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(54) Mail sorting system

(57) The invention relates to a mail sorting system and a method for handling mail matter, comprising a set of sorting compartments (1) consisting of one or more sorting compartments (2), an indicating means (11) arranged in each compartment (2) indicating the compartment, a control device (12) controlling the indicating means (11). The invention is characterized in that the mail sorting system and method are intended for sorting unaddressed mail matter in which address data is not readable on a mail piece, whereby the sorting data is arranged in the control means (12), and the mail sorting system and method are intended for collecting pre-sorted bundles (3) of mail matter according to delivery order from the compartments (2) of the set of sorting compartments (1), whereby the mail collecting order is arranged in the control device (12).

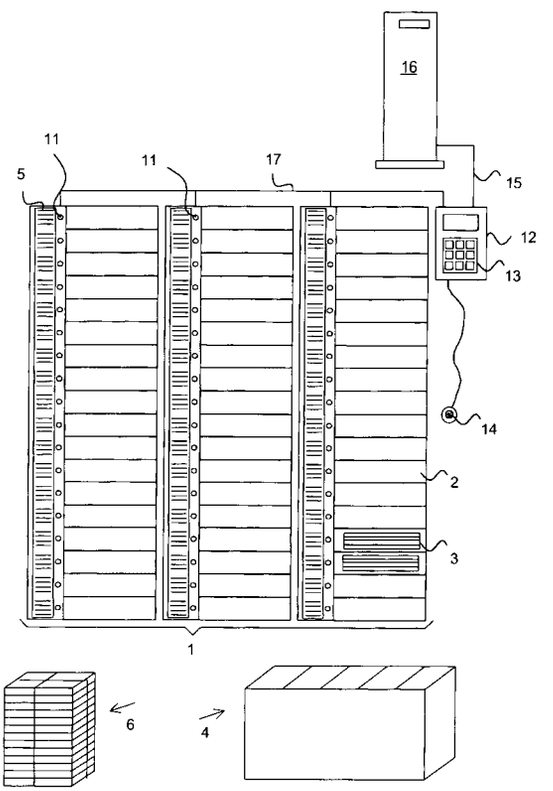

FIG.1

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Description

FIELD OF THE INVENTION

[0001] The invention relates to a mail sorting system for sorting mail matter according to the delivery order, the mail sorting system comprising a set of sorting compartments and means for assigning a receiving compartment for mail matter to be delivered to a specific delivery destination. In particular, the invention relates to the mail sorting step to be carried out prior to delivery to final addressees.

BACKGROUND OF THE INVENTION

[0002] Mail is delivered to final addressees, i.e. to so-called mail delivery destinations according to delivery areas. A delivery area may typically comprise up to 980 delivery destinations. The delivery area is divided up to seven sections of 140 delivery destinations. In a mail sorting step, sorting is carried out at a sorting station with the assistance of a set of mail sorting compartments, i.e. an installation system designed for efficient sorting of mail matter. The set of sorting compartments has a compartment for each delivery destination. The sorting step divides into two parts. The first is a so-called sorting step, in which a bunch of mail sorted according to sections is sorted to compartments to be mail bundles in such a manner that the mail pieces destined for a specific delivery destination are sorted into a postal bundle in the same compartment. In the second, i.e. collecting, step the mail bundles sorted into the sorting compartments are arranged in delivery order by collecting them from the sorting compartments, in the delivery order, into so-called bundle containers, from which the mail carrier delivers the mail to the delivery destinations either by van or on foot.

[0003] In the sorting step, both addressed and unaddressed mail pieces are handled and distributed into sorting compartments. In the description of the present invention, the addressed mail matter refers to mail pieces with the address of the receiver being marked on the mail piece. A typical example of the mail piece of this kind is an ordinary letter. The unaddressed mail matter refers to mail pieces, in which delivery address data is not marked directly on the piece or it is missing completely. Unaddressed mail matter typically includes advertising material. Another example could be mail pieces that are delivered to subscribers but the address data is not marked on the mail piece. Typically, a mail piece of this kind can be e.g. a periodical which is supplied for bulk delivery accompanied by separate delivery address data.

[0004] In the prior art mail sorting system, addressed mail matter is sorted into sorting compartments in a sorting step in such a way that an address tag that indicates the delivery address of the delivery destination of each compartment is arranged in the compartments of the set of sorting compartments. To speed the sorting, the delivery addresses are arranged on the tag in the alphabetical order. Addressed mail matter is sorted into a compartment indicated by the delivery address. For sorting unaddressed mail matter, the prior art solution employs the following method: an address tag arranged in connection with compartments contains information on which compartments unaddressed mail matter is sorted, or correspondingly, if a section includes delivery destinations which do not wish to receive advertising material, an indication thereof appears on the address tag. Address data of some mail matter may also be supplied as a separate list with the mail bundle.

[0005] In the prior art mail sorting system, a step of collecting mail pieces into bundle containers, in which the mail bundles are arranged in the delivery order, is implemented in such a way that the address tags are turned and on the reverse side thereof appear the collecting order of the mail bundles in the final delivery order according to the delivery destinations.

[0006] The above prior art mail sorting system and the method of working employed therein have a problem that the sorting of mail matter without the address being marked thereon is slow and sorting errors can readily occur in the sorting step. The reason is that the sorter must constantly read sorting data in the address tag or separate lists. In addition, if the sorter of the section concerned changes, it takes a relatively long time for a new sorter or a stand-in to become an efficient sorter. Moreover, also in the collecting step the sorter must constantly read the collecting order in the address tags, which is a relatively slow method.

BRIEF DESCRIPTION OF THE INVENTION

[0007] The object of the invention is to provide a mail sorting system in such a way that the above-described problems can be solved. This is achieved with a mail sorting system of the type described in the preamble, which is characterized in that means to be attached to the mail sorting system comprise an indicating means arranged in each compartment of a set of sorting compartments and a control means controlling the indicating means, in which control means a mail sorting program and delivery order of said mail delivery area are arranged.

[0008] The preferred embodiments of the invention are disclosed in the dependent claims.

[0009] The invention is based on the idea that, in the mail sorting system, an indicating means and a control means controlling the operation of these indicating means are arranged in connection with each sorting compartment of a set of compartments. The indicating means is preferably a signal light and the control means is preferably a micro-processor-based, programmable device provided with a data communication port, data communication features and a local control panel. The control means controls the operation of the indicating

means on the basis of a sorting program stored therein and on the basis of control data supplied to the control device by the sorter. The sorter can supply the control data to the control device by means of both the control panel and a step push button connected to the control device. It is also possible that a bar code reader, or the like, by which control data can be supplied to the control device is connected thereto. A mail sorting program and delivery order of a mail delivery area required for mail sorting can preferably be retrieved directly from an address database for the control device via the data communication port.

[0010] Several advantages are achieved with the mail sorting system of the invention. When sorting compartments for unaddressed mail matter to be sorted to specific receivers can be indicated by a dynamically controllable indicating means which indicates an active sorting compartment in accordance with a predetermined sorting or collecting program, instead of a method based on text or another static sign, it is possible to enhance and speed up the sorting step while the quality of sorting work is substantially improved. In a corresponding manner it is also possible to indicate the compartments where advertising mail is not desired.

[0011] An advantageous embodiment of the indicating means is a signal light, such as a LED light. It has a considerable advantage that the marked compartment is well detected visually and it is readily controllable by an electric control signal and it is also reliable due to on/off options of the required signal.

[0012] The control means controlling the indicating means of the mail sorting system of the invention is preferably a micro-processor-based device which is provided with sufficient memory capacity. Then it is simple to program the control device to control the indicating means on the basis of the control data, stored in the control device, which form the sorting and collecting order.

[0013] In the mail sorting system of the invention, the control means comprises control members, by which the sorter can supply control data to the control means. The invention in question preferably employs two different types of control elements. The control device comprises a control panel, through which, in the sorting step, the sorter can select a delivery area to be sorted, a section and a delivery method, which refers to the type of the mail matter to be sorted. Secondly, the device comprises a step push button which the sorter pushes in the collecting step in order to shift the indicating means to indicate the next mail bundle to be taken down and inserted in a bundle container. This arrangement has an advantage that the device is simple to use and the working step becomes more effective.

[0014] The control means of the mail sorting system of the invention also comprises data communication elements, i.e. a data communication port and the required software. Through these elements the control data forming the sorting and delivery order of various delivery areas can be stored easily and quickly in the control device and the control device can be connected to a central control system and the databases thereof. Fast programmability and a possibility to use the same distribution workstation for sorting the mail matter of several delivery areas are an advantage of this arrangement.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] In the following, the invention will be described in greater detail in connection with preferred embodiments, with reference to the attached drawings, in which

Figure 1 shows a schematic model of a mail sorting station, where a mail sorting system of the invention with indicating means, control device and central control system is arranged, and

Figure 2 shows components of the mail sorting system of Figure 1 with three sorting stations.

DETAILED DESCRIPTION OF THE INVENTION

[0016] Figure 1 shows a schematic view of a mail sorting station. An installation system which consists of a set of compartments 1 comprising sorting compartments 2 forms the framework of the workstation. One sorting compartment 2 corresponds to one delivery destination, i.e. delivery address. The sorting station is designed for sorting one section of a mail delivery area.

[0017] In Figure 1, the set of sorting compartments 1 is provided with a mail sorting system of the invention comprising indicating means 11, i.e. signal lights, arranged in the sorting compartments, which indicating means are equal in number with the sorting compartments. The indicating means 11 are connected with bus cabling 17 to a control device 12. The control device 12 controls the operation of the indicating means 11. The control device 12 is a micro-processor-based device comprising, in addition to the processor, a memory in which sorting or collecting software required for mail sorting is stored. The control device 12 also comprises an operating panel 13 and a step push button 14, by which the sorter can give control commands to the control device 12, i.e. in practice, control the control device 12 to run the sorting and collecting programs of various delivery areas and sections thereof.

[0018] The control device 12 also comprises a data communication bus for connecting the control device 12 to a mainframe 16. From the mainframe 16, the sorting and collecting programs of various delivery areas and sections thereof are stored in the memory of the control device 12. Thus, it is possible, in a centralized manner, to program, maintain and distribute directly as files the sorting and collecting programs determined in the databases of the mainframe.

[0019] With reference to Figures 1 and 2, the mail sorting system of the invention works as follows:

[0020] Mail is sorted by a sorter. The sorter works at a sorting station, and if addressed delivery is concerned,

the sorter is given for sorting bunches of mail 6 sorted according to sections. An address tag 5, onto which is marked the section's delivery destinations in the alphabetical order, is arranged in the set of sorting compartments 1 beside the sorting compartments 2. In the case of an addressed delivery, while sorting mail matter the sorter reads the address on a mail piece and inserts the piece in the compartment 2 indicated by the address tag 5.

[0021] Some of the mail matter is delivered in bunches without the addresses being written on the mail pieces. Delivery data related to these bunches are stored in the memory of the control device 12 and the sorter carries out sorting into receivers' compartments 2 as follows: The sorter selects with keys of the operating panel 13 of the control device 12 the delivery area to be sorted, the section thereof and the delivery method. The delivery method refers to a type of mail matter to be delivered, for instance, a specific magazine. Once the delivery method is selected, the control device 12 controls the indicating means 11 of the sorting compartments 2 to indicate the compartments 2 into which said mail pieces are inserted. The sorter thus detects the sorting data as visual information, preferably as a signal light, and each compartment receiving said mail matter at the same time. When said mail matter is distributed to the compartments 2, the sorter selects the next delivery method and in a corresponding manner the control device 12 controls the indicating means 11 of the set of sorting compartments receiving those mail pieces to indicate the compartments 2 into which said mail pieces are inserted. Correspondingly, delivery instructions, i.e. delivery method, stored in the control device 12 can be used to control the indicating means 11 in such a way that the indicating means 11 indicate, into which sorting compartments 2 certain mail matter, such as advertising mail, is not desired. The above-described operating model, in which the sorter selects the delivery method, is repeated for all delivery methods.

[0022] When all the delivery methods of said section are completed, i.e. in practice, when the addressed and the unaddressed mail matter of said section are sorted, the process proceeds to a collecting step. In the collecting step, the sorter collects the mail bundles 3 accrued in the sorting compartments during the sorting step into bundle containers 4, in which the sorted mail is transported to be distributed to delivery destinations. The sorter starts the collecting step by lightly pressing the step push button 14. Then the control device 12 starts the collecting program of the section and indicates one compartment 2 at a time the collecting order according to the delivery destinations of the section. After the first push of the step push button 14 the indicating means 11 of the sorting compartment 2 controlled by the control device 12 indicates the sorting compartment 2 of the first postal bundle 3 to be taken down and collected into the bundle container 4. After the second push of the step push button 14 the indicating means 11 of the sorting compartment 2 controlled by the control device 12 indicates the sorting compartment 2 of the second postal bundle 3 to be taken down and collected into the bundle container 4 and the same procedure is continued until the collecting program is completed and the whole section is collected into the bundle container 4. If the button is erroneously pushed and several compartments 2 are stepped over, a reversing step is carried out by pushing the step push button longer, for about 2 seconds, whereby the control device 12 shifts the indicating means one step backwards.

[0023] Even though the invention is described in the above with reference to the example of the attached drawings, it is obvious that the invention is not restricted thereto but it can be modified in a variety of ways within the inventive idea disclosed in the accompanying claims.

Claims

1. A mail sorting system for handling mail matter, the mail sorting system comprising

   a set of sorting compartments (1) consisting of one or more sorting compartments (2),
   an indicating means (11) arranged in connection with each sorting compartment (2), indicating the compartment,
   a control device (12) controlling the indicating means (11),
   control means (13,14) arranged in the control device (12) for receiving and generating control data to be supplied to the control device (12),
   data communication elements (15) attached to the control device (12) for receiving the control data to be supplied to the control device (12),
   a memory in the control device (12) for storing the control data supplied to the control device (12),

   characterized in that

   the mail sorting system is arranged for sorting unaddressed mail matter in which the address data is not readable on mail pieces, whereby the sorting data is arranged in the control device (12),
   the mail sorting system is arranged for collecting mail bundles (3) of pre-sorted mail pieces from the compartments (2) of the set of sorting compartments (1) according to the delivery order, the mail collecting order being arranged in the control means (12).

2. A mail sorting system as claimed in claim 1, **characterized** in that the control device (12) controlling the indicating means (11) is a device based on a

microprocessor.

3. A mail sorting system as claimed in claim 1 or 2, **characterized** in that the indicating means (11) are arranged to be controllable by a computer program which is database controlled.

4. A mail sorting system as claimed in claim 1, 2 or 3, **characterized** in that the indicating means (11) arranged in each sorting compartment (2) of the set of sorting compartments (1) is a signal light.

5. A mail sorting system as claimed in claim 1, 2 or 3, **characterized** in that the control device (12) comprises data communication elements (15) for connecting the control device (12) to a central control system (16).

6. A method for sorting unaddressed mail matter into compartments (2) of a set of sorting compartments (1) receiving the mail items, an indicating means (11) being arranged in connection with the compartments, indicating the compartment (2) and the indicating means being controlled by a control device (12),

characterized by

selecting a sorting area (delivery area and section) by the control means (13) of the control device (12),
selecting a type of mail matter (delivery method) by the control means (13) of the control device (12),
the control device (12) switching, according to the sorting data arranged thereto, the indicating means (11) of one or more compartments (2) receiving mail matter of the selected mail matter type, to indicate one or more compartments (2) receiving said mail matter of the selected mail matter type,
sorting the mail matter into one or more compartments (2) indicated by the indicating means (11).

7. A method for collecting mail bundles (3) of sorted mail pieces from compartments (2) of a set of sorting compartments (1), an indicating means (11) being arranged in connection with said compartments and the indicating means (11) being controlled by a control means (14) arranged in the control device (12),

characterized in that

a collection according to the mail collection order is activated by the control means (14) of the control device (12),
the control device (12) switches the indicating means (11) arranged in the control device (12) of the compartment (2) in a set of sorting compartments (1) to be collected in the collecting order, to indicate the compartment (2) from which the mail bundle (3) is to be collected,
the mail bundle (3) is collected into a bundle container (4) from the compartment (2) indicated by the indicating means (11).

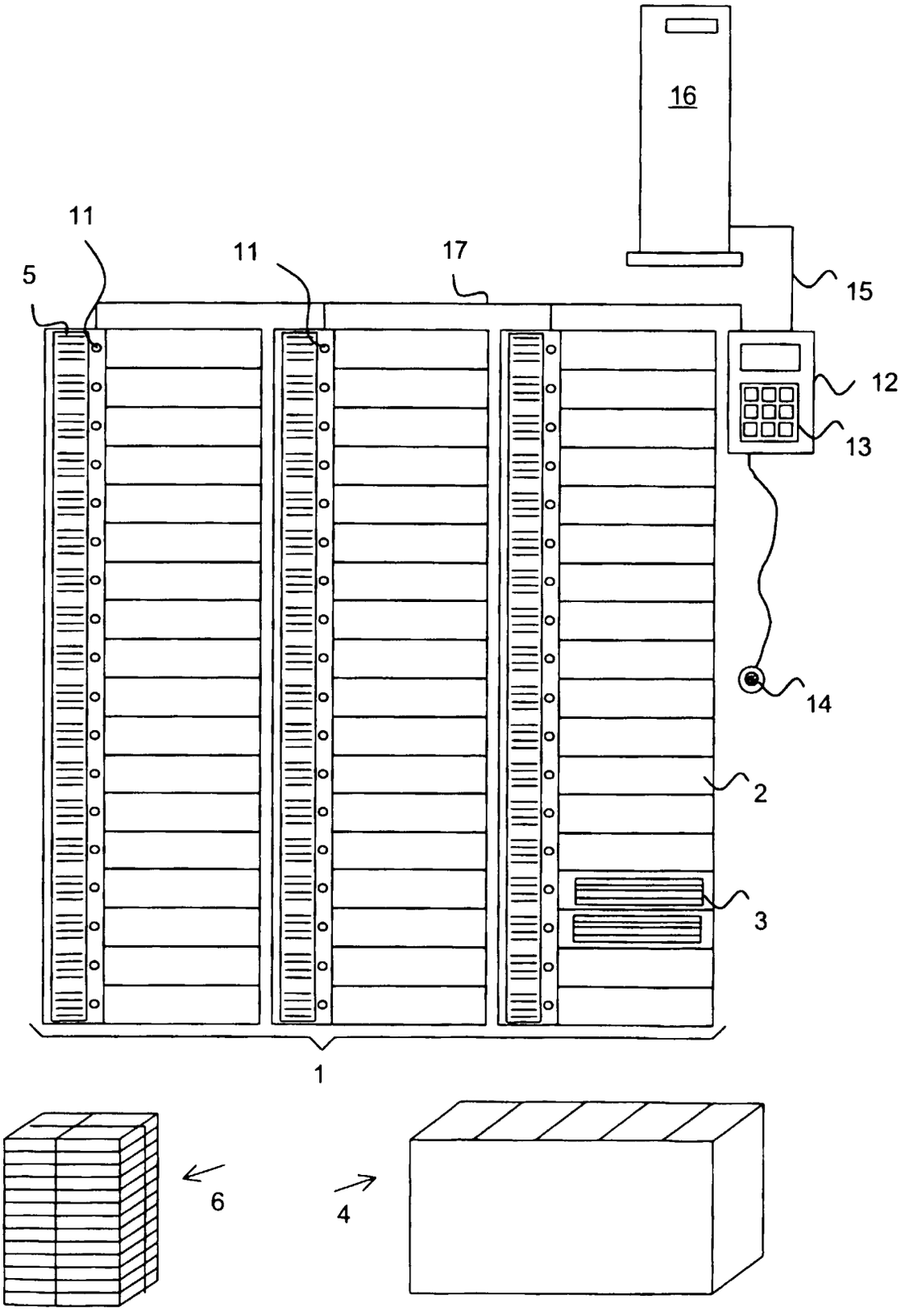

FIG.1

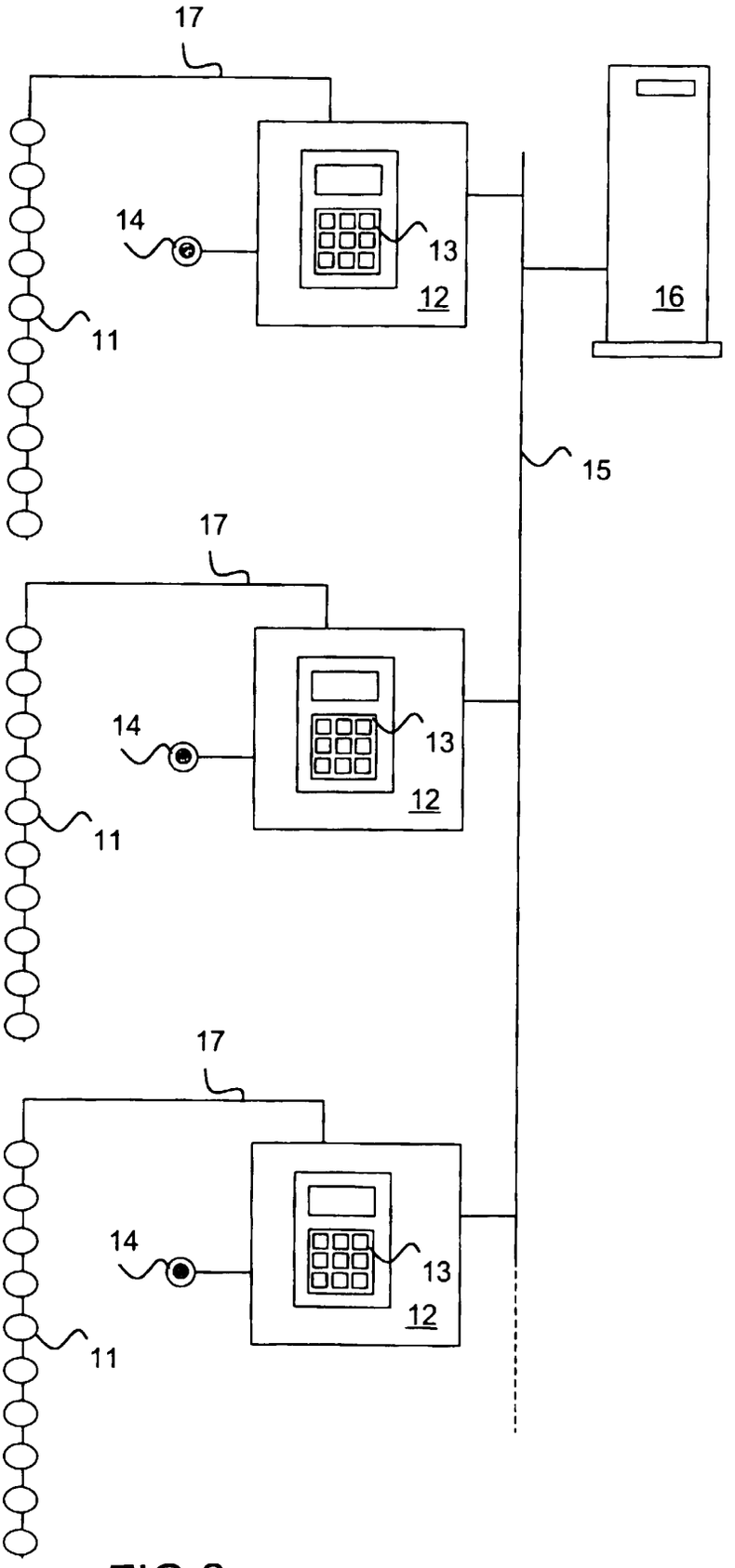

FIG.2