

(No Model.)

3 Sheets—Sheet 1.

C. W. UNDERWOOD.  
CAR LOADING APPARATUS.

No. 586,641.

Patented July 20, 1897.

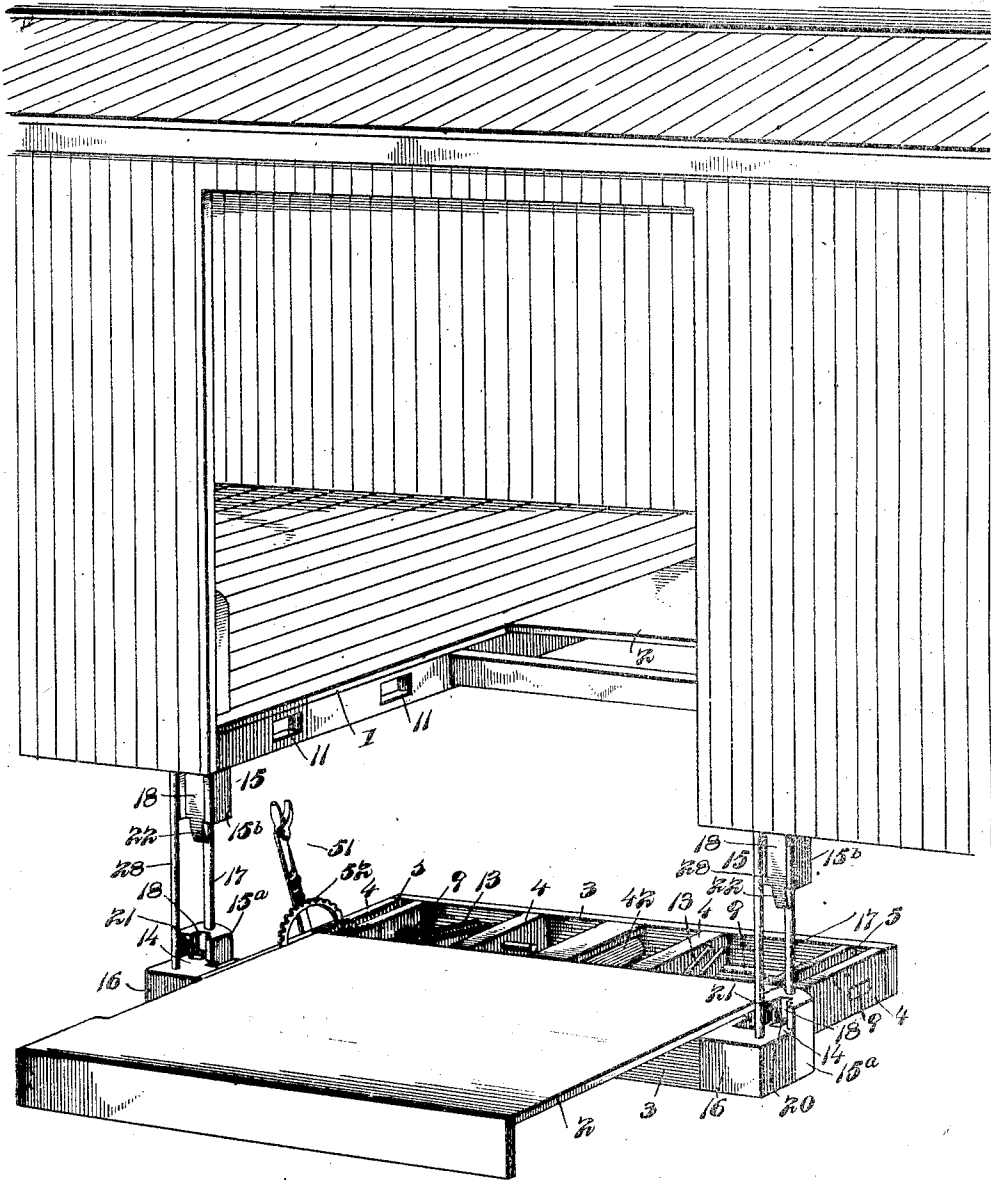


Fig. 1.

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Witnesses

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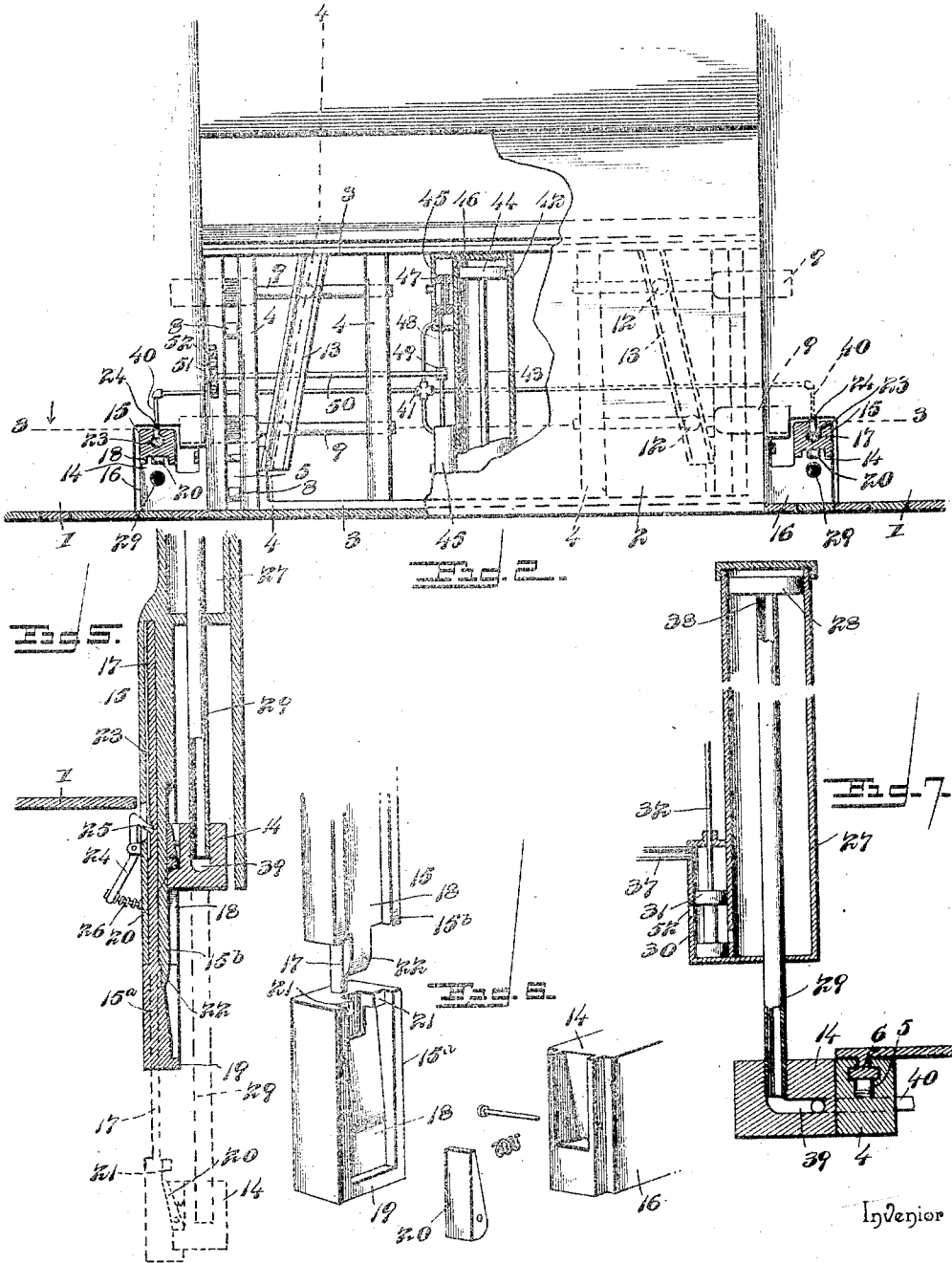
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Inventor

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3 Sheets—Sheet 3.

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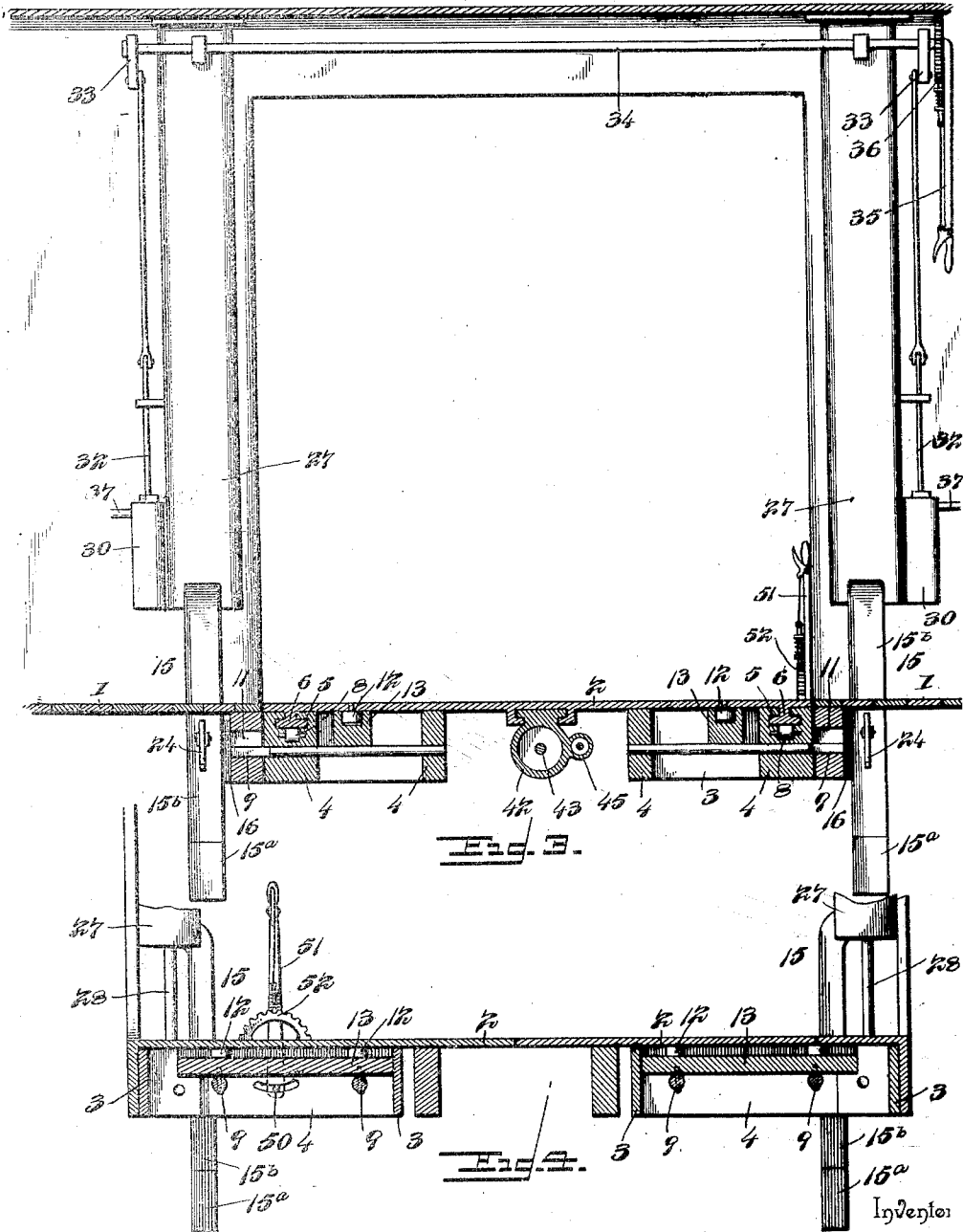


Fig. 2.

Fig. 3.

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By Two Attorneys,

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# UNITED STATES PATENT OFFICE.

CHARLES W. UNDERWOOD, OF JEANERETTE, LOUISIANA.

## CAR-LOADING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 586,641, dated July 20, 1897.

Application filed September 26, 1896. Serial No. 607,103. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES W. UNDERWOOD, a citizen of the United States, residing at Jeanerette, in the parish of Iberia and State of Louisiana, have invented a new and useful Car-Loading Apparatus, of which the following is a specification.

My invention relates to car-loading devices, and has for its object to provide means arranged wholly within the car for facilitating the introduction and removal of baggage, the elevation of the same to the level of the car-floor being accomplished by a motive agent, such as compressed air, and, furthermore, to provide means, in connection with the loading apparatus, for spanning the interval between the side of a car and the contiguous edge of a stationary platform, whereby trucks and similar articles may be conveyed directly from the platform to the car without effort upon the part of the operators.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a loading apparatus constructed in accordance with my invention, applied in the operative position to a car, the same being shown lowered and extended in position to receive baggage. Fig. 2 is a plan view of the same folded. Fig. 3 is a longitudinal section on the line 3 3 of Fig. 2. Fig. 4 is a transverse section on the line 4 4 of Fig. 2 to show the relative arrangement of the opposite duplicate loading devices. Fig. 5 is a detail vertical section of one of the extensible guides and contiguous parts, the same being shown contracted in full lines and extended in dotted lines. Fig. 6 is a detail view of a portion of one of the extensible guides and the contiguous portion of a slide and pawl, said parts being shown detached. Fig. 7 is a detail vertical section of one of the main cylinders and contiguous parts.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

The apparatus embodying my invention consists, essentially, of an elevator let into the plane of the frame of a baggage-car floor 1, said elevator having a floor 2, which is

adapted to be arranged with its upper surface flush with that of said stationary floor 1, and means for operating the elevator, whereby it may be lowered approximately to the plane of the track to receive baggage and then raised into the car to allow the load to be moved to the ends of the car.

In the construction illustrated in the drawings an elevating device is arranged contiguous to each car-door, each elevator being in width approximately equal to one-fourth the width of the car, whereby the timbers at the center of the car for a distance equal to approximately one-half the width of the latter are intact; but a platform 2, which forms part of the elevating device and which when in its folded position is arranged in the plane of the stationary portion of the car-floor, is equal to one-half the width of the car, whereby the inner edges of the platforms carried by the opposite elevators are in contact, as shown in Fig. 4.

Inasmuch as the opposite elevators and their means for operating the same are duplicate in construction, it will suffice to describe but one, particularly in view of the fact that said elevators may be independently operated to provide for loading from either side of the car.

The framework of the elevator (illustrated in the drawings) consists of longitudinal timbers 3, connected by transverse bars 4, the outer transverse bars having their facing sides grooved to form guides 5 to receive slide-bars 6 on the under side of the elevator platform 2. Said slides are preferably dovetailed in cross-section and rest upon anti-friction-rolls 8, arranged in the lower side of the guide-grooves. Locking-bolts 9 are employed at the extremities of the elevator to secure the latter in its folded or elevated position, said bolts being preferably arranged in pairs adapted for simultaneous movement, and each pair of bolts is operative connected with the movable platform of the elevator, whereby as said platform is projected or extended laterally the bolts will be withdrawn from engagement with the sockets 11 in the main frame of the car. The means shown in the drawings for thus operating the locking-bolts consist of studs or pins 12, on the under side of the elevator-platform, e

gaging diagonally-disposed or cam guides 13, supported by the bolts, said guides being diverged toward the side of the car and serving to connect the bolts in pairs for simultaneous movement.

Arranged at the outer angles of the elevator are slides 14, to operate in pendent stationary guides 15, supported by the main frame of the car at opposite sides of the door-opening, and said slides are attached to cross-heads or castings 16, secured to the ends of the frame of the elevator, the means for elevating the frame being attached to said cross-heads.

In order to provide for lowering the frame to a point near the plane of the track and at the same time avoid the permanent arrangement of the guides in such positions as to be liable to come in contact with obstructions upon the track, the guides are constructed to provide for their extension and consist of telescoping members. The lower or movable members 15<sup>a</sup> are provided with stems 17, which fit in bores of the stationary members 15<sup>b</sup>, and the channel 18, of which each member of a guide is provided with a part, is preferably rectangular in cross-section, and that portion which is formed in the movable member being of sufficient length to receive the slide, whereby when the slide comes in contact with the shoulder 19, by which the lower end of the channel is closed, the movable portion of the guide is depressed with the slide.

In order to provide for the subsequent elevation of the movable member of the extensible guide, I employ a spring-actuated pawl 20, mounted in the inner or rear side of the slide in contact with the floor of the guide-channel, the upper end of the channel in the movable portion of the guide being closed by a lip or shoulder 21, with which said pawl is engaged when the slide has been elevated sufficiently to bring its upper end contiguous to the upper end of said movable member. Depending from the lower extremity of the fixed or stationary portion of the guide is a trip-finger 22, having a beveled outer surface which is adapted to disengage the pawl from the lip or shoulder at the upper end of the movable member of the guide when the upper extremity is brought into contact with the lower extremity of the fixed member. In other words, the trip-finger is arranged to extend through a central opening in the lip or shoulder at the upper end of the movable member of the guide and pass in rear of the free end of the pawl to force the latter outwardly a sufficient distance to pass the lip or shoulder.

In order to prevent rotation of the stem or interior portion of the guide, I preferably provide the same with a keyway 23, in which operates the nose of a locking-pawl 24, which is mounted upon the fixed member of the guide, and in the floor of said keyway is provided a notch 25 for engagement by the nose of said locking-pawl when the platform is in its elevated position. The upper side of the

nose of the pawl is beveled, whereby, while the resistance offered by the pawl by reason of a strong actuating-spring 26 is capable of holding the movable member in its elevated position, sufficient depressing force can be applied to cause the disengagement of the pawl by the contact with its beveled surface of the upper side of the notch to allow said member of the guide to be lowered with the platform. In other words, the locking-pawl constitutes a temporary holding device for the movable member of the guide to prevent the accidental displacement thereof when the car is in motion.

The means illustrated in the drawings for operating the elevator include cylinders 27, arranged within the car upon opposite sides of and contiguous to the door-opening, said cylinders having open upper ends, and in each cylinder is arranged a piston 28, having its rod 29 attached to one of the cross-heads at the extremities of the frame of the elevator. In communication with each cylinder, at its lower end, is a valve-chest 30, in which is disposed a slide-valve 31, connected to a valve-stem 32, and the valve-stems of the two cylinders, which are employed in connection with each elevator, are connected to crank-arms 33 on a common operating-shaft 34, having a hand-lever 35. Suitable locking devices 36 are employed in connection with said hand-lever to secure it in the desired position and prevent accidental displacement.

The inlet-port of the valve-chest is connected with a supply-pipe 37, adapted to be connected with a suitable reservoir or source of motive agent, (not shown,) and the exhaust of each cylinder is through the piston-rod, which is hollow or tubular and is provided contiguous to the plane of the piston-head with an opening or port 38. The bore of the piston-rod communicates with a cored opening 39 in the cross-head or casting to which said rod is attached, and in communication with the cored opening or cavity is a conveyer 40, which extends longitudinally of the platform and is branched, as at 41, to convey motive agent to an operating device for the movable platform of the elevator, said operating device consisting of a transversely-arranged double-acting auxiliary cylinder 42, arranged upon the elevator and having the rod 43 of its piston 44 attached to the platform. Valve-chests 45 are arranged in communication, by means of inlet-ports 46, with opposite ends of the auxiliary cylinder and being, respectively, in communication with the branches of the feed-pipe or conveyer 40. The valves 47 in said chests are carried by a common stem 48, which is connected by means of a crank 49 with a rock-shaft 50, mounted longitudinally upon the elevator and having an operating-handle 51, provided with suitable locking devices 52 to prevent accidental displacement.

The operation of the loading apparatus, briefly described, is as follows: When the

parts are in the closed or folded position illustrated in Figs. 2, 3, and 4 and it is desired to lower the elevator to receive baggage, the hand-lever, which is operatively connected with the main-cylinder valve mechanism, is moved to open the main valves, and thus allow the communication of pressure to the interior of the main cylinders, and hence the removal of the weight of the elevator and connections from the longitudinally-slidable locking-bolts by which the elevator is held in its normal position. By reason of the hollow piston-rod and connections the pressure communicated to the interior of the main cylinders is also conveyed to the valve-chests of the auxiliary cylinder, and hence when the hand-lever 50 is moved to open the auxiliary valve at the rear or inner end of the auxiliary cylinder (and at the same time connect the outer end of said cylinder with its exhaust-port) the piston in the auxiliary cylinder is advanced to carry the movable platform of the elevator outwardly. The extension of the platform disengages the locking-bolts of the elevator from their sockets in the main frame and thus leaves the elevator suspended upon the main piston-rods and hence supported by the pressure in the main cylinders. Upon the reduction of pressure in the main cylinders, by opening communication between the interior thereof and the exhaust-posts 52<sup>a</sup>, the elevator is allowed to descend by gravity until the proper depression has been reached. The downward movement of the elevator may be checked at any point by closing the exhaust, and the excessive depression may be corrected by opening the inlet-ports to increase the pressure in the cylinders.

To return the parts to their normal positions, and thus elevate baggage to the level of the floor of the car and carry the same thereinto, the inlet-valves of the main cylinders are opened to admit motive agent, and subsequently the auxiliary valves are operated to open the port at the outer end of the auxiliary cylinder and connect the other with the exhaust, whereby the platform is retracted or drawn inwardly, thus extending the locking-bolts and securing the elevator, as before described. As the slides which are located upon the extremities of the elevator descend in the depending guides provided therefor the movable members of the guides retain their normal or elevated positions until said slides come in contact with the stops or shoulders at the lower extremities of said members, after which any subsequent depression of the elevator will cause a corresponding depression of the movable members of the guides, the downward pressure imparted to said movable members by means of the weight of the elevator being sufficient to detach the stems of said movable members from the locking-pawls by which they are normally held in their elevated positions. Upon the return or upward movement of the elevator the exten-

sions or movable members of the guides are elevated by the contact of the pawls on said slide with the stops or shoulders at the upper ends of the portions of the channel formed in said extensions or movable members, and when said extensions reach their normal positions, with their upper extremities in contact with the lower extremities of the fixed positions of the guides, they are locked by the means hereinbefore described.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. A baggage-car having a separate permanently horizontal floor-section adapted to normally occupy a position in the plane of the main portion of the car-floor, and means for lowering said section and returning the same to its normal position, substantially as specified.
2. A baggage-car having a fixed or permanent main floor-section cut away contiguous to the car-door to form an opening, and a movable floor-section fitted in the opening and adapted to normally occupy a position with its upper surface in the plane of the main floor-section, and means for lowering the movable floor-section and returning the same to its normal position, substantially as specified.
3. A baggage-car having its floor cut away contiguous to a door-opening to form a floor-opening having an open outer side, a movable floor-section adapted to fit in said floor-opening in the plane of the floor of the car, and operating devices for displacing the floor-section and returning it to its normal position, substantially as specified.
4. A car-loading device having an elevator operating in an opening in the car-floor, and carrying a horizontally-movable platform, and means for actuating the elevator and platform, substantially as specified.
5. A car-loading device having an elevator operating in an opening in the car-floor, a horizontally-movable platform carried by the elevator, locking devices for the elevator operatively connected to the platform, and means for actuating said parts, substantially as specified.
6. A car-loading elevator mounted on a car and having a horizontally-movable platform adapted to be arranged in the plane of the floor of the car, locking-bolts on the frame of the elevator, diagonally-disposed guides attached to the bolts, pins depending from the platform and operating in said guides, and means for actuating said parts, substantially as specified.
7. A car-loading elevator mounted for vertical movement on a car and having a horizontally-movable platform adapted to be arranged in the plane of the car-floor, means

for simultaneously lowering the elevator and extending or moving the platform outwardly, and vice versa, and locking-bolts mounted upon the frame of the elevator and operatively connected with the platform to engage fixed objects on the car, whereby the return of the elevator and platform to their normal positions is accompanied by the automatic locking of the same, substantially as specified.

8. A car-loading elevator and means for imparting vertical movement thereto, extensible guides depending from the car-frame, and slides on the elevator operating in said guides, substantially as specified.

9. A car-loading elevator and means for imparting vertical movement thereto, extensible guides depending from the car-frame and having vertically-movable members, slides on the elevator mounted upon said guides and adapted to engage and depress the movable members thereof, and means on the slides for engaging said movable members of the guides to return them to their normal positions when the elevator is raised, substantially as specified.

10. A car-loading elevator and means for imparting vertical movement thereto, extensible guides depending from the car-frame and having fixed and movable members provided with interlocking extremities, said movable members being provided with stems fitting in bores in the stationary members; means for temporarily locking the movable members in their elevated positions, and slides on the elevator for engaging and depressing the movable members of the guides, substantially as specified.

11. A car-loading elevator and means for imparting vertical movement thereto, extensible guides depending from the car-frame and having stationary and movable members of which the latter are mounted upon the former and are provided at their upper extremities with lips or shoulders, trip-fingers carried by the stationary members of the guides, slides on the elevator mounted in said guides and adapted to engage and depress the movable members thereof, and pawls carried by the slides to engage said lips or shoulders on the movable members to elevate the same, said pawls being disengaged by said trip-fingers when the movable members reach their normal positions, substantially as specified.

12. A car-loading elevator having a hori-

zontally-movable platform, an operating mechanism for the elevator including main cylinders, pistons operating in the cylinders and having their stems connected to the elevator, an auxiliary cylinder having valved communication with the exhaust-ports of the main cylinders, an auxiliary piston operating in said auxiliary cylinder and having its stem connected to the platform, and valve mechanism for controlling the inlet and exhaust ports of the main cylinders, substantially as specified.

13. A car-loading elevator mounted for vertical movement and having a movable platform, main cylinders having inlet and exhaust ports, valve mechanism for controlling said ports, main pistons operating in said cylinders and having tubular stems connected to the elevator, said stems being provided contiguous to the pistons with ports and communicating at their outer extremities with conveyers, an auxiliary cylinder having valve-casings connected with said conveyers and including controlling-valves, and a piston operating in the auxiliary cylinder and having its stem connected to the platform, substantially as specified.

14. The combination with a car having opposite side door-openings, of elevators arranged in openings formed in the floor of the car contiguous to said door-openings, horizontally-movable platforms carried respectively by said elevators and exceeding the latter in width, whereby when folded the platforms extend toward each other beyond the inner sides of the elevators, and operating devices, substantially as specified.

15. A car-loading elevator having a horizontally-movable platform, and connected operating devices for the elevator and platform, as communicating cylinders having pistons connected respectively to the elevator and the platform, whereby the admission of motive agent to one of the cylinders causes the application of pressure to the pistons of both cylinders, and valve mechanism for controlling the admission of motive agent, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES W. UNDERWOOD.

Witnesses:

JOHN H. SIGGERS,  
HAROLD H. SIMMS