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2,371,917

REVOLVING BIN

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2 Sheets-Sheet 1

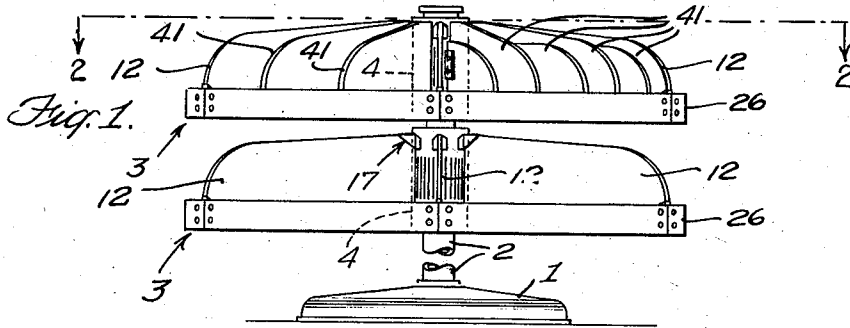
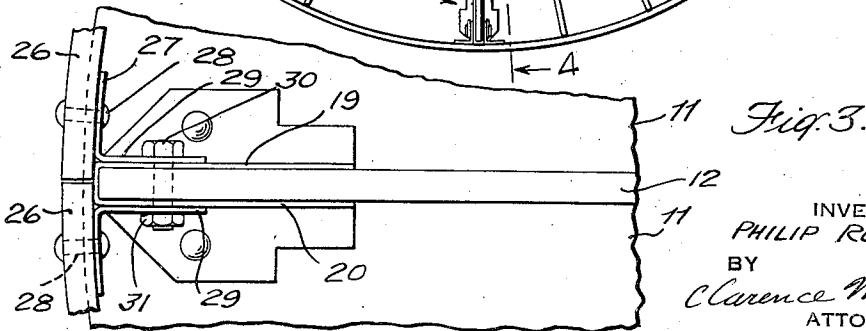
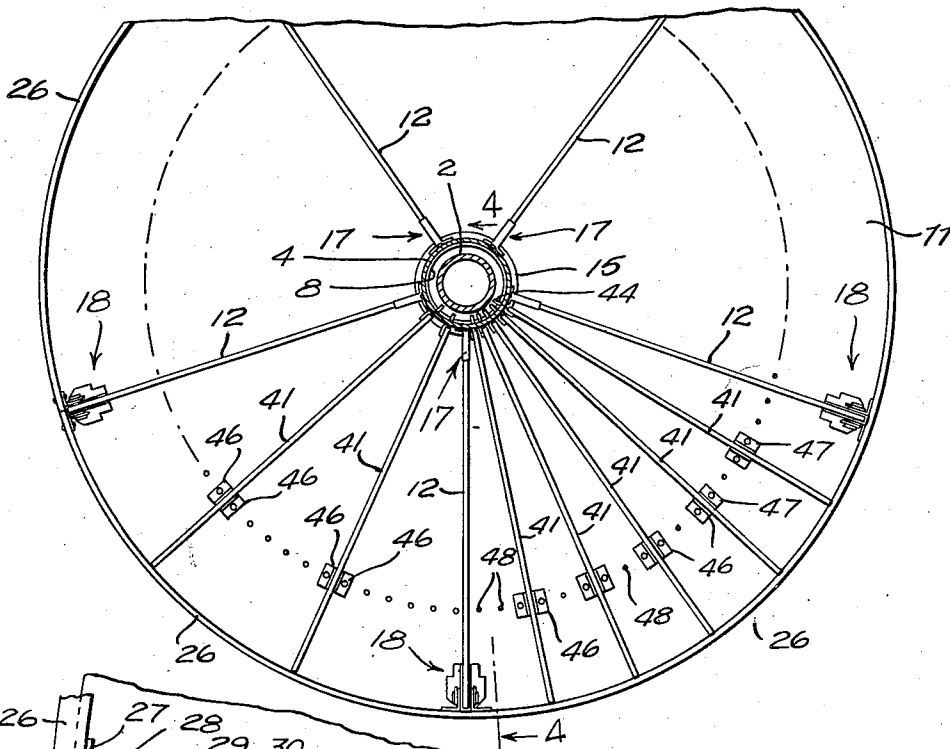


Fig. 2.



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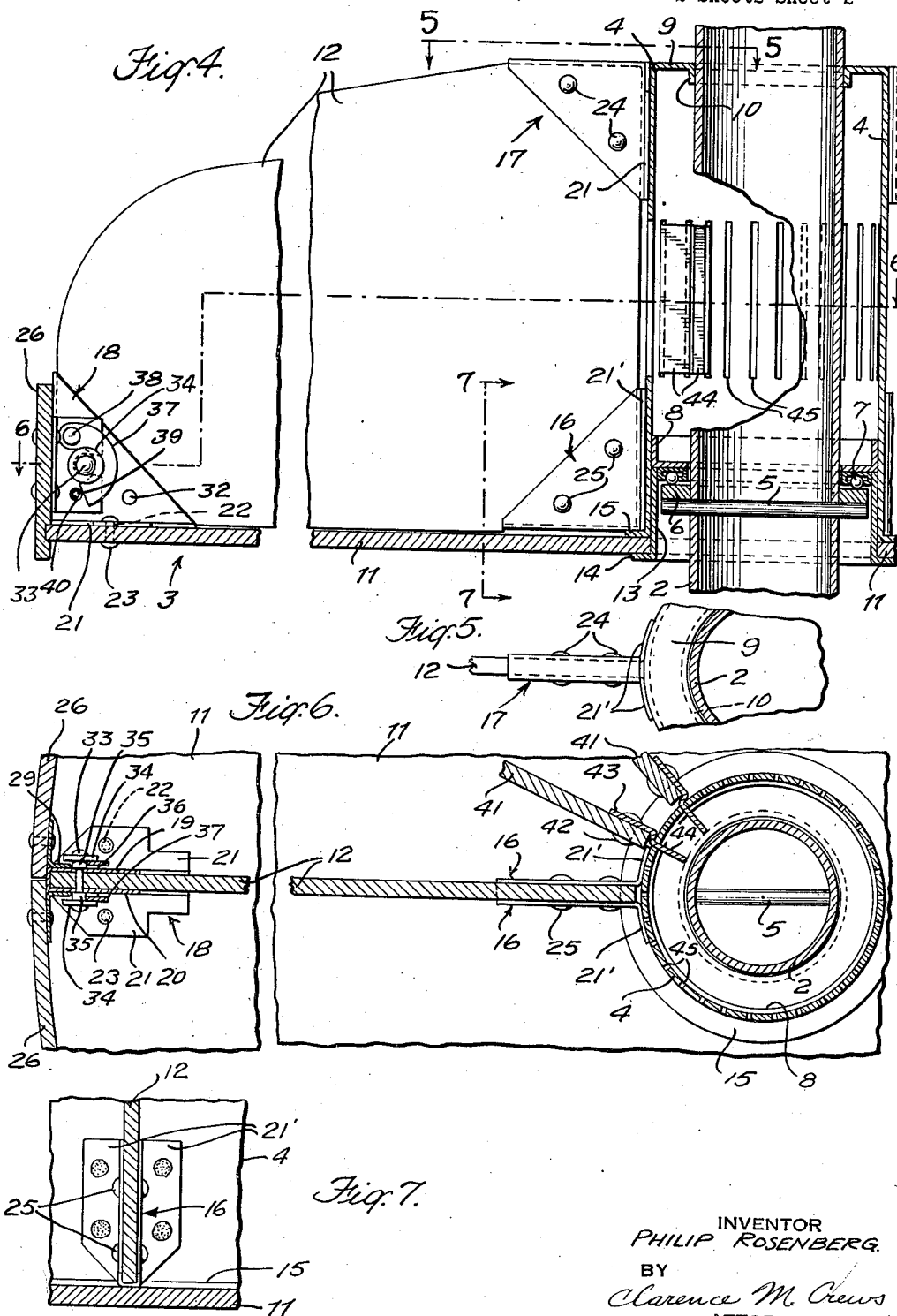
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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

2,371,917

REVOLVING BIN

Philip Rosenberg, New York, N. Y.

Application October 13, 1942, Serial No. 461,847

6 Claims. (Cl. 211-131)

This invention relates to revolving bins of the kind in which bin units are provided one above another upon a common supporting shaft, each with capacity for rotation relative to the shaft and to the others.

Bins of this character have commonly been made in the past exclusively of metal. It has recently become desirable because of war conditions to find substitutes for metal, and to devise new structures employing non-metallic materials wherever possible as substitutes for old structures in which metals were freely used. The elimination of metal in the principal parts of a bin unit presents new problems, particularly in the matter of providing an organization of adequate strength and rigidity for performing the intended service.

It is the primary object of the present invention to provide a revolving bin unit in which all the parts, exclusive of joining hardware and bearing members, may be formed of any suitable non-metallic material such, for example, as wood.

Although the present invention is primarily intended to enable the use of metal to be avoided to a large extent, it is also useful in a structure in which there is no restriction upon the use of metal.

Other objects and advantages will hereinafter appear.

In the drawings forming part of this specification

Fig. 1 is a view in elevation, broken away intermediate its height, showing a revolving bin in which features of the invention are embodied;

Fig. 2 is a fragmentary plan view of the structure illustrated in Fig. 1, but on a larger scale than Fig. 1;

Fig. 3 is a fragmentary detail plan view illustrating particularly the connection of a permanent divider to the floor member of a bin unit;

Fig. 4 is a fragmentary view in sectional elevation, and partly broken away for compactness, the section being taken on the line 4-4 of Fig. 2 looking in the direction of the arrows;

Fig. 5 is a fragmentary detail sectional view taken upon the line 5-5 of Fig. 4, looking in the direction of the arrows;

Fig. 6 is a fragmentary sectional view taken upon the line 6-6 of Fig. 4, looking in the direction of the arrows; and

Fig. 7 is a fragmentary view in sectional elevation, the section being taken upon the line 7-7 of Fig. 4, looking in the direction of the arrows.

The illustrative bin comprises a circular base member 1 which carries an upstanding shaft 2 upon which bin sections 3 are mounted with ca-

capacity for rotation relative to the shaft and to one another.

The base member 1 is desirably a molded base formed of concrete. The concrete base is poured in a mold and is caused to set with the lower end of a tube, which forms part of the shaft 2, embedded in it in position to cause the tube to extend vertically upward from the center of the base.

The shaft 2 comprises the metallic tube referred to and a filling of concrete, which filling embodies the principal element for imparting strength and rigidity to the shaft. The tube is not the usual thick-walled tube which has served by itself as the central shaft of prior revolving bins. It is a much lighter gauge tubing, chosen of suitable thickness to serve primarily as a mold for the contained concrete, and as a metallic bearing face for the concrete in service. The described construction greatly reduces the quantity of metal required for use in the base and in the shaft, this being a particularly important advantage at the present time. The concrete of the base may be of different composition from the concrete of the shaft, but is united integrally with it.

Each bin section 3 is revolvably mounted on the shaft 2 by means of a central sleeve 4. A supporting pin 5 is passed through holes in the shaft 2 to extend diametrically through the shaft and protrude at opposite sides thereof. A bearing washer 6 is supported upon the shaft and supports, in turn, a ball bearing 7. An annular, angular bearing member 8 is affixed within the sleeve 4 near the lower end of the sleeve, in any suitable manner, for example, by welding it to the sleeve. The member 8 rests upon the bearing 7 and carries the weight of the bin section. The sleeve 4, at the upper end thereof, is formed with an inwardly extending flange 9, at the inner extremity of which a downturned circular bearing flange 10 is provided.

The structure thus far described is not new with the present application.

Each bin section of the present structure includes a floor member 11 and a series of permanent dividers 12 which are of suitable non-metallic material such as wood, Masonite, etc. In prior structures, the permanent dividers have been directly welded to the sleeve 4 and to the metallic floor member along a base flange of the divider, so that the floor member, which is required to carry considerable weight, was supported from the central sleeve 4 through the permanent dividers. This construction is not avail-

able where the dividers and the floor members are of non-metallic material.

Means are accordingly provided for directly supporting the floor member 11 in part from the central sleeve 4. To this end a flanged sleeve 13 is fitted within the lower portion of the sleeve 4 and affixed to it as by welding. The sleeve 13 is formed with an outwardly extending flange 14, and the sleeve 4 is formed with an outwardly extending flange 15. Prior to the securement of the sleeves 4 and 13 to one another, the floor member 11 is impaled upon the sleeve 13, and clamped between the flanges 14 and 15. The inner margin of the floor member 11 is thus securely and permanently clamped and strongly supported by the sleeves 4 and 13.

Additional support is provided for the floor member 11 through the permanent dividers 12 by means of light gauge sheet metal connecting brackets 16, 17 and 18, which may desirably be duplicates, or substantial duplicates, of one another. The structure is most clearly illustrated in connection with the bracket 18, and will, therefore, be described in connection with that bracket. The bracket 18 is a piece of sheet metal folded to provide parallel walls 19 and 20 which are placed in embracing relation to the outer lower corner portion of the divider 12.

Each wall 19, 20 is formed with an outturned flange 21 having an opening 22 through it. The flanges 21 are secured to the floor member 11 by suitable fasteners such as rivets 23. The bracket 18 is also permanently secured to the permanent divider 12 by suitable through-fastening means, but since the fastening means of bracket 18 is different from that of brackets 16 and 17, the description of this part will be deferred for the present.

The bracket 17 extends around the upper edge of the permanent divider at the inner end thereof and is secured to the permanent divider 12 by rivets 24. The flanges 21 of the bracket 17 bear against the sleeve 4 and are permanently attached to it as by welding.

The bracket 16 extends around the lower edge of the divider 12 at the inner end thereof and is permanently attached to the divider by rivets 25. The flanges 21 of the bracket 16 bear against the sleeve 4 and are permanently secured to the sleeve as by welding.

It will be seen that the principal elements of the bin unit have been replaced by non-metallic members, and that a strong, rigid and permanent structure has been provided through the employment of a single short sleeve 13, for each bin section, and the three corner brackets 16, 17 and 18 in connection with each permanent divider.

The outer wall of the bin, which was formerly made of metallic wall sectors, is in the present construction replaced by non-metallic wall sectors 26. Each of these wall sectors 26 carries at its opposite sides an angle bracket 27 which is secured to the wall member by rivets 28 and which includes an inwardly extending web 29 adapted to extend alongside the bracket 18 and to be removably attached to it. A headed bolt 30 is passed through adjacent webs 29 of adjacent brackets 27, and through the wall members 19 and 20 of the bracket 18 as well as the interposed divider 12, and the parts are clamped together by a nut 31 threaded onto the bolt 30. The bracket 18 may additionally be secured to the permanent divider 12 by a rivet 32.

While the attaching means just described for

the wall members 26 may be practically employed, I prefer to use the connecting means described and claimed in my pending application Serial No. 461,848, filed concurrently herewith, now Patent No. 2,311,130, and illustrated in Figs. 4 and 6. In this construction the bolt 30 and the nut 31 are replaced by a rivet 33 which passes through washers 34, spacer sleeves 35, bracket 18 and divider 12, and holds the parts referred to rigidly together in fixed relation to one another. Each web 29 is formed with a horizontally extending slot 36 for receiving one of the spacer sleeves 35. A latch 37, pivotally mounted on the web 29 by means of a rivet 38, is adapted to be swung down between the web 29 on which it is carried and the adjacent washer 34 to assure that the web 29 will bear continuously and firmly against the adjacent wall of the bracket 18 when the parts are in assembled position. The bracket 18, unlike the brackets 16 and 17, is formed with outwardly extending bosses 39, and each boss is adapted to fit into an opening 40 of the adjacent web 29. The parts are thus firmly and rigidly, but separably secured to one another.

The bin is also provided with removable dividers 41 by means of which the compartments defined by the permanent dividers 12 may be subdivided at the will of the user. The removable dividers 41 are formed of non-metallic material with the exception of small pieces of joining hardware. Each removable divider 41 has secured to the inner end thereof, by means of rivets 42, an offset plate 43.

The tail portion 44 of each plate 43 extends beyond the inner end of the divider 41 and forms a tongue suitable to be inserted in any one of a series of slots 45 which are formed in the sleeve 4 between the upper extremities of the brackets 16 and the lower extremities of the brackets 17. Each removable divider 41 also includes a pair of opposed angle plates 46 near the outer end thereof which are secured to the divider 41 and to one another by suitable through-fastening means such as rivets. Each angle plate 46 includes a horizontal flange 47 which is adapted to bear against the floor member 11, and which has an opening formed through it. Holes 48 are provided in the floor member 11, being circularly arranged, so that a removable divider 41 may have its tongue 44 thrust through any one of the slots 45, and may be attached to the floor member in radial alignment with the slot which is used, by means of bolts passed downward through the horizontal flanges of the angle plates 46 and through the appropriate holes 48 of the floor member.

It will be evident, of course, that the described construction makes possible a very substantial reduction in the quantity of metal employed, and that it provides a strong and rigid bin section capable of performing heavy service.

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

I claim:

1. In a revolving bin including an upright, central, supporting shaft, in combination, a flat floor disc of non-metallic material provided with a central opening, and a pair of metallic supporting sleeves of relatively small size and mass as compared with the diameter of the floor disc and the mass of material which the floor disc is designed to carry, said sleeves mounted one within

the other and affixed to one another to form a unitary bearing and supporting structure which is revolvably mounted on the shaft, said sleeves having thin outturned flanges separated from one another only by the thickness of the floor disc for engaging, respectively, upper and lower marginal faces of the floor disc around the central opening and clamping the floor disc between them.

2. In a revolving bin including an upright, central, supporting shaft, in combination, a first metallic supporting and bearing sleeve having a thin outturned flange at the lower end thereof, a second metallic supporting sleeve received within the first and rigidly affixed thereto to form a unitary bearing and supporting structure which is revolvably mounted on the shaft, the second sleeve extending downward beyond the lower end of the first sleeve and having a thin outturned flange extending in spaced, parallel relation to the flange of the first sleeve, said sleeves being of relatively small size and mass as compared with the diameter of the floor disc and the mass of material which the floor disc is designed to carry, a flat, non-metallic floor disc impaled upon the second sleeve and clamped firmly in place between the sleeve flanges, the widths of said flanges being not substantially less than the distance between them, and a series of non-metallic vertical permanent dividers secured to the first sleeve and to outer marginal portions of the floor disc.

3. In a revolving bin unit, in combination, a floor member of non-metallic material provided with a central opening, a pair of supporting sleeves mounted one within the other and affixed to one another, said sleeves having outturned flanges between which the floor member is firmly clamped for supporting the floor member centrally directly from the sleeves, a series of non-metallic permanent dividers, divider embracing sheet metal brackets connected to the upper and lower inner corners of the dividers and united with one of the sleeves, and divider embracing

sheet metal brackets connected each to the outer end of a divider and to an outer marginal portion of the floor member for supporting the outer portion of the floor member from the sleeve through the dividers and the brackets.

4. In a revolving bin unit, in combination, a central supporting sleeve member, a non-metallic floor member centrally supported by the sleeve member, a series of non-metallic permanent dividers, and brackets connecting the upper and lower inner corners of each divider to the sleeve member and the outer lower corner of each divider to the floor member, each bracket composed of light gauge sheet metal and formed with connected parallel wall portions which receive the divider between them, each wall portion including an outturned attaching flange.

5. In a revolving bin unit, in combination, a central sleeve, a non-metallic floor member, a series of non-metallic permanent dividers through which the floor member is supported in part from the sleeve, and light gauge sheet metal brackets connecting the dividers to the sleeve and to the floor member, each bracket including connected parallel wall portions for embracing the divider, and outturned attaching flanges on the respective wall portions.

6. In a revolving bin unit, the combination with a central supporting sleeve having a series of parallel vertical slots formed in it, and a non-metallic floor member supported from the sleeve, of a removable divider composed chiefly of non-metallic material, a metallic tongue affixed to the inner end of the divider for fitting into a selected slot of the sleeve, and angle brackets secured in opposed relation to lower marginal faces of the divider at a point remote from the inner end of the divider, said brackets each including an outturned flange through which it can be affixed to the floor member.

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