Title
Auxiliary device for displacing a payload receptacle of a lift and device for monitoring the position and the movement of a cage in a shaft of a lift

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Related Art
DE 29817351
US 4735295
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Auxiliary device for displacing a payload receptacle of a lift and device for monitoring the position and the movement of a cage in a shaft of a lift

The auxiliary device is needed when the lift stands in the lift shaft (11) outside a station (12.1 to 12.6). It comprises an auxiliary drive device for the payload receptacle (14). For sight-free observation of the auxiliary device there is arranged an image transmission device (40), which comprises a sensor (42), a display device (44) and a transfer path (46).

The sensor (42) serves for detection of images which illustrate a drive pulley (18) coupled with the auxiliary drive device. The display device (44) serves for visualisation of the images detected by the sensor (42), and the transfer path serves for transmission of the images detected by the sensor (42) to the display device (44).

Figure 2
Application Number: 
Lodged:

Invention Title: AUXILIARY DEVICE FOR DISPLACING A PAYLOAD RECEPTACLE OF A LIFT AND DEVICE FOR MONITORING THE POSITION AND THE MOVEMENT OF A CAGE IN A SHAFT OF A LIFT

The following statement is a full description of this invention, including the best method of performing it known to us
AUXILIARY DEVICE FOR DISPLACING A PAYLOAD RECEPACLE OF A LIFT AND DEVICE FOR MONITORING THE POSITION AND THE MOVEMENT OF A CAGE IN A SHAFT OF A LIFT

FIELD OF THE INVENTION

The invention relates to an auxiliary device for displacing a payload receptacle of a lift and to a device for monitoring the position and the movement of a lift cage in a shaft of a lift.

BACKGROUND OF THE INVENTION

Lifts with an auxiliary device of the above kind are usually used for the transport of persons or goods in a vertical direction between at least two vertically offset stations and are arranged in a lift shaft in or outside of a building. A wall bounding the lift shaft has at the level of each station a loading/unloading opening adjoining awaiting zone. The opening is closable by means of a door. Payloads are disposed on the waiting zone before loading or after unloading of the payload receptacle. Such a lift essentially includes a payload receptacle such as a platform or a cage, a counterweight for the payload receptacle, a drive device, a braking device, at least one flexible support and drive element, such as for example a cable or rope, and the necessary electronic power and control system. The flexible support and drive element connects the payload receptacle with its counterweight and runs between the payload receptacle and counterweight by way of a drive wheel of the drive device. The drive device is disposed in the transport shaft above the zone thereof usable by the payload receptacle.

When braking takes place as consequence of a technical problem, i.e. in an emergency braking, the load receptacle is usually not located in a station. The auxiliary device then has to be actuated in order to bring the load receptacle to a station in the shortest time, so that persons and/or goods being transported do not have to remain in or on the load receptacle in the lift shaft. The auxiliary device has on the one hand a temporarily activatable brake release device, by which the braking device is released, and on the other hand an auxiliary drive device actuable in the case of emergency in order to raise or lower the load receptacle when the release device is activated; in that case, the load receptacle
has to be brought into one of the stations or at least into a region in the vicinity of
a station where a risk-free unloading can take place. The auxiliary drive device is
generally constructed so that it allows manual actuation of the drive device drive
pulley, which in normal operation is actuated by motor...Consequently, this drive
pulley can also be considered as part of the auxiliary drive device.

For lifts which are mounted in buildings with few storeys and which are
designed for transport of relatively small payloads, simple, manually actuable and
mechanically operating brake release and auxiliary drive devices are preferably
provided.

EP 0 947 460 A1 describes such an auxiliary device for a lift for persons,
with a release device and an auxiliary drive device. The latter possesses a crank
rod linkage which is so constructed that it is used not only for activating a brake
release device, but also for the drive of an auxiliary drive device. The upper end
region of the crank rod linkage can be coupled with the brake release element
and with the element of the auxiliary drive and is disposed in the uppermost part
of the transport shaft. The crank rod linkage is constructed to be pivotable and
mounted in such a manner that it can be pivoted from a rest position in which it is
disposed entirely in the lift shaft into an operative position in which its lower end
region projects through a window opening of a wall bounding the lift shaft. The
window opening lies in the upper region of the uppermost station, so that the
crank rod linkage can be readily actuated at its lower end by way of appropriate
handle elements by a person standing in the waiting zone of the station. The
disadvantage of this device is to be seen in that the actuation thereof has to take
place at the level of the uppermost station; this disadvantage is of particular
significance when this station is disposed within a residential unit, as is frequently
the case in superior dwellings and particularly in maisonette dwellings and
penthouse dwellings.

There is known from DE GM 296 15 921 U1 an auxiliary device which is
improved with respect to the aforementioned device of EP '460, in that operation
of the device can take place from a location disposed at a certain distance from
the uppermost station of the lift. However, this auxiliary device is of comparatively
complicated construction. A substantial disadvantage of such auxiliary devices
resides in the fact that it is not possible for a person who is actuating it to observe
the movement, which takes place in the uppermost region of the lift shaft, of the auxiliary drive device, given that there is direct visual link between this uppermost region of the lift shaft and the person carrying out the operation. Certainly, with a suitable arrangement of an observation window, the flexible support and drive element at which the load receptacle is suspended can be observed without further measures from a location outside the lift shaft; thus, an indication can be obtained about the movement of the payload receptacle. However, in many cases this is considered to be an inadequate solution. In order to actually observe an element of the auxiliary drive device, such as the drive pulley, the person carrying out the operation is obliged to move at least his or her head and neck region into the lift shaft, which forms a source of risk for this person and can hinder them during actuation of the auxiliary device. Moreover, the view of the uppermost region of the lift shaft through the payload receptacle is obstructed if this is disposed above the location of the person carrying out the operation.

**SUMMARY OF THE INVENTION**

It is therefore an object of the present invention to provide an auxiliary device for displacing a payload receptacle of a lift and a device for monitoring the position and the movement of a cage in a shaft of a lift which are simple with respect to construction, arrangement and operation and which can be operated from a storey lying at one or more levels below the uppermost building storey.

The present invention provides, in one aspect thereof, an auxiliary lift device which includes an image transmission device which essentially consists of a sensor, a display device and an image (or information) transfer path. The sensor serves the purpose of detecting at least one image of the movement of the auxiliary drive; the display device serves the purpose of making visible the images, which are picked up by the sensor, for the attention of the person carrying out the operation; and the transfer path serves for transmission to the display device of the images detected by the sensor. In applications where the operating elements of the auxiliary device are arranged far below the uppermost floor, the presence of the image transmission device allows mounting of the display device in the immediate vicinity of the operating elements of the brake release and auxiliary drive device.
In another aspect, the present invention provides a device for monitoring the position and the movement of a cage in a shaft of a lift, having a first means for monitoring the movement of the cage, which includes a unit for detection of the movement, an information transmission path and a display unit. In addition, there is provided a second means for monitoring the position of the cage, which includes a means for reproducing the position of the cage.

In a preferred first embodiment of the auxiliary device, the image transmission device is formed by at least two mirrors. The first mirror serves as a sensor and is oriented towards the auxiliary drive; the second mirror serves as a display device and is oriented towards an observation window, which is arranged in the wall of the lift shaft at the location provided for the person carrying out the operation. The transfer path is provided by the optical path between the first and the second mirror. This arrangement is comparatively simple in construction and reliable in operation. Moreover, it allows visualisation on the display device not only of an image of the movement of the auxiliary drive, but also of the constructional elements of the auxiliary drive itself and the surroundings thereof. In such embodiment, attention is given to mounting the mirror so that the payload receptacle does not reach into the transfer path and thereby interrupt it.

Advantageously, suitable means are provided to sufficiently brighten the lift shaft, including such that work when mains (power) failure take place when the auxiliary device has to be set in motion

The image transmission device can also include one or more additional mirrors arranged along the transfer path between the first and the second mirror. In that case, each mirror is oriented towards the two mirrors adjacent thereto in the transfer path. The additional mirrors in such an arrangement can be considered to be components of the transfer path. In order to obtain good image quality, it can be advantageous if individual mirrors have reflection surfaces which are not planar, but concave or convex.

Apart from the purely optical image transmission device with mirrors, there can also be provided in accordance with another aspect of the invention an image transmission device in which the transfer path is formed by a continuous conductor connection. This gives rise to, inter alia, the following advantages: the transfer path can be extended as desired; there is no risk that the transfer path is
interrupted by the payload receptacle; the display device can be mounted at a location which is optimum for the person carrying out the operation; and it is not necessary to provide an actual observation window in the wall of the lift shaft, because a small passage in this wall suffices for passing through the conductor connection. By contrast to the image transmission device with mirrors, it is further not necessary to provide emergency lighting for the entire transfer path, as merely sufficient light has to be present to guarantee the function of the sensor.

In yet another aspect, the auxiliary device may include an image transmission device wherein the sensor is formed by a video camera and the display device by a monitor, and wherein the transfer path is provided by an electrical or opto-electric conductor connection connecting the video camera with the display device. As in the case of the image transfer device with mirrors, there appears on the display device, i.e. on the monitor, an image of the auxiliary drive device and also its immediate environment. It is thereby possible to obtain more accurate indications of malfunctions. Several video cameras can also be mounted at different places within the lift shaft, wherein the images detected by them can be alternatively and selectably visualised on the monitor.

Auxiliary devices with an image transmission device of which the transfer path is formed by a conductor connection can also be conceived in such a manner as to include a rotary element which rotates fixedly with the shaft of the auxiliary drive device and the rotation of which is detected by the sensor. In that case there appears on the display device not an image of the auxiliary drive itself, but an image of the movement of the auxiliary drive.

In yet a further aspect of the invention, a conventional tachometer device can be mounted, as the sensor, at the shaft of such a rotary element which is preferably identical with the shaft of the auxiliary drive. The conductor arrangement in this case may advantageously be an electrical conductor arrangement. The display device, namely a conventional tacho display, can reproduce the image not only of a movement of the auxiliary drive device, but also of the speed thereof.

In another construction of the image transfer device with a conductor connection between the sensor and display device, the rotary element is constructed as a rotary disc and has light-permeable zones which are arranged at
mutual angular spacings and generally at a constant radial spacing from the rotational axis of the rotary element. As a rotary element or rotary disc there is preferably used a drive pulley of the drive of the lift, over which the flexible support and actuating elements for the payload receptacle run; such a drive pulley constantly rotates during displacement of the payload receptacle. Arranged on one side of the rotary disc is a light source which is so oriented that the light beam emitted by it is incident on a sector of the radial region of the rotary disc in which the light-permeable zones of the rotary disc are disposed. The sensor is arranged on the opposite side of the rotary disc. The display device shows an image of the movement of the drive or of the auxiliary drive or of the rotary disc. The display device is, for example, a monitoring light which blinks at the rhythm in which the light-permeable zones rotate away below the beam emitted by the light source, so that a bright/dark alternation is visible. The spacing in terms of time of the bright/dark alternation is a measure of the speed of the auxiliary drive and thus also of the payload receptacle.

In an image transmission device of that kind the light source can be formed by a first element of a light barrier and the sensor by the complementary second element of the light barrier. The conductor connection is, in that case an electrical conductor connection.

In an image transmission device which is similar to that just described the sensor may advantageously formed by an input of an optical conductor arrangement. The optical conductor arrangement itself is the conductor connection or the transfer path. The output of the optical conductor connection is oriented towards the display device, which acts in the manner of a monitoring light. As in the case of the image transmission device with a tachometer or light barrier there is in this case transmitted not an image of the drive pulley itself, but merely an image of the movement of the drive pulley. However, it is possible with a modification of this arrangement to transmit an image of the drive pulley itself. For this purpose, several optical conductors, for example n squared optical conductors must be used. The inputs and outputs of the conductors are respectively arranged in n columns to n lines; the larger the number n of optical conductors, the finer the scanning-pattern image that is received of the drive pulley.
The initially described construction of the image transmission device with mirrors has, as already mentioned, a 'non-material' transfer path. This would be particularly advantageous for applications in which an existing lift has to be subsequently equipped with an image transmission device. However, this is usually not possible with mirrors which need for that purpose a free space for the beam path near the load receptacle. Thereagainst, a comparatively simple and space-saving image transmission device can be realised in accordance with yet another aspect of the invention in which the 'non-material' transfer path is provided by a radio or laser connection.

An auxiliary device, in accordance with the invention, may thus include an image transmission device which, as explained, can be constructed in very diverse ways. It is also possible to provide image transmission devices which consist of several serially arranged part-devices constructed and operable in accordance with several of the above-described principles.

Advantageously, the invention also relates to a device for monitoring the position and movement of a lift cage, wherein the unit for detection of the movement of the cage enables a conclusion about the movement of the cage to be made by way of the detection of the movement of a movable part of the drive unit.

Moreover, a speed-limiting unit can be provided, wherein the unit for detection of the movement of the cage enables a conclusion about the movement of the cage to be made by way of the detection of the movement of a movable part of the speed-limiting unit.

A preferred embodiment of the unit for detection of the movement of the cage can advantageously comprise a flexible shaft which is connected with the movable part of the drive unit. The display unit may then include a rotating disc or a tachometer.

A unit for detection of the movement of the cage may, in a further embodiment of the invention include a flexible shaft which is connected with the movable part of the speed-limiting unit. The display unit will then include a rotating disc or a tachometer.
In another aspect of the invention in an embodiment in a speed-limiting unit, a cable is used wherein the means for reproducing the position of the cage comprises marks at the cable of the speed-limiting unit.

Moreover, a support means, which is connected with the cage, can be provided, wherein the means for producing the position of the cage comprises marks at the support means.

The present invention will now be described with reference to non-limiting embodiment thereof with reference to accompanying drawings. Other details and advantages of the invention will become clearer as well.

**BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1A shows a first auxiliary device according to the invention, with an image transmission device with mirrors, from the side;

FIG. 1B shows the auxiliary device illustrated in FIG. 1A, from above;

FIG. 2A shows a second auxiliary device according to the invention, with an image transmission device with a video system, in the same representation as FIG. 1A;

FIG. 2B shows the auxiliary device illustrated in FIG. 2A, in the same representation as FIG. 1B;

FIG. 3 shows a third auxiliary device according to the invention, with an image transmission device with a tachometer, in the same representation as FIG. 1A;

FIG. 4A shows a fourth auxiliary device according to the invention, with an image transmission device with a light barrier, in the same illustration as FIG. 1A;

FIG. 4B shows the drive pulley illustrated in FIG. 4A, in enlarged representation, 4A, in a view in the direction of arrow IV of FIG. 4A;

FIG. 5 shows a fifth auxiliary device according to the invention, with an image transmission device with a transfer path formed by an optical conductor arrangement; and

FIG. 6 shows a sixth auxiliary device according to the invention, with an image transfer device with a non-material transfer path.

**DESCRIPTION OF PREFERRED EMBODIMENT**

FIG. 1A shows an lift 10 with a lift shaft 11, which serves several stations--denoted in the following as stopping points or storeys--12.1, 12.2, 12.3, 12.4, 12.5
and 12.6 in floors arranged one above the other, wherein the station 12.1 is disposed in the basement and the station 12.6 at the uppermost floor. At each station, a door opening, which is closable by means of a not-illustrated door, is present in the wall of the lift shaft 11 and gives access to a payload receptacle (=lift cage) 14 when this is at rest in the station. The payload receptacle 14 is constructed as a cage and is vertically movable within the lift shaft 11. It is fastened at one end of a flexible support and drive element 16. Starting from the payload receptacle 14 the flexible support and drive element 16 runs upwards to a drive pulley 18 in the uppermost region of the lift shaft 11, runs around this drive pulley 18 and runs back down to a counterweight 20 of the payload receptacle 14.

A drive device 22 serves for driving the drive pulley 18. In the following the drive pulley 18 in conjunction with the drive device 22 is also termed drive unit. Disposed in the uppermost region of the lift shaft 11 are, moreover, a braking device 24, a temporarily activatable brake release device 26 and an auxiliary drive device 28 for the drive pulley 18. The brake release device 26 and the auxiliary drive device 28 are components of an auxiliary device 30, which serves the purpose of moving the payload receptacle 14 when, due to technical problems, it is blocked by the braking device 24 between two adjacent ones of the stations 12.1 to 12.4.

A speed limiter 51 is provided in the upper region of the lift shaft 11 for speed monitoring. A limiter cable 52 is guided from the speed limiter 51 over a deflecting roller 53 mounted in the shaft pit and back to the speed limiter 51. The limiter cable 52 is mechanically connected with the lift cage 14. If the speed of the lift cage 14 rises above a defined upper speed nominal value, the speed limiter 51 triggers a braking device, which is not shown in FIG. 1 and which brakes the lift cage 14 safely to a halt and retains it in this position.

A waiting area is disposed in front of the lift cage 14 at each floor; the pedestrian floor surfaces of the waiting areas are denoted by 13.1 to 13.6. For displacement of the payload receptacle 14, which according to FIG. 1 is blocked between the stations 12.2 and 12.3, to the station 12.2 the brake release device 26 is activated in not-illustrated manner by an operative 1 who is located at the level of the station 12.1, in the present case in the waiting area thereof, and who actuates the auxiliary drive device 28 during the activation of the brake release
device 26. The drive pulley 18 rotates under the action of the auxiliary drive 28, whereby the flexible support and drive element 16 is set into motion with the consequence that the payload receptacle 14 is, in accordance with the respective rotational direction of the drive pulley 18, raised, or as envisaged here, lowered. The auxiliary device 30 according to the invention moreover comprises an image transmission device 40, with the assistance of which it is possible for the operative 1 to observe the movement of the drive pulley 18 from his or her location outside the lift shaft 11 and without a direct visual link to the drive pulley 18. An arrangement of the operating elements of the auxiliary device 30 as well as the display device of the image transmission device 40 in the lowermost floor, thus in the basement, can be worthy of recommendation, since a separate monitoring and operating space can optionally be bounded off there so that, for example, an actuating device and other devices of the auxiliary device 30 can be accommodated in vandal-proof manner, but it is obviously also possible to select a higher floor for that purpose.

The image transmission device 40 essentially consists of a sensor 42, a display device 44 and a transfer path 46, which connects the sensor 42 with the display device 44. The previously described parts are, in principle, the same in all described embodiments. The various auxiliary devices 30 differ in practice only by the different construction of their image transmission devices 40.

The embodiment illustrated in FIGS. 1A and 1B shows an image transmission device with mirrors. The sensor 42 is formed by a first mirror similarly denoted by 42. This first mirror is oriented not only towards the drive pulley 18, but also towards the display device 44, which is formed by a second mirror similarly denoted by 44. The second mirror 44 is oriented towards the first mirror 42 and, moreover, is so arranged that it is viewable from the lowermost station 12.1 by way of a window opening 13 of the wall of the lift shaft 11. The first mirror 42 thus reflects the image of the drive pulley 18 and projects it onto the second mirror 44; the second mirror 44 reflects the image of the drive pulley 18 in direction towards the window opening 13. FIG. 1B shows that a free space 11.1 for the transfer path 46, which here is formed merely by the beam path, is present in the lift shaft 11 laterally near the payload receptacle 14 and the counterweight.
In the following the speed limiter 51, the limiter cable 52 and the deflecting roller 53 are termed a unit for speed limitation.

The image transmission device 40 can also be so arranged that it reproduces one or more of the movable parts of the unit 51, 52, 53 for speed limitation.

FIGS. 2A and 2B show a second auxiliary device 30 for a lift 10, which differs from the lift illustrated in FIGS. 1A and 1B by a differently designed image transmission device 40 and--in connection therewith--by the absence of the free space 11.1, which is not necessary here, in the lift shaft 11; such a free space 11.1 is also redundant in all further described embodiments. The image transmission device 40 is here formed by a video system, with a video camera 42 as the sensor, a monitor 44 as the display device and an electric conductor connection 46 as the transfer path between the video camera 42 and the monitor 44. The video camera 42 is disposed in the uppermost region of the lift shaft 11 and is so arranged that it picks up images of the drive pulley 18. The monitor 44 is disposed in the lowermost station 12.1; it can be arranged behind a door for protection against destruction. An emergency current unit 47 for the video system is arranged in the lift shaft 11 in the region of the station 12.1.

In FIG. 3 there is illustrated a third auxiliary device 30 for a lift 10 with yet another image transmission device 40. In that case, the sensor is formed by a tachometer unit 42 arranged at the drive pulley 18. The display device is a conventional tacho display device 44 viewable from a location in the lowermost station. The tachometer unit 42 and tacho display 44 are connected together by an electric conductor connection 46, which forms the transfer path. The tachometer unit 42 can be arranged, instead of at the shaft 19, also at a rotary element rotating in fixed relationship with the drive pulley 18.

A fourth auxiliary device 30 for the lift 10 is illustrated in FIGS. 4A and 4B. The image transmission device 40 of this auxiliary device 30 requires the drive pulley 18 to have light-permeable zones 19, which are arranged in mutual angular spacings at a constant radius. According to FIG. 4B the light-permeable zones 19 are formed by slot-shaped passages. A light-emitting first element 48 of a light barrier 42, 48 is oriented towards a location through which, on a rotation of the drive pulley 18, the light-permeable zones 19 thereof run. The second element 42
of the light barrier 42, 48 is arranged on the other side of the drive pulley 18 and forms the sensor of the image transmission device 40. This second element 42 of the light barrier 42, 48 is connected by way of an electric conductor connection 46, which is used as transfer path, with the display device 44. The display device 44 is a monitoring light with a bright/dark display, which is viewable in the lowermost station 12.1. Instead of the drive pulley 18 there can also be provided another rotary element, which rotates in fixed relationship with the drive pulley, in the form of a rotary disc with light-permeable zones.

FIG. 5 shows a fifth auxiliary device 30 for the lift 10, which is very similar to the auxiliary device described with respect to Figures. 4A and 4B and which likewise has a drive pulley 18 or another rotary disc with light-permeable zones 18. Here, however, a conventional light source or lamp 48 is provided as the light-emitting element and the sensor is formed by an input 42 of an optical conductor arrangement 46, which is used as the transfer path. The output of the optical conductor arrangement 46, which can be considered as the display device 44, is oriented towards a translucent surface 49 viewable from outside the lift shaft 11. The effect of the display device 44 is that of a monitoring lamp with a bright/dark display.

Finally, in FIG. 6 there is illustrated a sixth auxiliary device 30 for the lift 10, wherein, the image transmission device 40 comprises an emitter 42.1 coupled with the sensor 42 and a receiver 44.1 coupled with the display device 44 as well as a non-material transfer path 46 in the form of a radio or laser beam connection.

The arrangements, which are shown in FIGS. 1 to 6, of the image transmission device 40 with the display device 44 represent merely one of the possible embodiments of the invention.

The components of the image transmission device 40 together with the display device 44 are to be arranged in the lift shaft 11 where, with respect to the storey, the technical and constructional requirements appear most appropriate.

In FIGS. 1 to 6 a sight-free visualisation of the unit 51, 52, 53 for speed limitation by means of the image transmission device 40 is not, in fact, illustrated, but a corresponding arrangement of the image transmission device 40 for sight-free visualisation of the unit 51, 52, 53 for speed limitation is possible. It is to be
decided in accordance with the respective application how the image transmission device 40 is to be arranged. In principle, the above-mentioned embodiments also apply in the case of the sight-free visualization of the unit 51, 52, 53 for speed limitation.

Moreover, coloured marks 60 or marks 60 of another kind can be applied to the support cable 16 or the limiter cable 52 in order to determine the position of the lift cage 14.

The invention is suitable for lifts without an engine room. By that there are to be understood lifts which have no actual engine room. The drive thereof is thus disposed in the lift shaft near the counterweight and the lift cage.
THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. Auxiliary device for moving a payload receptacle of a lift, having an auxiliary drive device arranged for coupling with a drive unit of the payload receptacle, a speed limiting unit for limiting the travel speed of the payload receptacle, and an image transmission device arranged for indirect visualisation of one of a moveable component of the drive unit and a movable component of the speed limiting unit, the image transmission device having
   a sensor disposed for detecting images representing movement of one of the drive unit and the speed limiting unit,
   a display device disposed for visualisation of the images detected by the sensor, and
   a transfer path disposed for transferring the images detected by the sensor to the display device.

2. Auxiliary device according to claim 1, wherein
   the sensor is a first mirror oriented towards one of the drive unit and the speed limiting unit, wherein the display device is a second mirror that is oriented towards the first mirror, and the transfer path is provided by the optical path between the first and second mirror.

3. Auxiliary device according to claim 1, wherein the transfer path is a conductor connection.

4. Auxiliary device according to claim 1 or 3, wherein the sensor is a camera, the display device is a display monitor, and the transfer path is an electric conductor disposed for transfer of data and/or images between the camera and the display monitor.

5. Auxiliary device according to claim 1 or 3, when the sensor is operative to detect images of the movement of a rotating rotary element connected with the drive unit.
6. Auxiliary device according to claim 5, wherein the rotary element is a shaft of the drive unit, wherein the sensor is a tachometer element arranged at or in the lift shaft, and wherein the display device is a tachometer display.

7. Auxiliary device according to claim 5, wherein the rotary element is a drive pulley of the drive unit, the pulley having light-permeable zones arranged at mutual angular spacings along a circle arranged concentrically with the rotational axis of the pulley, wherein the image transmission device further includes a light source arranged on one side of the rotary element, the sensor being arranged on the other side of the rotary element such as to enable sensing of light emitted by the light source.

8. Auxiliary device according to claim 7, wherein the light source and the sensor are elements of a light barrier arrangement, and wherein the transfer path is an electric conductor connection.

9. Auxiliary device according to claim 7, wherein the sensor is an input of an optical conductor arrangement, and wherein the transfer path is an output of the optical conductor arrangement.

10. Auxiliary device according to claim 1, wherein the sensor is coupled with an emitter, wherein the display device is coupled with a receiver, and wherein the transfer path is a radio or laser light transfer path.

11. Device for monitoring position and movement of a cage in a shaft of a lift, including means for monitoring the movement of the cage that include a unit for visual detection of cage movement directly or indirectly, an image or image-data transmission path, an image display unit, and means for monitoring the position of the cage that include means for reproducing the position of the cage.

12. Device according to claim 11, further including a drive unit for movement of the cage, wherein the unit for detection of cage movement is operative to enable a conclusion about the movement of the cage to be made by way of detection of the movement of a movable part of the drive unit.
13. Device according to claim 11, further including a cage speed-limiting unit, wherein the unit for detection of cage movement is operative to enable a conclusion about the movement of the cage to be made by way of detection of the movement of a movable part of the speed-limiting unit.

14. Device according to claim 12, wherein the unit for detection of cage movement includes a flexible shaft connected with the movable part of the drive unit, and wherein the display unit includes one of a rotating disc and a tachometer.

15. Device according to claim 13, wherein the unit for detection of cage movement includes a flexible shaft connected with the movable part of the speed-limiting unit, and wherein the display unit includes one of a rotating disc and a tachometer.

16. Device according to claim 13 or 15, wherein the speed-limiting unit includes a cable, wherein the moveable part is a cable, and wherein the means for reproducing the position of the cage includes marks at the cable of the speed-limiting unit.

17. Device according to anyone of claims 11 to 16, further including support means connected with the cage, and wherein the means for reproducing the position of the cage includes marks at the support means.

18. Device for monitoring position and movement of a lift cage in a lift shaft, substantially as hereinbefore described with reference to anyone of Figures 1 to 6.

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