Dec. 8, 1964 I. DE WITT STEED 3,160,228

LIFTING DEVICE

Filed Feb. 6, 1962 3 Sheets-Sheet 1

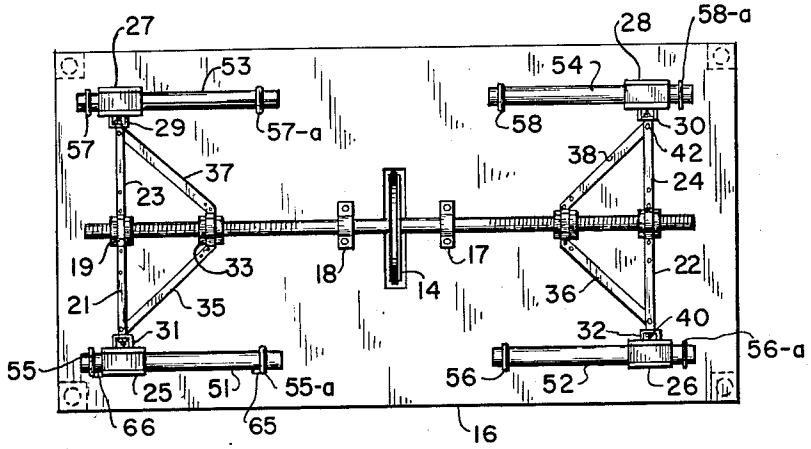
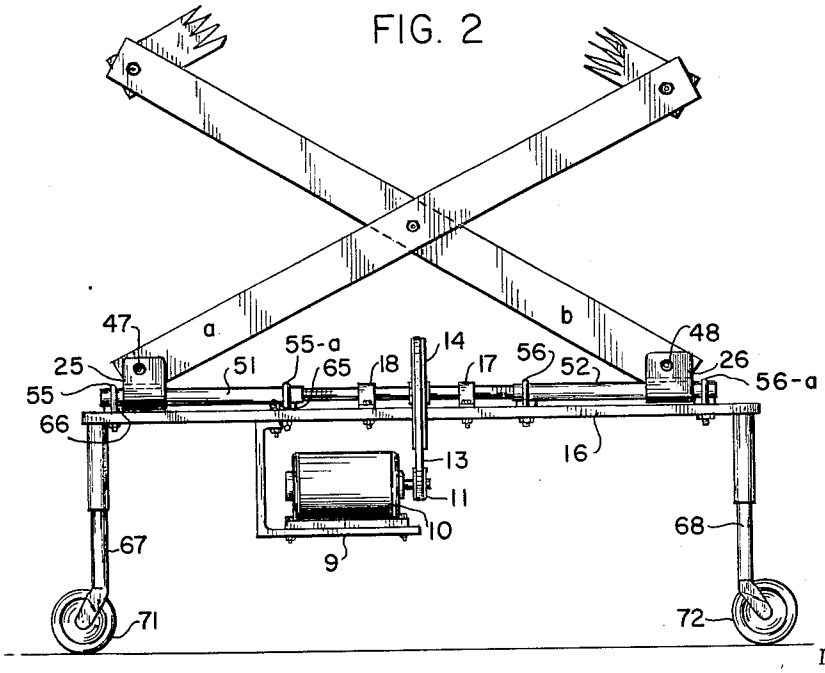


FIG. 1

FIG. 2



INVENTOR

IRAN De WITT STEED

BY

ATTORNEYS

Dec. 8, 1964 I. DE WITT STEED 3,160,228

LIFTING DEVICE

Filed Feb. 6, 1962 3 Sheets-Sheet 2

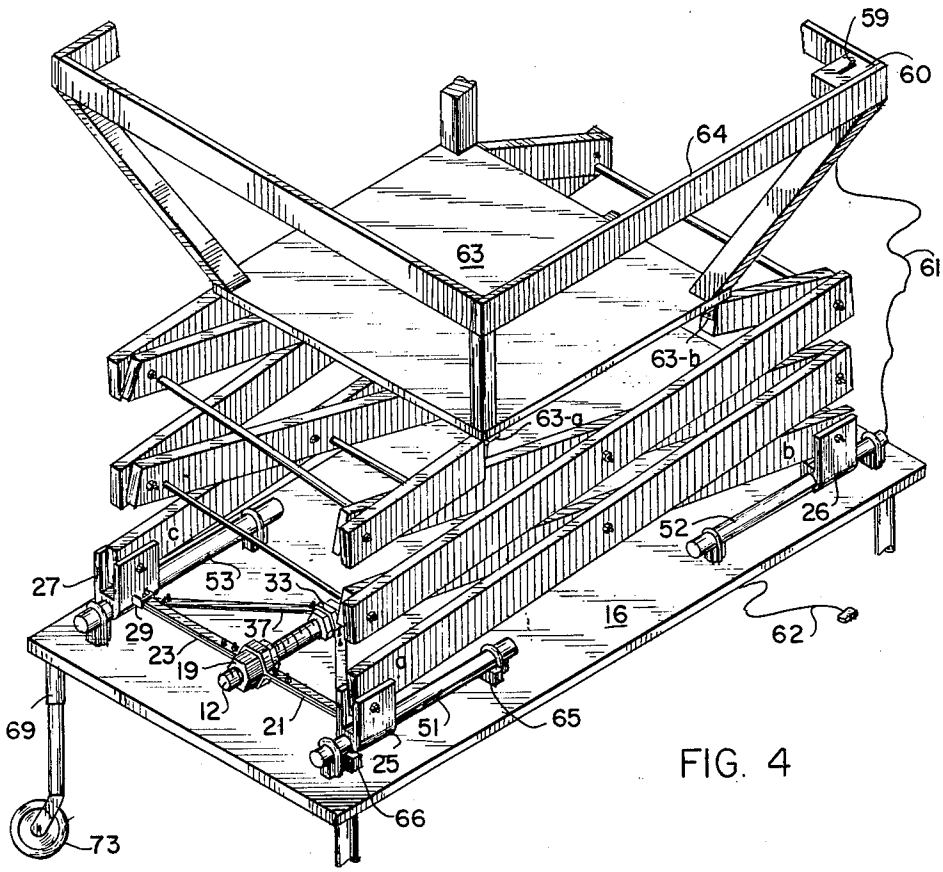


FIG. 4

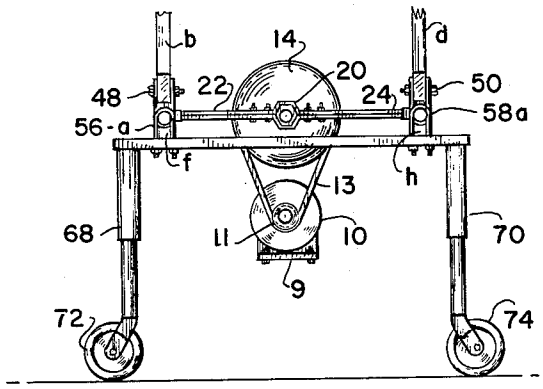


FIG. 3

INVENTOR
IRAN DeWITT STEED

BY

ATTORNEYS

Dec. 8, 1964 I. DE WITT STEED 3,160,228

LIFTING DEVICE

Filed Feb. 6, 1962 3 Sheets-Sheet 3

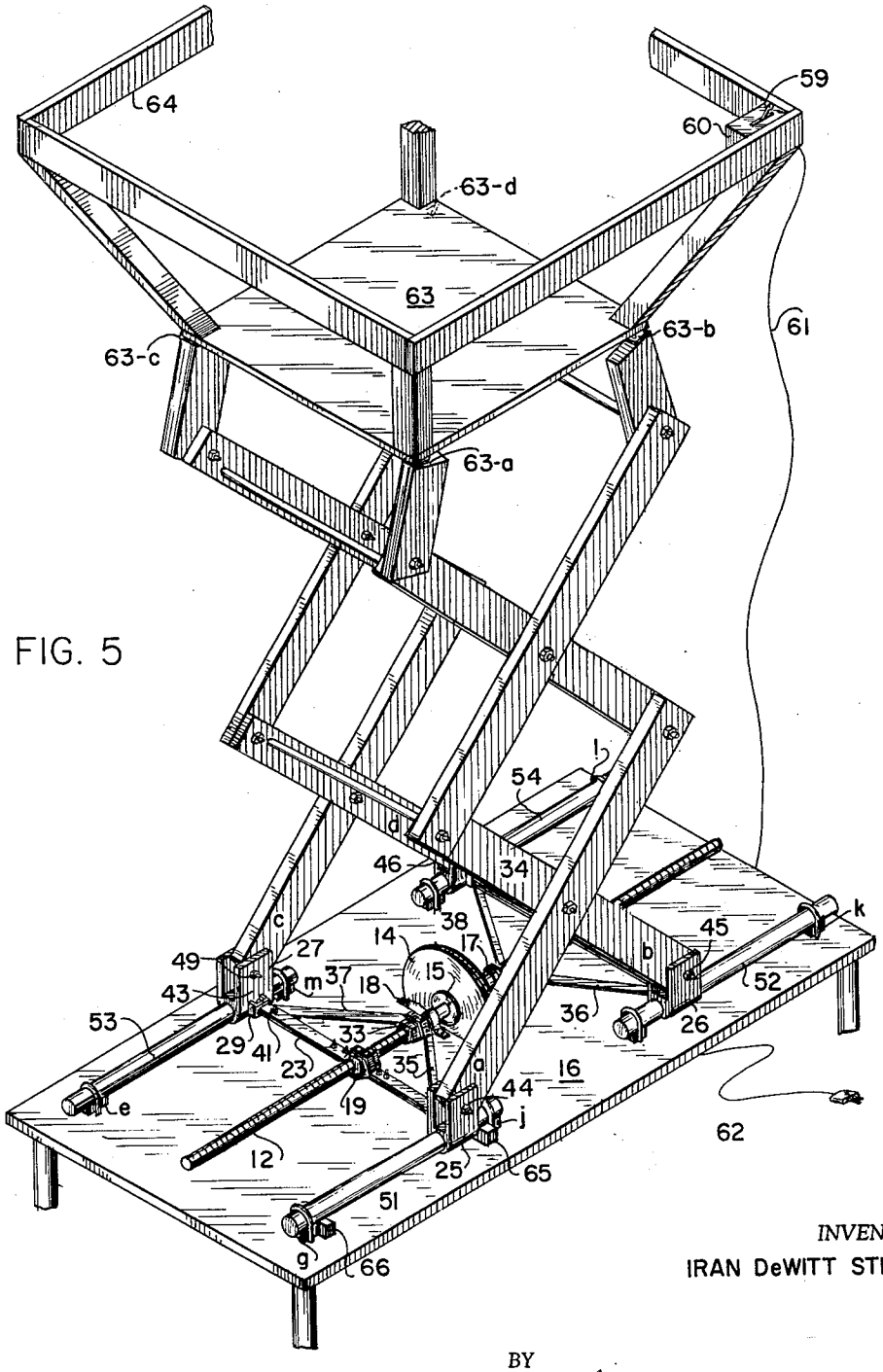


FIG. 5

INVENTOR
IRAN DeWITT STEED

BY Myers & Dowell & II
ATTORNEYS

United States Patent Office 3,160,228 Patented Dec. 8, 1964

3,160,228

LIFTING DEVICE

Iran De Witt Steed, Rte. 9, Springfield, Mo.

Filed Feb. 6, 1962, Ser. No. 171,506
2 Claims. (Cl. 182—148)

This invention relates to lifting devices in general and more particularly to lifting devices motor driven. Most lifting devices require a great deal of effort on the part of the operator, complicated pulley equipment or a powerful motor to raise a load of any consequence; with this lifting device, a large load may be lifted with a very small motor. Then, too, there is a certain amount of danger connected with most devices that raise a little at a time; an object of this lifting device is to eliminate the danger of a fall through mechanical failure. A further object is to supply a raising vehicle that will lower quickly, efficiently and safely, unlike contrivances which lower as a jack. Still another object is to do away with old-fashioned metal scaffolds which are slow, heavy and cumbersome and which must have material carried up to them at their stationary height either by a man walking up a ladder or some mechanical hoist. With my lifting device, a man may lower himself to his material of brick, mortar, lumber, stucco, paint, etc., load an amount and move himself immediately back up to several feet of height by the flip of a switch. Along this same line: Three or four of these lifts may be tied to a common switch and with run boards or platforms from one to the other, a series of long, evenly raising scaffolds may be set up.

Installed in basements, they may be used as efficient, inexpensive elevators in one and two story homes and office buildings. They may even be used in staggered series to hold up the form bed for a concrete and steel re-inforced roof or floor until cured.

Further objects of the invention and novel features of its construction will be apparent from the following specification when considered together with the accompanying drawing, in which:

FIGURE 1 is a view from above of the lifting device;

FIGURE 2 is a fragmentary view, showing from the side the close relationship between power and lift;

FIGURE 3 is an end view;

FIGURE 4 shows the lifting device depressed or brought down to its low point;

FIGURE 5 shows the lifting device raised to almost its fullest extent.

In FIGURE 2, a motor support **9** holds electric motor **10** which actuates motor pulley wheel **11** turning threaded shaft **12**, which has right hand threads on one end and left hand threads on the other, by means of belt **13** rolling on shaft pulley wheel **14**, held in place, as shown in FIGURE 5, by set screw **15**. Again in FIGURE 2, threaded shaft **12**, anchored to table **16** by bearing pillow blocks **17** and **18**, shown in FIGURE 1, turns in puller nuts **19** and **20**, which have puller arms **21**, **22**, **23** and **24** fastened to them, one on either side of each nut and extending outward to telescoping sleeves **25**, **26**, **27** and **28**, to which they are fastened at points **29**, **30**, **31** and **32**. Also threaded shaft **12** turns in brace nuts **33** and **34** which are a short distance away from puller nuts **19** and **20** and have brace arms **35**, **36**, **37** and **38** affixed to said brace nuts **33** and **34**, and which are anchored to puller arms **21**, **22**, **23** and **24** at puller arm-brace joints **39**, **40**, **41** and **42**. In FIGURE 5, telescoping sleeve lips **43**, **44**, **45** and **46** atop telescoping sleeves **25**, **26**, **27** and **28** are fastened with bolts **47** and **48**, shown in FIGURE 2, bolt **49**, shown in FIGURE 5, and bolt **50**, shown in FIGURE 3, to braced X frames *a*, *b*, *c* and *d*, shown in FIGURE 5. Telescoping sleeves **25**, **26**, **27** and **28** move backward and

forward over telescoped shafts **51**, **52**, **53** and **54**, said telescoped shafts anchored to table **16** by U bolts **55**, **55***a*, **56**, **56***a*, **57**, **57***a*, **58** and **58***a* shown in FIGURE 1. Separating telescoped shafts **51**, **52**, **53** and **54** from table **16** are shims *e*, *f*, *g*, *h*, *j*, *k*, *l* and *m*, shown in FIGURES 5 and 3.

From the above construction, as shown in FIGURE 5, it can be seen that when switch box lever **59** on forward and reverse switch box **60**, wired to electric motor **10** by switch wire **61** and conducting cable **62**, is turned to "forward" position, the electric motor **10** turns threaded shaft **12**, which, turning in puller nuts **19** and **20** and brace nuts **33** and **34** causes them to move toward each other, which, in turn, causes puller arms **21**, **22**, **23** and **24**, and brace arms **35**, **36**, **37** and **38** also to move toward each other, thus moving the bases of the braced X frames *a*, *b*, *c*, and *d* toward each other causing platform **63**, whose four corners are fastened to said X frames by hinges **63***a*, **63***b*, **63***c* and **63***d*, and whose safety is aided by railing **64**, to be raised several feet in height. Upper progress of platform **63** may be stopped automatically by limit switch **65**. Platform **63** is lowered by turning switch box lever **59** on switch box **60** to a "reverse" position. The reverse action causes X frames *a*, *b*, *c* and *d* to move in an opposite direction by action on them of puller nuts **19** and **20**, brace nuts **33** and **34**, puller arms **21**, **22**, **23** and **24**, and brace arms **35**, **36**, **37** and **38**. X frames *a*, *b*, *c* and *d* are stopped in descent by limit switch **66**.

For use of the lift on uneven terrain, FIGURES 2, 3 and 4 show adjustable legs **67**, **68**, **69** and **70**; and in the same figures, for ease of movement from place to place, locking rollers **71**, **72**, **73** and **74** are shown fastened to adjustable legs **67**, **68**, **69** and **70**.

Speed of the device, either upward or downward, is governed by the size of the pulley wheel **11** on electric motor **10** and shaft pulley wheel **14**. For normal speed, up and down, a 2 inch motor pulley wheel and a 10 inch shaft pulley wheel work well. However, for abnormally slow speeds and much greater power, an electric motor geared to an extremely slow speed should be used.

I claim:

1. A lifting device of the character described comprising, in combination,

a generally rectangular table member,

said table member being adapted to be mounted on adjustable legs having locking rollers thereon whereby it may be maintained level and stationary on an uneven surface,

slide-supporting shaft members mounted on the upper surface of said table and adjacent each corner portion thereof, said slide-supporting shaft members being disposed in parallelism to each other and positioned in a common plane parallel to the upper surface of said table member,

a screw shaft having reversely threaded portions at each end thereof disposed intermediate of and parallel to said slide-supporting shaft members and extending substantially the length of said table member,

bearing pillow block means for rotatably mounting said screw shaft in the common plane of said slide-supporting shaft members,

a pair of nut members axially spaced from each other on each end of said screw shaft and threadedly engaging the reversely threaded portion at each respective end of said screw shaft,

a load-bearing sleeve comprising a slide member coaxially engaging each slide-supporting shaft member for sliding movement therealong and positioned abreast of one of each pair of said nut members,

a pantograph type vertically movable platform having

leg members at its lower end pivotally secured to said load-bearing slide members,

linkage means connecting each pair of spaced nut members at each end of said screw shaft with the pair of load-bearing slide members positioned abreast of each pair of said spaced nut members and forming a truss-like connection therebetween,

drive means on said screw shaft positioned intermediate the pairs of said spaced nut members threadedly mounted thereon,

said bearing pillow block means for said screw shaft being located solely intermediate said drive means and said reversely threaded portions on said screw shaft,

motor means mounted beneath said table and having means engaging said screw shaft drive means through an opening in said table member,

and means for controlling said motor means for rotating said screw shaft in opposite directions for raising and lowering the platform.

2. A lifting device as defined in claim 1 wherein said means for controlling said motor includes:

a controller member therefor mounted on the upper end of said platform,

and means mounted adjacent one of said slide-supporting shaft members and positioned for engagement by the slide member at the limits of its opposite sliding movements thereon for stopping said motor means at the extreme upper and lower positions of the platform.

References Cited in the file of this patent

UNITED STATES PATENTS

512,052	McHenry	Jan. 2, 1894
722,166	Taft	Mar. 3, 1903
797,077	Shaw	Aug. 15, 1905
2,062,473	Norton	Dec. 1, 1936
2,206,788	Meacham	July 2, 1940
2,818,567	Oliver	Jan. 7, 1958