April 8, 1952 J. E. O'SHEA 2,591,857

WHEELBARROW

Filed Jan. 16, 1948

FIG. 1.

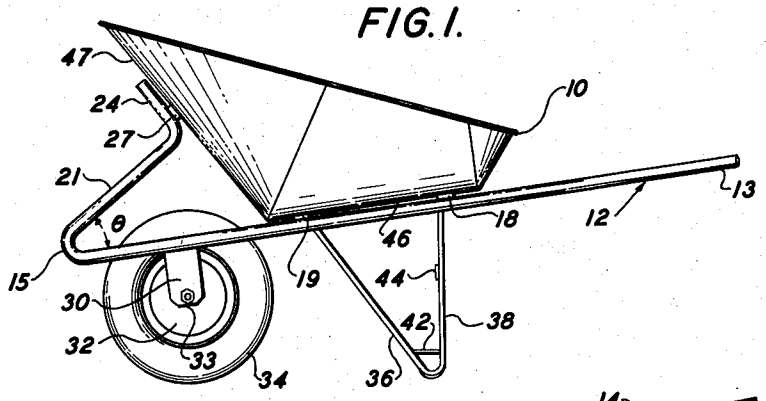


FIG. 2.

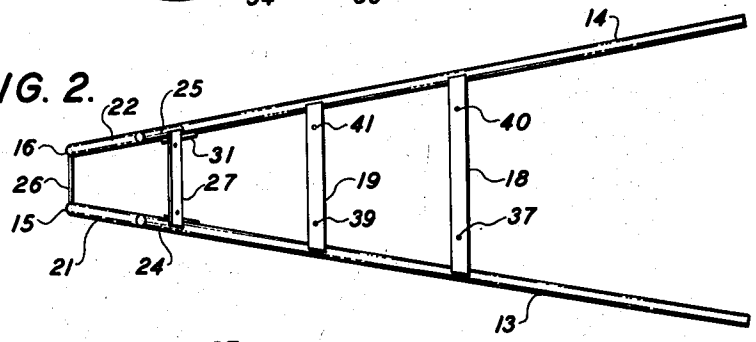


FIG. 3.

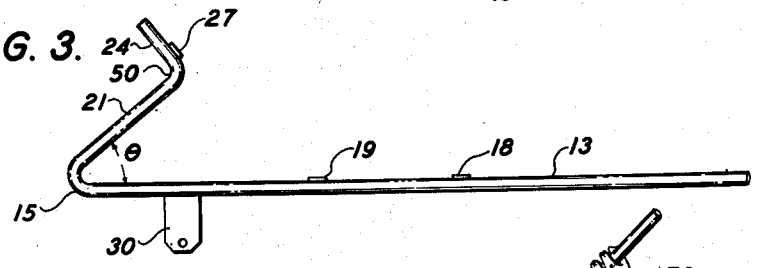
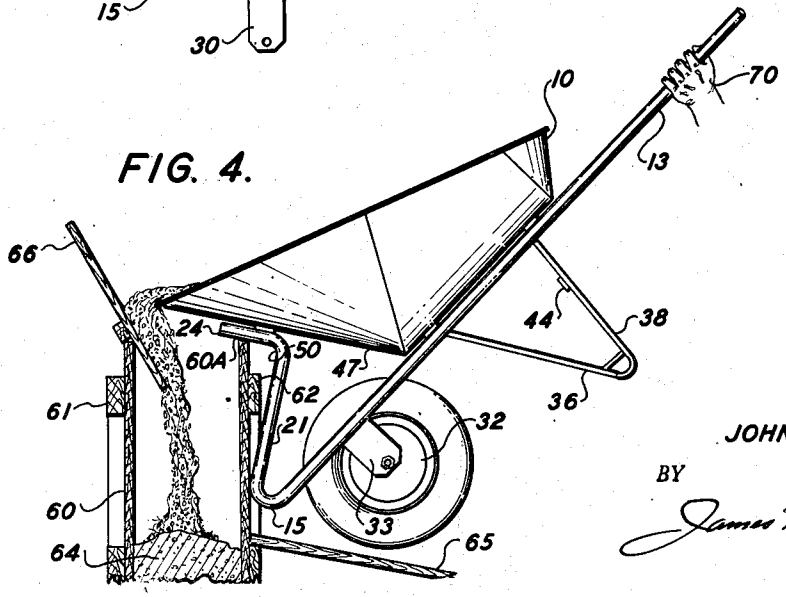


FIG. 4.



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Patented Apr. 8, 1952 2,591,857

UNITED STATES PATENT OFFICE

2,591,857

WHEELBARROW

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Application January 16, 1948, Serial No. 2,740

3 Claims. (Cl. 280—52)

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This invention relates to wheelbarrows. More specifically the invention relates to an improved wheelbarrow especially adapted to carrying and dumping mixed concrete. The wheelbarrow of the invention thus has wide utility in the construction industry.

The conventional wheelbarrow has a chassis carrying a tray and supported off the ground by a single center mounted forward wheel and a pair of laterally spaced legs located intermediate the wheel and the lifting grips of the barrow. The more rugged wheelbarrows used in concrete work are generally fabricated of metal and are often provided with a rubber tire to facilitate use on rough or soft terrain. A recently developed wheelbarrow comprises a chassis which consists of a pair of elongated tubular side members appropriately joined so that they converge towards each other at their forward ends. A rounded nose is formed at the forward end by bending the side members back upon themselves to form a pair of rearwardly and upwardly extending legs. The bottom of the tray rests across the two side members while an inclined planar front portion of the tray abuts against and is affixed to the inner ends of the two legs.

Many wheelbarrows have been provided with a nose extending forwardly from the wheel to serve as a support or rest when the barrow is being dumped. However, in many cases where concrete is being dumped into forms, etc., the nose is prevented from touching the ground by engagement of the lip of the tray with the edge of the form. In such case the rotation of the barrow from the wheeling to the dumping position is about the point of contact of the tray lip with the form. Inasmuch as upward of 500 lbs. of concrete may be carried in a 5 cu. ft. barrow, for example, the tray is subjected to a large torque and a great deal of wear. It is a fact that on most conventional wheelbarrows this is the first part to wear out.

In addition, the force necessary to pivot a concrete loaded barrow about a bearing point formed by the edge of a form and the flat under surface of the tray lip is tremendous. It is substantially impossible to accomplish this rotation by a smooth upward thrust on the grips; it being necessary with loads of over about 250 lbs. to dump the load with a single heave. This practice is not only tiring for the barrow man but also makes it difficult to properly guide and allocate the concrete, pouring as it does in a sudden rush from the barrow.

I have overcome both the foregoing difficulties by the provision of a barrow having support means disposed adjacent and beneath the inclined planar front portion of the tray and positioned to engage the upper edge of a pouring form or the like, thus taking the strain off of the barrow tray. Further by joining these support means to legs extending rearwardly and upwardly from a projecting nose in a smooth outwardly opening curve, I have provided a pair of laterally aligned curvilinear edges which facilitate the rotation of the wheelbarrow when this edge is engaged with the upper edge of a concrete form.

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The wheelbarrow of the invention comprises a chassis including a pair of elongated side members each having a curved nose portion on the front thereof. A pair of cross members join the side members in spaced relationship so that the longitudinal axes thereof converge toward the nose portion and a cross member joins the side members adjacent the nose portion. A tray having a flat bottom and a planar inclined front portion rests on the first mentioned cross members. The aforesaid nose portion is formed by bending the front end of each of the side members in a smooth curve to form a pair of rearwardly and upwardly extending arms making an angle of approximately 90° with the planar inclined front portion of the tray. In the improved wheelbarrow of the invention the rearwardly and upwardly extending arms are curved upwardly and forwardly adjacent the point of contact with the front of the tray to form a pair of support members extending along the bottom of the front portion of the tray and forming a continuous curvilinear edge with the rearwardly and upwardly extending arms. A member affixed across these support members adjacent the arms provides means for affixing the planar front portion of the tray to the support arms. A ground wheel rotatably mounted between the side members so that the locus of rotation thereof is rearward of the nose portion and a pair of legs depending from each of the side portions rearwardly from the ground wheel serve to complete the wheelbarrow.

The invention will be more clearly understood from the following detailed description thereof taken in relation to the accompanying drawing in which;

Fig. 1 is a side view of the wheelbarrow;

Fig. 2 is a plan view of the chassis of the wheelbarrow of Fig. 1;

Fig. 3 is a side elevation of the chassis of Fig. 2; and

Fig. 4 illustrates the manner of use of the barrow in relation to a conventional concrete form.

Referring to Figs. 1, 2 and 3, the wheelbarrow comprises a tray 10 supported on a chassis 12 which includes a pair of side members 13 and 14 curved at their forward end to form the nose portions 15 and 16 respectively. The nose formed by the bends 15 and 16 in the side members 13, 14 will be hereinafter referred to as the nose 15. Cross members 18 and 19 affixed at opposite ends to the two side members serve to hold the side members in spaced relationship and to align the side members so that the longitudinal axes thereof converge towards the nose 15. The side members 13 and 14 are bent at 15 and 16 respectively to form the nose portions and extend reawardly and upwardly therefrom to form the arms 21 and 22 respectively. The arms 21 and 22 terminate at their rearward ends in the upwardly and forwardly extending supports or braces 24 and 25 respectively. A cross member 26 is affixed between the two side members at the nose portions thereof and a cross member 27 joins the two supports 24, 25 adjacent the arms 21, 22.

A wheel hanger 30 depends from the side member 13 rearwardly from the nose and a like hanger 31 depends from the side member 14 in lateral alignment with the wheel hanger 30. A wheel 32 is rotatably journalled to the hangers 30, 31 on an axle 33. The wheel 32 may carry a rubber tire 34 as shown. The wheel hangers 30, 31 are so spaced that the nose 15 extends forwardly beyond the outer periphery of the tire 34. A conventional leg 36 depends vertically from the cross member 18 being affixed thereto at point 37 and is provided with an inclined brace 38 which is affixed to the forward cross member 19 at the point 39. A similar leg (not shown) depends from the cross member 18 at the point 40 and is provided with an inclined brace affixed to the cross member 19 at point 41. For added rigidity the leg 36 and the brace 38 are joined by a tie-rod 42 and the leg 36 and the identical leg (not shown) depending from the opposite side of the wheelbarrow are joined to each other by the tie-rod 44, (Fig. 1).

The tray 10 has a planar bottom 46 resting on and affixed to the supports 18 and 19 and a planar forward inclined portion 47 abutting against and affixed to the cross member 27.

Improvements in the wheelbarrow of the invention center around the relationship of the arms 21, 22, the upwardly and forwardly extending braces 24, 25, and the inclined planar front portion 47 of the tray 10. The nose portion 15 of the side member 13 and similarly the nose portion of the side member 14 are formed by bending the side member back upon itself at an angle theta (θ), (Figs. 1 and 3). The angle theta is selected so that the longitudinal axes of the arms 21, 22 are at right angles to the front inclined section 47 of the tray 10. In a preferred embodiment, as shown in the drawings, the braces 24, 25 are formed by bending the upper end of the arms 21, 22 respectively at right angles so as to form a smooth curved edge 50 between the support arm 24 and the riser 21 and a similar curved and laterally aligned edge between the riser 22 and the support arm 25. By including an angle of 90° between the arms 21, 22 and the integrally formed braces 24, 25 the latter are disposed in a plane parallel to the plane of the front portion of the tray 10. In this manner the major surface of the cross member 27 is aligned with the front of the tray 10 which is affixed thereto.

The operation of the wheelbarrow and particularly the functioning of the braces is illustrated in Fig. 4, which shows a conventional pouring form 60 partially filled with concrete 64 and having longitudinal braces 61, 62, etc. An inclined ramp 65 and a splash board 66 are conventional accessories to facilitate pouring into such a form.

In many cases when pouring into a hole or into a form that does not extend above a ramp a distance greater than the length of the arms 21, 22 the wheelbarrow may be pivoted about the nose 15 resting on the ground or on the ramp. However, in many cases, as shown in Fig. 4, this is not possible. In such case, with conventional wheelbarrows, it is the practice to rest the lip of the tray 10 on the edge of the form, as above described. In the wheelbarrow of the present invention the braces 24, 25 serve this purpose and take the brunt of the wear off of the tray 10. As the wheelbarrow starts to discharge concrete as shown in Fig. 4, the arms 21, 22 will be rotated to a vertical position at which point the planar inclined section 47 of the tray will assume a horizontal position. Because of the comparatively large angle of repose of ordinary concrete mix only a small portion of concrete contained in the tray 10 will dump in this position. The most difficult part of the dumping operation comes at the point when the center of gravity of the load approaches vertical alignment with the pivot point of the barrow. It is at this stage in the dumping when the curvature between the arms 21, 22 and the braces 24, 25 will expedite rotation of the wheelbarrow. A continuous curvilinear bearing surface is formed about which the barrow may be rotated by exerting a steady upward thrust on the grip end of the side members 13, 14. The manner of exerting this thrust is illustrated by the hand 70 in Fig. 4. This curvilinear bearing surface formed between the rearwardly extending arms and the underlying braces serves to facilitate the rotation of the barrow when it is suspended from a concerte form in the same manner that the curvilinear nose on the barrow of the invention and on many conventional barrows serves to facilitate rotation of the wheelbarrow when the nose is in contact with the ground or the ramp, etc.

I have provided an improvement in wheelbarrows which reduces the strain normally imposed on the forward lip of the wheelbarrow tray and correlatively reduces the wear on the tray. Further the wheelbarrow of the invention is easier to dump in those applications where the point of suspension is the top of the form or the like, rather than the ground.

I claim:

1. In a wheelbarrow, a chassis including a pair of elongated side members each having a curved nose portion at the front thereof, an intermediate cross member and a rear cross member joining the side members in spaced relationship so that the longitudinal axes thereof converge toward the nose portions, a forward cross member joining said nose portions, a tray having a planar bottom engaging said intermediate and rearward cross members and a planar inclined front portion, said side members having arms extending rearwardly and upwardly from said nose portion toward the approximate midpoint of said planar front portion, said arms curving additionally up-

wardly and forwardly adjacent the planar front portion of the tray and extending parallel thereto to form underlying braces upon which the wheelbarrow may be supported on the edge of a pouring form, an upper cross member affixed to the braces adjacent the planar front portion of the tray, means affixing said last named portion of the tray to the upper cross member, a ground wheel rotatably mounted between the side members so that the center of rotation thereof is rearward of the nose portion and below the upwardly curving portion of said arms, and a pair of legs each supported from the intermediate and rear cross members.

2. In a wheelbarrow, a chassis including a pair of elongated side members each having a curved nose portion at the front thereof, an intermediate cross member and a rear cross member joining the side members in spaced relationship so that the longitudinal axes thereof converge toward the nose portions, a forward cross member joining said nose portions, a tray having a planar bottom engaging said intermediate and rearward cross members and a planar inclined front portion, said side members having arms extending rearwardly and upwardly from said nose portion toward a point on such planar front portion spaced substantially below the upper margin thereof, said arms curving additionally upwardly and forwardly adjacent the planar front portion of the tray and extending parallel thereto to form underlying braces upon which the wheelbarrow may be supported on the edge of a pouring form, an upper cross member affixed to the braces adjacent the planar front portion of the tray, means affixing said last named portion of the tray to the upper cross member, a ground wheel rotatably mounted between the side members so that the center of rotation thereof is rearward of the nose portion and below the upwardly curving portion of said arms, and a pair of legs each supported from the intermediate and rear cross members.

3. In a wheelbarrow, a chassis including a pair

of elongated side members each having a curved nose portion at the front thereof, an intermediate cross member and a rear cross member joining the side members in spaced relationship so that the longitudinal axes thereof converge toward the nose portions, a forward cross member joining said nose portions, a tray having a planar bottom engaging said intermediate and rearward cross members and a planar inclined front portion, said side members having arms extending rearwardly and upwardly from said nose portion toward the approximate midpoint of said planar front section and at an angle of approximately 90° thereto, said arms curving additionally upwardly and forwardly adjacent the planar front portion of the tray and extending parallel thereto to form underlying braces upon which the wheelbarrow may be supported on the edge of a pouring form, an upper cross member affixed to the braces adjacent the planar front portion of the tray, means affixing said last named portion of the tray to the upper cross member, a ground wheel rotatably mounted between the side members so that the center of rotation thereof is rearward of the nose portion and below the upwardly curving portion of said arms, and a pair of legs each supported from the intermediate and rear cross members.

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