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Nini

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[54] **COMBINATION LADDER AND TOOL CART**

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[52] **U.S. Cl.** **182/17,** 182/20, 182/127, 182/129

[51] **Int. Cl.** **E06c 5/24**

[58] **Field of Search** 182/129, 127, 20, 28, 17, 182/152

[56] **References Cited**

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2,990,764	7/1961	Wilder	182/127
2,997,125	8/1961	Davis	182/17
3,190,406	6/1965	Usher	182/152
3,434,566	3/1969	Miller	182/15
3,490,558	1/1970	Foley	182/127
3,552,521	1/1971	Tate	182/17
3,684,055	8/1972	Rice	182/17

Primary Examiner—Reinaldo P. Machado
Attorney, Agent, or Firm—Pugh & Laiche

[57] **ABSTRACT**

A combined step ladder and tool cart having three basic components, namely a special, foldable step ladder having its set of front legs substantially shorter than the back set, a collapsible wheeled dolly, and removable tool or storage bin to be fitted within the confines of the dolly and attached thereto. The step ladder is mounted onto the dolly at its uppermost section by means of bolts or pivot pins and is designed to be folded up, over and horizontally onto the dolly so that it rides thereon when the dolly is transported from one location to another. The storage bin, which also can be collapsible if desired, is detachable from the dolly and carries on its front face such paraphernalia as a name tag, pencil holder and clip board. The dolly which is vertically adjustable serves as a set of front legs for the step ladder when the ladder is in its erected disposition. The dolly has its two sides joined by means of an X-folding member located at its back end and is preferrably completely open at its front end. Auxiliary tool trays and/or paint can racks can be mounted on the ladder for further utility.

10 Claims, 2 Drawing Figures

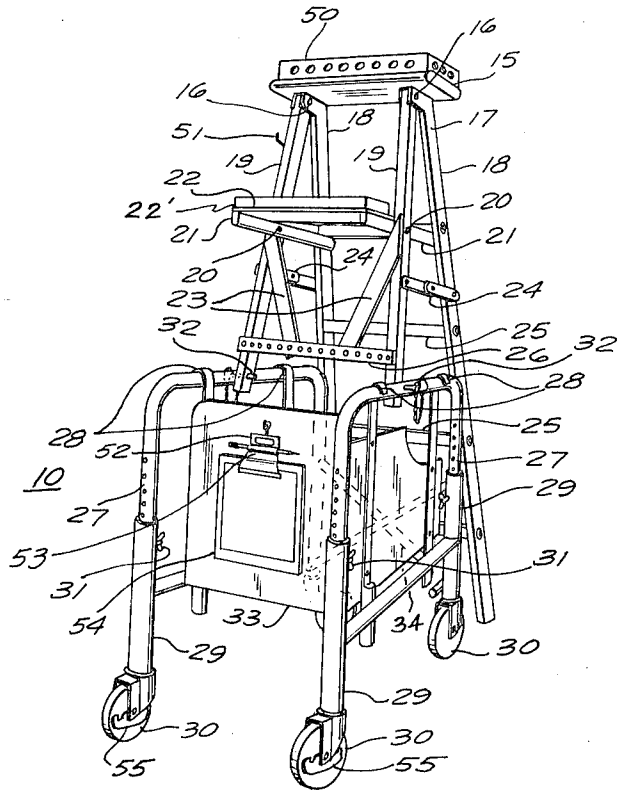


FIG. 1

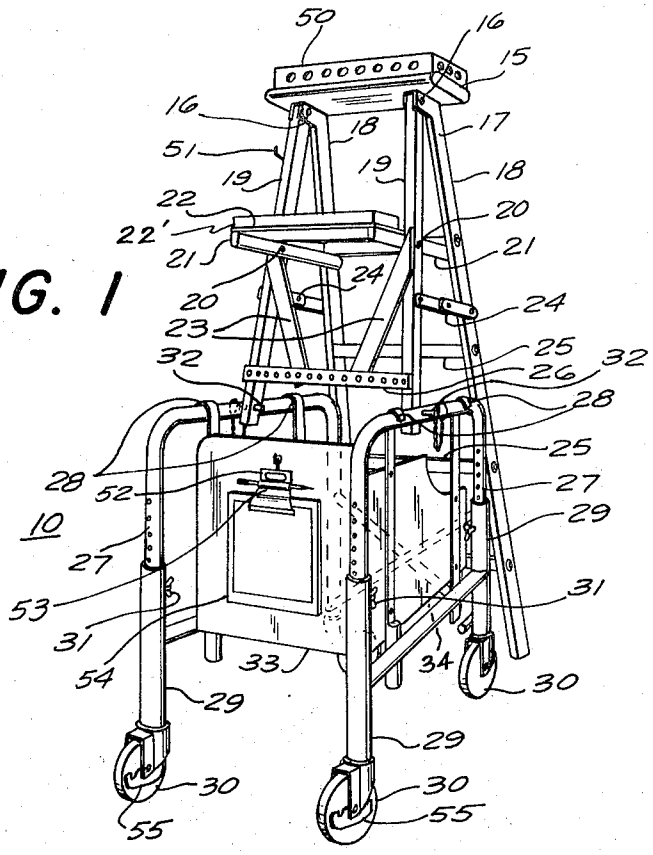
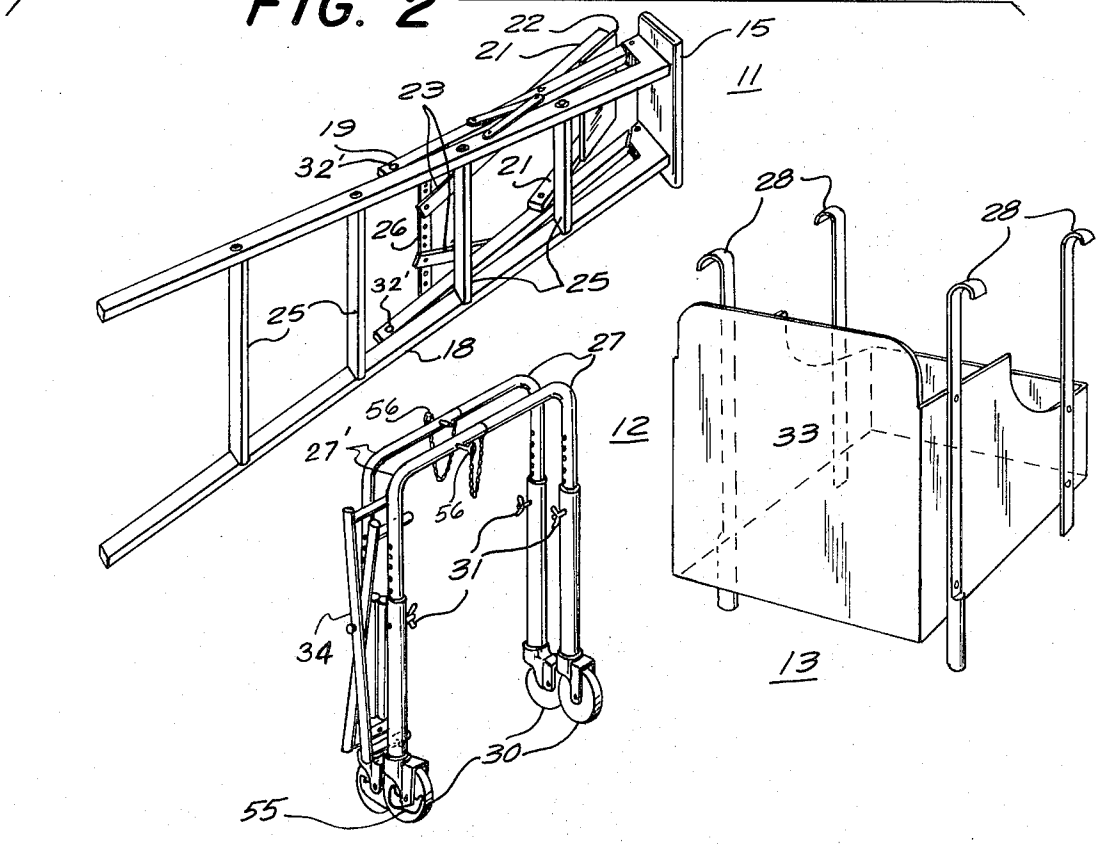

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FIG. 2


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32'
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32'
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27'
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COMBINATION LADDER AND TOOL CART

BACKGROUND OF THE INVENTION

The present invention relates to a combination ladder and tool cart for use in connection with, for example, maintenance operations in areas such as hospitals, apartment houses, and the like.

In the prior art there are of course various tool carts and there are of course many different ladders, but one is usually faced with the possession of one and the lack of the other just at the time when both are needed. Moreover, even when one has both but has to transport them to another location, the user usually has to make two trips or have additional personnel to assist in moving one or the other item.

The present invention eliminates these problems by providing a combination ladder and tool cart to serve the maintenance needs of most businesses. The ladder is attached to the tool cart in such a manner as to make the transportation of both a totally simple matter, since the ladder folds flat over onto the top of the cart and is rolled with the cart to the next work destination.

Additionally the entire cart and ladder assembly of the present invention can be quickly disassembled and folded for convenient transportation in any vehicle or for stroage in a closet or other work area.

Broadly speaking, the basic concept of combining a ladder and wheeled structure is admittedly old. Typical examples of such combinations are disclosed in the following U.S. Patents:

No.	Inventor	Issue Date
1,992,108	C. W. White	February 19, 1935
2,798,652	G. P. Easton	July 9, 1957
2,827,215	G. W. Burg et al	March 18, 1958
2,899,010	R. W. Ledgerwood	August 11, 1959
3,020,972	J. A. Hockett	February 13, 1962
3,495,850	R. J. Ziskal	February 17, 1970
3,684,055	Robert C. Rice	August 15, 1972

As to the particular purposes or use of the present invention, particular reference is made to the Hockett patent. However, each of the foregoing prior patents in this crowded art fails to achieve the combined great simplicity, reliability and compactness of the present invention with its great utility and safety in use.

Thus in spite of the prior art there still has been a longstanding need for a simple-to-operate, light-weight, collapsible, multi-use combination ladder and tool cart in the art to facilitate maintenance operations in connection with buildings such as, for example, hospitals, apartment houses and the like. Heretofore the lack of the efficient, versatile and reliable device of the present invention has resulted in many lost manhours which could otherwise have been spent in the useful work activities usually performed by maintenance men.

It is noted that the present invention structurally includes three separable elements: (1) a special step ladder having its front legs substantially shorter than its back ones; (2) a collapsible, foldable dolly having its two sides preferrably connected together at only its back end by means of a single folding X member; and (3) a box-like storage bin which can be placed within the open interior of the dolly; the ladder being connected to the dolly by means of pivot pins between the lower extremities of the ladder's front legs and the uppermost side portions of the dolly, this pivoting connection allowing the ladder to be moved up, over and horizontally onto the top of the dolly.

The instant device may be safely operated by means of foot locks on the front coasters of the cart so that the step ladder is rendered immovable relative to the floor and user.

It is noted that when the ladder is folded out and erected for use, the legs of the cart are locked for safety; that is, the front wheels of the cart form two of the legs of the ladder, while the other two legs of the ladder make contact with the floor.

It is further noted that the ladder used in the combination of the present invention is not made to be used separately from the cart. Indeed it is an object of the present invention to preclude someone's taking the ladder and misplacing it, defeating the purpose for the design of the combination unit.

Other special auxiliary features of the present invention include tool trays mounted on top of the step ladder and on its folding shelf, paint can racks mounted to the uppermost section of the step ladder for hanging paint cans thereon, and the inclusion of a name tag, pencil holder and a paperclip board on the front face of the storage bin. All of the above listed qualities and features in connection with the instant device add to its utility as a combination tool cart and step ladder.

The present invention was designed by a hospital maintenance supervisor who knows very well the needs of maintenance forces in business; and his in-depth experience indicates that the present invention meets most of the major needs for convenience and utility in maintenance supplies.

It is therefor an object of the present invention to provide a combination tool cart and step ladder which is readily usable in connection with maintenance operations in, for example, hospitals, apartment houses and the like.

It is another object of the present invention to provide an easy to manufacture, inexpensive combination tool cart and step ladder for use in connection with maintenance operations.

Yet another object of the present invention is the provisions of a combination tool cart and step ladder which is readily dismantled and assembled initially in three basic component parts, namely, a special step ladder, a collapsible dolly, and a storage or tool bin.

BRIEF DESCRIPTION OF THE DRAWINGS

For a further understanding of the nature and objects of the present invention, reference should be had to the following detailed description, taken in conjunction with the accompanying drawings, in which like parts are given like reference numerals and wherein:

FIG. 1 is a perspective front view of the assembled combination tool cart and step ladder, with the latter in its erected disposition.

FIG. 2 is a perspective view of the disassembled combination tool cart and step ladder in exploded array, showing separately the special step ladder, tool bin, and dolly (the latter in its collapsed disposition).

DESCRIPTION OF THE PREFERRED EMBODIMENT

The preferred embodiment 10 of the combined ladder and tool cart of the present invention is illustrated in its completely erected disposition in FIG. 1 and in completely disassembled array in FIG. 2.

As illustrated in exploded array in FIG. 2, the present invention structurally includes three separable elements 11 – 13: (1) a special step ladder 11 having its front legs 19 substantially shorter than its back ones 18; (2) a collapsible, foldable dolly 12 (shown in its collapsed disposition) having its two sides preferrably connected together at only its back end by means of a single folding X-member 34; and (3) a box-like storage bin 13 which can be placed within the open interior of the dolly 12.

To assemble the three elements 11 – 13 of FIG. 2 to produce the fully assembled device as illustrated in FIG. 1, the dolly 12 is unfolded by means of pulling the two upper side members 27' apart, expanding the X-frame member 34. The storage or tool bin 13 is then placed down within the open interior of the erected dolly so that the four side hooks 28 of the bin 13 engage the tubular side members 27 of the dolly 12 at their uppermost extremeties 27'. The bin 13 is then nested within the frame of the dolly 12 and is attached thereto, producing a stable and erect cart, the dolly 12 including at its lower extremities four coaster wheels 30 for mobility. It is noted that the dolly 12 includes only one X-frame member 34 located at its back end, thereby leaving its front end completely open which allows easier access to its interior when inserting or removing the storage bin 13 from the dolly 12.

The bolts or pivot pins 32, which are attached to the dolly 12 by means of chains 56, are moved out, and the lower extremities of the front legs 19 of the ladder 11 are placed in juxtaposition thereto so that the holes 32' line up with the pins 32. The pins are then inserted through the holes 32' and locked in place by any convenient means, such as for example wing nuts (not illustrated) if the pivot pins are made in the form of bolts. Thus, as seen in FIG. 1, the ladder 11 is connected to the dolly 12 by means of bolts or pivot pins 32 between the lower extremities of the ladder's front legs 19 and the uppermost side portions 27' of the dolly 12. This pivoting connection allows the ladder 11 to be moved up, over and horizontally onto the top of the dolly 12.

It is to be noted that, when assembled as in FIG. 1, the legs 18, 19 of the unit 10 can be moved relative to the floor by merely folding the step ladder 11 together using the pivoted break-jointed braces 24 in the well known way and then pushing the folded ladder (the disposition of ladder 11 in FIG. 2) forward and over horizontally up onto the cart 12 – 13 so that it rides on top of the cart 12 – 13.

This combined mobility enables the user to push the cart around at will along with the step ladder 11. However, standard-type foot locks 55 are provided on the front wheels to prevent the assembled combination tool cart and step ladder 10 from moving about when in use. In the event that the user merely desires to move the combination tool cart and step ladder 10 a short distance, the user needs merely to release the foot locks 55, raise the ladder 11 (without folding it) about the pivot pins 32, and push the device 10 the short distance.

As to the details of the step ladder 11, it is comprised of the shorter forward or front set of legs 19 and a rear set of legs 18. These forward and rearward set of legs 18, 19 are respectively joined at their tops by top pivot member 16 and at their sides by break-joint braces 24. The standard front shelf 22 is included which is supported by arms 21 which pivot about pins 20.

The front legs 19 are connected to each other by cross braces 23 in conjunction with lateral brace 26 which hold the front legs 19 stable relative to each other. The back legs are stabilized by means of the steps 25 and the top shelf or step 15.

An auxiliary tool tray 50 is mounted on the uppersection 15 of the step ladder 11 for use in placing articles therein for easy and quick access thereto. A second auxiliary tool tray 22' is mounted on top of the shelf platform 22. When the device 10 is not in use, the auxiliary tool trays 22', 50 can be stored in the storage bin 13 and the trays are so suitably dimensioned. Additionally, a paint can rack or hook 51 for holding a paint can is provided on leg 19 on the ladder 11 to further enhance the device's utility.

It is noted that dolly 12 includes a tubular set of four lower legs 29 and a tubular set of four upper legs 27 (formed by two inverted U-shaped members) mounted within the tubular legs 29 for relative, telescopic action with respect to each other. This telescopic action allows the dolly frame 12 to be varied in height. Upper legs 27 and lower legs 29 are fixedly mounted relative to each other by means of butterfly wing nuts and bolts 31 which protrude through mating apperatures in the upper and lower legs 27, 29.

Tool or storage bin 13 includes a front panel section 33 and also has rear side and bottom panels to thereby form a box-like enclosure. The side panels include at their rear portions a cut-out or lowered section to allow easy side access into the bin 13. As shown in FIG. 1, a name tag 52, a pencil holder 53 and a clip board 54 can be included on the front panel 33 for record-keeping purposes.

It is noted that when the dolly 12 is erected, that is, folded out, it defines an open rectangular interior to which the horizontal cross-section of the bin 13 conforms.

For strength and reliability the device 10 can be made all of aluminum. The step ladder 11 can be of standard height and construction with the exception that, for the preferred embodiment, the front legs must be suitably shortened. Suitable dimensions for the cart 12–13 would be a height of 29 inches, a lateral width of approximately 17 inches, and a longitudinal length of approximately 31 inches.

As is true with most mechanical devices, many variations in design and detail of the preferred embodiment of the present invention are possible. For example, the ladder could include an extension section in order for it to go to greater heights. Moreover, for further compactness in storage, the bin 13 could be made of a collapsible construction by a for example appropriately hinging some of the edges between the various panels; etc.

Because many varying and different embodiments may be made within the scope of the inventive concept herein taught, and because many modifications may be made in the embodiments herein detailed in accordance with the descriptive requirements of the law, it is to be understood that the details herein are to be interpreted as illustrative and not in a limiting sense.

What is claimed as invention is:

1. A combined ladder and tool cart comprising:

a step ladder having one set of its lower legs substantially shorter than the other;

a collapsible dolly defining a generally open interior when in its erected disposition; said shorter legs of

said ladder including ladder fastening means for fastening them to said collapsible dolly; and

a storage bin having a cross-section which at least generally conforms to said open interior of said dolly when erected and having bin fastening means for fastening it to said dolly within the interior thereof; said ladder, said dolly and said bin capable of being easily separated for compact storage when not in use.

2. The device as defined in claim **1** wherein:

said step ladder is fastened to said dolly at its upper most section by means of pivot pin means for allowing said ladder to be folded up, over and onto the top dolly so that it rides thereon when the dolly is transported from one location to another.

3. The device as defined in claim **1** wherein:

said dolly serves as a set of lower front legs for said step ladder when said step ladder is in its erected position.

4. The device as defined in claim **1** wherein:

said dolly is equipped with four wheels, at least two of which are lockable by means of foot locks so that the cart with its erected step ladder can be rendered immovable relative to floor.

5. The device as defined in claim **1** wherein said dolly has two sides and a single folding end member interconnecting said sides, the remaining end being open and unobstructed.

6. The device as defined in claim **1** wherein said single folding member comprises and X-folding structure wherein the two bar elements pivot about their center connection, the ends of said bar elements being connected to said sides of said dolly.

7. The device as defined in claim **1** wherein:

said dolly is rectangular in horizontal cross-section and has four vertical corner posts comprised of a set of four lower tubular legs and a set of four upper tubular legs mounted within said lower tubular legs for relative, telescopic motion with respect to each other, whereby the height of said dolly can be varied by said telescopic action.

8. The device as defined in claim **1** wherein:

said storage bin has mounted on its front face a name tag, a pencil holder and a clip board.

9. A combined ladder and tool cart comprising:

a step ladder having one set of its lower legs substantially shorter than the other;

a collapsible dolly defining a generally open interior when in its erected disposition; said dolly having two sides and a single folding end member interconnecting said sides, the remaining end being open and unobstructed, said single folding member comprising an X-folding structure wherein the two bar elements pivot about their center connection, the ends of said bar elements being connected to said sides of said dolly; said dolly being rectangular in horizontal cross-section and having four vertical corner posts comprised of a set of four lower tubular legs and a set of four upper tubular legs mounted within said lower tubular legs for relative, telescopic motion with respect to each other, whereby the height of said dolly can be varied by said telescopic action; said shorter legs of said ladder including ladder fastening means for fastening them to said collapsible dolly, said step ladder being fastened to said dolly at its upper most section by means of pivot pin means for allowing said ladder to be folded up, over and onto the top dolly so that it rides thereon when the dolly is transported from one location to another; said dolly serving as a set of lower front legs for said step ladder when said step ladder is in its erected position; said dolly being equipped with four wheels, at least two of which are lockable by means of foot locks so that the cart with its erected step ladder can be rendered immovable relative to floor; and

a storage bin having a cross-section which at least generally conforms to said open interior of said dolly when erected and having bin fastening means for fastening it to said dolly within the interior thereof; said ladder, said dolly and said bin capable of being easily separated for compact storage when not in use.

10. The device as defined in claim **9** wherein:

said storage bin has mounted on its front face a name tag, a pencil holder and a clip board.

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