack support means in accordance with the invention which is adapted to support the load in a split condition within the bin is that it is easier for the truck deliverymen to have access to the cases and requires less time to locate the desired case and to remove it from the stack for delivery to the customer. For example, if the deliveryman has an order for three different types of product which are located in the three different portions of the stack 62, he can get them out of the split pallet load far easier than he could out of a unitary pallet load. Also, if one of the desired cases is in the lowest layer of the bottom portion of the stack 62, it is far easier to remove only the bottom portion of cases to gain access to the desired case than to remove the entire load of cases which would be necessary with a unitary stack in order to obtain access to this case.

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In FIG. 1, the rear bin 12 is shown in an empty condition prior to being loaded with a stack of cases. In the second bin 12 from the rear of the truck 10, there is shown a stack 64 of cases split into three portions by the use of two shelves 30, the upper stack portion comprising two layers of cases, the middle portion comprising two layers of cases and the bottom portion comprising three layers of cases. In the front bin 12 there is shown a stack 66 split into two portions by the use of one shelf 30. The versatility of the stack means in accordance with the invention in accommodating various different stack arrangements is thus apparent.

Another advantage of the use of the split pallet arrangement in accordance with the invention is that many different size products may be contained on a single pallet load whereas in the prior art there is contained only the same size product on a single pallet load. Also, the use of the split pallet permits the loading of the pallet with less time and effort since the loader can insert a shelf 30 at his discretion, such as when there is a size change in the product. Presently, the loader spends considerable time on sorting the flavors in different patterns being particularly careful when using a lap on the bin. Even with considerable effort he still is likely to have a problem in that many cases are buried on the pallet load. Furthermore, the split pallet in accordance with the invention provides advantages in handling the return of empty bottles since it provides an excellent means for sorting the return cases on the job.

It is to be understood that the invention is not to be limited to the scope of the specific form thereof herein shown and described and that various embodiments thereof may be employed within the scope of the claims set forth hereinafter. For example, the shelf supporting brackets could be attached to the shelves when the pallet is being loaded with the cases, in which case the entire load would be transported into the bin in a split condition.

I claim:

1. Support means for stacks of articles to be transported in vehicles comprising means providing a plurality of bins on the transporting vehicle for receiving a stack of articles, each bin including a pair of vertically extending spaced side walls, a back wall, and a front opening through which a stack of articles is received into the bin, shelf means adapted to be placed between layers of articles in a stack to divide the stack into at

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least an upper and a lower portion and means for supporting a shelf means in a plurality of vertical positions within a bin including bracket means fixedly positioned to extend vertically along the side walls of a bin and having vertically spaced portions adapted to be engaged by said shelf means at various vertical locations for positioning a stack of articles within a bin in a split condition with the upper portion of the stack supported on a shelf means spaced above the lower portion of the stack, said shelf means being removably engageable with said shelf supporting members for placement between layers of articles of a stack during the formation of the stack, said shelf means includes bracket engaging members mounted for horizontal movement between a retracted position out of engagement with said bracket means and an extended position in engagement with said bracket means for engaging said bracket means at various of said vertically spaced portions, said bracket means includes a plurality of vertically spaced openings, said openings being generally equally spaced a short distance apart throughout a vertical extent providing numerous portions at different elevations for engagement by said bracket engaging members, said bracket engaging members on said shelf means being adapted for horizontal movement into said openings, means for biasing said bracket engaging members toward said extended position thereof, and means for retaining said bracket engaging members in said retracted position thereof and movable to a position releasing the same for movement to the extended position thereof by said biasing means.

2. Stack support means according to claim 1 wherein said bracket means includes a pair of vertically extending brackets on each side wall of the bin.

3. Stack support means according to claim 2 wherein one of said bracket engaging members is arranged to be associated with each bracket.

4. Stack support means according to claim 3 wherein said retaining means comprises a bar slidably mounted on opposite sides of said shelf means for movement between bracket engaging member retaining and releasing positions.

5. Stack means according to claim 4 wherein each of said bars projects rearwardly from said shelf in said bracket engaging member retaining position and is movable forwardly to said bracket engaging member releasing position.

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