E. N. HESCOCK AND E. F. SMITH.

PORTABLE ELEVATOR.

APPLICATION FILED FEB. 16, 1920.

Patented May 3, 1921.

2 SHEETS—SHEET 1.

1,376,540.

FIG 1

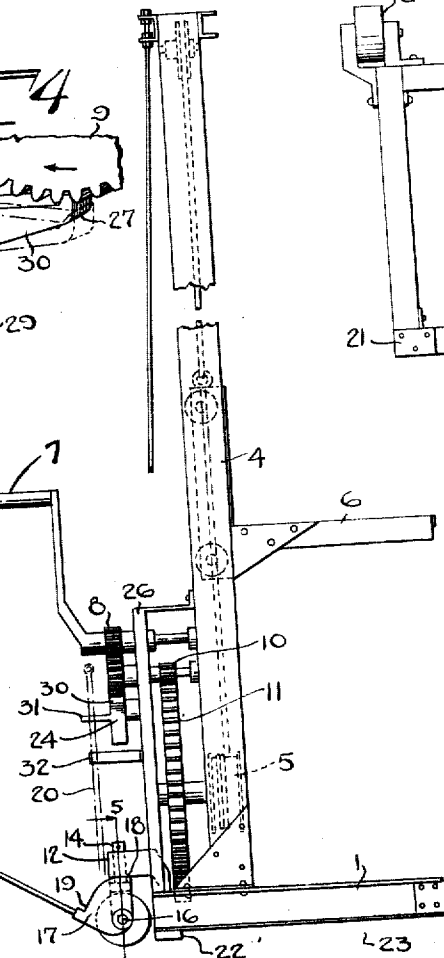


FIG 2

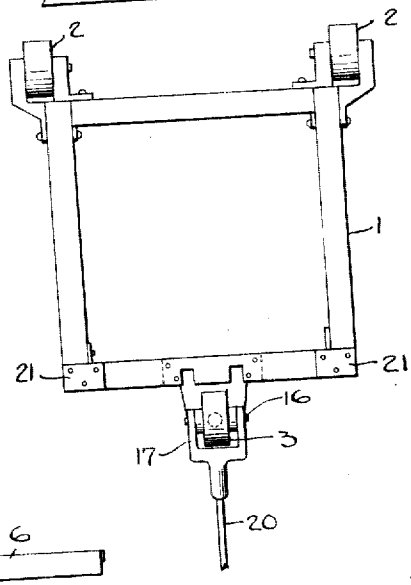


FIG 3

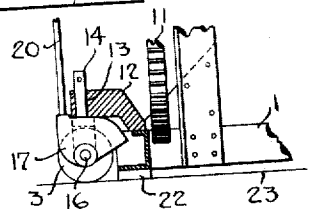


FIG 4

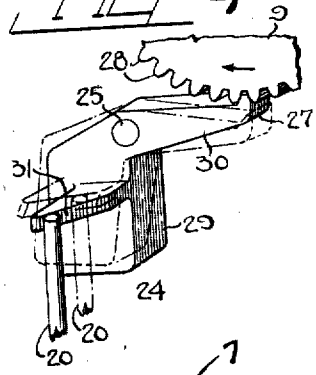


FIG 5

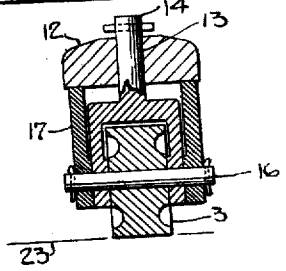
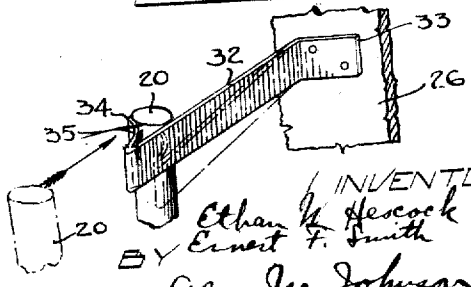


FIG 6



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2 SHEETS—SHEET 2.

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FIG 7

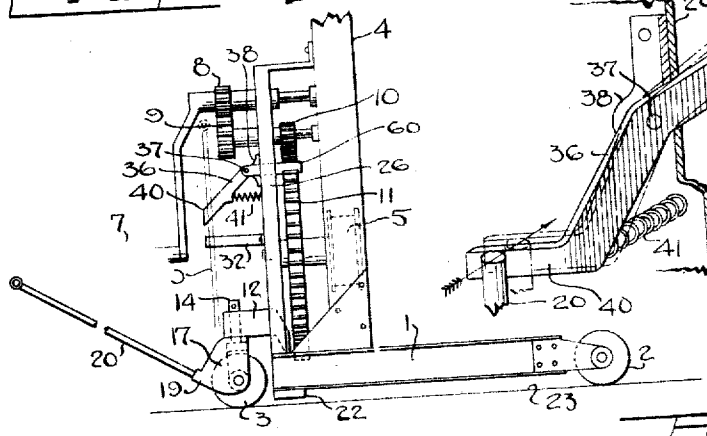


FIG 8

FIG 9

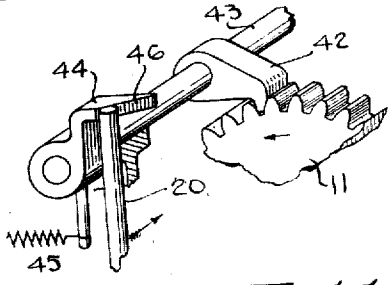


FIG 10

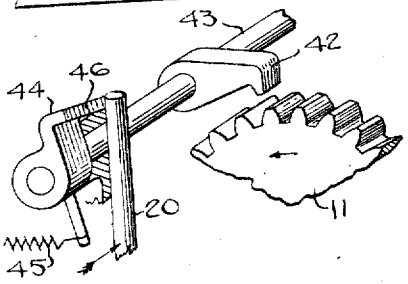


FIG 11

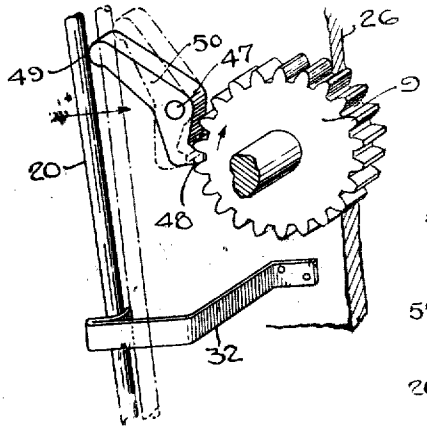
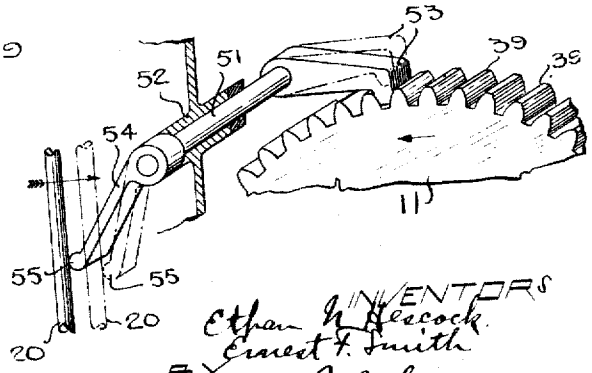


FIG 12



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UNITED STATES PATENT OFFICE.

ETHAN N. HESCOCK, OF WESTFIELD, NEW JERSEY, AND ERNEST F. SMITH, OF WOODHAVEN, NEW YORK, ASSIGNORS TO NEW JERSEY FOUNDRY & MACHINE COMPANY, A CORPORATION OF NEW JERSEY

PORTABLE ELEVATOR.

1,376,540. Specification of Letters Patent. Patented May 3, 1921.

Application filed February 16, 1920. Serial No. 358,869.

To all whom it may concern:

Be it known that we, ETHAN N. HESCOCK, a citizen of the United States, residing at Westfield, in the county of Union and State of New Jersey, and ERNEST F. SMITH, a citizen of the United States, residing at Woodhaven, in the county of Queens and State of New York, have invented certain new and useful Improvements in Portable Elevators, of which the following is a specification, taken in connection with the accompanying drawings.

Our invention relates to portable elevators and more particularly to means to positively insure that the elevator, when in use, shall be stabilized.

Our invention further relates to means for preventing the hoist mechanism from being operated unless the elevator is stabilized. Our invention further relates to using a portion of the traction means to operate, or bring into play, the stabilizing means. Our invention further relates to having a locking mechanism normally control the hoist mechanism, and a portion of the traction mechanism coöperating with the locking mechanism after the stabilizing mechanism has been brought into operation.

Our invention further relates to using the ordinary handle of the caster traction wheel of a movable elevator, and connecting it with suitable instrumentalities so that the handle, and mechanism to which it is connected, will automatically bring into play the stabilizing mechanism, and also will coöperate with the locking mechanism, alternately.

Our invention further relates to certain combinations, sub-combinations and details of construction which will be more fully hereinafter described and set forth in the claims.

In the accompanying drawings the same reference numerals refer to similar parts in the different figures.

Figure 1 is a side elevation of our improved portable elevator, with certain parts omitted for purposes of clearer illustration;

Fig. 2 is a plan view of the carriage of the elevator, omitting certain parts connected with it;

Fig. 3 is a side elevation, partly in vertical section of a detail, showing the cam yoke in the opposite position from that shown in Fig. 1;

Fig. 4 is a detail perspective view, on an enlarged scale, of one form of locking mechanism which we may employ;

Fig. 5 is a detail view, partly in vertical section on the line 5—5 of Fig. 1.

Fig. 6 is a detail perspective view of one form of catch, which we may employ for holding the handle in its inoperative position;

Fig. 7 is a side elevation, partly broken away, showing a somewhat different arrangement of locking mechanism;

Fig. 8 is a detail perspective view, on an enlarged scale, of the locking mechanism shown in Fig. 7;

Fig. 9 is a perspective view, partly broken away, showing another form of locking mechanism;

Fig. 10 is a detail perspective view on an enlarged scale of the same locking mechanism shown in Fig. 9, but in its opposite position;

Fig. 11 is a perspective view of a different form of pawl for locking the hoist mechanism;

Fig. 12 is a detail perspective view of still another different arrangement of pawl for locking the hoist mechanism;

It is well known that one of the chief objections to portable elevators is that they are not stable or rigid when in operation. These portable elevators must be easily movable from place to place in the warehouse, factory, dock, or other place where they are used. By our invention, without lessening the mobility of the movable elevator, or increasing its weight, we positively insure that it will be stable when the hoist mechanism is operated to lift the load. It is, of course, understood that a comparatively small movement or oscillation at the base or carriage will be greatly multiplied as the platform is raised. Such a wabbling or oscillation, when the platform is in its raised position is extremely dangerous as the load is apt to tip or fall off the platform with serious injury to the workmen, and possible danger or injury to the load, depending upon the character of the goods being stacked or raised at that time.

By our invention we absolutely eliminate all such oscillation or wabbling of the platform or of the elevator while the hoisting mechanism is being operated.

Our elevator comprises the usual carriage 1, with the traction wheels 2, 2 and 3, the latter being mounted as a caster wheel to permit ready handling and manipulation of the movable elevator in restricted passages or other locations in which it is used. We also employ a vertical upright 4, winding drum 5, movable platform 6, crank 7, gear wheels 8, 9, 10 and 11, which may be of any approved construction the same forming the hoisting mechanism to operate the drum 5.

On the front of the carriage 1 we mount a bracket 12, having a vertical bearing 13 for the pin 14 of the caster wheel fork 15. Within this wheel fork 15 is mounted the caster wheel 3 on the axle 16. Upon this same axle 16 is mounted a cam yoke 17, which straddles the wheel fork 15. The radius of this cam yoke 17 from the axle 16 to the point 18 is greater than the radius from the axle 16 to the point 19. To this cam yoke 17, we secure in any suitable manner, the handle 20 employed to pull or manipulate the movable elevator around to the different locations where it is desired to use it.

We provide the movable elevator with any suitable form of stabilizing means which will stabilize the elevator and prevent any movement or wabbling of the platform 6 and the vertical standard 4. Any stabilizing means may be used which will be brought into operation by a part of the traction means. We have shown by way of illustration one form of our invention in which the corners 21, 21 are provided with fixed feet or legs 22, 22 which may be secured to the carriage 1 in any suitable way. In our invention these stabilizing means give four points of support, together with the traction wheels 2, 2. Our stabilizing means are raised from the floor while the movable elevator is being moved from place to place, but have to be brought into contact with the floor 23 before the hoisting mechanism of the elevator can be operated.

In the position of the parts shown in Fig. 1, the handle 20, 20 is in its operative position which causes the cam yoke to move beneath the bracket 12 and in this manner lift the feet 22, 22 free from the floor, so that they will not drag or otherwise impede the manipulation of the elevator while it is being moved from place to place. As soon as the elevator has been positioned, where it is desired to stack or lift goods of any description, the handle 20 is brought from the position shown in Fig. 1 to that shown in Fig. 3, which will permit the entire front portion of the carriage 1 to drop slightly until the feet 22, 22 are brought into contact with the floor in which position the movable elevator is stabilized.

To make the movable elevator "foolproof," so that it is absolutely necessary for the operator to bring the stabilizing means into contact with the floor to prevent oscillation or wabbling of the platform 6, we employ any suitable locking means which coöperates with the hoisting mechanism and which is released only when the stabilizing means have been brought into their operative position, such for example as shown in Fig. 3.

Various forms of locking means coöperating with the hoisting mechanism may be used, as our invention is not to be confined to any particular locking means. Preferably the locking means coöperates with some part or element of the traction means, as for example the handle 20, which therefore performs not only the function of being a portion of the traction means but also coöperates with any suitable form of locking means which locks the hoisting mechanism until the elevator has been stabilized.

We have shown in our drawings various forms of locking means to coöperate with the hoisting mechanism, but these are only some of the different forms that may be used, it being distinctly understood that our invention is not to be confined to any particular form of locking means.

We may mount a pawl 24, Figs. 1 and 4, upon a pin 25, secured to the frame 26. This pawl is provided with means so that normally its tooth 27 engages with the teeth 28, 28 of the pinion 9. We preferably provide the pawl with a weighted end 29, which overbalances the end 30 and insures that the tooth 27 will normally contact with the teeth of the pinion 9. To release the pawl from engagement with the pinion, so that the hoist mechanism may be operated to move the platform 6, we provide it with any suitable means so that it will coöperate with the handle 20. We have shown for example the end 29 of the pawl provided with an inclined or wedge surface 31 so that when the cam yoke 17 is brought into the position shown in Fig. 3, the handle 20 coöperating with the inclined surface 31 will rock the pawl 24 and cause its tooth 27 to disengage the teeth 28, 28 of the pinion 9. This will permit the crank 7 to operate the hoist mechanism.

To secure the handle 20 in its proper position to hold the pawl 24 in its own inoperative position we may use any suitable form of catch or holding device; such, for example, as that shown in Fig. 6, in which the catch 32 is formed of a piece of metal having one end 33 secured to the frame 26, while the other end 34 is bent back to form a hook. Preferably this catch is resilient and will give or spring while the arm 20 is moving along the inclined surface 35 and will spring back as soon as the arm has passed the end 34, as shown in dotted and full lines in Fig. 6. When the parts are in this position the stabilizing means, as for

example the feet 22, 22, are in contact with the floor so that the movable elevator is stabilized. To move the elevator to a new position it is simply necessary to manipulate the handle 20 from contact with the hook 34 of the catch 32, bring the handle down into the position shown in Fig. 1, which will cause the cam yoke 17 to lift the forward portion of the carriage 1, when the elevator may be readily moved in its new position. The hoist mechanism cannot be operated in its new location until the handle 20 has again been brought into position to release the locking mechanism.

The locking mechanism may be mounted to coöperate with the gear 11 or any other portion of the hoist mechanism. We have shown such a construction in Figs. 7 and 8, where the locking pawl 36 is pivoted on the pin 37 mounted on the bracket 38 connected with the support 26. This pawl 36 has one end 60 coöperating with the teeth 39, 39 of the gear 11, its other end being provided with a bent portion 40 to coöperate with the handle 20. This pawl is preferably provided with a spring 41 to insure that it will normally engage with the teeth 39 of the gear 11 to lock the hoist mechanism.

In some cases we may mount a pawl 42, Figs. 9 and 10, upon a rock shaft 43, mounted on the elevator. The pawl engages with the gear wheel 11, or any other gear wheel of the hoist mechanism. In this form of locking mechanism we mount fast on the rock shaft 43 a cam 44 to coöperate with the handle 20, the pawl 42 being normally thrown into contact with the teeth of the gear wheel by the spring 45. When the handle 20 is brought into the position shown in Fig. 3, it will move up the inclined surface 46 of the cam 44 and rock the shaft 43, causing the pawl 42 to disengage the teeth of the gear wheel, Fig. 10.

We have shown a different form of pawl 50 in Fig. 11, which is pivoted on the pin 47, one end 48 coöperating with the teeth of the gear wheel 9, the other end 49 coöperating directly with the arm 20, as shown in full and dotted lines in this figure. To get the arm 20 to bear directly upon the end 49 of the pawl 50, it is necessary to move the arm 20 and the cam yoke 17 at right angles to the position shown in Fig. 3.

In some cases we may mount a rock shaft 51 in a bearing 52 carried by the frame and secure on one end of the shaft the pawl 53, which normally contacts with the teeth 39, 39 of the gear wheel 11. Upon the opposite end of the rock shaft 51, we mount an arm 54, against the end 55 of which the arm 20 directly contacts to rock the shaft and thereby lift the pawl 53. Any suitable means may be used to insure that the pawl 53 will normally contact with the gear wheel 11, as for example by making the pawl 53 heavier than the arm 54. In this form of our invention, as in the form shown in Fig. 11, the arm 20 and the cam yoke 17 have to be moved at right angles to the position shown in Fig. 3 so that the arm 20 may bear upon the end of the arm 54.

Having thus described this invention in connection with illustrative embodiments thereof, to the details of which we do not desire to be limited, what is claimed as new and what is desired to secure by Letters Patent is set forth in the appended claims.

What we claim is:—

1. In a movable elevator, the combination of stabilizing means fast on the elevator, hoisting mechanism, and a single control to alternately render the stabilizing and hoisting mechanism operative.

2. In a movable elevator, the combination of stabilizing means, hoisting mechanism, a lock to normally lock the hoisting mechanism, and hand operated traction means to alternately release the lock and bring the stabilizing means into operative position.

3. In a movable elevator, the combination of a carriage, stabilizing means carried by the carriage, hoisting mechanism, a lock to lock the hoisting mechanism, and means to tilt the carriage slightly at one end in a vertical plane to bring the stabilizing means into operative position, said means coöperating with the lock to release the hoisting mechanism.

4. In a movable elevator, the combination of a carriage, stabilizing means fast on the carriage, hoisting mechanism, a lock to lock the hoisting mechanism, and means to tilt the carriage slightly at one end in a vertical plane to bring the stabilizing means into operative position, said means coöperating with the lock to release the hoisting mechanism.

5. In a movable elevator the combination of a carriage, stabilizing means carried by the carriage, hoist mechanism, a lock to lock the hoist mechanism, and means to lower the carriage to bring the stabilizing means into operative position, said means coöperating with the lock to release the hoist mechanism when the carriage is lowered.

6. In a movable elevator the combination of a carriage, stabilizing means carried by the carriage, hoist mechanism, a lock to lock the hoist mechanism, and means including a cam to lower the carriage to bring the stabilizing means into operative position, said means coöperating with the lock to release the hoist mechanism when the carriage is lowered.

7. In a movable elevator the combination of a carriage, stabilizing means carried by the carriage, hoist mechanism, a lock to lock said hoist mechanism, traction wheels, a handle operating one of the traction wheels,

said handle coöperating with the lock to release the hoist mechanism as the stabilizing means are brought into their operative position.

8. In a movable elevator the combination of a carriage, stabilizing means carried by the carriage, hoist mechanism, a lock to lock said hoist mechanism, traction wheels, a handle operating one of the traction wheels, means to tilt one end of the carriage to operate the stabilizing means, said handle coöperating with the lock to release the hoist mechanism as the stabilizing means are brought into their operative position.

9. In a movable elevator the combination of hoisting mechanism, stabilizing means, draft mechanism, a lock to lock the hoist mechanism, said draft mechanism being adapted to alternately release the lock and bring the stabilizing means into operative position.

10. In a movable elevator the combination of a carriage, hoist mechanism including gear wheels, a lock to lock said gear wheels, a traction wheel, a handle to move said traction wheel, said handle coöperating with the lock to release the hoist mechanism.

11. In a movable elevator the combination of a carriage, stabilizing means carried by the carriage, hoist mechanism including gear wheels, a lock to lock said gear wheels, a traction wheel, a handle to move said traction wheel, said handle coöperating with the lock to release the hoist mechanism.

12. In a movable elevator the combination of a carriage, stabilizing means, a cam yoke to tilt one end of the carriage, hoisting mechanism, a lock to lock said hoisting mechanism, a handle connected to the cam yoke and adapted to operate it and also cooperating with the lock to release the hoisting mechanism.

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ERNEST F. SMITH.

Witnesses:
J. A. SCHNEITZER,
REUBEN IRWIN.