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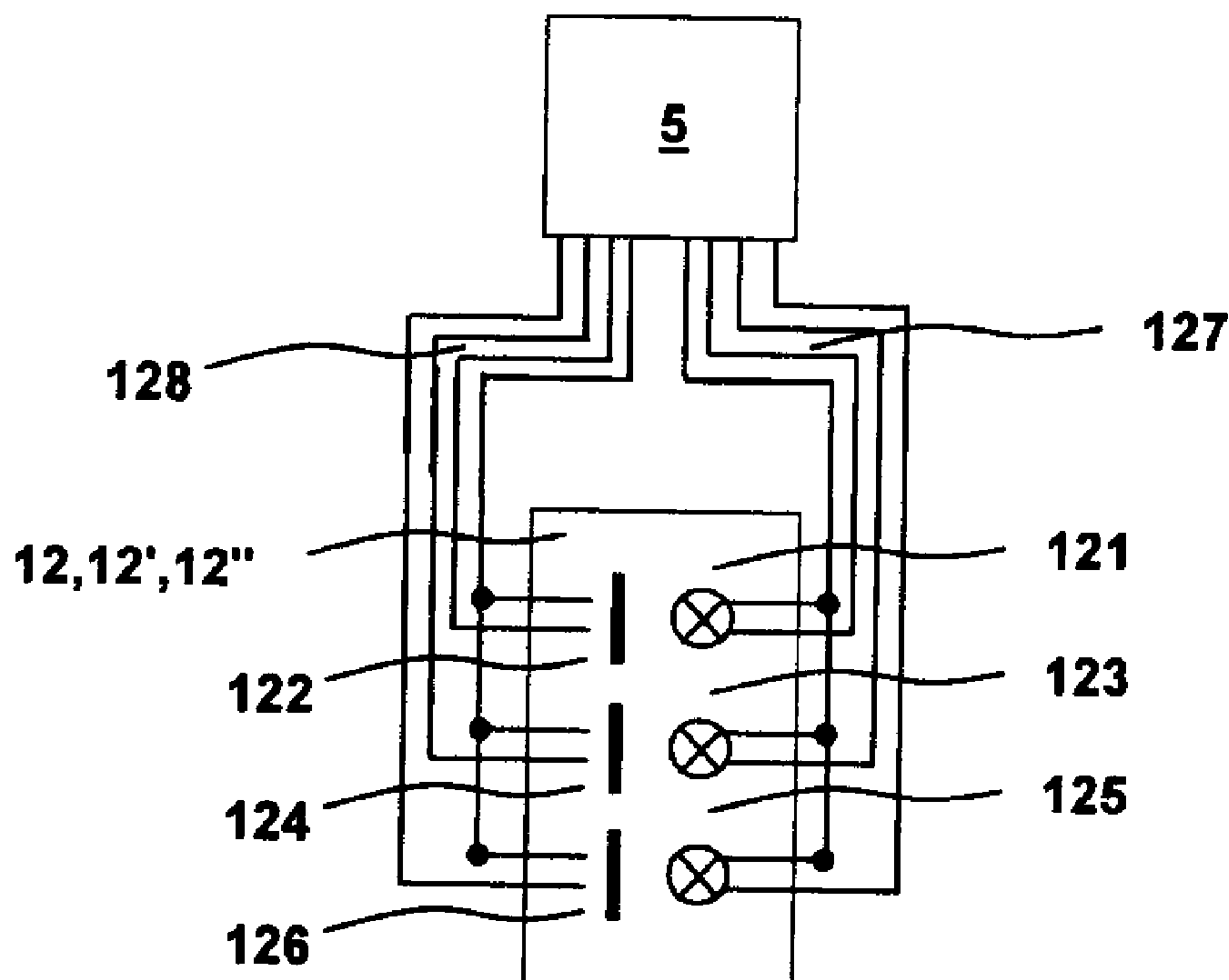
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(54) Title: METHOD AND SYSTEM FOR MODERNISATION OF A LIFT INSTALLATION



(57) Abrégé/Abstract:

The invention relates to a method for modernisation of a lift installation with several lifts (A, B, C) in a building, wherein at least one storey terminal (2, 2', 2'') for input of a storey call is provided on at least one storey (20, 20', 20'') of the building, which storey terminal (2, 2', 2'') is, for communication of an input storey call, connected with a group control (5), and at least one lift (A, B, C) is controlled in drive in accordance with the communicated storey call by the group control (5). At least one call detecting unit (40) is, for communication of an input storey call, connected with the group control (5). At least one new storey terminal (4, 4') is, for input of a storey call, mounted on at least one storey and the new storey terminal (4, 4') is, for communication of an input storey call, connected with the call detecting unit (40).

Abstract

The invention relates to a method for modernisation of a lift installation with several lifts (A, B, C) in a building, wherein at least one storey terminal (2, 2', 2'') for input of a storey call is provided on at least one storey (20, 20', 20'') of the building, which storey terminal (2, 2', 2'') is, for communication of an input storey call, connected with a group control (5), and at least one lift (A, B, C) is controlled in drive in accordance with the communicated storey call by the group control (5). At least one call detecting unit (40) is, for communication of an input storey call, connected with the group control (5). At least one new storey terminal (4, 4') is, for input of a storey call, mounted on at least one storey and the new storey terminal (4, 4') is, for communication of an input storey call, connected with the call detecting unit (40).

(Fig. 4)

Method and system for modernisation of a lift installation

The invention relates to a method and system for modernisation of a lift installation.

Lift installations for transport of persons/goods are relatively long-term capital assets with service lives of 20 years and more. If after a time of such length a general overhaul of a lift installation occurs, then the components of the lift installation are often aged in terms of technology, which obliges a more or less complete exchange of the components, termed modernisation in the following.

It is disadvantageous with this method of modernisation of a lift installation that the transport capacity of the lift installation during the modernisation is at best maintained. If in a lift installation with, for example, three lifts a lift is exchanged then this means a temporary reduction in transport capacity by 33%. The users, thereagainst, do not want to suffer any losses in convenience during the modernisation and in addition want to be transported as quickly and directly as possible. Long waiting times or inconvenient transfers are regarded as unacceptable.

The object of the invention is to provide a method and a system in which, during modernisation of a lift installation, waiting times or transfers, which are perceived as disadvantageous by the users, are largely avoided. This method shall be economic and compatible with proven standards of mechanical construction and of the electronics industry.

This object is fulfilled by the invention described herein.

According to the invention a lift installation, which is located a building, with several lifts in a building is modernised. At least one storey terminal for input of a storey call is located on at least one storey of the building. The storey terminal is, for communication of an input storey call, connected with a group control. At least one lift is controlled in drive in accordance with the communicated storey call from the group control. At least one call detecting unit is, for communication of an input storey call, connected with the group control. A new storey terminal for input of a storey call is mounted on at least one storey.

The new storey terminal is, for communication of input storey call, connected with the call detecting unit. Advantageously the existing storey terminals on the storey where a new storey terminal is mounted are made inaccessible.

Thus, during the modernisation a storey call is input by way of a new storey terminal, which storey call is communicated to the call detecting unit and from there is communicated in direct or indirect mode and manner to the group control. This has the advantage that on this storey a storey call can be input only at a new storey terminal. It is thus avoided that a user inputs a storey call several times, at an old storey terminal and at a new storey terminal. Such multiple input of a storey call needlessly reduces the transport capacity of the lift installation.

Further advantageous refinements of the invention are described hereafter.

Advantageously, a new group control is thereupon installed. At least one lift is transferred from the existing group control to the new group control. The transferred lift is controlled in drive by the new group control and the call detecting unit is, for communication of an input storey call, connected with the new group control.

The call detecting unit thus communicates not only with the old group control, but also with the new group control. The call detecting unit can communicate with the group controls in direct or indirect mode and manner. This makes it possible for the incidence of traffic during the modernisation to adapt to the changing transport capacity of the lift installation.

Advantageously the call detecting unit is an independent unit or a component of a storey terminal. Advantageously several call detecting units are mounted for each storey.

Advantageously storey calls input at the new storey terminal are distributed to the existing group control and to the new group control in accordance with at least one rule. Advantageously a random distribution or an alternating distribution or a performance-related distribution is used as the rule. This has the advantage that if the new group control has greater performance capability, thus has a higher capacity than the existing group control, input storey calls are selectively allocated to this new group control with higher performance capability.

Advantageously at least one new storey terminal for input of a storey call is mounted on several storeys, preferably on each storey, and the new storey terminals are, for communication of an input storey call, connected with the call detecting unit.

In advantageous manner the start storey of the input storey terminal is communicated as a start signal to the group control by the call detecting unit and the receipt of the input storey call is communicated as an acknowledgement signal to the call detecting unit by the group control. The deactivation of the acknowledgement signal is detected by the call detecting unit, whereupon the call detecting unit communicates the destination storey of the input storey call as a destination signal to the group control. This has the advantage that the call detecting unit translates a destination call, which is input at a new storey terminal, for the former group control. The call detecting unit initially communicates a start signal and then a destination signal to the former group control.

In advantageous manner the new storey terminal is a start call terminal or a destination call terminal. If the new storey terminal is a destination call terminal, existing cage terminals are made inaccessible. This also avoids a multiple input of a call, once as a destination call at the destination call terminal and then as a cage call in the cage terminal, which reduces the transport capacity of the lift installation.

In advantageous manner the call detecting unit is to be demounted after transfer of the last of the lifts from the existing group control to the new group control. The call detecting unit can thus be reused in further modernisations.

In advantageous manner the call detecting unit or a new storey terminal comprises an interface for deriving signals such as start signals, acknowledgement signals and destination signals. In this manner the signals can be derived simply and quickly in future modernisations.

Accordingly in one aspect, the invention resides in a method for modernization of an elevator installation with several elevators in a building, with at least one existing floor terminal for input of a floor call on at least one floor of the building, which said at least one existing floor terminal is, for communication of an input floor call, connected with an existing group control, and at least one of said several elevators is controlled in drive in accordance with the communicated floor call from the existing group control, comprising

the steps of: connecting at least one call detecting unit, for communication of an input floor call, with an existing connection between the existing group control and said at least one existing floor terminal; mounting at least one new floor terminal, for input of a floor call, on at least one floor; and connecting the at least one new floor terminal, for communication of an input floor call, with the at least one call detecting unit.

In another aspect, the invention resides in a system for modernization of an elevator installation with several elevators in a building, with at least one existing floor terminal for input of a floor call on at least one floor of the building, which said at least one existing floor terminal is, for communication of an input floor call, connected with an existing group control, and at least one of the elevators is controlled in drive in accordance with the communicated floor call from the existing group control, comprising: at least one new floor terminal, for input of a floor call, mounted on at least one floor; said at least one new floor terminal being, for communication of an input floor call, connected with at least one call detecting unit; and said at least one call detecting unit being, for communication of an input floor call, connected with an existing connection between the existing group control and said at least one existing floor terminal.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is described in detail in the following on the basis of forms of embodiment by way of example, wherein:

Fig. 1 shows a schematic view of a part of a lift installation to be modernised,

- Fig. 2 shows a view of a part of a storey of the lift installation according to Fig. 1 to be modernised,
- Fig. 3 shows a schematic wiring connection of a call detecting unit with existing storey terminals and an existing group control of a lift installation according to Figs. 1 and 2 to be modernised,
- Fig. 4 shows a schematic wiring connection of the cage terminals with an existing group control of a lift installation according to Figs. 1 and 2 to be modernised,
- Fig. 5 shows a first form of embodiment of a schematic wiring connection of a call detecting unit according to Fig. 3 with the existing group control and with a new group control,
- Fig. 6 shows a schematic view of a part of the lift installation according to Figs. 1 and 2, which is to be modernised, after wiring connection of the call detecting unit according to Fig. 5 with the existing group control and with the new group control,
- Fig. 7 shows a view of a part of a storey of the lift installation according to Fig. 6 to be modernised,
- Fig. 8 shows a second form of embodiment of a schematic wiring connection of a call detecting unit according to Fig. 3 with the existing group control and with a new group control.
- Fig. 9 shows a schematic view of a part of the lift installation according to Figs. 1 and 2, which is to be modernised, after wiring connection of the call detecting unit according to Fig. 8 with the existing group control and with the new group control, and
- Fig. 10 shows a view of a part of a storey of the lift installation according to Fig. 9 to be modernised.

Fig. 1 shows a schematic view of a part of a lift installation to be modernised. Further details can be inferred from Fig. 2. Fig. 2 shows a view of a part of a storey of the lift installation according to Fig. 1 to be modernised. The lift installation is installed in a building with, for example, three storeys 20, 20', 20". Several lift cages 11, 11', 11" are moved in at least one lift shaft. For example, the lift installation comprises three lifts A, B, C each with a respective lift cage 11, 11', 11". Each lift cage 11, 11', 11" is connected with a counterweight 14, 14', 14" by way of at least one support means. Each support means is driven by a drive 15, 15', 15". The drives 15, 15', 15" are, for example, arranged together with a group control 5 in an engine room 3 above the lift shaft 10. Access to the lift cages 11, 11', 11" takes place from the storeys 20, 20', 20" by way of storey doors 1, 1', 1" and cage doors 13, 13', 13". The storey doors 1, 1', 1" and cage doors 13, 13', 13" of the lift cages 11, 11', 11" are opened and closed in co-ordinated manner. In the example of Figs. 1 and 2 this means that a storey door 1 of the lefthand lift A on the third storey 20" and a cage door 13 of the lefthand lift A are opened only when the lift cage 11 of the lift and lift A is also disposed on the third storey 20".

At least one storey terminal is necessary for input of a storey call. According to Fig. 1, at least one storey terminal 2, 2', 2" is located on each storey 20, 20', 20" of the building. According to Fig. 2 exactly one storey terminal 2, 2', 2" is located on each storey 20, 20', 20" near each lift A, B, C. The storey terminal 2, 2', 2" is, for communication of an input storey call, connected with the group control 5. A storey call indicates to the group control 5 the start storey from which a user would like to be moved in the building by a lift A, B, C.

The lifts A, B, C are controlled in drive by the group control 5 in accordance with the communicated storey call. As soon as a user inputs a storey call on a storey 20, 20', 20" this is communicated as start storey to the group control 5. The group control 5 selects a lift cage 11, 11', 11" for servicing the storey call. This lift cage 11, 11', 11" is moved to the storey. The storey door 1, 1', 1" and the cage door of the lift cage 11, 11', 11" are open and the user can enter the lift cage 11, 11', 11". The user thereupon delivers a cage call in the lift cage 11, 11', 11". A cage terminal 12, 12', 12" for input of a cage call is located in each lift cage 11, 11', 11". The cage terminal 12, 12', 12" is, for communication of an input cage call, connected with the group control 5. The cage call is communicated to the group control 5 as destination storey. The group control 5 now moves the lift cage 11, 11', 11" to this destination storey. After the lift cage 11, 11', 11" has moved into the destination storey, the storey door 1, 1', 1" and the cage door of the lift cage 11, 11', 11" are opened

and the user can leave the lift cage 11, 11', 11".

Fig. 3 shows further details of the storey terminal 2, 2', 2". For example, each storey terminal 2, 2', 2" has at least one call button 22, 22', 22", 24, 24', 24" and at least one acknowledgement lamp 21, 21', 21", 23, 23', 23". A storey call for an upward travel in the building is input by way of a call button 22, 22', 22" and a storey call for a downward travel in the building is input by way of a call button 24, 24', 24". The input of a storey call in the start storey is carried out, for example, by closing an electrical contact at the output of the call button 22, 22', 22", 24, 24', 24" so that an electric current flows, which is detected by the group control 5 as a start signal. The group control 5 confirms receipt of the storey call by activation of an acknowledgement lamp 21, 21', 21", 23, 23', 23" in the start storey. The receipt of a storey call for an upward travel is confirmed by an acknowledgement lamp 21, 21', 21" and the receipt of the storey call for a downward travel is confirmed by an acknowledgement lamp 23, 23', 23". The activation of an acknowledgement lamp 21, 21', 21", 23, 23', 23" is carried out, for example, by application of an electrical voltage to two outputs of the acknowledgement lamp 21, 21', 21", 23, 23', 23" so that this is supplied with electrical current and illuminates. This generation of an acknowledgement signal is also carried out by the group control 5. The group control 5 thus communicates bidirectionally with the storey terminal 2, 2', 2". It is communicated as a start signal which call button 22, 22', 22", 24, 24', 24" on which storey terminal 2, 2', 2" of which storey 20, 20', 20" was actuated and it confirms the receipt of such a storey call by an acknowledgement signal through activation of an acknowledgement lamp 21, 21', 21", 23, 23', 23" associated with the call button 22, 22', 22", 24, 24', 24". The acknowledgement lamp 21, 21', 21", 23, 23', 23" is deactivated only when the lift cage 11, 11', 11" has moved into the storey.

Fig. 4 shows details of the cage terminal 12, 12', 12". The cage terminal 12, 12', 12" functions in analogous mode and manner to the storey terminal 2, 2', 2". For example, each cage terminal 12, 12', 12" has, for each storey 20, 20', 20" served by the lift cage 11, 11', 11", a call button 122, 124, 126 and an acknowledgement lamp 121, 123, 125. The input of a cage call takes place by, for example, closing an electrical contact at the output of the call button 122, 124, 126 so that an electrical current, which is detected by the group control 5 as a destination signal, flows by way of communication lines 128. The group control 5 confirms receipt of the cage call by activation of an acknowledgement lamp 121, 123, 125. The activation of an acknowledgement lamp 121, 123, 125 takes place by, for example, application of an electrical voltage via communication lines 127 to two outputs of

the acknowledgement lamp 121, 123, 125 so that this is supplied with electrical current and illuminates. This generation of an acknowledgement signal is similarly carried out by the group control 5. The acknowledgement lamp 121, 123, 125 is deactivated only when the lift cage 11, 11', 11" has moved into the destination storey.

For modernisation of the lift installation at least one call detecting unit 40 is, for communication of an input storey call, connected with the existing group control 5. Fig. 3 shows with respect thereto a schematic wiring connection of a call detecting unit 40 with at least one existing storey terminal 2, 2', 2" and with the existing group control 5. The call detecting unit 40 is, for example, connected by way of communication lines 213, 213', 213", 224, 224', 224" with three storey terminals 2, 2', 2" and with the group control 5. The communication is bidirectional, communication lines 224, 224', 224" communicate a storey call, which is input at a storey terminal 2, 2', 2", to the call detecting unit 40 and communication lines 213, 213', 213" communicate the receipt of a storey call from the group control 5 to the call detecting unit 40. The communication lines 224, 224', 224" communicate not only an input storey call for a downward travel, but also an input storey call for an upward travel and the communication lines 213, 213', 213" communicate the receipt of an input storey call for a downward travel as well as the receipt of an input storey call for an upward travel. The communication lines 213, 213', 213", 224, 224', 224" are, for example, signal lines on which start signals and acknowledgement signals are conducted as electrical voltages and currents. According to Fig. 3 the signal lines lie parallel to one another and three signal lines each communicate two items of status data. Such signal lines can be laid simply and quickly between the storey terminals 2, 2', 2" and the call detecting unit 40 within the scope of the modernisation of the lift installation. In particular, such signal lines can be laid without the transport capacity of the lift installation being prejudiced. In advantageous manner the call detecting unit 40 is connected with all storey terminals 2, 2', 2" on all storeys 20, 20', 20".

According to Figs. 4, 5 and 8 the call detecting unit 40 has a larger number of inputs and outputs for the bidirectional communication via communications lines 213, 213', 213", 224, 224', 224", 413, 424, 428. The call detecting unit 40 therefore has suitable generators and sensors of electrical current and electrical voltage so as to detect and generate the start signals, destination signals and acknowledgement signals applied to the inputs and outputs.

As shown in the first form of embodiment of the wiring connection of a call detecting unit 40 according to Fig. 5, the call detecting unit 40 is an independent unit and, for example, installed in the engine room 3. The call detecting unit 40 can, however, also be a component of a new storey terminal 4' in a storey 20'', which is shown in the second form of embodiment of the wiring connection of a call detecting unit 40 according to Figs. 8 to 10.

The lift installation to be modernised is now ready for exchange of at least one component of the lift installation. Such components are the group control 5, the storey terminals 2, 2', 2'', the drives 15, 15', 15'', the storey doors 1, 1', 1'', but also the lift cages 11, 11', 11'' and the counterweights 14, 14', 14''.

As shown in Figs. 6 and 7 as well as 9 and 10, at least one new storey terminal 4, 4' for input of a storey call is mounted on at least one storey 20, 20', 20''. In an advantageous manner at least one new storey terminal 4, 4' is mounted on several storeys 20, 20', 20''. Advantageously, at least one new storey terminal 4, 4' is mounted on each storey 20, 20', 20''. As shown in Figs. 5 and 8, the communication of the new storey terminal 4, 4' with the call detecting unit 40 is bidirectional. Communication lines 413, 424 provided for that purpose are, for example, signal lines on which electrical voltages and currents are conducted. These signal lines can be part of a bus system, such as an LON bus.

The new storey terminal 4 of the first form of embodiment of the wiring connection of a call detecting unit 40 according to Figs. 5 to 7 is in that case functionally identical with the former storey terminals 2, 2', 2'' and thus a start call terminal. In detail, Fig. 5 shows with respect thereto a schematic wiring connection of a new storey terminal 4 for communication of an input storey call with the call detecting unit 40. For example, the new storey terminal 4 has at least one call button 42, 44 and at least one acknowledgement lamp 41, 43. A storey call for an upward travel in the building is input by way of a call button 42 and a storey call for a downward travel in the building is input by way of a call button 44. The receipt of a destination call for an upward travel is confirmed by an acknowledgement lamp 41 and the receipt of a storey call for a downward travel is confirmed by an acknowledgement lamp 43. At least one communication line 424 communicates to the call detecting unit 40 a storey call input at the new storey terminal 4 and at least one communication line 413 communicates to the new storey terminal 4 the receipt of a storey call from the group control 5. The call detecting unit 40 communicates

the start storey of an input storey call by way of the communication lines 224, 224', 224" as a start signal to the group control 5 and the group control 5 communicates the receipt of an input storey call as an acknowledgement signal by way of the communication lines 213, 213', 213" to the call detecting unit 40.

Figs. 8 to 10 show a second form of embodiment of the wiring connection of a call detecting unit 40, which is a component of a new storey terminal 4'. The new storey terminal 4' according to Figs. 8 to 10 is in that case functionally identical with the former age call terminals 12, 12', 12" and is thus a destination call terminal. The new storey terminal 4' has, for each storey 20, 20', 20" served by the lift cages 11, 11', 11", a call button 422, 424, 426 and an acknowledgement lamp 421, 423, 425.

In detail, Fig. 8 shows with respect to thereto a schematic wiring connection of a new storey terminal 4' for communication of an input storey call by way of the call detecting unit 40 to the group control 5. At least one communication line 424 communicates to the call detecting unit 40 a storey call input at the new storey terminal 4' and at least one communication line 413 communicates to the new storey terminal 4' the receipt of a storey call from the group control 5. The call detecting unit 40 communicates the start storey of the input storey call by way of the communication lines 224, 224', 224" as a start signal to the group control 5 and the group control 5 communicates the receipt of an input storey call as an acknowledgement signal by way of the communication lines 213, 213', 213" to the call detecting unit 40. After a lift cage 11, 11', 11" serving the storey call has been moved by the group control 5 to the start storey, the group control 5 deactivates the acknowledgement signal on one of the communication lines 213, 213', 213". The call detecting unit 40 detects this deactivation of the acknowledgement signal and thereupon communicates, as a response, the destination storey of the storey call, which is input at the new storey terminal 4', as destination signal via a communication line 428 to the group control 5. For this purpose the call detecting unit 40 comprises a suitable sensor, which, for example, detects the acknowledgement signal, which is present as an electrical voltage at the outputs of the communication lines 213, 213', 213", of the group control 5. In addition, the call detecting unit 40 comprises a suitable generator in order to, for example, generate the destination signal flowing, as an electrical current, via communications lines 428 to the group control 5. The shape and size of the destination signals are detectable simply and quickly, because they are applied to the outputs 128 of the call buttons 122, 124, 126 of the cage terminal 12, 12', 12" as soon as a cage call is input. They can thus

be tapped off there in a learning phase and stored in a data memory of the call detecting unit 40.

The new storey terminal 4, 4' is thus indirectly connected, i.e. by way of the call detecting unit 40, with the existing group control 5. As shown in the forms of embodiment according to Figs. 6 and 7 as well as 9 and 10, the existing storey terminals 2, 2', 2" on the storeys 20, 20', 20" are made inaccessible so that the input of a storey call takes place only by way of a new storey terminal 4, 4'. A user can no longer input a storey call at an inaccessible existing storey terminal 2, 2', 2". For example, a wall is drawn up in front of the existing storey terminal 2, 2', 2" so that the existing storey terminals 2, 2', 2" are no longer visible to the user or are dissimulated or also physically unreachable. However, it is also possible to cap the signal lines of the call buttons 22, 22', 22", 24, 24', 24" of the existing storey terminals 2, 2', 2" to the group control 5 and to place an item of user information, according to which the existing storey terminals 2, 2', 2" are deactivated for the input of a storey call. As shown in the form of embodiment according to Fig. 9, the cage terminals 12, 12', 12" are also made inaccessible in the same mode and manner during the installation of a new storey terminal 4' which functions as a destination call terminal, so that not only the input of a storey call, but also that of a cage call are carried out only as input of a destination call by way of a new storey terminal 4, 4'.

The call detecting unit 40 or a new storey terminal 4, 4' advantageously comprises interfaces for deriving signals such as start signals, acknowledgement signals and destination signals. For example, a call detecting unit 40 or a new storey terminal 4, 4' comprises a simple and quickly reachable interface. Such an interface is, for example, mounted laterally outside at a housing of the call detecting unit 40 or of the new storey terminal 4, 4'. Any interfaces of proven industry standards such as RS232, USB, FTT10, etc., can be used. In this manner the signals can be derived in simple and quick manner in the case of future modernisations.

As soon as a new group control 6 is now installed within the scope of the modernisation of the lift installation and at least one lift A, B, C of the existing group control 5 is transferred to the new group control 6, so that the transferred lift A, B, C is controlled in drive by the new group control 6, the new group control 6 is also connected, for communication of an input storey call, with the call detecting unit 40. Fig. 6 shows in detail how, for example, a new group control 6 is installed in the engine room 3.

During the modernisation the call detecting unit 40 thus communicates not only with the old group control 5, but also with the new group control 6. This allows a distribution of the input storey calls to the old group control 5 and to the new group control 6. Advantageously, storey calls, which are input at the new storey terminal 4, 4', are distributed to the existing group control 5 and to the new group control 6 in accordance with at least one rule. In advantageous manner, a random distribution or an alternating distribution or a performance-related distribution is used as the rule. For this purpose the call detecting unit 40 comprises at least one electric processor with at least one data memory. An algorithm which is loaded into the electric processor and is executed by the electric processor is stored in the data memory. The algorithm executes this rule. For example, the algorithm comprises a first parameter P1 indicating the number of lifts A, B, C of the lift installation, which are controlled in drive by the existing group control 5. A second parameter P2 of the algorithm indicates the number of lifts A, B, C which are controlled in drive by the new group control 6. In addition, the algorithm comprises a third parameter K1 for the capacity of the existing group control 5 and a fourth parameter K2 for the capacity of the new group control 6. Moreover, the algorithm executes a selective call allocation. The fifth parameter Z1 denotes the call allocation to the existing group control 5 and (1-Z1) denotes the call allocation to the new group control 6. An effective transport capacity TKE results therefrom as follows:

$$TKE = P1 \cdot K1 \cdot Z1 + P2 \cdot K2 \cdot (1 - Z1)$$

For the case that one of the three lifts A, B, C for modernisation is dependent on the existing group control 5 and thus in principle is not available and that a further one of the three lifts A, B, C is dependent on the new group control 6, it follows that: $P1 = P2 = 1$. In the case of a capacity of the new group control 6 lying 20% higher than the capacity of the existing group control 5, it follows that: $K2 = 1.2 \cdot K1$.

A random allocation or an alternating allocation of the input storey calls to the existing group control 5 and to the new group control 6 corresponds with: $Z1 = (1 - Z1) = 0.5$. In the present case, an effective transport capacity of $TKE = 1.1$ then results.

The algorithm now allows a selective consideration of the higher capacity K2 of the new group control 6 in that a relatively small call allocation Z1 takes place at the existing group

control 5. For $Z1 = 0.2$ there then results an effective transport capacity $PKE = 1.16$, a value which is 6% higher than that of the random allocation or the alternating allocation.

The parameters of the algorithm can be adapted in simple manner to the changing transport capacity of the lift installation during the modernisation.

After transfer of the last of the lifts A, B, C from the existing group control 5 to the new group control 6 the call detecting unit can be demounted.

With knowledge of the present invention it is possible to realise numerous variations of the illustrated example of embodiment. Thus, the building can comprise more than three storeys and the lift installation can also consist of more than three lifts. It is obviously also possible to use lifts without counterweights. Equally, lifts without support means can be used. The drives can also be arranged in the lift shaft. In addition, the group control as well as the call detecting unit can be arranged in any desired space of the building, so that an engine room is not necessary. Equally, use can be made of storey terminals with more than two call buttons. Moreover, it is not necessary for the storey terminals to have acknowledgement lamps. The signal lines can be connected in parallel or also serially with the call detecting unit.

What is claimed is:

1. A method for modernization of an elevator installation with several elevators in a building, with at least one existing floor terminal for input of a floor call on at least one floor of the building, which said at least one existing floor terminal is, for communication of an input floor call, connected with an existing group control, and at least one of said several elevators is controlled in drive in accordance with the communicated floor call from the existing group control, comprising the steps of:
 - connecting at least one call detecting unit, for communication of an input floor call, with an existing connection between the existing group control and said at least one existing floor terminal;
 - mounting at least one new floor terminal, for input of a floor call, on at least one floor; and
 - connecting the at least one new floor terminal, for communication of an input floor call, with the at least one call detecting unit.
2. The method according to claim 1 including on the floor where the at least one new floor terminal is mounted making said at least one existing floor terminal inaccessible.
3. The method according to claim 1 including installing a new group control and transferring at least one of said several elevators from the existing group control to the new group control, the transferred elevator being controlled in drive by the new group control and connecting the at least one call detecting unit, for communication of an input floor, with the new group control.
4. The method according to claim 3 including distributing floor calls input at said at least one new floor terminal to the existing group control and to the new group control in accordance with at least one rule.
5. The method according to claim 4 wherein the at least one rule is a random distribution, an alternating distribution or a performance-related distribution.
6. The method according to claim 1 including mounting said at least one new floor terminal, for input of a floor call, on several floors and connecting the new floor terminals, for communication of an input floor call, with the at least one call detecting unit.
7. The method according to claim 1 including communicating a start floor of the input

floor call as a start signal to the existing group control by the call detecting unit and communicating receipt of the input floor call as an acknowledgement signal to the at least one call detecting unit by the existing group control.

8. The method according to claim 7 including detecting deactivation of the acknowledgement signal by the at least one call detecting unit.

9. The method according to claim 8 including communicating a destination floor of the input floor call as a destination signal to the group control by the at least one call detecting unit.

10. The method according to claim 1 including that if the at least one new floor terminal is a destination call terminal, making existing car terminals inaccessible.

11. The method according to claim 1 including demounting the at least one call detecting unit after transfer of the last of the elevators from the existing group control to a new group control.

12. The method according to claim 6 wherein said mounting said at least one new floor terminal comprises, mounting said at least one new floor terminal, for input of a floor call, on each floor.

13. A system for modernization of an elevator installation with several elevators in a building, with at least one existing floor terminal for input of a floor call on at least one floor of the building, which said at least one existing floor terminal is, for communication of an input floor call, connected with an existing group control, and at least one of the elevators is controlled in drive in accordance with the communicated floor call from the existing group control, comprising:

at least one new floor terminal, for input of a floor call, mounted on at least one floor;

said at least one new floor terminal being, for communication of an input floor call, connected with at least one call detecting unit; and

said at least one call detecting unit being, for communication of an input floor call, connected with an existing connection between the existing group control and said at least one existing floor terminal.

14. The system according to claim 13 wherein said at least one call detecting unit is an independent unit.

15. The system according to claim 13 wherein said at least one call detecting unit is mounted per floor.

16. The system according to claim 13 wherein said at least one new floor terminal is a start call terminal or a destination call terminal.

17. The system according to claim 13 wherein said at least one call detecting unit or said at least one new floor terminal includes an interface for deriving signals including at least one of start signals, acknowledgement signals and destination signals.

18. The system according to claim 13 wherein said at least one call detecting unit is a component of said at least one new floor terminal.

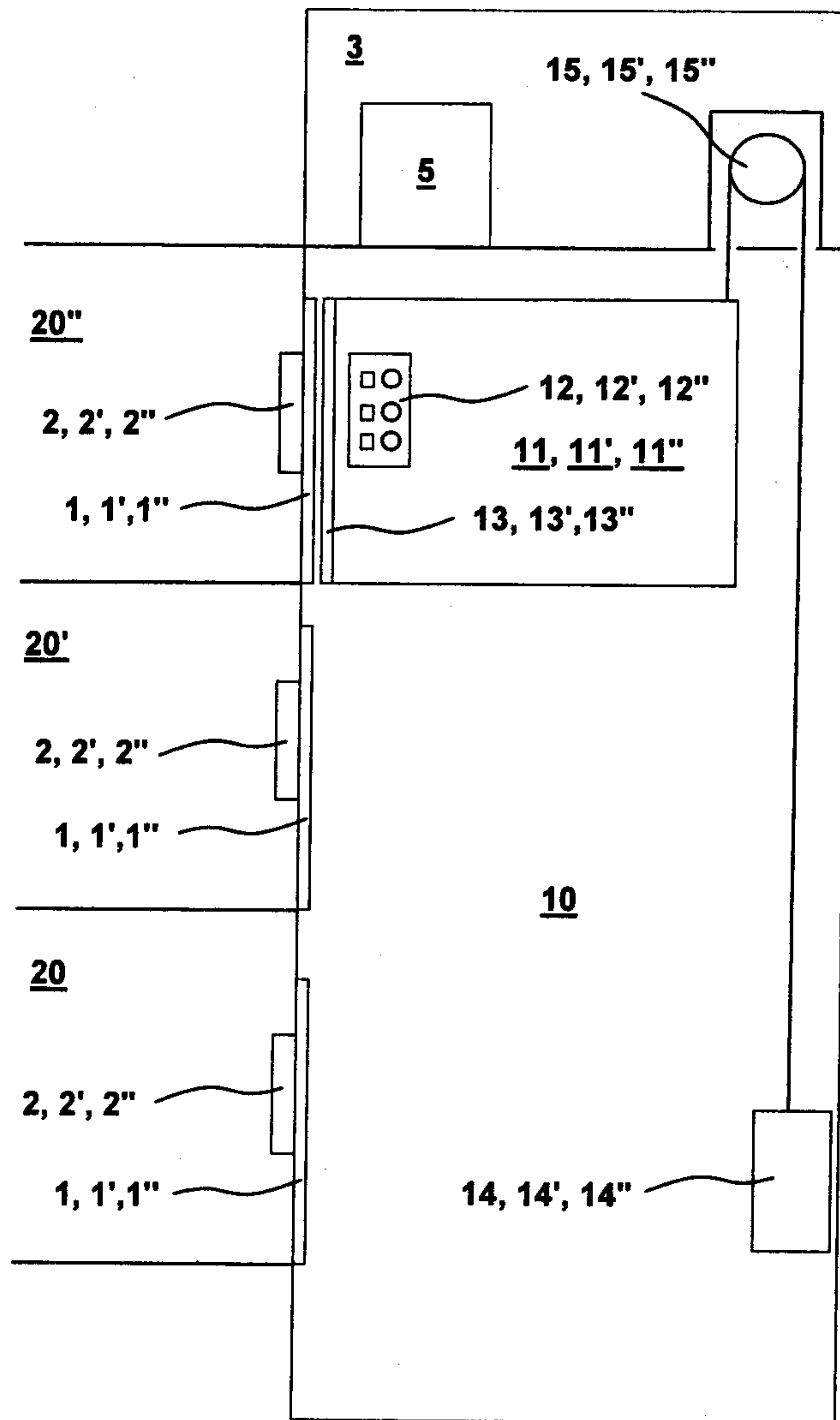


Fig. 1

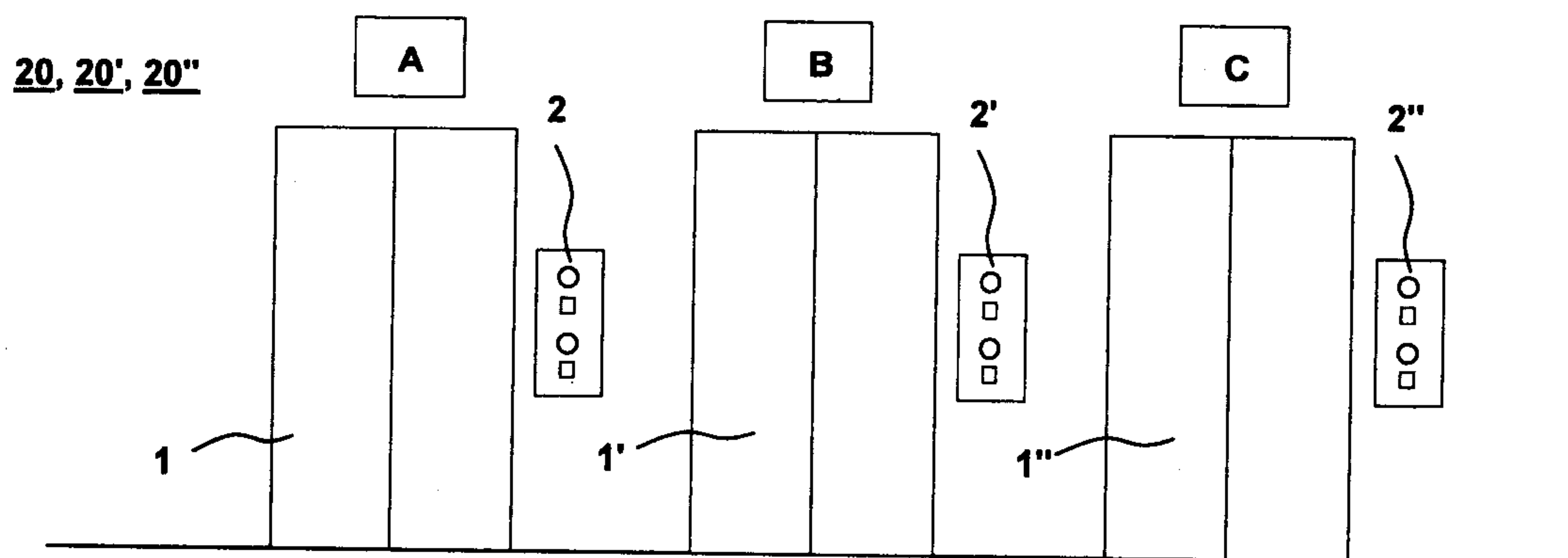


Fig. 2

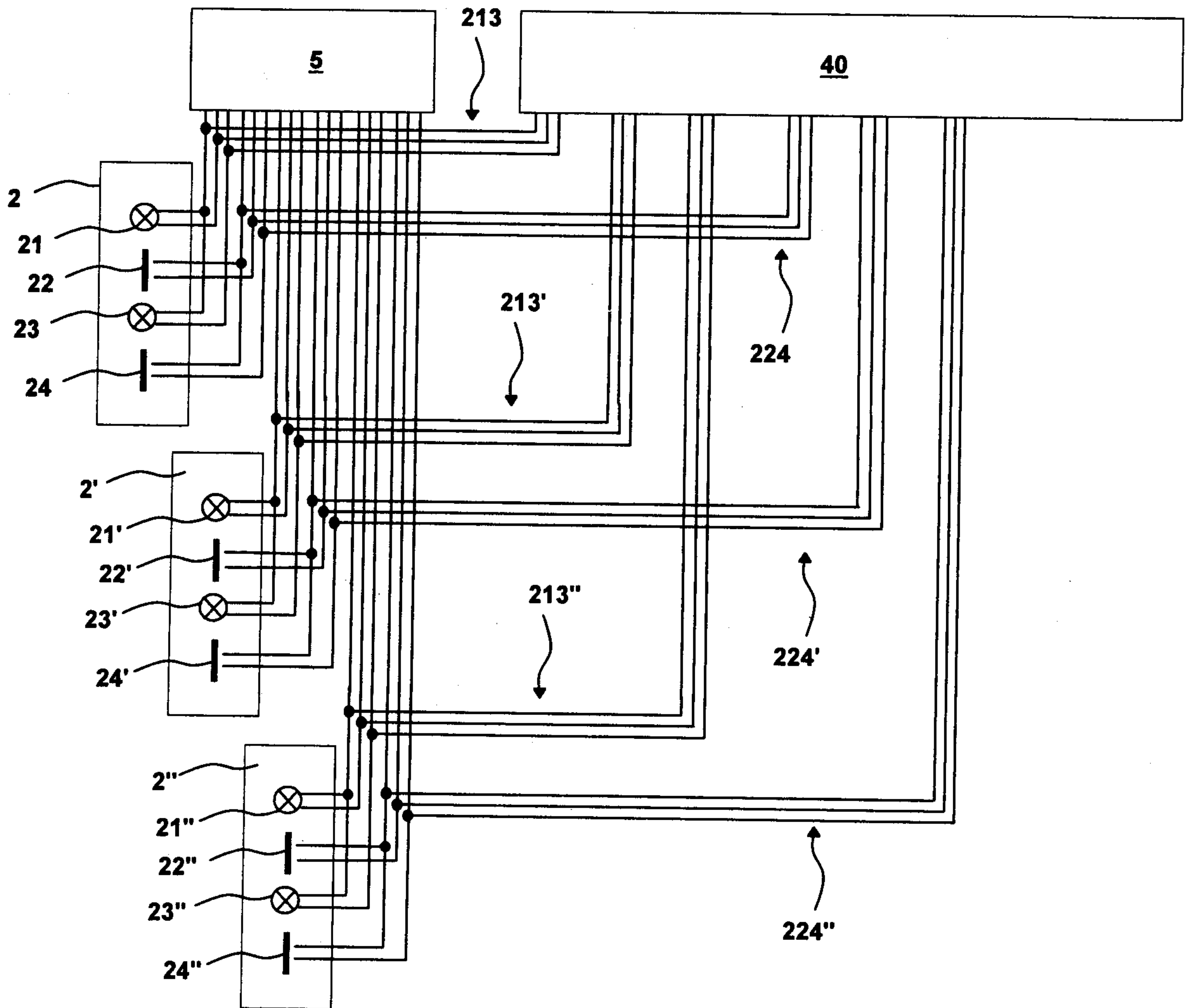


Fig. 3

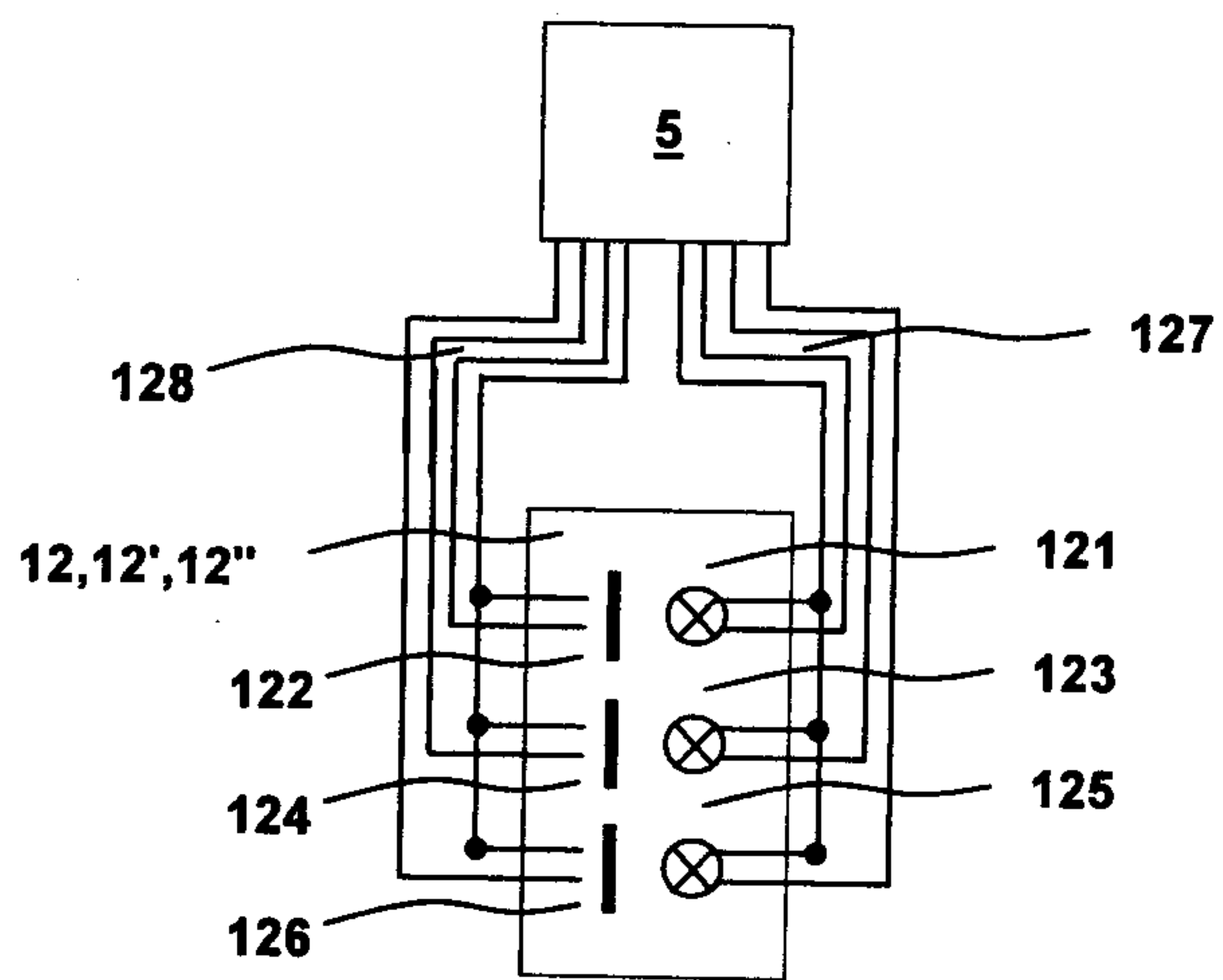


Fig. 4

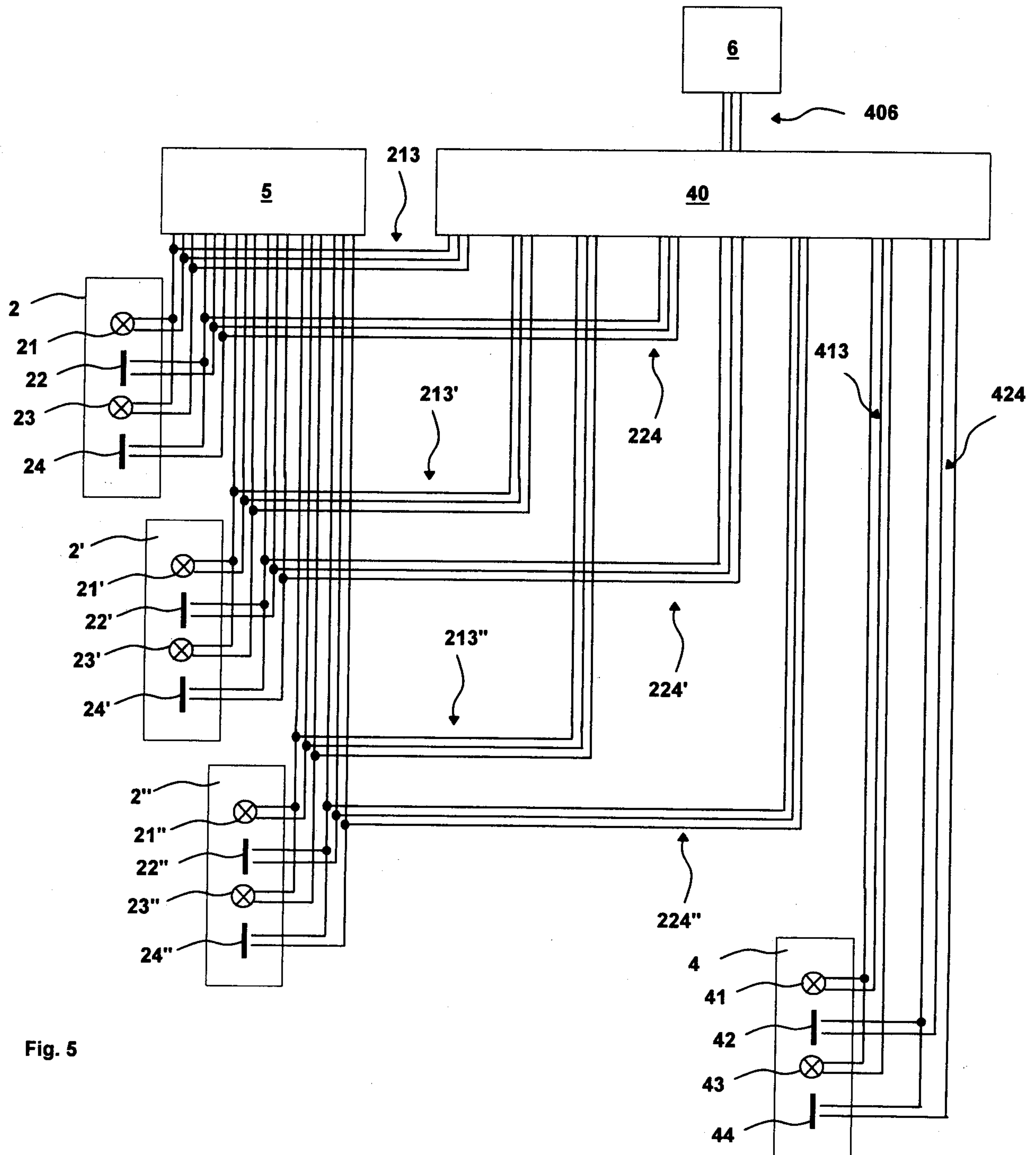


Fig. 5

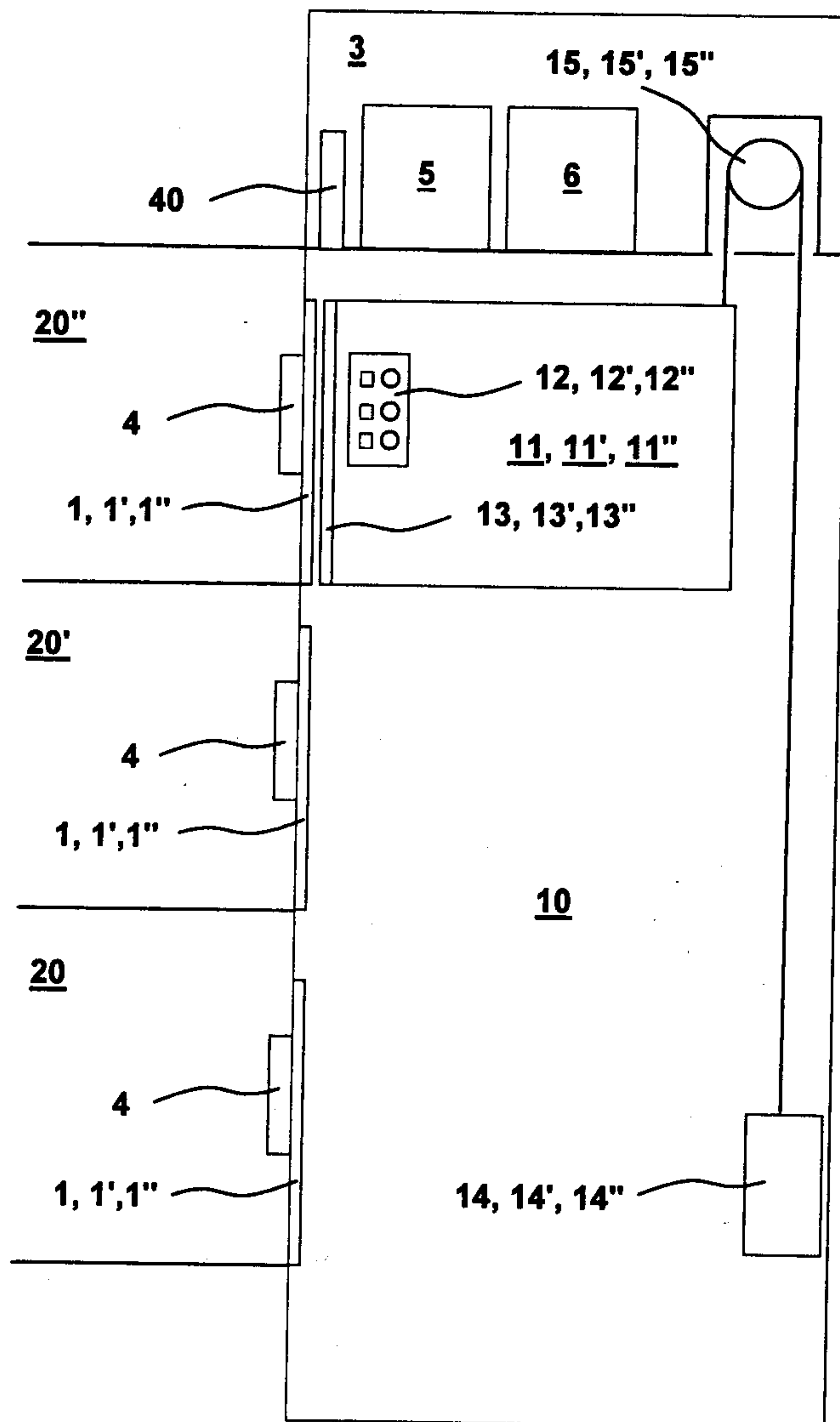


Fig. 6

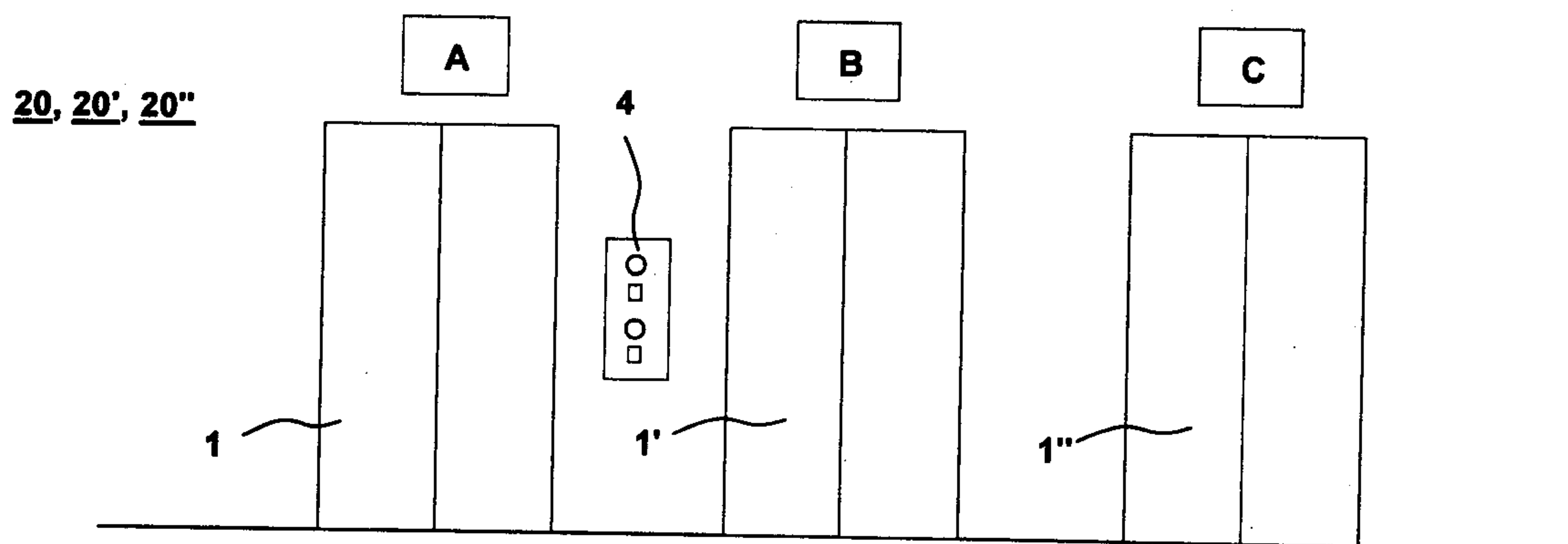


Fig. 7

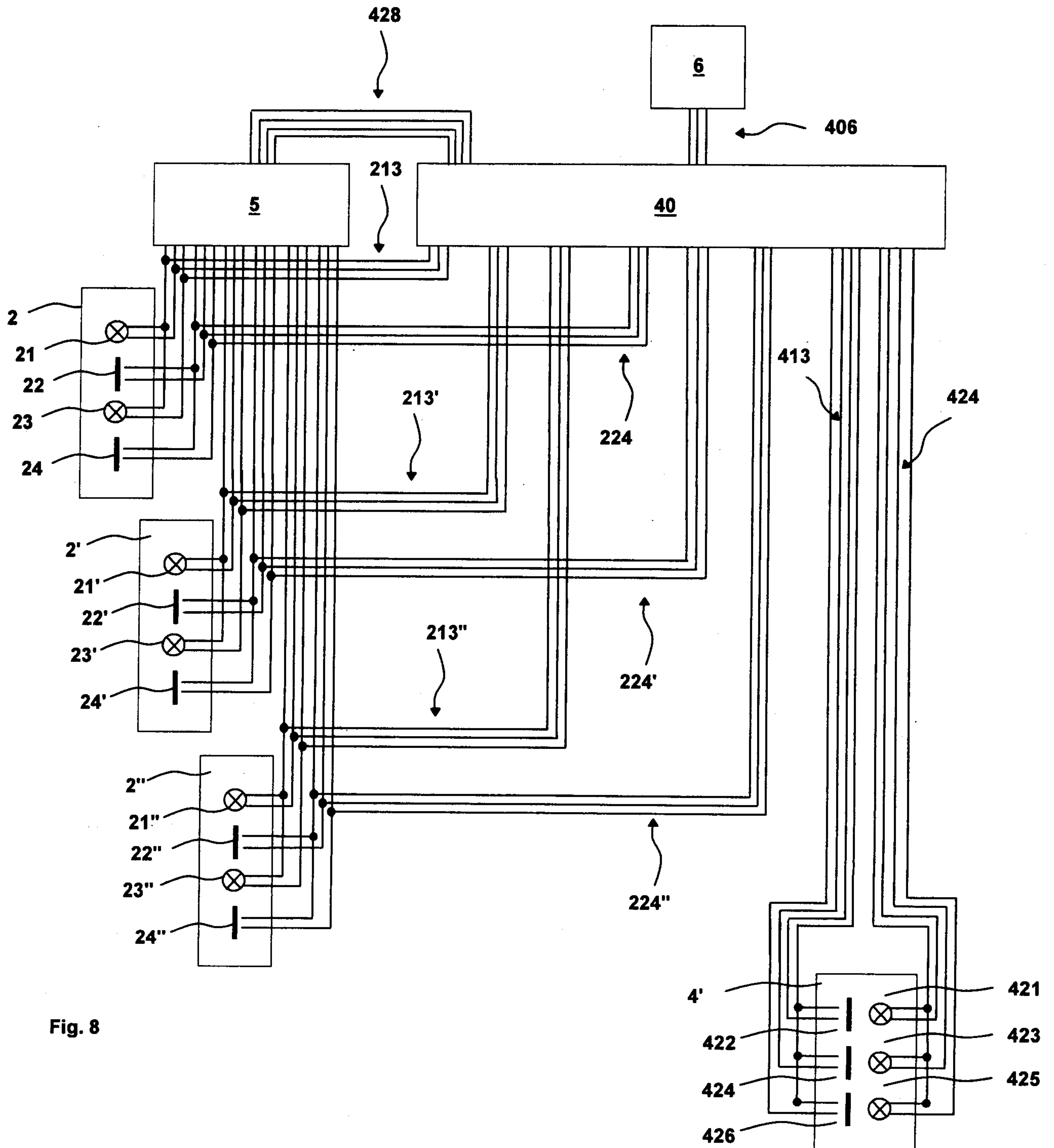


Fig. 8

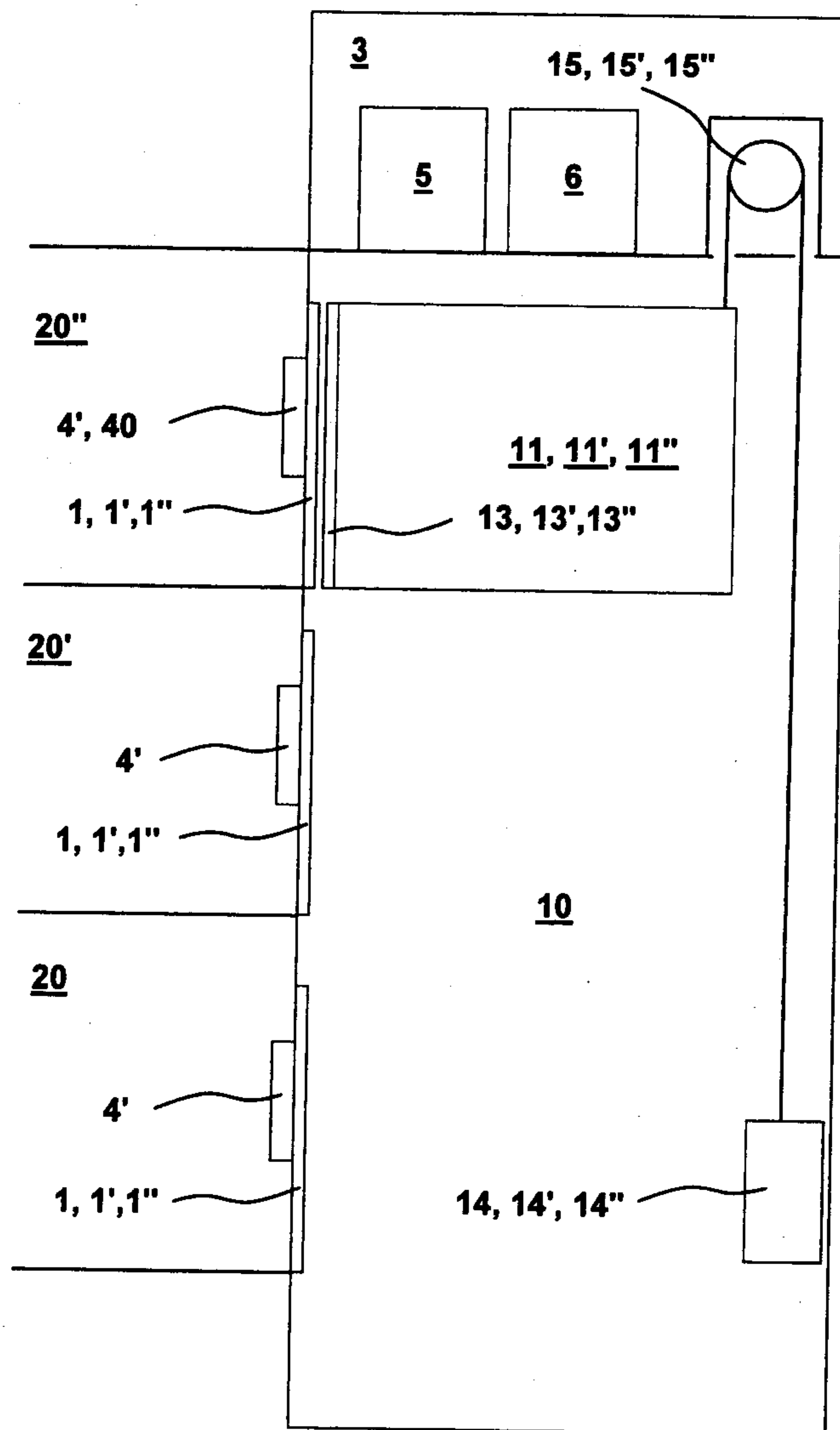


Fig. 9

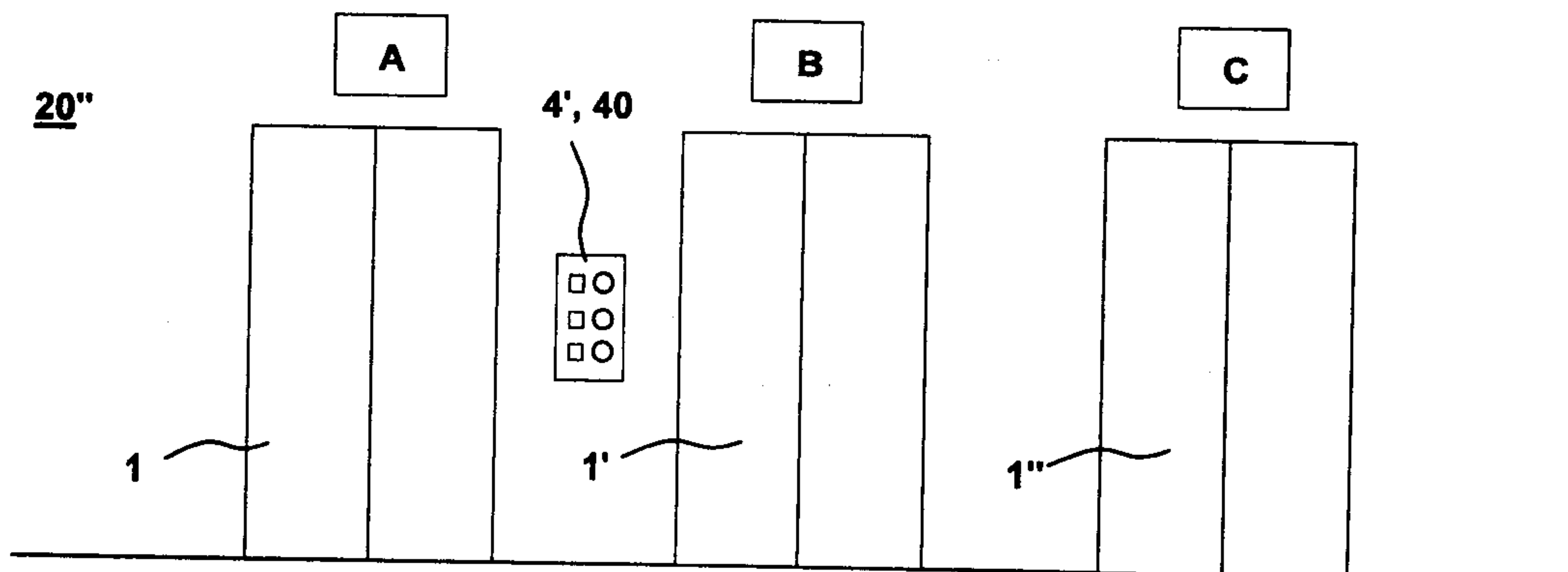


Fig. 10

