Sept. 13, 1932. J. F. O'CONNOR 1,877,028

BULK FREIGHT CONTAINER

Filed Nov. 17, 1930 3 Sheets-Sheet 1

Fig. 1

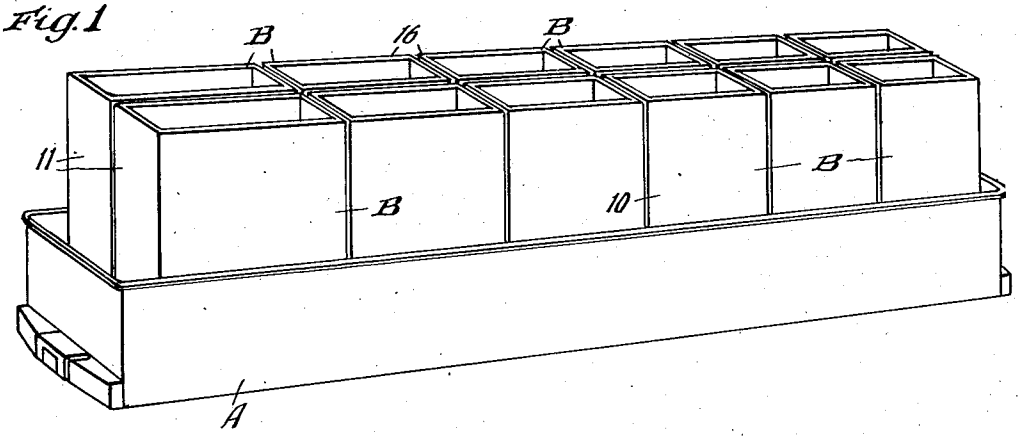
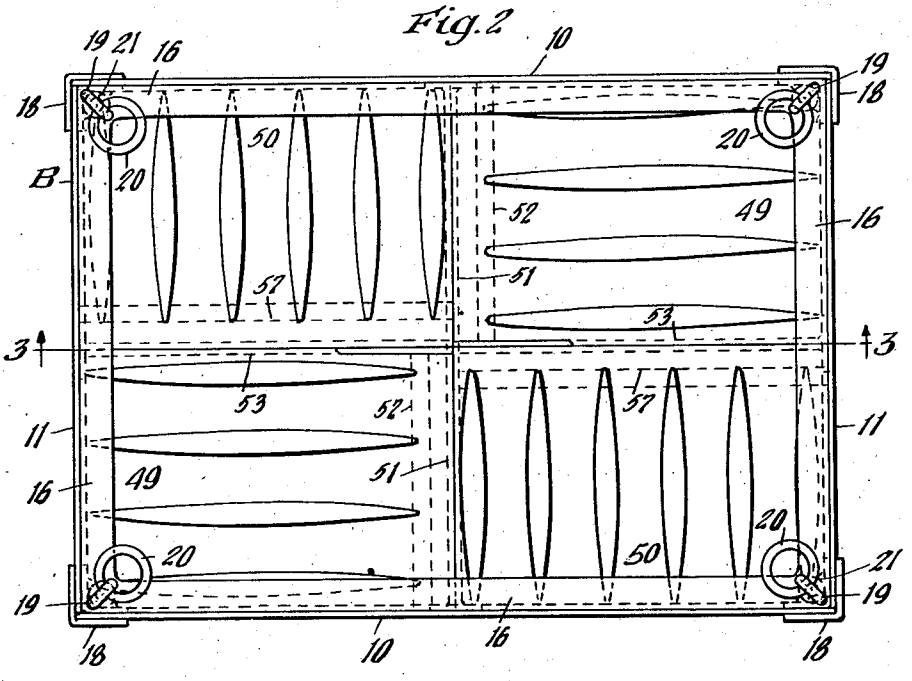


Fig. 2



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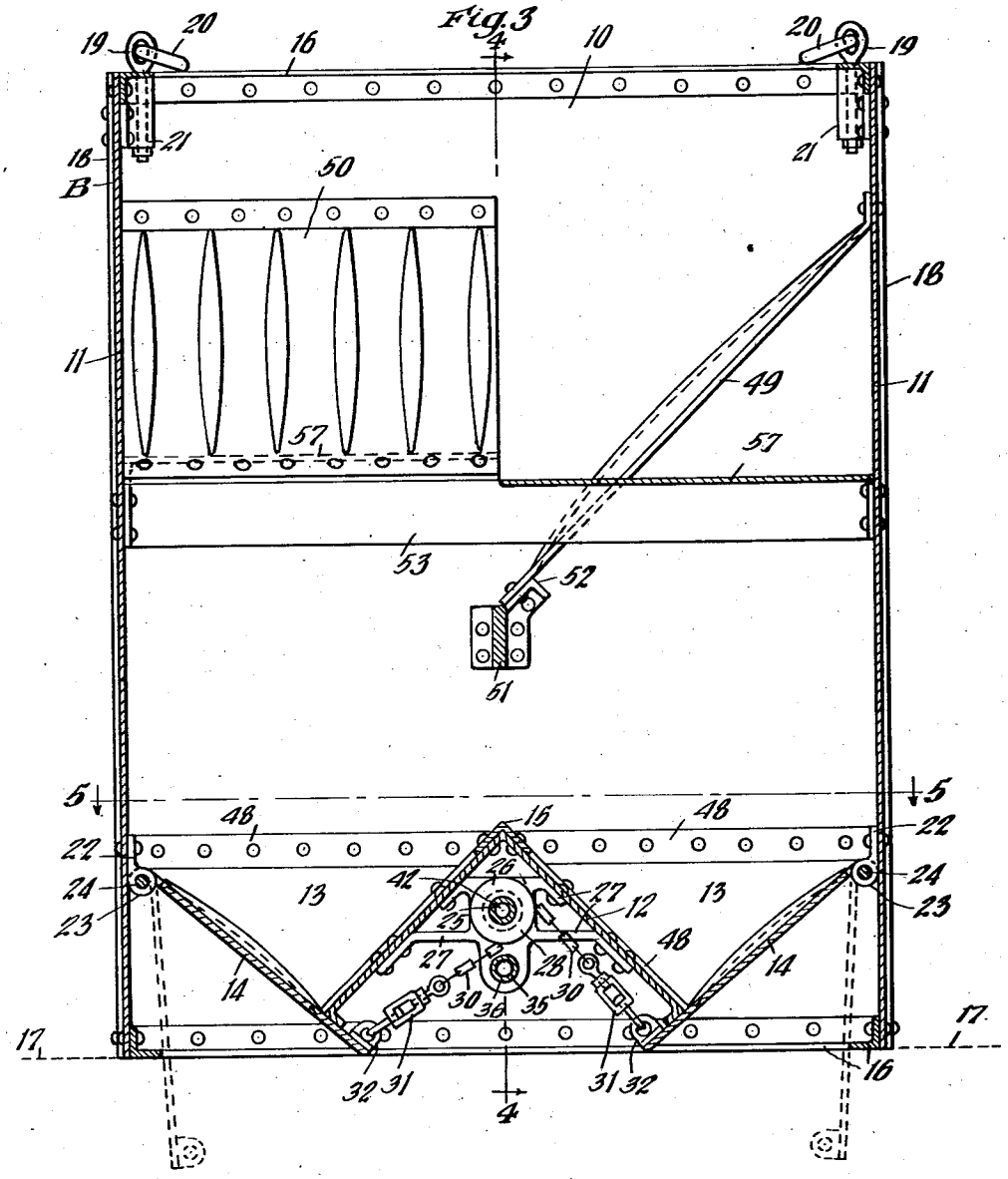
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Sept. 13, 1932. J. F. O'CONNOR 1,877,028

BULK FREIGHT CONTAINER

Filed Nov. 17, 1930 3 Sheets-Sheet 2

Fig. 3



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BULK FREIGHT CONTAINER

Filed Nov. 17, 1930 3 Sheets-Sheet 3

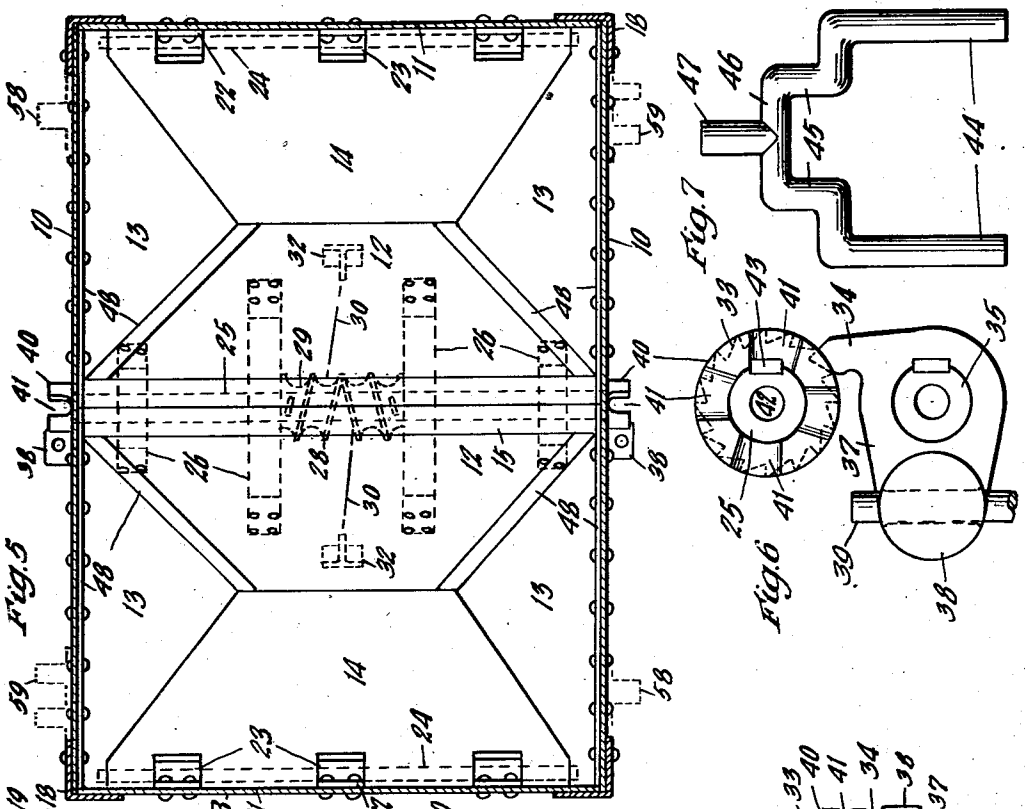


Fig. 5

Fig. 7

Fig. 6

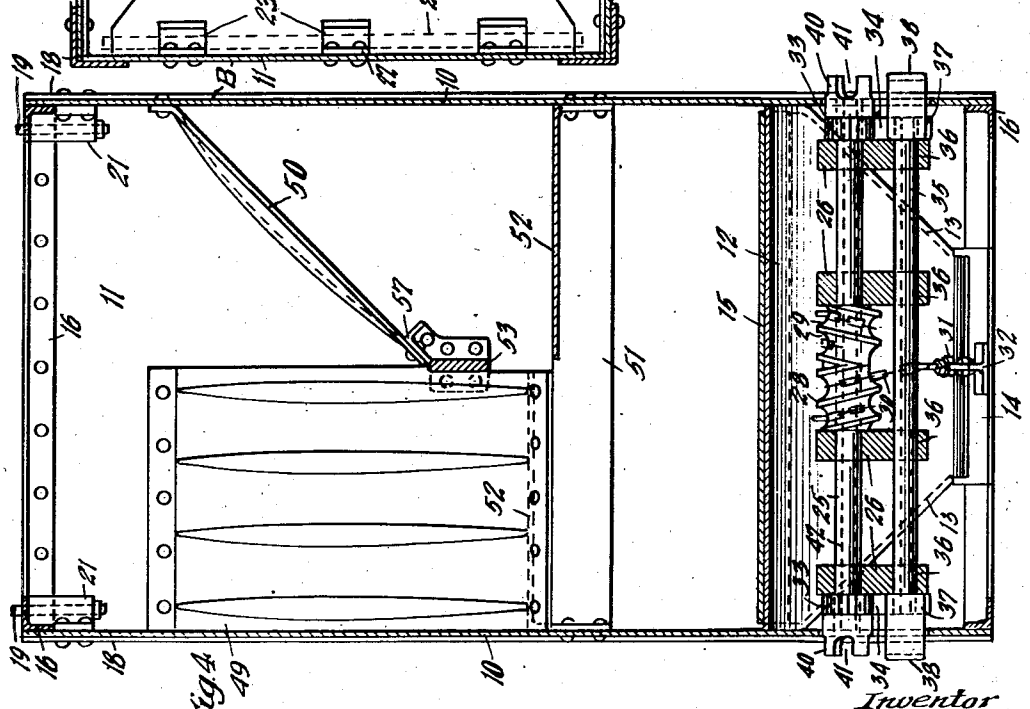


Fig. 4

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UNITED STATES PATENT OFFICE

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BULK FREIGHT CONTAINER

Application filed November 17, 1930. Serial No. 496,138.

This invention relates to improvements in bulk freight containers.

One object of the invention is to provide a carrier means for bulk freight, including a plurality of dumping freight containers, in combination with a railway car adapted to carry the containers, wherein each container is separately removable from the car to be individually dumped.

A further object of the invention is to provide a carrier means of the character specified in the preceding paragraph, wherein each individual container is provided with a dumping bottom so arranged that the container will rest squarely on the floor of the car when placed therein.

A still further and more specific object of the invention is to provide a dumping container for bulk freight adapted to be supported on the floor of a car, wherein the container has a raised bottom wall member including dumping doors.

Another object of the invention is to provide a container of the character described in the preceding paragraph, wherein the dumping bottom is of the hopper type, having hinged doors, and means is provided for actuating the doors and holding the same locked.

Still another object of the invention is to provide a bulk freight container in the form of a box-like member, open at the top, and having a bottom provided with dumping doors, wherein the container is protected against injury by interior inclined baffle plates which break the impact of the bulk material dropped into the container while the same is being loaded.

Other objects of the invention will more clearly appear from the description and claims hereinafter following.

In the drawings forming a part of this specification, Figure 1 is a perspective view of the body of a gondola type of freight car showing a plurality of bulk freight containers therewithin, and illustrating the general arrangement of my improved bulk freight carrier means. Figure 2 is a top plan view of one of the individual freight containers employed in connection with my improved carrier means. Figure 3 is a vertical, sectional view corresponding substantially to the line 3—3 of Figure 2. Figure 4 is a vertical, sectional view corresponding substantially to the line 4—4 of Figure 3. Figure 5 is a horizontal, sectional view, corresponding substantially to the line 5—5 of Figure 3. Figure 6 is a detailed end elevational view of a certain ratchet and cooperating locking pawl, employed in connection with certain dumping mechanism of my improved construction, and also showing the operating bar therefor, partly broken away. And Figure 7 is a plan view of a special form of wrench employed in connection with my improvements.

In carrying out my invention, as illustrated in said drawings, I employ a railway car A, preferably of the gondola type, and a plurality of box-like bulk freight containers B—B contained therein. The body of the gondola car only is illustrated in the drawings, the trucks and other details being omitted as they do not form an essential part of the invention.

The containers B—B are preferably all of the same size and are so proportioned that an ordinary gondola car contains twelve of the same arranged in two rows lengthwise of the car.

As shown in Figures 2 to 5 inclusive, each container B is of rectangular box-like form and open at the top. Each container has spaced, vertical side walls 10—10, spaced, vertical end walls 11—11 and a bottom wall, said bottom wall including a section 12 and four sections 13—13. The bottom wall extends from one of the side walls 10 to the other and has a raised central portion comprising the section 12, as clearly shown in Figure 3, said section being of the outline shown in Figure 5 and having downwardly inclined sides, the bottom edges of which terminate slightly above the lower edges of the side and end walls of the container and have the lower edges spaced from the end walls 11—11. The sections 13—13 are of triangular outline, as shown in Figure 5, and are inclined downwardly and inwardly from the side walls 10—10, being fixed to the latter and to the

section 12 by flanges 48—48, as shown. Dumping openings are thus provided at opposite ends of the container, which are normally closed by inclined door members 14—14, hereinafter more fully described. The bottom wall section 12 is preferably formed from a single piece of sheet metal material bent into V-shape form as shown, and having its opposite ends flanged and riveted to the side walls 10—10 of the container. In order to protect the edge at the angularly bent portion of the sheet metal plate, the same is covered by an angle bar 15, which is riveted thereto. The top and bottom edges of the side and end walls of the container are suitably reinforced, as shown, by angle bars 16—16, which are riveted to said walls, as clearly illustrated in Figure 3. The angle bars, as shown, have the vertical flanges thereof secured to the walls of the container. The reinforcing angle bars 16 at the bottom end of the container have their horizontal flanges in alinement with the lower edges of the side and end walls of the container, thereby forming with said lower edges of the walls a base member or portion whereby the container is squarely supported on a flat surface such as a floor of a railway car. Such a flat surface is indicated by the dotted lines 17—17 in Figure 3. The angle bars 16, which reinforce the open upper end of the container have their horizontal flanges, preferably flush with the upper end edges of the side and end walls of the container. The four corners of the container are exteriorly reinforced by angle bars or plates 18—18 fitting the corners, as clearly shown in Figure 2. Each container is also provided with an eye bolt 19 at each corner to which a ring 20 is secured. As shown most clearly in Figures 2, 3 and 4, the eye bolts extend through blocks 21, which are secured within the corners of the container at the top thereof. As will be evident, the eye bolts with the attached rings 20 at the four corners of the container, provide means whereby the container may be lifted and handled, the rings serving as connecting means for the usual supporting and lifting chains of a derrick or crane whereby the containers are handled.

Adjacent the bottom of the container, each end wall 11 has horizontally disposed hinge members 22—22 secured to the inner side thereof, the same being formed with hinge eye portions 23—23, which cooperate with similar hinge eye portions provided on the corresponding dumping door 14, the door 14 being connected to the hinge members 22—22 by means of the usual hinge pin 24. As clearly shown in Figure 3, the hinge members for the doors 14 are spaced such a distance above the lower extremity of the container that when the doors are in closed position, the lower edges thereof will lie above the plane of the floor line 17—17, that is the doors will be disposed entirely within the lower limits of the container when closed. As clearly indicated in Figure 3, the plates forming the door members 14 are preferably corrugated to reinforce the same. The doors 14 are of such a length that the lower or outer ends thereof project below the lower end edges of the plate section 12, forming the fixed raised bottom portion of the container. The doors are operated by means which also hold the same locked, as hereinafter described.

The operating means for the doors comprises a rotary shaft 25 mounted in bearing members 26—26 secured to the fixed bottom or floor member 12 of the container. As most clearly shown in Figure 4, four such bearing members are employed. Each bearing member has a plurality of horizontal arms 27—27 extending therefrom, which arms are riveted to the plate-like sections of the fixed bottom 12 of the container. The shaft 25 has a winding element or drum 28 fixed thereto, which drum is provided with a pair of spiral winding grooves 29—29 with which chains 30—30 connected to the doors 14—14 cooperate. As shown most clearly in Figure 3, each chain 30 is connected to the corresponding door by means of a turn buckle 31 connected to an eye member 32 in the form of a casting or lug fixed to the lower extremity of the corresponding door 14. The winding shaft 25 has ratchet members 33—33 fixed to opposite ends thereof with each of which a locking dog or pawl 34 cooperates. The locking dogs or pawls 34—34, which are disposed at opposite sides of the container, interiorly thereof, are fixed to a shaft 35 rotatably supported in bearing openings 36—36 provided at the lower ends of the bearing blocks or members 26—26. As will be evident, the two locking dogs are thus operated in unison. Each locking dog or pawl 34 is provided with a lateral extension 37 having a cylindrical projection or boss 38 thereon which extends through the corresponding side wall 10 of the container. Exteriorly of said wall, the lug 38 is provided with a diametrical bore or opening adapted to receive an operating bar 39 by which the dog may be manipulated. As will be evident, when the dogs 34 are engaged with the ratchet members 33, as shown in Figures 4 and 6, the winding shaft 25 is locked against rotation, thereby holding the doors in the closed position shown in Figure 3. When it is desired to open the doors, the locking dogs 34 are released by manipulating either one of the same through the medium of the bar 39. As will be evident, when one of the locking dogs 34 is operated, the shaft 35 will be rotated, thereby operating the other locking dog in a similar manner. In order to close the doors 14—14 after a dumping operation, the shaft 25 is rotated so as to wind the chains 30—30 on the drum 28. For this purpose,

the shaft 25 is provided with operating means at opposite ends thereof, which may be manipulated by the wrench member shown in Figure 7. In the present instance, each ratchet member 33 has an outwardly projecting cross-like portion 40, formed integral therewith. The portion 40 is provided with four radial slots 41—41, thereby providing engaging lugs with which the wrench, shown in Figure 7, may cooperate. The shaft 25 of the operating means is preferably in the form of a hollow tube, the opening thereof being indicated by 42. The castings forming the ratchet members 33 and the operating means engageable by the wrench, shown in Figure 7, are fixed to the opposite ends of the shaft 25, being preferably secured thereto by means of keys 43. As shown in Figure 7, the special wrench employed has a pair of operating handles 44—44 and inwardly offset sections 45—45 connected by a traverse bar-like portion 46 having a rounded bar-like central projection 47. The projection 47 is adapted to engage within the opening of the hollow tubular shaft 25 while the transverse bar-like section 46 engages within two opposed slots or openings 41—41 of the corresponding boss 40 of the operating means. In closing the doors, the wrench member shown in Figure 7 is engaged with one of the operating ends of the shaft 25, as hereinbefore described, and rotated in the proper direction to wind the chains 30—30 on the winding drum 28. Inasmuch as the locking dogs or bolts 34—34 are gravity influenced, the same will prevent unwinding of the chains and when the doors have fully closed will lock the same in said position.

Each container B is provided with a plurality of interior baffle plates, which are preferably four in number, and arranged as shown in the drawings. The four plates comprise two plates 49—49 and 50—50. The plates 49—49 are of the same design, and as shown are provided with longitudinal reinforcing corrugations. The plates 50—50, as most clearly shown in Figure 2, are provided with transverse reinforcing corrugations. The plates 49—49 are disposed at diagonally opposite corners of the container and each plate has the upper outer edge thereof secured to the corresponding end wall 11 of the container. The lower end of each baffle plate 49 is supported by a beam 51 centrally disposed of the container and extending from one of the side walls 10 to the other, having its opposite ends riveted to said walls. The supporting beam 51 has inclined supporting flanges 52—52 at opposite sides thereof, said flanges being alternated and each extending for half the length of the beam 51. As clearly shown in Figure 3, the lower end portions of the plates 49—49 are riveted to the flanges 52 of the beam 51. The beam 51 not only provides a support for the lower ends of the baffle plates 49—49, but in addition serves to brace the opposed side walls 10—10 of the container. The baffle plates 50—50 are also disposed at diagonally opposite corners of the container, each baffle plate being inclined, as clearly shown in Figure 4, and having the upper end portion thereof riveted to the corresponding side wall 10 of the container. The lower ends of the plates 50—50 are supported by a beam 53 extending from one end wall 11 to the other, centrally of the container, and disposed above the beam 51, as shown most clearly in Figures 3 and 4. The beam 53 is provided with flanges 57—57, similar to the flanges 52—52, hereinbefore described in connection with the beam 51, and the lower edge portions of the plates 50—50 are riveted to said flanges 57—57. In addition to serving as a support for the lower ends of the baffle plates 50—50, the beam 53 also braces the opposed end walls 11—11 of the container. As will be clear upon reference to Figures 2, 3 and 4, the baffle plates 49—49 and 50—50 are so disposed that when bulk material is dropped into the container the impact of the fall thereof will be broken and distributed. It is further pointed out that the lower end edges of adjacent baffle plates 49 and 50 are staggered in height, thereby permitting free passage of the bulk material from the top of the container to the bottom thereof.

As will be clear from the preceding description taken in connection with the drawings, my improved bulk freight containers are adapted for a variety of uses. The containers may be used for various operations, such as carrying material to building constructions, breakwaters, piers, etc., being adapted for handling brick, rock and other bulk material in large quantities. As will be clear, a plurality of containers B, such as shown in Figure 1, may be filled with bulk material at one point and then loaded within a car and conveyed to another point for use, the same being lifted out of the car by a crane, derrick or other hoisting apparatus in the manner hereinbefore described, the lifting chains of the derrick or other device being attached to the rings 20—20 at the four corners of each container. When it is desired to empty the load of the container, the dumping doors are opened in the manner hereinbefore described, thereby permitting the contents to drop from the bottom of the container.

By providing the arrangement of dumping doors wherein the lower edges of the same are within the confines of the lower limits of the containers, it is assured that each container will rest flatly on the floor of the car, the bottom edge portions of the side and end walls of the container serving to form a true base member. As hereinbefore pointed out, the containers are all of the same size and of

like construction and are so proportioned that they will fit within a car so as to utilize the space provided therein to the greatest advantage. In order to prevent accidental displacement of the containers in transit, each container is provided with two sets of lugs 58—59 at each side thereof, as clearly shown in dotted lines in Figure 5. The lugs 59 are preferably arranged in pairs, as shown, so as to receive the usual stake member of the car therebetween. The lug 58 on the same side of the container engages one side of another stake of the car. The lugs 58 and 59 are duplicated at opposite sides of the container, whereby the container will properly cooperate with the stakes of the car in either position of the same, that is with either side of the container turned outwardly.

Although my improved containers B have been herein shown as used in combination with a gondola type of freight car, it will be evident that the same may be employed with any kind of a car, including box cars having a flat floor member on which the containers may rest while being carried.

I have herein shown and described what I now consider the preferred manner of carrying out my invention, but the same is merely illustrative and I contemplate all changes and modifications that come within the scope of the claims appended hereto.

I claim:

1. A bulk freight container of rectangular box-like form open at the top and having inclined bottom dumping doors, said doors being entirely within the limits of the bottom edge of the container, said bottom edge lying in a single plane to rest on a flat floor of a car.

2. A bulk freight container of rectangular box-like form, open at the top and having dumping doors at the bottom portion thereof, said container having a base portion lying in a single plane and adapted to rest on a flat support, said base portion forming extensions of the vertical walls thereof and having the bottom edge thereof disposed in alinement with the bottom edges of the doors when closed.

3. In a bulk freight container, open at the top and having vertical side walls, said container having a base portion forming a continuation of said side walls, lying in a single plane and adapted to rest squarely upon a flat support, the bottom edge of said base member forming the bottom limits of said container, said container having a bottom dumping opening; a door hinged to said container and swingable to an inclined position within the lower limits of said container to close said opening.

4. In a bulk freight container, open at the top and having vertical side walls, the bottom edges of which form a base portion adapted to rest squarely on a flat support, said container having a bottom wall, and a swinging dumping door forming a part of said bottom wall, said door when closed being inclined, one end of said door being hinged to the container and the other end of the door, when closed, being disposed interiorly of the container and within the lower limits of said base portion thereof.

5. In a bulk freight container, open at the top and having vertical side walls, the bottom edges of said side walls forming a base portion adapted to rest squarely on a flat support, said container having a bottom wall including a plurality of inclined hinged dumping doors, each door being hinged at the upper end thereof to said container at such a distance above the bottom limits of the container that the lower edge of said door when closed is disposed within the lower limits of said container.

6. In a bulk freight container having opposed spaced end and opposed spaced side walls open at the top and fixed bottom wall having a raised central portion, said bottom wall being disposed entirely within the container and being spaced from each of the walls of one of said opposed sets to provide dumping openings; inclined dump doors for closing said openings, each of said doors being hinged at the upper end to one of said last named side walls and having, when closed, the lower edge thereof cooperating with the adjacent edge of the bottom wall and disposed within the lower limits of said container.

7. In a bulk freight container having opposed spaced end walls and opposed spaced side walls, said container being open at the top, and the lower end of said side and end walls forming a base portion adapted to rest squarely on a support, said container having hopper discharge means at the bottom portion thereof, said discharge means including a fixed bottom wall section and cooperating dumping doors, said fixed wall extending from one of said side walls to the other and having a central raised portion with downwardly inclined sides disposed entirely above the bottom limits of the container and spaced from the end walls respectively, thereby providing dumping openings, said dumping doors being hinged at their upper ends to said end walls and being inclined, when closed and having their lower edges lying within the lower limits of said container.

8. In a bulk freight container open at the top and having a base portion adapted to rest squarely on a flat support and hinged bottom dumping doors; of means for operating said doors including a winding element and flexible means adapted to be wound thereon, said flexible means being connected to said doors, said winding means being disposed entirely above the bottom limits of said base portion, and said dumping doors

when swung to closed position having the lower edges thereof disposed within the lower limits of said portion.

9. A bulk freight container open at the top and having spaced vertical end and spaced vertical side walls, the base portion of said opening forming a continuation of said walls and being adapted to rest squarely on a flat support, said container having hopper discharge means at the bottom thereof including a fixed bottom wall member and cooperating hinge doors which, when closed, are disposed entirely within the bottom limits of said base portion, and winding means for actuating said doors, said winding means being disposed within the bottom limits of said base portion and underneath said bottom wall member thereof.

10. A bulk freight container, said container being of rectangular box-like form open at the top, said container having dumping doors at the bottom thereof, and inclined baffle plates between said doors and the top of the container.

11. A bulk freight container having a dumping bottom and a plurality of interior baffle plates, each of said plates being inclined downwardly towards the central portion of the container.

12. A bulk freight container of rectangular box-like form having vertical side walls, a dumping bottom and a plurality of baffle plates, one of said plates being fixed to each wall and inclined downwardly and inwardly therefrom, and the lower inner edges of each of said baffle plates being staggered with respect to the next adjacent plate.

In witness that I claim the foregoing I have hereunto subscribed my name this 13th day of November 1930.

JOHN F. O'CONNOR.