United States Patent

Gibson et al.

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[54] **RIM LIFT BINS**

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[73] Assignee: **United States Steel Corporation**

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[52] **U.S. Cl.** .....**220/97 C,** 220/71

[51] **Int. Cl.** **B65d 21/02,** B65d 7/44

[58] **Field of Search**.....220/97 C, 97 F, 71; 215/10

[56] **References Cited**

UNITED STATES PATENTS

2,049,977	8/1936	Ross	220/71 X
2,822,951	2/1958	Tartaglia	220/97 C X

FOREIGN PATENTS OR APPLICATIONS

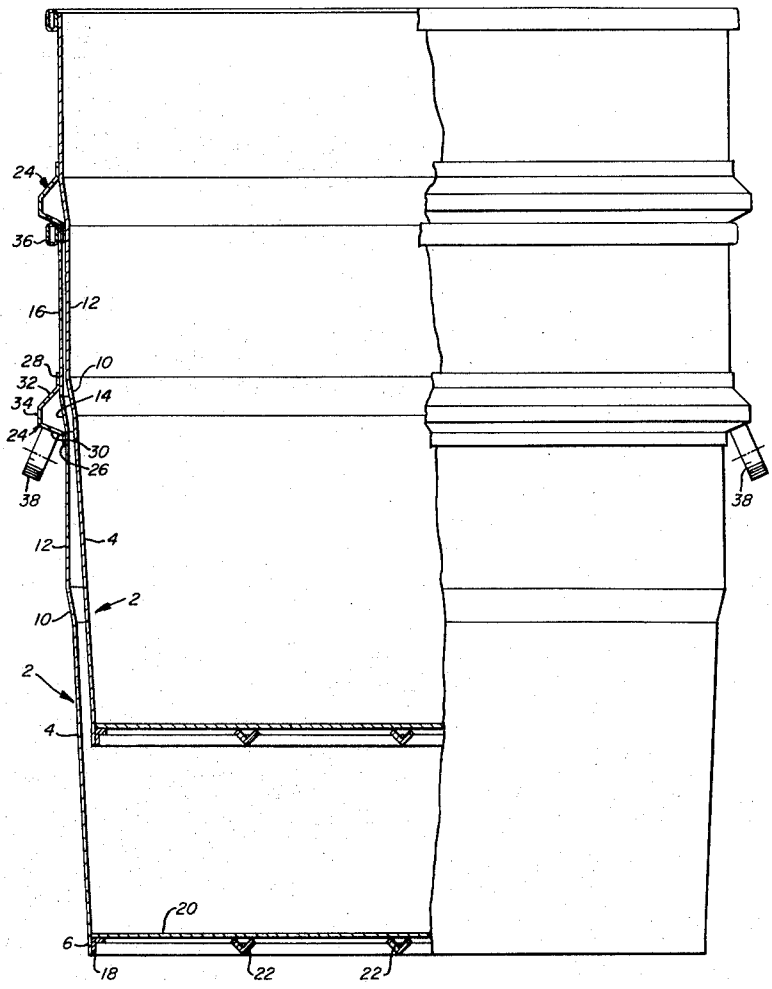
609,141	9/1948	Great Britain	220/97 C
1,490,636	6/1967	France	220/97 C

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[57] **ABSTRACT**

A rim lift bin has a main body member substantially rectangular in horizontal section. The body member has a relatively long bottom tapered section tapering outwardly and upwardly, a relatively short intermediate tapered section above the bottom tapered section which tapers upwardly and outwardly at an angle greater than the bottom tapered section, a first vertical section connected to the top of the intermediate tapered section, an upper tapered section connected to the top of the first vertical section, and a second vertical section extending upwardly from the upper tapered section. A channel rim member having a bottom leg extending upwardly and outwardly at a slight angle, a top leg and a vertical base connecting the legs is fastened to the main body member above the center of gravity of the bin. This arrangement permits nesting and easy handling of the bins.

10 Claims, 3 Drawing Figures

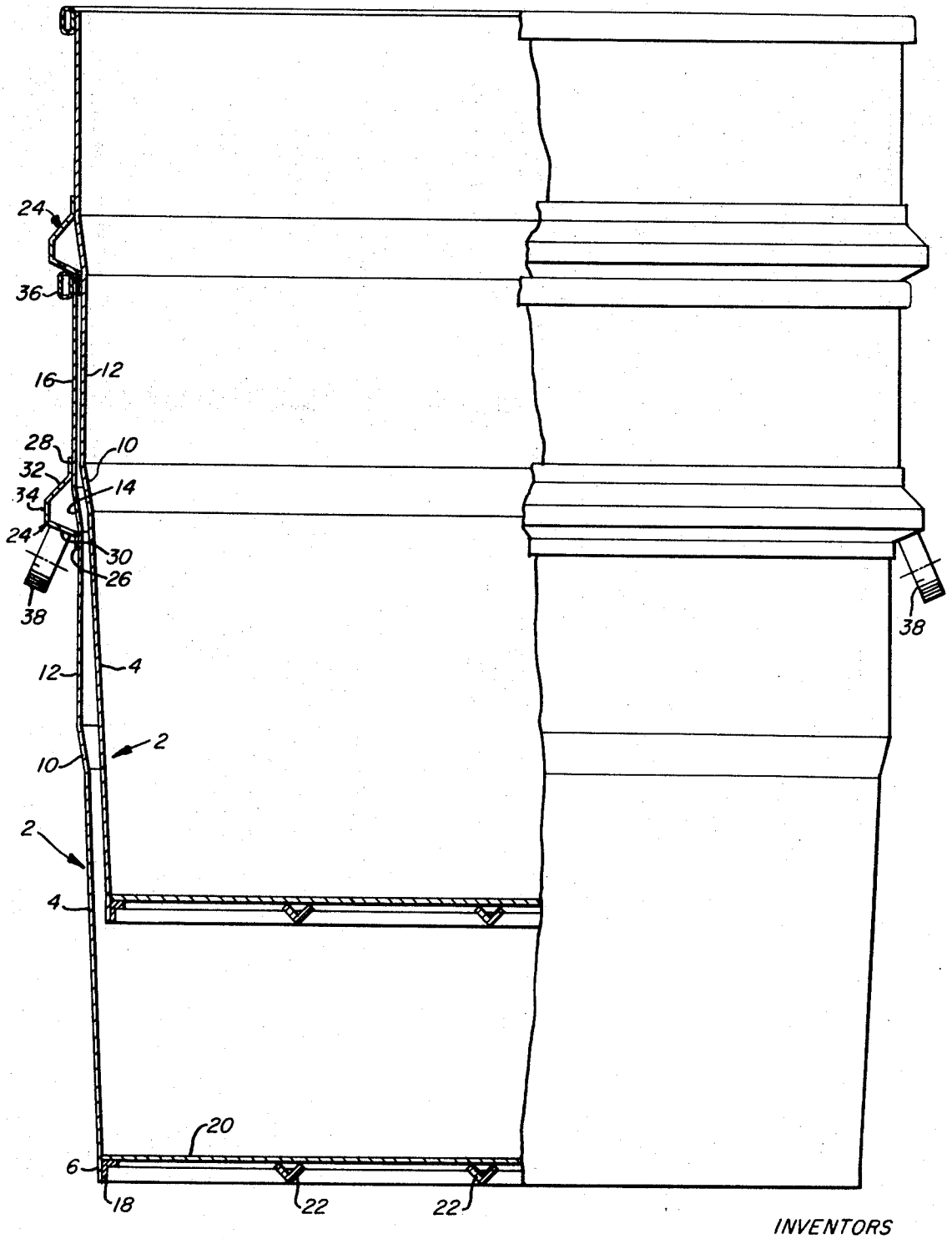


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SHEET 1 OF 2

FIG. 1



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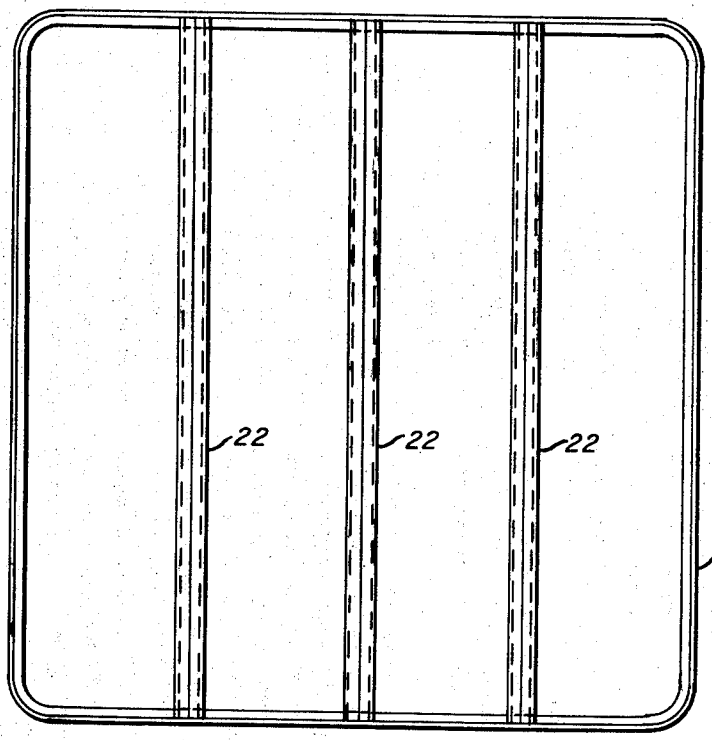
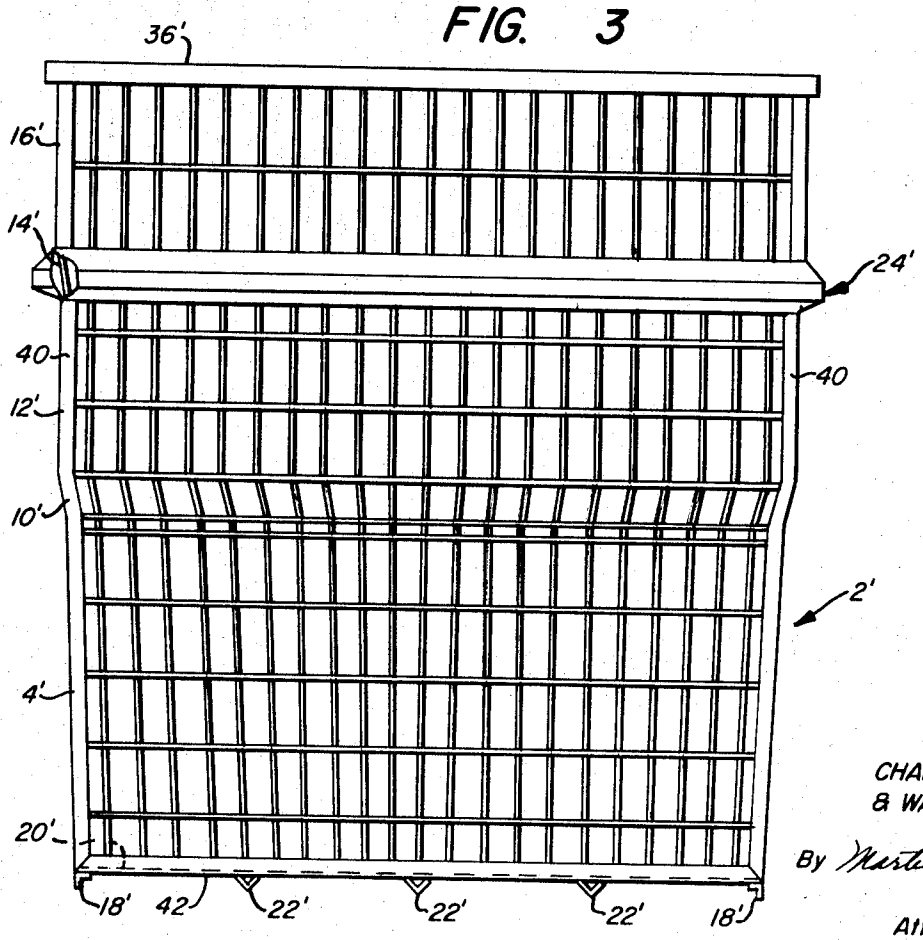


FIG. 2

FIG. 3



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RIM LIFT BINS

This invention relates to rim lift bins and more particularly to such bins made of steel in such manner that they can be readily nested, one within the other. In the handling of large batches of fruits, vegetables and other materials it is preferred to use large bins to reduce the cost of handling. One type of such bin is disclosed in a pamphlet entitled "Rim Lift System" published by United States Steel Corporation in May of 1968. However, the bin disclosed therein did not prove satisfactory in service because it did not track properly when mounted on a conveyor and had other disadvantages, including manufacturing and handling difficulties.

It is therefore an object of our invention to provide a rim lift bin which is relatively easy to manufacture and which may be readily nested.

Another object is to provide such a bin which best utilizes the material to obtain maximum strength and capacity.

These and other objects will be more apparent after referring to the following specification and attached drawings, in which:

FIG. 1 is an elevation of one embodiment of our invention with parts broken away and shown in section and also showing one bin nested within another;

FIG. 2 is a bottom plan view of the bin of FIG. 1; and

FIG. 3 is an elevation of a second embodiment of our invention with a part broken away to show a detail.

Referring more particularly to FIGS. 1 and 2 of the drawings, reference numeral 2 indicates a main body member of the rim lift bin of our invention. This is preferably made of sheet steel which in one particular case is 20 gauge. The member 2 is generally rectangular in shape and is preferably square with rounded corners as shown. The member 2 has a relatively long tapered section 4 which extends upwardly and outwardly. In one specific 47 inch high bin this is 22 ½ inches long. A short vertical section 6 may be provided at the bottom of section 4. A short intermediate tapered section 10 is connected to the top of section 4 and tapers upwardly and outwardly a short distance at a steeper angle than section 4 to provide strength. The top of section 10 merges with a first vertical section 12 which has a length substantially greater than that of tapered section 10. The top of section 12 merges with an upper tapered section 14 which tapers upwardly and outwardly for the same distance and at the same angle as section 10 to a second vertical section 16. An angle 18 extends around and is welded to the inside of section 6 with its inwardly extending leg extending horizontally at the top of section 6. The angle 18 is preferably in a plurality of sections welded together end to end. A sheet steel bottom member 20 rests on and is welded to the angle 18. A plurality of spaced apart angles 22 extend in parallel relationship below the bottom 20 with their legs extending upwardly and welded to the bottom of the member 20 so as to provide V-shaped reinforcing members. The angles 22 may be omitted and the sheet 20 bent downwardly at spaced intervals to provide V-shaped reinforcements. A channel or U-shaped rim member 24 is provided with a bottom flange 26 and a top flange 28 which are welded to the top of section 12 and the bottom of section 16. The U-shaped member 24 extends completely around the outside of the body member 2. Bottom leg 30 of the member 24 extends upwardly and outwardly from the bottom

flange at a relatively small angle which may be between 5 and 20°, but is preferably 10°. A top leg 32 extends downwardly and outwardly from the top flange at a relatively large angle such as 45°. The outer ends of the top and bottom legs are connected by a vertical base 34. The bottom leg 30 should be located above the center of gravity of the bin and is preferably located between 20 and 25 percent of the bin height below the top of the bin. A rectangular tubular member 36 extends around and is welded to the outside of the top of vertical section 16. The member 36 may be omitted when the U-shaped member 24 is mounted at the top of the bin. Also, a rolled top edge could be used in place of the member 36. Regardless of how the top of the bin is finished it will be seen that a top edge surface is obtained which is connected to the upper vertical section.

The bin is adapted to be supported upon and to be moved along a conveyor including a series of spaced apart rollers 38 which are preferably arranged for rotation about axes tilted from the horizontal at the same angle as leg 30. The rolls may also be arranged for rotation about horizontal axes if their supporting peripheral surfaces are arranged at the same angle as leg 30.

In handling the bin the surface 34 acts as a spacer between bins and also acts as a bumper to prevent damage to adjacent bins. FIG. 1 shows how two bins are nested, one within the other. It will be seen that the rim member 24 of the top bin rests on he stiffener 36 of the bottom bin and that the sections 12, 10 and 4 of the top bin are within sections 16, 14 and sections 12, 10 and 4, respectively of the bottom bin.

FIG. 3 shows a second embodiment of our invention having a main body member 2′ made of welded wire steel mesh. It will be seen that this bin has a bottom tapered section 4′, an intermediate tapered portion 10′, a first vertical portion 12′, an upper tapered portion 14′ and a second vertical portion 16′.

Angles 18′ are attached to the bottom of the welded wire fabric 2′. A welded wire fabric member 20′ rests on top of the angles 18′ and is welded thereto. Reinforcing angles 22′ are welded to the bottom of the member 20′. The construction so far described is essentially the same as that for the first embodiment except that the body member 2 is made of welded wire fabric rather than of sheet steel. A channel rim member 24′ made of sheet steel has the same construction as member 24 and is welded to fabric 21 in the same position as member 24. A rectangular tubular member 36′ having the same construction as member 36 extends around and is welded to the outside of the top of the vertical section 16′. The corners of the bin 2′ may be reinforced by steel angles 40 and the bottom reinforced by steel angles 42. This bin is lighter than the bin of the first embodiment and provides maximum air circulation and visibility of the content.

While two embodiments of our invention have been shown and described, it will be apparent that other adaptations and modifications may be made without departing from the scope of the following claims.

We claim:

1. A rim lift bin comprising a main body member substantially rectangular in horizontal section, said main body portion having a relatively long bottom tapered section tapering upwardly and outwardly, a relatively short intermediate tapered section above and

connected to said bottom tapered section tapering upwardly and outwardly at an angle greater than the bottom tapered section, a first vertical section extending upwardly from said intermediate tapered section, an upper tapered section tapering upwardly and outwardly from said first vertical section for approximately the same distance and at approximately the same angle as the intermediate tapered section, a second vertical section extending upwardly from said upper tapered section, and a top edge surface connected to said upper vertical section; a channel rim member having a bottom leg, a top leg, and a generally vertical base connecting the outer ends of said top and bottom legs; means connecting said rim member to said body member with the bottom leg above the center of gravity of said bin and its generally vertical base positioned outwardly beyond said upper vertical section; nd a bottom member secured to said main body member, said bottom leg being adapted to engage the top edge surface of another bin when in nested relationship therewith.

2. A rim lift bin according to claim 1 in which said bottom leg extends upwardly and outwardly of said rim member from said body member at an angle of between 5° and 20°.

3. A rim lift bin according to claim 2 in which said main body member and said bottom member are made of sheet steel.

4. A rim lift bin according to claim 3 in which said channel rim member is made of sheet steel and has lower and upper flanges secured to said first and second vertical sections respectively.

5. A rim lift bin according to claim 4 including a rectangular tubular member extending around and welded to the outside of the top of said main body member, an angle extending around and having one leg welded to the inside of the bottom of said main body member and its other leg extending inwardly from the top of said one leg for supporting said bottom member, and a plurality of reinforcing members secured to the bottom of said bottom member.

6. A rim lift bin according to claim 5 in which the said bottom leg of said rim member extends upwardly and outwardly at an angle of approximately 10°.

7. A rim lift bin according to claim 2 in which said main body member and said bottom member are made of welded wire steel mesh.

8. A rim lift bin according to claim 7 in which said channel rim member is made of sheet steel and has lower and upper flanges secured to said first and second vertical sections respectively.

9. A rim lift bin according to claim 8 in which the said bottom leg of said rim member extends upwardly and outwardly at an angle of approximately 10°.

10. A rim lift bin according to claim 9 including steel reinforcing angles at the corners of said main body member.

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