FORM 1

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952

APPLICATION FOR A STANDARD PATENT

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HOCHIKI KABUSHIKI KAISHA

596181

of 10-43, KAMIOSAKI 2-CHOME
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hereby apply for the grant of a standard patent for an invention entitled:

EXIT GUIDING SYSTEM

which is described in the accompanying complete specification

Details of basic application(s):

Number of basic application	Name of Convention country in which basic application was filed	Date of basic application
120888/86	JP	26 MAY 86

My/our address for service is care of CLEMENT HACK & CO., Patent Attorneys, 601 St. Kilda Road, Melbourne 3004, Victoria, Australia.

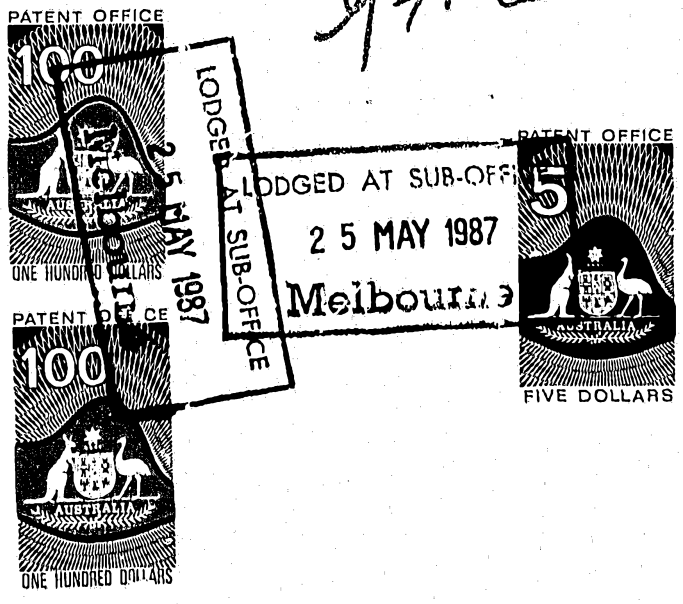
DATED this 25th day of May 1987

HOCHIKI KABUSHIKI KAISHA

APPLICATION ACCEPTED AND AMENDMENTS ALLOWED 13-2-90

CLEMENT HACK & CO.

TO: The Commissioner of Patents.



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DECLARATION IN SUPPORT OF A CONVENTION OR NON-CONVENTION APPLICATION FOR A PATENT OR PATENT OF ADDITION

Name(s) of Applicant(s)

In support of the application made by HOCHIKI KABUSHIKI KAISHA

Title

for a patent for an invention entitled Exit Guiding System

Name(s) and address(es) of person(s) making declaration

I/We, Shigeru Iibuchi of 17-2, Ikegami 3-chome, Ota-ku, Tokyo, Japan, President of HOCHIKI KABUSHIKI KAISHA

do solemnly and sincerely declare as follows:-

1. I am/we are the applicant(s) for the patent, or am/are authorised by the abovementioned applicant to make this declaration on its behalf.

2. The basic application(s) as defined by Section 141 of the Act was/were made in the following country or countries on the following date(s) by the following applicant(s) namely:-

Country, filing date and name of Applicant(s) for the or each basic application

in Japan on May 26, 1986
by HOCHIKI KABUSHIKI KAISHA
in _____ on _____ 19____
by _____

3. The said basic application(s) was/were the first application(s) made in a Convention country in respect of the invention the subject of the application.

Name(s) and address(es) of the or each actual inventor

4. The actual inventor(s) of the said invention is/are Tsutomu Nakanishi of 700-1, Kiso-machi, Machida-shi, Tokyo, Japan. Akira Kitajima of 6551 Warner Avenue, APT. #204, Huntington Berch, CA 92647, U.S.A.. Yoshiaki Fuwa of 411-1-810, Arai-cho, Hodogaya-ku, Yokohama-shi, Kanagawa-ken, Japan. Yasaburo Adachi of 10-10, Satsuki-cho, Akishino, Nara-shi, Nara-ken, Japan.

See reverse side of this form for guidance in completing this part

5. The facts upon which the applicant(s) is/are entitled to make this application are as follows:-
The applicant is the assignee of the actual inventors.

DECLARED at Tokyo, Japan this 20th day of April 1987

HOCHIKI KABUSHIKI KAISHA

Shigeru Iibuchi

Shigeru Iibuchi (President)

This form may be completed and filed after the filing of a patent

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(56) Prior Art Documents
US 4074225
US 4283657
US 4531114

(57) Claim

1. An exit guiding system comprising:

a first detector for positioning inside a building for detecting a change in the indoor ambient conditions due to occurrence of at least one of smoke and fire;

a second detector for positioning outside of said building for detecting a change in the outdoor ambient conditions due to occurrence of at least one of smoke and fire, said first and second detectors outputting signals at levels related to the intensity level of said smoke and fire;

a guiding device for positioning near a fire exit or in an access to exit for providing escape guidance at the time of a fire;

instructing means for causing performance or suspension of at least a portion of operations of said guiding device, said suspension being based on said signal levels of said respective detectors;

said instructing means including evaluation means for

determining whether or not the respective signal levels of said detectors reach a predetermined danger level;

said evaluation means comparing the signal level of said inside first detector with the signal level of said outside second detector when the signal level of either detector reaches said danger level, said evaluation means outputting an operation signal to said guiding device when the signal level of said inside first detector is greater than that of the outside second detector, on the other hand, said evaluation means outputting a suspension signal to said guiding device when the signal level of the outside detector is higher than that of said inside detector; and,

said guiding device being adapted to operate or suspend said at least a portion of the operations in response to the respective operation and suspension signals from said instructing means.

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Form 10

COMPLETE SPECIFICATION

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Complete Specification for the invention entitled:
EXIT GUIDING SYSTEM

The following statement is a full description of this invention including the best method of performing it known to me:-

EXIT GUIDING SYSTEM

BACKGROUND OF THE INVENTION

This invention relates to an exit guiding system which is provided in an access or passageway to a fire exit for indicating a guiding direction to the exit.

In conventional exit guiding devices provided on walls around fire exits for indicating the positions of the fire exits, messages indicative of the exit or symbol marks are indicated by the lightening of built-in light sources. It has been proved that these indication by the light become hard to be seen at the time of fire, due to smoke caused by the fire. To solve this problem, it has been proposed that a flashlight device such as a xenon tube is provided in the exit guiding device and the xenon tube is driven to emit light at the time of fire for making the indication visible even in the smoke. Or, there is another proposal to notify the exit to those who have a poor sight. In this proposal, a voice outputting device is provided in the exit guiding device, so that it may give a vocal message for escape guiding at the time of fire, at a volume of, for example, 90dB or more.

However, these escape guiding devices have such a disadvantage that not only those who have a poor sight but also ordinary persons may possibly be guided to exits, which have already become dangerous, due to the strong, powerful guidance by the flashing light or vocal messages, if the guidance by the flashing light or vocal message is continued even after the exits or the accesses of the exits have already been dangerous due to permeation of smoke.

SUMMARY OF THE INVENTION

The present invention has been developed to substantially alleviate at least one of the problems involved in the prior art.

In accordance with the present invention, there is provided an exit guiding system comprising:

a first detector for positioning inside a building for detecting a change in the indoor ambient conditions due to occurrence of at least one of smoke and fire;

a second detector for positioning outside of said building for detecting a change in the outdoor ambient conditions due to occurrence of at least one of smoke and fire, said first and second detectors outputting signals at levels related to the intensity level of said smoke and fire;

a guiding device for positioning near a fire exit or in an access to exit for providing escape guidance at the time of a fire;

instructing means for causing performance or suspension of at least a portion of operations of said guiding device, said suspension being based on said signal levels of said respective detectors;

said instructing means including evaluation means for determining whether or not the respective signal levels of said detectors reach a predetermined danger level;

said evaluation means comparing the signal level of said inside first detector with the signal level of said outside second detector when the signal level of either detector reaches said danger level, said evaluation means outputting an operation signal to said guiding device when the signal level of said inside first detector is greater than that of the outside second detector, on the other hand, said evaluation means outputting a suspension signal to said guiding device when the signal level of the outside detector is higher than that of said inside detector; and,

said guiding device being adapted to operate or suspend said at least a portion of the operations in response to the respective operation and suspension signals from said instructing means.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a block diagram of one embodiment of the present invention;

Fig. 2 is a schematic sectional view of an exit guiding system of the present invention which is provided in the vicinity of fire exits of a three-floor building;

Fig. 3 is an explanatory front view of the exit guiding indication unit of the invention, which includes a flashing device and a voice outputting device;

Fig. 4 is a block diagram showing another embodiment of

the present invention;

Fig.5 is a flowchart of a control operation of the embodiment as illustrated in Fig.4.

PREFERRED EMBODIMENTS OF THE INVENTION

Referring now to the drawings, preferred embodiments of the present invention will be described.

In Fig.1, 1 is a fire signal station and 2a, 2b ... 2n are signal lines derived from the signal station 1 to various lookout or watching regions. The signal lines 2a to 2n are connected to fire detectors 3 in the respective watching regions. The fire detectors 3 may be so-called on-off type fire detectors which output a fire detection signal when a change in environmental conditions caused by a fire, for example, a temperature and/or smoke density reaches a preset threshold level, or may be analog fire detectors which output analog fire detection signal corresponding to a temperature or smoke density.

4a to 4n are exit guiding indication units which are installed in the vicinity of fire exits or on walls of passageways of accesses to the exit.

As illustrated in Fig.2, emergency doors 14A to 14C are provided at respective fire exits leading to fire escape stairs 13 in a building having first to third floors 1F to 3F. The exit guiding indication units 4a to 4c each having a configuration as illustrated in Fig.1 are provided inside of the emergency doors 14A to 14C in the vicinity of the fire exits, respectively. Smoke density sensors 5a are provided on ceilings of the respective floors 1F to 3F, inside the respective emergency doors 14A to 14C. Similarly, smoke density sensors 5b are provided on ceilings of the fire escape stairs 13, outside of the respective emergency doors 14A to 14C.

Each of the exit guiding indication units 4a to 4n has the same configuration, and the exit guiding indication unit will now referred to.

Detection signals from the smoke density sensors 5a and 5b provided inside and outside of the the fire exit where the exit guiding indication unit 4a are supplied to determining sections 6a and 6b provided in the exit guiding indication unit 4a, respectively. Danger levels of smoke density at the fire exit are set as threshold values in the determining sections 6a and 6b. The threshold values are, for example, smoke density of 20%/m. The smoke density or densities indicated by the detection signal or signals from the smoke density sensor 5a and/or 5b exceed the preset threshold value, the determining section or sections 6a and/or 6b generate an H-level output.

The exit guiding indication unit 4a includes a light emission drive device for driving light emission of a xenon tube 7 and a voice synthesizing/outputting device 10 for outputting voice message for fire escape guiding. The light emission drive device 8 and the voice synthesizing/outputting device 10 are actuated in response to a fire detection signal from the fire signal station 1. The light emission drive device 8 intermittently drives the xenon tube 7 to emit light intermittently at predetermined time intervals. The xenon tube 7 generates intense flashing light to indicate the position of the fire exit. The voice synthesizing/outputting device 10 stores vocal data of preliminarily given escape guiding messages. The voice synthesizing/outputting device 10 reading out the vocal data when it receives the fire detection signal 11 from the fire signal station 1 to synthesize a required voice message and give the message for escape guiding, around the fire exit, at sufficiently large volume, for example, at volume of 90dB or more, through a loudspeaker 9 after amplification by a

voice amplifier.

When determination outputs from the determining sections 6a, 6b are supplied, as stop signals, to the light emission drive device 8 and the voice synthesizing/outputting device 10 through an OR gate 12, the devices stop their operations. Thus, the light emission of the xenon tube 7 and the outputting of the voice message through the loudspeaker 9 are stopped.

Each of the exit guiding indication units 4a to 4c provided on walls of the inside of the emergency doors of the respective floors is configured to have an appearance as shown, for example, in Fig.3.

More particularly, a symbol mark 15 indicative of a direction to the fire exit (or a written message such as "Fire Exit") is provided on a front face of the indication unit body 4. A light source such as fluorescent lamp built in the unit body 4 is always lit to irradiate the symbol mark 15. The light source is supplied with power from an external power source through the fire signal station 1. To prevent extinction of the symbol mark 15 due to possible power failure due to a fire, an emergency power source is provided in the fire signal station 1 or an emergency power source is provided in each of the indication units 4a to 4c. Thus, the illumination indication of the symbol mark 15 is assured both at a normal time and in an emergency case.

The xenon tube 7 is provided at a bottom of the indication unit body 4 and the loudspeaker 9 is encased within an acoustic window 9a on the left of the indication unit body 4. The loudspeaker 9 is utilized also for emergency anouncement as well as escape guiding message.

A control operation of the present embodiment for escape guiding will now be described, referring to Figs.1 and 2.

When the fire signal station 1 receives a fire signal

from the fire detector 3, a fire alarm such as local bell ringing is given. At the same, fire detection signals 11 are supplied to the respective units 4a to 4c to actuate the light emission drive device 8 and the voice synthesizing/outputting device 10 provided in the respective units 4a to 4c. This, in turn, makes the xenon tubes 7 of the respective exit guiding indication units 4a to 4c at the inside of the emergency doors 4A to 4C. Simultaneously, the voice message for escape guiding is given at volume of 90dB or more.

With this arrangement, the escaping persons in the building can surely and properly know the direction of the fire exits through the intense light emission of the xenon tube 7 even if smoke due to the fire permeates the building. Moreover, the escaping persons can confirm the direction of the fire exits through the escape guiding message in combination with the light emission of the xenon tube 7 to take quick escaping action. Furthermore, persons who have poor eyesight can also know the direction of the fire exits through the anouncement of the escape guiding message to take a quick action for escape.

On the other hand, the smoke density sensors 5a, 5b detect smoke densities around the fire exits and the determining sections 6a, 6b provided in the respective escape guide indication units 4a to 4c determine whether the detected smoke densities reach a predetermined danger level or not.

If the fire spreads around the fire exit 14C on the third floor and the smoke density detected by the smoke density sensor 5a or 5b or both of them reaches the predetermined danger level, the corresponding determining section 6a or 6b or both of them in the unit 4c generate a determination output of H level. This output is supplied to the light emission drive device 8 and the voice synthesizing/

outputting device 10 as a stop signal. As a result of this, the driving of the xenon tube 7 for light emission and the outputting of the voice message through the loudspeaker 9 are suspended to stop the escape guidance to the fire exit 14C. However, the light emission and voice message anouncement of the units 4a and 4b at the fire exits 14A and 14B, respectively are continued. With this arrangement, it can be enabled to guide the escaping people to the safe fire exits 14A and 14B, without preventing inappropriate guiding of the people to the fire exit 14C, which has now got dangerous.

In the embodiment as illustrated in Fig.1, only the escape guiding by the light emission of the xenon tube 7 and the anouncement of the voice message through the loudspeaker 9 is suspended, and the illumination indication by the lighting of the built-in light source for the symbol mark 15 is continued.

As described above, the light emission of the xenon tube 7 and the anouncement of the voice message are suspended when the smoke density detected by either of the smoke density sensors 5a and 5b reaches the danger level in the present embodiment. However, the escape through the fire exit is possible, when the smoke density of the outside of the exit does not reach the danger level, even if the smoke density of the inside of the fire exit exceeds the danger level. Therefore, it suffices that the escape guiding is suspended only when the detection smoke density of the smoke density sensor 5b provided outside of the fire exit reaches the predetermined danger level. Alternatively, the detection value of the smoke sensor 5a inside the fire exit may be compared with the detection value of the smoke sensor 5b outside of the fire exit, so as to suspend the escape guiding only when the detected smoke density by the smoke density sensor 5b outside the exit is larger.

Although both the light emission driving of the xenon tube 7 and the anouncement of the vocal message are suspended when the smoke density reaches the danger level in the embodiment as described above, only one of them may be suspended alternatively, while continuing the operation of the other.

In addition, although the voice synthesizing/outputting device 10 is provided in the escape guiding indication unit in the foregoing embodiment, the voice synthesizing/outputting device may alternatively be provided on the side of the fire signal station 1 to transmit a voice signal to each of the escape guiding indication units 4a to 4n.

Another embodiment of the present invention will now be described, referring to Figs.4 and 5. In this embodiment, the smoke density sensors are not provided in the respective escape guiding indication units and the fire signal station is adapted to effect danger determination for controlling the actuation and suspension of the escape guiding devices.

As illustrated in Fig.4, 20 is a fire signal station and a plurality of fire detectors 30a to 30n and a plurality of guiding devices 40a to 40n provided in exit passageways or accesses to respective fire exits are connected to the fire signal station 20 through signal lines. the fire detectors 30a to 30n are associated with the guiding devices 40a to 40n, for example, by matrix, so as to have definite correspondences or predetermined relationships therebetween, respectively. More particularly, it has been previously determined which corresponding guiding device 40a to 40n is to be actuated when one of the fire detectors 30a to 30n detects a fire.

The fire signal station 20 comprises a signal transmitting/receiving section 21, a signal processing section 22, an instructing section 23, an alarming section 24 and a manual inputting section 25 for level setting, restoring

input, suspending input, etc. The signal transmitting/receiving section 21 is an input/output port for carrying out the delivery of signals between the fire detectors 30a to 30n and the guiding devices 40a to 40n and the fire signal station 20. The signal processing section 22 carries out the determination of the data on the basis of the signal from the fire detectors 30a to 30n or the manual inputting section 25. The determination of the data to be carried out by the signal processing section includes determination of the address informations of the fire detectors 30a to 30n and the guiding devices 40a to 40n, determination of the operation informations, fire informations and danger informations based on detection signals from the fire detectors 30a to 30n, determination of the actuation/suspension informations from the manual inputting section 25, and determination of the resetting informations.

The instructing section 23 controls the actuation/suspension of the guiding devices on the basis of the output signals from the signal processing section 22. An instruction signal from the instructing section 23 is supplied to the relevant guiding device 40a to 40n through the signal transmitting/receiving section 21. The signal processing section 22 and the instructing section may be provided in the form of a microcomputer.

The alarming section 24 sounds the bell to inform an occurrence of a fire in response to the fire information signal from the signal processing section 22.

The manual inputting section 25 manually carries out setting and inputting of a level on which the determination of the signals from the fire detectors 30a to 30n is based and inputting of the actuating information, suspending information and resetting information for effecting the actuation, suspension and resetting of the guiding devices 40a to 40n. The level setting is effected by setting, in the form

of smoke density etc., threshold values for determination levels for the determination of the actuation information, fire information and danger information. For example, the threshold value for the determination of the actuation information is set 5%/m of smoke density, the threshold value for the determination of the fire information is set 10%/m of smoke density and the threshold value of the determination of the danger information is set 20%/m of smoke density. With this setting, if the smoke densities detected by the fire detectors 30a to 30n are, for example, 5 to 10%/m, then the signal processing section 22 carries out the determination of the actuation information and output an actuating information signal to the instructing section 23, so that the instructing section 23 may supply an actuating signal to the guiding devices 40a to 40n. The resetting information is to initialize the guiding devices 40a to 40n. The manual inputting section 25 is, for example, a keyboard.

The fire detectors 30a to 30n are each comprised of a fire sensor 31 and a signal transmitting/receiving section 32. The fire sensor 31 may be an on-off type or an analog type detector as described above. The on-off type detector employable in the present invention may be such that can output different signals corresponding to the signal processing levels. The detection signal of the fire s[illegible] supplied to the signal transmitting/outputting [illegible] 21 the fire signal station 20 through the signal trans[illegible] outputting section 32.

The guiding devices 40a to 40b are each comprised of an indication unit 41 and a signal device 42. The indication unit 41 is similar to that shown in Figs.1 and 3, and it comprises a symbol mark 42 irradiated by, for example, a fluorescent lamp, a flash light 43 which intermittently emits light by driving of xenon tube etc. to inform the escape passageways, and an acoustic device 44 for generating

sounds such as escape guiding messages.

The signal device 42 comprises the signal transmitting/outputting section 45 for delivering signals in relation with the fire signal station 20, a signal determining section 46 for effecting determination of the signals and a control section 47 for actuating/suspending the flash light 43 and the acoustic device 44.

For example, a signal transmitted from the instructing section 23 of the fire signal station 20 is received by the signal transmitting/receiving section 45 and supplied to the signal determining section 46. The signal determining section 46 determines the signal contents and outputs a signal corresponding to the contents determined to the control section 47. The control section 47 drives the flash light 43 and the acoustic device 44 of the indication unit 41, according to the contents of the signal from the signal determining section 46, to effect guiding to the escape passageway or access by light and sound.

The control operation of the embodiment as described above and illustrated in Fig.4 will now be described, referring to a flowchart of Fig.5. The processing flow comprises two systems. When no signal indicative of fire information is not received from any of the fire detectors, the processing is carried out in the procedures from step S2 to S3, S4, S5 ... However, if a signal indicative of fire information is input, the signal processing section 22 is entirely put into a "fire condition" mode and the processing is carried out in the procedures of step 2 to step S10, S11, S12 ...

When a detection signal is transmitted to the fire signal station 20 from any one of the fire detectors 30a to 30n, the fire signal station 20 carries out signal determination, at step S1, as to the address determination of the the fire detector and the content determination of the

information. Then, it is determined, at step S2, whether the fire condition mode has already been set or not. If the fire condition mode has not been set yet, the procedures proceed to step S3. At step S3, it is determined whether the transmitted detection signal is fire information or not, or the signal level exceeds the threshold value (for example, smoke density of 10%/m) of the fire level or not. If the signal is not a fire information, the procedures return to step S1 to repeat the above-mentioned operations for a detection signal from another detector next to the detector as described above. On the other hand, if the signal level is that of the fire information, then the procedures proceed to step S4 to drive the alarming section 24 for informing an occurrence of a fire.

Then, at step S5, the signal processing section 22 determines the guiding devices 40a to 40n of areas where the escape guiding should be inhibited, through the determination of the address of the fire detector 30a to 30n which transmitted the detection signals. This determination is made by the matrix. Then, the signal processing section 22 outputs an instruction to inhibit the operation to the instructing section 23. Subsequently, the guiding device determined at step S6 is put into an operation-inhibited state. Thereafter, it is determined whether the guiding device 40a to 40n which has put into the operation-inhibited state at step S7 is still operated (the flash light 43 and the acoustic device 44 are in operation) or not. If it is not in operation, the procedures return to step S1 and if it is in operation, the guiding device 40a to 40n to be suspended is selected at step S8. At step S9, the operation of the guiding device 40a to 40n selected is suspended and the procedures return to step S1.

If a detection signal is output from another fire detector 30a to 30n after the fire condition mode has been

already set, the procedures proceed from step S2 to step S10 to determine whether the resetting information has input by the manual inputting section 25 or not. If the resetting information has been input, the guiding devices 40a to 40n are reset to the respective initial states at step 11 to terminate the processing. Thus, the actuation inhibition/suspension by the signal output to the respective guiding devices is released.

If there is no resetting information at step S11, it is determined at step S12 whether the detection signal from the fire detector 30a to 30n is a danger information or not, or exceeds the threshold value (for example, a smoke density of 20%/m) of the danger level or not. If the signal is a danger information, the procedures proceed to step S5 and the operations as described above are carried out at steps after step S6. If the signal is not a danger information, it is determined at step 1[illegible]ner a suspension information has been input by the manual inputting section 25. If there has been an input, the procedures proceed to step S7 to carry out the determination for steps S8 and S9. If there has been no suspension information input, it is determined at step S14 whether the detection signal from the fire detector 30a to 30n is an actuating information or not, or whether it exceeds the threshold value (a smoke density of 5%/m) of the actuating level or not. If the signal is lower than the threshold value, the procedures return to step S1, whilst if the signal exceeds the threshold value, the procedures proceed to step S15. In this connection, it is to be noted that the actuating information may be input manually by the manual inputting section 25. In this case, the procedures proceed to step S15 as a result of the input, irrespective of the signals from the fire detectors 30a to 30n.

At step S15, it is determined whether the guiding

device 40a to 40n corresponding to the fire detectors 30a to 30n which has transmitted a detection signal is in the operation-inhibited condition or not. If it is in the operation-inhibited condition, the procedures return to step S1. If it is not in the operation-inhibited condition, it is further determined at step S16 whether the guiding device has been already actuated or not. If the device is in operation, the procedures return to step S1 and if the device is not in operation, the guiding device to be actuated is selected at step S17. At step 18, the guiding device 40a to 40n selected is actuated.

The control operations as described above are carried out for all of the fire detectors 30a to 30n.

As described above, according to the present embodiment, the determination of the fire information, danger information and actuation information is made and the guiding devices 40a to 40n of the area to be actuated, suspended or subjected to the operation inhibition are selected on the basis of the detection signals from the fire detectors 30a to 30n. Thus, only the guiding devices 40a to 40n in the safe escape passageways are operated, while keeping the guiding devices 40a to 40n in dangerous escape passageways unoperated. Therefore, inadequate guiding to the dangerous exit passageways can be surely avoided, ensuring safe and proper escape guiding.

Further in case the xenon tube 7, the flush light 43, speaker 9 and the accoustic device 44 are no provided in the escape guiding indication unit 4 and 41, the object to be controlled to put into operation-suspended state by the present invention may be an indication unit where only a symbol mark for showing a escaping route is attached.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. An exit guiding system comprising:

a first detector for positioning inside a building for detecting a change in the indoor ambient conditions due to occurrence of at least one of smoke and fire;

a second detector for positioning outside of said building for detecting a change in the outdoor ambient conditions due to occurrence of at least one of smoke and fire, said first and second detectors outputting signals at levels related to the intensity level of said smoke and fire;

a guiding device for positioning near a fire exit or in an access to exit for providing escape guidance at the time of a fire;

instructing means for causing performance or suspension of at least a portion of operations of said guiding device, said suspension being based on said signal levels of said respective detectors;

said instructing means including evaluation means for determining whether or not the respective signal levels of said detectors reach a predetermined danger level;

said evaluation means comparing the signal level of said inside first detector with the signal level of said outside second detector when the signal level of either detector reaches said dan level, said evaluation means outputting an operation signal said guiding device when the signal level of said inside first detector is greater than that of the outside second detector, on the other hand, said evaluation means outputting a suspension signal to said guiding device when the signal level of the outside detector is higher than that of said inside detector; and,

said guiding device being adapted to operate or suspend said at least a portion of the operations in response to the respective operation and suspension signals from said instructing means.

2. An exit guiding system as claimed in claim 1, wherein

said instructing means are located in said guiding device and said detectors are connected to said guiding device.

3. An exit guiding system as claimed in claim 2, wherein said instructing means are included in a fire signal station and said detectors are connected to said fire signal station.

4. An exit guiding system as claimed in claim 1, wherein said guiding device includes at least one of an indicating device for guiding by light and an acoustic device of guiding by sound.

5. An exit guiding system as claimed in claim 4, wherein operation of at least one of said indication device and said acoustic device is suspended by said suspension signal output.

6. An exit guiding system as claimed in claim 1, in which said indication device includes at least one of a visual symbol indicating unit and a xenon tube, operation of at least one of said unit and tube is suspended by said suspension signal output.

7. An exit guiding system as claimed in claim 1, wherein said guiding device includes a voice outputting device for giving a vocal guidance message.

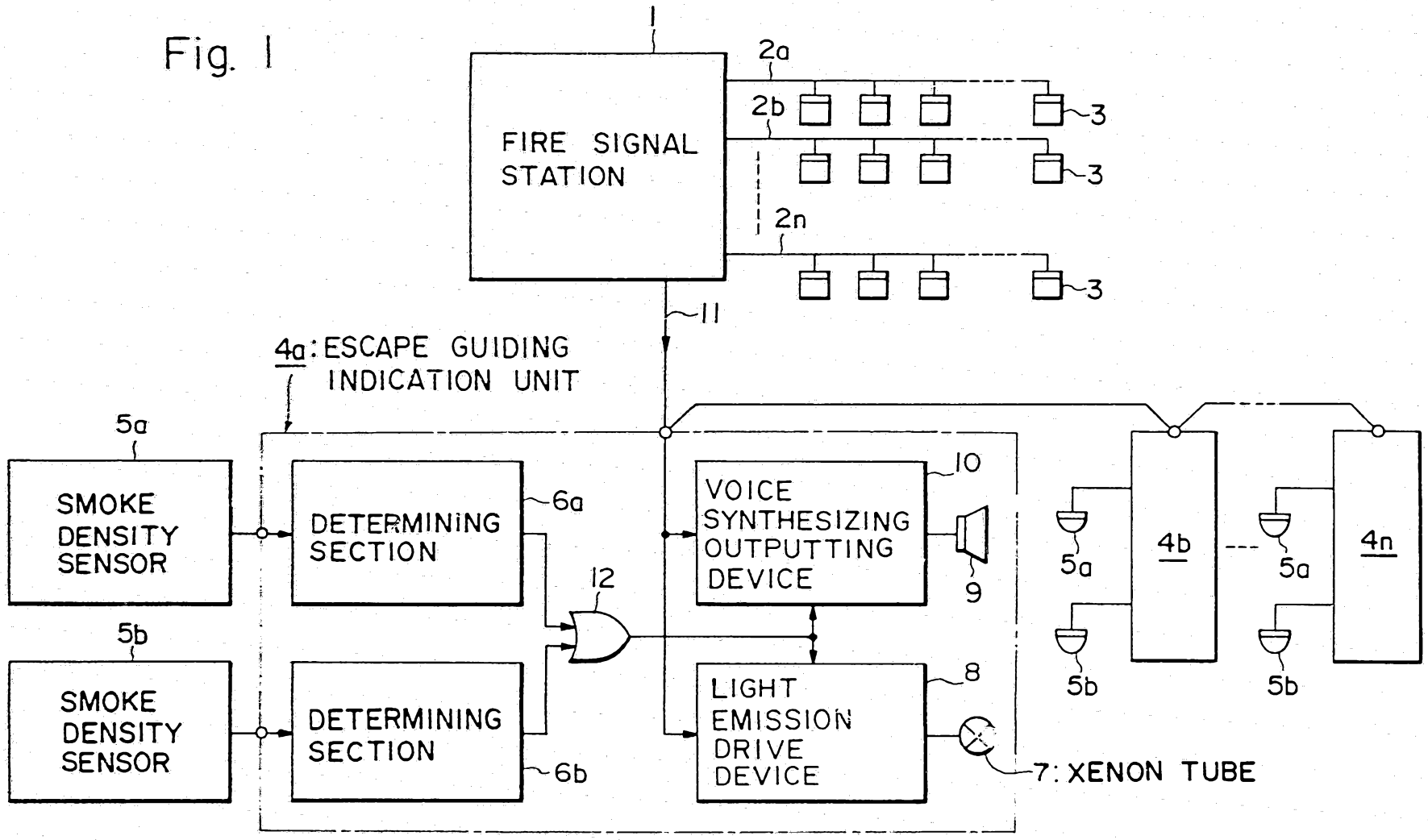
8. An exit guiding system substantially as herein described with reference to and as illustrated in the accompanying drawings.

Dated this 5th day of February, 1990.

HOCHIKI KABUSHIKI KAISHA
By Its Patent Attorneys:

GRIFFITH HACK & CO.
Fellows Institute of Patent
Attorneys of Australia.

Fig. 1



73 382/87

Fig. 2

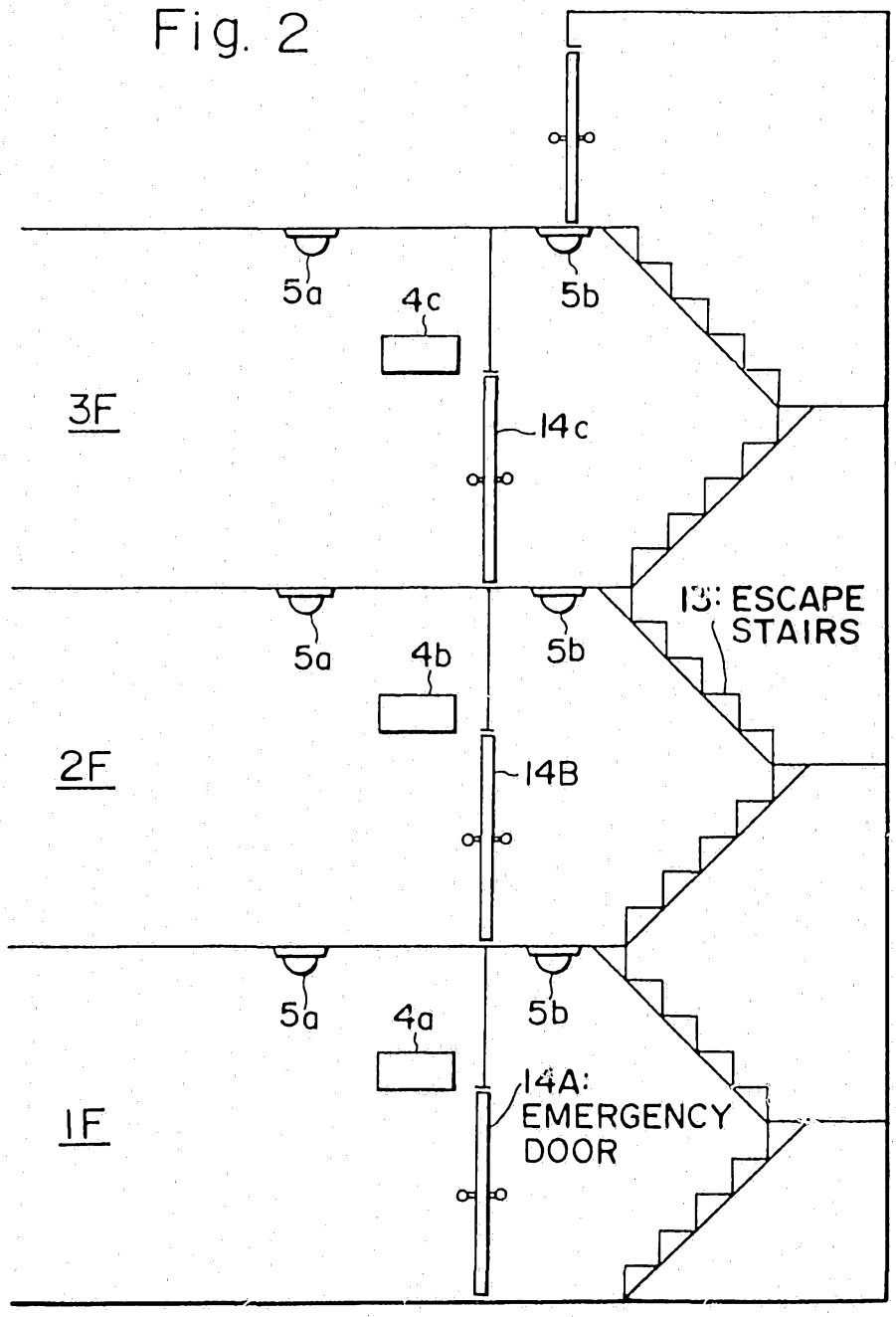

5a
4c
5b
3F
14c
13: ESCAPE STAIRS
5a
4b
5b
2F
14B
5a
4a
5b
14A: EMERGENCY DOOR
1F

Fig. 3

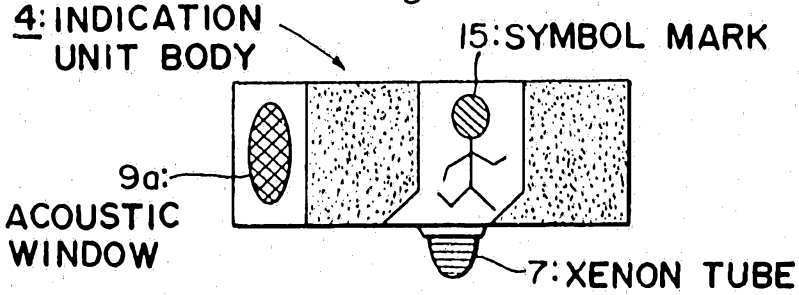

4: INDICATION UNIT BODY
15: SYMBOL MARK
9a: ACOUSTIC WINDOW
7: XENON TUBE

Fig. 4

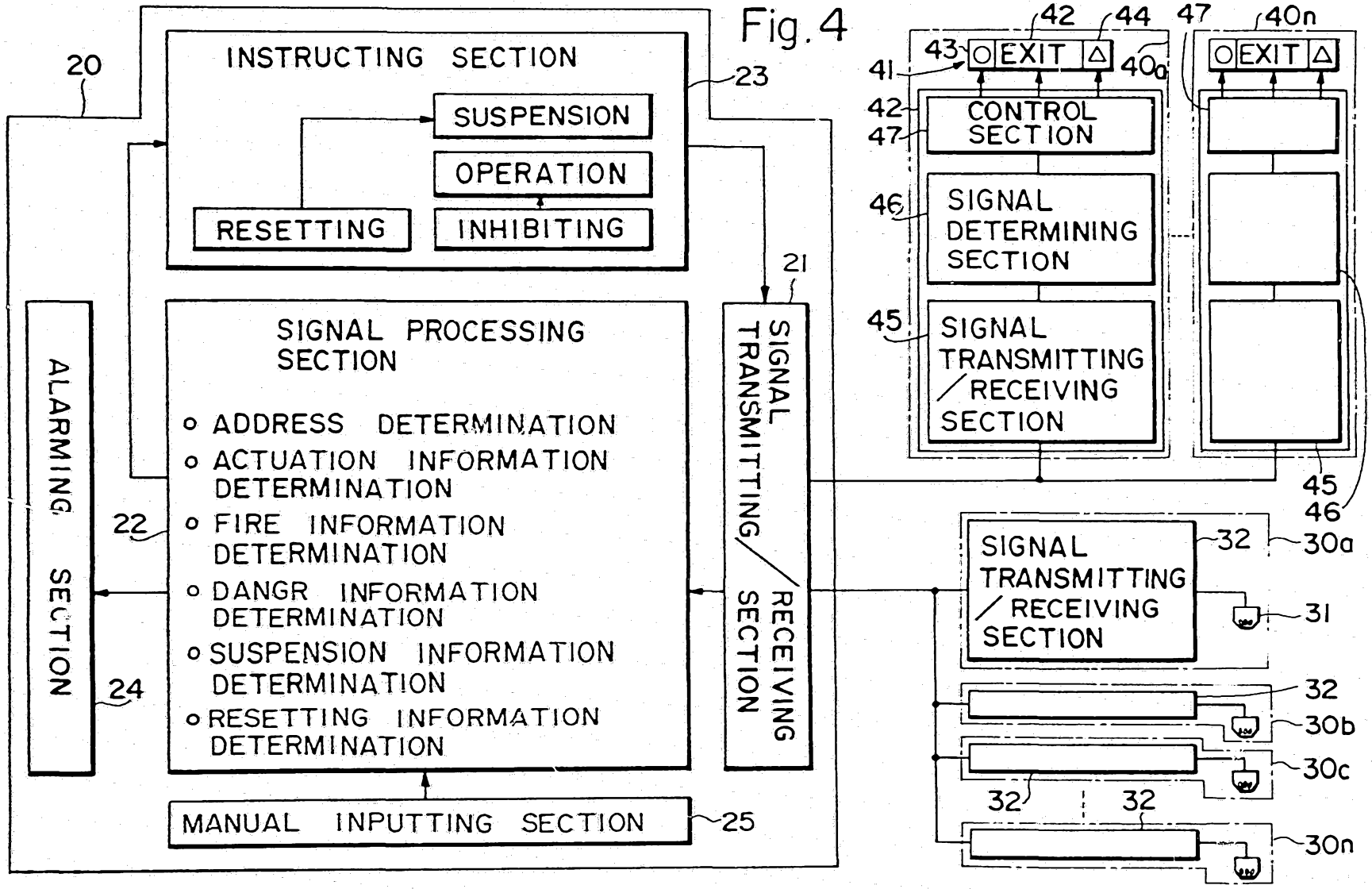
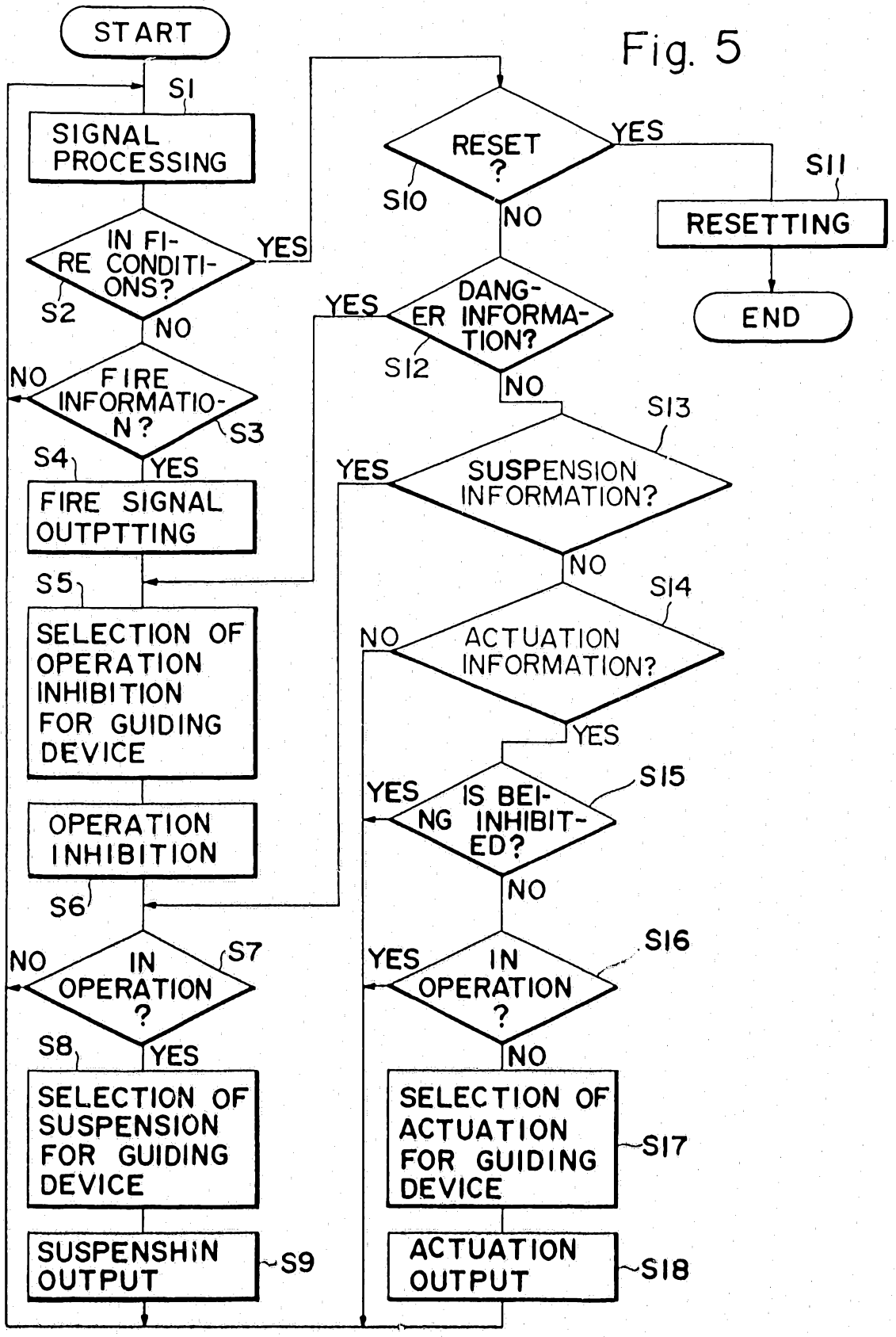

20
INSTRUCTING SECTION
23
SUSPENSION
OPERATION
RESETTING
INHIBITING
21
SIGNAL PROCESSING SECTION
ADDRESS DETERMINATION
ACTUATION INFORMATION DETERMINATION
FIRE INFORMATION DETERMINATION
DANGR INFORMATION DETERMINATION
SUSPENSION INFORMATION DETERMINATION
RESETTING INFORMATION DETERMINATION
22
ALARMING SECTION
24
SIGNAL TRANSMITTING / RECEIVING SECTION
MANUAL INPUTTING SECTION
25
42
44
47
40n
43
EXIT
41
40a
CONTROL SECTION
46
SIGNAL DETERMINING SECTION
45
SIGNAL TRANSMITTING / RECEIVING SECTION
SIGNAL TRANSMITTING / RECEIVING SECTION
32
30a
31
30b
30c
30n

Fig. 5


START
S1
SIGNAL PROCESSING
IN FIRE CONDITIONS?
S2
YES
NO
FIRE INFORMATION?
S3
NO
YES
S4
FIRE SIGNAL OUTPTTING
S5
SELECTION OF OPERATION INHIBITION FOR GUIDING DEVICE
OPERATION INHIBITION
S6
IN OPERATION?
S7
NO
YES
S8
SELECTION OF SUSPENSION FOR GUIDING DEVICE
SUSPENSHIN OUTPUT
S9
RESET?
S10
YES
NO
S11
RESETTING
END
DANGER INFORMATION?
S12
YES
NO
SUSPENSION INFORMATION?
S13
YES
NO
ACTUATION INFORMATION?
S14
NO
YES
IS BEING INHIBITED?
S15
YES
NO
IN OPERATION?
S16
YES
NO
SELECTION OF ACTUATION FOR GUIDING DEVICE
S17
ACTUATION OUTPUT
S18