

Dec. 27, 1932.

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1,892,406

SHIPPING CONTAINER

Filed Dec. 21, 1931

2 Sheets-Sheet 1

Fig. 1.

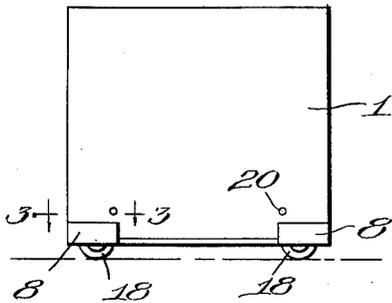


Fig. 2.

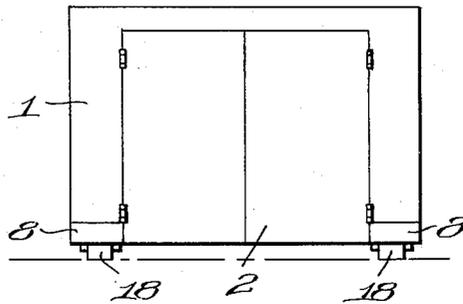
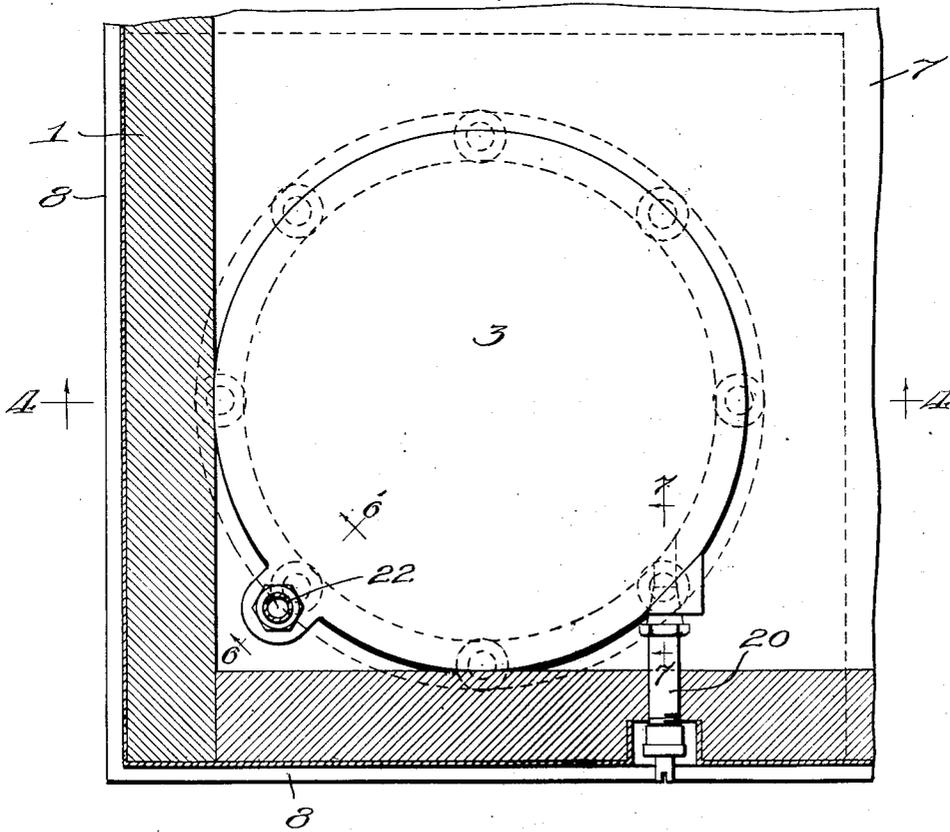


Fig. 3.



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2 Sheets-Sheet 2

Fig. 4.

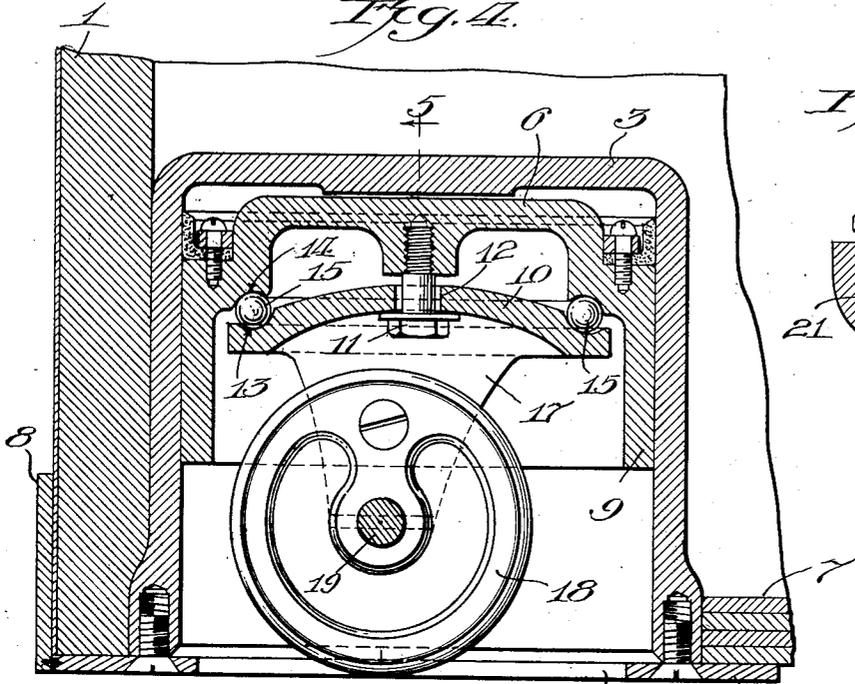


Fig. 6.

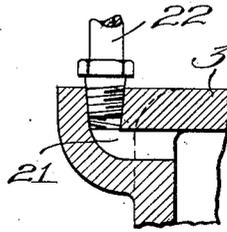


Fig. 5.

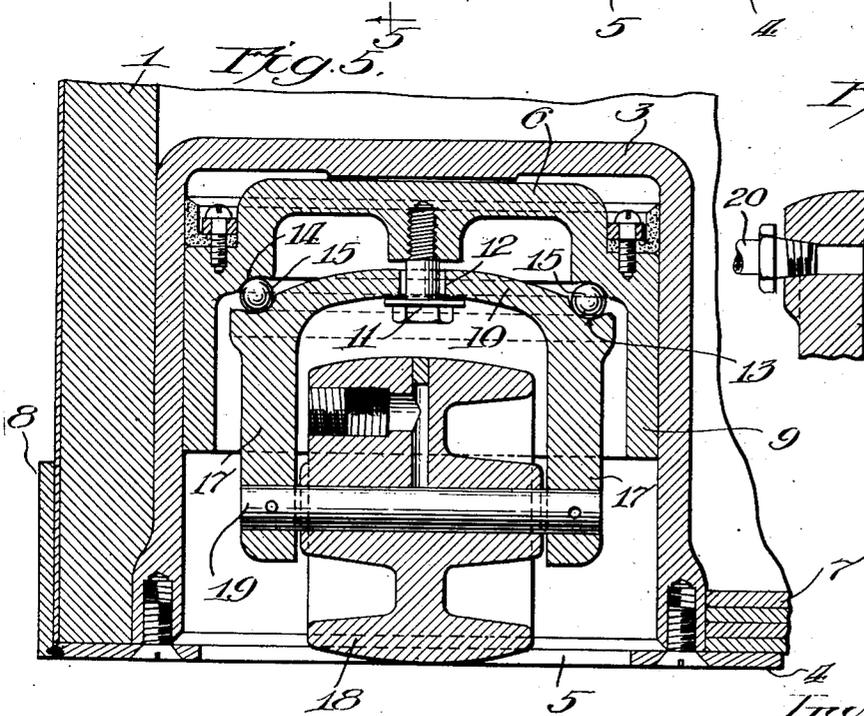
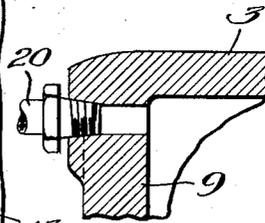


Fig. 7.



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UNITED STATES PATENT OFFICE

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SHIPPING CONTAINER

Application filed December 21, 1931. Serial No. 582,381.

The present invention relates to box-like structures adapted to receive less than car-load lots of freight, for shipping purposes, and particularly to containers provided with disappearing wheels, whereby the containers may be moved along on their wheels or be lowered so as to rest on their own bases, independently of the wheels. The object of the present invention is to improve the disappearing wheel construction or rolling support means.

Viewed in one of its aspects, the present invention may be said to have for its object to provide shipping containers with disappearing wheels or rolling supports adapted also to turn about vertical axes in order to facilitate turning movements of the containers.

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 end and side elevations of a shipping container embodying the present invention; Fig. 3 is a section, on a much larger scale, on line 3—3 of Fig. 1, showing only a corner of the container; Fig. 4 is a section on line 4—4 of Fig. 3, the rolling support or wheel being shown in elevation; Fig. 5 is a section on line 5—5 of Fig. 4; and Figs. 6 and 7 are sections taken, respectively, on line 6—6 and line 7—7 of Fig. 3.

Referring to the drawings, 1 represents a suitable box-like container of considerable capacity, the container being preferably rectangular and having a door or doors 2. In the bottom of the container, at each corner, is a vertical cylinder 3 closed at the top and open at the lower end. Extending across the lower end of each cylinder, and detachably secured thereto, is a plate 4 having a center opening 5 somewhat smaller in diameter than the internal diameter of the cylinder. Therefore, this plate provides the cylinder with an inwardly-projecting flange at the lower end to serve as a stop to prevent

the piston 6 from dropping out through the lower end of the cylinder. The plate 4 extends laterally beyond the sides of the cylinder so as to underlie the adjacent portions of the bottom wall 7 and the lower edges of the adjacent vertical walls of the container. The container may be provided with metal reinforcing plates 8 at the corners adjacent to the bottom, which plates may be welded to the adjacent edges of the corresponding plates 4.

Each of the pistons 6 is provided with a deep annular skirt or flange 9 to afford a long bearing. Within the space enclosed by the skirt or flange of the piston is a turntable 10 loosely held in place by a machine bolt 11 passing up into the same and into the overlying body portion of the piston. The hole 12 in the turntable through which the bolt 11 passes is larger in diameter than the bolt, and the thickness of the turntable at the center is less than the distance between the head of the bolt and the overlying part of the piston. Therefore, while the bolt will prevent the turntable from dropping down, it leaves it free, not only to turn, but to adjust itself in various directions. In the top of the turntable, near the periphery, is an annular groove 13. There is a similar groove 14 in the under side of the piston. Lying partly in the groove 13 and partly in the groove 14, are a series of balls 15. Depending from the turntable are a pair of separated arms 17, 17. Between these arms is a thick wheel or roller 18 rotatable upon a shaft 19 extending through and fixed in the arms at some distance from the vertical axis of the cylinder. In other words, the horizontal axis of rotation of the wheel is displaced in the horizontal direction from a downward extension of the axis of rotation of the turntable. Or, stating it in another way, the wheel or roller is eccentrically disposed in the cylinder, thus facilitating a relative shifting of the container and the wheel about a vertical axis to determine the direction in which the container is to move when carried along on the rolling supports or wheels.

The parts are so proportioned that, when the pistons are in the upper ends of their

cylinders, the wheels will be housed in the cylinders, permitting the container to rest on its own bottom on the floor or bed of a car or truck. When air under pressure is admitted to the upper ends of the cylinders, the cylinders, and, therefore, the container, will be moved up so that the weight of the container will be borne by the wheels which then project below the container, as shown in Figs. 1 and 2. In the arrangement shown, air may be admitted into each cylinder through a suitable inlet connection extending from a point near the top of the cylinder through a side wall of the container. If all of the cylinders are to be connected together so that air may be delivered to all of them from a single inlet, each cylinder may have in the top an outlet communicating with a pipe or conduit forming part of a system of piping between all of the cylinders.

When the container is in the raised position, its weight carried by the wheels, it is resting on air cushions disposed between the container and the wheels. Consequently, when the container is rolled over a rough path, or, if a wheel or wheels strike an obstruction or drop into a depression, the air cushions absorb the shocks that would otherwise be transmitted directly to the container and to its contents.

It will also be seen that the eccentricity of the rollers or wheels with respect to the turntables enables the container readily to respond to forces tending to move it in any given direction. Consequently, the container may be rolled about freely in any direction.

It will also be seen that the roller units, including the cylinders and the turntables, are of simple, compact and rugged construction; the long skirts on the pistons preventing binding of the pistons under pushing or pulling forces on the container; and room being provided for eccentrically disposed wheels without making the cylinders unduly large.

While we have illustrated and described with particularity only a single preferred form of our invention, we do not desire to be limited to the exact structural details thus illustrated and described; but intend to cover all forms and arrangements which come within the definitions of our invention constituting the appended claims.

We claim:

1. In combination, a container having in the bottom distributed vertical cylinders open at the lower end, pistons in said cylinders, turntables below the pistons and connected thereto for rotary movements about the long axes of the corresponding cylinders, rollers below and rotatably connected to the turntables, the rollers being eccentrically disposed with respect to the cylinders, and means for

admitting air under pressure into the cylinders above the pistons.

2. In combination, a container having in the bottom distributed vertical cylinders open at the lower end, pistons in said cylinders, turntables below the pistons and connected thereto for rotary movements about the long axes of the corresponding cylinders, rollers below and rotatably connected to the turntables, the rollers being eccentrically disposed with respect to the cylinders, rolling bearing elements between and in contact with the turntables and the corresponding pistons, and means for admitting air under pressure into the cylinders above the pistons.

3. In combination, a container adapted to rest directly on a floor or the like and having in the bottom distributed vertical cylinders open at the lower end, pistons in said cylinders, horizontal rollers under the pistons, means connecting the rollers to the pistons to permit each roller to turn about its own horizontal axis and also about a vertical axis spaced apart in the horizontal direction from the aforesaid horizontal axis, and means to admit air into the cylinders above the pistons.

4. In combination, a container having in the bottom distributed vertical cylinders open at the lower end, pistons in the cylinders, each piston having a deep depending skirt, a turntable within each piston, rolling bearing elements between the top of each turntable and the overlying part of the corresponding piston, a bolt device loosely connecting each turntable to its piston for rotation about the vertical axis of the piston, a horizontal roller below each turntable, and means on each turntable to support the corresponding roller with its horizontal axis spaced apart in the horizontal direction from the vertical axis of the corresponding cylinder, and means to introduce air under pressure into the cylinders above the pistons.

5. In combination, a container having in the bottom distributed vertical cylinders open at the lower end, pistons in the cylinders, each piston having a deep depending skirt, a detachable plate fastened to the lower end of each cylinder and projecting across the interior of the cylinder far enough to serve as a stop to prevent the removal of the piston, a turntable within each piston, rolling bearing elements between the top of each turntable and the overlying part of the corresponding piston, a bolt device loosely connecting each turntable to its piston for rotation about the vertical axis of the piston, a horizontal roller below each turntable, and means on each turntable to support the corresponding roller with its horizontal axis spaced apart in the horizontal direction from the vertical axis of the corresponding cylinder, and means to introduce air under pressure into the cylinders above the pistons.

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6. In combination, a rectangular container having in the bottom at the four corners vertical cylinders open at the lower ends, pistons in said cylinders, a detachable plate fastened to the lower end of each cylinder and projecting across the interior of the cylinder far enough to serve as a stop to prevent the removal of the corresponding piston, each plate also projecting on all sides from the corresponding piston and underlying the adjacent side walls and the adjacent portions of the bottom wall of the container, rollers underlying and carried by the pistons, and means for admitting air under pressure into the cylinders above the pistons.

7. In combination, a rectangular container having in the bottom at the four corners vertical cylinders open at the lower ends, pistons in said cylinders, a detachable plate fastened to the lower end of each cylinder and projecting across the interior of the cylinder far enough to serve as a stop to prevent the removal of the corresponding piston, each plate also projecting on all sides from the corresponding piston and underlying the adjacent side walls and the adjacent portions of the bottom wall of the container, reinforcing plates on the vertical sides of the container at the bottom, said reinforcing plates being welded to the plates that are secured to the lower ends of the cylinders, rollers underlying and carried by the pistons, and means for admitting air under pressure into the cylinders above the pistons.

In testimony whereof, we sign this specification.

GEORGE RUDOLPH MEYERCORD.
OLIN H. BASQUIN.

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