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Aug. 16, 1949.

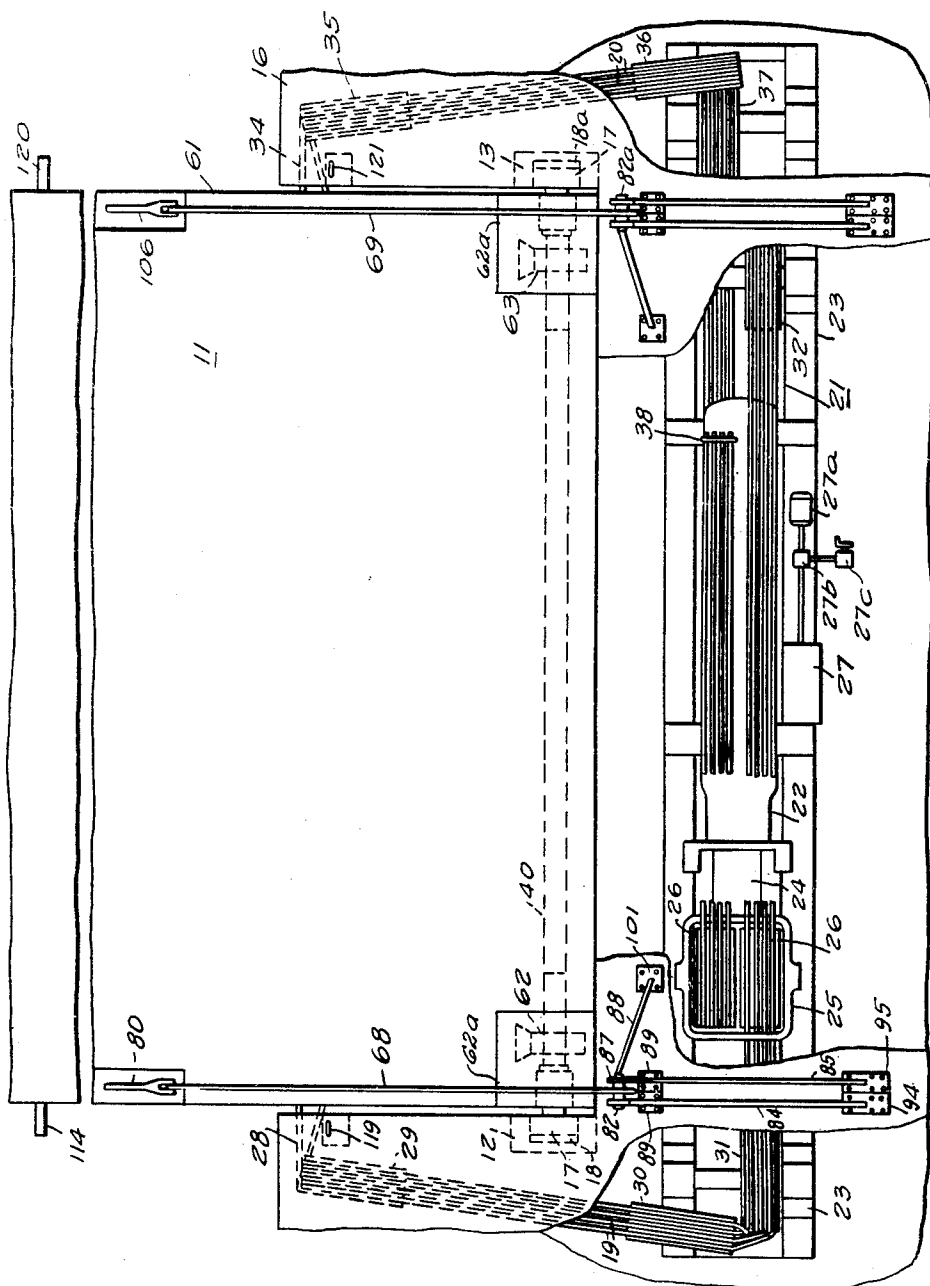
C. A. DANA ET AL

2,479,321

ELEVATOR

Filed Jan. 5, 1946

6 Sheets-Sheet 1



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Fig. 1.

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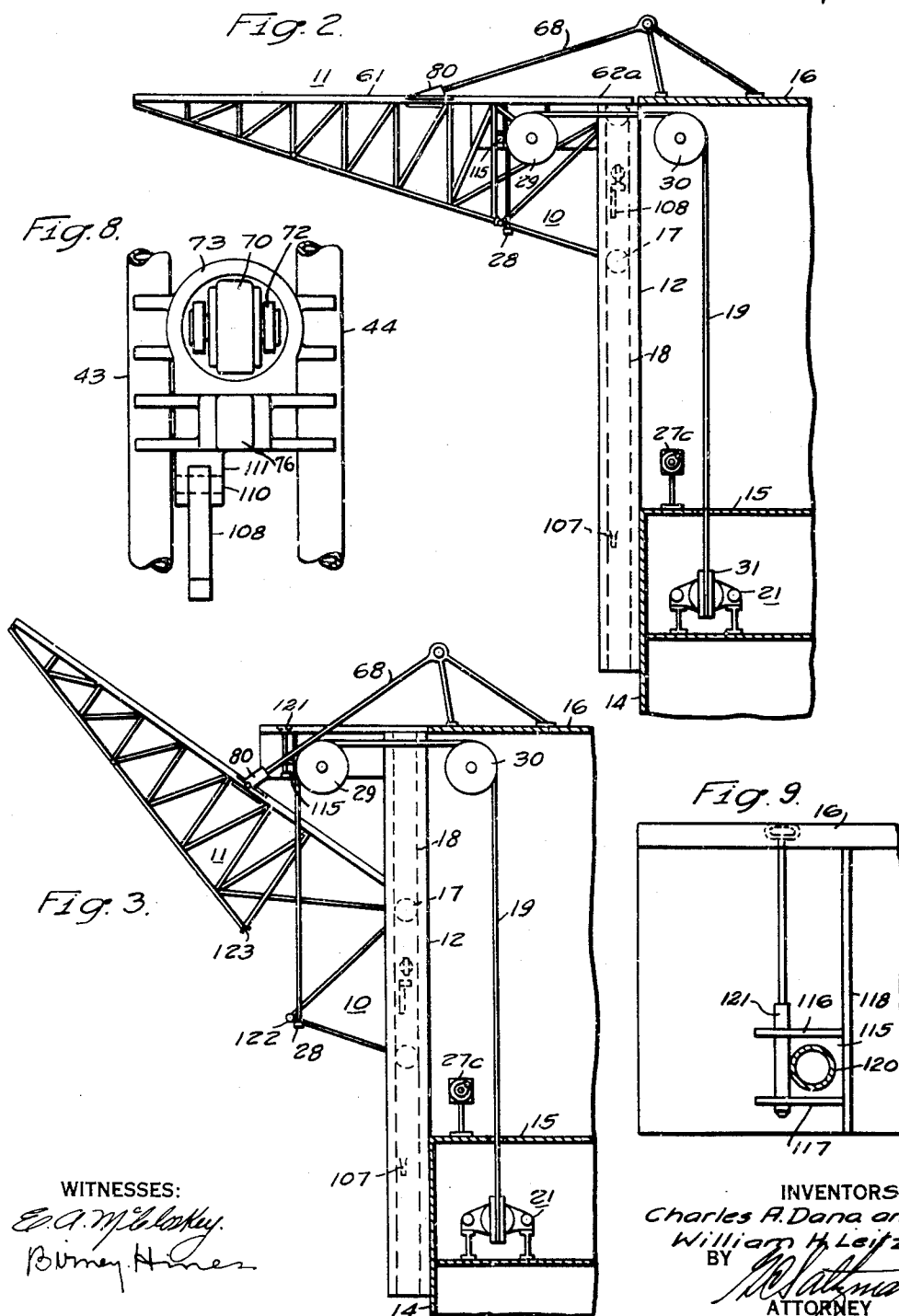
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ELEVATOR

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6 Sheets-Sheet 2



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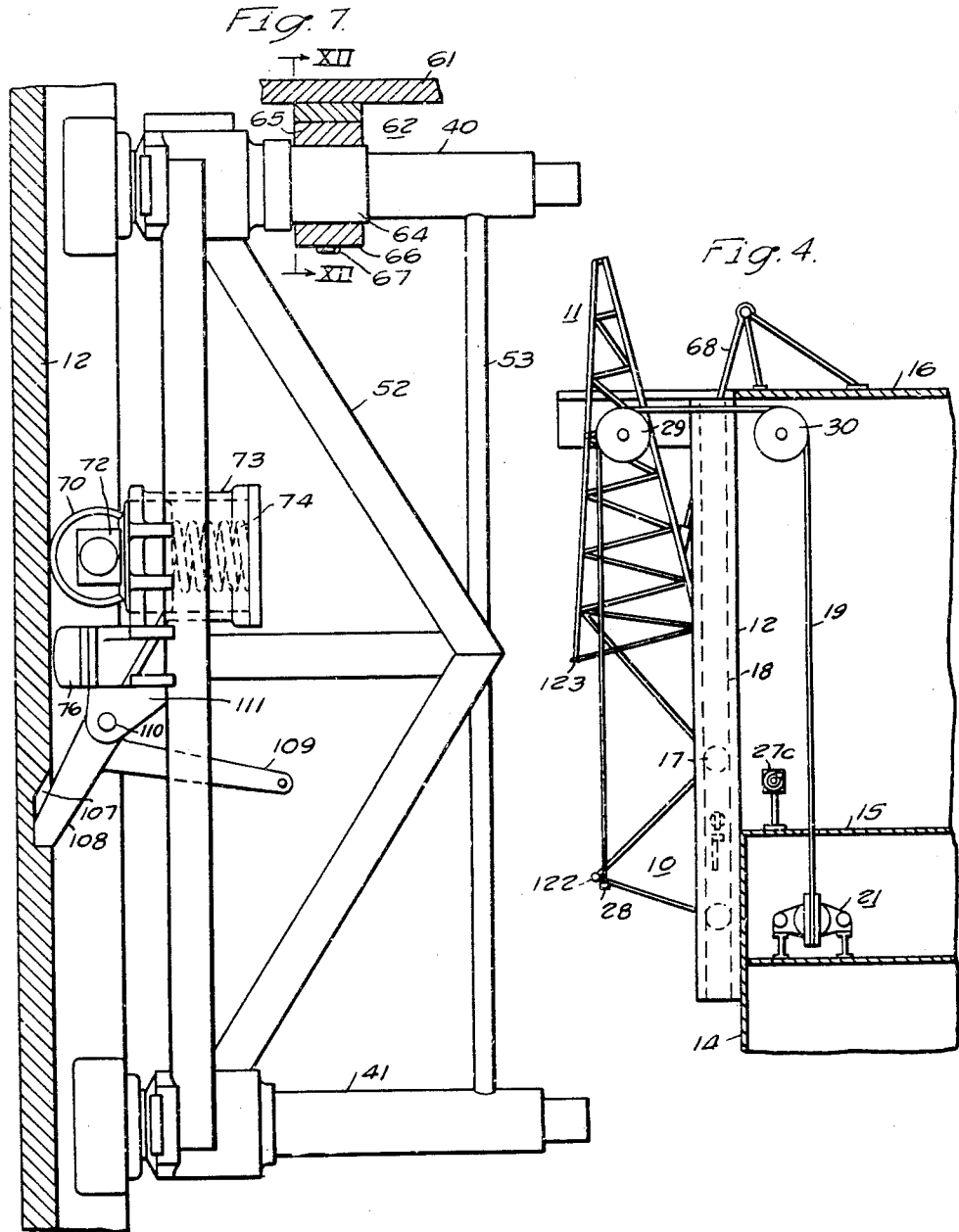
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6 Sheets-Sheet 3



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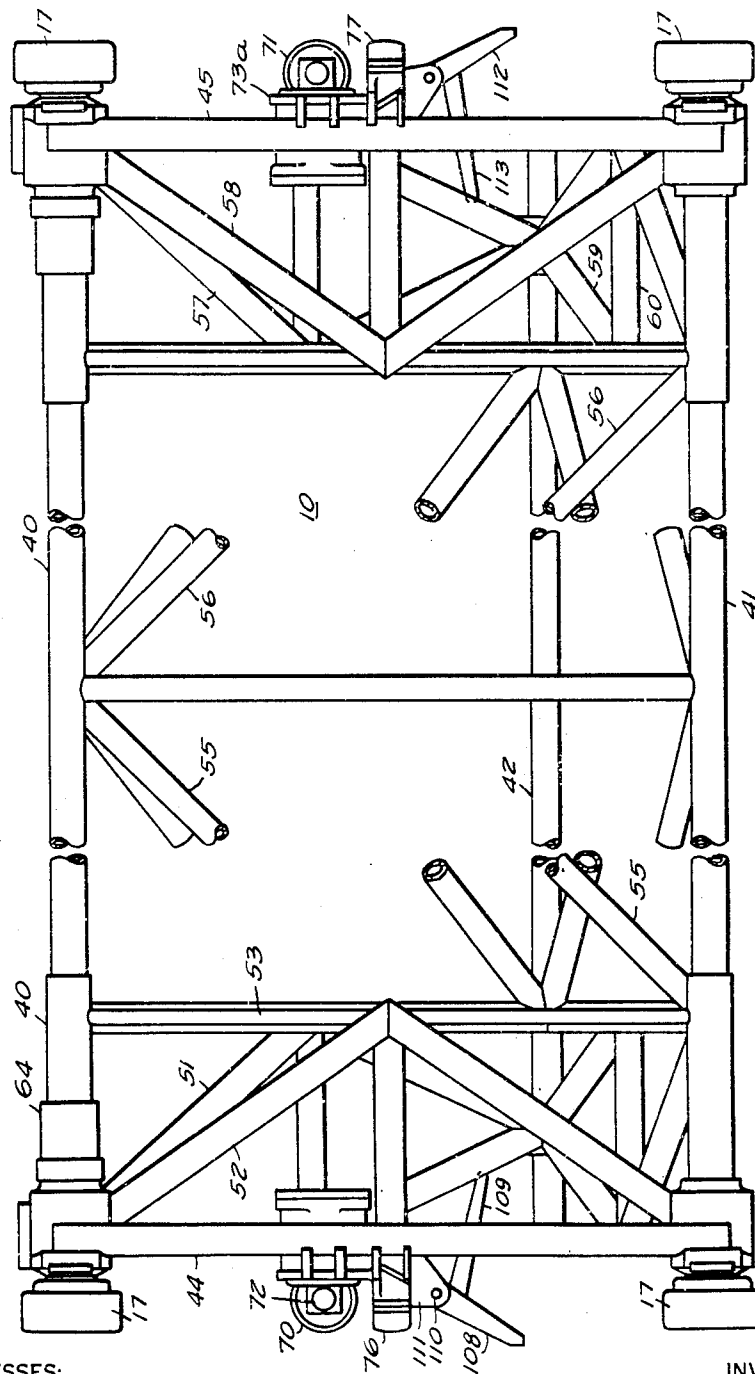
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ELEVATOR

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Fig. 5.



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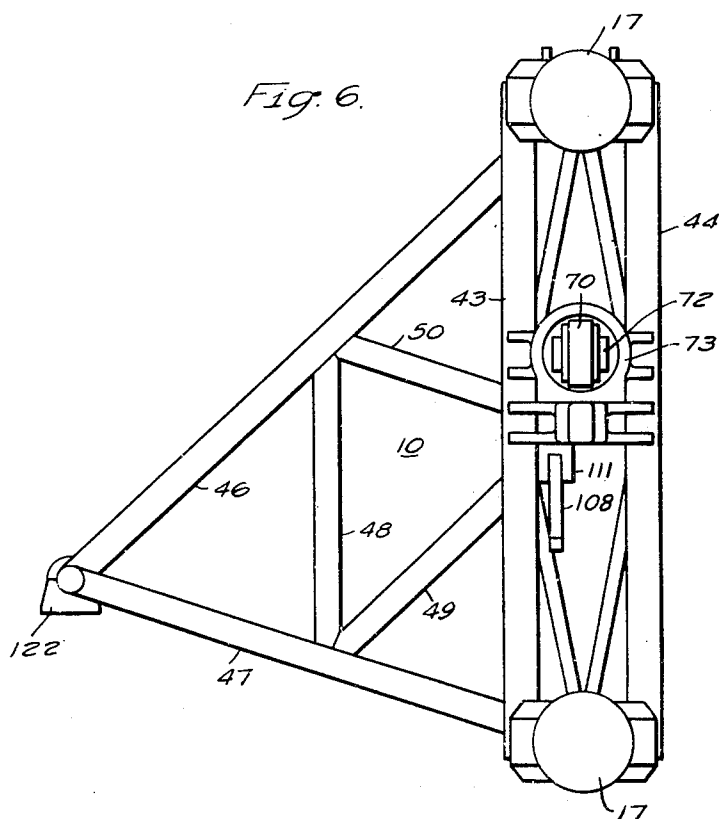
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ELEVATOR

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6 Sheets-Sheet 5



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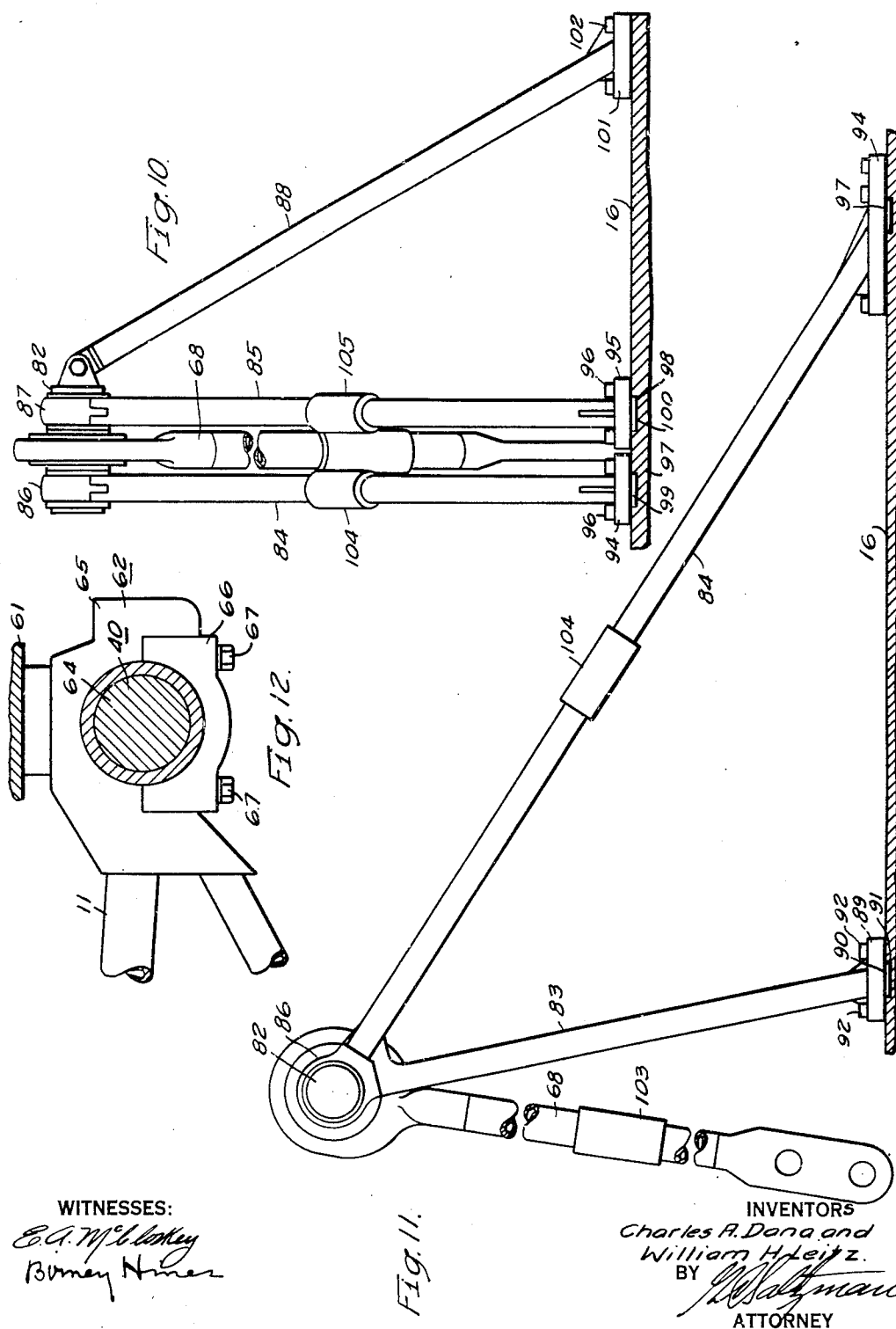
C. A. DANA ET AL

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ELEVATOR

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UNITED STATES PATENT OFFICE

2,479,321

ELEVATOR

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Application January 5, 1946, Serial No. 639,274

11 Claims. (Cl. 187-6)

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Our invention relates to deck-edge elevators and, more particularly, to means for folding and stowing the platforms of such elevators.

Where deck-edge elevators are used on airplane carrier ships for transferring airplanes from one deck to another, they are mounted on the outer side of the ship in alignment with an opening therein to the main deck, and are movable up and down on the side of the ship, to serve the main decks and the flight decks. A deck-edge elevator of this type is very large and extends outwardly from the ship hull to such an extent as to prevent the ship on which it is mounted from going through narrow openings.

One object of our invention is to provide a deck-edge elevator in which the platform may be easily folded and stowed in such position as to occupy a small amount of room on the side of the ship.

Another object is to provide for folding a deck-edge elevator platform against the side of a ship, without requiring the use of additional winches, cables, and cable sheaves.

It is also an object of our invention to provide a deck-edge elevator with a foldable platform which may be relatively easy and inexpensive to manufacture, install, operate, and maintain in operation.

For a better understanding of our invention, reference may be had to the accompanying drawings, in which:

Figure 1 is a top plan view of our improved deck-edge elevator on a ship with its removable stowing struts disposed in position for a stowing operation with part of the upper deck of the ship being cut away to disclose the operating mechanism for the elevator;

Fig. 2 is a view in aft end elevation of the elevator shown in Fig. 1, in its uppermost position and in condition for a folding operation;

Fig. 3 is a view similar to Fig. 2 with the elevator platform in a partially folded position;

Fig. 4 is a view similar to Fig. 2 with the platform folded and in its stowed position on the side of the ship;

Fig. 5 is an enlarged view from the interior of the ship of the truss which serves as a base for supporting the elevator platform, with central portions of the truss broken away.

Fig. 6 is a view in end elevation of the truss shown in Fig. 5;

Fig. 7 is an enlarged view of one end of the truss shown in Fig. 5 and the latching mechanism thereon for limiting the downward movement of the truss and platform when the elevator is stowed on the side of the ship;

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Fig. 8 is a view in front elevation of the latching mechanism shown in Fig. 7;

Fig. 9 is a view in side elevation of one of the locking pins in the flight deck for locking the elevator platform in its stowed position;

Fig. 10 is an enlarged view, of the aft stowing struts as they appear from the flight deck when mounted thereon for a stowing operation,

Fig. 11 is a view in aft side elevation of the stowing struts shown in Fig. 10; and

Fig. 12 is an enlarged view of one of the hinge joints connecting the platform and the base taken on the line XII—XII of Fig. 7.

Referring more particularly to Figs. 1, 2, 3, and 4, we have illustrated a deck edge elevator comprising a truss or base section 10 provided with a platform section 11 disposed between a pair of guide rails 12 and 13 mounted on the outer side of a ship hull 14 for serving its main deck 15 and its flight deck 16. A plurality of rollers 17 are rotatably mounted on each end of the base section 10 in position to ride in vertical guiding slots 18 and 18a in the sides of the guide rails facing each other for guiding the vertical movement of the elevator as it is raised or lowered and for maintaining the base section in its desired angular relation to the hull of the ship.

A plurality of hoisting cables 19 and 20, operated by a hydraulic hoisting engine 21, are provided for supporting the elevator platform and base and for raising and lowering them. The hydraulic engine comprises a single cylinder 22 mounted in a horizontal position on a frame or engine bed 23 and a power plunger 24 disposed in the cylinder. The outer end of the plunger is provided with a power head 25 in which a pair of power sheaves 26 are rotatably mounted.

In operation, the plunger moves back and forth horizontally and thus moves the power sheaves 26 back and forth with it, for operating the hoisting cables to raise and lower the elevator. The plunger is designed for operation by a suitable hydraulic medium such as oil, placed under pressure by any suitable equipment (not shown) and is controlled by a valve 27 operated by a valve motor 27a through a gear box 27b. A hand operative device 27c is provided for controlling the valve 27 by hand when it is desired to use hand control instead of motor control for the engine.

The hand drive box is so arranged that opening its cover for operation disconnects the motor and mechanically connects the hand drive gears for operating the valve. When the hand box is closed, the hand wheel is disengaged and the motor is again electrically connected for opera-

tion. If further information is desired about the details and mode of operation of the hydraulic engine, it may be secured from the James Dunlop application, Serial No. 515,992, filed December 28, 1943, now Patent Number 2,409,198 issued October 15, 1946.

The outer ends of the cables 19 are secured to the aft end of the base section by suitable hitches 28 mounted thereon and pass upwardly and over an idler sheave 29 fastened to the ship structure underneath the overhanging portion of the flight deck, thence inwardly over a second idler sheave 30 mounted on the ship frame inside the hull, thence downwardly and under a deflector sheave 31 mounted on the engine bed 23, thence around a stationary sheave 32 mounted on the engine bed at the rear of the engine, and thence around one of the power sheaves 26 to a plurality of hitches mounted on the under side of the engine cylinder but not shown in the drawings.

The outer ends of the cables 20 are secured to the fore end of the base section by a suitable cable hitch means 34 and pass upwardly over an idler sheave 35 fastened to the ship structure underneath the overhanging portion of the flight deck, thence inwardly over a second idler sheave 36 mounted on the ship frame inside the hull, thence downwardly and under a deflector sheave 37 mounted on the right hand end of the engine bed, and thence under and over one of the power sheaves 26 in the plunger head to suitable hitches 38 secured to the upper rear part of the engine cylinder.

Referring more particularly to Figs. 5, 6 and 7, the base member 10 comprises a top chord truss member 40, a bottom chord truss member 41 and a front truss member 42 disposed substantially parallel to each other and braced apart by a plurality of truss members 43, 44 and 45 and a plurality of angularly disposed truss members such as 46 and 47. A plurality of inner bracing truss members such as 48 to 60 are applied to the truss structure for increasing its strength and stability. The truss members and bracing truss members are constructed of high tensile steel tubing, structural steel and steel plate welded together in bridgelike construction to form a relatively light but strong base for supporting the elevator platform 11 and any load which may be placed thereon. In this construction, the intermediate portion of the top chord truss member 40 serves as a hinge pin for connecting the platform and base sections and its outer ends serve as anchor blocks for the upper end rollers 17.

The platform section 11 is constructed of high tensile steel tubing, structural steel and steel plate welded together in bridgelike construction to form a relatively light but strong frame upon which any suitable flooring 61 may be laid.

Normally, the platform 11 remains in its horizontal position on the side of the ship during practically all of the activities of the ship. At times, however, it is necessary for the ship to pass through very narrow waterways or the locks of canals which are too narrow to admit the ship with the elevator platform riding thereon in its normal horizontal position. This will be understood when it is realized that some deck-edge elevator platforms extend outwardly from the ship for a distance of 30 feet or more.

Therefore, in order to permit stowing of the elevator so that the ship may pass through narrow places, we have mounted the platform section on the base section by a pair of hinge joints 62 and 63 disposed on the hinge pin sections of the

top chord truss member 40 and have provided a plurality of removable stowing struts 68 and 69 for pivotally connecting the platform to the flight deck in such manner that lowering the base section to stowing position will stow the platform in a substantially vertical position against the ship. Suitable removable plates 62a (Figs. 1 and 2) may be provided as covers for the hinges 62 and 63 when the elevator is in normal operation. Removal of these plates provides greater clearance for parts adjacent the platform section and reduces the spacings required for such parts.

As illustrated particularly in Figs. 7 and 12, the hinged joint 62 comprises a hinge pin 64 mounted in the truss member 40 in position to be engaged by a recess member 65 constituting a part of the platform structure and a holding block 66 secured to the underside of the member 65 by a plurality of bolts 67 in order to constitute a journal bearing. The hinged joint 63 is constructed in the same manner as the hinge joint 62 so that both joints may cooperate to provide a means whereby the outer end of the platform section may swing upwardly in a hinged action when the elevator is being stowed on the side of the ship.

In order to cushion the end thrust of the base section against the guide rails 12 and 13, an end roller 70 is disposed on the aft end of the base structure and an end roller 71 is disposed on the fore end of the base structure in position to bear against the inner faces of the guide rails. The end roller 70 is rotatably mounted in a bearing 72, the inner cylindrical end of which extends into and is slidably supported by a frame 73 mounted upon the vertical truss members 43 and 44. A spring 74 is disposed in the frame 73 in position to bias the roller 70 outwardly against the inner face of the guide rail 12 so as to provide a thrust bearing for the elevator which will prevent it from hammering against the guide rails. The end roller 71 is mounted in a similar manner on the vertical trusses 45 at the opposite end of the base member 10.

A bumper 76 is mounted on the end roller frame 73 below the roller 70 and a bumper 77 is mounted on the end roller frame 73a below the roller 71 for limiting the endwise movements of the elevator to a predetermined value. The play allowed between the end bumpers 76 and 77 and the inner faces of the guide rails 12 and 13 should be very small and the pressure of the springs 74 on the end rollers 70 and 71 should be so adjusted that they will cushion even this small movement very strongly.

As illustrated in Figs. 1, 2, 3 and 4, the stowing strut 68 is pivotally attached to the aft end of the elevator platform section 11 by a strut hitch 80. When the stowing strut 68 is not in use, the stowing hitch 80 lies beneath the platform 11 and is covered by a removable plate (not shown).

Figs. 10 and 11 illustrate the stowing strut 68 in greater detail by which it may be seen that the upper end of the strut is hingedly attached by a strut hinge pin 82 to the upper ends of a pair of vertical stanchions 83 and a pair of rearwardly extending stanchions 84 and 85. The pin 82 extends through a pair of cast heads 86 and 87 mounted on and welded to the upper ends of the vertical stanchions. A side stanchion 88 is provided for bracing the pin 82 and the upper ends of the vertical and rear stanchions.

The lower ends of the vertical stanchions 83 are fastened to metal plates 89. Each of these plates is provided with a block 90 on its underside disposed to be seated in a recess 91 in the

flight deck. The plates 89 are provided with removable bolts 92 so that they may readily be bolted to the flight deck when a stowing action is to be made, and may be removed when no stowing action is to be made. The lower ends of the rear stanchions 84 and 85 are fastened to metal plates 94 and 95, which may be readily bolted to the flight deck by means of a plurality of bolts 96. Suitable bosses 97 and 98 are disposed on the undersides of the plates 94 and 95 in position to rest in recesses 99 and 100 when the stanchions are in use in a stowing operation.

The lower end of the side brace stanchion 88 is provided with a metal plate 101 which may be readily bolted to the flight deck by a plurality of bolts 102. The stowing strut 68 and the rear stanchions 84 and 85 are provided with suitable adjusting segments 103, 104 and 105 by which they may be adjusted to the correct length for stowing operations.

The stowing strut 69 is connected to the fore end of the elevator by a stowing hitch 106 and is mounted on vertical stanchions, rear stanchions and a side stanchion in the same manner as the strut 68 is connected to the aft portion of the elevator and flight deck.

When the stowing struts and stanchions are not in use for stowing the elevator, they are removed from the flight deck and elevator and placed in suitable storage space on the ship.

In making a stowing operation, the base section is lowered to a stowing position. In order to prevent the base 10 from moving below its stowed position in a stowing operation, the guide rail 12 is provided with a stowing step 107 disposed to receive a stowing pawl 108 (Fig. 7) which is pivotally mounted on the aft end of the base 10. The pawl 108 is provided with an operating arm 109 and is pivotally mounted by a pin 110 in a split projection 111 on the underside of the frame 73 which supports the end roller 70 and the bumper 76.

A similar stowing pawl 112, provided with an operating arm 113 (Fig. 5), is mounted on the end roller frame 73a on the fore end of the base section for engaging a stowing step in the guide rail 13 when a stowing operation is to be made. Any suitable pins or bolts (not shown) may be used for fastening the outer ends of the pawl arms 109 and 113 to the frame work of the base section to keep the pawls in non-operative position during normal operation of the elevator and for releasing the pawls to operative position when a stowing operation is to be made. The weight of the pawl operating arms 109 and 113 should be made sufficient to bias the pawls 108 and 112 to their outer position for engaging the stowing steps when a stowing operation is to be made.

A stowing bar 114 is fixed on the aft end of the platform section (Fig. 1) in position to enter a stopping slot 115, formed by structural steel parts 116, 117 and 118 (Fig. 9) disposed on the ship structure underneath the overhanging portion of the flight deck, when the platform reaches its full stowed position. A locking pin 119 is mounted in the flight deck in position to be lowered into holes in the structural steel parts 116 and 117 behind the stowing bar 114 when the platform is in its stowed position and thereby lock the platform in such position. The locking pin is provided with a handle at its upper end by means of which it can be raised and lowered in locking the platform in its stowed position. A

similar stowing bar 120 and locking pin 121 are provided at the fore end of the platform.

Suitable alignment blocks 122 are mounted on the front truss member 42 of the base section in position to be engaged by cooperating alignment blocks 123 mounted on the lower edge of the platform section to insure the proper alignment of the platform section with the base section when the platform section is returned from its stowing position to its normal horizontal position for elevator operation. A plurality of suitable bolts (not shown) may be used for bolting the alignment blocks together to hold the platform section firmly on the base section while the elevator is in normal operation.

The invention may be better understood by an assumed operation of the apparatus described.

In preparing to place the elevator in its stowed position, it is moved to the main deck and the attendants take the stowing struts and stanchions from their storage space and load them on the elevator platform. They then move the elevator, by means of the hand control, to a position where the usual cat walks (not shown) are accessible from the main deck and then remove the bolts from the fore and aft alignment blocks 122 and 123 to free the platform section for its stowing movement. The pins or bolts (not shown) for holding the stowing pawls 108 and 112 in nonoperation position are released and the pawls are checked to determine if they are free to rotate and are biased toward the guide rails 12 and 13.

The hand control 27c is now operated to move the elevator upwardly to a position where it is level with the flight deck, and the plates are removed to uncover the strut hitches 80 and 106 and the platform hinges 62 and 63.

The attendants now erect and securely bolt the stowing stanchions 83, 84, 85 and 88 for the strut 68 and the similar stanchions for the strut 69 on the flight deck at the fore and aft ends of the elevator platform. Next, the inboard ends of the stowing struts 68 and 69 are placed in the upper ends of the stowing stanchions and fastened therein by the stowing strut hinge pins 82 and 82a. After the inboard ends of the stowing struts are fastened into place, their outboard ends are fastened to the stowing hitches 80 and 106. The elevator is now ready to be stowed against the side of the ship.

After the engine room is checked to determine that the control is ready for the stowing operation, the hand control wheel 27c is operated to slowly lower the elevator. This causes the base section 10 to descend, thereby causing the inner edge of the platform section 11 to move downwardly and its outer edge to swing upwardly and inwardly on the hinged joints 62 and 63, as indicated in Fig. 3. The hand control wheel is operated slowly to continue the lowering of the base section 10 until the stowing pawls 108 and 112 move downwardly and into the stowing steps 107 in the guide rails 12 and 13. During this downward movement of the base section, the platform section tilts inwardly toward its approximately vertical position. As the base moves down to its full stowing position, the pawls 108 and 112 enter the stowing steps 107 and cause substantially all the weight of the platform to rest upon the stowing steps. At this point, the platform section 11 has swung upwardly and inwardly until the stowing bars 114 and 120 have entered the locking slots 115. The elevator is now in its stowed position with its hinged platform section

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disposed in a position approximately 13.6° from the vertical, or in substantially a vertical position. The attendants now replace the locking pins 119 in the steel parts 116 and 117 (Fig. 9) and thereby lock the stowing bars 114 and 120 in their locking slots 115, and thus lock the platform section in its stowed position.

At this point, the stowing pawls 108 and 112 should be checked for their position in the stowing steps 107, to make sure that they are in proper position to withstand the strain of supporting the elevator in its stowed position. The elevator is now stowed against the side of the ship and locked in its stowed position.

When it is desired to release the elevator from its stowed position and return it to its normal position for serving the main deck and the flight deck, the attendants remove the locking pins 119 and 121 from the locking slots 115 and then operate the hand control to raise the elevator, and thereby cause the base section 10 to rise above its stowed position. As the base section rises, the unlocked platform section 11 swings outwardly and downwardly, and this movement continues until it is level with the flight deck. Next, the attendants replace the locking pins 119 and 121 in the locking slots 115, and disengage the outboard ends of the stowing struts 68 and 69 from the stowing hitches 80 and 106. The attendants then remove the stowing strut hinge pins 82 and 82a from the heads of the stowing stanchions and place the stowing struts on the elevator platform. Next, the attendants remove the stowing stanchions by unbolting them from the flight deck and place them on the elevator platform. Next, the hinge covers 62a and the stowing hitch covers are replaced on the platform section.

The elevator is now lowered slowly by operating the hand control until the cat walks (not shown) are accessible from the main deck. The bolts are now replaced in the alignment blocks 122 and 123 to secure the platform and base in a unitary structure. The stowing pawls 108 and 112 are also moved to their retired position and fastened therein by means of pawl pins (not shown). The elevator may now be lowered to the main deck and the stowing struts and stanchions be returned to their usual storage space.

By the foregoing operation, it will be seen that we have provided a deck-edge elevator which may be easily stored against the side of a ship, where it may be securely locked and held while the ship is moving through narrow places such as canal locks.

Although we have illustrated and described only one specific embodiment of our invention, it is to be understood that many modifications thereof and changes therein may be made without departing from the spirit and scope of the invention.

We claim as our invention:

1. A deck-edge elevator for serving an upper deck and a lower deck on a ship comprising, a pair of guide rails vertically disposed on the side of the ship, an elevator base section slidably disposed between the guide rails, a plurality of hoisting cables for operating the base section, a platform section hingedly mounted on the base section, means for pivotally connecting the platform section to the upper deck, means for lowering the base section after the platform section is pivotally connected to the upper deck to thereby cause the platform section to tilt into stowed position, and means for limiting the down movement

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of the base section in stowing the elevator to a predetermined point.

2. A deck-edge elevator for serving an upper deck and a lower deck on a ship comprising, a pair of guide rails vertically disposed on the side of the ship, an elevator base section slidably disposed between the guide rails, a plurality of hoisting cables for the base section, an engine for operating the cables to raise and lower the base section, a platform section having its inner portion hingedly mounted on the base section, removable means for pivotally connecting the outer portion of the platform section to the upper deck, means for controlling the engine to lower the base section after the platform section is pivotally connected to the upper deck to thereby cause the platform section to tilt into its stowed position, and means mounted on the guide rails and the base section for limiting the down movement of the base section during stowing operation to a predetermined point.

3. A deck-edge elevator for serving an upper deck and a lower deck on a ship comprising, a pair of guide rails vertically disposed on the side of the ship, an elevator base section disposed between the guide rails, a plurality of hoisting cables for the base section, an engine for operating the cables to raise and lower the base section, a platform section hingedly mounted on the base section and disposed to rest thereon in substantially a horizontal position when the elevator is in condition for normal operation, a plurality of stanchions, means for removably mounting the stanchions on the upper deck, a plurality of stowing struts, means for pivotally connecting the stowing struts to the upper ends of the stanchions and to the platform section when the elevator is at the upper deck, a controller for causing the engine to lower the base section after the platform section is pivotally connected to the upper deck to thereby cause the platform section to tilt into its stowed position, and a plurality of stowing steps and stowing pawls cooperatively disposed on the base section and the guide rails for limiting the down movement of the base section and the platform section to a predetermined point.

4. A deck-edge elevator for serving an upper deck and a lower deck on a ship comprising, a pair of guide rails disposed on the side of the ship, an elevator base section slidably disposed between the guide rails, said base section having an outwardly extended portion, a plurality of hoisting cables for the base section, an engine for operating the cables to raise and lower the base section, a platform section hingedly mounted on the base section and having a bottom portion disposed to rest on the extended portion of the base section when the elevator is in condition for normal operation, a plurality of stowing struts, for pivotally connecting the outer portion of the platform section to the upper deck, means for controlling the engine to lower the base section after the platform section is pivotally connected to the upper deck to thereby cause the platform section to tilt into its stowed position, a plurality of stowing steps and stowing pawls cooperatively disposed on the base section and the guide rails for limiting the down movement of the base section to a predetermined point when it is being stowed, means for locking the platform section in its stowed position.

5. A deck-edge elevator for serving an upper deck and a lower deck on a ship comprising, a pair of guide rails vertically disposed on the side of the ship, an elevator base section slidably disposed

between the guide rails, said base section having a rear vertical portion and an outwardly down sloping portion, a plurality of hoisting cables for the base section, an engine for operating the cables to raise and lower the base section, a platform section hingedly mounted on the base section and having an outwardly and downwardly extending bottom portion disposed to rest on the downwardly sloping portion of the base section when the elevator is in condition for normal operation, a plurality of stowing struts, for pivotally connecting the platform section to the upper deck, means for controlling the engine to lower the base section after the platform section is pivotally connected to the upper deck to thereby cause the platform section to tilt into its stowed position, a plurality of stowing steps disposed on the guide rails, a plurality of stowing pawls pivotally mounted on the base section for engaging the stowing steps and thereby support the base section and platform section, and means for locking the platform section in its stowed position.

6. A deck-edge elevator for serving an upper deck and a lower deck on a ship comprising, a pair of guide rails vertically disposed on the side of the ship, an elevator base section disposed between the guide rails, said base section having a rear vertical portion and an outwardly down sloping portion, a plurality of rollers disposed on the ends of the vertical portion of the base section for engaging the guide rails to maintain said vertical portion in vertical alignment with the guide rails and to facilitate movement of the base section thereon, a plurality of hoisting cables for the base section, an engine for operating the cables to raise and lower the base section, a platform section having its inner edge hingedly mounted on the base section and having an outwardly and downwardly extending bottom portion disposed to rest on the downwardly sloping portion of the base section when the elevator is in condition for normal operation, a plurality of stowing struts, for pivotally connecting the platform section to the upper deck, means for controlling the engine to lower the base section after the platform section is pivotally connected to the upper deck to thereby cause the platform section to tilt into its stowed position, a plurality of stowing steps disposed on the guide rails, a plurality of stowing pawls pivotally mounted on the base section for engaging the stowing steps and thereby support the base section and platform section, and means for locking the platform section in its stowed position.

7. A deck-edge elevator for serving an upper deck and a lower deck on a ship comprising, a pair of guide rails vertically disposed on the side of the ship, an elevator base section disposed between the guide rails, said base section having a rear vertical portion and an outwardly down sloping portion, a plurality of rollers disposed on the ends of the vertical portion of the base section for engaging the guide rails to maintain said vertical portion in vertical alignment with the guide rails and to facilitate movement of the base section thereon, a plurality of hoisting cables for the base section, an engine for operating the cables to raise and lower the base section, a platform section having its inner edge hingedly mounted on the base section and having an outwardly and downwardly extending bottom portion disposed to rest on the downwardly sloping portion of the base section when the elevator is in condition for normal operation, a plurality of

stanchions, means for removably mounting the stanchions on the upper deck, a plurality of stowing struts, means for pivotally connecting the stowing struts to the upper ends of the stanchions and to the platform section when the elevator is at the upper deck, a controller for causing the engine to lower the base section after the platform section is pivotally connected to the upper deck to thereby cause the platform section to tilt into its stowed position, a plurality of stowing steps disposed on the inner faces of the guide rails, and a plurality of stowing pawls pivotally mounted on the base section for engaging the stowing steps and thereby support the base section and platform section.

8. A deck-edge elevator for serving an upper deck and a lower deck on a ship comprising, a pair of guide rails vertically disposed on the side of the ship, an elevator base section disposed between the guide rails, said base section having a rear vertical portion and an outwardly down sloping portion, a plurality of rollers disposed on the ends of the vertical portion of the base section for engaging the guide rails to maintain said vertical portion in vertical alignment with the guide rails and to facilitate movement of the base section thereon, a plurality of hoisting cables for the base section, an engine for operating the cables to raise and lower the base section, a platform section having its inner edge hingedly mounted on the base section and having an outwardly and downwardly extending bottom portion disposed to rest on the downwardly sloping portion of the base section when the elevator is in condition for normal operation, a plurality of substantially vertical stanchions, a plurality of rear stanchions, a plurality of bracing stanchions, means for removably mounting the stanchions on the upper deck, a plurality of stowing struts, means for pivotally connecting the inner ends of the stowing struts to the upper ends of the stanchions, a plurality of stowing hitches mounted on the platform section for pivotally attaching the outer ends of the struts thereto to pivotally connect it to the upper deck, a controller for causing the engine to lower the base section after the platform section is pivotally connected to the upper deck for tilting the platform section into its stowed position, a plurality of stowing steps disposed on the inner faces of the guide rails, a plurality of stowing pawls pivotally mounted on the base section for engaging the stowing steps and thereby support the base section and platform section in stowed position, and means for locking the platform section in its stowed position.

9. A deck-edge elevator for serving an upper deck and a lower deck on a ship, comprising a pair of guide rails vertically disposed on the side of the ship, a base section slidably disposed between the guide rails, said base section being constructed of steel tubing and structural steel welded together in a triangular bridgelike construction of which the top chord of the truss serves as a hinge pin for a plurality of hinges and the outer ends of which serve as anchor blocks for upper rollers to guide the base section along the guide rails, a plurality of hoisting cables for the base section, an engine for operating the cables to raise and lower the base section, a platform section having its inner edge hingedly mounted on the hinge pin portion of the base section and disposed substantially in a horizontal position on the base section when the elevator is in condition for normal operation, removable means for pivotally connecting the outer portion

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of the platform section to the upper deck when the elevator is at the upper deck, a controller for causing the engine to lower the base section after the platform section is pivotally connected to the upper deck to thereby cause the platform section to tilt into its stowed position, and means for limiting the down movement of the base section to a predetermined point when it is being stowed.

10. In an elevator installation, a structure having two spaced stations to be served by an elevator, an elevator having a base section and a platform section hingedly mounted on the base section, motive means for moving said base section between said spaced stations in a predetermined path substantially transverse to the axis of the hinge between the sections and pivoting means effective when in operative condition for pivotally connecting the platform section to the structure, said motive means being operable after the plat-

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form section is pivotally connected to the structure to move the base section in said predetermined path in a direction such that the pivoting means tilts the platform section about the base section into a stowing position.

11. An elevator installation as defined in claim 10, wherein said pivoting means comprises a link having its ends pivotally connected respectively to the structure and to the platform section at a point spaced from the axis of that hinge between the sections, said pivoting means having separable parts for interrupting the connection of the structure and the platform section there-through.

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No references cited.