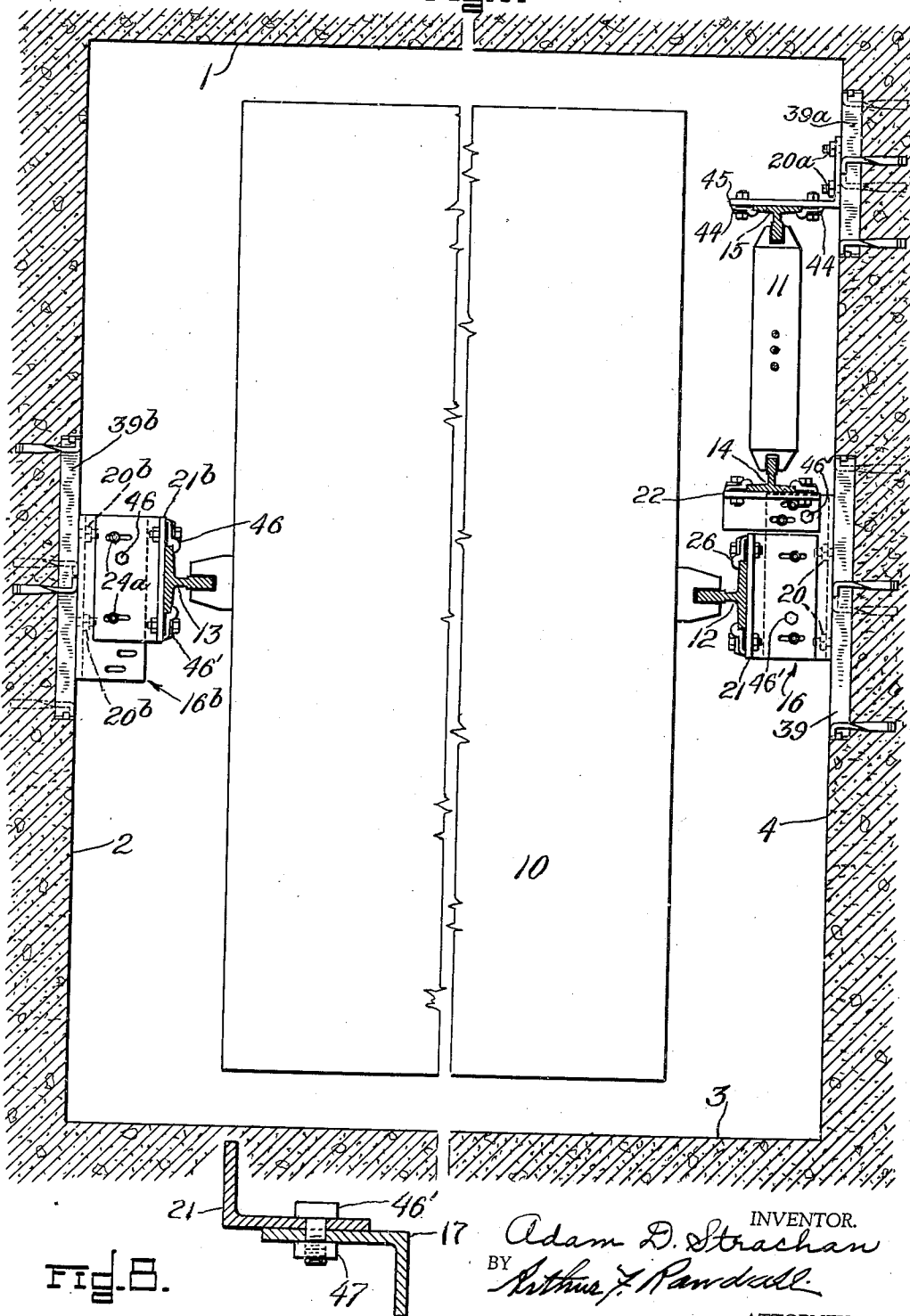


Filed Feb. 12, 1946

ELEVATOR CONSTRUCTION

2 Sheets-Sheet 1

Fig. 1.



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INVENTOR.
Adam D. Strachan
BY
Arthur F. Randall.
ATTORNEY.

March 1, 1949.

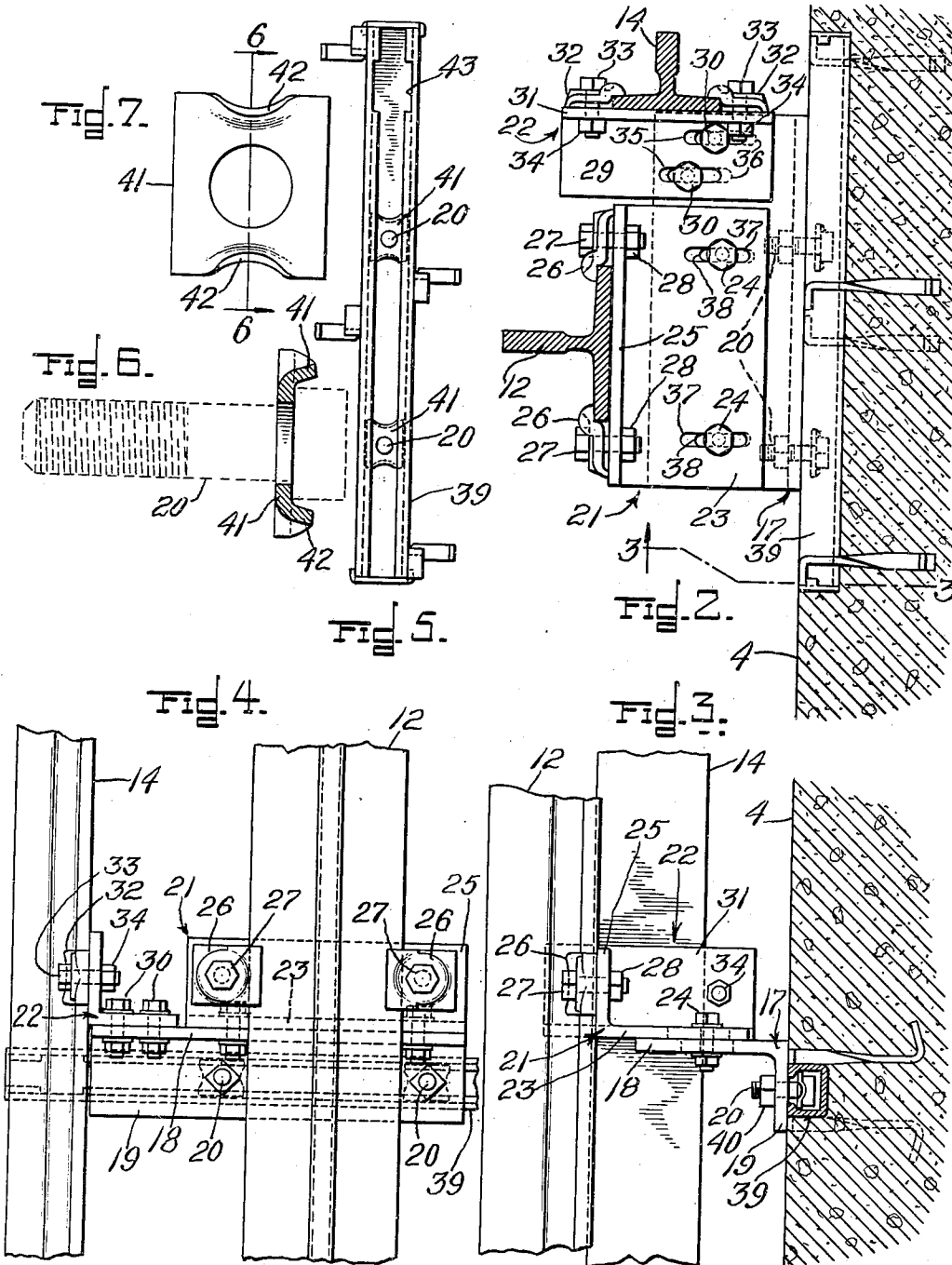
A. D. STRACHAN

2,463,215

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2 Sheets-Sheet 2



INVENTOR.

Adam D. Strachan

BY

Arthur F. Randall

ATTORNEY.

UNITED STATES PATENT OFFICE

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ELEVATOR CONSTRUCTION

Adam D. Strachan, Needham, Mass.

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6 Claims. (Cl. 187—95)

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This invention relates to elevator construction and has particular reference to a bracket for supporting guide rails for the car and counterweight thereof.

This invention has for its object to improve the construction of elevator installations and particularly to provide a bracket for supporting one of the two guide rails for the car and one of the two guide rails for the counterweight, with provision for adjustment of both rails bodily in a horizontal direction parallel with a side wall of the elevator shaft to which the bracket is fastened, and also with provision for independent adjustment of each rail bodily in a horizontal direction at right angles to said wall, thereby to facilitate the proper installation of all of the guide rails of the elevator and enable the same to be expeditiously, properly and accurately positioned relatively to each other and relatively to the walls of the elevator shaft and to the car.

To this end I have provided an improved elevator apparatus and a novel rail-supporting bracket therefor, all of which, in the preferred embodiment of the invention, may be constructed as set forth in the following description, the several novel features of the invention being particularly pointed out and defined in the claims at the close of the description.

In the accompanying drawings:

Figure 1 is a sectional plan view of an elevator installation constructed in accordance with this invention.

Figure 2 is a plan view of my new rail-supporting bracket attached to one of the walls of the elevator shaft.

Figure 3 is a section on line 3—3 of Fig. 2.

Figure 4 is an elevation of the parts of Fig. 3 as viewed from the left.

Figure 5 is a front elevation of the channel insert hereinafter described.

Figures 6 and 7 are details, full size, relating to the channel insert shown in Fig. 5, Figure 6 being a section on line 6—6 of Fig. 7.

Figure 8 is a sectional detail hereinafter described.

Having reference to Fig. 1 of the drawings, 10 shows in plan view an elevator car that is raised and lowered within an elevator shaft by any suitable means (not shown), said shaft being defined by the side walls 1, 2, 3 and 4. At 11 is shown the counterweight for car 10 which is connected as usual with the latter so as to move up and down in unison therewith.

Car 10 is guided in its up and down movements by a pair of vertical rails 12 and 13 while the

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counterweight 11 is guided in its up and down movements by a pair of rails 14 and 15.

In building an elevator apparatus it is essential that all of the guide rails be fixed in positions where they are truly vertical with the rails of each pair disposed a predetermined distance apart and alined opposite each other. My invention makes it possible to meet these requirements with ease and dispatch mainly through the provision of a novel composite rail-supporting bracket that is indicated generally at 16 in Fig. 1 and further illustrated in Figs. 2, 3 and 4, said bracket being fixed in position against wall 4 and serving to support the two guide rails 12 and 14. While I have herein shown but one bracket 16 it is to be understood that the wall 4 would be equipped with a vertical row of spaced-apart brackets like that shown at 16 for supporting the two rails in their proper positions.

As shown in Figs. 2, 3 and 4 the bracket 16 comprises an angle-iron shelf member 17 made with a flat horizontal approximately rectangular flange 18 provided at its rear with a flat depending approximately rectangular flange 19 that is seated against the face of wall 4 and to which latter it is securely fastened by two bolts 20, 20.

Seated upon the horizontal flange 18 of shelf member 17 are two angle-iron brackets 21 and 22, the bracket 21 being disposed with its two flanges approximately parallel with the flange 19 of shelf member 17 and the bracket 22 being opposite one end of bracket 21 with its two flanges disposed approximately at right angles to said flange 19 of the shelf member.

The flange 23 of angle bracket 21 serves as a base and is seated flatwise upon the top of the horizontal flange 18 of the shelf member where it is securely fastened in place by two bolts 24. The vertical flange 25 of angle bracket 21 is disposed in a position to provide a seat for the guide rail 12 (Figs. 1 and 3) whose base is securely fixed in position against the same by means of two clamps provided at opposite sides thereof, each of said clamps comprising an apertured jaw 26 overlapping the adjacent marginal portion of the base of rail 12 and a bolt 27. Each bolt 27 extends through the aperture of its jaw 26 and through an aperture provided in the vertical flange 25 of the angle bracket 21, the inner end of said bolt being provided with a nut 28 which is set up tight to cause jaw 26 to clamp the rail securely in position.

The flange 29 of angle bracket 22 serves as a base and is seated flatwise upon the top of the horizontal flange 18 of shelf member 17 where

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it is securely fastened in place by two bolts 30. The vertical flange 31 of angle bracket 22 is disposed in a position to provide a seat for the counterweight guide rail 14 (Figs. 1, 2 and 4) whose base is securely fixed in position against the same by means of two clamps provided at opposite sides of the rail 14, each of said clamps comprising an apertured jaw 32 overlapping the adjacent marginal portion of the base of rail 14 and a bolt 33. Each bolt 33 extends through the aperture of its jaw 32 and through an aperture provided in the vertical flange 31, the inner end of said bolt being provided with a nut 34 which is set up tight to cause jaw 32 to clamp rail 14 securely in position.

The bolts 30 (Figs. 2 and 4) by which angle bracket 22 is fixed in position upon shelf member 17 extend through registering elongate slots 35 and 36 formed, respectively, in base flange 29 of angle bracket 22 and in the horizontal flange 18 of shelf member 17, all of said slots being perpendicular to the flange 19 of the latter thereby to provide for adjustment of angle bracket 22 toward and from the wall 4 in order to aline the rail 14 (Fig. 1) with the rail 15. The lengths of the slots 35 and 36 (Fig. 2) are considerably greater than the diameters of the bolts 30 and therefore the maximum extent of such adjustment is approximately equal to the sum of the lengths of either pair of slots 35 and 36 minus the diameter of the bolt occupying the same. It is also true that a loose fit is provided between each bolt and its slots so as to provide for limited adjustment of the angle bracket swivelly.

The bolts 24 (Figs. 2 and 3) by which angle bracket 21 is fixed in position upon shelf member 17 extend through registering elongate slots 37 and 38 formed, respectively, in base flange 23 of angle bracket 21 and in the horizontal flange 18 of shelf member 17, all of said slots being perpendicular to the flange 19 of the latter thereby to provide for adjustment of angle bracket 21 toward and from the wall 4. The length of each slot 37 and 38 is considerably greater than the diameter of its bolt and therefore the maximum extent of such adjustment is equal to the sum of the lengths of the slots of each pair minus the diameter of the bolt occupying the same. A loose fit is also provided between each bolt and its slots so as to provide for limited swivel adjustment of the angle bracket.

Embedded horizontally within wall 4 flush with the surface thereof is a channel insert 39 (Figs. 2, 3 and 5) of usual construction within which the heads of the bolts 20 are confined so that when the nuts of bolts 20 are loose the shelf member 17 and its bolts are free to be adjusted horizontally in a direction approximately parallel with wall 4. At the same time it is possible, when the nuts of bolts 24 (Fig. 2) are loosened, to adjust angle bracket 21 and rail 12 perpendicularly with respect to channel insert 39 and wall 4. Thus, through adjustment of the rail 12 in these two directions said rail may be secured in a vertical position and accurately located within the elevator shaft.

Each bolt 20 (Figs. 5, 6 and 7) is, as usual, equipped with a rectangular washer 41 disposed within channel insert 39 and formed with oppositely disposed laterally projecting lugs 42 occupying positions at opposite sides of the rectangular head of the bolt. These washers are loosely fitted to the interior of the channel insert and each serves to hold its bolt against rotation when the nut of the latter is operated. At 43, Fig. 5,

is shown the usual passageway through which the heads of the bolts 20 and their washers 41 may be inserted into and removed from the channel insert 39.

The counterweight rail 15 (Fig. 1) is fastened by clamps 44 to one of the flanges of an angular bracket 45 whose other flange is seated against wall 4 and formed with apertures for the reception of two bolts 20a projecting from a channel insert 39a that is embedded in wall 4 after the manner of channel insert 39. While the bolts 20a are loose it is possible to adjust angle bracket 45 and rail 15 toward or from rail 14 to dispose the two rails at the proper distance apart to receive the counterweight 11 between them after which bolts 20a are set up tight.

To aline the two rails 14 and 15 opposite each other the angle 22 is adjusted toward or from the wall 4 to the extent necessary after which the bolts 30 (Fig. 2) are set up tight.

The rail 13 may be secured to the wall 2 of the shaft in any suitable manner, but as shown in Fig. 1 of the drawings I may provide a channel insert 39b embedded horizontally in said wall to which an angular shelf member 16b, similar to the shelf member 16 above described, is fastened by means of two bolts 20b projecting from said channel insert. Seated upon shelf member 16b is an angular bracket 21b similar to the above described angular bracket 21 and, like the latter, having its base flange adjustably fastened by means of bolts 24a to the top horizontal flange of bracket member 16b. Rail 13 is fastened to the other vertical flange of bracket 21b by clamps 46.

After all of the rails and brackets have been accurately secured in place within the elevator shaft 1—2—3—4 a drill is driven through the horizontal flanges of the angular brackets 21, 22 and 21b and through the horizontal flanges of the two shelf members 17 for the reception of dowels 46' (Figs. 1 and 8) by which the angular brackets and the shelf members are positively locked against relative displacement during use of the elevator. These dowels may, as shown in Fig. 8, be in the form of bolts provided with nuts 47 by which they are securely held in place.

What I claim is:

1. In an elevator structure, the combination with a car; a pair of vertically disposed rails for guiding said car in its up and down movements; a counterweight, and a pair of vertically disposed rails for guiding said counterweight in its up and down movements, of means for supporting said guide rails fixedly in their operative positions, said means including a horizontal shelf member, a bracket member fixed in position upon said shelf member to which one of the guide rails for the car is secured and by which said rail is supported at a predetermined distance from the other guide rail for the car; a second bracket member fixed in position upon said shelf member to which one of the guide rails for the counterweight is secured and by which said rail is supported in alinement with the other counterweight-guiding rail, and means connecting said shelf member with a supporting fixture so that it is adjustable thereon horizontally to effect alinement of said car-guiding rails.

2. In an elevator structure the combination of claim 1 wherein there is also provided a third bracket member to which said other counterweight-guiding rail is secured, and means fixedly connecting said third bracket member with said supporting fixture so that it is adjustable hori-

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zontally thereon toward and from said shelf member thereby to dispose said counterweight-guiding rails a predetermined distance apart.

3. In an elevator structure, the combination with a car; a pair of vertically disposed rails for guiding said car in its up and down movements; a counterweight, and a pair of vertically disposed rails for guiding said counterweight in its up and down movements, of means for supporting said guide rails fixedly in their operative positions, said means including a horizontal shelf member, a bracket member on said shelf member to which one of the guide rails for the car is secured, means for securing said bracket member in a fixed position on said shelf member but with provision for independent adjustment thereof toward and from the other car-guiding rail thereby to dispose said car-guiding rails a predetermined distance apart, a second bracket member on said shelf member to which one of the guide rails for the counterweight is secured, means for securing said second bracket member in a fixed position on said shelf but with provision for independent adjustment thereof in a direction to effect alinement of its guide rail with the other guide rail for the counterweight, and means supporting said shelf member in a fixed position but with provision for adjustment thereof horizontally in a direction to effect alinement of said car-guiding rails.

4. A rail support for elevator structures, said support having in combination, a right-angled shelf member whereof one flange is provided with means for fastening the same flatwise and vertically against the face of a wall of the elevator shaft so as to support the other flange thereof in a horizontal position and so that said shelf member is adjustable horizontally on said wall; a right-angled bracket member having one flange thereof disposed horizontally and seated upon the horizontal flange of the shelf member and the other flange thereof disposed vertically to support a guide rail in position beyond the horizontal flange of the shelf member; means rigidly fixing the horizontal flange of said bracket member in position upon the horizontal flange of the shelf member so that it can be adjusted toward and from the vertical flange of the shelf member; means on the vertical flange of said bracket mem-

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ber for clamping a guide rail thereon; a second right-angled bracket member having one flange thereof disposed horizontally and seated on the horizontal flange of the shelf member opposite one end of said first-mentioned bracket member and at right angles thereto and the other flange thereof disposed vertically to support a guide rail in position beyond the horizontal flange of the shelf member; means rigidly fixing the horizontal flange of said second bracket member in position upon the horizontal flange of said shelf member so that it can be adjusted toward and from the vertical flange of the shelf member, and means on the vertical flange of said second bracket member for clamping a guide rail thereto.

5. A rail support for elevator structures constructed in accordance with claim 4 and wherein each of said three members is a section of angle iron.

6. A rail support for elevators constructed in accordance with claim 4 wherein each of said three members is a section of angle iron; wherein the horizontal flange of said shelf member is made with a plurality of elongate slots that are disposed approximately at right angles to the vertical flange of said member; wherein the horizontal flange of each of said bracket members is made with elongate slots each of which is parallel and in register with one of the slots of the horizontal flange of said shelf member, and wherein bolts are provided extending through the registering slots and by which the two bracket members are fixedly clamped to the horizontal flange of the shelf member.

ADAM D. STRACHAN.

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