(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 700 860 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
13.03.1996 Bulletin 1996/11

(51) Int Cl.[6]: **B66B 11/02**

(21) Application number: **95305189.3**

(22) Date of filing: **25.07.1995**

(84) Designated Contracting States:
DE GB

(30) Priority: **03.08.1994 FR 9409635**

(71) Applicant: **OTIS ELEVATOR COMPANY**
Farmington, CT 06032 (US)

(72) Inventors:
- **Pougny, Jean-Pierre**
  45500 Saint Godon (FR)
- **Sirigu, Gerard**
  45500 Gien (FR)
- **Rebillard, Pascal**
  45500 Gien (FR)
- **Xiong, Youde**
  45500 Gien (FR)

(74) Representative: **Piesold, Alexander J.**
Frank B. Dehn & Co.
Imperial House
15-19 Kingsway
London WC2B 6UZ (GB)

(54) Integrated elevator platform

(57) An elevator car platform includes a base (12) constituted by a layer made of a light rigid composite material which is coated on its sides by two rigid skins (14), a sensitive layer (26) acting as a load scale secured to the upper skin (16), an insulating cushion (28) made of an elastic material covering said sensitive layer and ensuring the acoustic and antivibratory insulations of the car, a floor (30) made of a light rigid material and coated with two rigid skins (32,34), said floor covering the entire surface of the insulating cushion except for a zone having a constant width and extending along the entrance edge of the car, and a door-sill profile (40) having the same dimensions as said zone and provided with an upper flat face on which grooves (42) are formed for guiding the lower edges of the doors, said profile being fixed in said zone so that its upper face is substantially at the same level as the upper face of the floor (30).

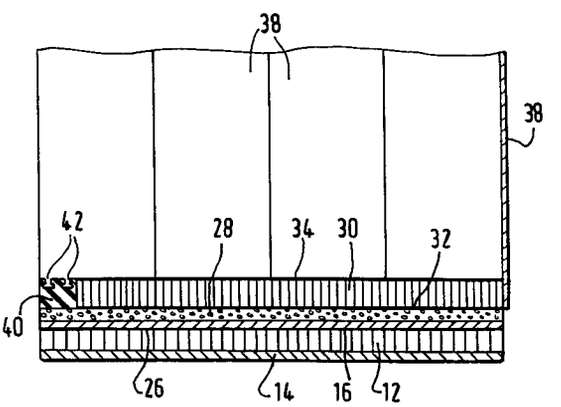


FIG. 3

EP 0 700 860 A1

Description

The invention concerns a platform of an elevator car having several integrated functions.

In conventional platforms for elevator cars, the different functions, such as the load scale function, the guiding of the doors at their lower edge, the acoustic and antivibratory insulation functions and the support floor function are fulfilled by separate elements which need to be assembled together in situ. Said platform comprises a rectangular frame constituted by steel beams welded together. On said frame lies a floor made of a steel plate, with interposition of several antivibratory and acoustic insulating blocks, made of rubber. Between the frame and the floor is inserted a load scale which is generally constituted by a housing equipped with several switches which define load thresholds on the basis of deformations of the floor and of the blocks. The platform also includes at its entrance edge a door-sill profile for guiding the lower edge of the doors of the elevator car.

Such a platform which uses massive steel elements is heavy and expensive. Moreover, the mounting of the platform is long and complicated since the operator needs to secure on the site the insulating blocks and the load scale to the frame and then to fix the floor and the door-sill profile. Furthermore, the antivibratory and acoustic insulation functions are ineffective due to the fact that the blocks are secured only at discrete points of the platform. Similarly, the load scale is sensitive only to loads located substantially above it. Finally, due to the heavy weight of the elevator car, a powerful motor is required to actuate it.

The invention concerns an elevator car platform which comprises:

- a base constituted by a layer of a light rigid material coated on its faces with two rigid skins,
- a sensitive layer acting as a load scale and secured to the upper skin,
- an insulating cushion made of an elastic material covering said sensitive layer and ensuring acoustic and antivibratory insulation of the car,
- a floor made of a light rigid material and coated with two rigid skins, said floor covering the entire surface of the insulating cushion, except for a zone having a constant width and extending along the entrance edge of the car, and
- a door-sill profile having the same dimensions as said zone and provided with an upper flat face on which grooves are formed for guiding the lower edges of the doors, said profile being fixed in said zone so that its upper face is substantially at the same level as the upper face of the floor.

At least in its preferred forms, the present invention provides a platform for an elevator car which integrates all the above-mentioned functions and which is lighter and less expensive than those of current platforms.

Advantageously, the base may be made of a composite material having a honeycombed structure whose alveoles are filled with an acoustic insulating foam. The base may also be made of any other laminated material, such as wood plates glued together.

The lower and upper skins of the base and of the floor may be constituted by steel sheets. Tapped inserts may be embedded in the edges of the base for screwing vertical girders or tie rods which normally connect the platform to an upper crossbeam of the car.

The sensitive layer may be constituted by discrete sensors or piezoelectric elements disposed at selected points of the base. Preferably, the sensitive layer comprises an optical fiber contorted in such a way as to form a flat network.

Thus, each of the components of the platform fulfils a specific function on the entire surface of the platform. The integration of all the functions in the platform makes it possible to use a minimum of components and to simplify its construction. The weight of the platform is thus reduced, so as the time involved for constructing and for mounting the platform and consequently the cost of the platform are reduced.

Moreover, the integration of the antivibratory function over the entire surface of the honeycombed base results in a reduction of the level Of vibrations and noise of the car compared with known types of platforms where the antivibratory insulation is ensured by rubber blocks localized only at local points of the surface of the platform.

The load scale function is significantly improved since the sensitive layer extends over the entire surface of the platform. The comfort of the passengers is thus improved at the starting of the car, owing to the suppression of jerks resulting from a better control of the motor. A better precision of stopping is obtained.

There now follows a description of a non-restrictive embodiment of the invention given by way of example with reference to the accompanying drawings in which:

Figure 1 is a plan view of the top of the platform;

Figure 2 is a section view along line II-II of Figure 1; and

Figure 3 is a section view along line III-III of Figure 1.

With reference to Figures 1 to 3, the elevator car platform 10 comprises a base 12 constituted by a plate of constant thickness and having a honeycombed structure. Said base may be made of aluminium or a composite material and its alveoles are filled with an acoustic foam which ensures the insulation of the platform against noise. The base may also be made of wooden plates

glued together.

Metallic inserts (not shown) are embedded in the region of the peripheral edge of the base so as to allow the screwing of screws or bolts.

A lower skin 14 and an upper skin 16 both constituted by steel plates are glued or screwed to the horizontal faces of the base respectively. Two parallel edges of the lower skin are folded at a right angle so as to form vertical borders 18,20 which cover the sections of the base. On these borders are secured the lower ends of four vertical tie rods 24 by means of bolts. The upper ends of the tie rods are connected to upper crossbeams (not shown).

A sensitive layer 26 acting as a load scale is secured to the upper skin 16. Said sensitive layer may be constituted by a single optical fiber contorted so as to form a flat network through which a luminous beam circulates. It is known that the amount of light transmitted by this fiber depends on the mechanical pressure exerted on it. The base 12 and its two skins 14,16 slightly project with respect to the sensitive layer 26 on the region of the two parallel walls of the car (Figure 2).

The sensitive layer 26 is covered with an elastic cushion 28 having the same surface area as the base and intended to carry out the antivibratory insulation of the car.

A floor 30 made of a light rigid material, such as a honeycombed composite material, is glued to the cushion. The two faces of the floor are coated with skins 32,34 made of steel. Tapped inserts 36 are embedded on the lateral edges of the floor for securing the vertical walls 38 of the car.

As shown on Figures 1 and 3, the floor 30 and its skins 32,34 extend over the entire surface of the cushion 28, except an entrance edge zone having a constant width and height. A door-sill profile 40 having the same height and width as said edge zone is secured in the latter, whereby its upper face is flush with the upper face of the skin 34.

The door-sill profile 40 has on its upper face several longitudinal grooves 42 (two in the case of Figure 3) for guiding the lower edges of the doors.

The platform thus integrates all the conventional functions of the load scale, acoustic and antivibratory insulation and individual support floor. The platform is relatively light since it comprises few metallic elements. Its construction is very simple and does not require any welding of its elements. The platform is delivered on the mounting site fully assembled and ready to receive the walls 38 and the vertical tie rods 24.

Claims

1. Elevator car platform, comprising:

   - a base (12) constituted by a layer of a light rigid material coated on its faces with two rigid skins (14,16),
   - a sensitive layer (26) acting as a load scale and secured to the upper skin (16),
   - an insulation cushion (28) made of an elastic material covering said sensitive layer and ensuring acoustic and antivibratory insulation of the car,
   - a floor (30) made of a light rigid material and coated with two rigid skins (32, 34), said floor covering the entire surface of the insulating cushion, except for a zone having a constant width and extending along the entrance edge of the car, and
   - a door-sill profile (40) having the same dimensions as said zone and provided with an upper flat face on which grooves (42) are formed for guiding the lower edges of the doors, said profile being fixed in said zone so that its upper face is substantially at the same level as the upper face of the floor (30).

2. A platform according to claim 1, wherein the base (12) is made of a light metal or composite material having a honeycombed structure, the alveoles of which are filled with an acoustic insulating foam.

3. A platform according to claim 1, wherein the base (12) is made of wooden plates glued together.

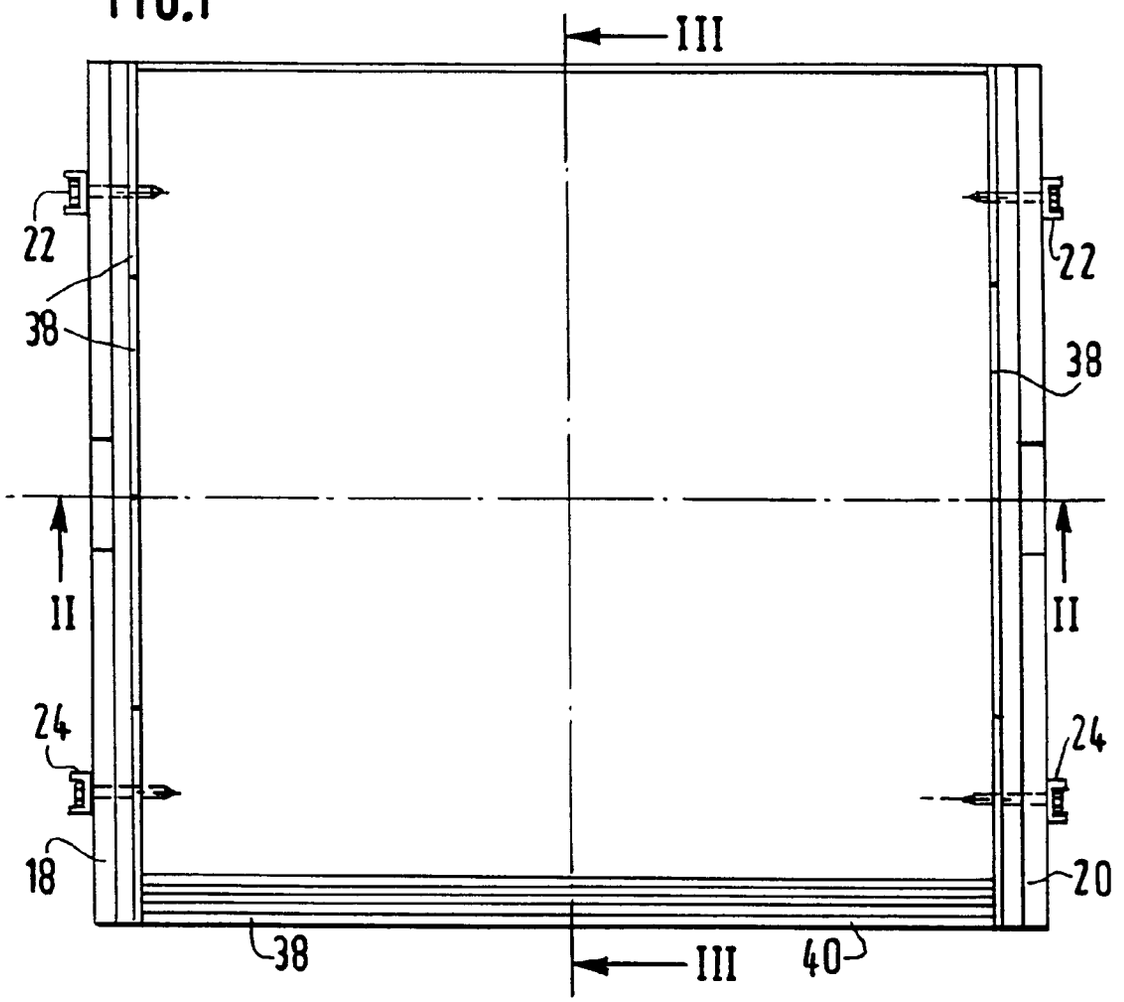
4. A platform according to any preceding claim, wherein the lower skin (14) of the base is provided on two parallel edges thereof with vertical borders (18, 20) which cover the edges of the base and on which are secured by means of bolts (22) the lower ends of vertical tie rods (24).

5. A platform according to any preceding claim, wherein the sensitive layer (26) is constituted by an optical fiber contorted to form a flat network.

6. A platform according to any preceding claim, wherein the floor (30) is made of a honeycombed composite material.

7. A platform according to any preceding claim, wherein tapped inserts (36) are embedded on the lateral edge of the honeycombed floor for securing the vertical walls (38) of the car.

FIG.1


III
22
38
22
38
II
II
24
24
18
20
38
III
40

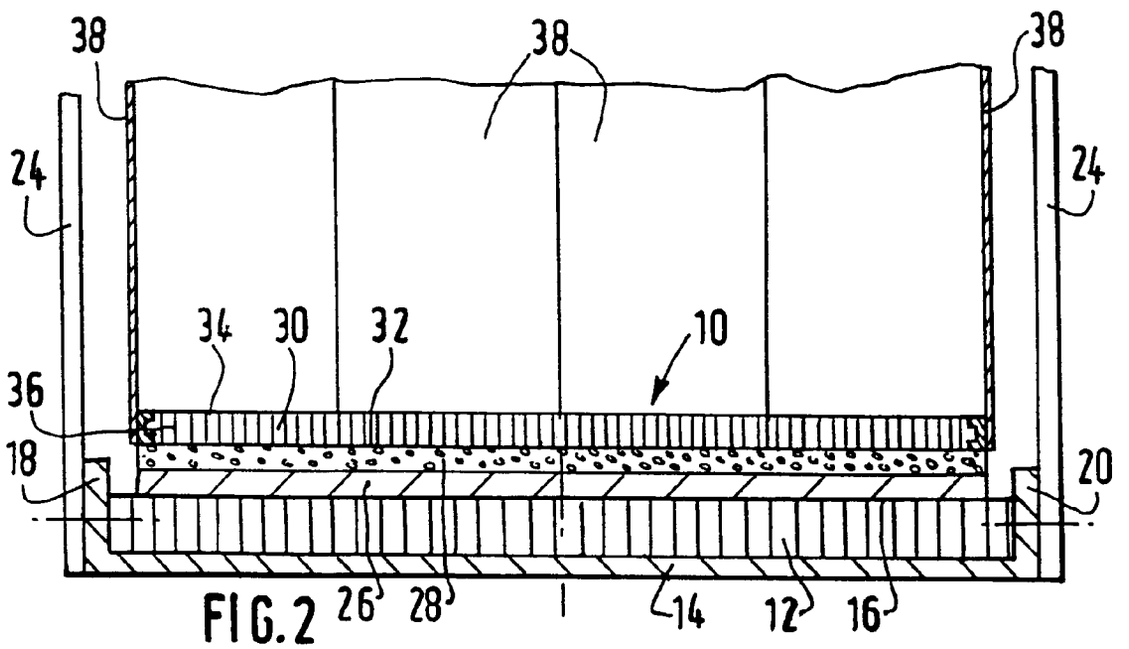

38
38
38
24
24
34
30
32
10
36
18
20
26
28
14
12
16

FIG.2

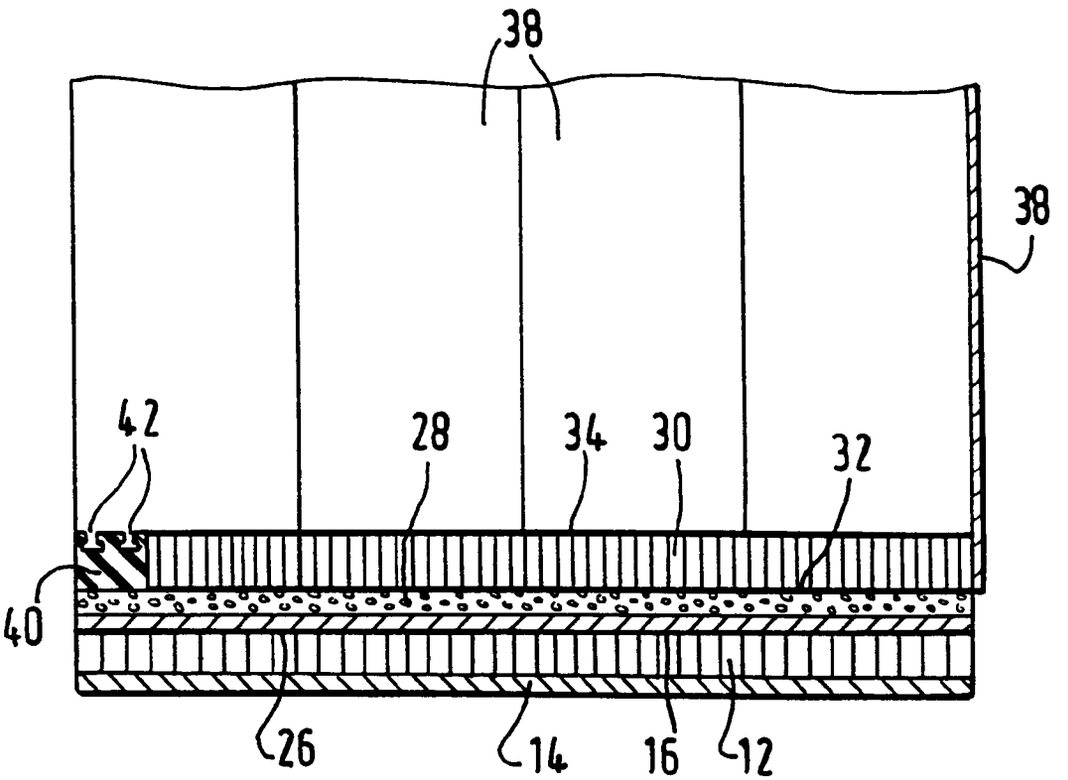


FIG. 3

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 95 30 5189

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	PATENT ABSTRACTS OF JAPAN vol. 18 no. 404 (M-1646) ,28 July 1994 & JP-A-61 015859 (TOSHIBA CORP) 26 April 1994, * abstract *	1,4	B66B11/02
A	EP-A-0 566 424 (OTIS ELEVATOR COMPANY) * page 5, line 21 - line 24; figure 13 *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

B66B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	27 October 1995	Salvador, D

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)