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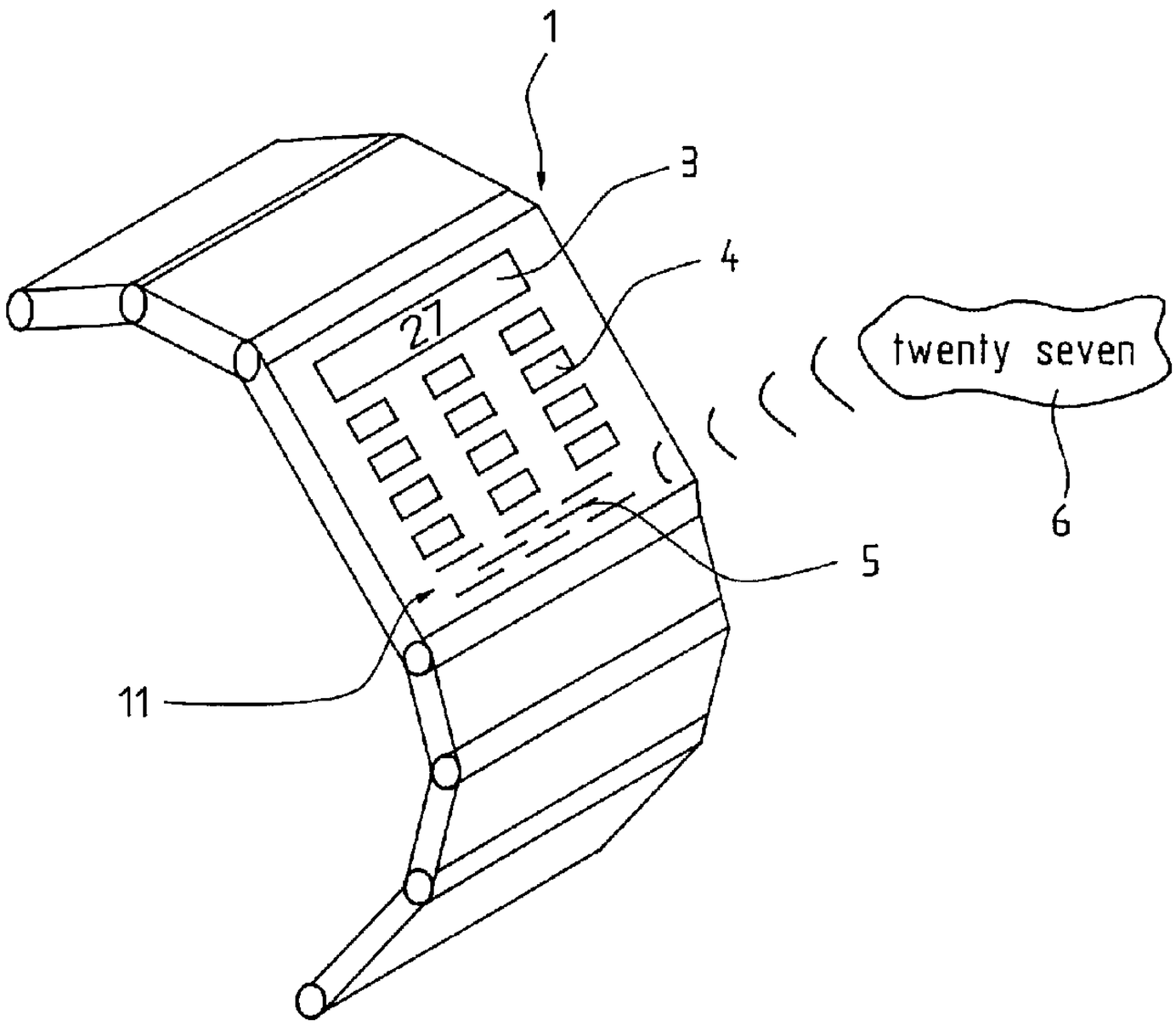
(54) Titre : DISPOSITIF ET METHODE DE SAISIE D'INSTRUCTIONS VOCALES POUR UNE INSTALLATION D'ASCENSEUR

(54) Title: INPUT APPARATUS AND METHOD FOR ACOUSTIC COMMAND INPUT FOR A LIFT INSTALLATION



(57) Abrégé/Abstract:
In this portable input apparatus (1) the call input can be undertaken separately in terms of time and place from the lift installation. The input apparatus (1) has the form of, for example, a wristwatch. As interface for the user the input apparatus (1) has a first display (3) for visualisation of data, a first keyboard (4) for manual input of data or travel commands and an audio unit (5) for acoustic input of data or travel commands and for generation of audio information for the lift user. The, for example, destination storey "twenty-seven" selected by speech (6) in English, is indicated on the display (3) by "27" and in the proximity of the lift installation is automatically transferred to the lift control. The lift control in tum communicates to the portable input apparatus (1) the allocated lift cage carrying out the desired travel.

Summary

In this portable input apparatus (1) the call input can be undertaken separately in terms of time and place from the lift installation. The input apparatus (1) has the form of, for example, a wristwatch. As interface for the user the input apparatus (1) has a first display (3) for visualisation of data, a first keyboard (4) for manual input of data or travel commands and an audio unit (5) for acoustic input of data or travel commands and for generation of audio information for the lift user. The, for example, destination storey "twenty-seven" selected by speech (6) in English, is indicated on the display (3) by "27" and in the proximity of the lift installation is automatically transferred to the lift control. The lift control in turn communicates to the portable input apparatus (1) the allocated lift cage carrying out the desired travel.

(Fig. 1)

DESCRIPTION

Input Apparatus and Method for Acoustic Command Input for a Lift Installation

The invention relates to an input apparatus and a method for acoustic command input for a lift installation with a lift control consisting of a unit for reception and conversion of the acoustic commands and of a display unit for the visualisation of the acoustic command input.

There has become known from the patent specification US 5 255 341 a lift installation in which the travel commands to the storeys can be input acoustically. A microphone and indicator lamps for the acoustically input travel commands are arranged in the proximity of the lift input. So that the speech recognition can be guaranteed, a distance sensor detects the presence of a lift user within a specific distance from the microphone. The correct distance from the microphone is indicated to the lift user by means of check lamps. The travel command acoustically communicated to the system by the lift user is evaluated by a speech recognition unit and converted into an electrical signal corresponding to the desired storey and visualised at the indicator lamps. The travel commands can also be input manually by means of call buttons.

A disadvantage of the known equipment resides in the fact that the acoustic travel command input is possible only in the proximity of the lift installation and within a specific distance from the lift entrance of the lift installation. The travel command input must be dealt with at just the place where the most interfering noise caused by the voices of the other lift users arises. Erroneous evaluations of the speech recognition unit and thus an inadequate efficiency of the lift installation are the consequence.

Here the invention will create a remedy. The invention, as it is characterised in claim 1, meets the object of avoiding the disadvantages of the known equipment and of creating an apparatus which enables a separation in terms of time and place of a call input from the lift installation.

The advantages achieved by the invention are essentially to be seen in that the lift user can deal with the input of his travel destination in advance and remotely from the lift installation. The lift user can give his travel wish in a private environment and make it

known to the system in due course. He no longer needs to worry about the call input in a crowd in front of and in the lift cage. It is further advantageous that the lift installation can operate more efficiently, because it no longer has to wait for the manual travel commands claiming much time for input. It is furthermore advantageous that an individual checking of the lift user is possible, because each lift user has his personal input apparatus. Moreover, individual instructions, for example for the use of another lift or an escalator, can be given to the owner of an input apparatus. Travel destinations can also be input in concepts synonymous to numbers. For example, the parking storey, which usually has to be selected by "-2", can be acoustically selected by "car". The input apparatus can also be equipped with further functions, such as, for example, telephone, pager or communication with the coffee machine. Furthermore, individual data of the user, such as, for example, speech, access authorisation to specific storeys, or restrictions; can be assigned to the apparatus.

In one aspect, the present invention resides in an input apparatus for inputting an acoustic command to a lift installation having a lift control consisting of a unit for reception and conversion of an acoustic command and a display unit for visualisation, wherein the input apparatus comprises a device by which the acoustic command can be received independently in terms of time and place from the lift installation.

In another aspect, the present invention resides in a method for inputting an acoustic command to a lift installation having a lift control whereby an acoustic command is communicated to the lift control and can be visualised by means of a display unit, wherein the acoustic command input can take place independently in terms of time and place from the lift installation.

The invention is more closely described in the following by reference to drawings illustrating merely one route of embodiment. There:

Fig. 1 shows a portable input apparatus for acoustic input of destination calls,

Fig. 2 shows a destination call terminal, which is arranged on the storey, for communication with the input apparatus,

Fig. 3 shows a block circuit diagram of the input apparatus according to the invention and

Fig. 4 shows a flow chart for illustration of the communication between the input apparatus and the destination call terminal.

A portable input apparatus for designation call input separated in terms of time and place from the lift installation is designated by 1 in Figs. 1 to 4. The input apparatus has the form of a wristwatch. However, it can also have the form, for example, a credit card, a key fob or a signet ring. As interface for the user 2 the input apparatus 1 comprises a first display 3 for visualisation of data, a first keyboard 4 for manual input of data or travel commands and an audio unit 5 for acoustic input of data or travel commands and for generation of audio information. For example, the destination storey "twenty-seven" selected by English

speech 6 is displayed on the display 3 by "27". A decade keyboard, in which the numbers of the selected storeys are put together from at least one numeral, is usually used as the first keyboard 4. The keyboard 4 can also consist of keys related to storeys.

Fig. 2 shows a destination call terminal 7 which is arranged at the storey and at which destination calls are usually manually input by means of a second keyboard 8. The destination calls are immediately allocated with the designation call control to the lift cage with the best possible travel conditions, which cage is visualised for the user 2 at a second display 9. Moreover, the destination call terminal 7 comprises a second transmitter/receiver unit 10, which can communicate with a first transmitter/receiver unit 11 of the portable input apparatus 1. In Fig. 2 it is illustrated how the first transmitter/receiver unit 11 communicates, for example, the acoustically selected storey "27" to the second transmitter/receiver unit 10. Thereafter, the lift cage C, which is allocated by the destination call control and executes the designation call, is indicated at the second display 9, communicated by means of the second transmitter/receiver unit 10 to the first transmitter/receiver unit, indicated at the first display 3 and made audible for the user by the audio unit 5. The information is thus also available for the user 2 at any time outside the range of the designation call terminal 7. The user 2 can change, cancel or later input again his travel command at any time up to transmission to the destination call terminal 7. The energy source of the input apparatus or the designation call terminal 7 is not illustrated.

The input apparatus 1 can also communicate with a conventional lift control, which has transmitter/receiver units, with storey pushbutton and cage with cage control panel. In this case, the user 2 can send for and enter the lift cage and deal with the call input without having to go forward to the storey pushbutton or cage control panel. The cage can depart earlier, because no time is lost for the call input.

Fig. 3 shows a block circuit diagram of the input apparatus 1. The user 2 passes on his travel command or destination call acoustically to a microphone 12, the signal of which is fed to an audio transducer 13. In the speech recognition part of the audio transducer 13 the acoustic signal is converted into a digital signal, which is able to be further processed by a first control unit 14 equipped with a computer. In reverse direction, the digital signals of the first control unit 14 are fed to a speed synthesising part of the audio transducer 13, which converts the digital signal into an analog audio signal. The audio signal is made

audible for the user 2 by means of a loudspeaker 15. Microphone 12, loudspeaker 15 and audio transducer 13 form the audio unit 5 of the input apparatus 1. The first control unit 14 is connected with the first display 3, the first keyboard 4, a store 16 and the first transmitter/receiver unit 11. The control unit controls the first display 3 and the interrogation of the first keyboard, compares data with data of the store, and passes on applicable data to the first receiver/transmitter 11. In reverse direction, data of the transmitter/receiver unit 11 are processed by the control unit 14. The store 16 consists of several storage blocks for storage of user data, system and operating data, safety data and statistical data. Individual data of the user, such as, for example, personal identification, preferred user service, preferred storey, speech, etc., are filed in a first storage block 16.1. Data of the operating lift system, such as, for example, number of destination storeys, transport speed, peak traffic times, number of lift cages, zones, information about storey occupation, restaurants, etc., are filed in a second storage block 16.2. A synonym table is filed in a third storage block 16.3. As further explained above, the user 2 can select his destination storey by means of a number, for example, "27". However, the user also has the possibility of communicating his travel wish to the system in the form of a synonym which is simple to be aware of, such as, for example, "car", "coffee" or "restaurant". The control unit 14 has the capability, with the assistance of the synonym table filed in the third storage block 16.3, to convert the synonym into a storey number and/or inform the user 2 about the arrangements located in the selected storey, such as, for example, opening and closing times of the parking deck, choice of beverages of the coffee machine or menu suggestions of the restaurant. Restriction data concerning entry and access controls are filed in a fourth storage block 16.4. Symbols or commands unable to be processed or storeys barred to the user 2 are communicated to the user 2 by means of the first display 3 or by means of the audio unit 3. Routines of the user 2 are filed in a fifth storage block 16.5. When, in accordance with usual practice, the user puts in his coffee break at 9 o'clock this information is processed by the input apparatus 1 in self-learning manner. After a certain time, due to the preceding routines there is brought to the attention of the user 2, for example, the approaching coffee break. The desired travel destination is filed in a sixth storage block 16.6. The data of the store 16 can be read and/or changed by the lift operator by means of a programming apparatus or on the approach to the transmitter/receiver units 10, 11 or by means of a code directly via keyboard 4 and/or by means of acoustic inputs via audio unit 5.

As soon as the user 2 comes into the immediate vicinity of the lift installation by his input apparatus 1, the second transmitter/receiver unit 10 comes into connection with the first transmitter/receiver unit 11. This transmits the travel command to the destination storey terminal 7. As soon as the travel command is allocated, the lift cage C executing the travel command is acoustically and optically communicated to the user by means of the input apparatus 1. The second transmitter/receiver unit 10 is connected with a second control unit 17, which is equipped with a computer, of the destination call terminal 7, which handles the data traffic with the lift control.

Fig. 4 shows a flow chart for the illustration of the communication between the input apparatus 1 and the destination call terminal 7. In step S1, the input apparatus 1 is, after an initialising, freed for destination call input. The user 2 now has the possibility of inputting a travel command acoustically in step S2 or manually in step S5 by means of the input apparatus 1. In the case of acoustic destination call input, the acoustic signal, for example "twenty-seven", is converted by means of the audio transducer 13 into a machine-readable signal or code in step S3. In step S4 the first control unit 14 forms, if necessary also with the assistance of the synonym table, the destination call number corresponding to the desired storey. It is checked in step S6 whether the desired destination call is subject to restrictions. By an output, which is designated by YES, of the checking the user 2 is, as shown in step S7, acoustically and/or optically notified that the wish is not able to be performed. By an output, which is designated by NO, of the checking in step S6 the desired destination storey is, as shown in step S8, optically and acoustically acknowledged at the input apparatus 1 and filed in the sixth storage block 16.6. The destination call input is thus completed. However, the input can be corrected or input again at any time up to communication to the destination call terminal 7. In the vicinity of the lift installation the second transmitter/receiver unit 11 of the destination call terminal 7 requires, as shown in steps S9 and S10, the input apparatus 1 to communicate the call input. In step S11 the travel destination desired by the user 2 is transmitted to the destination call terminal 7, which passes on the destination call to the lift control in step S12 and visualises it at the second display 9 in steps S13 and S14. In step S15 the lift control immediately allocates the designation call to the lift cage with the best travel conditions having regard to the number of passenger and the total travel distance. The allocated lift cage C executing the destination call is transmitted to the destination call terminal 7. The communication of the allocated lift cage C to the input apparatus 1 by means of the transmitter/receiver units 10, 11 takes place in steps S16 and S17. The

communication between input apparatus 1 and destination call terminal 7 takes place in wire-free manner, for example, in the infra-red range. The allocated lift cage C is optically and/or acoustically communicated to the user 2 in step S18. The optical indication remains until the user has entered the lift cage C.

Patent Claims:

1. Input apparatus for inputting an acoustic command to a lift installation having a lift control consisting of a unit for reception and conversion of an acoustic command and a display unit for visualisation, wherein the input apparatus comprises a device by which the acoustic command can be received independently in terms of time and place from the lift installation.

2. Input apparatus according to claim 1, wherein the input apparatus is portable and comprises a control unit, a keyboard for input of data or travel commands, a display for visualisation of data, an audio unit for conversion of audio information, a store for storage of data and a first transmitter/receiver unit, which is suitable for communication with a second transmitter/receiver unit of a stationary call terminal.

3. Input apparatus according to claim 2, wherein the audio unit comprises a microphone for reception of audio information, a loudspeaker for delivery of audio information and an audio transducer for speech recognition and speech synthesis.

4. Input apparatus according to claim 2, wherein the store comprises a first storage block with individual data of a user, a second storage block with data of the lift system, a third storage block with a synonym table, a fourth storage block with restriction data for lift use, a fifth storage block with routines of the user and a sixth storage block with the desired travel destination.

5. Method for inputting an acoustic command to a lift installation having a lift control whereby an acoustic command is communicated to the lift control and can be visualised by means of a display unit, wherein the acoustic command input can take place independently in terms of time and place from the lift installation.

6. Method according to claim 5, wherein the acoustic command input and command storage is carried out by means of a portable input apparatus and the commands are communicated in the immediate proximity of the lift installation to the lift control.

7. Method according to claim 5, wherein data of the lift control are communicated in the immediate proximity of the lift installation to the input apparatus and are acoustically and/or optically indicated to a user.

8. Method according to claim 6, wherein the command input is carried out in concepts synonymous with storey numbers.

Fig. 1

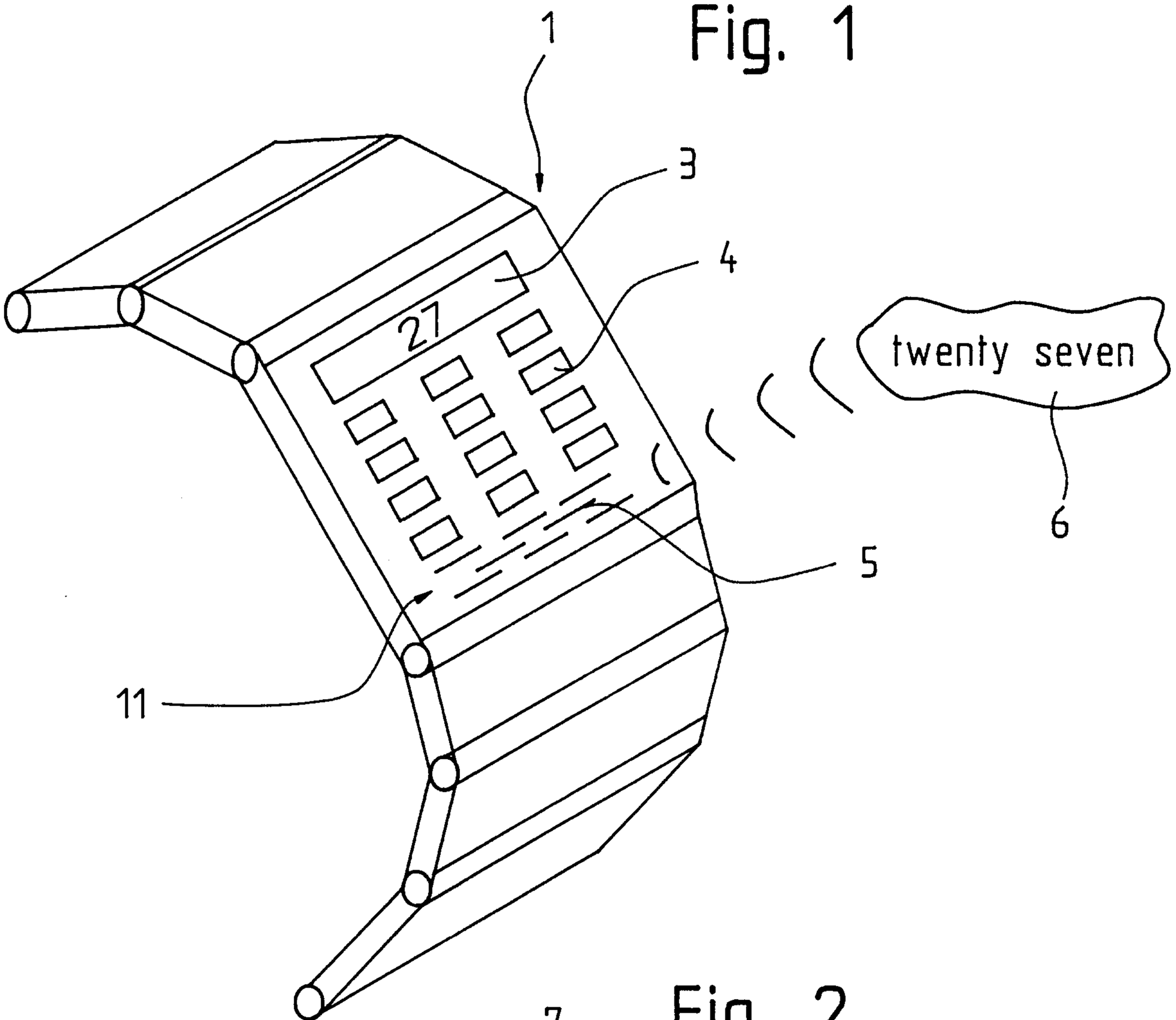


Fig. 2

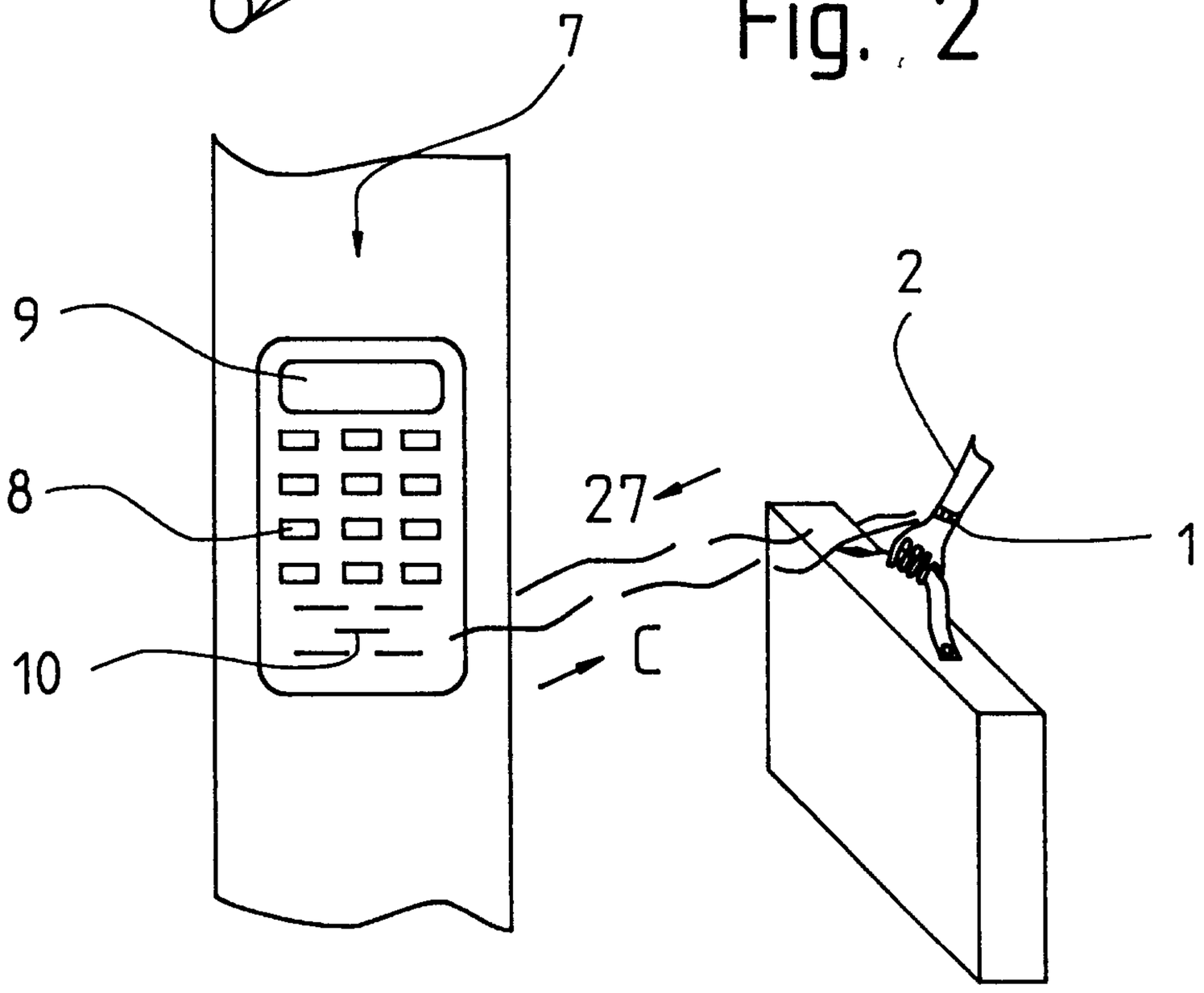


Fig. 3

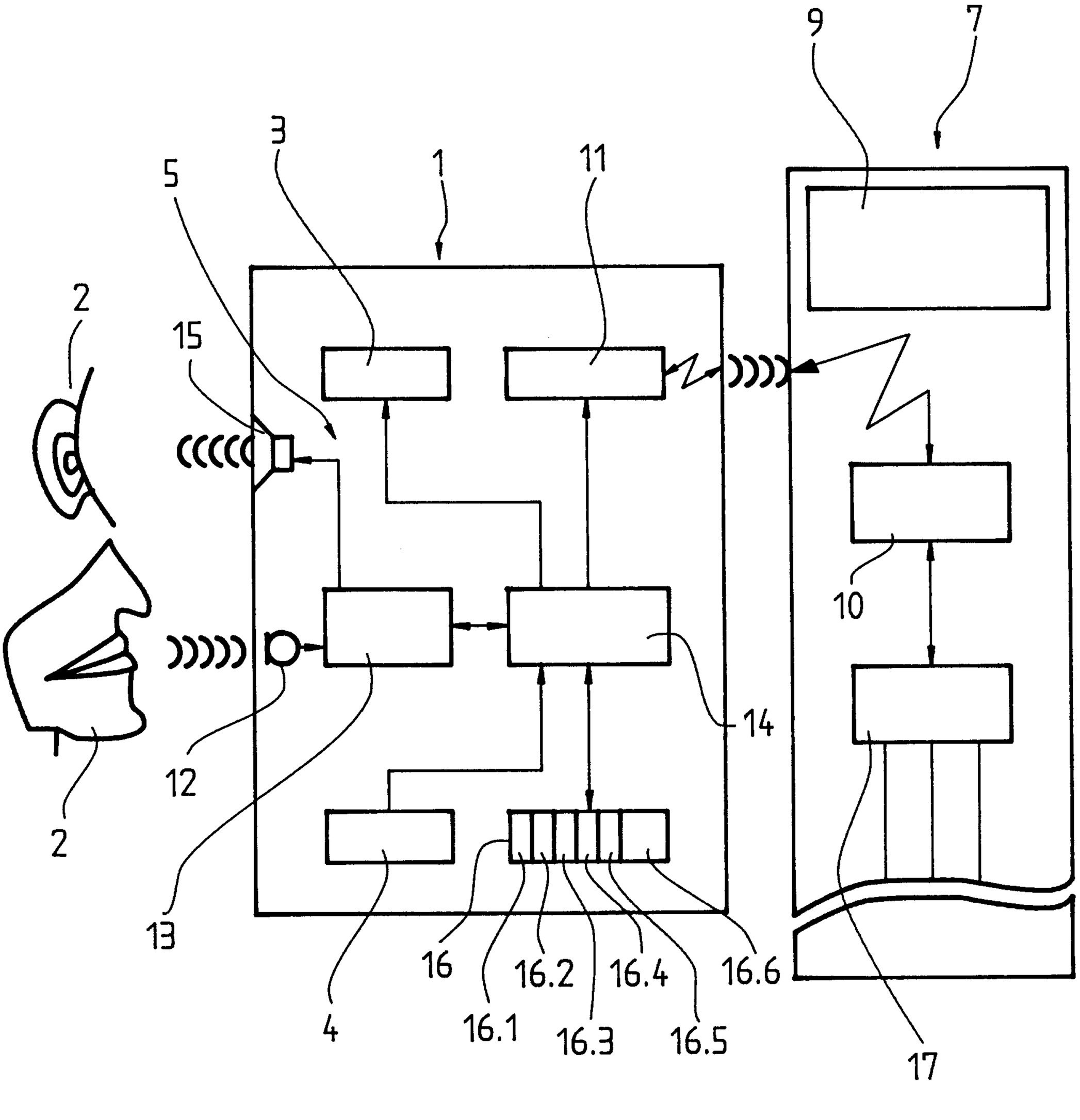
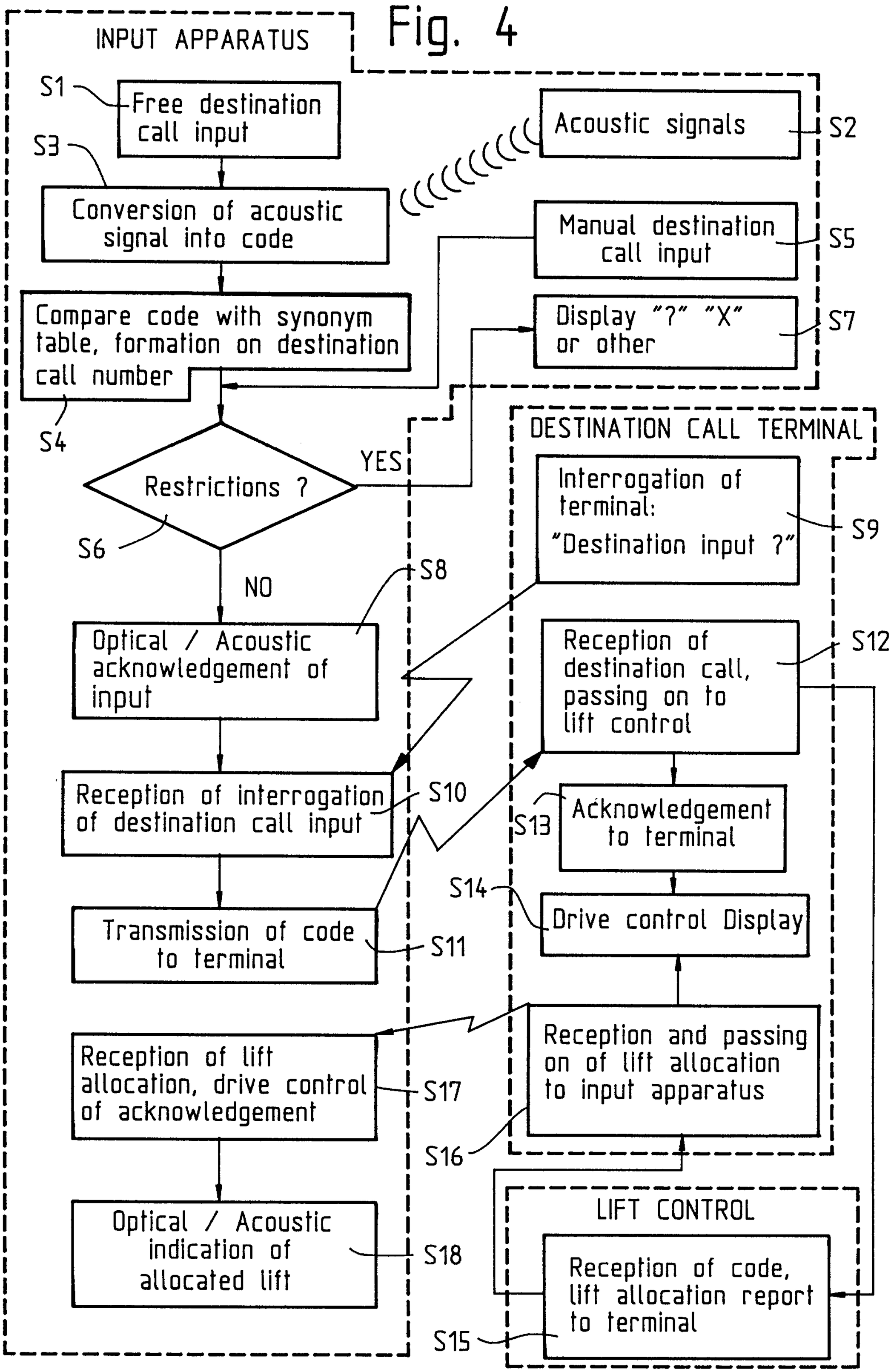
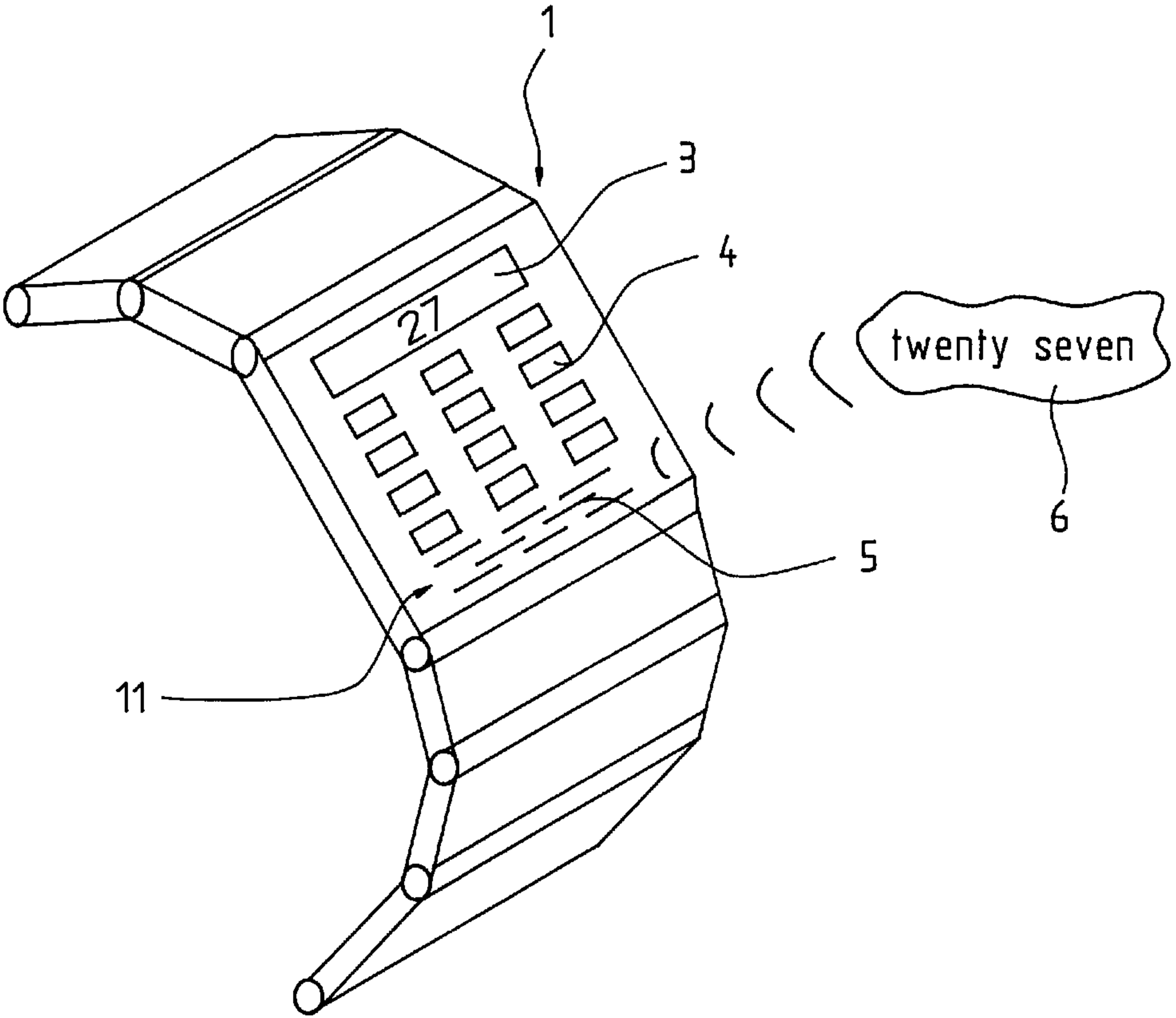


Fig. 4


INPUT APPARATUS
S1
Free destination call input
S3
Conversion of acoustic signal into code
Compare code with synonym table, formation on destination call number
S4
Restrictions ?
YES
S6
NO
Optical / Acoustic acknowledgement of input
Reception of interrogation of destination call input
S10
Transmission of code to terminal
S11
Reception of lift allocation, drive control of acknowledgement
S17
Optical / Acoustic indication of allocated lift
S18
Acoustic signals
S2
Manual destination call input
S5
Display "?" "X" or other
S7
S8
DESTINATION CALL TERMINAL
Interrogation of terminal:
"Destination input ?"
S9
Reception of destination call, passing on to lift control
S12
S13
Acknowledgement to terminal
S14
Drive control Display
Reception and passing on of lift allocation to input apparatus
S16
LIFT CONTROL
Reception of code, lift allocation report to terminal
S15


1
3
4
27
twenty seven
6
5
11