

Jan. 19, 1943.

P. ROSENBERG

2,308,629

BIN

Filed Jan. 23, 1942

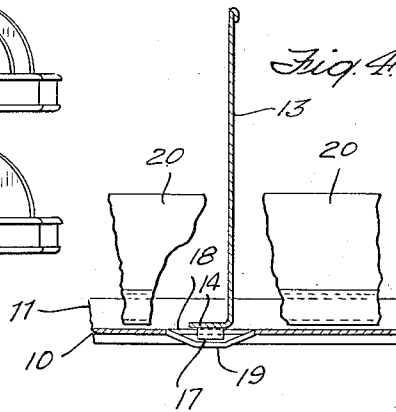
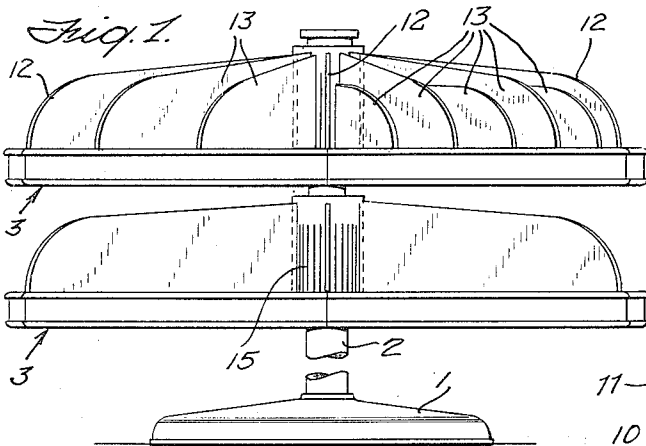
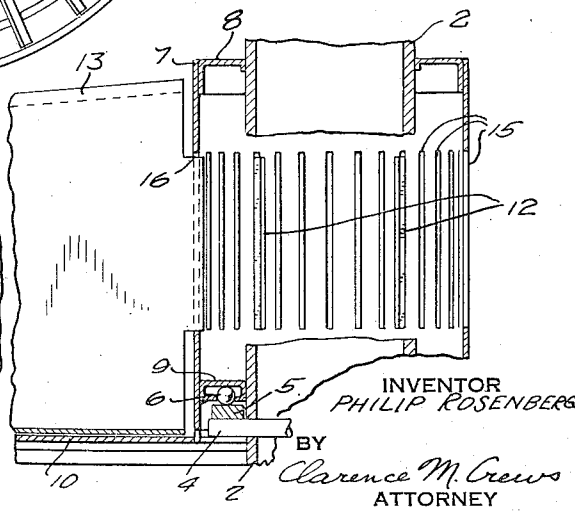
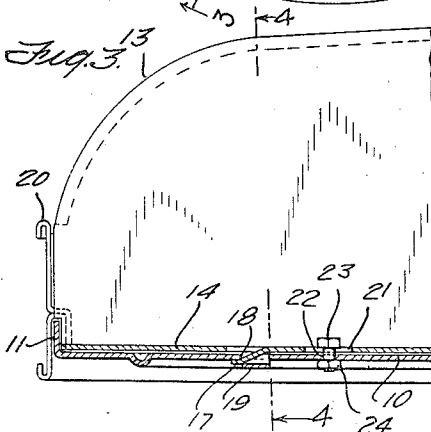
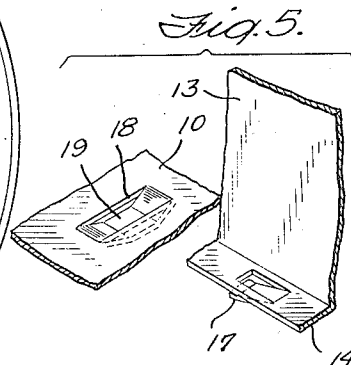
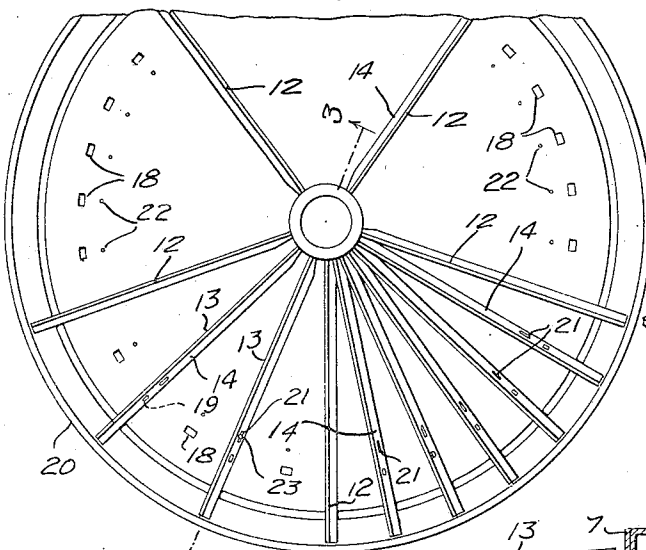


Fig. 2.



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2,308,629

BIN

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Application January 23, 1942, Serial No. 427,851

7 Claims. (Cl. 211—131)

This invention relates to bins, more particularly to bins of the rotary type.

Bins of the kind referred to commonly include a supporting base, a central shaft, and bin sections mounted on the shaft, each with capacity for rotation relative to the shaft and independently of the other bin sections.

Each bin section generally includes a floor member or platform, a central supporting sleeve, and a series of vertical, radially extending, permanent dividers affixed to the platform and to the sleeve. The permanent dividers separate the bin section into a series of major sectors, and each of these major sectors may be subdivided into bin compartments of various sizes by the application of removable dividers. The present invention has primarily to do with the application and removal of the removable dividers.

The primary object of the invention is to provide inexpensively and effectively for the easy application and removal of the temporary or removable dividers, and for the stable and secure retention of the temporary dividers in place.

To this end it is a feature of the invention that the sleeve is provided with a series of elongated vertical slots, and that each temporary divider is formed at its inner end with an inwardly extending tongue adapted to be inserted in any one of the sleeve slots.

It is a further feature of the invention that the temporary divider is provided with a downwardly offset tongue adapted to be inserted through the floor member, and that the floor member is provided with a multiplicity of openings, each in radial alignment with one of the slots, and each remote from the sleeve, for orienting the divider and for quickly effecting a stable and firm but detachable connection between the divider and the floor member at a point remote from the sleeve. The fact that the tongue is offset downwardly to lie at the lower side of the floor member is important because the tongue is kept out of contact with the contents of the bin and is not, therefore, exposed to blows which might displace or deform it.

Other objects and advantages will hereinafter appear.

In the drawing forming part of this specification

Fig. 1 is a view in elevation of a bin embodying the invention, the structure being broken away intermediate its ends for compactness of illustration;

Fig. 2 is a fragmentary plan view of the bin illustrated in Fig. 1;

Fig. 3 is a fragmentary, vertical, sectional view taken upon the line 3—3 of Fig. 2, looking in the direction of the arrows, the view being upon a larger scale than Figs. 1 and 2;

Fig. 4 is a fragmentary view in sectional elevation, taken upon the line 4—4 of Fig. 3 and looking in the direction of the arrows; and

Fig. 5 is a fragmentary perspective view showing the formation of the underlying elements of the floor member and the base flange of a removable divider.

The illustrative bin comprises a base 1 and an upright shaft 2, the shaft having bin sections 3 rotatably mounted upon it at different levels. The bin sections may all be duplicates of one another, and hence only two bin sections have been illustrated. It is apparent, of course, that as many bin sections as desired may be mounted upon a single shaft.

The mounting of a bin section is best illustrated in Fig. 3. A pin 4 is passed diametrically through the shaft 2 with its ends projecting beyond the shaft at opposite sides thereof. A ring 5 is supported upon the projecting ends of the pin 4, and in turn supports a ball bearing 6. A sleeve 7 has secured to its inner face, as by welding, upper and lower channel rings 8 and 9 which substantially fit the shaft 2. The lower bearing ring 9 receives and rests upon the ball bearing 6.

A floor member or platform 10 in the form of a disc having a circumferentially extending, upstanding lip or flange 11, is supported from the sleeve 7 through permanent dividers 12. The sleeve 7 forms a common inner wall for all the bin compartments of a bin section. Each permanent divider is suitably secured to the supporting sleeve 7 and to the platform 10, as by welding. Temporary or removable dividers 13 each include a base flange 14. The sleeve 7, the floor member 10, the permanent dividers 12 and the temporary dividers 13 are all desirably sheet metal parts.

The invention has to do with the means for effecting quick and convenient attachment and removal of the temporary dividers 13 in selected locations, and for making the attachment of the temporary dividers solid, steady and secure.

To this end it is a salient feature of the invention that the sleeve 7 is formed with a multiplicity of elongated vertical slots 15, and that each temporary divider 13 is provided at its inner end with an inwardly extending tongue 16 which is vertically elongated. Each tongue 16 desirably extends to a point far above the floor member

10, and preferably above the mid-height of the temporary divider. The tongue 16 and the slot 15 coact to hold the divider against sidewise tilt-in, although they admit of limited radial movement of the divider.

The base flange 14 of each divider has a downwardly offset tongue 17 struck from it near the outer end of the divider. The tongue 17 is adapted to be passed through the floor member 10 and in cooperation with the undisplaced metal of the flange 14 to grip a portion of the floor member.

The floor member 10 is provided with a multiplicity of openings 18 through which the tongues 17 may be inserted. Each opening is located at a point remote from the sleeve 7 and in radial alignment with one of the slots 15 of the sleeve 7. Each opening 18 is formed by displacing downward from the floor member 10 a strap-like portion 19 which desirably remains connected with the main body of the floor member at both ends of the strap. The downwardly offset strap portion is adapted to engage and bear against the lower face of the tongue 17 when the tongue has been inserted through the opening 18.

In assembling a temporary divider 13 with the sleeve 7 and the floor member 10, the tongue 16 is first inserted through a selected slot 15 of the sleeve, the divider is then pressed downwardly and drawn outward to insert the tongue 17 through the appropriate hole 18 into a position like that illustrated in Fig. 3. This locks the divider securely but removably in place. The divider lies within the circumferential flange 11 of the floor member 10 and within a peripheral wall member 20 which is mounted on the flange 11 and on the permanent dividers 12.

Because the tongue 17 and the strap 19 are displaced downward, they lie outside the bin compartment, and are not exposed to contact with the contents of the bin. They are not, therefore, subject to displacement or deformation when material is dumped into the bin, or when the material in the bin shifts about.

Although the temporary dividers are firmly and solidly supported, they may be removed and rearranged at will with the utmost ease and convenience. The slots of the sleeve and the interfitting parts of the divider flange and the floor member are formed by simple cutting and stamping operations, and, therefore, represent an extremely inexpensive means for detachably, yet effectively, securing the temporary dividers solidly in place.

In some instances it may be desirable to secure the removable dividers more solidly in place. Such need may arise under a variety of circumstances, for example, when it is known that dividers will be required to sustain a considerable weight of articles or material, or that the dividers will be subjected to rough usage, as on shipboard. The user of the bin is, therefore, given the option of bolting each temporary divider in place or of leaving it unbolted. For this purpose the base flange 14 of each temporary divider 13 is formed with a slot 21 and the floor member 10 is provided with an opening 22 in radial alignment with each sleeve slot 15. When a temporary divider has been put in place, a headed bolt 23 may be passed downward through the slot 21 and the appropriate opening 22, and secured in place by a nut 24 threaded on the bolt at the lower side of the floor member 10. This does not, of course, prevent subsequent removal of the temporary divider.

While the invention has been illustratively

shown and described as embodied in a rotary bin it is not confined to that use but may be used to advantage in any bin structure in which removable dividers are useful.

I have described what I believe to be the best embodiment of my invention. I do not wish, however, to be confined to the embodiment shown, but what I desire to cover by Letters Patent is set forth in the appended claims.

I claim:

1. In a rotary bin which includes a vertical supporting shaft, a floor member, a series of permanent dividers secured thereto, and a supporting sleeve surrounding, and revolubly mounted on, the shaft, and secured to the permanent dividers, the combination with the floor member and the sleeve of a removable divider, said sleeve including upper and lower bearing members for cooperating with the shaft but spaced substantially from the shaft between said bearing members and including a multiplicity of vertical slots through its wall between the bearing members, and said removable divider including an inwardly extending tongue at the inner end thereof adapted to be fitted selectively through any one of the vertical slots, and means securing the removable divider to the floor member in radial alignment with the selected slot and at a point remote from the sleeve.

2. In a rotary bin which includes a vertical supporting shaft, a floor member, a series of permanent dividers secured thereto, and a supporting sleeve surrounding, and revolubly mounted on, the shaft, and secured to the permanent dividers, the combination with the floor member and the sleeve of a removable divider, said sleeve including upper and lower bearing members for cooperating with the shaft but spaced substantially from the shaft between said bearing members and including a multiplicity of vertical slots through its wall between the bearing members, said removable divider including an inwardly extending tongue at the inner end thereof adapted to be fitted selectively through any one of the vertical slots, and also including a horizontal base flange having a projection adapted to be interfitted with the floor member, and said floor member being apertured to receive said projection in radial alignment with any one of the slots.

3. In a rotary bin which includes a vertical supporting shaft, a floor member, a series of permanent dividers secured thereto, and a supporting sleeve surrounding, and revolubly mounted on, the shaft, and secured to the permanent dividers, the combination with the floor member and the sleeve of a removable divider, said sleeve including upper and lower bearing members for cooperating with the shaft but spaced substantially from the shaft between said bearing members and including a multiplicity of vertical slots through its wall between the bearing members, said removable divider including an inwardly extending tongue at the inner end thereof adapted to be fitted selectively through any one of the vertical slots, and also including a downwardly offset tongue adapted to be passed downwardly through the floor member and interlocked therewith, and said floor member having an opening in radial alignment with each of the slots adapted to receive the downwardly projecting tongue and thereby to orient the divider and hold it firmly in place.

4. In a rotary bin which includes a vertical supporting shaft, a floor member, a series of per-

manent dividers secured thereto, and a supporting sleeve surrounding, and revolubly mounted on, the shaft, and secured to the permanent dividers, the combination with the floor member and the sleeve of a removable divider, said sleeve including upper and lower bearing members for cooperating with the shaft but spaced substantially from the shaft between said bearing members and including a multiplicity of vertical slots through its wall between the bearing members, said removable divider including an inwardly extending tongue at the inner end thereof adapted to be fitted selectively through any one of the vertical slots, and also including a downwardly and outwardly projecting tongue adapted to be passed through the floor member and to be interlocked therewith, and said floor member having an opening in radial alignment with each of the slots adapted to receive the downwardly projecting tongue and thereby to orient the divider and hold it firmly in place.

5. In a bin which includes a floor member, a series of permanent dividers secured thereto, and a supporting sleeve secured to the permanent dividers, the combination with the floor member and the sleeve of a removable divider, said sleeve including a multiplicity of vertical slots, and said removable divider including an inwardly extending tongue at the inner end thereof adapted to be fitted selectively in any one of the slots, said removable divider including a downwardly and outwardly projecting tongue adapted to be passed through the floor member and to be interlocked therewith, and said floor member having, in radial alignment with each slot and at a point remote from the sleeve, an opening for receiving the downwardly extending tongue and a downwardly offset portion in line with the opening for bearing against the lower face of the tongue when the tongue has been inserted through the opening.

6. In a bin which includes a vertical support-

ing shaft, a floor member, a series of permanent dividers secured thereto and a supporting sleeve surrounding, and revolubly mounted on, the shaft, and secured to the permanent dividers, the combination with the floor member and the sleeve of a removable divider, said sleeve including upper and lower bearing members for cooperating with the shaft but spaced substantially from the shaft between said bearing members and including a multiplicity of elongated vertical slots through its wall between the bearing members and said removable divider including an inwardly extending tongue at the inner end thereof which is vertically elongated to extend well above the mid-height of the divider, said tongue being insertable through any one of the vertical slots, and means including a horizontal base flange on the removable divider and interfitting formations on the base flange and the floor member for securing the removable divider to the floor member in radial alignment with the selected slot and at a point remote from the sleeve.

7. In a bin which includes a floor member, a series of permanent dividers secured thereto, and a supporting sleeve secured to the permanent dividers, the combination with the floor member and the sleeve of a removable divider, said sleeve including a multiplicity of vertical slots, and said removable divider including an inwardly extending tongue at the inner end thereof adapted to be fitted selectively in any one of the slots, said removable divider also including a horizontal base flange and a tongue offset downwardly therefrom, and said floor member being formed with an opening in radial alignment with each slot for enabling said tongue to be passed through the floor member and then moved into embracing relation to a portion of the floor member bordering the selected opening.

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