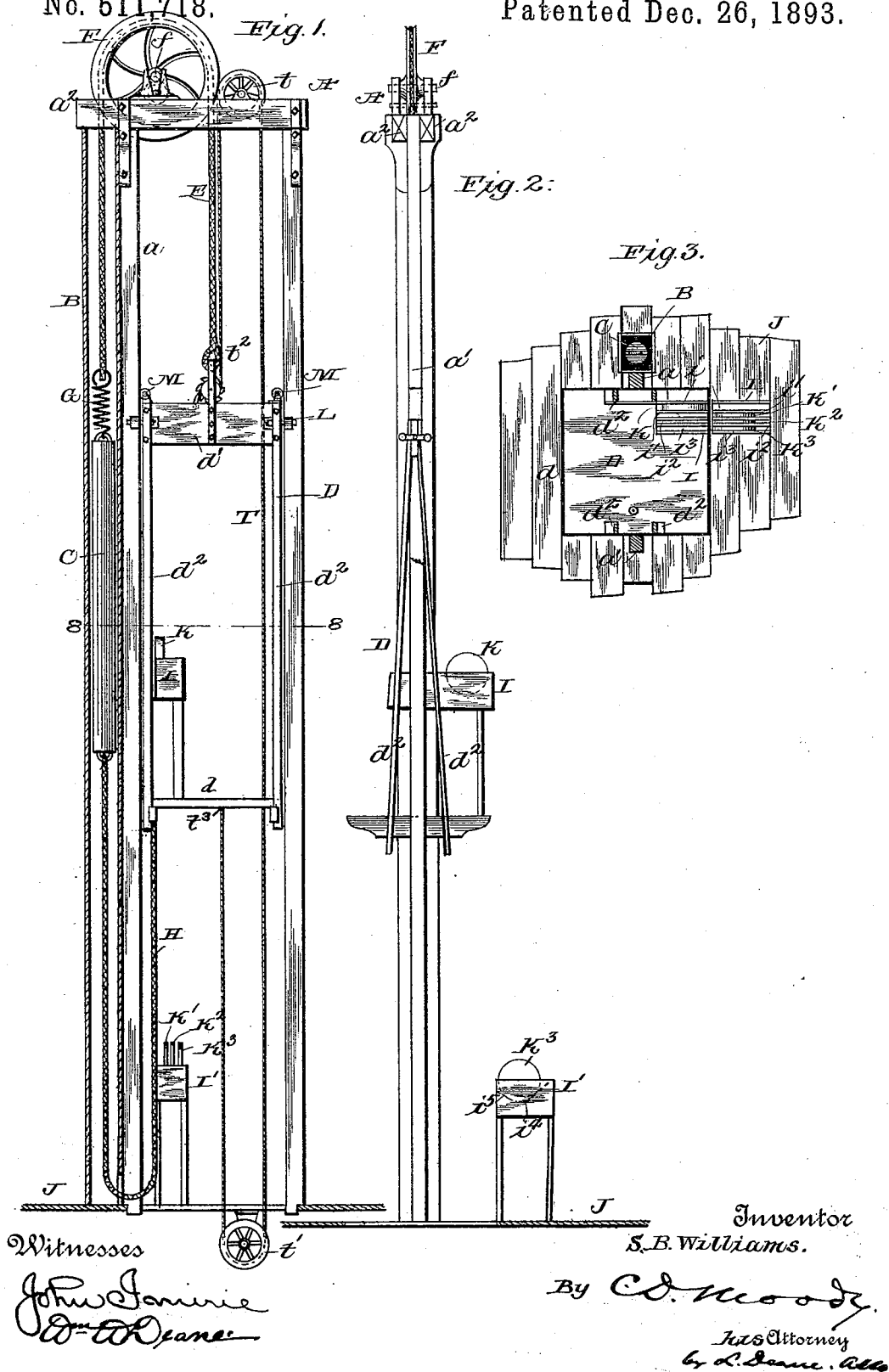


(No Model.)

S. B. WILLIAMS.
ELEVATOR.

No. 511 718.

Patented Dec. 26, 1893.



UNITED STATES PATENT OFFICE.

SAMUEL B. WILLIAMS, OF MARTIN'S FERRY, OHIO.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 511,718, dated December 26, 1893.

Application filed December 5, 1892. Serial No. 454,171. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL B. WILLIAMS, of the city of Martin's Ferry, county of Belmont, State of Ohio, have made a new and useful Improvement in Elevators, of which the following is a full, clear, and exact description.

The present improvement relates to that class of elevating apparatus known as balanced elevators and the novelty consists in the general combination of parts, all substantially as is hereinafter set forth and claimed, aided by the annexed drawings, making part of this specification, in which—

Figure 1, is a side elevation of my improved elevator. Fig. 2, is an edge view of the same. Fig. 3, is a horizontal section on line 8—8 of Fig. 1.

The same letters of reference denote the same parts.

A represents a suitable frame for supporting the movable parts of the apparatus. It extends vertically to any desired height, and it consists principally of the uprights a, a' , and the cross timbers, a^2, a^2 . A suitable casing, B, may be employed to contain the counterbalance, C, and it may be arranged along side the upright a , substantially as shown.

D represents the elevator cage, cab, or platform. This part may assume any desirable form consistent with the principle of the improvement. In the present instance the cage consists mainly of the floor d , the overhead cross pieces, d' , and the rods, d^2 , which serve to suspend the floor from the cross pieces substantially as shown.

E represents the rope which supports the cage and connects it with the counterbalance, the rope passing upward over a suitable pulley, F, and thence downward to connect with the counterbalance. The pulley in the present construction is supported in roller bearings, f , upon the cross timbers of the frame, and the rope in place of being connected with the counterbalance is attached to a spring, G, which in turn is attached to the counterbalance, all substantially as shown.

H represents a rope or other tie connected at one end with the counterbalance and at the other end with the cage. Its function is to balance the rope E as the cage is lifted and lowered.

As thus far described the construction is mainly analogous to that of other elevators heretofore in use. The special means employed to adjust the elevator to the particular weight being carried is a feature of the improvement and is as follows: The elevator cage is provided with a receptacle I having several, say four compartments i, i', i^2, i^3 , arranged side by side and open in the direction of whatever the cage in its movement connects with. The receptacle is mounted upon a stand, or is otherwise arranged, to bring its compartments in position to be conveniently reached by the hand of occupant of the cage while in a standing position. Each floor has a similar receptacle, I', but arranged to enable its compartments, as the elevator is operated, to, respectively, register with the compartments in the receptacle I upon the cage. Such a registration is indicated in Fig. 3. A set of weights, K, K', K², K³, are used in connection with the receptacles I, I', the weight K being designed for use in the compartments i and i of the receptacles I and I', respectively, the weight K' in the compartments i' and i' , the weight K² in the compartments i^2 and i^2 , and the weight K³ in the compartments i^3 and i^3 , in the compartments I, I', respectively. That is, the weight K can be transferred to and fro between the compartments i and i , and the other weights respectively can be similarly shifted in their respective sets of compartments. Each weight is circular to enable it to be rolled, and it is preferably in the form of a disk, as shown, to enable it not only to be rolled but also to be readily grasped and handled by the person using it. The disks are respectively of different gravities, the disk K³ being say a ten pound one, the disk K², a twenty pound one, the disk K', a thirty pound one, and the disk K a forty pound one. The object of the described weights and receptacles is similar to that had in view in other forms of balanced elevators, but the chief value of the particular construction here described is that it enables the desired adjustment to be very readily effected, and this is accomplished partly by reason of the receptacles and weights being arranged within easy reach of the person about to leave or enter the elevator cage, partly in being able to see and to di-

rectly manipulate the weights, and partly in having a set of weights of different gravities each one of which has its own set of compartments, and which weights can be variously combined, as hereinafter explained, so that a comparatively small number of weights can be made to serve for quite a number of adjustments.

The compartments in the receptacle I, register, and are practically united, with the corresponding compartments in each of the receptacles I', as the cage is raised and lowered in use, and when the two receptacles do thus register weights can be readily rolled from one receptacle to the other, and in doing this the operator applies his hand to that portion of the weight or weights which is above the walls of the receptacle-compartments. But to prevent the weights from being accidentally displaced, the floor, *f*, of the receptacle is, as indicated substantially by the broken lines in Fig. 2, made to rise a little, substantially as indicated at *f'*, at the entrance to the compartment, thereby forming more or less of an obstacle to the rolling of the weight, and a sufficient one to cause the weights to be confined in their respective compartments against accidental displacement, but not so great but that the weights can be intentionally readily rolled to and fro as described.

The hand rope T, that is employed in operating the cage, passes over bearings such as sheaves *t t'*, arranged at the top and bottom respectively of the elevator, and at its ends *t*, *t'*, is connected with the cage, substantially as shown. This rope also passes through or past the cage so as to be within reach of the passenger.

In operating the weights to balance the elevator-cage the procedure is as follows: At the time the passenger enters the cage the compartments of the weights stand upon the cage register, as stated, with the compartments of the stand upon the adjoining floor; if the cage and its load do not balance the counter weight C, the passenger rolls one or more of the weights K, &c., from one of the stands to the other thereof according to the situation; that is, if the cage and its load are too light, weights are rolled onto the cage-stand, and if too heavy weights are rolled from off the cage-stand; to illustrate, suppose the counter weight is adapted to balance the cage and a two hundred pound passenger; if a person of such weight enters the cage the apparatus is balanced, and by pulling downward upon the rope T, with say a five pound force, the cage is accordingly lightened and the counter balance at once acts to raise the cage. The speed of the ascent will depend upon the force exerted upon the rope T. To descend the passenger pulls upward upon the rope T and the cage with its load accordingly drops. Should,

however, a passenger of say one hundred and ninety pounds weight enter the cage the apparatus must be balanced by rolling the ten-pound weight from the floor-stand onto the cage-stand; a one hundred and eighty pound man rolls on the twenty pound weight to make the balance. A one hundred and seventy pound man rolls on the ten and twenty pound weights. A one hundred and forty pound man rolls the twenty and forty pound weight on, and a one hundred pound passenger rolls on all of the weights to make the proper balance. Obviously the described weights can be further variously combined and transferred to and from the stands to enable almost any load to be balanced. From the described weights being side by side in their respective stands it becomes easy to simultaneously transfer two or more of the weights, and with a single hand. The weights are fully in view; are easily started from their respective compartments; and by reason of their described elevation the passenger can, as he passes to and from the cage, readily, and without stooping or employing his feet, make the desired transfer. With the equilibrium thus established the passenger first loosens the cage by applying his foot to the pedal P, which movement enables the brake-shoes to be withdrawn from their points of bearing and the cage thereby freed, after which the cage is raised or lowered in the manner described. The spring G comes into use as follows: In case the cage is run up rapidly, and the counterbalance dropped accordingly, a severe strain is brought upon the strain rope E in case the cage is suddenly arrested in its movement, and in consequence the rope is liable to break. The insertion of an elastic connection, such as the spring G, obviates this difficulty.

I claim—

An elevator comprising a cage, a counterbalance, a rope attached to the cage top extending upwardly and passing over a pulley on a shaft at the top of the well and from thence to said counterbalance, another rope extending from the bottom of the cage to said counterbalance, and a hand-rope extending from the top of the cage over a pulley on a separate shaft at the top of the well, down through the cage and around a pulley at the bottom of the well, and attached to the bottom of the cage, and transferable weights arranged side by side and adapted to be moved by hand from a stand on the cage to a stand on the building floor, and vice versa, as set forth.

Witness my hand this 30th day of November, 1892.

SAMUEL B. WILLIAMS.

Witnesses:

GEO. G. SEDGWICK,
E. E. MCCOMBS.