Feb. 23, 1965 J. MILLAR, JR., ETAL 3,170,707

WHEELBARROWS

Filed July 12, 1962 2 Sheets-Sheet 1

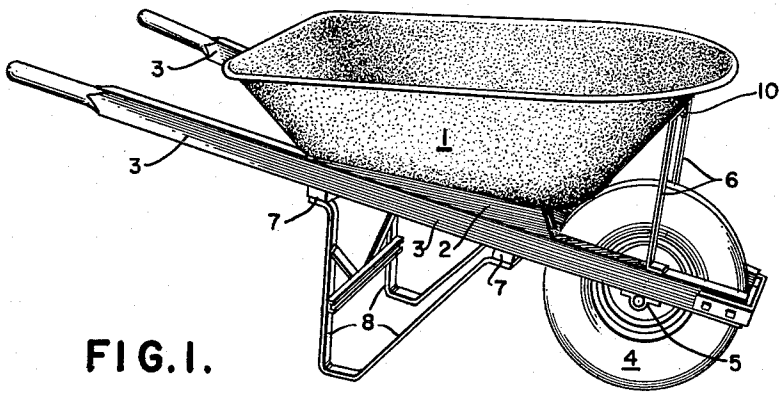


FIG. 1.

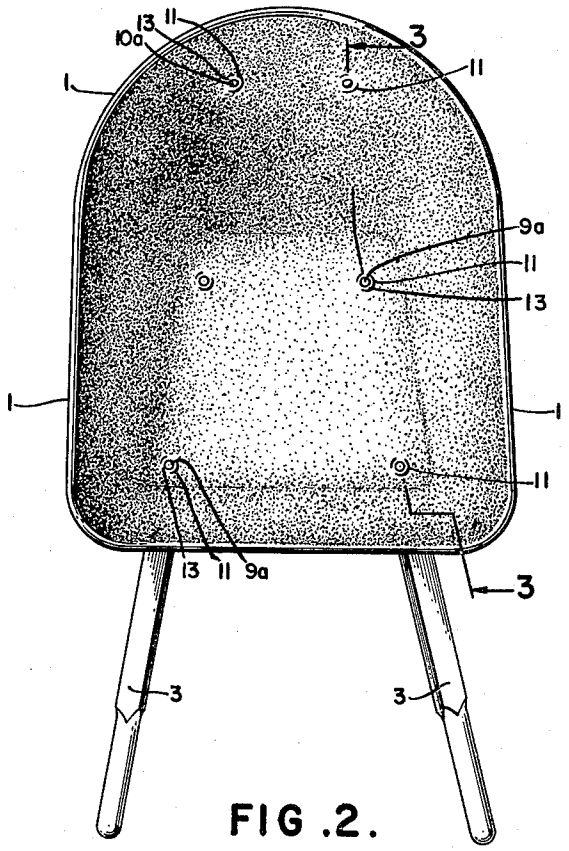


FIG. 2.

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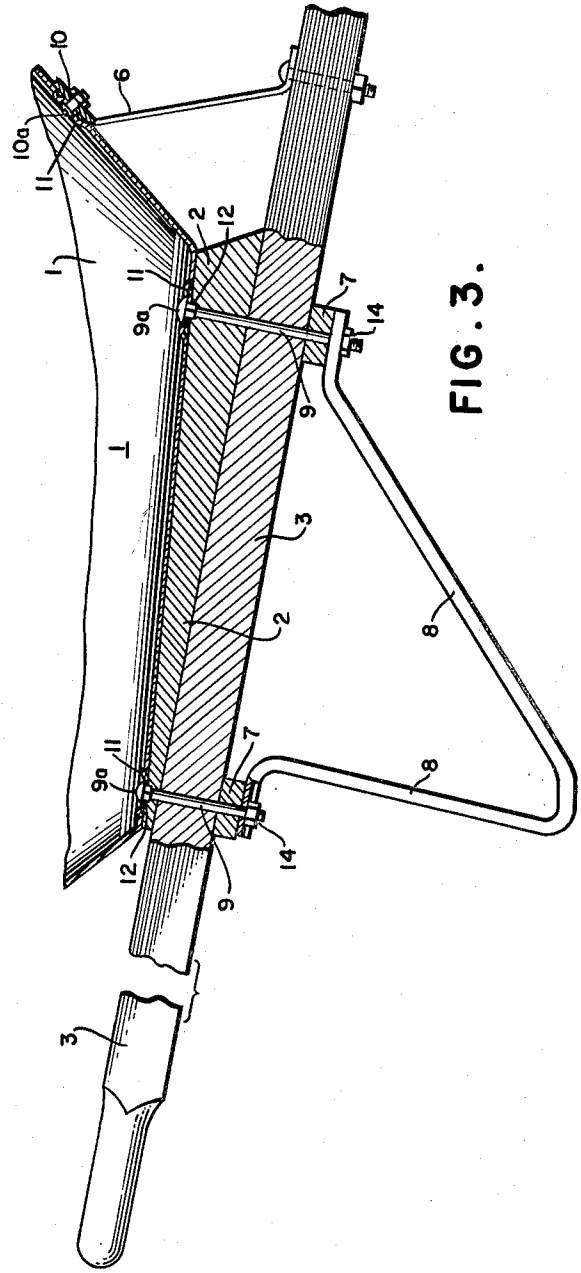


FIG. 3.

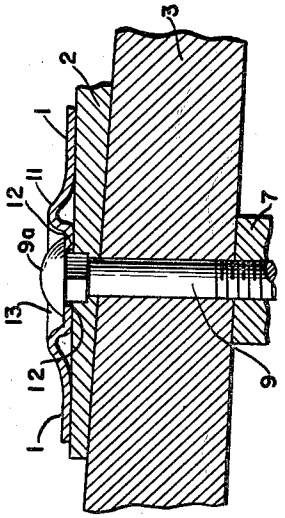


FIG. 4.

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WHEELBARROWS

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3 Claims. (Cl. 280—47.31)

The present invention relates to improvements in wheelbarrows, concrete carts, dump carts, contractors' carts, garden carts, and the like, and more particularly to novel means for securing the various parts thereof into a sturdy assembly.

More particularly, an object of the improvements is the provision of a novel securing means in the form of bolts which tie the various parts in a secure and trustworthy arrangement.

A further object of the improvements is the provision of a wheelbarrow assembly employing securing bolts in such a manner as to preserve an uninterrupted, smooth surface within the tray area. To this end the improvements provide a lip or embossed area surrounding the bolt heads, so as to present a raised area thereabout, which forms a shield around the bolt heads.

A still further object of the invention is to provide one or more protective areas, which for convenience are characterized as "nests," in which the bolt head resides, thereby preventing the bolt head from being an obstacle in the path of cleaning and unloading tools which workmen may employ in scraping the inner surface of the trays.

Another object of the improvements is to provide a novel tray for use in a wheelbarrow assembly which is economical in manufacture, efficient in use, and which permits an unlimited number of separate trays to be stacked or nested one within the other, for convenient shipment in commerce.

These and other objects will be apparent to those skilled in the art, upon reference to the accompanying drawings, in which:

FIGURE 1 is a perspective view of an assembled wheelbarrow, embodying the preferred form of the present improvements.

FIGURE 2 is a top plan view of the wheelbarrow illustrated in FIGURE 1, again showing the preferred form of the improvements.

FIGURE 3 is an enlarged section, taken on line 3—3 of FIGURE 2.

FIGURE 4 is a fragmentary view, further enlarged and in section, of the preferred form of the improvements shown in FIGURES 1 to 3.

Referring to the drawings, the present improvements are illustrated as applied to a wheelbarrow assembly. However, it will be obvious to those skilled in the art, that the improvements are equally adaptable for use in the assembly of concrete, dump, contractors' and garden carts or other containers. In all these products and others designed for the transportation and unloading of loose granular material, or wet or sludge materials, the present improvements are readily adaptable. The tray portion of the invention may be manufactured of metallic, plastic, or other rigid material.

Referring more particularly to FIGURES 1 and 2, the wheelbarrow consists of the drawn steel tray 1, having no rivets, seams or welds. The inner surface is therefore smooth, to facilitate unloading of granular or wet materials by dumping, or by the use of manual tools. The tools usually consist of hand shovels and the like, and the bottom and sides of tray 1 present an uninterrupted surface, so that the tools encounter no obstacles during use. The tray has rounded, curled edges to facilitate fast and controlled pouring of wet or sludge materials. This tray is

mounted on a carriage or chassis which comprises wooden wedge-shaped handle risers 2, which in turn are superimposed on wooden handles 3, which extend in one direction, beyond the tray, to serve as handles, and converge in the opposite direction, beyond the tray, to form spaced mountings in which the traction tire 4 is journaled in axle brackets 5.

The forward or discharge portion of the tray is supported in the area over the tire by vertical braces 6, which are secured in any desired manner to the handles 3. The handles 3 are maintained in the spread or diverging position shown in FIGURE 2, by means of transverse metal strips or braces 7, while the remainder of the assembly consists of channel-shaped leg members 8, which support the entire unit at the time of rest or loading. These elements may be secured to one another, by any suitable means. Upon reference to FIGURE 3, it will be seen that the tray 1, elements 2, 3, 6, 7 and 8 have perforated areas in register, to receive securing bolts, as hereinafter described.

As seen more clearly in FIGURE 2, tray 1 is mounted on the undercarriage or chassis by means of one or more bolts 9 and 10. In FIGURE 2 there are six such bolts, but in that view only the bolt heads 9*a* and 10*a*, are in view. In the bottom portion of the tray, two such bolts secure the tray to the righthand handle (see FIGURE 2) and also two more bolts secure the tray to the lefthand handle (see FIGURE 2). In addition, the two bolts 10, having heads 10*a*, secure the flared or discharge portion of the tray 1 to the vertical braces 6.

In a wheel barrow of this type, as it existed prior to the present improvements, it will be seen that the bolt heads 9*a* and 10*a* heretofore protruded above and into the inner surface of the tray, thereby creating obstacles to the continuous discharge of the wet materials, but more particularly creating obstacles to the scraping action of a workman using a hoe, shovel or other unloading tool. It is readily apparent that in the use of these unloading tools, they became caught on the bolt heads 9*a* and 10*a*, which not only was inconvenient, delayed the unloading and cleansing operation, but in some cases seriously jarred and caused sprains in the arms of the workmen, due to the sudden arresting of the manual unloading action or movement.

The present improvements therefore are designed particularly to eliminate the foregoing undesirable results outlined immediately above. To that end the preferred form in FIGURES 1 to 4 provides an annular lip or emboss raised from the surface of the tray itself. These embossed rings 11 surround the holes or perforations 12, and each provide a depressed area or nest 13, as seen quite clearly in FIGURE 4.

The annular ring 11, which is raised in the nature of a lip completely around the holes 12, serves as a housing within which the bolt heads 9*a* and 10*a* may nest. The ring 11 protrudes above the bolt head, so as to create a miniature "hill" thereabout. As clearly seen in FIGURES 3 and 4, these rings 11 are in the form of a crater, and consist of inner and outer portions tapering inwardly from the tray bottom. Accordingly, as the workman moves an unloading tool along the inner surface of the tray, the sharp edges of those tools will encounter the embossed rings, which will cause the tool or tool edges to glide over the bolt heads 9*a* and 10*a* without interruption, and without being arrested or becoming caught on the bolt heads.

Embossed rings 11, providing nests 13 for the bolt heads as seen in FIGURE 3, are provided not only in the bottom of the tray but also in the flared forward unloading wall thereof. These same refinements of construction are provided in six places, as clearly seen in FIGURE 2.

The type of bolt and bolt head indicated as **10** and **10***a* comprise slotted truss head screws, because in this particular location, the metal tray is secured to a metal brace. However, the longer bolts **9**, with dome shaped heads **9***a*, are known as carriage bolts, having a squared or hexagonal shank or neck immediately under the head and between the head and the cylindrical form of the bolt. In this particular refinement, as seen in FIGURES 3 and 4, the bolt extends through perforated registering areas in the tray bottom, riser **2**, handle **3**, horizontal brace **7** and leg member **8**. It is apparent that elements **2**, and **3**, are made of wood. The lower portion of the bolt is screw threaded to receive the nut **14**. When assembled and in use, it will be seen that the bolt head **9***a* is housed within the embossed nest **13**, and extends through the tray, handle riser **2**, handle **3**, brace **7**, and leg **8**. The nut **14**, being screwed home, securely unites all these parts in a sturdy relationship, which condition is not sacrificed by virtue of the provision of the protective and embossed rings **11**. It is apparent that the squared neck of the bolts at the time of assembly bite into the wood of the risers **2** at the perforated areas, and this feature gives added stability to the assembly.

It is significant that the present improvements have a distinct added advantage when being shipped in commerce. It is rather standard practice for the wheelbarrow illustrated in FIGURE 1 to be shipped from the manufacturing plant in a "knocked down" condition. That means that the undercarriage or chassis may be taken apart and shipped in a more convenient shape, while the trays, having no protruding parts, may be stacked or nested one within the other, in unlimited numbers, thereby producing great economy in shipment.

A primary advantage, however, in the improvements shown in FIGURES 1 to 4, consists in the economy in manufacture. In achieving the desirable result, eliminating bolt head obstacles in the tray surface, the present improvements provide the perforated areas and embossed rings with a minimum of stamping operations, with no additional operations necessary on the undercarriage parts, such as on risers **2** or handles **3**. Accordingly, unusual speed in assembly-line production can be achieved with the simple solution of a troublesome problem with which the trade has been confronted. This primary advantage is achieved by providing the tray with a substantially continuous lower wall which includes the perforated areas within the embossed rings. The embossed portions of the tray are gradually tapered only upwardly from this wall, and thus do not present an irregularity which interferes with the mounting of the tray upon the chassis. When the tray and chassis are attached together, each bolt projects through a tray perforation and through the surface on the chassis which supports the tray. In the disclosed embodiment, the supporting means is the uppermost surface of the riser **2**.

In the foregoing description of the preferred form, considerable emphasis has been placed on the provision of

an annular embossed ring, protruding above the inner surface of the tray and above the bolt head. The ring form is preferred because it lends itself to easy and economical manufacture by a suitable die. It is understood however, that the ring may be replaced by a pair of raised embossed knobs or small ridges located on opposite sides of the bolt head.

It is noteworthy that the trays which are subjected to considerable loading and unloading abuse, when damaged beyond use or repair, are readily replaceable without the necessity of employing a new undercarriage.

The present improvements therefore provide a simple, economical and workable solution to the common problem of unloading and cleansing wheelbarrow trays. These and other refinements of construction, may occur to those skilled in the art, without departing from the spirit and scope of the appended claims.

We claim:

1. A portable cart comprising a chassis, a tray superimposed on said chassis, headed securing means attaching said tray to said chassis, said tray having a substantially continuous wall therein, said continuous wall having perforated areas therein, said tray having embossed areas protruding above said continuous wall proximate to each of said perforated areas, each of said embossed areas having its portions most remote from its respective perforated area gradually tapered upwardly from said continuous wall, each of said securing means having a head above said tray nested within one of said embossed areas, said chassis including supporting means lying beneath and supporting said continuous wall of said tray, and each of said securing means having a shank penetrating said supporting means to attach said tray to said chassis.

2. A portable cart as defined in claim 1 wherein each of said embossed areas is ring shaped and is located to entirely surround its respective perforated area.

3. A portable cart as defined in claim 1 wherein said chassis includes a pair of generally horizontal handle elements and riser elements, said riser elements located adjacent to and above said handle elements, and said supporting means is an upper surface of said riser elements.

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