Sept. 29, 1925. 1,555,103

T. CHRISTIAN

PORTABLE ELEVATOR

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Fig. 1

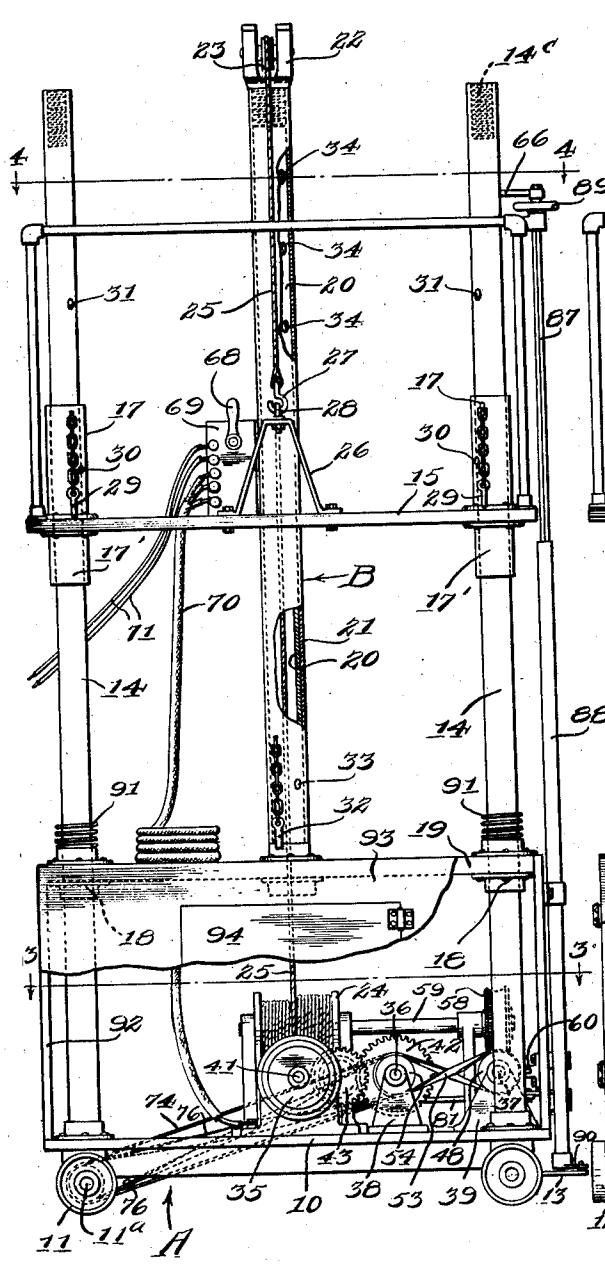
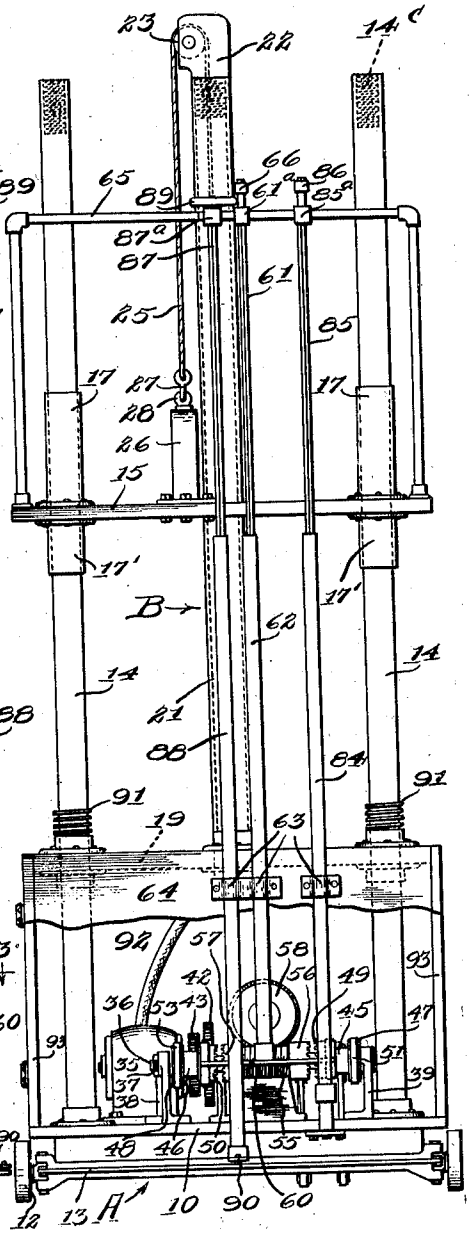


Fig. 2



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Fig. 3

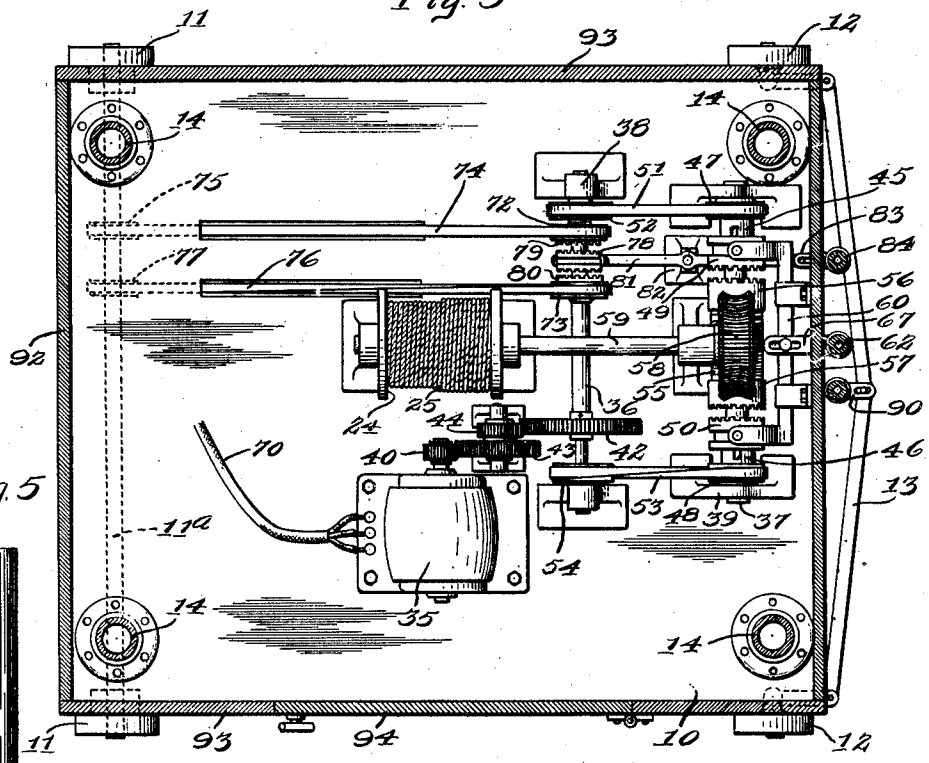
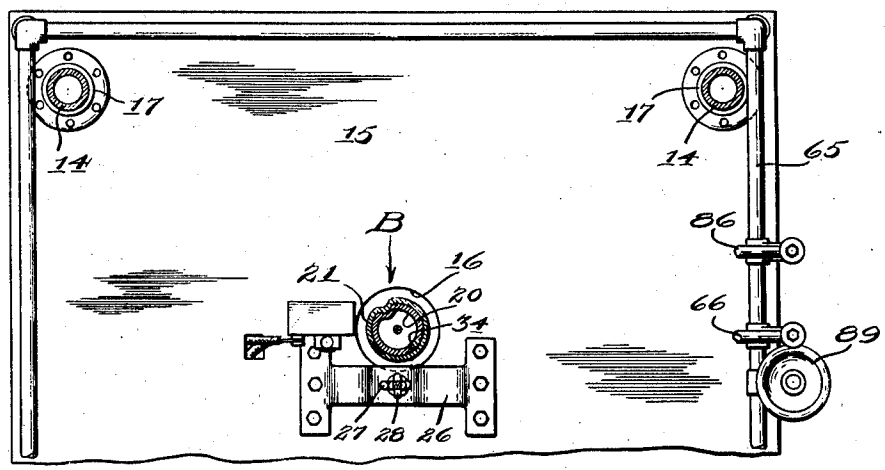


Fig. 5



Fig 4



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UNITED STATES PATENT OFFICE.

THOMAS CHRISTIAN, OF ST. PAUL, MINNESOTA.

PORTABLE ELEVATOR.

Application filed December 31, 1924. Serial No. 759,006.

To all whom it may concern:

Be it known that I, THOMAS CHRISTIAN, a subject of the King of Bulgaria, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented a new and useful Portable Elevator, of which the following is a specification.

My invention relates to improvements in portable elevators of a type particularly, though not exclusively, adapted to provide a scaffold wherefrom an artisan may have ready access to his work in elevated places.

One object of the invention is to provide a device of the present kind wherein a platform is mounted on a wheeled truck carrying power operated means for driving the truck and for elevating and lowering the platform and, wherein, controls are carried by the platform to actuate said power operated means and to steer the truck.

Another object of the invention is to provide in an elevator of the instant nature, an assemblage of parts, whereby the normal high limit of the platform may be increased with a minimum of effort and within the inherent range of the device.

With the foregoing and other objects in view, which will appear in the following description, the invention resides in the novel combination and arrangement of parts and in the details of construction hereinafter described and claimed.

In the drawings, Fig. 1 is a side elevation of a device embodying my invention; Fig. 2 is an end elevational view thereof; Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1; Fig. 4 is a similar view taken on the line 4—4 of said Fig. 1 and Fig. 5 is an elevational view of one of the guide post extensions.

Referring to the drawings, it will be seen that the illustrated device includes a truck A consisting of a bed 10 mounted on wheels 11, 12, the latter being knuckled and joined by a tie-bar 13. Rising from the four corners of the truck bed 10 are guide posts 14. A platform 15 having an opening 16 in the center thereof is guided vertically on said posts 14, said platform being supplied at its corners with upper and lower collars 17, 17′ which receive and ride upon the posts 14. Fixed to the posts 14 are flanges 18. These flanges carry a deck 19, which, in turn, braces said posts 14. Rising from the center of the deck 19 and reaching through the opening 16 in the patform 15 is a boom B, the same comprising telescoping sleeves 20, 21. The inner or base sleeve 20 has an external groove therein (Fig. 4) extending longitudinally thereof. The outer or crown sleeve 21 is formed with an internal rib fitting said groove and providing a feathered connection between said two sleeves 20, 21. At the tip of the crown sleeve 21 is a head block 22 in which a sheave 23 is mounted. A winding drum 24 mounted on the bed 10 is turned reversely by mechanism soon to be described. Said drum 24 has a cable 25 wound thereon and reaching upward through the hollow boom B to the sheave 23. Turning over this sheave 23, the cable 25 drops to and is connected with the platform 15, the connection between cable and platform including a bracket 26 secured to the latter and a hook 27 on said cable adapted to be caught in an eye 28 fastened to said bracket.

From the foregoing it will be understood that the turning of the drum 24 in reverse directions will result in lifting and lowering the platform 15 on the guide posts 14. To increase the elevation that the platform normally may attain in the arrangement of parts shown in Figs. 1 and 2, I provide extensions 14^a (Fig. 5) for the guide posts 14, said extensions 14^a having reduced threaded ends 14^b adapted to be fitted in threaded sockets 14^c in the upper ends of said guide posts 14. The post extensions 14^a may be conveniently applied to the posts 14 and the boom B correspondingly lengthened by a workman standing upon the platform 15. This possibility is brought about through the provision of means for securing the platform 15 to the posts 14. In its simplest form, such means comprises pins 29 movably insertible through apertures 30 in the four collars 17 and into registering holes 31 in the four posts 14. Standing upon the platform 15, supported by said pins 29, a workman may easily apply the post extensions 14^a to the guide posts 14. Being temporarily relieved of the weight of the platform 15, the cable 25 is slackened and the crown sleeve 21, freed upon the sackening of said cable, is lifted on the base sleeve 20 to lengthen the boom B. Reaching an elevation giving the desired height to the boom B, the crown sleeve 21 is secured to the base sleeve 20 by means of a pin 32, which is inserted through an opening 33 in the sleeve 21 and into one of several openings

34 in the base sleeve 20. Thus adjusted to suit the new conditions, the cable 25 is again put to use for supporting the platform 15 and the platform locking pins 29 removed from the apertures 30 in the collars 17.

Preferring that my device embody a self-contained power unit for turning the drum 24, I arrange an electric motor 35 on the bed 10. Paralleling the axis of the motor 35 is a power shaft 36 and a counter shaft 37, the same journaled in brackets 38, 39 rising from the bed 10. Interposed between a gear 40 on the motor shaft 41 and a gear 42 on the power shaft 36 are speed reduction gears 43, 44. At the ends of the counter shaft 37 are loose sleeves 45, 46, said sleeves being provided with pulleys 47, 48 fixed thereon and with clutch members 49, 50 feathered thereto. The pulley 47 is driven by a straight belt 51 turning over a pulley 52 on the drive shaft 36, while the pulley 48 is driven by a crossed belt 53 turning over a pulley 54 on said power shaft 36. A worm 55 mounted to turn on the counter shaft 37 is formed at its ends with clutch members 56, 57 and meshes with a worm wheel 58 on the drum turning shaft 59. A shifter yoke 60 common to the clutch members 49, 50 is shifted oppositely to severally engage said members 49, 50 with the clutch members 56, 57 on the worm 55 and thereby reversely turn the drum 24 through said worm and the worm wheel 58 and drum shaft 59. Said shifter yoke 60 is operated from the platform 15 at any elevation thereof through the medium of a rod 61 which telescopes in a sleeve 62, the latter being carried in a bearing 63 on a front panel 64 between the bed 10 and deck 19 and the former carried on a guard rail 65 on the platform 15. The rod 61 is square in cross section to fit the correspondingly formed sleeve 62, said rod having a hand lever 66 at its upper end and the sleeve 62 having an arm 67 at its lower end, said arm being connected with said shifter yoke 60 to throw the same back and forth. In addition to being able to reverse the rotation of the drum 24 from the platform 15, a worker standing on said platform may start and stop the motor 35 through the medium of a lever 68 on a control box 69. This control box, located on the platform 15 and electrically connected with the motor 35 through a long, flexible conductor 70 is of conventional design and in itself constitutes no part of my invention. The usual lead in wires 71 are connected with the control box 69.

For propelling the device along a wall or for other purposes, I gear the power shaft 36 to the rear axle 11^a of the truck A and to which axle the wheels 11 are secured. Two pulleys 72, 73 are loosely mounted on the power shaft 36. The pulley 72 is connected through a straight belt 74 with a pulley 75 on the axle 11^a, while the pulley 73 is connected through a crossed belt 76 with a second pulley 77 on said axle 11^a. Interposed between the pulleys 72, 73 and feathered to the shaft 36 is a clutch member 78 common to clutch members 79, 80 on the pulleys 72, 73. Said clutch member 78 is shifted back and forth on the power shaft 36 to engage the same, first with one of its companion members 79, 80 and then with the other member, whereby the axle 11^a may be turned reversely and the device propelled forward and backward. A shifter bar 81 for the clutch member 78 is pivoted medially on a rest 82 on the bed 10, one end of said bar 81 co-acting with said clutch member 78. Co-operating with the other end of said shifter bar 81 is an arm 83 for swinging said bar. This arm is carried at the bottom of a sleeve 84 formed similarly and supported like the sleeve 62. Telescoped in said sleeve 84 is a rod 85, the same being carried by the rail 65 on the platform 15 and supplied at its upper end with a hand lever 86.

The steering of the device from the platform 15 in forward and reverse travel is accomplished, in part, through a rod 87 telescoped in a sleeve 88, the former being equipped at its upper end with a steering wheel 89, and the latter at its lower end with an arm 90 connected with the tie-bar 13, both said rod and sleeve being formed and supported in the manner of the rods 61, 85 and sleeves 62, 84 hereinbefore described.

Duplicates, except for length, of the rods 61, 85 and 87 are substituted therefor, when the platform 15 is used at elevations requiring the employment of the guide post extensions 14^a. The rods 61, 85 and 87 normally employed are easily lifted from their supporting bearings 61^a, 85^a and 87^a on the rail 65 and the longer duplicate rods (not shown) are readily substituted therefor.

Buffer springs 91 encircling the guide posts 14, above the deck 19, cushion the fall of the platform 15 as it reaches its low limit.

Back and side panels 92, 93 together with the front panel 64, bed 10 and deck 19 complete an enclosure for the power mechanism on the bed 10. In one of said side panels 93 is a door 94 permitting of ready access to said mechanism.

Changes in the specific form of my invention, as herein disclosed, may be made within the scope of what is claimed without departing from the spirit of my invention.

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

1. In a device of the class described, a truck including a bed and supporting wheels at either end of said bed, the wheels at one end thereof being knuckled for steering purposes, guide posts rising from the bed, a platform guided vertically by said posts, a

deck superimposing the bed and carried by said posts, a hollow boom rising from the deck, said platform being apertured to freely receive said boom, a sheave carried at the upper end of the boom, a winding drum on the bed, a cable secured at one end to the drum and at its other end to the platform, said cable passing upwardly from the drum through the boom, thence over said sheave and downward to the platform, means on the truck bed for reversely turning said drum, extensible controlling means carried by the platform for actuating said drum turning means, extensible steering means also carried by the platform for guiding said knuckled wheels, the posts including detachable upper sections and the boom including feathered, telescoping sleeve members, one, an inner base sleeve, and the other, an outer crown sleeve, and means for adjustably securing said crown sleeve in various elevations on said base sleeve to bring the height of the boom into correspondence with the height of the guiding posts when the latter are lengthened by the use of said upper guiding post sections.

2. In a device of the class described, a truck including a bed and supporting wheels at either end of said bed, guide posts rising from the bed, a platform guided vertically by said posts, a deck superimposing the bed and carried by said posts, a hollow boom rising from the deck, said platform being apertured to freely receive said boom, a sheave carried at the upper end of the boom, a winding drum on the bed, a cable secured at one end to the drum and at its other end to the platform, said cable passing upwardly from the drum through the boom, thence over said sheave and downward to the platform, means on the truck bed for reversely turning said drum, extensible controlling means carried by the platform for actuating said drum turning means, said guiding posts including detachable upper sections and the boom including telescoping sleeve members, one, an inner base sleeve, and the other, an outer crown sleeve, and means for adjustably securing said crown sleeve in various elevations on said base sleeve to bring the height of the boom into correspondence with the height of the guiding posts when the latter are lengthened by the use of said upper guiding post sections.

3. In a device of the class described, a bed, guide posts rising from the bed, a platform guided vertically by said posts, a boom rising through the platform, said platform being apertured to receive said boom, means for raising and lowering the platform through the medium of the boom, said posts including detachable upper sections and the boom including telescoping sleeve members, one, an inner base sleeve, and the other, an outer crown sleeve, and means for adjustably securing said crown sleeve in various elevations on said base sleeve to bring the height of the boom into correspondence with the height of the guiding posts when the latter are lengthened by the use of additional guiding post selections.

4. In a device of the class described, a bed, guide posts rising therefrom, a platform guided vertically by the posts and formed with a boom receiving opening therein, a deck supported by said posts, an upright, hollow boom resting on said deck and rising through said opening in said platform a sheave at the upper end of said boom, cable winding and unwinding means on the base and a cable adapted to be drawn in and paid out thereby, said cable extending upward from said means and through said boom, thence over said sheave and down to point of attachment to said platform.

In testimony whereof, I have signed my name to this specification.

THOMAS CHRISTIAN.