Oct. 24, 1939. W. A. BEAUCHAMP 2,177,313

BULK FREIGHT CONTAINER

Filed Nov. 1, 1937 4 Sheets-Sheet 1

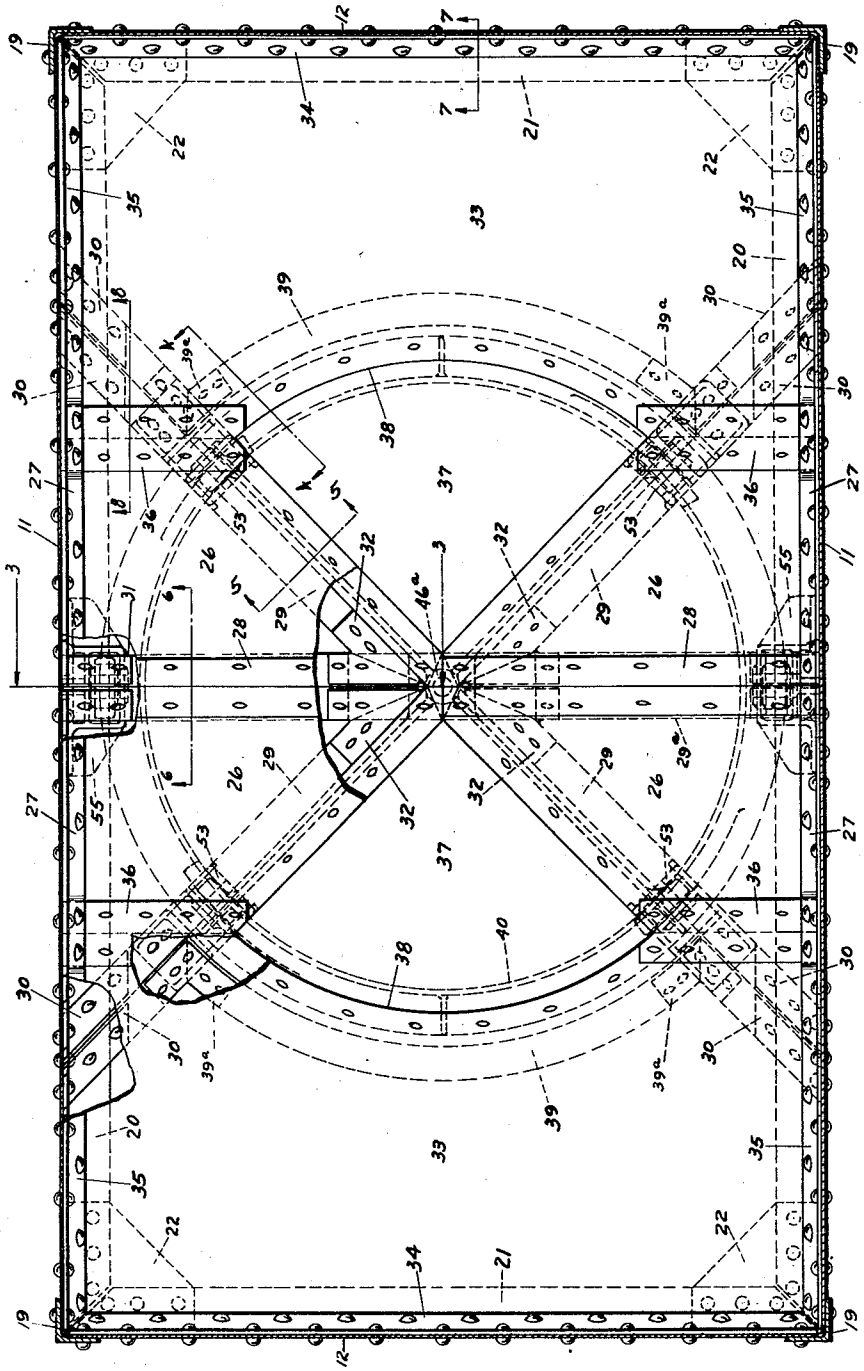


FIG. 1

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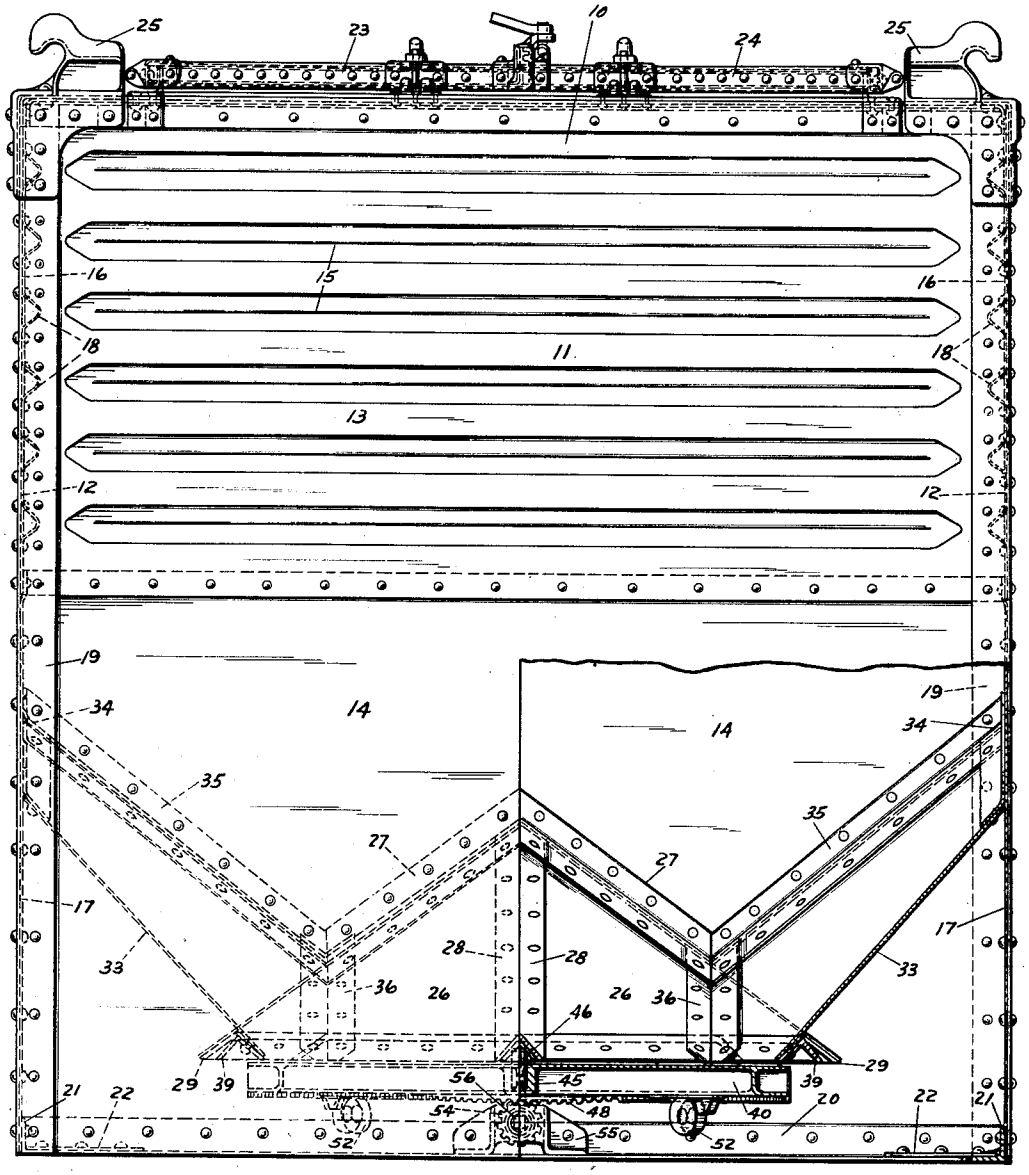
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BULK FREIGHT CONTAINER

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FIG—2



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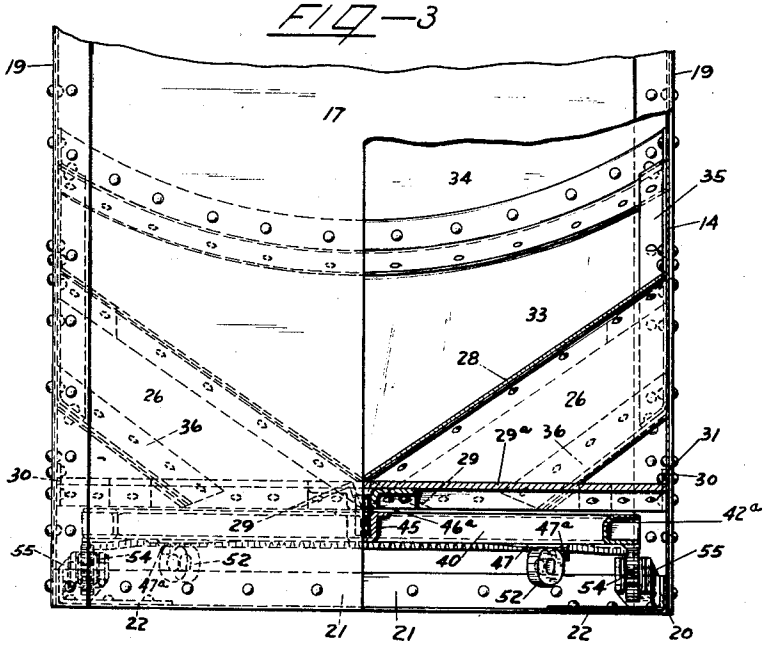
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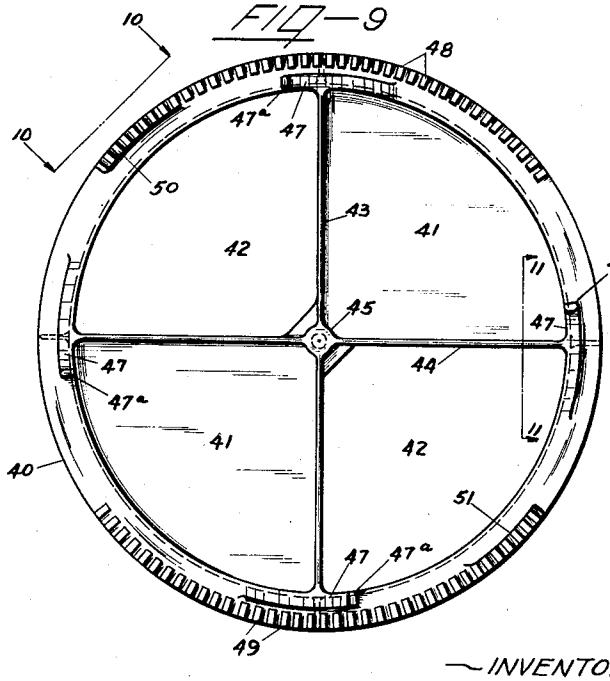
BULK FREIGHT CONTAINER

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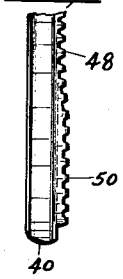
FIG—3



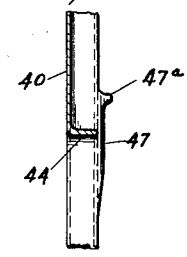
FIG—9



FIG—10



FIG—11



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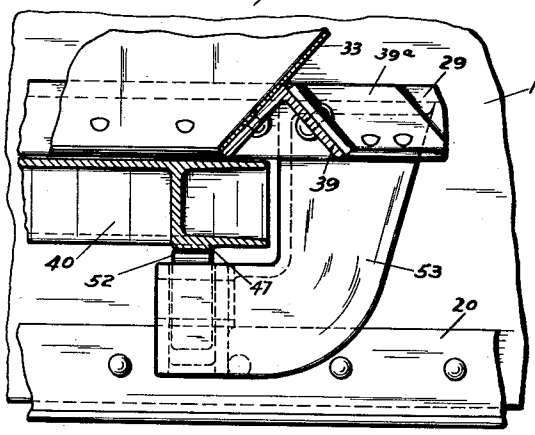
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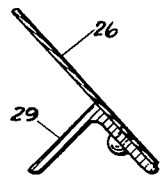
BULK FREIGHT CONTAINER

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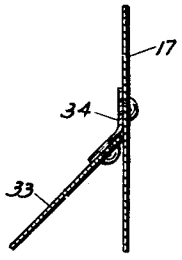
FIG—4



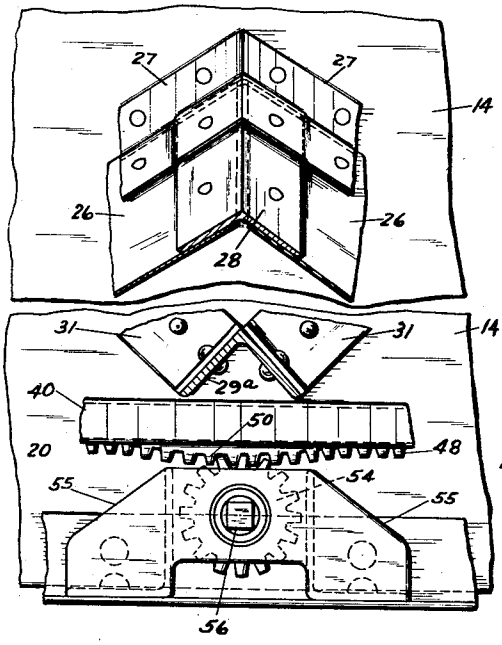
FIG—5



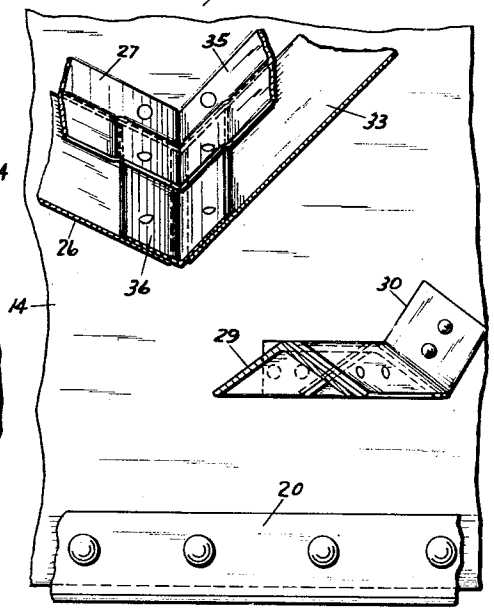
FIG—7



FIG—6



FIG—8



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Patented Oct. 24, 1939

2,177,313

UNITED STATES PATENT OFFICE

2,177,313

BULK FREIGHT CONTAINER

Wilfred A. Beauchamp, Chicago, Ill., assignor to The Youngstown Steel Door Company, Cleveland, Ohio, a corporation of Ohio

Application November 1, 1937, Serial No. 172,065

5 Claims. (Cl. 221—144)

This invention relates to bulk freight containers.

The invention has for its objects to provide freight containers in which various kinds of bulk materials may be transported by train, truck, boat and the like, which shall be sturdy in construction and weather-proof; to provide freight containers having opposed discharge openings formed by sloping metallic sheets which insure discharge of the material in the container; and to provide horizontally rotatable closures for said discharge openings supported and readily operated by means located substantially at the periphery of the closures to secure simultaneous control of the discharge openings and regulate the flow of material from the container.

Other objects of the invention will become clear as the description thereof proceeds.

In the drawings forming part of this specification:

Figure 1 is a horizontal section through the container looking at the bottom of the container, parts being broken away in order to more clearly show details of the construction.

Figure 2 is a side elevation partly in section.

Figure 3 is a partial end elevation partly in section, corresponding to the plane indicated by section line 3—3 of Figure 1.

Figure 4 is a section taken on line 4—4 of Figure 1.

Figure 5 is a section taken on line 5—5 of Figure 1.

Figure 6 is a section taken on line 6—6 of Figure 1.

Figure 7 is a section taken on line 7—7 of Figure 1.

Figure 8 is a section taken on line 8—8 of Figure 1.

Figure 9 is a bottom plane view of the closure.

Figure 10 is a view taken on line 10—10 of Figure 9.

Figure 11 is a section taken on line 11—11 of Figure 9.

Referring to the drawings, the container 10 is shown as being rectangular in section and embodying side walls 11—11 and end walls 12—12. Each of the side walls is formed of two metallic panels 13 and 14, the panel 13 being the upper panel and being provided preferably with spaced horizontal corrugations 15. Similarly, each of the end walls 12 is formed of two metallic panels 16 and 17, the panel 16 being the upper panel and being formed with spaced horizontal corrugations 18.

The side and end walls extend preferably from top to bottom of the container and are connected by means of vertical corner angles 19 as by riveting. The corner angles 19 also extend from top to bottom of the container.

Horizontal angles 20 and 21 are secured respectively to the lower margin of the side walls 11 and the end walls 12. These bottom angle members are secured additionally to the lower ends of the corner angles 19 and at their meeting edges are braced by means of gusset plates 22. A sturdy bottom edge is thus provided for the container and the bottom angles of this construction serve additionally as a base for the container.

The top of the container is provided with the usual charging port which is closed by means of the hinged closures 23 and 24, so arranged as to render the charging port weatherproof. At the top of the container and situated at the four corners thereof are combined corner and lifting castings 25 adapted for engagement by lifting tackle in order to facilitate handling of the container.

The bottom of the container is formed of a plurality of metallic sheets secured respectively to the side and end walls and sloping downwardly from the point of securement to discharge openings formed in said bottom. Each of the side slope sheets 26 is in the form of a trapezoid, the longer base of which lies substantially along the transverse center line of the container. Each side slope sheet is fastened to its corresponding side wall 11 by means of an angle member 27 shown as riveted to the slope sheets and to the side walls of the container. At their meeting edges the side slope sheets are fastened together as by riveting through an angle member 28 which overlies the adjacent margins of the sheets. As hereinabove described, these sheets slope downwardly from the side walls of the container and at their lower edges are fastened to angle members 29 arranged as clearly shown in Figure 5 of the drawings. These angle members consequently serve to reinforce the lower margins of the side slope sheets.

The angle members 29 which lie in a horizontal plane extend from the center of the bottom of the container to the side walls of the container in radial lines. At the side walls each of the angles 29 is fastened by means of brackets 30 secured to the angles and to the side walls as by riveting. At the center of the bottom of the container the angles 29 are connected to an angle member 29a which extends continuously from side wall to side wall to which said angle member is secured by means of brackets 31. This connectiton is ef-

fected by brackets 32 riveted to the angle member 29a and to the respective angles 29. For the purpose of this connection the ends of the angles 29 are sheared to conform to the slope of the legs of angle member 29a as clearly shown in Figure 1. The angles 29 in addition to their function as reinforcing members for the lower margins of the side slope sheets, serve in conjunction with the angle member 29a to brace the side walls of the container.

As more clearly appears in Figure 3 of the drawings, the end slope sheets 33 are transversely curved from side wall to side wall of the container. An angle member 34 secured to an end wall and to an end slope sheet serves to secure each end slope sheet to an end wall of the container. The angle members 34 follow the curved contour of the end slope sheets. Where the end slope sheets meet the side walls of the container, angle members 35 are utilized to fasten these sheets to the side walls. Each edge of the end slope sheets extends downwardly toward the center of the container, joins the shorter base of a side slope sheet and is connected thereto by an angle member 36 disposed to overlie the adjacent margins of the end and side slope sheets. It will be observed that the angle connections utilized in the securement of the side and end slope sheets to each other and to the side and end walls of the container satisfactorily weatherproof the bottom of the container. It will be apparent, moreover, that the disposition of the side and end slope sheets are such as to converge downwardly toward the discharge openings 37 formed in the bottom of the container.

As clearly appears in Figure 1 of the drawings, the discharge openings 37 are in opposed relationship and are defined by the lower horizontal margins of the side slope sheets and by the lower margins of the end slope sheets. The latter are of curved contour as indicated at 38 and are reinforced by means of curved angle members 39. The angle members 39 extend between the horizontal angle members 29 secured to the lower margins of the side slope sheets and are connected therewith by means of brackets 39a. The arrangement hereinabove described provides substantially sectoral discharge openings.

A closure member 40 is utilized to control the discharge openings 37. The closure 40 is substantially cylindrical and is preferably formed of a casting. The marginal portion of the closure is channel shaped in vertical section as clearly appears from Figure 2 of the drawings thereby providing a rigid peripheral portion. The closure comprises additionally sectoral closure portions 41 separated by similarly shaped openings 42. At these openings the channel shaped marginal portions of the closure are sloped to conform to the slope of the end sheets as indicated at 42a. Reinforcing members 43 and 44 disposed at right angles to each other extend from a pocket 45 formed in the center of the closure. The pocket 45 is adapted to receive a pin 46, the upper portion of which extends into a bearing member 46a secured to the horizontal angle member 29a. The underside of the peripheral portion of the closure carries spaced wedges 47 provided with stop lugs 47a and in addition is formed with spaced series of teeth 48 and 49. It is to be observed that certain of the teeth in each series are deeper than the remainder of the teeth in said series as indicated at 50 and 51.

The relationship between the closure 40 and the discharge openings in the bottom of the container is clearly illustrated in Figures 1, 2 and 3 of the drawings The closure 40 is supported upon a plurality of spaced rollers 52 carried by the brackets 53 secured to each of the horizontal angle members 29. With reference to Figure 4 of the drawings, it will be seen that the rollers 52 are in vertical alignment with the wedges 47.

For the operation of the closure 40 a plurality of pinions 54 are provided. These pinions are secured centrally of the container to each side wall by means of brackets 55. Each pinion is mounted upon a shaft having a squared end 56 which may be reached through an opening in the side wall of the container so that a crank may be placed upon the pinion shaft.

In view of the foregoing detailed description of the invention it is believed that the operation of the closure 40 will be apparent. In its closing position the closure portions 41 will extend across the openings 37 in the bottom of the container. When it is desired to discharge the contents of the container, a crank may be inserted through either opening in the side walls and engaged with the squared end of the pinion shaft. Upon rotation of the shaft and pinion, the closure will be rotated about the pin 46 so as to simultaneously expose the openings 37. In this position the sloped portions 42a of the closure provide a continuation of the end sheets and the stop lugs 47a abut against the rollers 52 limiting opening rotation of the closure. During the rotation of the closure it will be supported upon the rollers 52. Any desired degree of opening may be obtained and by virtue of the invention any desired amount of the contents of the container may be discharged and the flow of the contents then readily shut off. When the closure 40 is returned to its closing position the rollers 52 will engage the wedges 47 on the closure and exert a lifting force upon the closure to insure snug engagement between the closure and the angle members defining the discharge openings 37. A weather-tight condition between the closure and the container is thus insured. Because of the greater depth of the teeth 50 and 51 engagement between them and and the pinions 54 is insured even though the closure is moved upwardly in its final closing movement by the wedges 47. Also the rollers 52 will abut against the stop lugs to limit closing rotation of the closure.

It will be apparent that numerous changes and modifications in the details of the invention will be clear to those skilled in the art. It is intended, therefore, that all such modifications and changes be comprehended within this invention, which is to be limited only by the scope of the claims appended hereto.

I claim:

1. A bulk material freight container having side and end walls, comprising radially extending horizontal angle members, means securing said angle members to said side walls, means securing said angle members together at the center of said container, a bearing member fastened to one of said angle members, oppositely disposed curved angle members extending between and fastened to adjacent pairs of radial angle members, side and end slope sheets secured to said walls and to said angle members, said end slope sheets terminating a substantial distance from the center of said container and forming opposed sectoral discharge ports in conjunction with said side slope sheets, a horizontally rotatable closure for said discharge ports, a centrally located pock-

et provided in said closure in vertical alignment with said bearing member and a pin disposed in said pocket and said bearing member.

2. A bulk material freight container having side and end walls, comprising radially extending horizontal angle members, means securing said angle members to said side walls, means securing said angle members together at the center of said container, oppositely disposed curved angle members extending between and fastened to adjacent pairs of radial angle members, side and end slope sheets secured to said walls and to said angle members, said end slope sheets terminating a substantial distance from the center of said container and forming opposed sectoral discharge ports in conjunction with said side slope sheets, a horizontally rotatable closure for said discharge ports and means operable from a side wall of said container for imparting opening and closing rotation to said closure.

3. A bulk material freight container having side and end walls, comprising radially extending horizontal angle members, means securing said angle members to said side walls, means securing said angle members together at the center of said container, oppositely disposed curved angle members extending between and fastened to adjacent pairs of radial angle members, side and end slope sheets secured to said walls and to said angle members, said end slope sheets terminating a substantial distance from the center of said container and forming opposed sectoral discharge ports in conjunction with said side slope sheets, a horizontally rotatable closure for said discharge ports and means operable from a side wall of said container for imparting opening and closing rotation to said closure, said end sheets sloping downwardly from said end walls to said discharge ports and being curved between said side walls.

4. A bulk material freight container comprising means defining opposed sectoral discharge ports, a horizontally rotatable closure disposed below said discharge ports, said closure having opposed sectoral portions separated by sectoral openings, rollers carried by said container supporting said closure at its periphery, teeth depending from the bottom of said closure and pinions carried by said container meshing with said teeth, said closure having wedge members cooperating with said rollers to force said closure tightly against said means in port closing position, said teeth on said closure which engage said pinions in the closed position of said closure being of increased depth.

5. A bulk material freight container having side and end walls comprising radially extending horizontal angle members, means securing said angle members to said side walls, means securing said angle members together at the center of said container, oppositely disposed angle members extending between and fastened to adjacent pairs of radial angle members, side and end slope sheets secured to said walls and to said angle members, said end slope sheets terminating a substantial distance from the center of said container and forming opposed sectoral discharge ports in conjunction with said side slope sheets, a horizontally rotatable closure for said discharge ports, brackets fastened to said radial angle members, rollers carried by said brackets for supporting said closure, and means operable from a side wall of said container for imparting opening and closing rotation to said closure.

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