

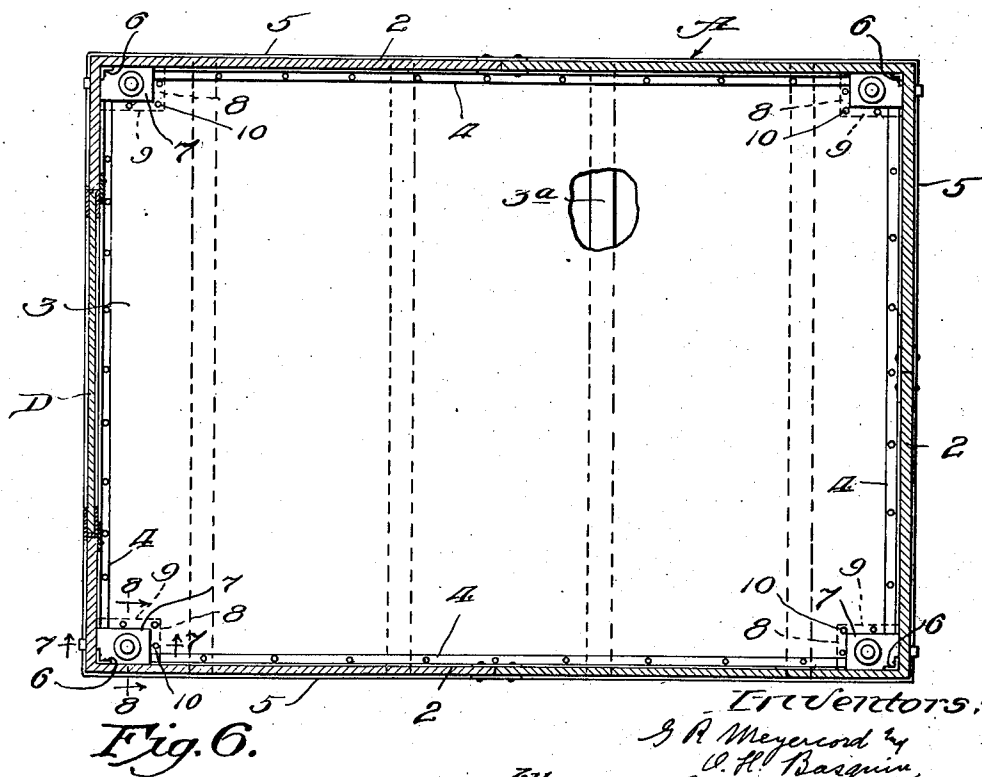
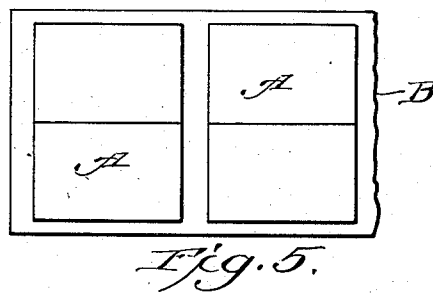
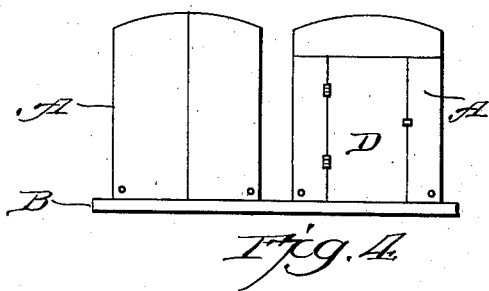
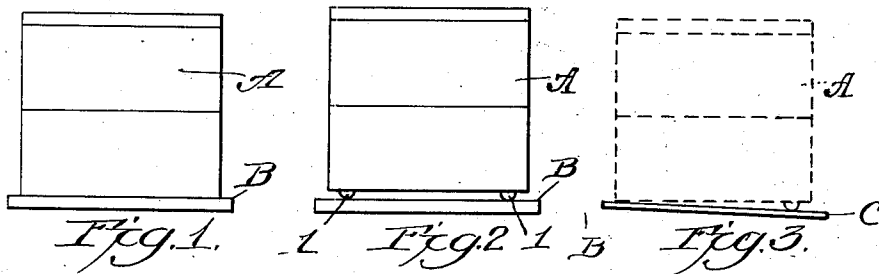
May 10, 1932.

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1,857,653

SHIPPING CONTAINER OR FREIGHT CAR BODY SECTION

Filed April 16, 1931 3 Sheets-Sheet 1



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3 Sheets-Sheet 2

Fig. 8.

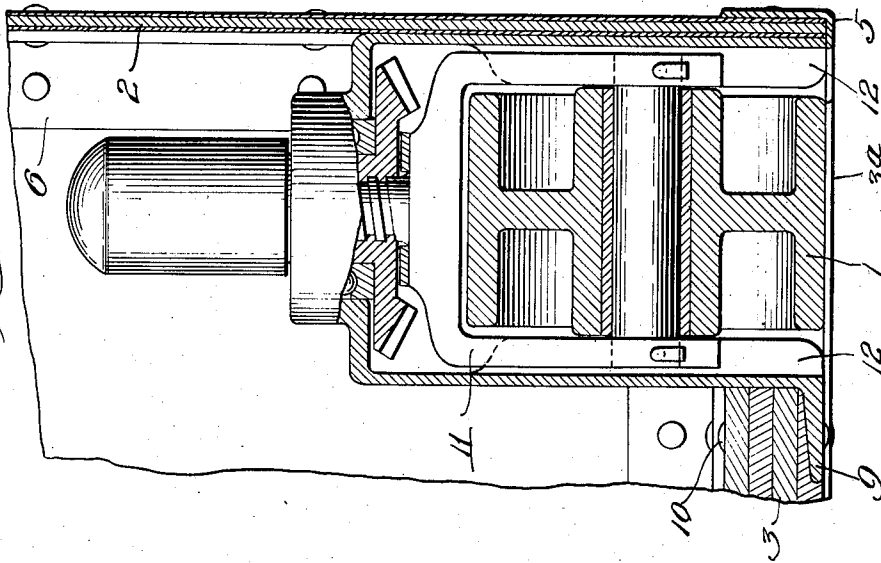
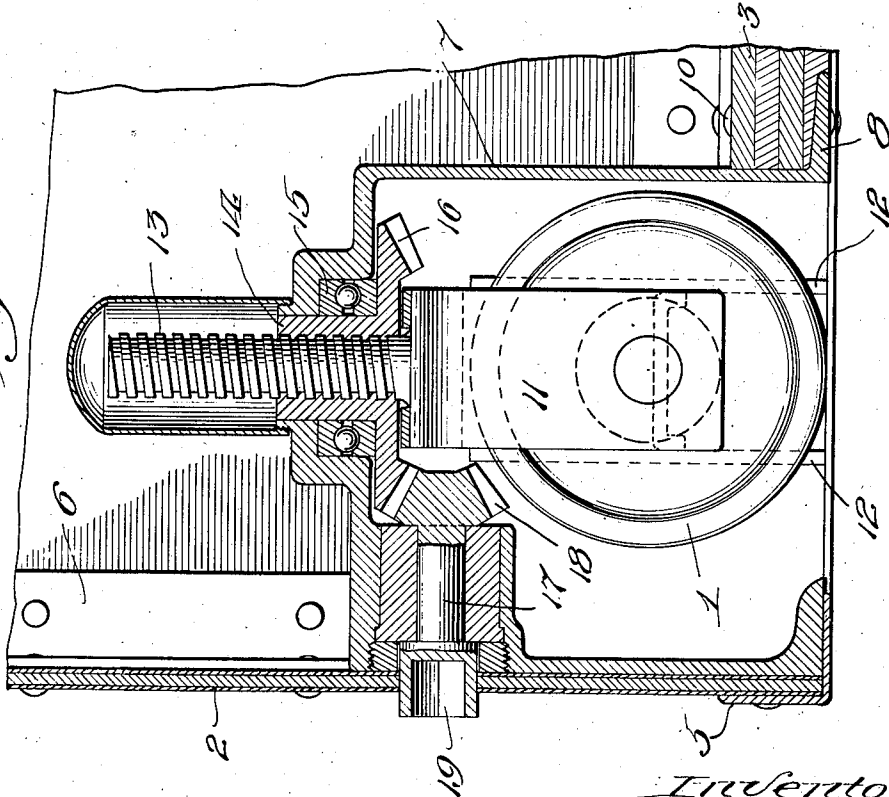


Fig. 7.



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Fig. 10.

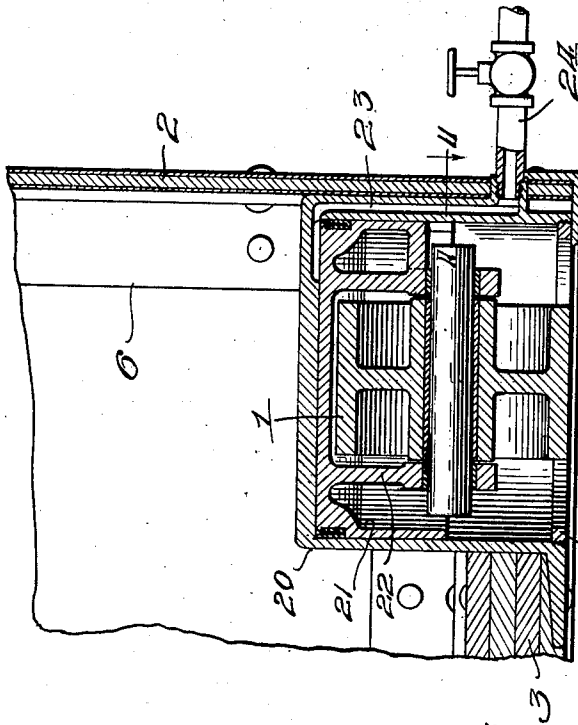


Fig. 9.

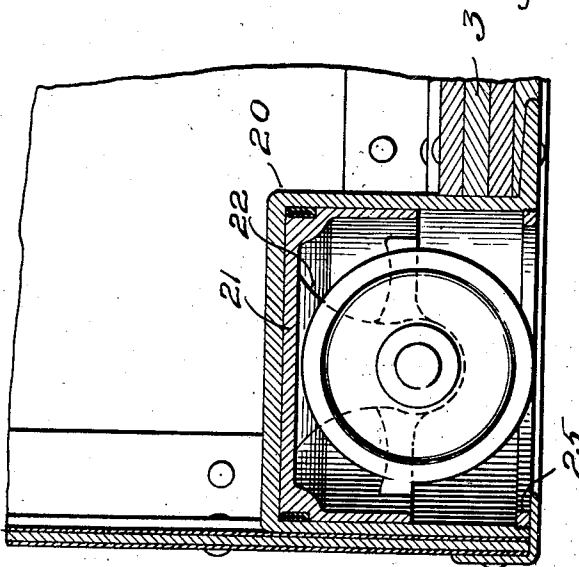


Fig. 11.

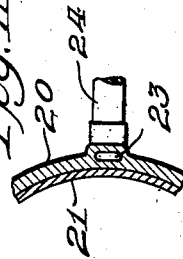
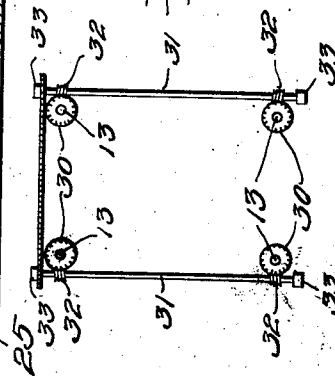


Fig. 12.



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UNITED STATES PATENT OFFICE

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SHIPPING CONTAINER OR FREIGHT CAR BODY SECTION

Application filed April 16, 1931. Serial No. 530,510.

A considerable part of the freight that is shipped in closed freight cars is in less than carload lots. Where such goods are shipped in ordinary freight cars, there are involved 5 problems so serious that it was long ago proposed to make car bodies in sections, each of which may contain quantities of less than carload lots, all intended for the same destination. This idea has not been used at all generally, even though there is great need for something of this kind.

The object of the present invention is to produce a sectional car body which shall be of simple, rugged and durable construction, 15 provide a maximum storage space for goods to be shipped, permit transportation thereof on ordinary flat cars without requiring material changes to be made in the latter, and be composed of units each of which may easily be removed from the car to trucks or the like 20 for transportation to a loading or an unloading point; thereby adapting itself to efficient and convenient shipment in less than carload lots of all goods that can be housed in such individual car body sections or container. 25

In carrying out our invention, we form large containers or boxes, each preferably approaching in length the width of an ordinary flat car, and as high and wide as desired, but not so high or wide as to prevent ready transportation thereof through city streets. These containers may be placed side by side, crosswise of a flat car, so as to form a sectional box car body, and they may be 35 temporarily held in place by suitable detachable fastenings, or not, as may be desired. When they are loaded, the individual sections or units rest directly on the floor of the car and, because of the size and weight 40 of the units, the friction between their bottoms and the car will hold the units firmly in place. Heretofore, where individual units of a sectional car body have been removable, it has been necessary to employ cranes or other powerful hoisting machinery to handle 45 them; or, in some instances, each unit or section has been mounted on a truck that permits it to be lowered and be self-supporting. When the containers are mounted on trucks, 50 considerable storage space is wasted, because

the actual bottom walls of the containers must stand high above the floor of the car, even when the containers rest directly on the car. Furthermore, where supporting trucks are employed, the bottom walls of the containers 55 can never rest on a flat surface, but the entire weight of the containers and their contents must at all times be borne from a few distributed supporting points. Consequently, this old type of sectional body does not solve 60 the problem, because of waste of storage space and the difficulty of making the individual container strong enough without being too heavy.

In accordance with our invention, the containers normally rest on their own bottoms 65 which may transmit the load, over their entire areas if desired, directly to the floor or bed of the car. The containers may, therefore, be comparatively light. The rolling 70 supports for our containers are small and compact devices mounted in small rugged housings built into the bottoms of the containers and taking up very little room; therefore, leaving available a maximum storage 75 space for goods within the containers. These rolling supports are disappearing, in the sense that they may be brought into idle positions within their housings and thus permit the containers to rest on their own bottoms 80 on the cars or wherever they may happen to be; but, when it is desired to move a container, it is jacked up, as it were, so as to transfer its weight and the weight of its contents to the rolling supports. If it be 85 on a car, the container need only be rolled off onto a truck brought alongside the car. There are available trucks with lifting and tilting platforms. When such a truck is run beside a car and its platform inclined slightly, a container may easily be rolled from 90 the car upon the same. After being transferred to the truck, the container may be lowered, so as again to rest on its own bottom, or it may be lowered at one end only and be 95 permitted to rest on its rolling supports at the other end. By means of the truck, the container may be carried to its final destination. Such a container may be filled in a warehouse, or elsewhere, and be brought to 100

and placed on a car ready to receive the same.

The various features of novelty whereby our invention is characterized will hereinafter be pointed out with particularity in the claims; but, for a full understanding of our invention and of its objects and advantages, reference may be had to the following detailed description taken in connection with the accompanying drawings, wherein:

Figures 1 and 2 are views, more or less diagrammatic, of the top of a flat car, looking at one end, having thereon one of our improved containers in the lowered and raised positions, respectively; Fig. 3 is a view showing diagrammatically the tiltable and vertically-movable top of a truck upon which has been rolled the container shown in Fig. 2, the container being indicated in dotted lines; Figs. 4 and 5 are, respectively, side and plan elevations at one end of the flat car top, showing two of the containers positioned thereon; Fig. 6 is a horizontal section, through one of our improved containers, looking downward; Fig. 7 is a section, on an enlarged scale, taken approximately on line 7—7 of Fig. 6; Fig. 8 is a section on line 8—8 of Fig. 6, the scale being the same as that of Fig. 7; Figs. 9 and 10 are views similar to Figs. 7 and 8, respectively, showing a modification; Fig. 11 is a section on line 11—11 of Fig. 10, the body portion of the container being omitted; and Fig. 12 is a diagrammatic view showing a modified arrangement for raising and lowering the containers.

Referring to Figs. 1-5 of the drawings, A represents a tall, box-like container, short enough to permit it to be transported while extending transversely across the top B of a flat car, and long enough to permit a maximum use to be made of the available transverse dimension of the car. Under the container are a series of wheels 1, or other rolling supports, shown as being placed at the corners. The container is mounted on these wheels in such a manner that it may be raised and lowered bodily between a position in which its bottom wall rests on the car top or other surface, as shown in Fig. 1, and a position, as shown in Fig. 2, in which the weight is borne by the wheels, and the container may, therefore, be rolled from one place to another. One way of removing a container from the car is to run alongside of the car a truck having a vertically-movable, tiltable top C. If this top is inclined downwardly somewhat, the container can easily be rolled upon the same from the car. The container may then be lowered bodily on the wheels so as to rest at its base on the truck, or one end may be lowered, as shown in Fig. 3, while the other end remains up. The containers may have doors in one or both ends, so that access to the interior may be had from one or both sides of the car, such a door being shown at D, in Fig. 4.

The container should be light and strong, as should also the rolling supports and the means for raising and lowering the container on the latter. Furthermore, the raising and lowering means should be easy and convenient of operation.

The container illustrated more or less in detail in Figs. 6, 7 and 8 has its vertical walls 2, 2 made of panels of metal-sheathed lumber, whereas the bottom 3 is made of a much heavier panel or panels, preferably of plywood. In the angles between the bottom and the vertical walls are angle irons 4, 4, whereas angle irons 5, 5 are fitted over the outer corners at the bottom; these latter angle irons extending throughout the length and width of the container. Vertical angle irons 6, 6 are placed in the four corners between the vertical walls. When the horizontal flanges of the angle irons 5, 5 lie underneath the bottom wall of the container, as shown, strips, such as show at 3a, should be secured to the under side of the bottom wall so as to bring the effective under surface of the latter flush with the under faces of these flanges. In any event, it is the effective under surface of the bottom wall itself, no matter how it is produced, that constitutes the normal supporting base for the container. In this way, we produce a construction that is strong and rugged and yet is comparatively light.

In the arrangement shown, there are four rollers mounted so as to be movable into and out of small, rugged housings 7, 7 of which there is one fixed in each corner at the bottom of the container. The floor is cut away to provide openings in which the housings set while engaged with the two adjacent vertical walls of the container. Each housing has at the bottom outwardly projecting flanges 8 and 9 which underlie the bottom or floor beside the corresponding opening in the latter; the floor being counter sunk from the under side so that the lower faces of these flanges will be flush with the under side of the floor. Suitable rivets 10, 10 pass through the floor and the flanges 8 and 9, respectively. The angle irons 4, 4 are cut off at the ends so as to abut against the sides of the housings. Similarly, the vertical angles 6 are cut off at their lower ends so as to cause them to rest on top of the housings.

As shown in Figs. 7 and 8, each roller is mounted in the lower end of a yoke 11 movable vertically between guides 12, 12 on the inner sides of the housing. The yoke has an upwardly extending screw-threaded stem or shaft 13 passing through a nut 14 rotatable in the upper wall of the housing; there being an anti-friction thrust bar 15 interposed between a part of the nut and the top wall of the housing. On the lower end of the nut is a bevel gear 16. In the arrangement shown, the anti-friction bar lies between this gear and the top

wall of the housing. A short shaft 17 extends inwardly from the exterior of the container through the corresponding end wall and into the housing. On the inner end of this shaft is a pinion 18 meshing with the gear wheel 16. The outer end of the shaft 17 is shaped, as indicated at 19, to receive a crank or other tool for turning the same.

The parts are so proportioned that, when the shaft 17 is turned far enough in one direction, the container is lowered so as to rest on its own base or bottom, independently of the roller which is then completely enclosed in the housing, as shown in Figs. 7 and 8. When the shaft 17 is turned in the opposite direction, the container, or rather the corresponding corner thereof, is gradually raised, until its weight is transferred to the roller. Therefore, when all of the raising and lowering devices have been operated so as to set the container down on the car top, or other platform, it will rest there just as would any other heavy box-like structure. However, when the container is raised at all four corners, it may be rolled about.

In Figs. 9 and 10, there is disclosed a modified raising and lowering device. In this form of our invention, the housing 20 is in the form of a vertical cylinder in which there is slidable a piston 21 from which depend arms 22, 22 between which the roller is journaled. In one of the vertical walls of the housing is a passage 23 leading to a point above the top of the piston. This passage has an inlet or pipe connection 24 leading to the exterior of the container.

If air under pressure is admitted into the cylinder through this inlet and the passage 23, the cylinder will be forced up, relatively to the piston. If the air is admitted to all of the cylinders at one time, the container will be raised by a single operation or, one cylinder after another may be energized so as to raise one corner at a time, either partially or through the full distance. Into the bottom of each cylinder is screwed a ring 25 which will act as a stop to prevent separation of the piston and cylinder so that, whenever a cylinder is raised until the stop engages with the lower end of the piston, further upward movement will be prevented.

It may be desirable to operate simultaneously all of the raising and lowering devices, such as shown in Figs. 7 and 8, for example, or, for some purposes, it may be advantageous to operate two of such devices simultaneously. We have, therefore, shown, more or less diagrammatically in Fig. 12, means for accomplishing this.

Referring to Fig. 12, it will be seen that the nuts on the screws 13 are provided with worm wheels 30. On each side of the container is a shaft 31 extending lengthwise thereof and provided with worms 31, 31 meshing with the corresponding worm

wheels. The ends of the shaft, as indicated at 32, are designed to receive a wrench or other tool for turning the same. Therefore, by turning one of the shafts from either end, the corresponding corner of the container will be raised or lowered. If it be desired to raise and lower all of the corners simultaneously, corresponding ends of the shafts may be connected by a suitable drive, conveniently a sprocket chain drive 33. Therefore, upon turning either shaft from either end, the container will be raised or lowered bodily in a single movement.

We claim:

1. The combination with a shipping container in the form of a box adapted normally to rest its bottom wall on any flat supporting surface, of rolling supports therefor, and connecting means between said supports and the container, including devices to lower the container with respect to the supports and cause it to rest on its bottom wall or raise it far enough to cause the said rolling supports alone to rest on the supporting surface and sustain the weight of the container.

2. The combination with a shipping container adapted normally to rest its bottom wall on any flat supporting surface, of rolling supports, connections between said supports and the container, and means for applying power from points outside of the container to raise the container high enough to cause it to be carried by said supports or lowered far enough to cause it to rest on the supporting surface independently of said supports.

3. The combination with a shipping container adapted normally to rest its bottom wall on any flat supporting surface, said container having chambers opening out through its bottom wall, of rolling supports in said chambers, and means connecting said supports to the container to permit said supports to be lowered so as to extend at least partially below the bottom of the container or be raised so as to lie wholly within said chambers and cause the container to rest on its own bottom.

4. The combination with a shipping container, of distributed individual rolling supports for the container beneath the same, said container having in the bottom individual chambers into which the supports may be lifted so as to permit the container to rest on its bottom wall independently of said supports, and means to raise said supports into said chambers or lower them to cause them to project below the bottom of the container.

5. The combination with a rectangular shipping container adapted normally to rest its own bottom wall on a floor or the like, of compact rugged housings fixed in the bottom thereof at the four corners, vertically-adjustable members in said housings, and rolling supports on the lower ends of said members, said housings being deep enough to permit

said members to be adjusted to cause the said rolling supports to be projected below the same and thus raise the container bodily from the floor.

5 6. The combination with a shipping container adapted normally to rest its own bottom wall on a floor or the like, of rugged housings fixed to the same in the bottom thereof, horizontal nuts mounted in the upper portions of the housings so as to be rotatable and be held against upward movement relatively to the housings, means for turning the nuts from the exterior of the container, vertical screw shafts extending through said nuts, and rolling supports on the lower ends of said shafts, the parts being so proportioned and arranged that the container may be raised on the said supports far enough to cause the weight thereof to be borne by the supports or be lowered sufficiently to permit it to rest on the floor or the like independently of the rolling supports.

7. In combination, a rectangular shipping container of a length approaching the width of the top of a railway flat car whereby it may be placed lengthwise across such a car, the bottom wall of the container being adapted normally to rest on the car, rolling supports for the container, and connecting means between the supports and the container including devices to lower the container thereon until it rests on the car floor independently of said rolling supports or to raise it high enough with respect to said rolling supports to lift it bodily above the car floor.

8. The combination with a rectangular shipping container, of compact rugged housings fixed in the bottom thereof at the four corners and open at their lower ends, vertically movable pistons in said housings, rolling supports underneath and carried by said pistons, said housings being deep enough to permit said pistons and rolling supports to be confined within the housings or to be projected downwardly and cause the container to be bodily raised from a supporting surface, and means for introducing air into the housings above the pistons.

9. The combination with a rectangular shipping container adapted normally to rest on a floor or other shipping surface, rolling supports associated with said container, and means to raise the container bodily from the supporting surface and impose its weight on the rolling supports with air cushions located between the rolling supports and the container.

10. The combination with a member adapted to support and convey goods, said member being adapted normally to rest its entire bottom face on any flat supporting surface, said member having distributed small chambers opening out through the bottom face thereof, roller elements in said chambers and adapted to be completely housed therein when said

member is resting on its own bottom, and means in said chambers to raise said member on said elements so as to cause the latter to project therefrom and serve as the supports for said member.

In testimony whereof, we sign this specification.

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