June 17, 1947. C. H. BATES 2,422,331

COLLAPSIBLE WHEELBARROW

Filed March 25, 1946 2 Sheets-Sheet 1

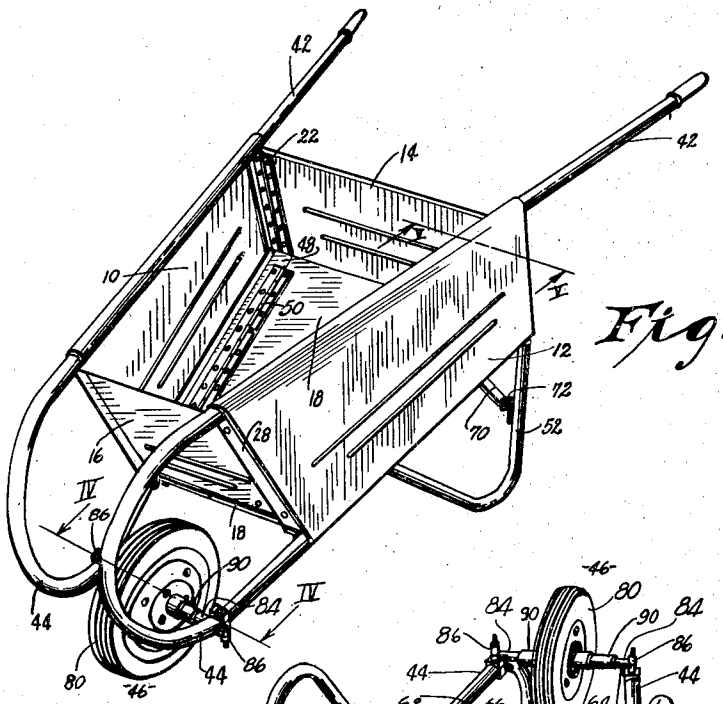


Fig. 1.

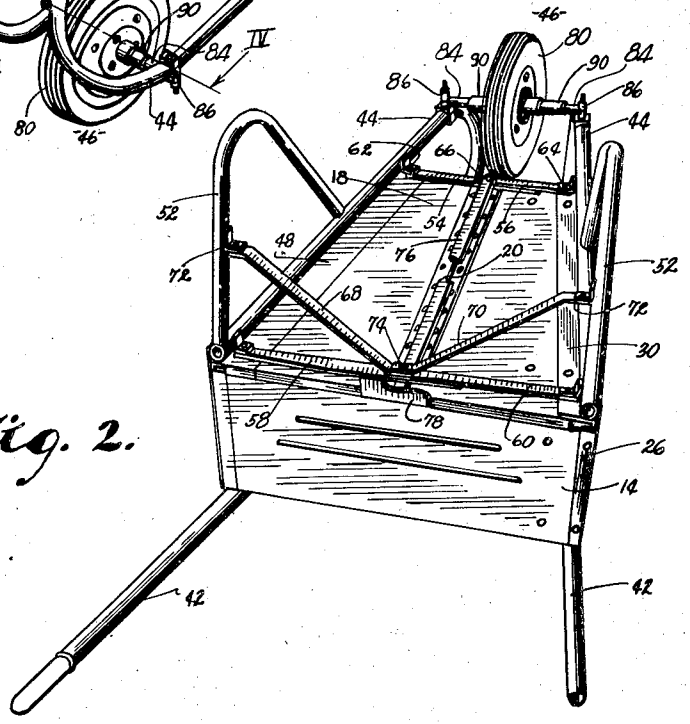


Fig. 2.

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COLLAPSIBLE WHEELBARROW

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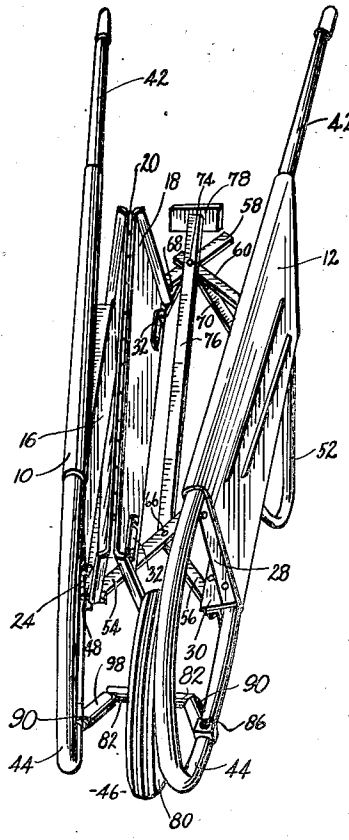


Fig. 3.

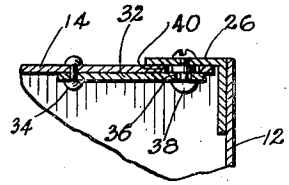


Fig. 6.

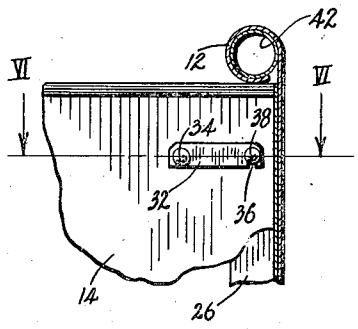


Fig. 5.

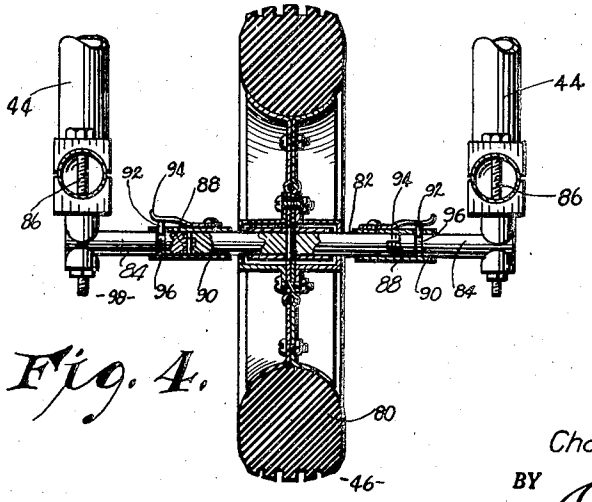


Fig. 4.

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2,422,331

COLLAPSIBLE WHEELBARROW

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10 Claims. (Cl. 280—42)

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This invention relates to wheel barrows and the primary aim is to provide such a material handling and transporting implement as may be conveniently and quickly converted to and from a completely collapsed condition where shipping, storing and transporting thereof may be done without the wheel barrow occupying an objectionably large amount of space.

One of the most important objects of this invention is the provision of a collapsible wheel barrow, the sections whereof are made of light weight material, shiftably interconnected to allow manual manipulation to convert the parts of the barrow from an operative to an inoperative condition and vice versa whenever the occasion requires, all without the employment of any tools or implements.

Another important object of this invention is to provide a collapsible wheel barrow the body whereof is formed of a number of sections of sheet material, all articulated and sized to allow superimposing the sheets of material in substantial parallelism when the wheel barrow is collapsed.

Other objects of the invention are to provide a wheel barrow having a body formed of a number of cooperating specially designed sections mounted upon framework capable of holding the sections in an operative condition; to provide a wheel assembly mounted directly upon the framework or other parts of the wheel barrow so that the same may be collapsed to the inoperative condition without removing the wheel or any part of the assembly; and to provide a framework formed to interlock and maintain the entire wheel barrow in a rigid condition for manipulation and the carrying of a load when the wheel barrow is to be put into use.

Other aims of the invention will appear during the course of the following specification referring to the accompanying drawing, wherein:

Fig. 1 is a top perspective view of the collapsible wheel barrow made in accordance with the present invention.

Fig. 2 is a bottom perspective view thereof.

Fig. 3 is a perspective view of the wheel barrow with the component parts thereof in a partially collapsed condition.

Fig. 4 is a fragmentary cross sectional view on an enlarged scale taken on line IV—IV of Fig. 1 and looking in the direction of the arrows.

Fig. 5 is an enlarged fragmentary detailed sectional view taken on line V—V of Fig. 1; and

Fig. 6 is a detailed sectional view taken on line VI—VI of Fig. 5.

The form of the invention chosen for illustration is capable of fulfilling the objects above set down and adequate to teach the manner of producing the wheel barrow in an economical way.

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The body per se comprises a pair of side walls 10 and 12, a pair of end walls 14 and 16 and a bottom 18. The bottom is sectional and the two sections thereof are hinged together along a longitudinal line at the median point of bottom 18. This hinge 20 permits the bottom 18 to "break" and form a pair of superimposed sections, each substantially the same size as side wall 10. End wall 14 is hinged as at 22 to one end of side wall 10. This hinge is so placed as to allow end wall 14 to swing into superimposed relation with side wall 10 when the body of the wheel barrow is to be collapsed. Likewise, end wall 16 is hinged as at 24 to the opposite end of side wall 10 from hinge 22. Side wall 12 has flanges thereon for supporting the free ends of end walls 14 and 16 and the free edge of bottom 18 when the wheel barrow is in the operative position as clearly illustrated in Figs. 1 and 2. For example, wall 14 rests against inturned flange 26 on side wall 12, end wall 16 rests against inturned flange 28 and bottom wall 18 rests upon flange 30, all rigid to side wall 12. When the wheel barrow is in the operative position and walls 14, 16 and 18 rest upon their respective flanges 26, 28 and 30, latches 32 are brought into play to lock the parts together. There is at least one latch on each wall 14, 16 and 18 and all are formed substantially the same, as clearly illustrated in Figs. 3, 5 and 6. Each latch is pivotally mounted as at 34 on the respective wall to have a notch 36 engage a pin 38 rigid to the flange against which the respective wall rests when the body is in the operative position. A hole 40 through the wall clears pin 38, all as shown in Fig. 6. These latch members 32 are on the inside faces of the various walls and may be swung to and from position without trouble when the wheel barrow is to be manipulated from the open to the collapsed condition.

The material from which the aforesaid walls are constructed is preferably sheet metal and it has been found that a very light wheel barrow may be made when using aluminum. Aluminum tubing may also be employed in producing the handles 42 and wheel brackets 44, one of which is associated with each side wall 10 and 12 respectively.

The handle extends rearwardly from the body of the wheel barrow and the bracket extends forwardly a distance sufficient to accommodate the wheel assembly broadly designated by the numeral 46 and hereinafter to be more fully de-

scribed. The tubular member from which each handle and bracket 42 and 44 is formed is rebent upon itself to present a U-shaped element, the upper leg whereof is embraced by a curled marginal edge of the respective wall. The lower leg of the U-shaped element lies along the bottom of inturned flange 30 of wall 12 on the one side and below an inturned flange 48 at the lower edge of wall 10. This inturned flange 48 is wide enough to underlie end walls 14 and 16 when they are in superimposed relation against wall 10 and the hinge 50 carrying the bottom wall 18 is connected directly to this flange 48. A leg 52 depends from the lower leg of the aforesaid U-shaped element extending rearwardly from each bracket 44 and these legs 52 are likewise formed of tubular material and attached directly to the leg of the U-shaped element as illustrated in Fig. 2.

A framework of links is constructed as shown in Fig. 2. This framework serves to maintain the sections of the wheel barow body in a rigid extended condition and likewise presents a means for drawing the side walls 10 and 12 together after end walls 14 and 16 and bottom wall 18 have been unlatched and folded against side wall 10. The framework comprises a number of links 54, 56, 58 and 60 arranged in pairs and having pivotal connection with the rearwardly extending leg of brackets 44. For example, one end of link 54 is pivotally connected as at 62 and one end of link 56 is pivotally connected as at 64. The proximal ends of these links 54 and 56 are overlapped and pivotally joined by a pin 66. The same form of structure is utilized in mounting links 58 and 60 but in addition to these links 58 and 60 at the rearmost portion of the wheel barrow body there is a pair of braces 68 and 70 pivotally secured as at 72 to the respective legs 52 and pivotally interconnected as at 74 by the same pin which passes through the overlapped inner proximal ends of links 58 and 60. This pin also passes through bar 76 interconnecting the inner articulated ends of links 54 and 56 and also the similar ends of links 58 and 60. This bar 76 has a head 78 thereon that may be grasped by the operator to cause the two pairs of links to move to and from the extended condition. Thus, after walls 14, 16, and 18 are swung against wall 10, manipulating the linkage just described will draw the side portions of the wheel barrow body toward each other, provided of course, the wheel assembly 46 is conditioned to permit such action.

The wheel assembly 46 is a uniquely arranged construction as shown in detail in Fig. 4. Wheel 80 is mounted upon a section 82 of a shaft that extends from one bracket 44 to another. Section 84 of the shaft of wheel assembly 46 has one end secured to one bracket 44 through the medium of a bolt or analogous means 86 while its inner end is pivotally attached as at 88 to the outer end of section 82 of the shaft.

A sleeve 90 is slidably mounted upon shaft sections 82 and 84 and carries a locking pin 92 on a spring 94 to enter groove 96 in shaft section 84 when sleeve 90 is in the position to extend over a portion of both sections 82 and 84. This relation of the parts is clearly shown in Fig. 4 and indicates that the inner articulated ends of shaft sections 82 and 84 cannot move about their pivotal interconnection 88. When the wheel barrow is to be collapsed, spring 94 is lifted to draw pin 92 out of groove 96 and sleeve 90 then moves along section 84 to a point where the

pivotally interconnected ends of these shaft sections are without sleeve 90 and where they may swing or "break," as illustrated in Fig. 3. A similar section 98 joined to the other bracket 44 in identically the same manner as just described with respect to section 84 presents a double-joint (one on each side of wheel 80) and when these joints are both free to hinge, the wheel assembly 46 will remain associated with the brackets 44 as they are shifted toward and from each other. Thus, no parts will become lost or misplaced and since the sleeves 90 are manually manipulable, no tools are necessary to shift the wheel barrow parts from the open to the collapsed condition.

Advantages arising from the employment of a wheel barrow made pursuant to the invention are obvious and will not only fulfill the objects above set forth but other requirements of wheel barrows where the same are to be collapsed and stored in a minimum amount of space.

Such changes and modifications as fall within the scope of the appended claims may be made without departing from the spirit of the invention and it is, therefore, realized that the above described form of the invention is merely as an example and not confining so far as the appended claims are concerned.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A wheel barrow of the kind described comprising a body formed of a pair of side walls, a pair of end walls and a bottom wall; handles extending outwardly from the side walls at one end thereof; brackets extending outwardly from the opposite end of the side walls; and a wheel assembly mounted on the brackets, said end walls and the said bottom wall being hinged to one of the side walls for movement into substantially parallel relation therewith, said wheel assembly being collapsible permitting movement of the side walls together after the end walls and the bottom wall have been swung into parallel relation with the one side wall.

2. A wheel barrow of the kind described comprising a body formed of a pair of side walls, a pair of end walls and a bottom wall; handles extending outwardly from the side walls at one end thereof; brackets extending outwardly from the opposite end of the side walls; a wheel assembly mounted on the brackets, said end walls and the said bottom wall being hinged to one of the side walls for movement into substantially parallel relation therewith, said wheel assembly being collapsible permitting movement of the side walls together after the end walls and the bottom wall have been swung into parallel relation with the one side wall; and a collapsible framework interconnecting the pair of side walls.

3. A wheel barrow of the kind described comprising a body formed of a pair of side walls, a pair of end walls and a bottom wall; handles extending outwardly from the side walls at one end thereof; brackets extending outwardly from the opposite end of the side walls; a wheel assembly mounted on the brackets, said end walls and the said bottom wall being hinged to one of the side walls for movement into substantially parallel relation therewith, said wheel assembly being collapsible permitting movement of the side walls together after the end walls and the bottom wall have been swung into parallel relation with the one side wall; and a collapsible framework interconnecting the pair of side walls, said framework

including a number of links and a manually manipulable bar disposed to receive force for shifting the side walls toward and from each other.

4. A wheel barrow of the kind described comprising a body formed of a pair of side walls, a pair of end walls and a bottom wall; handles extending outwardly from the side walls at one end thereof; brackets extending outwardly from the opposite end of the side walls; and a wheel assembly mounted on the brackets, said end walls and the said bottom wall being hinged to one of the side walls for movement into substantially parallel relation therewith, said wheel assembly being collapsible permitting movement of the side walls together after the end walls and the bottom wall have been swung into parallel relation with the one side wall, said bottom wall being a number of articulated sections in the same plane when in the operative position and in superimposed relation all in parallelism with the side wall when the body is collapsed.

5. A wheel barrow of the kind described comprising a body formed of a pair of side walls, a pair of end walls and a bottom wall; handles extending outwardly from the side walls at one end thereof; brackets extending outwardlly from the opposite end of the side walls; and a wheel assembly mounted on the brackets, said end walls and the said bottom wall being hinged to one of the side walls for movement into substantially parallel relation therewith, said wheel assembly being collapsible permitting movement of the side walls together after the end walls and the bottom wall have been swung into parallel relation with the one side wall, the other side wall having a flange thereon for supporting the end walls and the bottom wall, along the portions thereof remote from their hinge connections, and which receive the end walls and the bottom wall when the wheel barrow is in the operative condition.

6. A wheel barrow of the kind described comprising a body formed of a pair of side walls, a pair of end walls and a bottom wall; handles extending outwardly from the side walls at one end thereof; brackets extending outwardly from the opposite end of the side walls; and a wheel assembly mounted on the brackets, said end walls and the said bottom wall being hinged to one of the side walls for movement into substantially parallel relation therewith, said wheel assembly being collapsible permitting movement of the side walls together after the end walls and the bottom wall have been swung into parallel relation with the one side wall, said wheel assembly including a sectional shaft, means pivotally interconnecting the sections of the shaft for movement to and from an aligned condition, and structure for holding the sections of the shaft against pivotal movement.

7. A wheel barrow of the kind described comprising a body formed of a pair of side walls, a pair of end walls and a bottom wall; handles extending outwardly from the side walls at one end thereof; brackets extending outwardly from the opposite end of the side walls; a wheel assembly mounted on the brackets, said end walls and the said bottom wall being hinged to one of the side walls for movement into substantially parallel relation therewith, said wheel assembly being collapsible permitting movement of the side walls together after the end walls and the bottom wall have been swung into parallel relation with the one side wall; and a collapsible frame-work interconnecting the pair of side walls, said frame-work including a number of links and a manually manipulable bar disposed to receive force for shifting the side walls toward and from each other, said frame-work being constructed to rigidly secure the side walls in spaced apart relation when the wheel barrow is opened to the operative condition.

8. A wheel barrow of the kind described comprising a body formed of a pair of side walls, a pair of end walls and a bottom wall; handles extending outwardly from the side walls at one end thereof; brackets extending outwardly from the opposite end of the side walls; a wheel assembly mounted on the brackets, said end walls and the said bottom wall being hinged to one of the side walls for movement into substantially parallel relation therewith, said wheel assembly being collapsible permitting movement of the side walls together after the end walls and the bottom wall have been swung into parallel relation with the one side wall; and a collapsible frame-work interconnecting the pair of side walls, said frame-work including a number of links and a manually manipulable bar disposed to receive force for shifting the side walls toward and from each other, said frame-work being constructed to rigidly secure the side walls in spaced apart relation when the wheel barrow is opened to the operative condition, said frame-work including a brace for each leg respectively.

9. In a collapsible wheel barrow, a body formed of a number of articulated sections; means for holding the sections in an operative condition; and a wheel assembly adapted to cooperate with the body sections to permit collapsing of all parts of the wheel barrow to a relatively flat package, as all parts thereof remain interconnected, said wheel assembly comprising a sectional shaft, a wheel on one of the sections of the shaft and a manually releasable joint at each end respectively of the shaft section having the wheel thereon for connecting that section to the proximal ends of two sections of the shaft at each end of the section having the wheel thereon.

10. In a collapsible wheel barrow, a body formed of a number of articulated sections; means for holding the sections in an operative condition; and a wheel assembly adapted to cooperate with the body sections to permit collapsing of all parts of the wheel barrow to a relatively flat package, as all parts thereof remain interconnected, said wheel assembly comprising a sectional shaft, a wheel on one of the sections of the shaft and a manually releasable joint at each end respectively of the shaft section having the wheel thereon for connecting that section to the proximal ends of two sections of the shaft at each end of the section having the wheel thereon, said two sections being secured to different but opposed sections of the wheel barrow body.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,823,816	Chittenden	Sept. 15, 1931
611,675	Brookmeyer	Oct. 4, 1898

FOREIGN PATENTS

Number	Country	Date
337,661	Germany	June 6, 1921