Dec. 8, 1959 C. B. LANG 2,916,293

COMBINED TRANSPORTING AND DISPLAY APPARATUS

Filed May 14, 1958 2 Sheets-Sheet 1

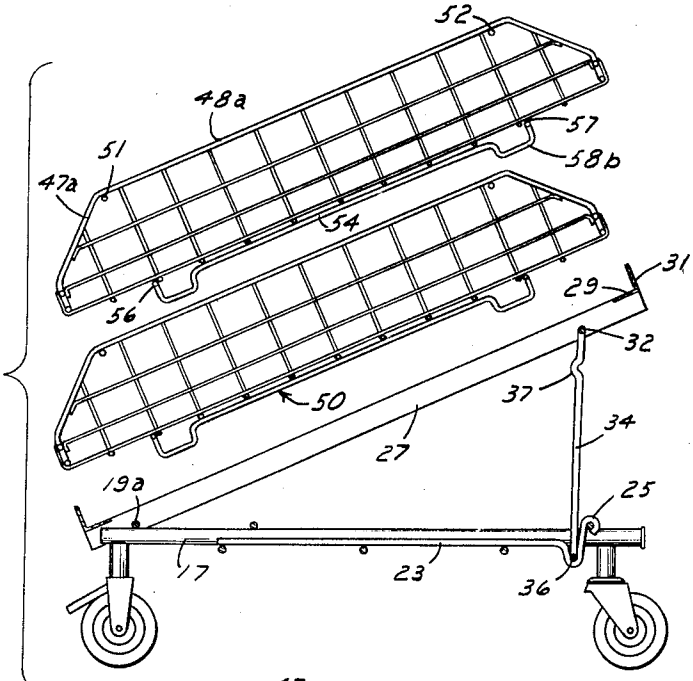

fig. 5

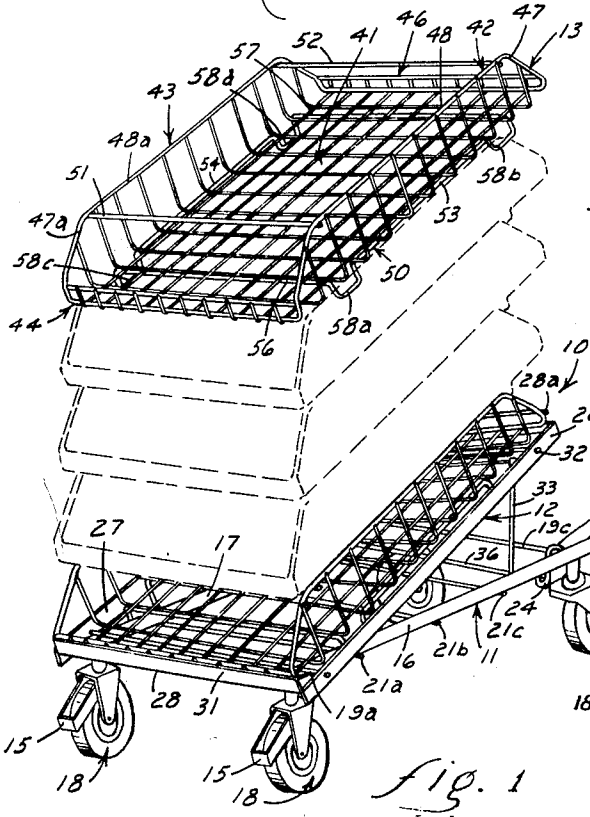

fig. 1

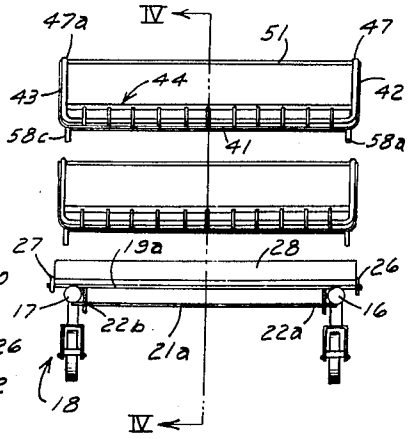

fig. 3

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COMBINED TRANSPORTING AND DISPLAY APPARATUS

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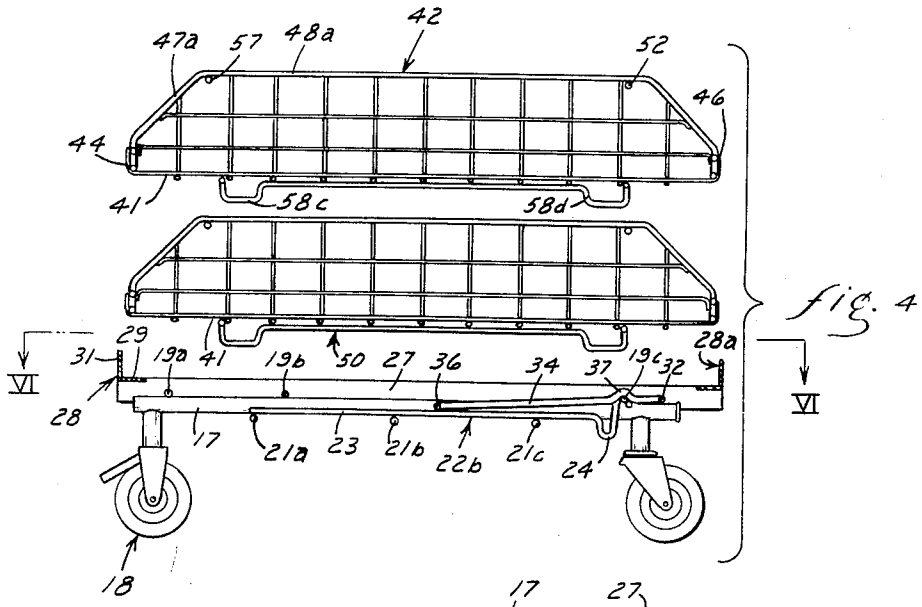


fig. 4

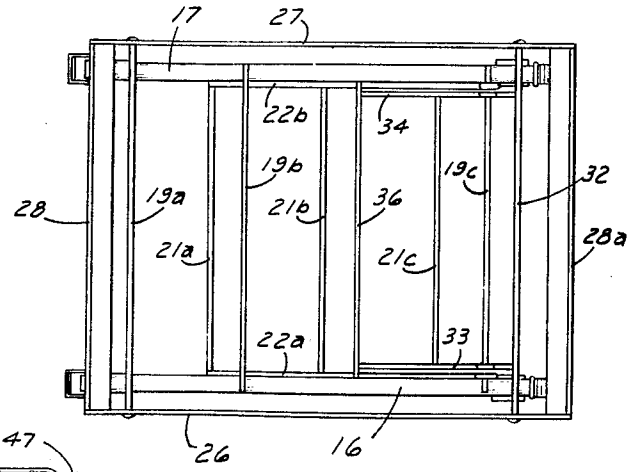
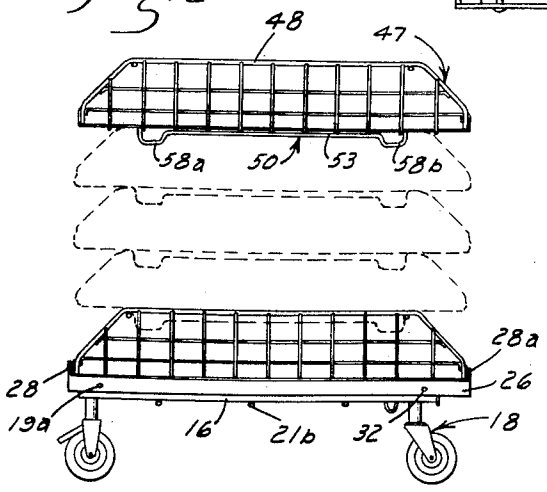


fig. 6

fig. 2



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COMBINED TRANSPORTING AND DISPLAY APPARATUS

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Application May 14, 1958, Serial No. 735,301

5 Claims. (Cl. 280—79.3)

This invention relates to a transporting and display apparatus and, more particularly, relates to an apparatus including a portable tray-supporting structure in which the trays can be inclined to display goods carried thereon.

In certain types of merchandising operation, particularly in the supermarket field, it is desired to move commodities or food articles, such as baked goods, directly from the machine by which they are packaged to the point of sale thereof without manually handling same so that the purchaser thereof is the first person to touch the article from the time it leaves the packaging machine. It has been previously suggested to place the articles on trays as they are discharged from the packaging machine, stack the trays on a portable stand, move the stand to the store and position same at the desired location therein so that purchasers may remove the articles from the trays. The equipment previously used for performing this type of merchandising operation has not been particularly well suited for displaying the articles in the most effective manner. Further, in some instances the equipment utilized a stand having trays which could not be readily removed from the stand and, thus, the customer was required to reach a long distance to grasp an article once the first few sales of the articles have been made. Since the average customer in a supermarket takes only a few seconds on the average to decide upon and select the particular brand of any given item he will purchase, it is apparent that brands of articles must be prominently displayed, readily visible and convenient to reach or else the sales thereof will suffer. Thus, it is clear that an improved apparatus for performing the article transporting and display procedure discussed above is needed.

Accordingly, it is an object of this invention to provide an improved transporting and display apparatus particularly adapted for transporting and displaying food articles, such as bread, in a supermarket.

It is a further object of the invention to provide an improved transporting and display apparatus, as aforesaid, having a portable carriage with a stack of trays removably supported thereon.

It is a further object of this invention to provide an improved transporting and display apparatus, as aforesaid, in which the trays can be inclined so that the articles carried thereon will be readily visible to a purchaser in the supermarket.

It is a further object of this invention to provide an improved transporting and display apparatus, as aforesaid, in which the individual trays of the stack can be removed when empty in order to make the articles carried on the adjacent tray readily visible and convenient to reach.

It is a further object of this invention to provide an improved transporting and display apparatus, as aforesaid, in which the trays can be arranged in a variety of different positions with respect to each other in order to create an attractive and attention-getting display.

It is a further object of this invention to provide an improved transporting and display apparatus, as aforesaid, which is readily portable, economical to manufacture and of durable construction.

Other objects and advantages of this invention will become apparent to those acquainted with equipment of this type upon reading the following description and inspecting the accompanying drawings.

In the drawings:

Figure 1 is an oblique, partially schematic, view of the transporting and display apparatus, the trays thereof being shown in the offset, inclined position.

Figure 2 is a side, partially schematic, view of the transporting and display apparatus, the trays thereof being in their horizontal position.

Figure 3 is an exploded, front view of the transporting and display apparatus with the trays thereof being in a horizontal position.

Figure 4 is a sectional view taken along the line IV—IV of Figure 3.

Figure 5 is an exploded, side view of the transporting and display apparatus with the trays thereof being shown in their offset, inclined position.

Figure 6 is a top view of the carriage and tray support frame taken along the line VI—VI of Figure 4.

General description

In general, the invention provides a movable article transporting and display apparatus including a carriage or dolly supported on ground-engaging wheels. The carriage has a tray support frame pivotally connected thereto at one end thereof. A stack of trays is positioned upon the tray support frame, said trays having means thereon for interlocking same in order to maintain the trays in stacked position with respect to each other and with respect to the tray support frame. Means are provided for tilting said frame with respect to the carriage in order to incline the trays mounted thereon with respect to the horizontal. Thus, the trays may be inclined with respect to the horizontal and the articles carried thereon will be readily visible and available for selection by the customer.

Detailed description

The movable transporting and display apparatus **10** includes a portable carriage or dolly **11** having a frame **12** pivotally connected thereto adjacent one end thereof. A stack of trays **13** is removably positionable upon the frame and is movable therewith into an inclined position.

The carriage or dolly **11** is substantially rectangular in shape and includes a pair of side members **16** and **17**. Casters **18** are secured to the side members **16** and **17** adjacent the respective ends thereof and support the carriage for movement in the usual manner. Brake devices **15** are secured to the forward pair of casters **18** and are releasably engageable therewith to lock the carriage in non-movable position. The carriage also includes three upper cross rods **19***a*, **19***b* and **19***c* which extend between the side members and which are secured to the upper sides thereof in any suitable fashion, such as by welding. The carriage also includes three lower cross rods **21***a*, **21***b* and **21***c* which extend between the side members **16** and **17** and are secured to the lower sides thereof. A pair of guide rods **22***a*, **22***b* are positioned, respectively, adjacent the opposing, inner surfaces of the side members **16** and **17**. The guide rods **22***a* and **22***b* each include a horizontal portion **23** which is positioned adjacent the juncture of the lower cross rods **21***a*, **21***b*, **21***c* with the respective side members, said horizontal portion being secured to said cross rods and said side member in any suitable manner, such as by welding. A notch **24** is formed in each of the guide rods

22*a* and 22*b* adjacent the rearward end thereof. The rearward end portion 25 of each of the guide rods 22*a* and 22*b* extends upwardly and is wrapped around the upper cross rod 19*c*.

The frame 12 is substantially rectangular and includes a pair of substantially parallel side plates 26 and 27, said side plates being spaced apart a distance greater than the spacing of the members 16 and 17. A pair of end members 28, 28*a* are secured to and extend between the side plates 26 and 27 at the respective ends thereof. The end members 28, 28*a*, in this particular embodiment, are formed of angle irons and have a horizontal flange 29 and a vertical flange 31. The side plates 26 and 27 each have an opening therethrough adjacent the forward end thereof through which the upper cross rod 19*a* extends. The upper cross rod 19*a* forms the pivot pin for pivotally supporting the frame 12 on the carriage 11 adjacent the forward end thereof. If necessary, the side plates may be retained on the cross rod 19*a* by any suitable means (not shown).

A cross rod 32 extends between the side plates 26 and 27 of the frame 12 adjacent the rearward end thereof and is pivotally mounted therewithin in the same manner as is the cross rod 19*a*. A pair of parallel, spaced legs 33 and 34 are secured, respectively, at one end thereof to the cross rod 32 adjacent the respective ends thereof and said legs extend transverse to said cross rod. A further cross rod 36 is secured to the other ends of legs 33 and 34 and is parallel with rod 32. The cross rod 36 has end portions which ride, respectively, on the horizontal portions 23 of guide rods 22*a* and 22*b* and which are receivable within the notches 24 on said guide rods. The legs 33 and 34 each have a notch 37 therein within which the rod 19*c* may be received when the legs 33 and 34 are in substantially horizontal position as shown in Figure 4.

The trays 13 are of substantially identical construction and each include a bottom wall 41, a pair of side walls 42 and 43 extending upwardly from the respective sides of the bottom wall and a pair of relatively short end walls 44 and 46 extending upwardly from the respective ends of the bottom wall. The upper edges 47, 47*a* of the side walls 42, 43 have upwardly converging end portions and central portions 48, 48*a* which are parallel to the base wall 41. The central portions 48, 48*a* are substantially as long as the distance between the side walls 42 and 43. A pair of cross rods 51, 52 extend between the side walls and are secured to the upper edges 47, 47*a* thereof, adjacent the respective ends of the central portions 48, 48*a*. Thus, the cross rods 51, 52 and the central portions 48, 48*a* of the upper edges of the side wall substantially define the edges of a square framework, sometimes hereinafter referred to as the upper square. Rod means 50 are secured to the lower surface of the bottom wall 41 to define a square framework, sometimes hereinafter referred to as the lower square, having side edges 53, 54 and end edges 56, 57. The dimensions of the lower square are slightly smaller than the dimensions of the upper square. The side edges 53 and 54 of the lower square have reversely bent portions adjacent the ends thereof defining depending legs 58*a*, 58*b*, 58*c* and 58*d* which are substantially parallel with the side walls 42 and 43 and offset inwardly a slight distance therefrom.

Preferably, the trays 13 are formed of criss-crossing wire rods as disclosed, for maximum visibility of the articles to be carried therewithin. However, it will be recognized that it is within the scope of the invention to form the trays of other constructions including solid plates, if desired.

Since the lower square on the bottom wall of the tray is slightly smaller than the upper square on the upper edge of the tray, when the trays are stacked upon each other the depending legs 58*a*, 58*b*, 58*c* and 58*d* will be received within the upper square of the adjacent lower tray and will lie closely adjacent the corners thereof.

Thus, the trays may be stacked upon each other and no substantial movement of one tray with respect to the other will be possible. Moreover, since the lower square on the tray is slightly smaller than the upper square thereof, the trays may be stacked upon each other with alternate trays being stacked crosswise of the others in which case the depending legs 58 of the crosswise extending trays instead of lying substantially parallel with the side walls 42 and 43 of the tray will lie parallel with the cross rods 51 and 52. Further, the location of the rods 51 and 52 as shown permits the trays to be positioned in offset relation wherein the lower framework on the higher tray is offset rearwardly of the upper framework on the lower tray. In this position, the legs 58*b* and 58*d* are positioned rearwardly of and bear against the cross rod 52 as shown in Figures 1 and 5. The depth of the legs 58 with respect to the vertical extent of legs 33 and 34 and the position thereof with respect to the ends of the trays and the location of rods 51 and 52 are such that the trays stacked on the inclined frame 12 in offset relation have their forward and rearward edges lying within common substantially vertical planes and are firmly maintained in such position.

The distance between the edges 53 and 54 of the lower square is greater than the distance between the side members 16 and 17 of the carriage but is less than the distance between the plates 26 and 27 of the frame 12. Thus, the legs 58 on the lowermost tray of the stack will fit between the corresponding sides of the carriage and the frame when the frame and the trays supported thereon are in a horizontal position. The length of the trays 13 is slightly less than the distance between the flanges 31 on the end members 28 and 28*a* of the frame 12. Thus, the bottom wall 41 of the lowermost tray will rest on the horizontal flanges 29 of the end members 28 and 28*a*.

Operation

The carriage 11 and the frame 12, with the frame being in its downward, horizontal position as shown in Figure 4, may be positioned adjacent the discharge end of a packaging machine and a series of trays may be provided adjacent thereto. As the packaged articles, such as loaves of bread, are discharged from the packaging machine, same may be placed in a tray and when the tray is filled it may then be placed on the frame 12 with the bottom wall resting on the flanges 29. Succeeding trays may be filled in similar manner and stacked upon the adjacent lower tray by fitting the lower square thereon within the upper square of the adjacent lower tray. Thus, the trays may be stacked upon each other until the desired number of trays have been placed on the carriage.

With the frame and the stack of trays in horizontal position, the carriage may be moved onto a delivery truck. As the delivery truck makes its rounds of customers, such as supermarkets, one or more of the carriages 11 may be removed therefrom at each stop and may be manually wheeled into the location where the articles, as loaves of bread, are to be displayed and sold. After the carriage reaches the point of sale the frame 12 may then be moved into the inclined position shown in Figure 1 by manually grasping the rearward end member 28*a* and moving same upwardly. This will cause the ends of the cross rod 36 to move along the horizontal portions 23 of the guide rods 22*a*, 22*b* until said end portions are received within the notches 24 whereupon the frame will be firmly locked in the inclined position as shown in Figure 1. During the movement of the cross rod 36 the legs 33 and 34 will move therewith into a vertical position and the cross rod 32 will pivot with respect to the frame 12. Either immediately before or immediately after the frame 12 is moved to its inclined position, the trays are offset with respect to each other by raising each tray with respect to the adjacent lower tray and moving same rearwardly until the legs 58*b* and 58*d* thereof are positioned behind the crossbar 52. When the frame 12 is inclined the legs 58*b*

and 58*d* will rest against the cross bar 52 on the adjacent lower tray and, thus, the trays will be inclined and offset so that the contents thereof will be readily available for inspection and selection by a customer. It will be observed that the inclination of the trays will cause the articles therewithin to move downwardly toward the forward edge of the tray as articles are removed from the forward portion thereof by customers. Thus, it will not be necessary to manually move the articles into the most readily accessible position.

As soon as one of the trays is empty, such may be removed from the stack and piled adjacent the carriage to thereby expose the articles in the next lower tray for selection and purchase. Thus, the carriage may be left in the desired location in the store until such time as all the contents thereof have been removed or until the delivery man returns to take the unpurchased articles away. When the delivery man returns, he may place the carriage 12 in its lower, horizontal position by manually raising the rearward end of the frame until the rod 36 clears the notches 24, swinging the legs 33 and 34 forwardly onto the horizontal portion 23 of the guide rods 22 and 22*a* and letting the frame downwardly until it rests against the carriage 11. The trays may then be restacked on the frame and the carriage may then be placed onto the delivery truck and returned for subsequent loading.

While a particular preferred embodiment of the invention has been disclosed herein, it will be understood that the invention contemplates such modifications or changes therein as lie within the scope of the appended claims.

What is claimed is:

1. An article-supporting tray structure mountable upon a tiltable frame, comprising a substantially rectangular bottom wall; a pair of relatively short end walls extending upwardly, respectively, from the respective end edges of said bottom wall; a pair of side walls extending upwardly, respectively, from the respective side edges of said bottom wall, the upper edges of said side walls each having upwardly converging end portions and a central portion extending substantially parallel with said bottom wall, said central portions of said upper edges being substantially equal in length to the distance between said side walls; a pair of rods extending between and rigidly secured to the upper edges of said sidewalls adjacent the respective ends of the central portions thereof and defining therewith a first substantially square framework, said rods being spaced from the respective end walls of said tray; rod means secured to the lower side of said bottom wall and defining a second substantially square framework having four spaced legs extending downwardly from the corners thereof, said second framework being slightly smaller than said first framework and lying directly therebelow, said legs being reversely bent portions of said rod means and the legs on one of said trays being snugly, slidably and simultaneously receivable within the corners of the first framework of another tray, whereby said one tray is positively held against lateral movement with respect to said other tray.

2. A movable article-supporting apparatus, comprising: a substantially rectangular carriage supported on ground-engaging wheels; a rectangular tray support frame and means for pivotally mounting said frame on said carriage adjacent the forward end thereof; elevatable leg means connected to said frame and movable to an upright extended position for elevating the rearward end of said frame with respect to said carriage so that said frame is inclined with respect to said carriage; means for releasably locking said frame in the inclined position thereof; a stack of trays removably mounted on said frame; upstanding means on said frame adjacent the leading edge thereof engaging the lowermost tray for preventing said trays from sliding off said frame; said trays each including a bottom wall, a pair of side walls extending upwardly, respectively, from the respective side edges of said bottom wall and a pair of end walls extending upwardly, respectively, from the respective end edges of said bottom wall; stop means on said side walls and extending transversely thereof; limit means depending from the bottom wall of each tray and engageable with the stop means on the tray therebeneath for preventing forward or sideward movement of said trays with respect to each other, said limit means being of such length with respect to said leg means and being so positioned with respect to said stop means that the trays may be positioned in a vertically extending stack on said frame when said frame is inclined with respect ot the horizontal.

3. A movable article supporting apparatus, comprising: a rectangular carriage including a pair of side members each having a pair of ground engaging wheels thereon at the respective ends thereof, said carriage having a series of spaced cross members extending between said side members; a rectangular tray support frame, said frame including a pair of side members and means pivotally supporting said side members adjacent the forward ends thereof on said carriage, said frame including a pair of end members extending between said side members adjacent the respective ends thereof, said end members each having a flange thereon extending transversely toward the other end member and the forward end member having an upstanding flange thereon; a stack of trays removably mounted on said frame, the lowermost tray of said stack resting upon said transversely extending flanges and abutting against said upstanding flange for preventing forward movement of said trays with respect thereto; said trays being substantially identical in construction and each thereof including a bottom wall with side and end walls extending upwardly therefrom, cross bars extending between the upper edges of said side walls and defining therewith a first substantially square framework; means on said bottom wall defining a second substantially square framework having downwardly extending legs at the respective corners thereof, said second framework being slightly smaller than said first framework and being located directly therebelow whereby said trays may be stacked upon each other with the second framework of a tray being placed upon the first framework of an adjacent lower tray with the legs of said second framework being received within said first framework whereby said trays are releasably held in stacked relationship; leg structures pivotally connected to said frame adjacent the rearward end thereof, said leg structures being movable between a substantially horizontal and a substantially vertical position wherein said leg structures extend downwardly from said frame; and means on said carriage for releasably locking said leg structures in said vertical position to hold said frame in an inclined position with respect to said carriage, said legs on said second framework being of such length with respect to the length of said leg structures on said frame and being so located with respect to said first framework and the end edges of said trays that said trays form a vertically extending stack with the end edges thereof lying, respectively, in common substantially vertical planes when said frame is in its inclined position.

4. An article supporting apparatus, comprising: a carriage having ground engaging wheels; a substantially flat frame pivotally connected near one edge thereof to said carriage for movement around a substantially horizontal axis between a substantially horizontal position and an inclined position; means for releasably supporting said frame upon said carriage in said inclined position; at least two substantially similar and rectangular trays removably stacked upon and movable with said frame, each tray having a bottom wall, a pair of upwardly extending side walls and a pair of upwardly extending end walls; a pair of substantially parallel elements extending between, and rigidly secured to the upper edges of, said side walls and spaced from the adjacent end walls, said elongated elements defining with the upper edges of said side walls a rectangular zone; four spaced legs secured to the bottom

wall of each tray and extending downwardly therefrom, said legs defining a rectangle similar to and smaller than said rectangular zone and located directly therebelow, the legs at one end of each tray being engageable with the elongated element at the corresponding end of another tray when said one pair of legs is either inside of said zone or outside of said zone, whereby said trays are held with their corresponding ends lying substantially within a pair of spaced parallel and substantially vertical planes when said frame is in the inclined position and when said frame is in the horizontal position.

5. The structure of claim 4 wherein said legs are substantially equal in dimension lengthwise of said trays, said dimension being substantially equal to the difference in the distance between said one elongated element and the adjacent vertical plane measured in a direction parallel with said bottom wall when in the horizontal position and in said inclined position.

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