Nov. 16, 1965 B. J. GREEN ETAL 3,217,873

SHIPPING AND DISPENSING CARTON

Filed April 12, 1962

Fig. 1.

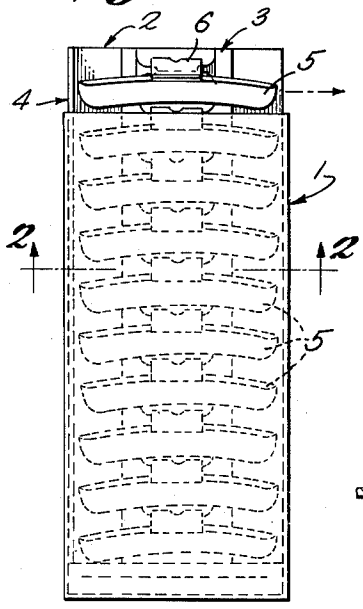



Fig. 2.

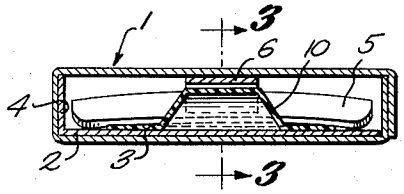



Fig. 3.

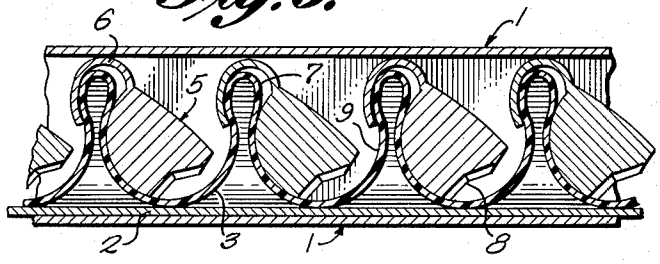



Fig. 4.

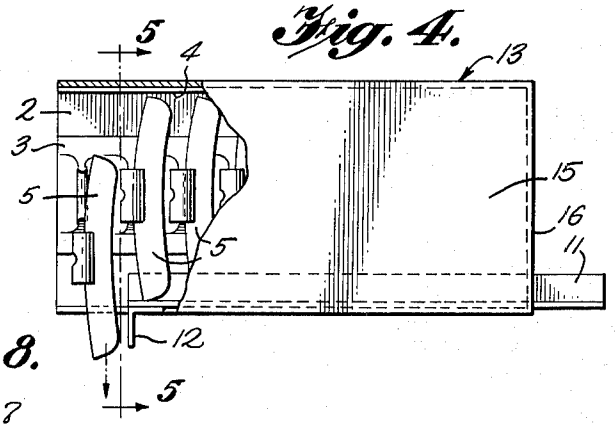



Fig. 5.

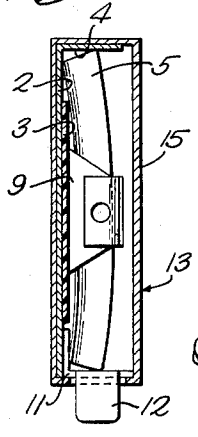



Fig. 8.

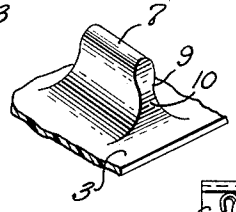



Fig. 6.

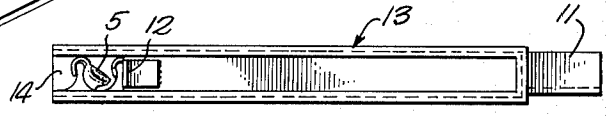
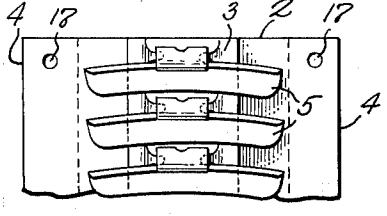



Fig. 7.

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# SHIPPING AND DISPENSING CARTON

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11 Claims. (Cl. 206—65)

This invention relates to a combination shipping and display carton and dispenser for vehicle wheel balance weights.

Among the problems faced by the prior art in attempting to provide shipping and display cartons for wheel balance weights has been that of devising a carton which will permit easy removal of individual weights, while at the same time providing adequate support for the relatively heavy weights such that the carton will not be damaged or otherwise broken during shipping, and also that the weights will not fall or be removed from their cartons except when such removal is desirable. Another problem which has confronted the prior art is the prevention of movement during shipping of the individual weights, which are usually made of lead or other similarly soft, heavy metal, and thus easily subject to damage if allowed to strike each other without packaging the weights so tightly that individual weights are not easily removable from the container. Prior attempts to solve these problems have not been found effective to properly support and maintain the weights in a protected position. It is known to the art to use the common rack type holder, usually made of cardboard; however, these supports do not hold the heavy weights when in inverted position, primarily because these racks deform or are pinched in a manner to release the weights. The use of solid racks of metal, wood or other material, while satisfactory from a strength standpoint, are far too expensive to be considered as practical.

It is thus an object of the present invention to provide container for wheel balance weights which provides adewhich will provide adequate support for the weights during shipment and storage and which also permits easy removal of individual weights from the container and also prevents accidental removal of the weights.

It is another object of this invention to provide a container for wheel balance weights which effectively prevents movement of the weights within the container during shipment, but which does not hinder easy removal of individual weights from the container.

It is still another object of the invention to provide a container for wheel balance weights which provide adequate support to prevent damage to the weights which would otherwise result from the compressive forces exerted when the containers are stacked one on top of another during storage.

It is a still further object of this invention to provide a container having a rack which, while light and simple in construction, cannot be pinched or deformed inwardly in the course of normal usage.

A further and more particular object of the present invention is to provide a wheel weight container having a rack thereon which will lockingly engage each weight to prevent its release except in a lateral direction and which will maintain this engagement even when inverted.

Other objects and advantages of this invention will be apparent from the following detailed description thereof.

In accordance with this invention a package is provided which generally comprises, other than the wheel balance weights themselves, three elements which are: a rectangular-shaped outer container having flap openings at either end; a trough-shaped inner container having upturned flanges running the length of one or both of its longer sides, and a rack-type element mounted on the inner container which functions in cooperation with the inner container, to support and restrain from movement the wheel balance weights which are slidably mounted on the rack. The rack comprises a flat strip having protruding therefrom a series of parallel ridges which run transversely to the length of the strip. These ridges preferably have a length which is substantially less than the width of the strip and are positioned at the center of the strip. Each ridge has a bulbous and hollow transverse cross-section shaped such that it is adapted to engage the curved web of sheet metal clip which extends from the conventional wheel balance weight. The engagement between ridge and web is such that lateral sliding movement is easily accomplished, but, due to the interlock between the web and the bulbous end of the ridge, other movement of the weight is prevented. It is to be noted that the ends of each ridge are closed to stiffen and strengthen the ridge, in order that the locking engagement is maintained.



The mounting of the rack on the inner container permits easy access to individual weights by simply sliding the inner container a sufficient distance out of the outer container such that a weight may be disengaged from the rack by sliding the weight laterally.

For the purpose of illustration, a typical embodiment is shown in the accompanying drawing in which:

FIGURE 1 is a plan view of the container showing a partially removed inner container;

FIGURE 2 is a transverse sectional view taken on line 2—2 of the container shown in FIGURE 1;

FIGURE 3 is a longitudinal sectional view of the container taken on line 3—3 of FIGURE 2;

FIGURE 4 is a plan view of a dispenser which comprises a modified embodiment of the container shown in FIGURE 1;

FIGURE 5 is a transverse sectional view taken on line 5—5 of the dispenser shown in FIGURE 4;

FIGURE 6 is a side view of the dispenser of FIGURE 4;

FIGURE 7 illustrates still another embodiment whereby the inner container may be used as a display and/or dispensing device, and

FIGURE 8 shows a perspective view of a portion of the rack, including the ridge which serves to support a wheel balance weight.

Referring to FIGURES 1 to 3 and 8 of the drawing, 1 indicates the outer container within which inner container 2, is slidably positioned. The inner container is in the form of a flat strip and is provided with a flange 4. Mounted upon inner container 2 is rack 3. Protruding from rack 3 are hollow ridges 9 which terminate in closed, continuous bulbous ends 7 which in transverse cross section extend on both sides of the ridges to form a locking means. The rack 3 and the ridges 9 are preferably made of a thin, hollow film of organic thermoplastic material, such as cellulose acetate, cellulose acetate butyrate, polyethylene, nylon, polyethylene terephthalate, etc., which can be shaped into the required configuration at the lowest cost. The most suitable shaping method from a cost standpoint has been found to be that of vacuum forming films of the plastic material. The axial ends of ridges 9 are closed with integral panels or ends 10 to prevent the deformation of the ridges when lockingly engaged by the wheel weight clip. Since these ridges are preferably hollow, the ends should be closed as seen most clearly in FIGURES 2 and 8. This construction greatly reduces the natural tendency of the bulbous ends 7 to become pinched or deformed inwardly, which would cause the failure of the locking engagement between the clip and the ridge, when, for example, the rack would be inverted so that the weights face downwardly.

The wheel balance weights 5 are mounted on the rack by slidably engaging curved web surface or of clip

6 with bulbous end 7. As may be seen from FIGURE 3, the weights are thus firmly supported out of contact with each other and are incapable of moving in other than the lateral direction, as shown in FIGURE 1.

The inner container 2 may have attached thereto either one flange 4 as shown in FIGURE 1, or, alternatively, another flange on the oppoiste edge of container 2 may be provided. If two flanges are incorporated on the container, at least one of these flanges should be easily separable from container 2; e.g., by perforating the edge where the bottom wall of container and flange meet. Thus, when it is desired to open container 1 and remove a weight for use in balancing a wheel, all that is required is to slide inner container 2 a sufficient distance out of outer container 1 to permit a weight 5 to be slidingly removed from a ridge 9. If an inner container with two flanges 4 is used, the inner container should first be entirely removed from outer container 1 and one of the flanges removed and discarded. Since the inner and outer container are preferably made from cardboard, heavy paper or similar material, and suitably scored, removal of the flange is easily accomplished by tearing. The inner container may then be replaced in the outer container and the unit is ready for use as a dispenser.

As can readily be understood, the use of a container having two flanges will add vertical load support to the outer container 1 when in a horizontal position.

In the embodiment of the invention shown in FIGURES 4 to 6, the inner container 2 is removed entirely from its outer container. If the inner container has been provided with two flanges 4, one of these flanges is removed in the manner previously described. Then, on the side of container 2 from which the flange has been removed, angle iron 11 is inserted beneath the weights and, in essence, replaces the removed flange as well as providing other advantages to be hereinafter described. Angle iron 11 may be made from any organic plastic material capable of being formed into the required shape, cardboard, sheet metal or any similar stiff material. Attached to angle iron 11 is tab 12 which facilitates movement of the angle iron.

After the angle iron has been inserted under the weights, the assembled unit is inserted into dispenser 13, which is provided with slot 14 in one of its sides. This slot is adapted to permit tab 12 to extend therethrough to facilitate easy grasping for sliding movement. Dispenser 13 may be made from any of the materials mentioned as suitable for angle iron 11. If desired, top side 15 of dispenser 13 may be formed of any transparent material capable of being formed into a thin sheet; e.g., glass, lucite, etc., which will render the weights in the dispenser visible.

To remove weights from the dispenser 13, rather than moving inner container 2 as described with reference to FIGURES 1 to 3, angle iron 11 is moved by means of tab 12 until access is had to the first available weight on rack 3. If the dispenser is mounted with face 15 in a vertical plane, weight 5 falls by gravity through the slot and into the hand of the operator. If face 15 lies in a horizontal plane, the weight 5 is gripped manually and removed from the dispenser by sliding it laterally.

The slot 14 in dispenser 13 must, of course, be of such dimensions that weights 5 will pass therethrough. Furthermore, dispenser 13 is provided with a slot (not shown) in wall 16 which will permit sliding movement of angle iron 11 rearwardly of the dispenser.

The embodiment of this invention shown in FIGURE 7 is designed to be hung from a wall or shelf. In this embodiment, flanges 4 are provided with holes 17 in one end thereof. Thus, when it is desired to use this embodiment, inner container 2 is removed entirely from its outer container; flanges 4 (in this embodiment two flanges are a necessity) are bent in such a manner as to bring them into a common plane with the bottom wall of container 2 and the unit is mounted by means of holes 17 upon appropriate nails or pegs. The weights 5 may then be removed simply by sliding them in either horizontal direction.

In addition to the advantages of this invention which have already been described, it has been found that a surprising decrease in damage to the weights during storage and shipment results because of the unique construction of the invention. It had previously been found that if a number of containers filled with weights were stacked one on top of another that the compressive load exerted by the stacked containers caused some of the weights to be bent or otherwise distorted. In particular, shipping caused surface damage and it was found that channel 8 in the weights tended to become damaged during storage. It is obvious that conventional cardboard cartons could not provide adequate support to protect the weights.

This invention transfers at least a part of the load exerted by storage from the weights to the plastic rack and thereby substantially reduces damage during storage. Furthermore, a certain amount of cushioning effect is supplied by the rack, as may be seen most clearly from FIGURE 3. The fact that channels 8 do not bear against another surface affords further protection for the weights.

The plastic rack of this invention has been found to be superior for purposes of packaging wheel balance weights, because it provides increased structural strength with a lower weight, and in addition is more resistant to heat, humidity, etc., than the cardboard type materials conventionally used in packaging. Also, the plastic material has greater shape retentivity than cardboard. This means that the bulbous ends 7 of the rack ridges are less likely to become pinched and thus are less likely to lose their interlocking engagement with the weights. The panels or ends 10 of the ridges, which are a departure from the conventional corrugated cardboard construction, contribute substantially to the pinch resistance of the ridges and bulbous ends. Thus, upon inverting the rack having the weight thereon, the bulbous ends will maintain the weights in position and prevent the sliding of the weights from the rack in other than a lateral direction. If desired, the panels 10 of the ridges may be slanted to permit greater length of the ridge adjacent the container 2 and, therefore, greater support for the weights along the length of the weights and yet not reduce the effectiveness of the ends 10 in mintaining the pinch resistance of the short bulbous ends 7.

As may be seen from FIGURE 2, the length of the top of the ridges is substantially less than the width of the container, being approximately the length of web of the wheel clip and at least less than 1½ inches in length. This not only reduces the amount of material required for the rack, but also permits easy removal of the weights, as well as emphasizes the stiffening capabilities of the panel or end 10, since the spacing between these panels is reduced.

This invention thus provides a shipping and display carton for wheel balance weights which is simple, light and preventative of damage which would otherwise result from the normal course of shipping and storing the cartons.

It is to be understood that the inner container alone may be used to hold the weights and even without the outer container, complete inversion of the container would not release the weights.

Since different embodiments of the invention could be made without departing from the scope thereof, it is intended that the invention be limited only by the following claims.

We claim:

1. A composite container, comprising an outer container, an inner container slidably received in the outer container, said inner container comprising a flat strip having a flange on at least one side of the strip, a rack mounted on said inner container, said rack comprising a series of substantially equally spaced, substantially parallel ridges protruding therefrom, the longitudinal axes of said ridges

being substantially perpendicular to the longitudinal axis of said flange, the top of each of said ridges having a closed, continuous bulbous enlargement in transverse cross-section and extending transversely on both sides of said ridge to form a locking means, and each ridge having means thereon to maintain the shape of the bulbous enlargement and an article having a curved surface mounted on and in contact with both sides of the same bulbous enlargement, said article being movable from each bulbous enlargement only in a direction parallel to said longitudinal axis of said ridge.

**2.** The composite container described in claim **1**, wherein the ridges have an axial length of substantially less magnitude than the side of the inner container.

**3.** The composite container of claim **1**, wherein said means comprises a panel at the end of said ridges.

**4.** The composite container of claim **1**, wherein the rack is made of a thin film of organic plastic and the ridges are hollow.

**5.** A package comprising an outer container, an inner container slidably received in the outer container, said inner container comprising a flat strip having a flange on at least one side of the strip, a rack mounted on said inner container, said rack comprising a series of substantially equally spaced, substantially parallel ridges protruding therefrom, the longitudinal axes of said ridges being substantially perpendicular to the longitudinal axis of said flange, the top of each of said ridges having a closed, continuous bulbous enlargement in transverse cross-section and extending transversely on both sides of said ridge to form a locking means, each ridge having means thereon to maintain the shape of the bulbous enlargement, and vehicle balance weights slidably mounted on said ridges.

**6.** The package described in claim **5**, wherein said



weights are provided with a curved web surrounding and in locking engagement with the locking means formed by the bulbous end of one of said ridges.

**7.** The package described in claim **6**, wherein said means on the ridges is a panel at their ends to strengthen and stiffen the ridges.

**8.** The package described in claim **7**, wherein the inner container is provided with two flanges and each flange is provided with at least one hole near at least one end thereof.

**9.** The package according to claim **7**, wherein said outer container is provided with a groove in one side thereof to permit removal of individual weights, and wherein means is provided on said inner container to protrude through said groove to facilitate movement of said inner container.

**10.** The dispenser of claim **9**, wherein said means on said inner container includes a protruding tab at one end thereof.

**11.** The dispenser described in claim **10**, wherein the rack is made from a thin film of organic plastic and all the ridges are hollow.


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