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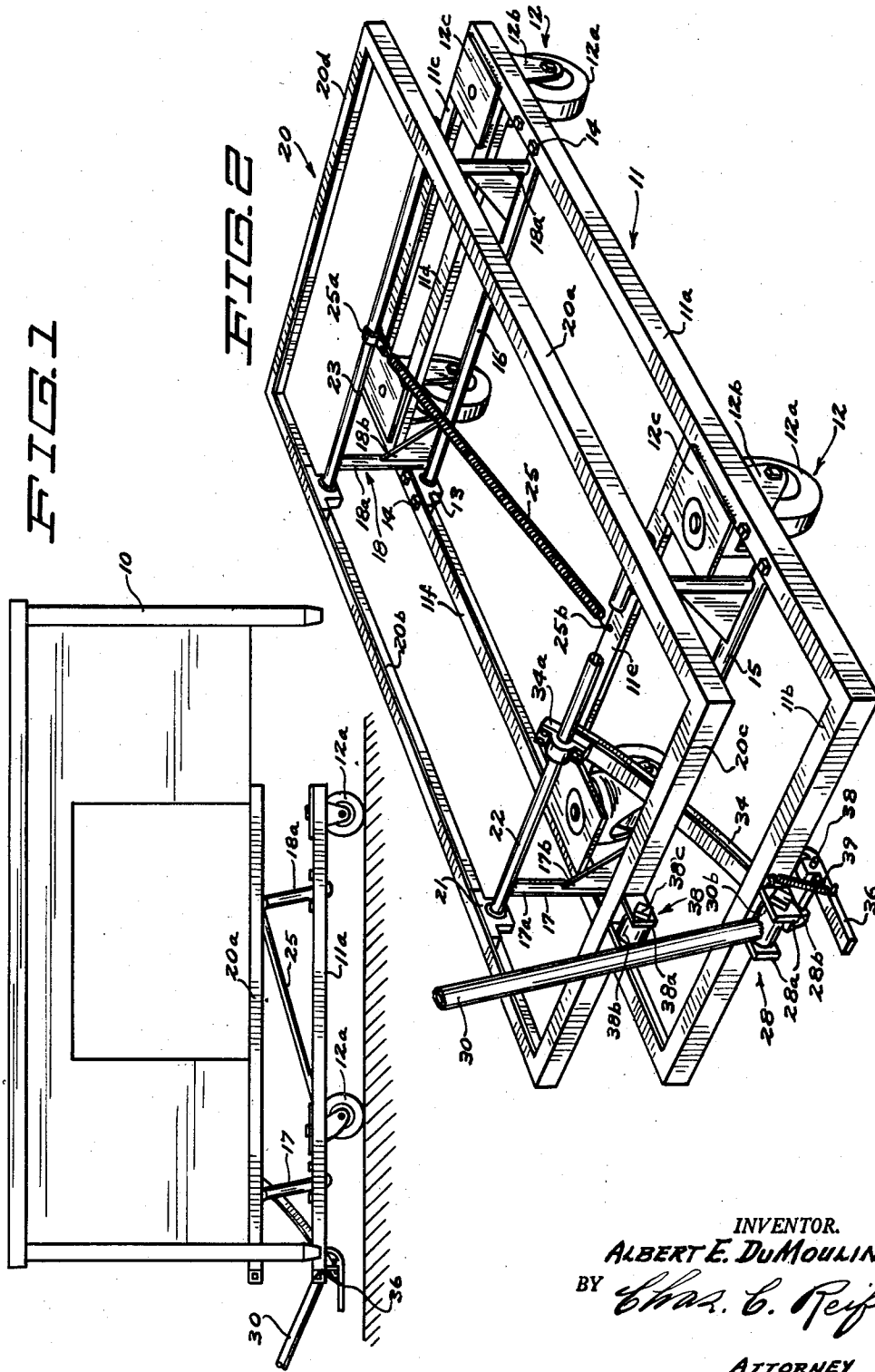
A. E. DU MOULIN

2,840,346

LIFTING AND MOVING DEVICE

Filed Feb. 15, 1954

2 Sheets-Sheet 1



INVENTOR.
ALBERT E. DU MOULIN
BY *Chas. C. Reif*
ATTORNEY

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FIG. 3

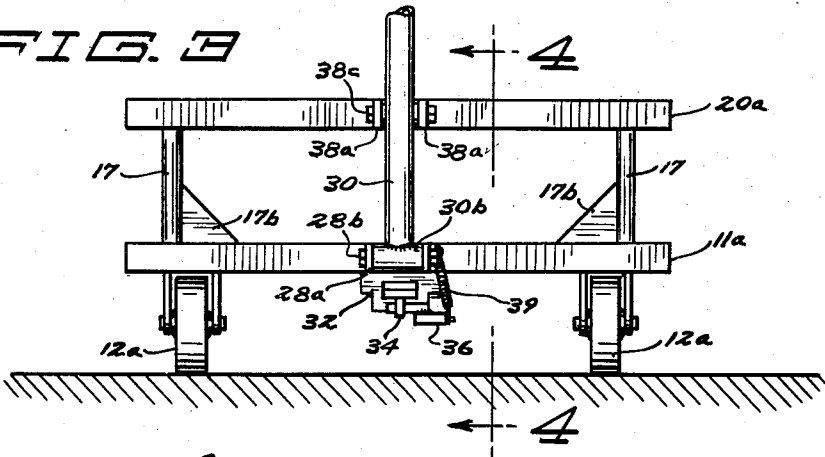


FIG. 4

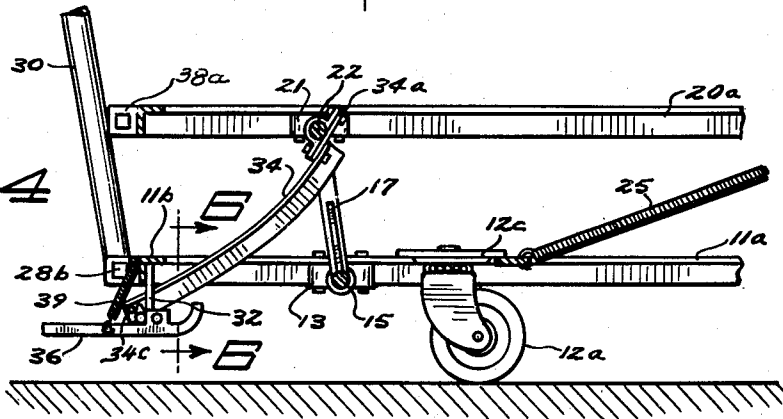


FIG. 5

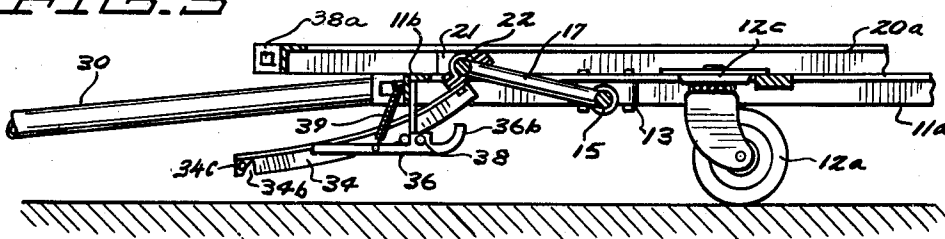
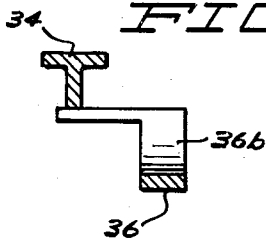


FIG. 6



INVENTOR.
ALBERT E. Du MOULIN
BY *Charles C. Reif*
ATTORNEY

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LIFTING AND MOVING DEVICE

Albert Emil Du Moulin, St. Paul, Minn.

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1 Claim. (Cl. 254—10)

This invention relates to a lifting and moving device, and particularly to a device for use in a place of business for easily moving an article of equipment, such as a desk. It is a common practice to move office equipment frequently and it is desirable to have a device with which a single operator would be able to easily lift and move about equipment, such as desks.

It is an object of this invention to provide a lifting and moving device for moving office equipment.

It is another object of this invention to provide a lifting and moving device which can be lowered to have placed thereon office equipment, such as a desk, and which can be operated by a single operator to easily move said equipment about.

It is a further object of this invention to provide a movable device for lifting and moving equipment, such as a desk, comprising a frame generally rectangular in plan, casters supporting said frame, a second frame above said first frame, means for pivotally supporting said second frame above said first frame, means for holding said second frame in a raised position, and means for urging said second frame to a lowered position when said last mentioned means is released.

It is a more specific object of this invention to provide a moving and lifting device comprising a frame generally rectangular in plan, spaced casters supporting said frame, a pair of longitudinally spaced shafts extending transversely of said frame and being journaled therein, supporting members spaced longitudinally of said shafts and secured thereto, a second frame generally rectangular in plan adapted to be disposed above said first frame, a pair of longitudinally spaced shafts extending transversely of said second frame and journaled therein, said last mentioned shafts being respectively substantially in alignment with said first mentioned shafts, said last mentioned shafts being respectively secured to said supporting members whereby said second frame is pivotally supported above said first frame, means for releasably holding said second frame in said raised position, and resilient means for urging said second frame to a lowered position substantially in contact with said first frame when said last mentioned means are released.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawings in which like reference characters refer to similar parts throughout the several views and in which:

Fig. 1 is a view of applicant's device in side elevation shown in operating position;

Fig. 2 is a perspective view of applicant's device with some parts broken away;

Fig. 3 is a view of applicant's device in front elevation;

Fig. 4 is a broken view of applicant's device taken on line 4—4 of Fig. 3, as indicated by the arrows;

Fig. 5 is a broken view of applicant's device similar to the view shown in Fig. 4, with the parts shown in a different position; and

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Fig. 6 is a view of a portion of applicant's device taken on line 6—6 of Fig. 4, as indicated by the arrows.

Referring to the drawings, applicant's device is shown in operating position in Fig. 1 having thereon a member 10, here shown to be a desk. Said desk here disclosed is of the common variety generally in use. Referring to Fig. 2, applicant's device is shown comprising a lower supporting member 11. Said member 11 is disclosed as a frame substantially rectangular in plan and being formed of angle bars disposed to have their flanges form upper horizontal and outer vertical surfaces. Said member 11 has side portions 11a and 11f, a front end portion 11b and a rear end portion 11c. The adjacent ends of said portions are joined so that member 11 is formed as a rigid unit. Said member 11 is provided with a pair of cross members 11d and 11e formed as substantially flat elongated bars having their ends respectively secured to sides 11a and 11f of said member 11. Said member 11d is spaced a short distance inwardly of portion 11c and member 11e is spaced some distance inwardly of portion 11b. Said members 11d and 11e are provided as bracing members to add rigidity to said member 11. Said member 11 is supported by a set of casters 12 which are shown to be four in number. A pair of said casters are respectively provided at the rear end corners of said member 11 and are secured thereto and to the adjacent portions of member 11d in any suitable manner, as by welding. Another pair of said casters 12 are respectively secured in like manner to said member 11 adjacent the points of intersection of the respective ends of member 11e and the portions 11a and 11f. Said casters are of a common variety, and the wheels 12a thereof may be formed of any suitable material, such as metal, fiber or rubber. Said wheels 12a are journaled in yokes 12b and said yokes are rotatably secured to holding plates 12c. Respectively secured to portions 11a and 11f of member 11 and spaced longitudinally thereof, are bearings 13. These are a common type of plain bearings and are secured to portions 11a and 11f in any suitable manner, as by metal screws 14. Extending transversely between said portions 11a and 11f and spaced longitudinally thereof, are shafts 15 and 16. Said shafts are here disclosed as being in the form of tubular rods having their ends journaled in said bearings 13. Respectively secured to said shafts 15 and 16 adjacent portions 11a and 11f, as by welding, are spaced pairs of supporting members 17 and 18. Said supporting members respectively comprise substantially short length tubular portions 17a and 18a disposed at right angles to said shafts 15 and 16 and angle bracing members 17b and 18b. Said members 17 and 18 are respectively movable with said shafts 15 and 16 about the axes of said shafts. A second frame member 20 is provided similar in structure to member 11 and having side portions 20a and 20b, a front end portion 20c and a rear end portion 20d. Said member 20 has secured thereto bearings 21. Said bearings are identical in structure to bearings 13. Said bearings 21 are secured to member 20 in substantially the same positions that said bearings 13 are secured to said member 11. Said bearings 21 are herein disclosed as being secured to said member 20 by welding. Shafts 22 and 23 are provided extending transversely of member 20 and the same are journaled in said bearings 21. Said shafts are identical in structure to shafts 15 and 16. Said frame 20 is adapted to be placed above frame 11 and said bearings 21 and shafts 22 and 23 will be respectively in substantially vertical alignment with bearings 13 and shafts 15 and 16 when said member 20 is in vertical alignment with said member 11. Said shafts 22 and 23 are respectively secured to members 17a and 18a, as by welding. Hence it is seen that member 20 is pivotally secured to said members 17 and 18 and when moved

forwardly will move downwardly until it is substantially in contact with the upper surface of member 11. A resilient member 25 is provided having a clamp 25a secured to one end portion and said clamp is secured to said shaft 23 intermediate its ends and the other end 25b of said member 25 is secured to member 11e intermediate its ends. Said end portion 25b is disposed through a small aperture provided in said member 11e. Said member 25 is here disclosed as a tensile coil spring and it will tend to urge said member 20 downwardly and forwardly.

A bracket 28 is provided comprising spaced side portions 28a secured to the front end of portion 11b, as by welding, and being disposed at right angles to portion 11b. A member 30 is provided and herein is disclosed as an elongated cylindrical handle member having a lower T-shaped end portion 30b disposed between said lugs 28a and is held pivotally secured therebetween by a nutted bolt 28b disposed transversely through said lugs and said end portion 30b. Hence said handle 30 is pivotally secured to said bracket 28. A U-shaped bracket 32 is provided secured to and depending from portion 11b in alinement with said bracket 28 and at right angles thereto.

A lever 34 is provided having one end portion 34a formed as a clamp and being adapted to be clamped about and secured to shaft 22 intermediate its ends. Said member 34 is here disclosed as being formed of a T-shaped metal bar and being concavely curved longitudinally thereof. The other end portion of said member 34 is provided with a notch 34b adjacent said end portion. A pin 34c is disposed through said member 34 transversely thereof between said notch 34b and the end of said member 34 and is adapted to engage the sides of bracket 32. Said member 34 is disposed through and is adapted to move through said bracket 32. When said member 20 is in a raised position, said member 34 will engage said bracket 32 at its notched portion 34b and said pin 34c will engage the sides of said bracket 32 to prevent member 34 from being withdrawn completely through said bracket. A member 36 is provided and forms a lever. Said member 36 is pivotally secured to one side of said bracket 32 by a pin 38. The rear end portion 36b of said lever 36 is curved upwardly and inwardly at right angles, as shown in Fig. 6, so as to extend transversely of member 34 and be adapted to engage the same. The front end portion of said lever 36 extends outwardly for some distance. A resilient member 39 is provided and is here disclosed as a coil spring having its lower end secured to lever 36 a short distance in front of said pin 38 and having its other end secured to one of said lugs 28a. Hence it is seen that member 39 will hold the front end portion of lever 36 upwardly.

Said lever 34 may be provided with a plurality of notches 34b. As here disclosed, when said member 34 is in its upward position with its notched end portion secured in bracket 32, said member 20 will be held in a raised position just slightly forward of exact vertical alinement with member 11.

Secured to portion 20c in vertical alinement with bracket 28 is a bracket 38 similar in structure to said bracket 28. Said bracket 38 comprises side members 38a, a roller 38b disposed between said side members and a nutted bolt 38c disposed transversely through said roller and said side members.

In operation, when it is desired to move an article of office equipment, such as desk 10, the operator will place applicant's lifting device adjacent one end of said desk. The front end portion of lever 36 will be depressed with the operator's foot. Portion 36b of said lever 36 will then be raised and will engage the underside of lever 34 and will raise it until said notch 34b is disengaged from the bottom portion of bracket 32. Said member 25 will then urge member 20 forwardly and downwardly. The

operator will hold the handle member 30 with some pressure against the bracket 38 to control the speed with which said member 20 is moved forwardly. When said member 20 comes to rest in its lowered position substantially in contact with the upper surface of member 11, the operator will move applicant's device to a position beneath said article 10. The operator will then grasp the end portion of handle 30 and will lift it and move it upwardly and rearwardly. The operator will then engage roller 38b and frame 20 with said handle and will move said frame upwardly and rearwardly to engage and lift said article 10. As said frame 20 is thus moved, said member 34 will be drawn rearwardly through bracket 32 until said notch 34b engages the bottom portion of bracket 32, and said member 20 will then be locked in a raised position. The point at which handle 30 engages roller 38b acts as a fulcrum point so that while the upper portion of said handle is moving frame 20 and the article thereon rearwardly, the lower portion of said handle is acting to pull the frame 11 and casters 12 forwardly. Hence as a result of the simultaneous movement of frame 20 upwardly and rearwardly and of the lower frame 11 forwardly, a substantial amount of weight can be left on said frame 20 with comparatively a small amount of effort. Said member 20 in its raised position is slightly forward of a position in direct vertical alinement with member 11. Hence when it is desired to unload said article 10 the operator will again depress the front end portion of member 36 until lever 34 is disengaged from bracket 32 and the weight of said article 10 itself will then move said member 20 forwardly and downwardly. The forward movement of frame 20 can be governed by use of handle 30. Applicant's device can then be easily withdrawn from its position beneath said article 10.

Thus it is seen that I have provided a very efficient lifting and moving device which enables a single operator to quickly and easily move about heavy articles of equipment, such as office desks, and a substantial savings in cost is effected by making it possible for a single operator to do this work. Applicant's device has been placed in commercial use and has proved to be very successful in operation.

It will of course be understood that various changes may be made in the form, details, arrangement and proportions of the parts, without departing from the scope of applicant's invention, which, generally stated, consists in a device capable of carrying out the objects above set forth, in the parts and combinations of parts disclosed and defined in the appended claim.

What is claimed is:

A lifting and moving device having in combination, a supporting frame generally rectangular in plan, spaced casters supporting said frame, a handle pivoted to one end of said frame centrally transversely thereof, a second frame above said first frame, means connecting said frames for pivotally raising and supporting said second frame above said first frame, a roller carried at the front end portion of said second frame forming a fulcrum engageable by said handle, whereby said handle forms a lever to raise and lower said second frame, a lever having one end pivoted to said second frame at a point somewhat rearwardly of the front end thereof, a bracket depending from the front end portion of said first frame in vertical alignment with said handle and having said lever movable therethrough, said lever having a lower portion engageable in said bracket, said lever when engaged in said bracket being of a length to hold said second frame in its raised position just forward of its dead center position in relation to its supporting means, and means to prevent the withdrawal of said lever from said bracket, a second lever pivoted to one side of said bracket having a forwardly extending foot engaging portion, a spring connecting said foot engaging portion to said second frame normally to hold said lever in an

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inoperative position, said second lever having a transversely extending portion rearwardly thereof adapted to engage said first mentioned lever whereby when said foot engaging portion is depressed, said transversely extending portion engages and raises said first lever out of engagement with said bracket to permit said lever to slide forwardly through said bracket, whereby said second frame automatically lowers itself to a position of rest on said first frame.

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286,292
309,121
318,145
388,516
623,669
2,513,440

6

References Cited in the file of this patent

UNITED STATES PATENTS

Gordon	-----	Oct. 9, 1883
Arnold	-----	Dec. 9, 1884
Smith	-----	May 19, 1885
Wilson	-----	Aug. 28, 1888
Hooper et al.	-----	Apr. 25, 1899
Alderson	-----	July 4, 1950