Sept. 2, 1969 L. A. ANDERSON 3,464,520

SELF-OPERATED ELEVATOR

Filed Nov. 14, 1967 2 Sheets-Sheet 1

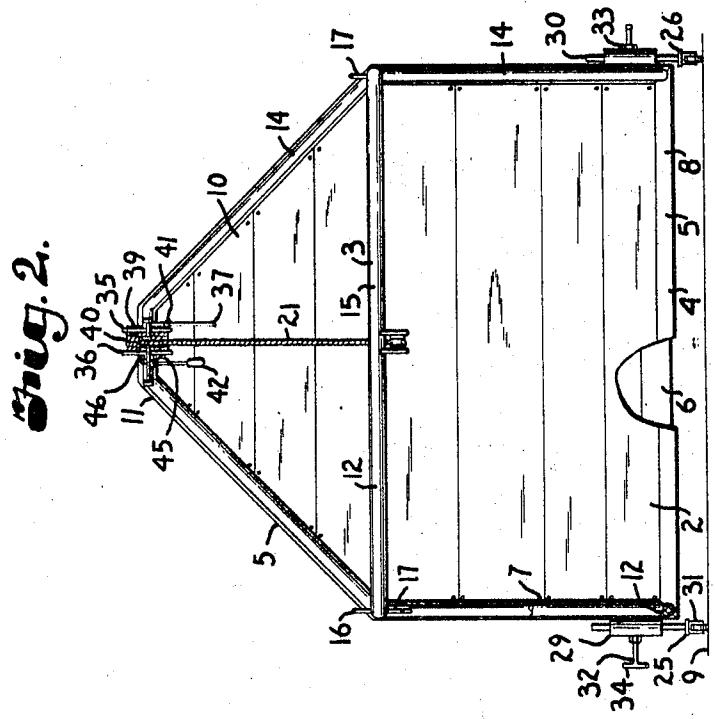


Fig. 2.

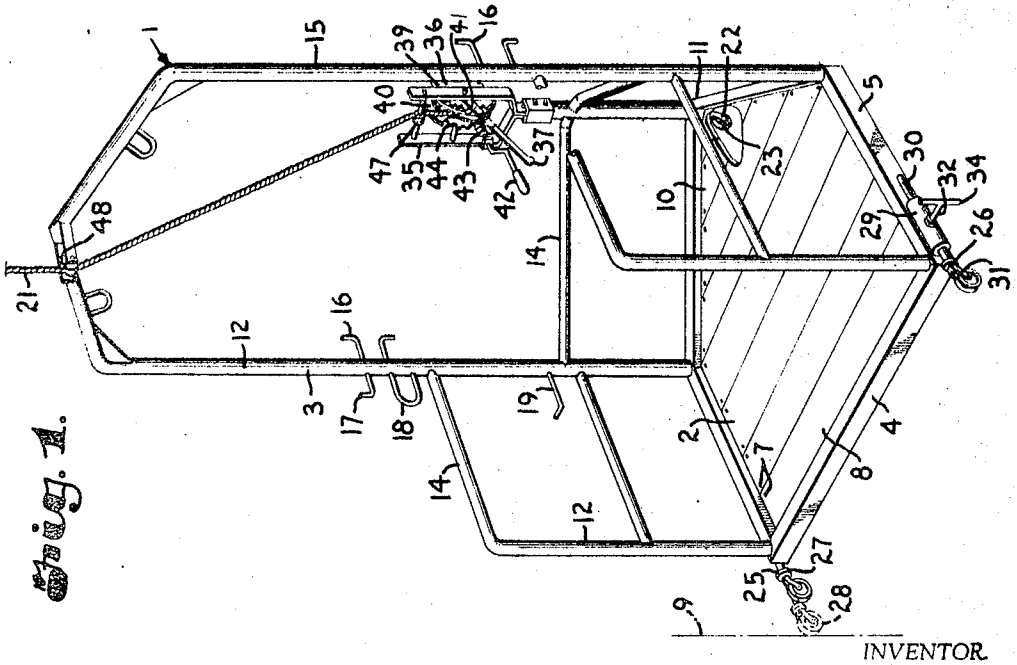


Fig. 1.

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Fig. 4.

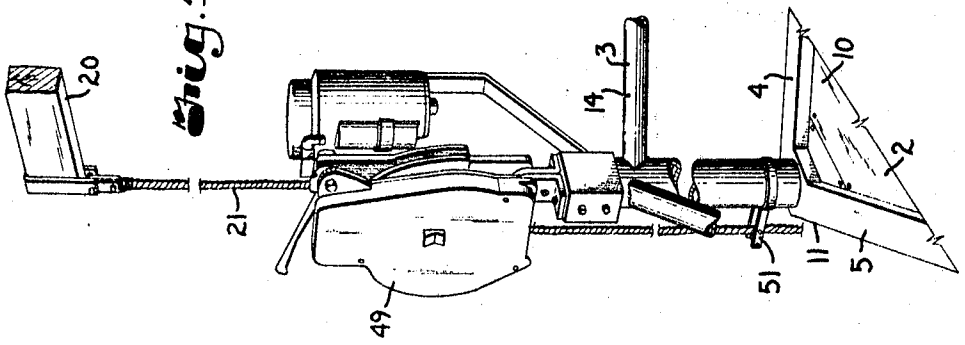
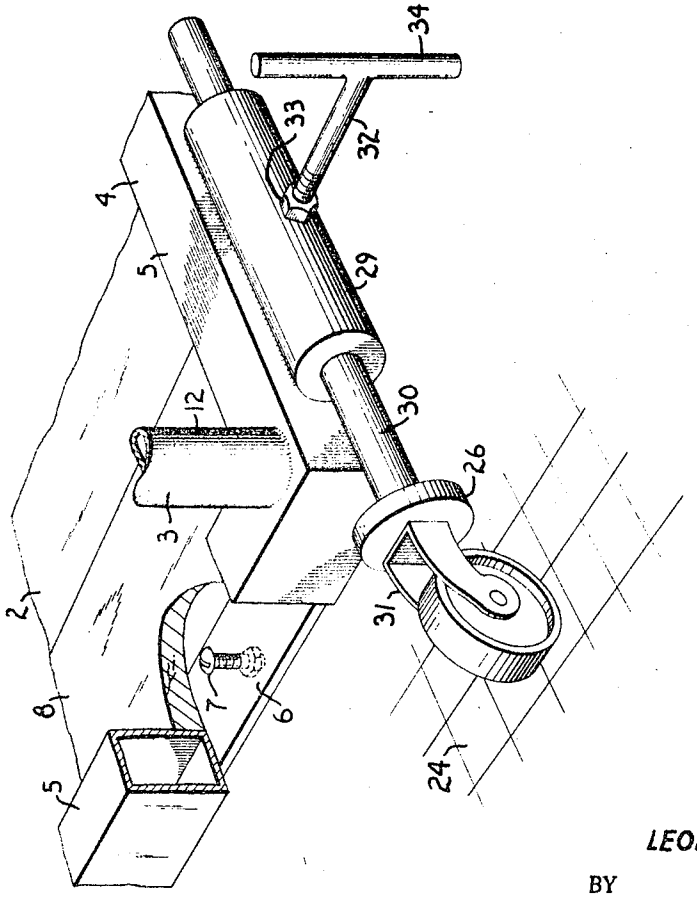


Fig. 3.



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SELF-OPERATED ELEVATOR

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U.S. Cl. 182—142 8 Claims

ABSTRACT OF THE DISCLOSURE

A one-man self-operated elevator and scaffold having a work platform with a cage extending upwardly therefrom. A winch is mounted on the cage and a cable extends upwardly from the winch to a cage support member for vetrical movement of the elevator. A swivel castor is mounted at the front of the platform and wheels are adjustably mounted at the rear of the platform. The adjustable wheels are adapted to engage a horizontal surface and a vertical surface and are adapted to be removable between and extended and a retracted position.

The principal objects of the present invention are: to provide a stable one man self-operated elevator and scaffold adapted to be moved horizontally on a horizontal surface and adapted to be moved vertically along a vertical surface; to provide such an elevator and scaffold having a plurality of equipment and tool supporting members mounted on a cage; to provide such an elevator having a rectangular first portion adapted to be adjacent a work surface and a triangular second portion adapted to support a winch or power means for raising and lowering the elevator; to provide such an elevator constructed of strong light weight materials which is portable; and to provide such an elevator simple to operate, economical to manufacture, and versatile and safe in use.

Other objects and advantages of this invention will become apparent from the following description taken in connection with the accompanying drawings wherein are set forth by way of illustration and example certain embodiments of this invention.

FIG. 1 is a perspective view of a one-man self-operated portable scaffold embodying features of the present invention.

FIG. 2 is a top plan view of the scaffold.

FIG. 3 is a perspective view, at an enlarged scale, of one of a pair of adjustable wheels mounted at the rear of the scaffold.

FIG. 4 is a perspective view of a modified form of the present invention showing a power unit for raising and lowering the scaffold.

Referring more in detail to the drawings:

The reference numeral **1** generally designates a one-man self-operated portable scaffold or elevator having a work platform **2** surrounded by a cage **3**.

A cage base frame **4** supports the platform **2** and the cage **3** which extends upwardly therefrom. In the illustrated structure, the cage base frame **4** is formed by tubular members **5** extending around the periphery of the platform **2**. The tubular members **5** may be round, square or rectangular. The platform **2** is supported on a platform supporting plate **6** which is suitably secured to the cage base frame **4** as by welding. In the illustrated structure the platform supporting plate **6** is mounted on a lower surface of the tubular members **5** and extends inwardly therefrom to receive the platform **2** which is suitably secured thereon as by bolts **7**.

The platform **2** and cage **3** have a first or work portion **8** adapted to be positioned adjacent a work surface such as a vertical wall **9**. The platform **2** and the cage

3 have a second or front portion **10** adapted to extend outwardly from the work surface such as the wall **9**. In the illustrated structure the work portion **8** of the platform **2** is substantially rectangular and the front portion **10** of the platform **2** and the cage **3** is substantially triangular with an apex **11** at a point away from the wall **9**.

The cage **3** is formed by plurality of upright members **12** supported on the tubular members **5** and extending upwardly therefrom. A plurality of rail members **14** extend between the upright members **12**. The rear of the cage **3** is open to permit easy access to the work surface by a workman on the scaffold **1**.

The upright members **12** positioned at a point where the rectangular work portion **8** joins the triangular front portion **10** extend above the upright members **12** positioned adjacent the wall **9** to form a main frame **15**. The main frame **15** is thereby substantially centered in relation to the cage **3**.

Work equipment and tools are supported on suitable tool supporting members such as cleats **16**, hooks **17**, rings **18** and hangers **19** mounted on the cage **3**. In the illustrated structure, the equipment and tool supporting members are mounted on the upright members **12** to support equipment such as drill motors, sand blasting equipment, paint spray guns and the like. Rope and cable may be wound around the cleats **16** to support various articles and equipment. Rope or cable may be threaded through the rings **18** to hoist various supplies from lower levels such as drinking water, food, paint cans, mortar buckets and the like.

The scaffold or elevator **1** is suspendedly supported from a suitable cage support means such as a beam **20** or a suitable hook (not shown) such as L-shaped or S-shaped hoop suitable secured to a structure such as a chimney, stand pipe, skylight or the like and supporting a shackle having one end of a cable **21** secured thereto.

A suitable swivel caster **22** having a rotatable wheel **23** mounted therein is mounted below the base frame **4** and positioned at the apex **11** of the triangular front portion **10**. The swivel caster **22** is adapted to engage a horizontal surface **24** thereby providing support for the scaffold **1** and permitting movement along the horizontal surface **24**.

Rear wheels **25** and **26** are adjustably mounted on the cage base frame **4** and positioned to be adjacent the vertical wall **9** of a structure. The rear wheels **25** and **26** are each adjustable between a retracted position **27** and an extended position **28**. In the retracted position **27**, the rear wheels **25** and **26** are positioned and adapted to engage the horizontal surface **24** to support the scaffold **1** and permit horizontal movement along the horizontal surface **24** in cooperation with the wheel **23** of the swivel caster **22**. In the extended position **28**, the rear wheels **25** and **26** are adapted to engage a vertical work surface such as the wall **9** to permit vertical movement up and down the wall **9**.

In the illustrated structure a tubular member or sleeve **29** is mounted on each side of the base frame **4** and positioned adjacent the rear of the work portion **8** and substantially parallel with the platform **2**. An elongate shaft **30** is slidably mounted within each of the sleeves **29**. A yoke **31** is suitably secured to one end of each shaft **30**, as by being welded thereto. The rear wheels **25** and **26** are each rotatably mounted within the respective yoke **31** and positioned to rotate about an axis transverse to the longitudinal axis of the respective shaft **30**.

The rear wheels **25** and **26** are independently adjusted between the respective retracted positions **27**, respective extended positions **28** and intermediate positions therebetween. Each wheel supporting shaft **30** is retained in the respective positions by a retaining rod **32** movably

mounted transverse to the respective shaft **30** and adapted to frictionally engage same to retain the respective rear wheels **25** and **26** in the selected adjusted positions.

In the illustrated structure the retaining rod **32** is an elongate member having one end threadedly engaged in a rod retaining member such as an internally threaded nut **33** suitably secured to each of the sleeves **29**. The respective retaining rod **32** is rotated by a handle member **34** suitably secured on the other end of the retaining rod **32**. Rotating the rod **32** in a first direction moves the rod **32** toward the shaft **30** to permit frictional engagement therewith and rotating the rod **32** in a reverse direction moves the rod **32** away from the shaft **30** to remove frictional engagement with the shaft **30** and thereby permit adjustment of the wheels **25** and **26** between the respective retracted positions and the respective extended positions. The retaining rod **32** thereby permits adjustment of the respective rear wheels **25** and **26** and retains the rear wheels in the various selected positions.

Raising and lowering means **35** are mounted on the cage **3** and positioned to clear the platform **2**. In the illustrated structure, the cable **21** has the other end thereof engaging and adapted to be wound around a winch **36**. In the illustrated structure the winch **36** is manually operated to raise the scaffold **1** by a jack handle **37**. A driving pawl **38** is mounted on the jack handle **37** and positioned to engage outwardly extending teeth **39** of a drum **40** mounted on the winch **36**. A suitable locking pawl **41** is positioned to engage the teeth **39** of the drum **40** to prevent reverse rotation thereof.

A crank handle **42** is used to lower the scaffold **1**. The crank handle **42** rotates a suitable worm **43** engaging a gear **44** which rotates the drum **40** in a direction reverse to the rotation produced by the jack handle **37**. During lowering of the scafford **1** it is necessary to disengage a ratchet pawl **45** from a ratchet **46** and manually disengage the locking pawl **41** from the teeth **39**. The locking pawl **41** remains in engagement with the teeth **39** except during lowering of the scaffold **1**.

A cable guide **47** is positioned adjacent and above the raising and lowering means **35** to threadedly receive the cable **21**. An adjustable pulley **48** is positioned above the platform **2** at a point substantially in the center of the scaffold **1** and at the top of the main frame **15** to direct the cable **21** from the beam **20**, or other suitable support, through the cable guide **47** to the winch **36**.

The cage **3** and cage base frame **4** may be constructed of suitable light weight members, such as tubular members of aluminum. The light weight scaffold **1** may be manually maneuvered along the horizontal surface **24**.

The scaffold **1** is sized to comfortably support one man and the necessary tools and equipment required for the man to remain in the scaffold **1** while same is in a raised position thereby substantially reducing the number of up and down movements required to get tools and equipment thus resulting in a substantial time saving by eliminating the time usually wasted in climbing up and down the cable **21** for tools, equipment, food, water, supplies and the like.

The scaffold **1** is particularly adapted for interior or exterior construction or maintenance operations and the adjustable rear wheels **25** and **26** are adapted to engage vertical surfaces which are planar, such as building walls, or curved surfaces, such as chimneys, smoke stacks and the like.

A modified form of the scaffold **1** is illustrated in FIG. 4 wherein the raising and lowering means **35** is a power unit **49** connected to a suitable source of power such as electricity or an air compressor. The power unit **49** is operative to move up or down the cable **21** in response to adjustment of an operating lever **50**. In the illustrated structure, a second cable guide **51** is positioned below the power unit **49** to guide the cable **21** away from the platform **2**. The adjustable pulley **48** is positioned above

the platform **2** to direct the cable **21** to the upper cable guide **47** and to the power unit **49**.

As in the structure previously described, the modified form illustrated in FIG. 4 has an open cage adjacent the work surface such as the wall **9**.

It is to be understood that while I have illustrated and described two forms of my invention, it is not to be limited to the specific forms or arrangement of parts herein described and shown except insofar as such limitations are included in the claims.

What I claim and desire to secure by Letters Patent is:

1. A self-operated elevator comprising:

(a) a platform,

(b) a cage extending upwardly from said platform and having a base supporting said platform and having a front and a rear,

(c) means mounted on said cage for raising and lowering said elevator,

(d) swivel support means mounted on said cage base adjacent said cage front and having a wheel rotatably mounted therein, and

(e) adjustable support means mounted on said cage base adjacent said cage rear and having wheels rotatably mounted therein, said adjustable support means including a first position adapted to engage a horizontal surface for horizontal movement therealong in cooperation with said swivel support means, and a second position adapted to engage a vertical surface for vertical movement therealong.

2. The self-operated elevator as set forth in claim **1** including:

(a) a plurality of equipment and tool supporting members mounted on said cage.

3. The self-operated elevator as set forth in claim **1** wherein:

(a) said platform has a first portion being substantially rectangular and a second portion being connected to said first portion and substantially triangular, said second portion being said cage front;

(b) said swivel support means is mounted on said platform second portion at an apex thereof, and

(c) said cage is open at said rear thereof.

4. The self-operated elevator as set forth in claim **3** wherein said cage includes:

(a) a plurality of upright members extending upwardly from said platform,

(b) a plurality of rail members extending between said respective upright members, and

(c) said upright members mounted on said platform second portion extending above said upright members mounted on said platform first portion with said winch and said cable guide and said adjustable pulley mounted on said extended upright members at a position substantially above said platform.

5. The self-operated elevator as set forth in claim **1** wherein said means for raising and lowering said elevator includes:

(a) a power unit having said cable threaded therethrough and adapted to selectively move up and down said cable;

(b) cable guides positioned above and below said power unit, said cable being threaded through said cable guides; and

(c) an adjustable pulley mounted on said cage and positioned thereon to guide said cable to said power unit through said upper cable guide.

6. The self-operated elevator as set forth in claim **1** wherein said adjustable support means includes:

(a) elongate tubular members mounted on each side of said cage base adjacent the rear thereof and positioned substantially parallel with said platform,

(b) an elongate shaft slidably mounted within each of said tubular members,

(c) a yoke fixedly mounted on one end of each shaft,

(d) said wheels being rotatably mounted within each

respective yoke and positioned to rotate about an axis transverse to said shaft, and

(e) shaft retaining means adapted to frictionally engage said shaft to retain same in selected adjusted positions.

7. The self-operated elevator as set forth in claim 6 wherein the shaft retaining means includes:

(a) an elongate retaining rod rotatably mounted on each of said tubular members and positioned transverse to said elongate shaft, said retaining rod being threaded on one end thereof;

(b) a rod retaining member secured to each of said tubular members and being internally threaded to receive said threaded end of said retaining rod therein; and

(c) a handle member mounted on the other end of said retaining rod whereby rotating said retaining rod in a first direction moves said rod to frictionally engage said shaft and rotating said retaining rod in a reverse direction moves said rod to permit adjustment of said respective wheel and shaft.

8. A one-man self-operated portable scaffold comprising:

(a) a work platform having a rectangular first portion and a triangular second portion connected to said first portion,

(b) a cage extending upwardly from said platform, said cage having a plurality of upright members extending upwardly from said platform and a plurality of rail members substantially parallel with said platform and extending between respective upright members, said cage having a main frame positioned adjacent said platform second portion;

(c) a first means for raising and a second means for lowering said scaffold mounted on said cage;

(d) a cage support member positioned above said cage;

(e) a cable having one end secured to said cage support member and the other end secured to said first and said second means, said cable being adapted to be engaged by said first and said second means;

(f) a swivel support member having a wheel rotatably therein and mounted below said platform at an apex point of said triangular second portion;

(g) wheels rotatably mounted on said platform first portion and adjustable between a first position adapted to engage a horizontal surface for cooperation with said wheel of said swivel support member for horizontal movement along said horizontal surface and a second position adapted to engage a vertical surface for vertical movement therealong; and

(h) a plurality of tool supporting members mounted on said cage main frame.

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