July 10, 1951 A. H. HANSON 2,560,342

COMBINATION LADDER AND HAND TRUCK

Filed Aug. 4, 1948 2 Sheets-Sheet 1

Fig. 1

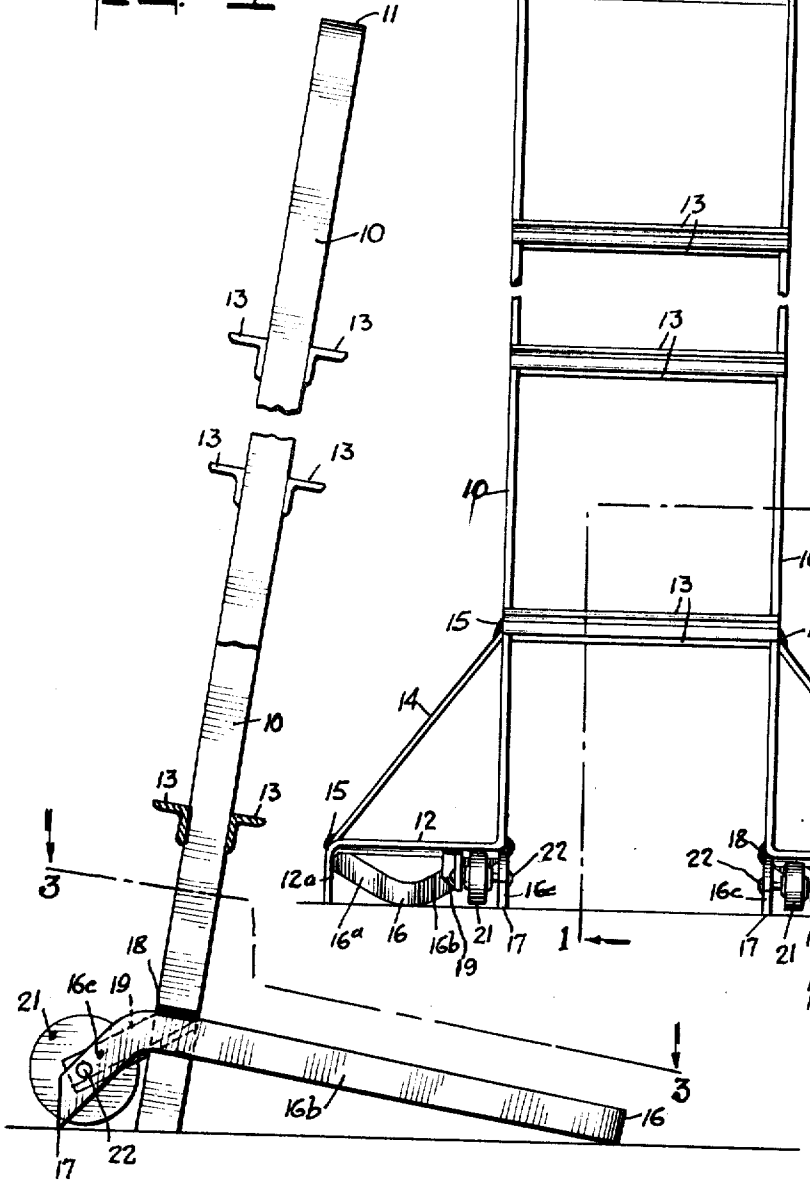


Fig. 2

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Filed Aug. 4, 1948 2 Sheets-Sheet 2

FIG. 3

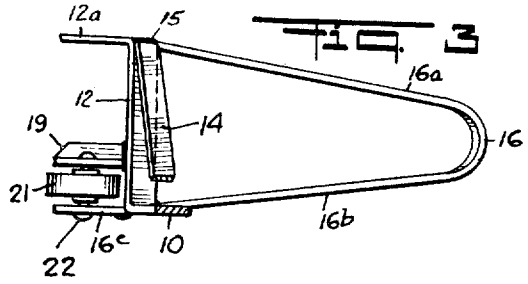
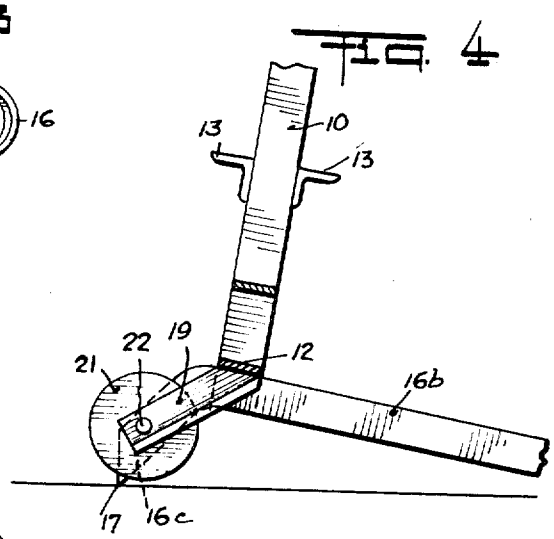


FIG. 4



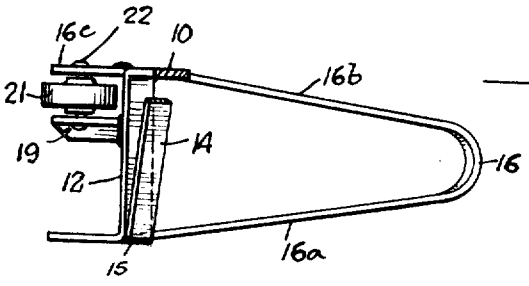


FIG. 5

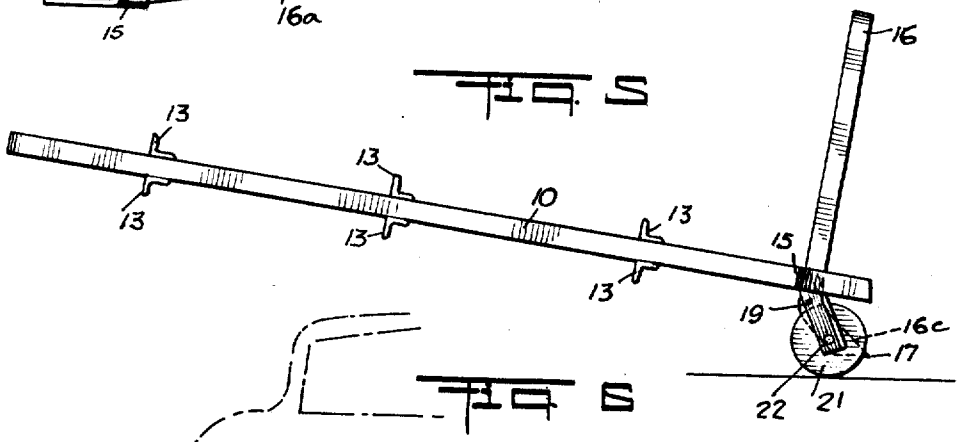
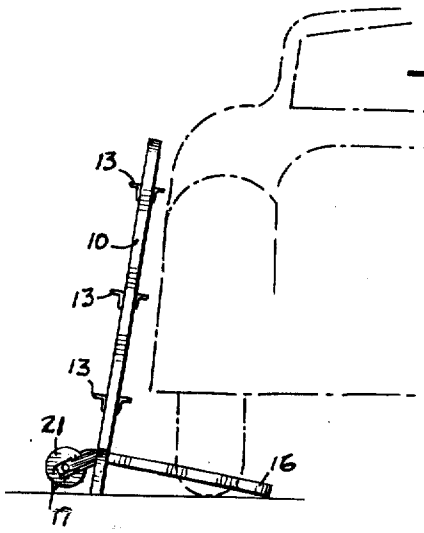


FIG. 6



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COMBINATION LADDER AND HAND TRUCK

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12 Claims. (Cl. 228—16)

1

This invention relates to an improved dual-use ladder unit of general application where it is required to get in close to the work without leaving any part of the ladder up against the work and particularly useful in washing, polishing and painting automobiles, the ladder unit being convertible into a hand truck by altering its position with respect to the floor or ground level.

The tendency in recent automobile design has been to eliminate running boards, thereby making the automobile roof top and upper portions of the automobile body difficulty accessible for washing and polishing operations. Consequently, workmen frequently resort to the practice of opening car doors and supporting themselves by holding on to the upholstered interior of the car which may be easily soiled, or they employ other makeshift arrangements which are potentially hazardous for themselves.

The alternative use of a conventional step ladder with a pivoted supporting frame involves placing the rungs of the ladder at right angles to the automobile body or other work with the attendant necessity for the user to twist his body in order to free his work. In addition to the discomfort experienced by the user in this latter position, there is also a dangerous tendency to upset the ladder.

The employment of a straight ladder enables the user to get in close to the work but, on the other hand, requires that the ladder rest against some portion of the work which condition, in the case of automobiles, introduces the undesirable possibility of damaging or marring the expensive finish. Furthermore, the straight ladder has a pronounced tendency to slip on hard-surfaced, wet floors such as are usually encountered in garages.

Accordingly, it is an object of the invention to provide an improved ladder which overcomes the aforementioned difficulties and disadvantages, which is designed and constructed in such a manner that the user may get in close to the work without contacting the work with the ladder and which is provided with a pair of base supports for straddling those portions of the work which are in contact with the ground surface, such as the tires and wheels of automobiles. The above objects are achieved by providing a ladder having a pair of side bars or stringers spaced apart by a plurality of rungs, each of said stringers having an integral, lateral, slightly elevated, horizontal extension at the bottom thereof. A rearwardly extending base support is then secured as by welding beneath the lateral extension of

2

each stringer in such a manner that the plane of the assembled rungs and stringers will be at an inclination to the ground surface, there being a free space between said base supports for straddling those portions of the work in contact with the ground in order to get in close to the work.

Another object of the invention is the provision of a device of the character indicated having a pair of wheels mounted on the base supports forwardly of the stringers in such a manner that the wheels will be disposed slightly above ground level in inoperative position when the device is used as a ladder with the base supports resting on the ground, the device being convertable for use as a hand truck by the simple expedient of rotation about the forward extremities of the base support to rest the device upon said pair of wheels.

The foregoing objects as well as additional objects and advantages of the invention will be readily apparent in the source of the following detailed description taken in connection with the accompanying drawings, which illustrate a preferred embodiment of the invention, and wherein:

Fig. 1 is a side elevation of a device embodying the features of the invention taken along line 1—1 of Fig. 2.

Fig. 2 is a front elevation of the device.

Fig. 3 is a plan view of that portion of the device below line 3—3 of Fig. 1, showing the spaced, rearwardly extending base supports and the forwardly mounted wheels.

Fig. 4 is a sectional detail taken along line 4—4 of Fig. 2, showing the wheels disposed in inoperative position above ground level when the device is used as a ladder with the base supports resting on the ground.

Fig. 5 is a side elevation of the device supported on its wheels to serve as a hand truck.

Fig. 6 is a side elevation of the device in use as a ladder with its base supports straddling the tire and wheel of an automobile (shown in broken outline) in order to approach closely to the automobile body without resting any part of the ladder thereagainst.

The side bars 10 and top rung 11 of the ladder are preferably formed from a single length of bar metal by simple bending operations. Each side bar 10 is provided at the bottom thereof with a preferably integral, lateral, horizontal extension 12 terminating in a turned down foot portion 12a substantially parallel to said side bars. The remaining rungs are preferably formed

from pairs of angle iron 13, 13 to provide wide steps which are secured between the side bars 10 in any preferred manner, as by welding. In order to impart greater rigidity to the ladder, diagonal supports 14 may be welded as at 15 between each side bar 10 and the foot portion 12a of lateral extension 12.

A rearwardly extending base support 16 is rigidly mounted beneath each of the lateral horizontal extensions 12 of side bars 10, as by welding. Each base support 16 may conveniently take the form of an integral, bifurcated element having rearwardly convergent branches 16a and 16b. The end of the outer branch 16a is secured to the foot portion 12a of horizontal extension 12. The inner branch 16b extends forwardly of side bar 10 as a downwardly turned projection 16c preferably terminating in pointed end 17. Each inner branch 16b is also welded to side bar 10 as at 18. Base supports 16 are mounted in such a manner that the plane of the side bars 10 and rungs 13 is inclined to the ground supporting surface.

Mounting supports 19 may be spaced a suitable distance from each forward projection 16c and said supports may be welded to horizontal extension 12 as shown at 20. Wheels 21 are mounted on pins or axles 22 extending through suitably disposed apertures in each pair of mounting supports 19 and forward projections 16c.

As clearly illustrated in Fig. 3, there is free space between the separately mounted base supports 16. This is an important feature of the invention and enables the device to be placed closely in toward an automobile body in the vicinity of the wheel with said base supports straddling the wheel (see Fig. 6). It is to be noted that, when the device is used as a ladder with base supports 16 resting on the ground, wheels 21 will be maintained slightly above ground level in inoperative position, as best shown in Figs. 1, 4 and 6. On the other hand, by pivoting the ladder about points 17 until wheels 21 contact the ground, as illustrated in Fig. 5, the device may be used as a hand truck.

The device may be fabricated omitting the wheels 21 and the mounting supports 19, if desired, to function solely as a ladder.

While the particular form of base support illustrated in the drawing as a bifurcated member 16 having a downwardly turned forward projection 16c has the considerable advantage of distributing the burden of a man's weight along each of the branches 16a and 16b and contributes to the balance and stability of the device, the base supports may vary in shape and design from that shown.

Since certain additional modifications may be made in the device of the invention without departing from the scope thereof, it is intended that all matter contained in the foregoing description and shown in the accompanying drawing be interpreted merely as illustrative and not in a limiting sense.

What is claimed is:

1. A ladder of the character described comprising an integral member defining a top rung and a pair of inclined side bars, a plurality of spaced horizontal rungs secured between said side bars, each of said side bars having a lateral, elevated, horizontal extension at the bottom thereof, each of said extensions terminating in a turned down foot portion and a lateral, rearwardly extending base support rigidly secured beneath each of said horizontal extensions, said base supports being

spaced from each other to provide a free space therebetween.

2. A combination ladder and hand truck comprising a pair of inclined side bars, a plurality of spaced horizontal rungs secured between said side bars, each of said side bars having a lateral horizontal extension at the bottom thereof, a lateral, rearwardly extending base support rigidly secured beneath each of said horizontal extensions, each of said base supports comprising a bifurcated member having a pair of rearwardly convergent branches, each of said branches having a free outer end which contacts the ground to support said ladder with its side bars in an upright position, one of said branches extending forwardly to define a downwardly turned projection and a pair of wheels mounted on said projections, said pair of wheels being disposed in inoperative position above ground level when the free outer ends of said base supports are in contact with the ground, said downwardly turned projection serving as a pivot point upon the ground about which said ladder may be pivoted to bring said wheels into contact with the ground and to enable said ladder to be used as a hand truck.

3. A combination ladder and hand truck comprising a pair of inclined side bars, a plurality of spaced horizontal rungs secured between said side bars, each of said side bars having a lateral horizontal extension at the bottom thereof, a lateral rearwardly extending base support rigidly secured beneath each of said horizontal extensions, each of said base supports comprising a bifurcated member having a pair of rearwardly convergent branches, each of said branches having a free outer end which contacts the ground to support said ladder with its side bars in an upright position, one of said branches extending forwardly to define a downwardly turned projection, a mounting support fixed to each of said horizontal extensions and spaced from said projections, and wheels mounted between each pair of said projections and mounting supports, said wheels being disposed in inoperative position above ground level when the free outer ends of said base supports are in contact with the ground, said downwardly turned projection serving as a pivot point upon the ground about which said ladder may be pivoted to bring said wheels into contact with the ground and to enable said ladder to be used as a hand truck.

4. A combination ladder and hand truck comprising an integral member defining a top rung and a pair of inclined side bars, a plurality of spaced horizontal rungs secured between said side bars, each of said side bars having a lateral horizontal extension at the bottom thereof, each of said extensions terminating in a turned down foot portion, a lateral rearwardly extending base support rigidly secured beneath each of said horizontal extensions, each of said base supports comprising a bifurcated member having a pair of rearwardly converging branches, each of said branches having a free outer end which contacts the ground to support said ladder with its side bars in an upright position, one of said branches extending forwardly to define a downwardly turned projection and a pair of wheels mounted on said projections, said pair of wheels being disposed in inoperative position above ground level when the free outer ends of said base supports are in contact with the ground, said downwardly turned projection serving as a pivot point

upon the ground about which said ladder may be pivoted to bring said wheels into contact with the ground and to enable said ladder to be used as a hand truck.

5. A combination ladder and hand truck comprising an integral member defining a top rung and a pair of inclined side bars, a plurality of spaced horizontal rungs secured between said side bars, each of said side bars having a lateral horizontal extension at the bottom thereof, each of said extensions terminating in a turned down foot portion, a lateral rearwardly extending base support rigidly secured beneath each of said horizontal extensions, each of said base supports comprising a bifurcated member having a pair of rearwardly convergent branches, each of said branches having a free outer end which contacts the ground to support said ladder with its side bars in an upright position, one of said branches extending forwardly to define a downwardly turned projection, a mounting support fixed to each of said horizontal extensions and spaced from said projections, and wheels mounted between each pair of said projections and mounting supports, said wheels being disposed in inoperative position above ground level when the free outer ends of said base supports are in contact with the ground, said downwardly turned projection serving as a pivot point upon the ground about which said ladder may be pivoted to bring said wheels into contact with the ground and to enable said ladder to be used as a hand truck.

6. A ladder of the character described comprising a pair of side bars, a plurality of spaced horizontal rungs secured between said side bars, and a pair of lateral, rearwardly-extending base supports adapted to support said ladder upon a horizontal surface, said base supports being rigidly secured to the lower end of said side bars, being substantially perpendicular to said side bars, and being spaced from the bottom edge of said side bars, each of said base supports having a free end which rests upon said horizontal surface when said ladder is placed in its operative position with the bottom edge thereof lying flat upon said horizontal surface, said side bars in said operative position being inclined to said flat surface in the direction of said base supports, the free ends of said base supports being spaced laterally a substantial distance from the outer edges of the respective side bars, said base supports having a free space therebetween.

7. A ladder of the character described comprising a pair of side bars, a plurality of spaced horizontal rungs secured between said side bars, and a pair of lateral, rearwardly-extending base supports adapted to support said ladder upon a horizontal surface when said ladder is placed in an upright position with its bottom edge resing flat upon said horizontal surface, each of said side bars having a lateral, horizontal extension spaced from the bottom edge thereof, each of said base supports being rigidly secured to one of said extensions and being substantially perpendicular to said side bars, each of said base supports having a free end portion which rests upon said horizontal surface when said ladder is in its operative position, said side bars in said operative position being inclined with respect to said flat surface, the free end portions of said base supports being spaced laterally from the outer edges of the respective side bars.

8. A ladder of the character described comprising a pair of side bars, a plurality of spaced

horizontal rungs secured between said side bars, each of said side bars having a horizontal extension at the bottom thereof, each of said extensions terminating in an outer, turned down foot portion which is spaced laterally from the outer edge of the respective side bar, and a lateral, rearwardly extending base support rigidly secured beneath each of said horizontal extensions, each of said base supports having a free end portion, said base supports being adapted to support said ladder in an upright position upon a horizontal surface with said free end portions of the base supports and said turned down foot portions of the side bars resting upon said horizontal surface, said side bars in the upright position of said ladder being inclined in the direction of said base supports, said base supports being spaced from each other to provide a free space therebetween, the free end portions of said base supports being spaced laterally from the outer edges of the respective side bars.

9. A ladder according to claim 8 in which each of the base supports comprises a bifurcated member having a pair of rearwardly convergent branches which meet at said free end portions of the base supports.

10. A combination ladder and hard truck unit comprising a base section and a ladder section which is rigid with said base section, said ladder section having a top rung, a pair of side bars, and a plurality of spaced, horizontal rungs secured between said side bars, said side bars being secured at their bottom ends to the rear end of said base and being substantially perpendicular to said base, said base section being adapted to be brought to a supporting position upon a ground surface in which the forward end of said base section abuts said ground surface and in which the dominant plane of said base section is inclined relative to said ground surface, and said ladder portion is disposed upright and inclined relative to said ground section in the direction of the forward end of said base section, said unit presenting a free and unobstructed area forwardly of said ladder section and above said base section, said base section having a pair of wheels mounted at the rear end thereof, said unit being pivotable rearwardly from the supporting position of said base section, to enable said unit to be used as a hand truck.

11. A combination ladder and hand truck unit comprising a base section and a ladder section which is rigid with said base section, said ladder section having a top rung, a pair of side bars, and a plurality of spaced, horizontal rungs secured between said side bars, said side bars being secured at their bottom ends to the rear end of said base and being substantially perpendicular to said base, said base section being adapted to be brought to a supporting position upon a ground surface, in which position the forward end of said base section abuts said ground surface and in which the longitudinal plane of said base section is inclined relative to said ground surface, and said ladder section is in an upright position and inclined relative to said ground section in the direction of the forward end of said base section, said unit presenting a free and unobstructed area forwardly of said ladder section and above said base section, said base section having a pair of wheels mounted at the rear end thereof, said unit being pivotable rearwardly from the supporting position of the base section to a position in which the base section is brought to a substantially upright position and only the wheels of the unit are

abutting the ground surface, to enable said unit to be used as a hand truck.

12. A combination ladder and hand truck unit according to claim 11, in which the top rung of the ladder section serves as a hand-grip when the unit is used as a hand truck.

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