No. 891,140. PATENTED JUNE 16, 1908.

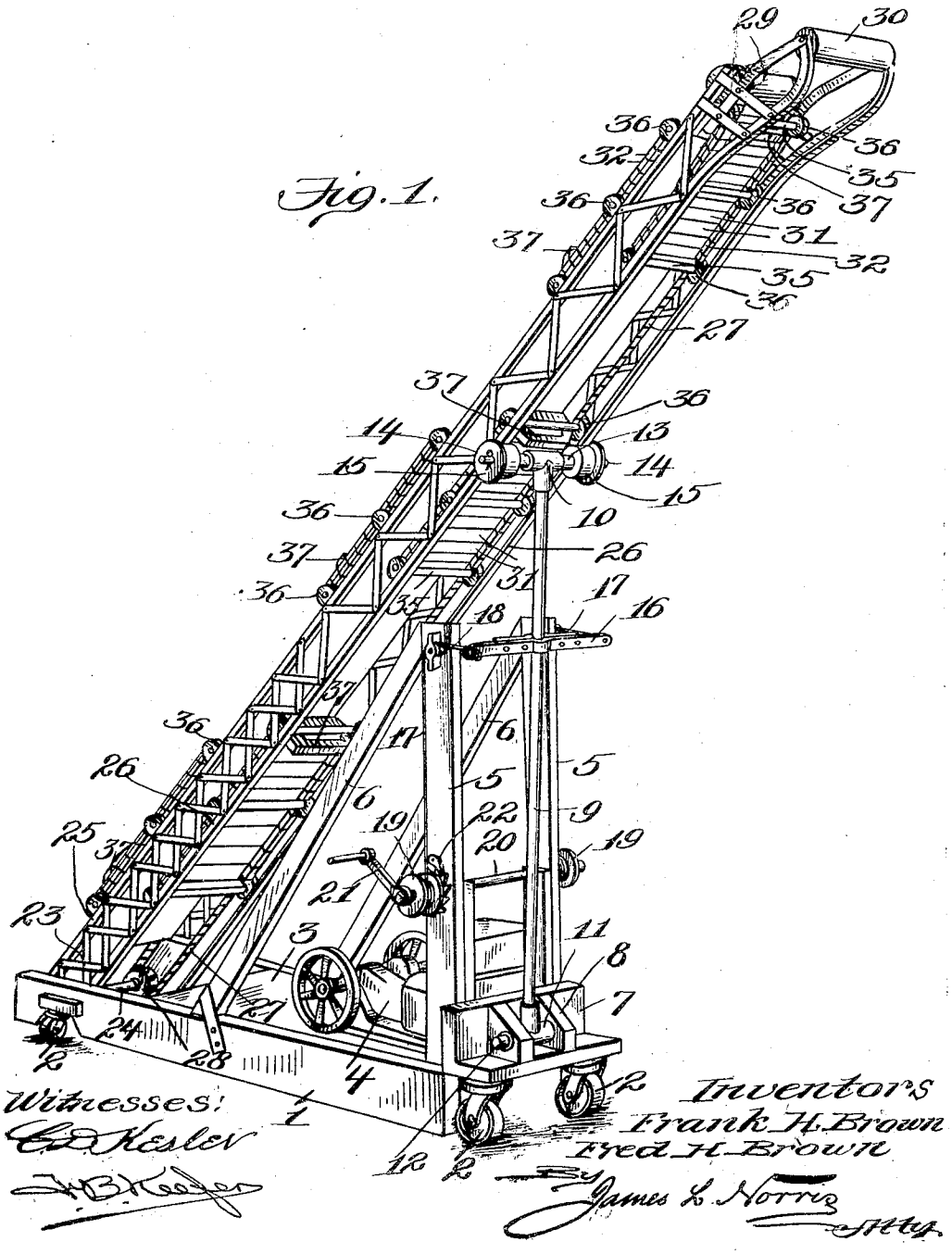
FRANK H. BROWN & FRED H. BROWN.

ELEVATOR.

APPLICATION FILED SEPT. 7, 1907.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 2.

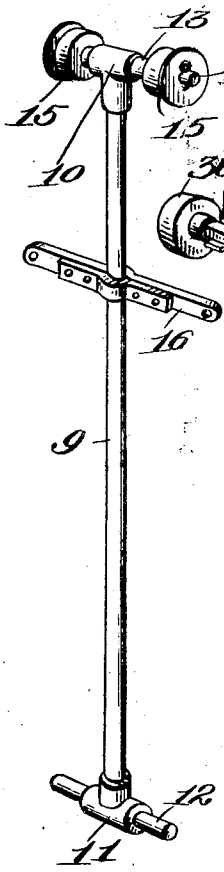


Fig. 3.

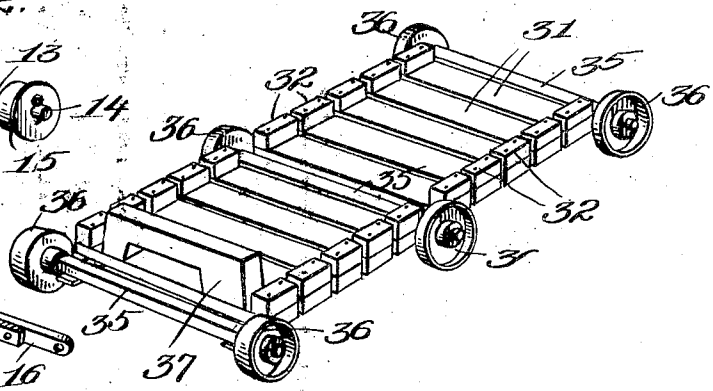


Fig. 4.

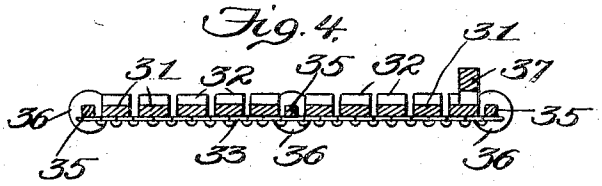
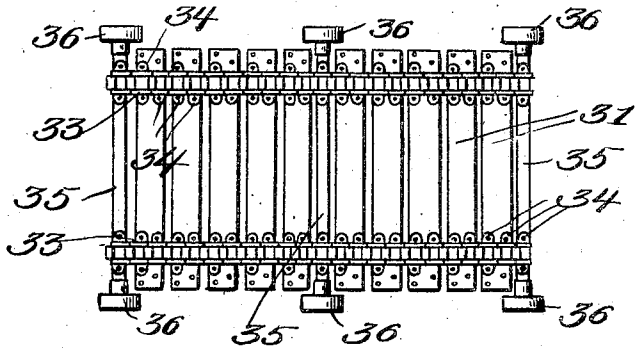


Fig. 5.



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FRANK H. BROWN AND FRED H. BROWN, OF PORTLAND, OREGON.

ELEVATOR.

No. 891,140. Specification of Letters Patent. Patented June 16, 1908.

Application filed September 7, 1907. Serial No. 391,838.

To all whom it may concern:

Be it known that we, FRANK H. BROWN and FRED H. BROWN, citizens of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented new and useful Improvements in Elevators, of which the following is a specification.

This invention relates to elevators, and is particularly applicable to portable devices of this class adapted for use in ware-houses to elevate bags, boxes, barrels and other parcels for convenience in stacking and storing the same.

The present invention involves improvements on the elevators respectively disclosed by U. S. Patents No. 668,971, granted February 26, 1901, and No. 846,725, granted March 12, 1907. The improvements contemplate the provision of means for rendering the elevator as a whole convenient in use in various parts of a ware-house or other place, and to facilitate movement thereof through doors without in the least impairing or restricting the disposition of the carrier and its coöperating elements at varying heights between maximum and minimum limitations which may be varied, but primarily determined to accommodate a desired use of an elevator of this class. The improved means adopted for raising and lowering the carrier and its accessories, or the essential element of the elevator, permits a material reduction of the vertical extent of the frame with the advantageous result that the device as a whole may be more readily moved from one position to another through doorways of ordinary height and disposed in various rooms within a ware-house or other inclosure.

Another very effective feature of the improvement consists in a truck organization embodied in or forming a part of an endless carrier and arranged at regular intervals in the latter to receive bags, boxes, barrels and other parcels.

Numerous advantages will be hereinafter stated in connection with the several structural features which will be specified in the subjoined description, and any reference hereinafter made to any particular construction will be understood as being a preferred selection of such structure and that the invention is not limited in the least to the particular means employed in carrying out the improvements, but on the contrary capable of modification within the scope of the invention.

In the drawings—Figure 1 is a perspective view of an elevator embodying the features of the invention; Fig. 2 is a similar view in detail of the device for raising and lowering the carrier; Fig. 3 is a detail perspective view of the truck organization; Fig. 4 is a longitudinal vertical section of the truck organization, and, Fig. 5 is a bottom plan view of the truck organization.

Similar characters of reference are employed to indicate corresponding parts in the several views.

The numeral 1 designates a base frame which will be equipped with suitable braces and openings to adapt it to receive the remaining parts of the structure directly cooperating therewith, and has a plurality of casters 2 applied thereto in different positions to facilitate moving the elevator from one place to another or rendering it easily portable. The base 1 has a suitable bed 3 on which a motor organization 4 of any preferred type is disposed for actuating the carrier which will be more fully hereinafter explained. The motor organization 4 has been shown diagrammatically simply to illustrate a full operative elevating mechanism, it not being essential to the actuation of the movable parts of the elevator, that any particular type of motor be used.

The standards 5 rise from one end of the base 1 and have inclined braces 6 connected to the upper extremities thereof and to the said base. An angle support 7 is secured to one end of the base, preferably the front end, and is provided with suitable bearing boxes 8 in which is fulcrumed the lower end of an adjustable prop or means 9 for controlling the height of the carrier and its accessories and such prop or means will be hereinafter referred to as a swinging controller for the elevation of the carrier and the parts coöperating therewith. This swinging controller 9 is preferably formed of metal pipe having "T" devices 10 and 11 secured on the upper and lower extremities thereof, the T device 11 being provided with a fulcrumed bar 12 driven therethrough and engaging the bearing devices or boxes 8. The T device 10 has an axle bar or shaft 13 secured therein and formed with opposite reduced extremities 14, flanged wheels or pulleys 15 being loosely mounted on said reduced extremities and free to rotate. At an intermediate point

a cross bar 16 is secured to the body of the controller and to opposite ends of the cross bar cables or analogous devices 17 are secured and pass over sheaves 18 secured on the outer surfaces of the upper extremities of the standards 5, and from the said sheaves the cables pass downwardly to winding drums 19 on the opposite extremities of a shaft 20 supported by the said standards 5 and having at one end a suitable crank handle 21 and a ratchet and pawl mechanism 22. By rotating the shaft 20 and the winding drums 19 in reverse directions the controller or prop may be raised or lowered and correspondingly elevate or depress the carrier and its coöperating means.

The elevator frame 23 is fulcrumed or movable at its lower extremity on a shaft 24 terminally engaging the side members of the base 1. This frame 23 comprises upper and lower parallel angle bars 25 and 26 which are braced and connected by suitable latticework as shown and is similar in its construction to the elevator frames disclosed by the patents hereinbefore mentioned and particularly Patent No. 846,725. The frame 23 may be raised and lowered on the shaft 24 as a pivotal support and in accordance with the adjustment of the controller hereinbefore described and coöperating with said frame is an endless carrier consisting of a pair of sprocket chains 27 which engage sprocket wheels 28 on the shaft 24 and also other sprocket wheels carried by an upper shaft or drum 29 connecting the upper extremities of the sides of the said elevator frame and similar to the construction at this point as disclosed by the aforesaid patents. The lower angle bars 26 are projected beyond the upper angle bars 25 at the upper extremity of the elevator frame and suitably shaped and braced to support a roller 30 which facilitates the movement of a bag, box or barrel over the upper end of the elevator and clear of the working parts including the carrier. This arrangement at the upper extremity of the elevator frame as just explained facilitates the projection of said portion of the frame just far enough beyond the point where the carrier makes its return movement to practically deliver a bag or box from the carrier or the truck organization included in the latter without requiring manual assistance or attention.

The elevator frame and carrier structure explained is but one preferred form of arrangement and is not necessarily essential in the details of construction enumerated to the practical operation of the elevator as a whole. It will be observed, however, that the elevator frame and carrier specified are of a light and durable structure and consequently advantageous not only for elevator purposes, but in the production of a portable elevator.

The carrier comprising the endless belts or sprocket chains 27 is driven through the medium of the shaft 24 by the motor 4, suitable belting or other power-transmitting means being introduced between the motor and said shaft. The endless carrier or conveyer includes in its organization a truck feature which is arranged at intervals therein and comprises a plurality of cross slats 31 having terminal guards or blocks 32 secured on the ends thereof, the slats 31 being attached to the endless sprocket chains or belts 27 by introducing in the latter a plurality of links 33 provided with opposite securing ears or projections 34 riveted or otherwise fixed to the slats 31 so that when the truck organization of the carrier is uppermost or in position to receive a bag, box or the like, the ears or projections 34 will be positioned against the under sides of the said slats. The truck organization also includes roller shafts 35 held in the opposite sprocket chains or belts 27 and terminally provided with rollers 36 which bear on the horizontal members of the angle bars 25 and 26 of the elevator frame to ease the movement of the endless carrier or conveyer and prevent the latter from sagging when loaded or projecting below the lower portion of the said elevator frame. Three roller shafts 35 are shown in the present instance, but it is obvious that this number may be varied in accordance with the increase or decrease of length of the truck organization. It will also be understood that the particular links 33 to which the slats 31 are secured, are not essential to the practical operation of the truck organization and that other links might be substituted therefor. It has been found by practical experiment, however, that this simple form of link is very well adapted for the purpose. Each truck organization also has a foot brace 37 secured at one extremity to the opposite endless sprocket chains or belts 27, the purpose of the foot brace being to hold the bag, box, barrel or other parcel in place on the truck organization during ascent of the latter and this brace, combined with the guards 32, will be especially useful in providing a receptacle means for positively holding a bag, box, barrel or other parcel on the endless carrier or conveyer and obviate any tendency either to backward movement of the object elevated or lateral slipping of the same. As in the patented structures hereinbefore referred to it will be noted that the endless carrier or conveyer is driven from the lower end of the elevator and that the said frame is adjustable on the shaft 24 and unattached at any other point and hence said elevator frame and carrier, together with the truck organizations, may be raised and lowered without in the least interfering with the operation of the carrier or without stopping the motor. Furthermore the shaft 24 will be positioned close to the floor or rest on which the base 1 is disposed,

and by this means a bag or the like may be placed upon the floor at the lower end of the elevator and then pushed over upon the carrier and the latter will pick up such bag and carry it upwardly along, over and discharge it at the upper end of the elevator frame.

The flanged pulleys or wheels 15 on the upper extremity of the prop or controller 9 bear against the under surfaces of the lower angle bars 26 and do not, in the least, interfere with the movement of the rollers 36 of the truck organizations over said lower angle bars as the rollers 36 are held in continual engagement with the upper surfaces of such angle bars. Hence it is possible to move the pulleys or rollers 15 over the under sides of the angle bars 26 without restriction within the limit of adjustment which the controller is permitted to have and without stopping the movement of the carrier. In other words the elevator frame and carrier may be changed as to their elevation during the operation of the carrier and to facilitate the disposition of bags, boxes or other parcels at different points on a stack or in various elevated positions.

The truck organizations disposed at intervals in the endless carrier or conveyer being composed of flexibly-connected elements or members and free to assume the same positions as the remaining parts of the carrier, will not in the least interfere or obstruct the movement of the latter as it traverses the elevator frame. Furthermore the truck organizations are so arranged that when they arrive at the bottom of the elevator frame they will pass around to the upper portion of the latter in proper position to receive a bag, box or other parcel and after discharging their loads at the upper extremity of the elevator frame will regularly return through the lower portion of the latter to the lower extremity in regular sequence, and it will be understood that the elevating capacity of the elevator within a given time will depend solely on the number of truck organizations forming part of the endless carrier or conveyer.

In addition to the efficient service of the guards or blocks 32 in connection with the slats 31 as hereinbefore specified, said blocks also perform the additional function of making the truck organization rigid and are preferably fastened in place by means of bolts.

The truck organizations may also be properly termed cars included within the endless carrier or conveyer structure, and it will be understood that said trucks or cars may be made independently of the carrier, and each elevator may be equipped with a number of the trucks or cars and the carrier or conveyer can be composed of links of such nature that they may be readily separated and attached to facilitate the introduction of the truck or car organizations at various intervals throughout the length of the carrier. This is an obvious expedient which will be readily appreciated by those having knowledge of endless or chain belt constructions and a variation in the number of trucks or carriers used in each elevator is contemplated.

What is claimed is—

1. In an elevator of the class specified, a supporting means, an elevator frame fulcrumed on the supporting means and involving a carrier movable thereover, a fulcrumed controller engaging the under portion of the elevator frame and movable to raise and lower the entire elevator frame, the controller having means on its upper free end to antifrictionally bear against opposite side portions of the under side of the elevator frame, and means connected to the intermediate portion of the controller and operative to raise and lower the latter, the said means being attached to the controller between the upper free end and the lower end to leave the said upper free end clear for engagement with the elevator frame.

2. In an elevator of the class specified, a supporting means, an elevator frame fulcrumed at its lower extremity on the supporting means and involving a carrier movable thereover, a fulcrumed controller movably attached at its lower end to the frame and having a swinging movement towards and away from the supporting means, the upper extremity of the controller loosely engaging the under side of the elevator frame and untrammeled by connecting devices, the said controller being operative to raise and lower the elevator frame, and means engaging the controller between the lower movably attached end and the upper free end for adjusting the same.

3. In an elevator of the class specified, a supporting means, an elevator frame fulcrumed on the supporting means and involving a carrier movable thereover, a controller consisting of a single member fulcrumed at its lower end on the supporting means and movable towards and away from the latter to raise and lower the elevator frame, the upper end of the controller having antifrictional devices standing outwardly therefrom to engage the under side of the elevator frame, and means between the lower fulcrumed end of the controller and the upper free end of the same provided with devices attached thereto to regulate the adjustment of the controller.

4. In an elevator of the class specified, a supporting means, an elevator frame fulcrumed on the supporting means and involving a carrier, a controller fulcrumed at its lower extremity on the supporting means and having rotatable devices at its upper extremity loosely bearing against the under side of the elevator frame, and a cross bar connected to an intermediate portion of the

controller and provided with devices for elevating and lowering the said controller.

5. In an elevator of the class specified, a supporting means, an elevator frame fulcrumed on the supporting means and involving a carrier, a controller fulcrumed at its lower extremity on the supporting means and consisting of a body portion with flanged pulleys at its upper extremity and a cross bar held in fixed position below the pulleys, flexible devices connected to the opposite extremities of the cross bar, and means for winding and unwinding said flexible devices, the pulleys on the upper end of the controller loosely engaging the under side of the elevator frame.

6. In an elevator of the class specified, an elevator frame, an endless carrier movable in the said frame and involving a plurality of connected links, and a car organization arranged at spaced intervals in the carrier and consisting of a plurality of transversely extending slats connected to a portion of the links and provided with end blocks, the carrier links between the opposite terminals of the car organizations being unconnected in a transverse direction.

7. In an elevator of the class specified, an elevator frame, an endless carrier movable in the said frame and involving a plurality of connected links, and car organizations arranged at spaced intervals in the carrier and consisting of a plurality of transversely extending slats connected to a portion of the links and provided with end blocks and a foot brace at one extremity, the links of the carrier between the terminals of the car organizations being unconnected in a transverse direction.

8. In an elevator of the class specified, an elevator frame, an endless carrier movable longitudinally through the frame and involving a plurality of links, and a car organization arranged at intervals within the carrier and comprising a plurality of transversely extending shafts having rollers thereon and slats arranged with relation to the said shafts and rollers and connected to the links, the slats being provided with end blocks projecting upwardly therefrom, and the links of the carrier between the terminals of the car organizations being unconnected in a transverse direction.

9. In an elevator of the class specified, an elevator frame, an endless carrier movable in the frame and involving a plurality of links, and a car organization arranged at intervals within the carrier and comprising a plurality of transversely extending shafts having rollers thereon, and slats arranged intermediately with relation to the shafts and rollers and connected to the links, the links being attached to the under sides of the slats and the latter provided with end blocks projecting upwardly above the rollers.

10. In an elevator of the class specified, an elevator frame, an endless carrier movable in the frame and involving a plurality of links, and a car organization arranged at intervals within the carrier and comprising a plurality of transversely extending shafts having rollers thereon, and slats arranged intermediately with relation to the shafts and rollers and connected to the links, the links being attached to the under sides of the slats and the latter provided with end blocks projecting upwardly above the rollers, a foot brace being also disposed at one end of each car organization.

In testimony whereof we have hereunto set out hands in presence of two subscribing witnesses.

FRANK H. BROWN.
FRED H. BROWN.

Witnesses:
R. E. MENEFEE,
MINNIE HILL.