

1

2

3,082,876

SELF-LEVELING, STORING, AND DISPENSING APPARATUS

John Joseph Cranmore, Bronx, N.Y., assignor to American Machine & Foundry Company, a corporation of New Jersey

Filed Apr. 28, 1954, Ser. No. 426,239

4 Claims. (Cl. 211-49)

This invention relates to an improved apparatus and method for storing and dispensing material in a self-leveling dispenser particularly of the type in which the material is stored in racks stacked on the carrier platform.

Whenever stacking trays or baskets are used in a self-leveling, storing and dispensing apparatus to facilitate stacking the material is carried in the dispenser it was necessary, up to the time of the present invention, to provide a floor space to stack the empty racks as each tray is emptied or removed from the loaded dispenser. One type of dispenser used in this manner is shown in U.S. Patent 2,662,802, granted to William J. Gibbs, on February 15, 1949, wherein the apparatus is used to stack glassware and chinaware.

The stacking of empty trays was usually provided for by placing a dolly or shelf next to the self-leveling dispenser upon which the empty racks were placed.

Such an arrangement obviously required floor space not only for the self-leveling dispenser but also an equal amount of floor space for the empty racks. This was, of course, objectionable not only because it required the use of valuable floor space, but also because it was quite an inconvenience to have a stack of empty racks standing next to the dispenser over which people could stumble and injure themselves. This same procedure also had to be followed in the case where self-leveling dispensers were employed in the industrial field where such racks are used to store material in the process of manufacture.

It is the purpose of the present invention to provide a solution to this need and dilemma by providing an improved self-leveling dispenser of the type employing racks for storing material which will not require extra floor space for the storage of empty racks.

Another object of this invention is to provide an improved method for handling and storing empty racks as they are removed from a self-leveling, storing and dispensing apparatus of the cantilever type.

Another object of this invention is to store empty racks in the space located between the carrier and base of a cantilever type self-leveling storing and dispensing apparatus.

Another object is to arrange a kitchen with mobile self-leveling dispensers, which can be readily incorporated as part of a counter to occupy a minimum of floor space.

Other objects and features of the invention will appear as the description of the particular physical embodiment selected to illustrate the invention progresses. In the accompanying drawings, which form a part of this specification, like characters of reference have been applied to corresponding parts throughout the several views which make up the drawings.

FIG. 1 is a perspective view of the improved, self-leveling, storing and dispensing apparatus showing it partly unloaded with the empty racks stored on the base underneath the carrier.

FIG. 2 shows my improved self-leveling dispenser arranged as part of a counter.

This invention may be used with any type of self-leveling dispenser employing racks to stack material on the carrier platform, such as are employed in industry for handling parts in the process of manufacture and as

are employed for handling glassware and chinaware in kitchens and cafeterias.

To illustrate the invention I have shown how my invention may be employed in connection with the handling of glassware and china with the understanding that my invention can be similarly employed for handling other types of articles.

With reference to FIG. 1 of the drawings this consists of a base B and an upright U secured to one end of the base B. The base B consists of two side supporting guide rails 10 and 12 which extend below the material supporting carriage for laterally confining empty trays placed upon the base. These guides may be made from angle iron so that horizontal surface is employed to support the empty trays along their sides while the upwardly extending flange prevents the empty tray from being pushed side-wise off the bottom support.

The forward end 14 of the base B is formed in substantially the same plane as the bottom supporting side rails 10 and 12 so that the stacked empty trays can be readily pulled as a unit in a horizontal direction from these side rails so as to permit the carrier platform to be immediately reloaded with racks of clean glasses and china, or other material, as the case might be.

A counterbalanced cantilever tray-supporting platform 16 may be of a construction similar to the structure shown in U.S. Patent 2,662,802, granted to Mr. William J. Gibbs on December 16, 1953, and is mounted to travel freely up and down on the upright U.

The cantilever platform 16 has a pair of supporting brackets 18 which extend through suitable slots 20 formed in the upright U. The material supporting carriage in FIG. 1 has been artificially held in a lowered position to more clearly show that the slots 20 extend to the top of the upright U. A pair of rollers 22 carried by the brackets 18 track on the outside of the upright U while a second pair of rollers is connected to the brackets 18 and track on the inside surface of the upright U in a manner similar to that disclosed in U.S. Patent 2,626,802. As stated above, the counterbalancing structure for raising and lowering the cantilever platform 16 to maintain the top loaded tray at a substantially constant level with respect to the top of the upright U may be similar to that shown in U.S. Patent 2,662,802 and illustrated as follows: Lugs 15 and 17 and rollers 21 and 22 are arranged in such a manner that rollers 21 contact and ride against the inside surface of the flange formed on the front plate 23 adjacent the sides of housing U, while rollers 22 contact and ride against the other side of the flange which is adjacent the outside surface of said front plate 23 on the sides of the housing U, thus keeping the cantilever platform 16 always at a horizontal level. Guide rollers 25 are employed for the purpose of minimizing friction and preventing scraping of the article carrier against the slots or plates of housing U in case an unevenly distributed load should cause a slight cocking of the article carrier.

One end of a pair of sprocket chains 29 is connected to the upper end of each lug 15. Each sprocket chain 29 runs over idler sprockets 31 and 33 and the other end of each sprocket chain 29 is anchored to a forked lug 35 mounted on the lower side of top plate 36 of housing U (FIGURE 1).

Two sprockets 31 are mounted on a cross shaft 37 supported in suitable bearings (not shown), attached to the inner side walls 42 of housing U. The two sprockets 33 are loosely mounted at the ends of a floating shaft 44. A plurality of calibrated springs 46 are anchored at one end to suitable lugs 48 secured to the guide rails 10 and 12 and are connected at the other end to the floating shaft 44. These springs 46 are of such design that they

3

expand and contract at a uniform rate varying directly with the degree of force exerted thereon.

It can be mentioned that the calibrated counterbalancing spring is of such design that it moves the rack supporting carriage a distance upwardly after the uppermost rack and material therein has been removed from the stack, which distance is at least equal to the height of the rack so as to allow sufficient room between the bottom of the carrier and the base to insert the empty rack therebetween.

It will be appreciated that this self-leveling dispenser travels up and down freely on the upright U so that under the action of the counterbalancing springs when loaded racks are placed on or removed from the top of the carrier 16, the entire loaded stack will be lowered or raised a corresponding distance, due to the counterbalancing action of the spring referred to in U.S. Patent 2,662,802, so that the upper layer will be maintained at a substantially constant level. As glassware, china, or other material is removed from the uppermost rack or tray, the carrier 16 is raised so that the next following layer will be elevated to the same height. As the trays or racks are emptied they are removed from the top of the stack and placed under the carrier on top of the stack or trays supported on the base.

This arrangement has the advantage that no additional floor space is required in using this type of dispenser for stacking empty trays, because as the dispenser is unloaded the carrier rises, thus making room for the next empty tray.

By the time the dispensing apparatus is completely empty the carrier 16 will have reached its uppermost limit of travel and all of the empty trays will have been stacked on top of the base beneath the carrier.

When the self-leveling dispenser has been emptied in this manner it is rolled from its dispensing location on its casters 24 to the dishwashing and loading station where the stack of empty racks can be quickly pulled from the bottom of the dispenser and a new stack of filled racks placed on the carrier 16 so that it can be immediately pushed back to the dispensing location.

The arrangement mentioned is most advantageous because it permits the same self-leveling dispenser to be used for supporting the full trays as well as the empty trays, thus dispensing with the need for a dolly for handling empty trays and the floor space required therefor.

In the embodiment of the invention shown in FIG. 2 it will be seen how floor space has been utilized to the greatest extent possible by the present invention. The counter shown in FIG. 2 consists of a table top 26 having an upright supporting framework 28. A rectangular opening 30 is formed in the table top 26 of the counter for receiving a loaded self-leveling dispenser which is rolled into position. As the dispenser is unloaded in the manner described above the empty trays are placed under the carrier on top of the base. This method of combining a self-leveling dispenser with a counter has the advantage that the space under the carrier which was formerly wasted space when the dispensing carrier was in elevated position has now been put to a useful purpose. The amount of equipment formerly required for handling racks of material has been reduced while the efficiency of the self-leveling dispenser has been materially increased by making it serve a dual purpose, namely storing the trays when loaded as well as when empty.

The invention hereinabove described may be varied in construction within the scope of the claims, for the particular device selected to illustrate the invention is but one of many possible embodiments of the same. The invention, therefore, is not to be restricted to the precise details of the structure shown and described.

What is claimed is:

1. A self-leveling, storing and dispensing apparatus for storing stacked trays of material comprising a base hav-

4

ing an unobstructed horizontal surface and of a size slightly larger than said trays, an upright on said base near the rear thereof, a cantilever platform for carrying said trays traveling freely up and down on said upright, calibrated counterbalancing means for raising and lowering said platform so as to maintain the top of the material stored thereon at a constant level, and side guide rails spaced apart the width of said trays formed on said base for laterally restricting the lowermost tray placed on said base, the front of said base being open to allow a stack of empty trays to be freely pushed horizontally in or out between said side rails.

2. A self-leveling, storing and dispensing apparatus comprising a base having a bottom support for supporting trays, spaced flanges extending along the sides of said base for laterally confining said trays inside the perimeter of said flanges, said base having one end thereof unrestricted to allow empty trays to be slid horizontally in and out on said bottom support between said flanges, an upright secured to the other end of said base, a cantilever rack support mounted to ride up and down on said upright, and calibrated counterbalancing means connected to said support to raise and lower said support a distance corresponding substantially to the thickness of a rack placed on said support so as to always maintain the uppermost loaded rack at a substantially constant level.

3. A self-leveling, storing and dispensing apparatus comprising a base, casters supporting said base for free movement about a floor, guide rails extending upwardly from two opposite sides of said base to confine empty trays between the side guide rails, bottom guide rails extending along the length of said side guide rails for supporting an empty tray positioned in between said side guide rails, said base having an unobstructed horizontal egress from one end of said bottom guide rails so as to permit a stack of empty trays to be slid along said base for removal therefrom without having to be elevated, an upright extending perpendicularly upwardly from the opposite side of said base, a cantilever tray supporting platform traveling up and down on said upright, calibrated counterbalancing means for raising and lowering said cantilever platform so as to maintain the uppermost loaded tray of material supported thereon at a constant elevation.

4. A self-leveling, storing, and dispensing apparatus having a base onto which empty racks can be slid horizontally from one end, side rails extending upwardly from opposite sides of said base adjoining the open end of said base, an upright extending upwardly from the end of said base which is opposite to the open end of said base, a cantilever material supporting platform mounted to ride freely up and down on said upright, counterbalancing means connected to said platform for raising and lowering said platform a distance correlated with the height of each rack of material each time a loaded rack of material has been added to or taken from the stack of loaded racks on said platform so as to maintain the top loaded rack of material on said platform at a constant elevation, the initial raising of said platform being of a sufficient distance to allow an empty tray to be slid horizontally on said base underneath the cantilever material supporting platform between said side rails.

References Cited in the file of this patent

UNITED STATES PATENTS

723,428	Wege	Mar. 24, 1903
869,491	Hurteau	Oct. 29, 1907
1,240,908	Weis	Sept. 25, 1917
2,082,214	Osten	June 1, 1937
2,251,874	Gibbs	Aug. 5, 1941
2,444,776	Kalning	July 6, 1948
2,507,785	Hartman	May 16, 1950
2,560,928	Bockius	July 17, 1951
2,604,996	Smith	July 29, 1952
2,662,802	Gibbs	Dec. 15, 1953