Feb. 2, 1960 R. W. LEDGERWOOD 2,923,373

EXTENSIBLE PLATFORM TRUCK

Filed Oct. 28, 1957 2 Sheets-Sheet 1

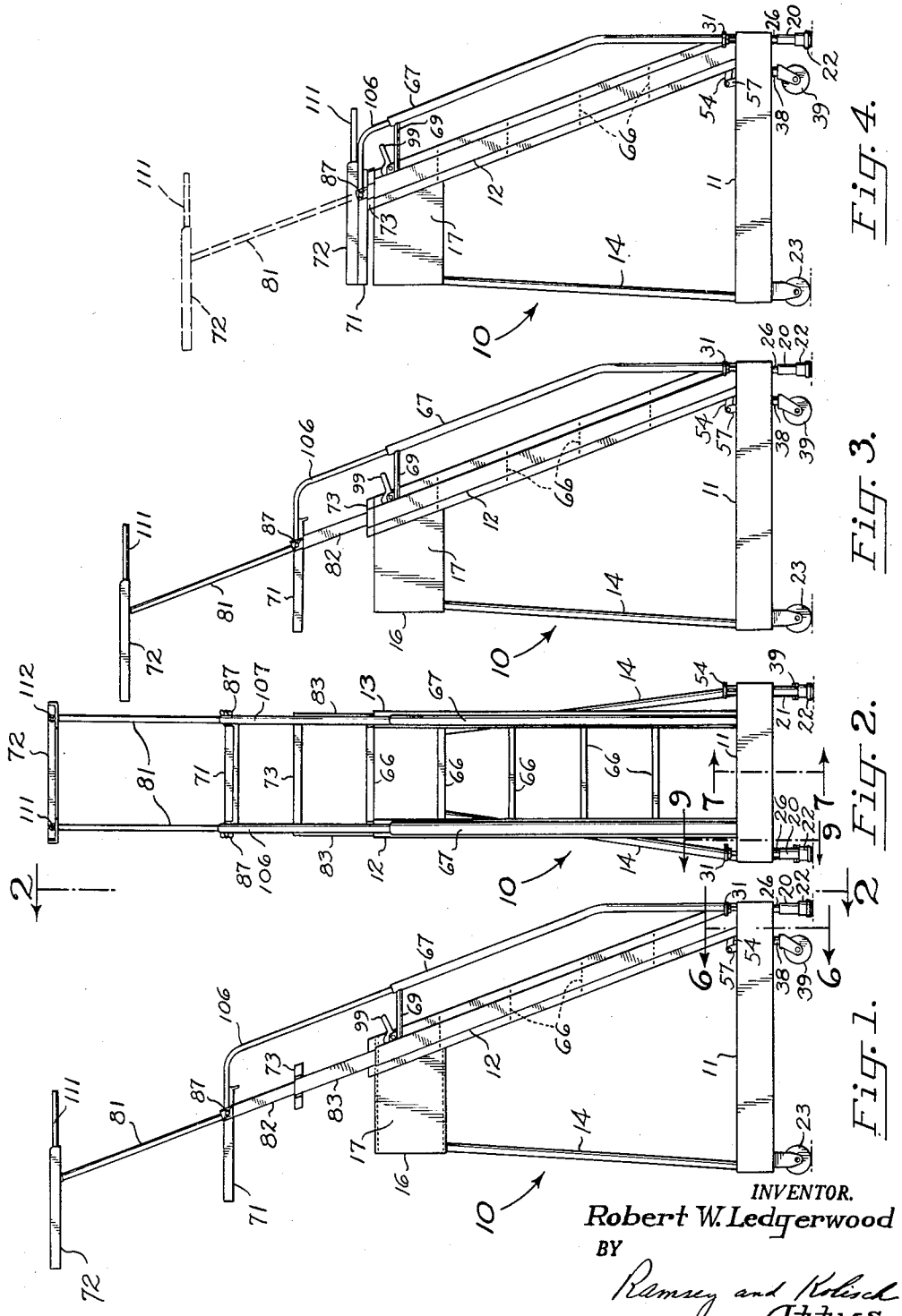


Fig. 4.

Fig. 3.

Fig. 2.

Fig. 1.

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2 Sheets-Sheet 2

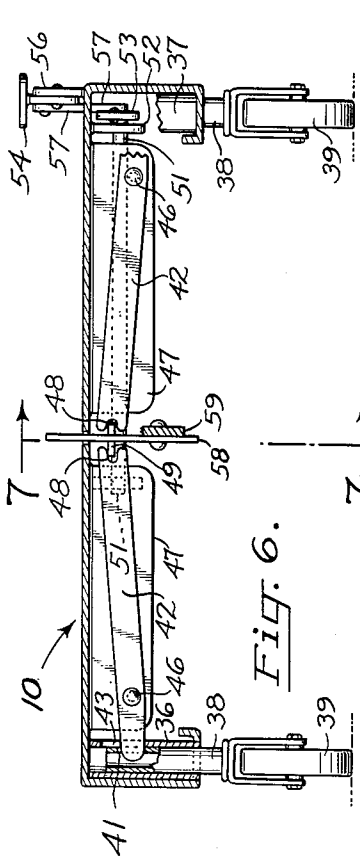


Fig. 6.

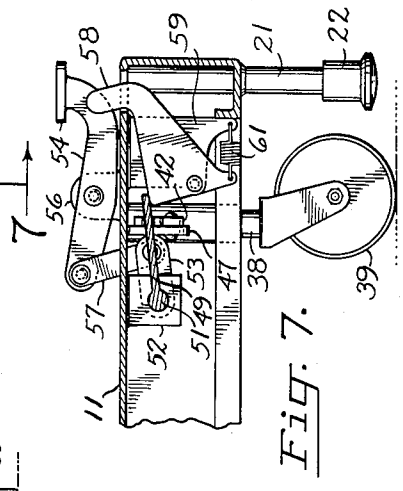


Fig. 7.

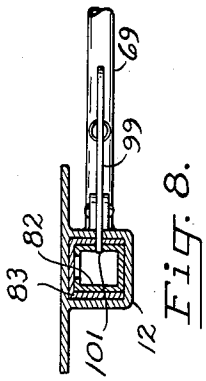


Fig. 8.

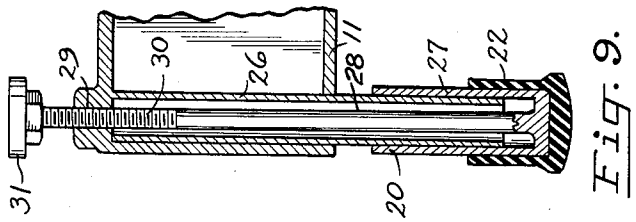


Fig. 9.

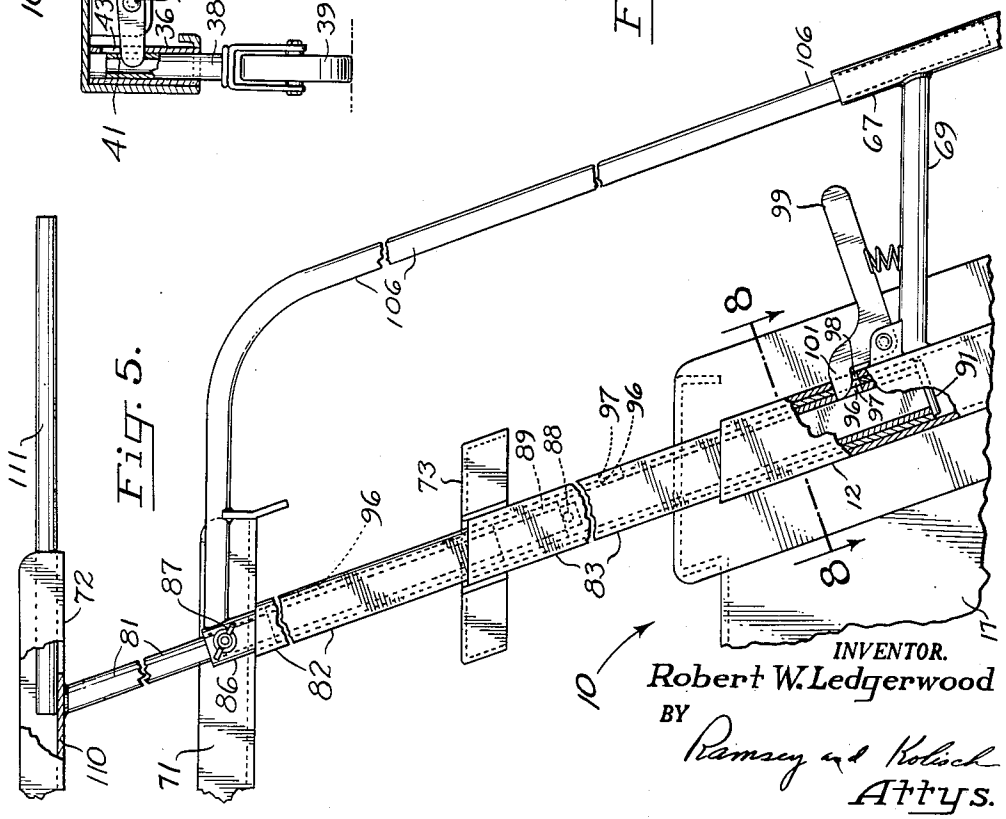


Fig. 5.

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EXTENSIBLE PLATFORM TRUCK

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Application October 28, 1957, Serial No. 692,653

4 Claims. (Cl. 182—102)

This invention relates to extensible platform apparatus, and more particularly, to an extensible platform truck of novel construction particularly useful for reaching points spaced a considerable distance from the ground.

In the maintenance of public buildings, institutions, and the like, as when servicing light fixtures, cleaning ceiling installations, or making repairs in overhead pipe or electrical systems, it has been found convenient to use mechanism for elevating a workman or maintenance man to enable him to reach the highly elevated areas which need servicing. The mechanism should support the workman steadily, and also provide a suitable work surface for depositing tools or replacement parts. To facilitate movement of the mechanism through doorways and other areas of limited overhead clearance, the mechanism should be collapsible.

Generally, it is an object of this invention to provide a simple yet highly efficient extensible platform truck which provides stable support for a workman, and which is easily adjustable to accommodate working at various heights. The platform truck is readily maneuverable, and performs in a highly practical manner.

This invention contemplates a platform truck which includes an elongated upright chassis having a plurality of ladder steps vertically spaced from one another and forming an inclined truck ladder along one side of the chassis. The base of the chassis is supported at one end by a pair of opposed wheels which provide rolling support for the chassis. The other end of the base has a pair of legs projecting therefrom, which support the chassis in a fixed position during its use. Collapsible wheels are included adjacent these legs which may be lowered and locked in position to raise the chassis thereby to make the truck ready for transport. When the wheels are not locked in a lowered position, the weight of one end of the chassis tends to be supported substantially entirely on the legs. This type of construction is an important safety factor, as it insures stable support for any person using the truck.

The platform truck of this invention features a pair of platforms which are extensible above the ladder for the truck in a direction parallel to the incline of the ladder. The upper of the platforms may serve as a support surface for any tools or replacement parts which are needed. The lower of the platforms provides a support for a workman using the truck. The platforms extend rearwardly of the plane of the ladder. The bottom platform enables a workman to stand with his feet spaced somewhat rearwardly of the plane of the ladder, so that the upper portion of the workman, who normally is standing vertically, lies directly adjacent the upper platform.

Each of the platforms are provided with a pair of opposed handles. These handles extend forwardly of the platform and are located on either side of the platform. The handles for the upper platform function as a means for lifting or lowering the platform. These handles also define, together with the platform, an enclosure bounded on three sides for steadying a workman standing adjacent

the platform. The handles for the bottom or lower platform extend forwardly and then curve downwardly to telescopically meet elongated hand rails carried by the truck chassis and located on either side of the truck ladder. This construction is advantageous since the bottom platform also constitutes a step in a ladder extension provided for the truck ladder proper. The handles form extensions for the guide or hand rails of the main truck ladder. A collapsible step interposed between the bottom platform and the top of the truck ladder also functions as one of the steps in the ladder extension provided.

The invention is further characterized by a novel construction wherein the collapsible step and platforms are carried at each end by a telescopic extension mechanism slidably mounted in one of the uprights for the main truck ladder. Each of the extension mechanisms includes three concentrically arranged support members, the inner one supporting the top platform, the next adjacent member supporting the lower platform, and the outer member supporting the collapsible step. The construction is particularly adapted to hold the various platforms and step rigidly when they occupy an extended position. Further, the extension mechanism may be contracted so as to occupy a relatively short overall length.

These and other objects and advantages are attained by the present invention, the invention being described hereinbelow in conjunction with the accompanying drawings wherein:

Fig. 1 is a side view of apparatus constructed according to this invention showing the parts in an extended position;

Fig. 2 is an end view, viewing from right to left along the line 2—2 in Fig. 1;

Fig. 3 illustrates the apparatus in Fig. 1 with the parts in a partially collapsed position;

Fig. 4 illustrates the apparatus in Fig. 1 with the parts in another position;

Fig. 5 is an enlarged view, partly in section, of upper portions of the apparatus;

Fig. 6 is a section view, slightly enlarged, along the line 6—6 in Fig. 1, illustrating wheel mechanism employed for placing the apparatus in condition for transport;

Fig. 7 is a section view along the line 7—7 in Fig. 6;

Fig. 8 is a section view along the line 8—8 in Fig. 5, showing a telescopic extension mechanism used for mounting the ladder platform elements; and

Fig. 9 is an enlarged section view along the line 9—9 in Fig. 2.

Referring now to the drawings for a more detailed description of an embodiment of this invention, and more particularly to Figs. 1 through 4, the extensible platform truck illustrated comprises a chassis indicated generally at 10, having a horizontal, substantially rectangular base portion 11. Affixed to the forward end of base 11 and extending upwardly at an inclined angle with their upper ends spaced rearwardly of their lower ends are a pair of laterally spaced ladder uprights 12 and 13. At the rear of the chassis are a pair of laterally spaced chassis members, one on each side of the chassis, illustrated by chassis member 14. The upper ends of chassis members 14 and ladder uprights 12 and 13 are interconnected, as by plates 16 and 17, which rigidize the structure.

The base of the chassis is supported at its forward end by a pair of opposed legs 20 and 21. These are provided at their lower ends with rubber grips, such as grip 22, and have their upper ends suitably affixed to the base of the chassis. The rear end of the chassis is supported by a pair of opposed wheels, each sup-

porting one side of the chassis, and represented by wheel 23.

One of the legs for chassis 10 is adjustable in length. The adjustable leg enables the apparatus to be set firmly on an uneven floor. With reference to Fig. 9, leg 20 is adjustable, this leg including a sleeve 26 affixed to the base of the chassis, a tube section 27 having a closed lower end, concentric with and slidably mounted on the lower end of sleeve 26, and a stud 28 secured at its base to the closed end of tube section 27. Stud 28 extends upwardly through the interior of sleeve 26 and outwardly through a bore 29. Grip 22 is inserted over tube section 27. The tube section is adjusted vertically relative to sleeve 26 by turning stud 28, the stud having a threaded portion 30 received by complementary threads formed in bore 29. A handle 31 affixed to the top of stud 28 facilitates setting the stud and vertical adjustment of tube section 27.

Auxiliary wheel mechanism or means is included at the forward end of base 11. The wheel mechanism may be lowered relative to the base and when lowered lifts legs 20 and 21 off the ground thereby to prepare the truck for transport. More specifically, referring to Figs. 6 and 7, under the forward end of the base 11 are a pair of laterally spaced pipe sections 36 and 37, each secured to base 11. The pipe sections extend vertically downwardly, and are open at their lower ends. Slidably mounted in each pipe section is a hollow rod portion 38. Each rod portion carries at its lower end a swivel wheel indicated at 39. Each of the rod portions is also provided with a slot 41, into which is inserted the end of a pivoted lever 42. Levers 42 extend through accommodating slots, such as slot 43, formed in pipe sections 36, 37.

Levers 42 for swivel wheels 39 are each pivoted at a point 46 to a downwardly depending flange 47 carried by base 11. The inner ends of levers 42 are provided with notches 48 loosely fitted about an actuating lever 49. Actuating lever 49 is affixed to one end of a shaft portion 51 rotatably mounted in a bracket 52. The other end of shaft 51 is connected to an arm 53. A pedal lever 54, is pivoted as on bracket 56 to the top of base 11, has one end link connected by link 57 to the outer end of arm 53. Link 57 pivots relative to arm 53 and lever 54. Downward movement of the righthand portion of pedal lever 54 in Fig. 7 causes arm 53 to rotate in a counter-clockwise direction, rotation of arm 53 being accompanied by movement of actuating lever 49 in a counter-clockwise direction. This serves to raise the inner ends of the actuating levers, pivoting the levers about their pivot connections so as to lower the rods 38 and the swivel wheels carried by these rods.

The wheels are locked in a lowered position relative to base 11 by means of a pivoted latch member 58, which pivots on a flange 59 of the base. Actuating lever 49 rides up and over a shoulder at the forward end of the latch member when the wheels are lowered. The latch member is urged to the position of Fig. 7 by a spring 61. In this position the wheels are locked in place. The latch member is disengaged from actuating lever 49 by movement of the latch member in a clockwise direction in Fig. 7. When the wheels are not locked in a lowered position, the weight of the chassis urges the wheels upwardly so that the forward end of the chassis is supported substantially entirely on legs 20, 21.

Affixed at vertically spaced intervals to ladder uprights 12 and 13 are a plurality of step elements indicated at 66 in Figs. 1–4. The step elements and ladder uprights form an inclined ladder at the forward end of the truck which slopes rearwardly from the forward end of the truck. A hand rail 67 is provided on each side of the ladder. The hand rails are secured at their bottom ends to the base of the truck and are held outwardly from the top of the ladder by braces 69.

Above the truck ladder proper defined by the uprights and step elements 66 is an extensible platform means which includes a pair of platforms 71 and 72. The platforms are mounted on support means which accommodate movement of the platforms in a direction parallel to the plane to extended positions spaced upwardly from the top of the ladder. The platforms are fully extended in Figs. 1 and 2. Fig. 3 illustrates the platforms partially extended, and Fig. 4 shows the platforms collapsed against the top of the ladder proper. A collapsible step 73 interposed between the lower platform and the top of the ladder is also movable to an extended position intermediate the lower platform and the top of the ladder, as shown in Fig. 1. Step 73 and the bottom platform function as a ladder extension for the main truck ladder.

Specifically, slidably mounted within each of the ladder uprights is an adjustable, telescopic extension mechanism comprised of three concentrically arranged support members. These are indicated in Fig. 5 at 81, 82, and 83. Referring to Figs. 5 and 8, the inner of the support members 81 takes the form of a cylindrical pipe section. Support members 82 and 83 have generally a rectangular peripheral outline. Support member 81 is telescopically received by member 82, and member 82 is telescopically received by member 83. The entire mechanism may be slid downwardly within a ladder upright when the platforms are collapsed.

Upper platform 72 is secured at each end to a support member 81. Each support member 81 slides in a tube section 86 which is affixed to an intermediate support member 82. An adjustable wing screw 87 inserted through the tube section provides a means for securing support member 81 in adjusted positions relative to section 86 and support 82.

Lower portions of each support member 81 slide in a tube section 89 affixed to the interior of member 82. The bottom end of member 81 is provided with a catch, illustrated by button 88, which extends outwardly from the periphery of the support member to engage the lower end of tube section 89 when the upper platform is moved outwardly a predetermined distance from member 82. This results in the upper platform and the lower platform moving in unison outwardly from the ladder when a predetermined spacing exists between the platforms.

Intermediate support member 82, or the member next adjacent member 81, is slidably received within support member 83. Platform 71 is secured to the upper ends of these members. Each support member 82 has affixed to its lower end a bar segment 91. The bar segment is carried outwardly of the support member in the path of the lower end of outer support member 83, and engages the outer support member when support member 82 is extended a predetermined distance outwardly of support member 83. When the bar segment engages the outer support member, the inner and outer support members move as a unit outwardly from a ladder upright.

Collapsible step 73 is secured to the upper ends of outer support members 83. Step 73 is formed with a hollow base, as shown by the dotted lines in Fig. 5, so that it may slide down over the top step of the truck ladder proper.

The intermediate and outer support members of each extension mechanism each include a series of slots, indicated for member 82 at 96 and for member 83 at 97. Each hollow ladder upright slidably mounting an extension mechanism also contains a slot 98. The slots of the intermediate and outer support member are movable into registry with slot 98 to enable the two members to be set in a fixed position relative to the ladder upright. A latch member 99 pivoted to each ladder upright has an end 101 which is insertable into the slots to lock the various parts in a fixed position.

Referring to Figs. 1 and 2, lower platform 71 has affixed thereto and extending forwardly from the platform a pair of handles 106 and 107. These project outwardly

and then curve downwardly to be telescopically received within the hollow interior of hand rails **67** carried by the truck chassis. A continuous hand aid is thus formed between platform **71** and the base of the truck ladder, which is particularly important since the lower platform forms one of the steps in the ladder extension provided the truck ladder proper when the platform mechanism is extended.

Referring to Figs. 2 and 5, upper platform **72** has a pair of handles **111** and **112**, which extend forwardly from each side of the platform. These take the form of horizontal bars. The base **110** of platform **72**, as shown in Fig. 5, does not extend forwardly much beyond the top ends of support members **81**. Handles **111** and **112** in combination with the forward edge of base **110** define an enclosure bounded on three sides for supporting a worker mounted on lower platform **71**. Handles **111** and **112**, as well as the handles **106** and **107**, also present a means for raising the platforms to different selected positions of adjustment.

It will be noted that the platforms extend rearwardly of the plane of the truck ladder. The lower platform enables an occupant of the apparatus to stand directly against forward edge of base **110** of the upper platform when the parts are extended. The space between the upper and lower platforms is not encumbered with steps, but instead is left open, to permit a user to move readily while standing on the lower platform.

While the members supporting the lower platform and collapsible step are fixed in adjusted positions by latch members, the upper platform is secured in adjusted positions by means of the wing screw provided. This is advantageous since it permits minute adjustment in the relative spacing between the platforms to accommodate individuals of different height.

It is claimed and desired to secure by Letters Patent:

1. An extensible platform truck comprising an elongated upright chassis, a plurality of step elements mounted along a side of said chassis vertically spaced from one another and defining a ladder extending along an inclined plane, and extensible platform means mounted above said ladder, said extensible platform means having a pair of platforms, one above the other, the upper of said platforms having at each end a support, each support comprising a pair of telescopic support members, said support members collapsing within said chassis when the upper platform is lowered, the lower member of each pair of telescopic support members being extensible from but continuously supported in said chassis, the lower of said platforms being secured at each end to the lower support member of each pair, a step interposed between the lower of said platforms and said ladder, collapsible support members mounting said step in said chassis, and means for locking said lower support members and the support members for said step in an extended position relative to said chassis.

2. An extensible platform truck comprising a base, a pair of elongated spaced ladder uprights affixed to said base and extending upwardly at an inclined angle relative thereto with their upper ends rearwardly of their lower ends, a plurality of steps interposed between and affixed at vertically spaced intervals to said ladder uprights, and a telescopic adjustable extension means slidably mounted in each of said uprights, each of said extension means having three concentrically arranged support members, the inner of said support members having a horizontal platform affixed to its upper end projecting rearwardly therefrom and means at its lower end engaging the next adjacent support member when extended a predetermined distance outwardly from this support member, said next adjacent support member having a platform affixed to its upper end projecting rearwardly therefrom and means at its lower end engaging the outer support member when extended a predetermined distance outwardly from this support member, said outer support member having a step element affixed thereto, said next adjacent support member being extensible relative to but continuously supported in the ladder upright mounting the same.

3. The apparatus of claim 2 wherein each of said ladder uprights has a latch member mounted thereon adapted to engage complementary slots formed in said outer and said next adjacent support members, whereby the two support members may be secured in selected positions of adjustment.

4. An extensible platform and ladder construction comprising an elongated, upright frame, a plurality of spaced step elements mounted on said frame defining a ladder extending along an inclined plane with the top of the ladder disposed rearwardly of the base of the ladder, a platform projecting rearwardly of the plane of said ladder and support means mounted on and slidable relative to said frame mounting said platform, said support means being slidable in the plane of said ladder and extensible from said frame but continuously supported therein, catch means interposed between said frame and said support means positively for locking said support means in selected adjusted positions, a second platform projecting rearwardly of the plane of said ladder, a second support means mounted on and slidable relative to said first-mentioned support means mounting said second platform, clamp means for securing said second support means in selected adjusted positions relative to said first support means, a pair of handles secured to the first-mentioned platform, one on each side of the platform, projecting forwardly of the plane of said ladder and then curving downwardly, and hand rails carried by said frame forwardly of said ladder telescopically joining with the handles connected to said platform.

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