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**④ INTEGRATED ELEVATOR CAB FIXTURE.**

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**EP 0 070 876 B1**

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**Description****Technical Field**

This invention relates to elevator systems and, in particular, elevator cab fixtures — control buttons, panels and displays — and their location in an elevator cab.

**Background Art**

As is well known, typical or conventional elevator cab fixtures comprise a control panel, basically a planar arrangement of control buttons fixed to one wall of the elevator cab, and a display of some type, usually located on one of the cab walls where most passengers can see it, and often above or at the top of the panel, but sometimes above the cab door, to show cab position and possibly direction — up/down. The main criteria controlling fixture location in the cab are ease of operation of the control panel buttons and convenient display visibility. In particular, the control buttons should be accessible to the passenger — and the display should be high enough so that it is not obstructed by other passengers, yet is easily seen by all passengers.

This typical arrangement, however, is usually located for average passengers, normal standing people of average height, and this often makes the fixtures extremely inaccessible for some passengers, such as children and handicapped persons, especially those in wheelchairs, who have limited reaching capability and whose view is easily obscured by other passengers in the cab. Being that the typical fixture arrangement and location in the cab is inconvenient for certain types of passengers who can be expected to use the elevator, greater emphasis is now being placed on making the fixtures convenient for them as well. But whatever the solution, it should not favour one type of passenger, and the fixtures should be equally convenient for children, occupants of wheelchairs, and normal standing occupants of average height and reach.

In an effort to standardize requirements somewhat to alleviate these problems, some "suggested minimum passenger elevator requirements for handicapped" passengers have been proposed, as published by the National Elevator Industry Association. Proposed as basic fixture dimensions for most situations, the bottom row of control buttons on the control panel should be no more than 88.9 cm (35") above the floor height, and the top row of keys not higher than 137.2 cm (54") above the floor. The bottom dimension is satisfactory for handicapped persons, namely those in wheelchairs, but are actually too low for the normal standing passenger, making the lower buttons difficult to see and reach, especially in a crowded car. Standards for the displays have not been proposed, but, naturally, should also be addressed in solving the problem.

U.S. Patent 2,518,920 discloses a display that is located in the uppermost portion of a cab pointing downward to the passengers, but this patent is

concerned only with the location of the car portion indicator for normal standing passengers.

**Disclosure of Invention**

An object of the present invention is to provide cab fixtures — control panels and displays — which are easily used by both handicapped and normal standing passengers.

According to the present invention, there is provided an elevator cab for transporting passengers, including a control panel attached to one cab wall, comprising a first surface containing a plurality of control buttons, arranged at a cab wall from a first distance from the cab floor, and further including a display with a second surface, the second surface being vertically above the first surface and oriented downward, at an angle from the cab wall, from a second distance above the floor, the first distance being selected such that the majority of buttons on the first surface are substantially at eye level for a first group of passengers standing within reaching distance of the panel, the second distance being such that the display is above the eye level of a first and second group of passengers and the angle being such that the viewing angle of the display is oriented downward towards both groups of passengers, characterized in that said first and second surfaces are integrated in said control panel, said first surface being oriented upward at an angle from the cab wall such that the viewing angle relative to this first surface is oriented towards the second group of passengers standing within reaching distance of the panel.

The present invention consequently provides a composite — integrated — fixture characterized in that the control buttons can be observed and operated by a wide variety of passengers, without favouring any particular one of them and the car position and motion display can be observed easily by all passengers.

Other objects and features of the present invention will be apparent from the remaining description of an embodiment of the invention.

**Brief Description of Drawings**

Fig. 1 is a partial cutaway view of the side of an elevator cab containing a conventional control panel, and shows the viewing angles associated with a representative adult and a child passenger in the cab;

Fig. 2 is the same view as in Fig. 1, but shows the viewing for a representative passenger in a wheelchair;

Fig. 3 is a partial cutaway view of the side of an elevator cab having a cab fixture embracing the present invention and shows the viewing angles for the representative adult and child passengers;

Fig. 4 is the same side view as Fig. 3, but shows the viewing angles for the passenger in a wheelchair; and

Fig. 5 is a perspective view of a control panel embracing the present invention.

### Best Mode for Carrying Out the Invention

Fig. 1 shows a child 10 and an adult 12 standing in an elevator cab (partially shown only) and observing a conventional, generally flat control panel 14 attached to the cab wall 15. The panel contains along its length a plurality of stacked buttons, and at the panel top 14A, an indicator. Being well known, however, the buttons and display are not shown. Dotted lines A, B, C and D define each passenger's viewing path of the two extreme ends 14A and 14B of the control panel 14. The panel is assumed to be positioned lower than other panels positioned only for adults — as in most installations — to be convenient (easy to see and reach) for the child and also the adult. As a result, the viewing distance along paths A and B are not equal, producing a shallow viewing angle 16 at the lower end 14B, and making it difficult for the adult to see and reach the lower end. For the child 10, the reverse occurs, and the arrangement produces a shallow viewing angle 17 of the end 14A, but a deep viewing angle of the lower end 14B, hence, making the bottom accessible and the top hard to see.

Fig. 2 shows the viewing paths E and F for a passenger 20 sitting in a wheelchair, and the same problem occurs for this passenger as for the child: it is hard to see the upper end, but easy to see and reach the lower end. Figs. 1 and 2 demonstrate why merely lowering existing panels is not a satisfactory solution; it creates as many problems as it solves, and merely penalizes all passengers to some extent.

Figs. 3 and 4, on the other hand, show an integrated cab fixture 30, a combined control panel and display, according to one embodiment of the present invention. Shown in perspective in Fig. 5, the fixture 30 has a lower control button surface 30A, containing buttons 32, preferably arranged in rows, and an upper surface 30B, containing a display 34, for example, a digital display, for indicating car location and possibly car direction, or, for that matter, other information. In order to facilitate observation of the indicator, the surface 30B is at an angle 33 with respect to the vertical cab wall 15, and to facilitate observation and access to the control buttons the lower surface 30A is at an angle 36 with respect to the wall 15; the wall, of course, being vertical with the cab floor 18. The lower surface 30A may contain primary elevator control buttons 32A, those most often and likely to be used and relating door operation and car emergencies. Buttons of lesser importance, less likely to be used, may be located on a central flat portion 30C of the control panel, this portion 30C being parallel to the wall X, that is not at an angle with respect to it, thus substantially perpendicular to the cab floor.

Fig. 3, like Fig. 1, shows the two occupants 10 and 12, and Fig. 4, like Fig. 2, shows the occupant 20. But, contrasting Figs. 1 and 3, by angling the surface 30A upward, the viewing angle 16A of the lower portion of the fixture (as seen on path G) is significantly more than the angle 16, making it easier for the passenger 12 to see and reach the

lower buttons, without negatively affecting the viewing angle and access for passenger 10. The viewing angle 17A, of the upper portion 30B (as seen along path H), is significantly greater than the viewing angle 17 shown in Fig. 1, making it easier for the passengers 10, and also the passengers 20, to observe the display. The display is also easier for the passenger 12 to see because of the angle 33.

Assuming the suggested requirement, that the lowest buttons be no less than 88.9 cm (35") above the floor height, these dimensions have been determined experimentally to be suitable for providing convenient operation for most passengers 10, 12 and 20 expected to use the cab: The lower edge 30D of the panel 30, at position D1, should be approximately 86.4 cm (34") above the floor; the first row 32B of buttons, at position D2, approximately 88.9 cm (35") to 91.4 cm (36") above the floor; and the angle 36 about 14° to 15°. The overall panel length for these conditions should be such that the upper end of the panel 30E, at position D3, is 213.4 cm (84") above the floor, and the angle 33 should be approximately 14° to 15°, like angle 36. The width of the panel should be such that the primary buttons can fit on the lower panel surface 30A. But, as stated previously, buttons may be placed in the center portion 30C.

A preferred embodiment of the present invention has been shown, but modifications, variations or alterations therein and thereto may be apparent or suggested to one skilled in the art without departing from the scope of the invention as claimed hereinafter.

### Claims

1. An elevator cab for transporting passengers, including a control panel attached to one cab wall (15), comprising a first surface (30A) containing a plurality of control buttons (32A, 32B) arranged at a cab wall from a first distance from the cab floor, and further including a display (34) with a second surface (30B), the second surface being vertically above the first surface and oriented downward, at an angle (33) from the cab wall, from a second distance above the floor, the first distance being selected such that the majority of buttons on the first surface are substantially at eye level for a first group of passengers (10) standing within reaching distance of the panel, the second distance being such that the display is above the eye level of a first and second group of passengers and the angle being such that the viewing angle of the display is oriented downward towards both groups of passengers, characterized in that said first and second surfaces (30A, 30B) are integrated in said control panel (30), said first surface being oriented upward at an angle (36) from the cab wall (15) such that the viewing angle relative to this first surface is oriented towards the second group of passengers (12) standing within reaching distance of the panel.
2. An elevator cab according to claim 1, charac-

terized in that the first distance is approximately 86.4 cm (34 inches), the first and second angles are approximately 14°, and the second distance is approximately 208.4 cm (82 inches).

3. An elevator cab according to claim 1, characterized in that rows of control buttons extend horizontally across the first surface, the lowest row (32B) being, relative to the cab floor, approximately 91.4 cm (36 inches) above the cab floor.

#### Patentansprüche

1. Fahrstuhlkabine zur Beförderung von Fahrgästen mit einem an einer Kabinenwand (15) angebrachten Steuerschaltfeld, das eine erste Oberfläche (30A) mit einer Mehrzahl von Schaltknöpfen (32A, 32B) aufweist und an einer Kabinenwand von einem ersten Abstand an von dem Kabinenboden angebracht ist, und weiter mit einer Anzeigetafel (34) mit einer zweiten Oberfläche (30B), wobei die zweite Oberfläche senkrecht oberhalb der ersten Oberfläche in einem zweiten Abstand oberhalb des Bodens ist und nach unten unter einem Winkel (33) zu der Kabinenwand ausgerichtet ist, wobei der erste Abstand so gewählt ist, daß die Mehrzahl der Knöpfe auf der ersten Oberfläche im wesentlichen auf Augenhöhe einer ersten Gruppe von innerhalb Reichweite zum Schaltfeld stehender Fahrgäste (10) ist, der zweite Abstand so, daß die Anzeigetafel oberhalb der Augenhöhe einer ersten und einer zweiten Gruppe von Fahrgästen ist und der Winkel so, daß der Sichtwinkel der Anzeigetafel auf beide Gruppen von Fahrgästen herab ausgerichtet ist, dadurch gekennzeichnet, daß die erste und zweite Oberfläche (30A, 30B) in dem Steuerschaltfeld (30) zusammengefaßt sind, wobei die erste Oberfläche unter einem Winkel (36) zu der Kabinenwand (15) so nach oben ausgerichtet ist, daß der Sichtwinkel relativ zu dieser ersten Oberfläche zu der zweiten Gruppe von Fahrgästen (12), die innerhalb Reichweite des Schaltfeldes stehen, ausgerichtet ist.

2. Fahrstuhlkabine nach Anspruch 1, dadurch gekennzeichnet, daß der erste Abstand ungefähr 86,4 cm (34 Zoll) beträgt, der erste und zweite Winkel ungefähr 14° betragen und der zweite Abstand ungefähr 208,4 cm (82 Zoll) beträgt.

3. Fahrstuhlkabine nach Anspruch 1, dadurch gekennzeichnet, daß sich Reihen von Schaltknöpfen horizontal über die erste Fläche erstrecken,

ken, wobei die unterste Reihe (32B) in bezug auf den Kabinenboden ungefähr 91,4 cm (36 Zoll) über dem Kabinenboden ist.

#### Revendications

1. Cabine d'ascenseur destinée pour le transport de passagers, comprenant un panneau de commande fixé à une paroi (15) de la cabine, qui comprend une première surface (30A) qui contient une pluralité de boutons de commande (32A, 32B) agencée sur une paroi de la cabine, à une première distance du plancher de la cabine, et comprenant en outre un afficheur (34) comprenant lui-même une deuxième surface (30B), la deuxième surface étant placée à la verticale au-dessus de la première surface et orientée vers le bas, et inclinée d'un angle (33) sur la paroi de la cabine, à une deuxième distance au-dessus du plancher, la première distance étant choisie de telle manière que la majorité des boutons portés par la première surface se trouvent sensiblement au niveau de l'oeil pour un premier groupe de passagers (10) qui se tiennent debout à portée du panneau, la deuxième distance étant telle que l'afficheur se trouve au-dessus du niveau de l'oeil d'un premier ou d'un deuxième groupe de passagers et l'angle étant tel que l'angle de vision de l'afficheur soit orienté vers le bas, vers les deux groupes de passagers, caractérisée en ce que la première et la deuxième surfaces (30A, 30B) sont intégrées dans ledit panneau de commande (30), ladite première surface étant orientée vers le haut, en formant un angle (36) avec la paroi (15) de la cabine tel que l'angle de vision relatif à cette première surface soit orienté vers le deuxième groupe de passagers (12) qui se tiennent debout à portée du panneau.

2. Cabine d'ascenseur selon la revendication 1, caractérisée en ce que la première distance est d'environ 86,4 cm (34 pouces), le premier et le deuxième angles sont d'environ 14° et la deuxième distance est d'environ 208,4 cm (82 pouces).

3. Cabine d'ascenseur selon la revendication 1, caractérisée en ce que des rangées de boutons de commande s'étendent horizontalement sur la première surface, la rangée la plus basse (32B) se trouvant, relativement au plancher de la cabine, à environ 91,4 cm (36 pouces) au-dessus du plancher de la cabine.

