

COMMONWEALTH OF AUSTRALIA

Patents Act 1952-1969

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

(1) Here insert (in full) Name or Names of Applicant or Applicants

In support of the Convention Application made by⁽¹⁾.....
UHLIN PER AXEL

(2) Here insert title of Invention.

for a patent.....for an invention entitled:⁽²⁾

I ⁽¹⁾ UHLIN PER AXEL
~~XXXX~~

(3) Here insert (in full) Address or Addresses

of⁽³⁾ Backen, Stensfalt, S-545 00 Toreboda, Sweden

do solemnly and sincerely declare as follows:

1. I am ~~XXXXXX~~ the applicant for the patent.

(4) Here insert basic Country or Countries followed by date or dates and basic Applicant or Applicants.

2. The basic application as defined by Section 141 of the Act was.....
made in⁽⁴⁾ Sweden
on the 19th day of August, 1985, by
me.

~~XXXXXX~~ ~~XXXXXX~~ ~~XXXXXXXXXX~~

3. I am ~~XXXXXX~~ the actual inventor of the invention referred to in the basic application ~~XX~~

(5) Here insert full Name(s) and Address(es) of actual Inventor(s) if other than Applicant(s).

~~XXX~~

~~the actual inventor of the invention and the facts upon which I am entitled to make the application~~

(6) Full Name of actual Inventor or Inventors.

~~XXXXXX~~ ~~XXXXXXXXXX~~

4. The basic application referred to in paragraph 2 of this Declaration was the first application made in a Convention country in respect of the invention the subject of the application.

DECLARED at Toreboda

this Twenty-second day of May 1989

(7) Signature of Applicant or Applicants.

(7) Per Axel Uhlin

To: THE COMMISSIONER OF PATENTS.

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SURVEILLANCE INSTALLATION

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WATERMARK MELBOURNE

(56) Prior Art Documents
DE 2335772
DE 2923732
EP 63876

(57) Claim

1. An intrusion detection system for protecting an area of ground at ground level, comprising a central monitoring and control unit, a plurality of distribution units placed at selected locations in said area of ground to be protected, said distribution units being wired in circuit relationship with said central monitoring and control unit, a plurality of sensing means wired in circuit relationship with said distribution units, each sensing means comprising an electric switch in said circuit relationship, said switch being adapted to activate alarm means, a movable magnetic operator for said switch, said switch being in a first switching position when said movable magnetic operator is in close proximity thereto, said switch moving to a second switching position when released by moving said magnetic operator away from said switch, an elongated strand means connected to said magnetic operator and inconspicuously deployed over a portion of said area of ground, said elongated strand means connected to said magnetic operator

(11) AU-B-63336/86
(10) 592597

-2-

and inconspicuously deployed over a portion of said area of ground comprises a net, said strand means being tripped by movement of an intruder to pull said magnetic operator away from said switch to thereby activate said alarm means to generate an alarm signal when said switch moves from said first position to said second position, and a low voltage direct current supply in said control unit for supplying direct current operating power for said intrusion detecting system.

PCT

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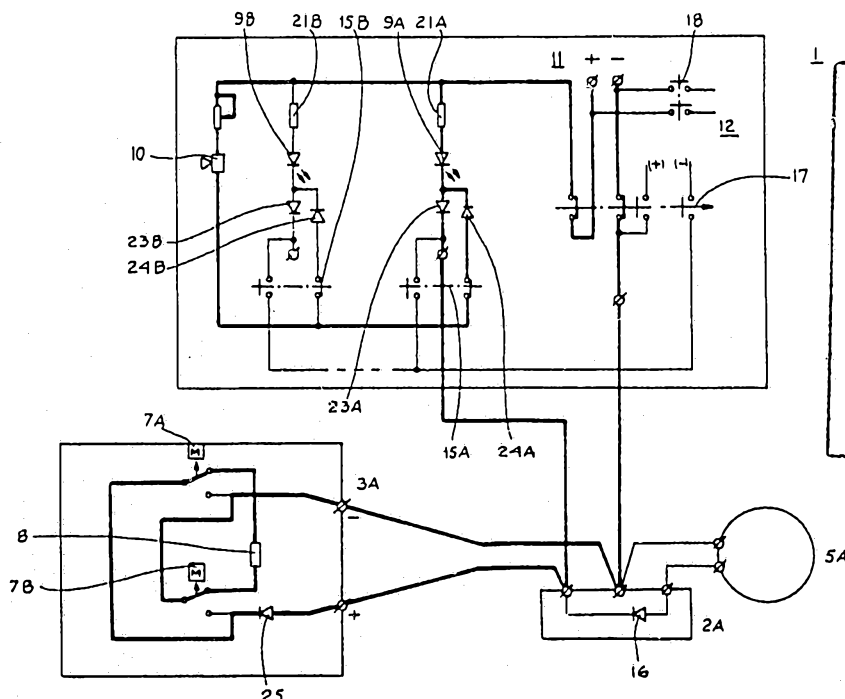
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(54) Title: SURVEILLANCE INSTALLATION



This document contains the
amendments made under
Section 49.
and is correct for printing.

(57) Abstract

The object of the invention is to effect surveillance of a specific area against undesired entry. This is achieved by placing a number of sensing means (3) in the area. The sensing means are electrically connected to an alarm and control centre (1) located some distance away. The means (3) are mechanically connected to one or more obstructions (4) in the form of wires, cords, net or the like. The force required to break the mechanical connection is almost negligible. Each sensing means (3) cooperates with one or more action members (5). An action member (5) may consist of a tape-recorder, a search-light or a mine.

SURVEILLANCE INSTALLATION

The present invention relates to a surveillance installation. In public places with a large through-flow of people TV cameras are generally used, connected to a surveillance centre where an observer sits and watches events. This is an efficient but extremely expensive method. For surveillance of areas where only a few people normally pass it is generally advisable to close off the area by means of a barrier or signs stating that entry is not permitted or is only permitted at certain times.

The present invention relates to an installation for surveillance of an area of the latter type.

There is provided by the present invention an intrusion detection system for protecting an area of ground at ground level, comprising a central monitoring and control unit, a plurality of distribution units placed at selected locations in said area of ground to be protected, said distribution units being wired in circuit relationship with said central monitoring and control unit, a plurality of sensing means wired in circuit relationship with said distribution units, each sensing means comprising an electric switch in said circuit relationship, said switch being adapted to activate alarm means, a movable magnetic operator for said switch, said switch being in a first switching position when said movable magnetic operator is in close proximity thereto, said switch moving to a second switching position when released by moving said magnetic operator away from said switch, an elongated strand means connected to said magnetic operator and inconspicuously deployed over a portion of said area of ground, said elongated strand means connected to said magnetic operator and inconspicuously deployed over a portion of said area of ground comprises a net, said strand means being tripped by movement of an intruder to pull said magnetic operator away from said switch to thereby activate said alarm means to generate an alarm signal when said switch moves



1a

from said first position to said second position, and a low voltage direct current supply in said control unit for supplying direct current operating power for said intrusion detecting system.

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According to an advantageous embodiment the sensitive member is provided at one end with a magnet loosely applied on the sensing means and retained there by an attraction member which may consist of a strip of ferrometal. If the sensitive member is touched the magnet is easily dislodged and the electrical state in the above-mentioned current circuit is thus altered. Said magnet might, for instance, influence a circuit breaker or switch so that, in the absence of the magnet, a resistor is short-circuited.

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It should be evident that the magnetic force of the magnet at the sensing means can be controlled by varying the distance between the magnet and the unit in the sensing means to which the magnet is attracted.

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Electric current is transmitted between the central unit and a sensing means through a two-way wire. Both direct and alternating current are suitable for the purpose.

According to an advantageous embodiment of the present invention the installation can also be used to initiate action members of various types. Such action members may consist of a tape-recorder providing information as to the cause of the trespassing. Other examples of action members are search-lights or a unit emitting a smoke screen. For military applications the action member may consist of a mine or a unit emitting toxic gas.

To enable the installation to be used for both gathering information and taking action it is advisable to use two different direct voltages. The same wire connections used for the sensing means can then also be used for the action members. Each sensing means, and possibly also the central unit, should include a rectifier. This enables the two direct voltages to be pole-inverted with respect to each other, one direct voltage only cooperating with the sensing member and the other direct voltage only cooperating with the action member.

The two direct voltages may have the same or different values. In some cases it has proved ^{advisable} ~~advisable~~ for one voltage to have ^a low value and the other ^a high value.

Further characteristics of the present invention are revealed in the following claims.

The present invention will be described in more detail with reference to the accompanying drawings showing one embodiment thereof.

The drawings show in

Figure 1 a wiring diagram for an alarm and control centre with a distribution unit,



- Figure 2 a wiring diagram for a non-activated sensing means,
Figure 3 a section of a sensing means,
Figure 4 a see-through view of an embodiment of a sensing means,
Figure 5 a wiring diagram for an installation in non-activated state,
5 Figure 6 a wiring diagram for an installation when triggered
Figure 7 a wiring diagram for an installation when triggered but with
the buzzer disconnected,
Figure 8 a wiring diagram for an installation with an action member
connected and
10 Figure 9 block diagram over a complete installation.

Figure 1 shows an alarm and control centre 1 connected to a distribution unit 2. A sensing means and an action member, to be described in more detail in the following, can be connected to the distribution unit. The distribution unit 2 is connected to the alarm and control centre 1 by two
15 leads. One of these leads includes a circuit with a light-emitting diode 9A, two rectifiers 23A and 24A, a resistor 21A and a three-way switch 15A. A buzzer 10 can also be connected in parallel to this circuit. One or other of two direct voltage sources 11 and 12 can be connected to the two leads by means of circuit breakers 17, 18 and 19. The distribution unit 2
20 is provided with three connections, namely two outer connections and one intermediate connection. The two outer connections are joined together by a rectifier 16. The intermediate connection is connected to one of the two wires to the alarm and control centre, and the other wire from the alarm and control centre 1 is connected to one of the outer connections. A
25 sensing means is connected to the intermediate connection and one of the outer connections and an action member is connected to the other outer connection and the intermediate connection.

A number of distribution units 2 are connected to the central alarm and control unit 1, each distribution unit having its own circuit consisting
30 of the units 9, 15, 21, 23 and 24.

Figure 2 shows a wiring circuit for a sensing means containing two switches 6A and 6B. The switches are actuated by magnets 7A and 7B,

respectively, and each switch is enclosed in a protective gas tube. The two switches are used to short-circuit a resistor 8. A practical embodiment of a sensing means is shown in Figure 4 revealing two pockets for the magnets 7A and 7B, the pocket for magnet 7A being designated 13. The pocket is located above the switch 6A which the magnet is to actuate. Below each magnet is a ferrometallic unit which attracts the magnets 7A and 7B. When a magnet is in place in its pocket, the contact tongue assumes the position shown to the left in Figure 4 and, in the absence of the magnet, the position shown for the righthand switch.

Figure 3 shows an embodiment of a switch with associated magnet. The force with which a magnet is retained in the sensing means can be controlled by making the ferrometallic strip adjustable in relation to a magnet placed in the pocket.

In a sensing means of the type just described, each magnet may have an eye connected to a cord or net, both cord and net being either suspended or placed loose on the ground, preferably in such a manner as to be difficult to detect. The magnetic force shall be sufficient to remove the magnet without the person coming into contact with the cord or net being aware that he has encountered an obstruction.

Figures 5-8 describe a chain of events from alarm to action for an installation comprising a distribution unit 2, a sensing means 3 and an action member 5. An installation comprising a larger number of sensing means and action members would function in exactly the same manner. The relevant current circuits have been indicated in thicker lines in the drawings.

The figures show a central alarm and control unit 1 connected to a distribution unit 2A to which are connected a sensing means 3A and an action member 5A. Figure 5 shows a situation in which current is supplied from a voltage source 11, this being of any size. However, it is probably advisable for this source to supply low voltage. A three-way switch 15A is in the position shown in the figure. A faint lamp in the form of a light-emitting diode 9 indicates if the sensing member 3A is correctly connected. Should a person tread on the cord or net connected to the magnet

7A, this magnet will be dislodged from the sensing means, whereupon the switch will assume the position shown in Figure 6. This Figure shows clearly that removal of the magnet has caused the resistor 8 to short-circuit so that the light-emitting diode receives higher voltage and shines more brightly. An operator in the alarm and control centre can immediately see that someone is in the vicinity of the sensing means 3A. At the same time as the light-emitting diode is caused to shine more brightly, a buzzer 10 or some other means generating sound is also activated. If the three-way switch 15A is placed in its intermediate position (Figure 7) the buzzer 10 will be disconnected. The installation is now ready to initiate the action member 5A. If the action member 5A is to be initiated the three-way switch 15A must be brought to the position shown in Figure 8. The switch 17 must then be brought to its righthand position so that the distribution unit 2A is supplied with direct voltage from the source 12 where the direct voltage is pole-inverted in relation to the direct voltage supplied earlier. The existence of rectifiers 16 and 25 ensures that the pole-inverted direct voltage will be supplied only to the action member 5A. The action member 5A may consist of a compact little unit containing tape-recorder and loud-speaker. Alternatively, the action member may consist of a searchlight or any other suitable means, or it may even consist of a unit emitting a smoke screen or toxic gases. A water spray could also be initiated in this way. It is also feasible to connect a number of sensing means in series or in parallel. The same applies to the action members which may be connected in parallel or in series. A combination of both series and parallel connection is also possible.

Initiation of the action members can also be performed automatically without manual intervention. The advantage of manual intervention is that undesired initiation of the action members can be prevented.

After initiation of an action member, all switches are moved to the positions shown in Figure 5 and dislodged magnets are returned to their pockets.

It should be evident that each sensing means may be provided with more than two magnets. Furthermore, each magnet may be connected to one or more cords or one or more nets.

Figure 9 shows an example of how an area is screened off with the aid of a number of sensing means. Four cables lead from the alarm and control unit 1 to four branch units 14A, 14B, 14C and 14D. Distribution units are connected to each branch unit. Two-way wiring cables lead to each distribution unit, each cable to a branch unit, thus containing a number of wires corresponding to the number of ^{distribution} ~~branch~~ units plus one extra. In the top righthand corner of Figure 9 is a distribution unit 2A to which a sensing means 3A is connected via a sensitive member 4A. In the lower righthand corner are two sensing means, designated 3B and 3B', which are series-connected. The sensing means 3B is provided with a sensitive member 4B and the sensing means 3B' with a sensitive member 4B'. The lower lefthand corner of the figure shows a distribution unit 2C to which are connected two sensing members 3C and 3C'. The upper lefthand corner of Figure 9 shows that the action members 5 can be both series and parallel-connected, two series-connected action members 5D and 5D' and one parallel-connected action member 5D'' being shown.

20 The concept of activating two different members by means of different, pole-inverted direct voltages, used for the sensing means and action member, respectively, is generally applicable and can be utilized in other installations where two different members are to be actuated using only direct voltage.

25 The sensing means utilized in the present invention can be used in installations where mechanical interference is to effect an alteration in a current circuit.

In the foregoing there has been described a sensing means 3, which causes an indication ^{of mechanical} ~~at a mechanical~~ damage to wires, cords, net and the like. The indication is caused by the sensing means allowing a higher value of the current to pass through the same after ^{such} ~~the~~ damage, said change in current can also be obtained by



other than

~~not~~ mechanical means. Thus the means can consist of microphones which feel vibrations in the ground or sound appearing at the sensing means 3. It is also possible that the supply means of the sensing means can be reacted by light of different frequencies.

5 The supply means can emit light and receive light.

The control unit can have control units, which at change in current value at a sensing means immediately connect the higher voltage, which release the action means. In last mentioned case it ought to be suitable to use a relay which at increasing
10 current from the sensing means attract the relay so that the higher D.C. voltage is supplied to the action member 5.



THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. An intrusion detection system for protecting an area of ground at ground level, comprising a central monitoring and control unit, a plurality of distribution units placed at selected locations in said area of ground to be protected, said distribution units being wired in circuit relationship with said central monitoring and control unit, a plurality of sensing means wired in circuit relationship with said distribution units, each sensing means comprising an electric switch in said circuit relationship, said switch being adapted to activate alarm means, a movable magnetic operator for said switch, said switch being in a first switching position when said movable magnetic operator is in close proximity thereto, said switch moving to a second switching position when released by moving said magnetic operator away from said switch, an elongated strand means connected to said magnetic operator and inconspicuously deployed over a portion of said area of ground, said elongated strand means connected to said magnetic operator and inconspicuously deployed over a portion of said area of ground comprises a net, said strand means being tripped by movement of an intruder to pull said magnetic operator away from said switch to thereby activate said alarm means to generate an alarm signal when said switch moves from said first position to said second position, and a low voltage direct current supply in said control unit for supplying direct current operating power for said intrusion detecting system.

2. The intrusion detection system of claim 1 wherein said elongated strand means connected to the magnetic operator of each sensing unit being collectively arranged around the perimeter of the area of ground to be protected.



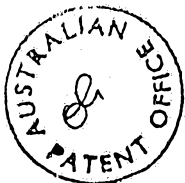
3. The intrusion detection system of claim 1 wherein said circuit relationship comprises a two-wires series hookup between the central monitoring and control unit and each individual distribution unit and its connected sensing means and further comprising a light emitting circuit element and three-way switch mounted in said monitoring and control unit in series relationship between said low voltage supply and the feed line to each respective distribution unit.

4. The intrusion detection system of claim 3 wherein the central monitoring and control unit includes a plurality of parallel connected light emitting circuit elements and three way switches to feed a plurality of distribution units.

5. The intrusion detection system of claim 3 wherein said sensing means includes a voltage dropping resistor in series circuit with said light emitting circuit element and said three-way switch when said sensing means switch is in said first position whereby said light emitting circuit element emits a light of reduced intensity indicating circuit integrity.

6. The intrusion detection system of claim 5 wherein said voltage dropping resistor is bypassed when said sensing means switch is moved to said second position whereby said light emitting circuit element emits a light of greater intensity indicating the presence of an intruder.

7. The intrusion detection system of claim 6 wherein said sensing means includes a rectifier in series circuit with said light emitting circuit element and three-way switch permitting current flow in one direction only.



8. The intrusion detection system of claim 7 including a plurality of series connected sensing means.

9. The intrusion detection system of claim 5 wherein said light emitting circuit element comprises a light emitting diode.

10. The intrusion detection system of claim 6 wherein an audible signal means is wired in parallel with said light emitting circuit element to yield an audible signal when said light emitting circuit element is in said greater light intensity state.

11. The intrusion detection system of claim 10 wherein operation of said audible signal means can be terminated by operating said three-way switch to an audible signal means open circuit position.

12. The intrusion detection system of claim 3 including an intruder warning signal electrically connected to said two-wire series hookup at said distribution unit.

13. The intrusion detection system of claim 12 wherein said electrical connection at said distribution unit includes a first, a second and a third terminal, said first terminal being connected to said feed line from said central monitoring and control unit, said second terminal being connected to said low voltage direct current supply, said first and second terminals also being connected to said sensing unit, said second and third terminals being connected to said intruder warning signal, and said first and third terminals being connected by means of a rectifier.

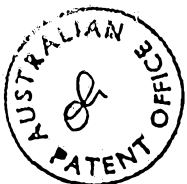


14. The intrusion detection system of claim 12 wherein electrical isolation of said intruder warning signal in said two-wire hookup is achieved by reversing the polarity of said low voltage direct current supply with respect to the polarity of the intruder sensing mode operation, reverse current flow being blocked by said rectifiers in said distribution unit and said sensing means.

15. The intrusion detection system of claim 14 wherein polarity reversing is effected by relay and switching means including a polarity reversing position of said three-way switch in said monitoring and control unit.

16. The intrusion detection system of claim 15 including a plurality of series connected intruder warning signals.

17. In an intrusion detection system for protecting an area of ground at ground level, a sensing means for detecting the presence of an intruder, said sensing means comprising a housing having at least two opposed open ended compartments, a pair of magnets one of each slidably arranged for movement in and out of each said compartment, a magnetically operated switch located adjacent each said compartment, said switch being responsive to the presence of said magnet in close proximity thereto to maintain a first switching position, an elongated strand means connected to said magnet and inconspicuously deployed over a portion of said area of ground, said strand means being tripped by movement of an intruder to pull a said magnet out of either said compartment thereby enabling said switch to move to a second switching position.



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~~13~~

18. The intrusion detection system of claim 18 wherein said magnetically operated switch comprises a glass sealed reed switch.

DATED this 19th day of September, 1989.

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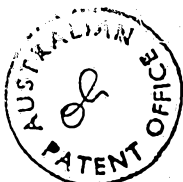


FIG. 1

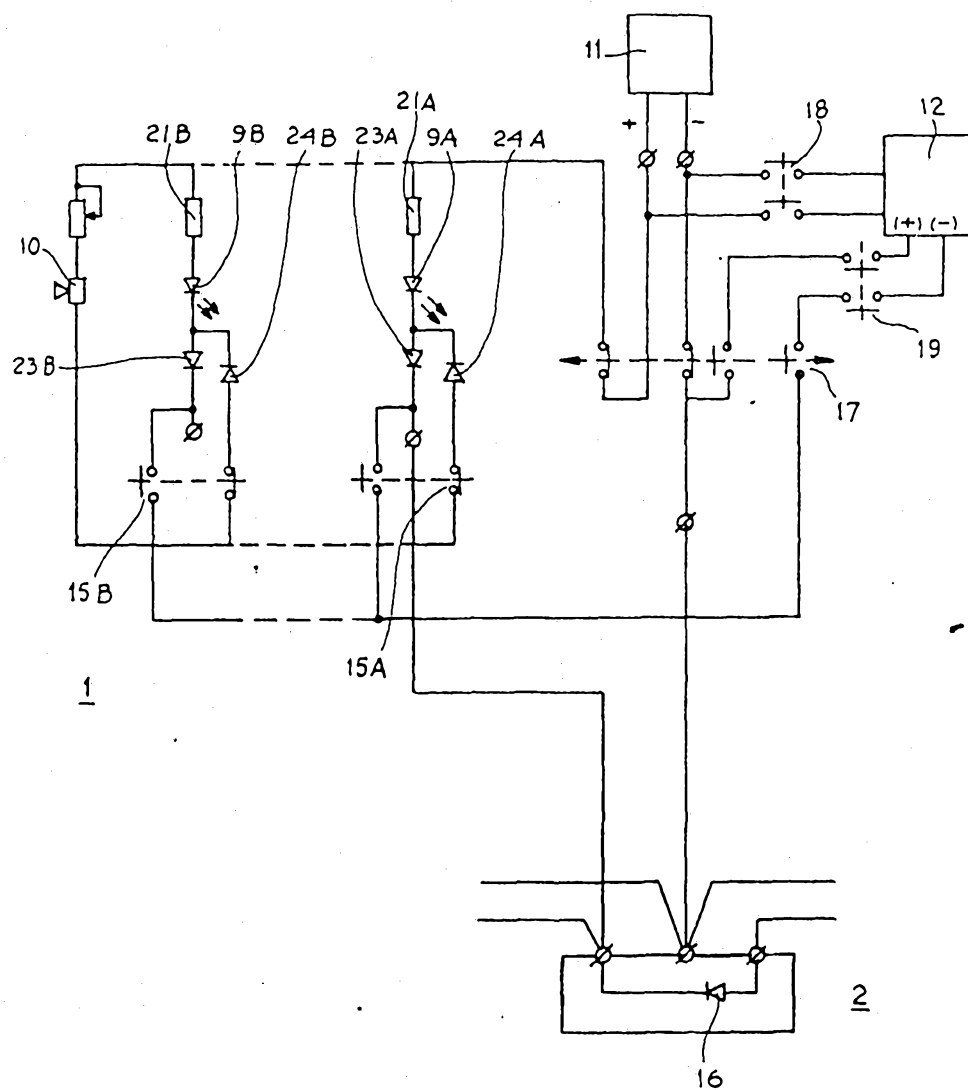


FIG. 2

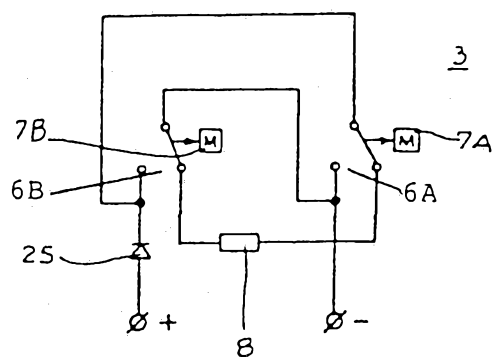


FIG. 3

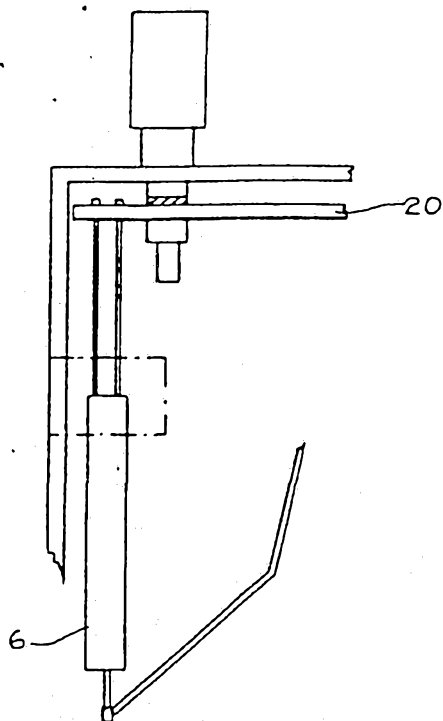


FIG. 4

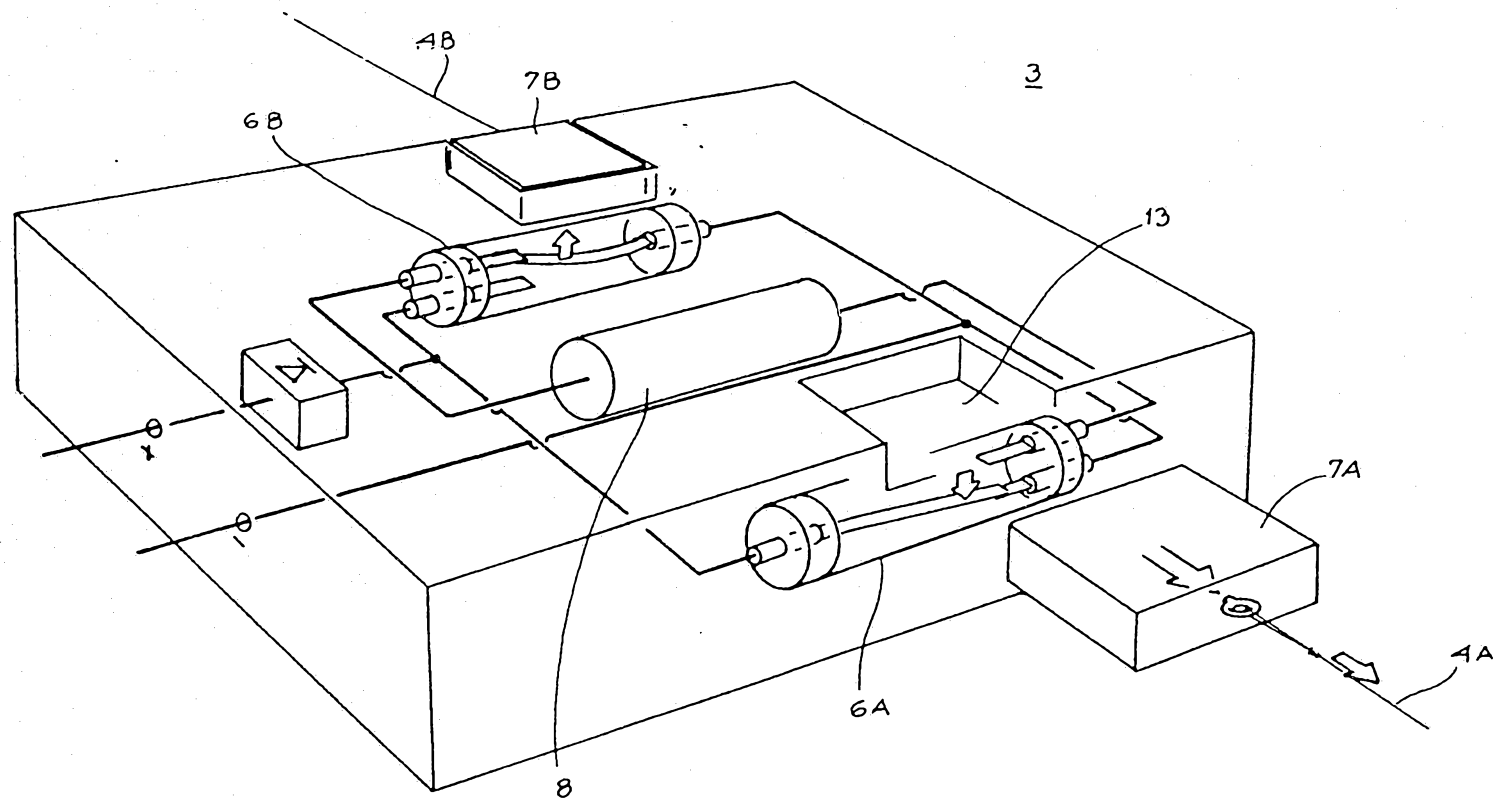


FIG. 5

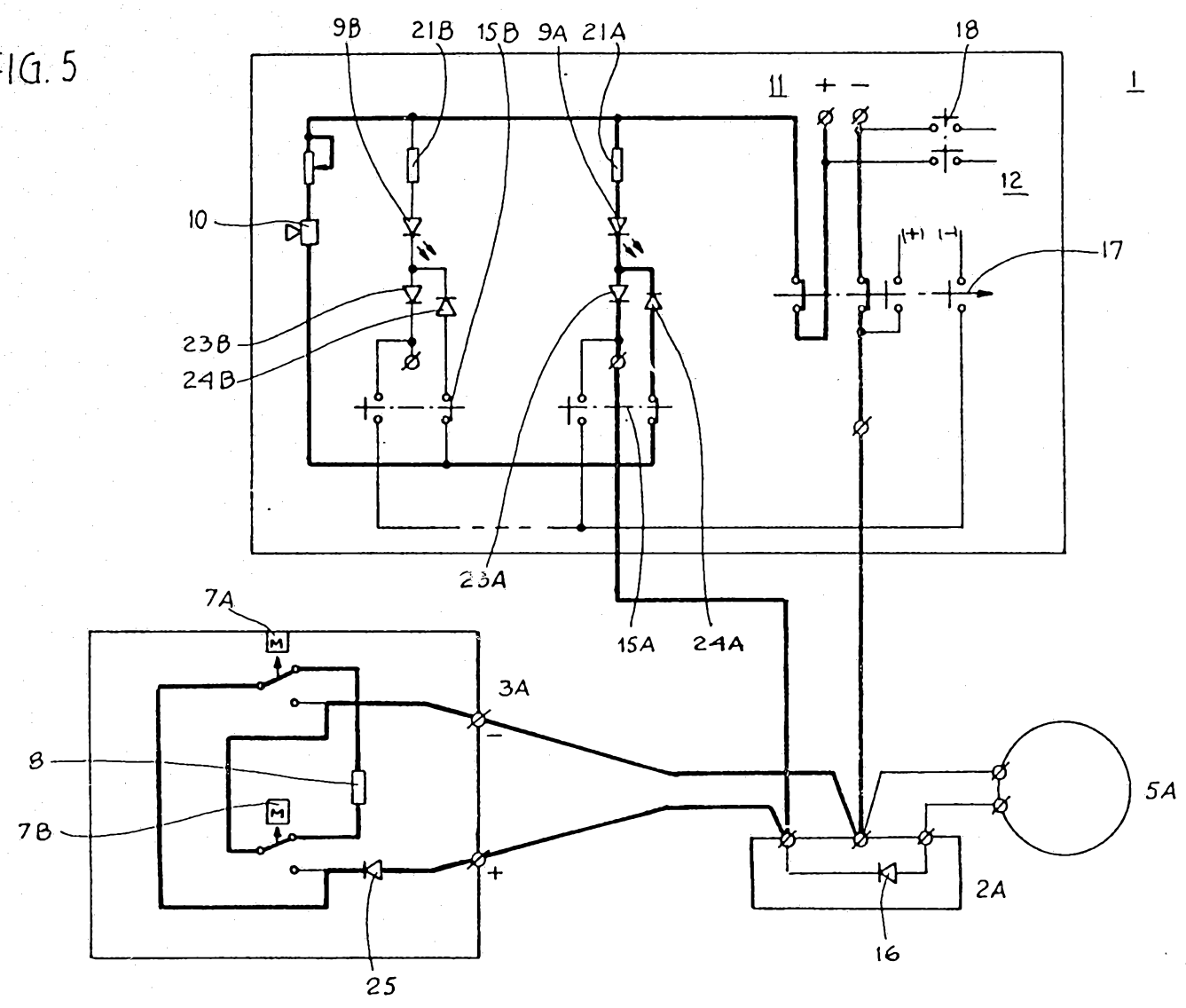


FIG. 6

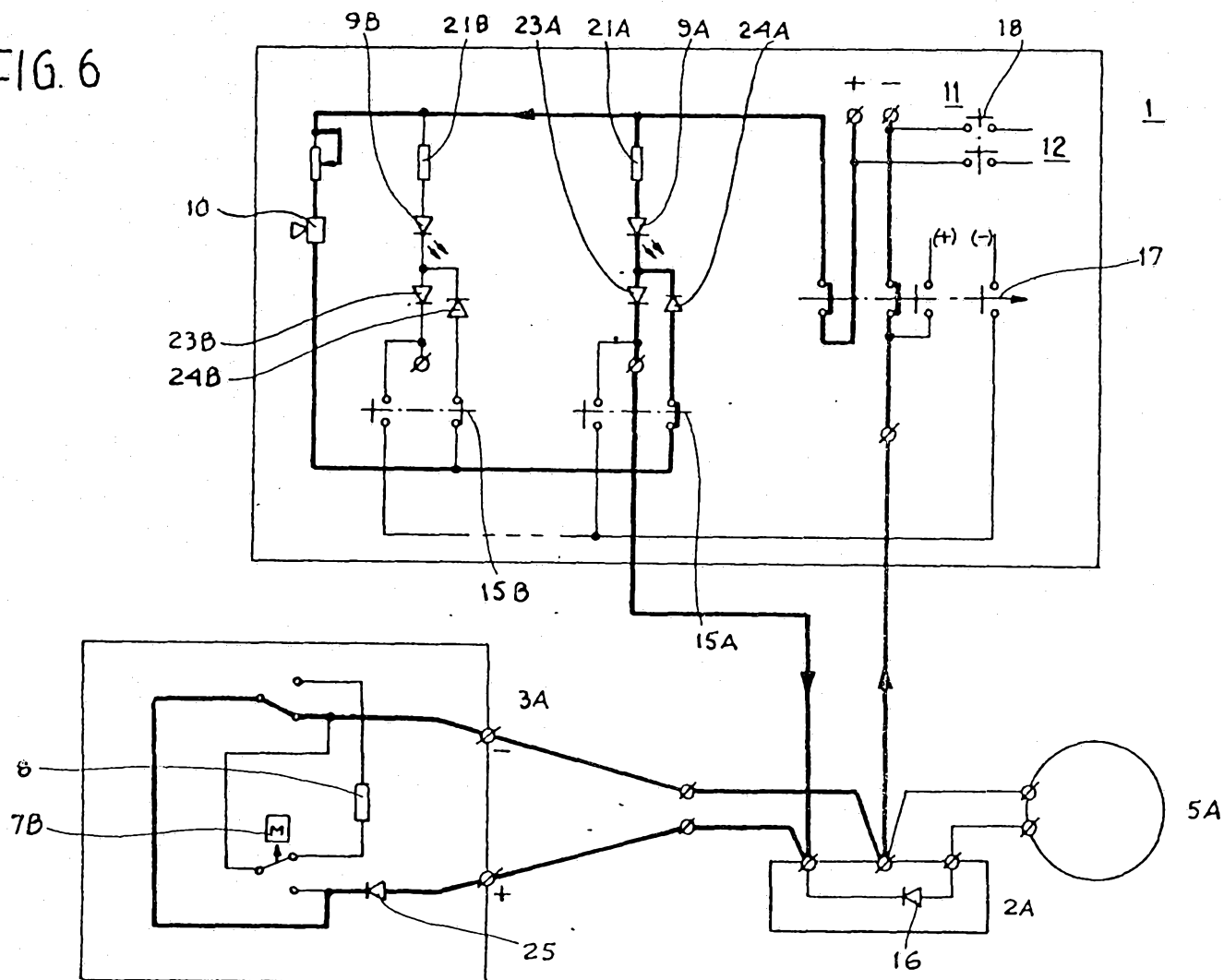


FIG. 7

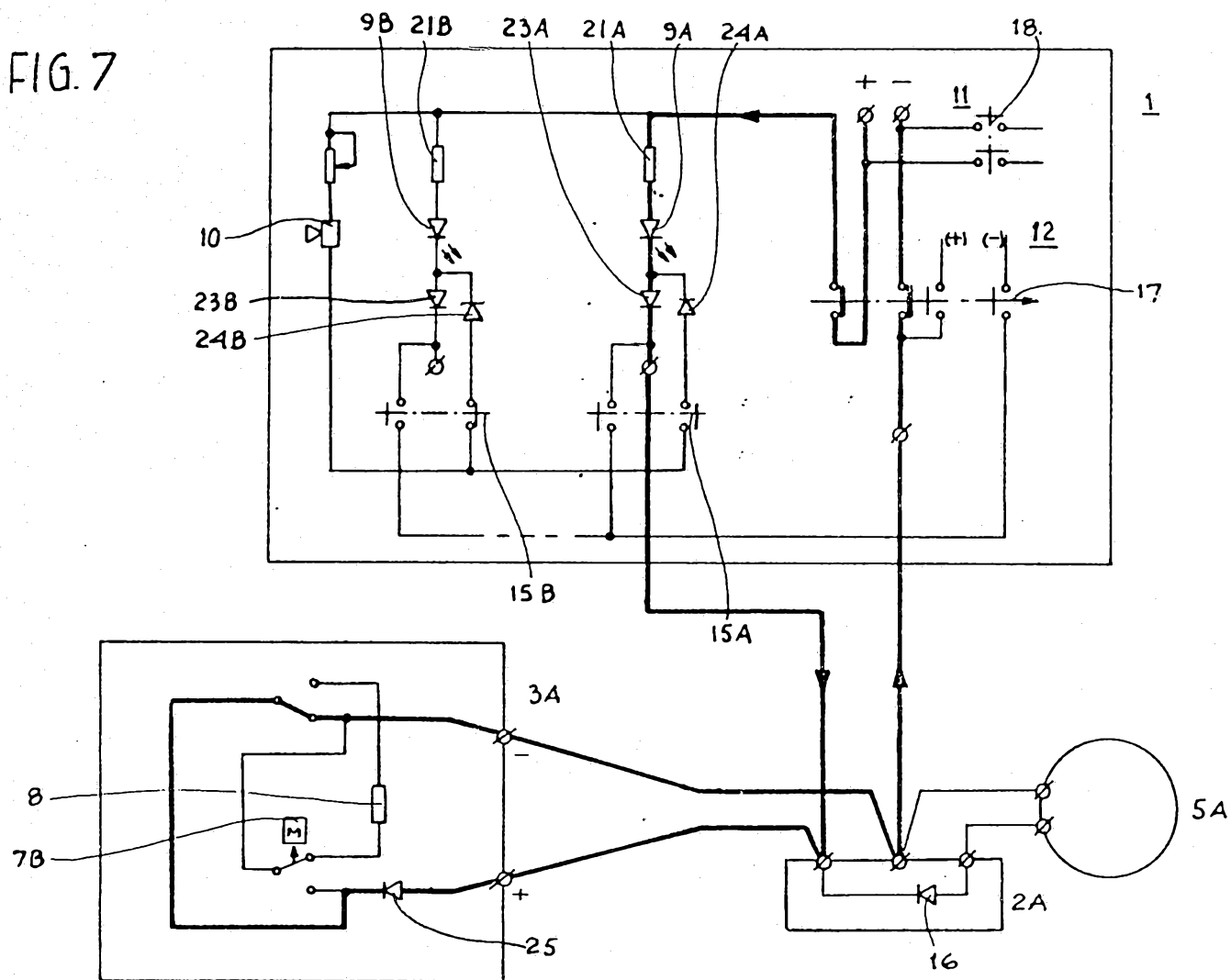
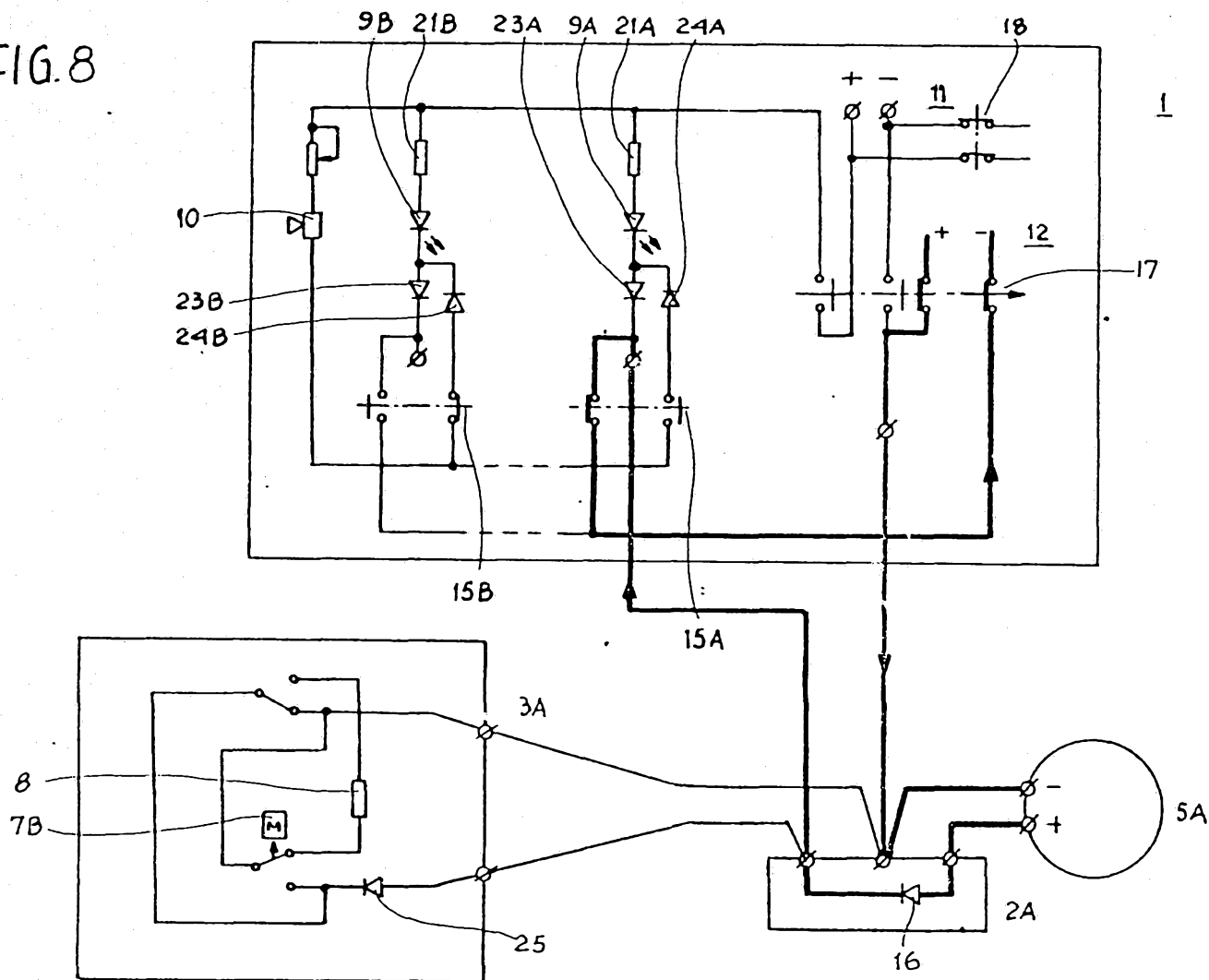
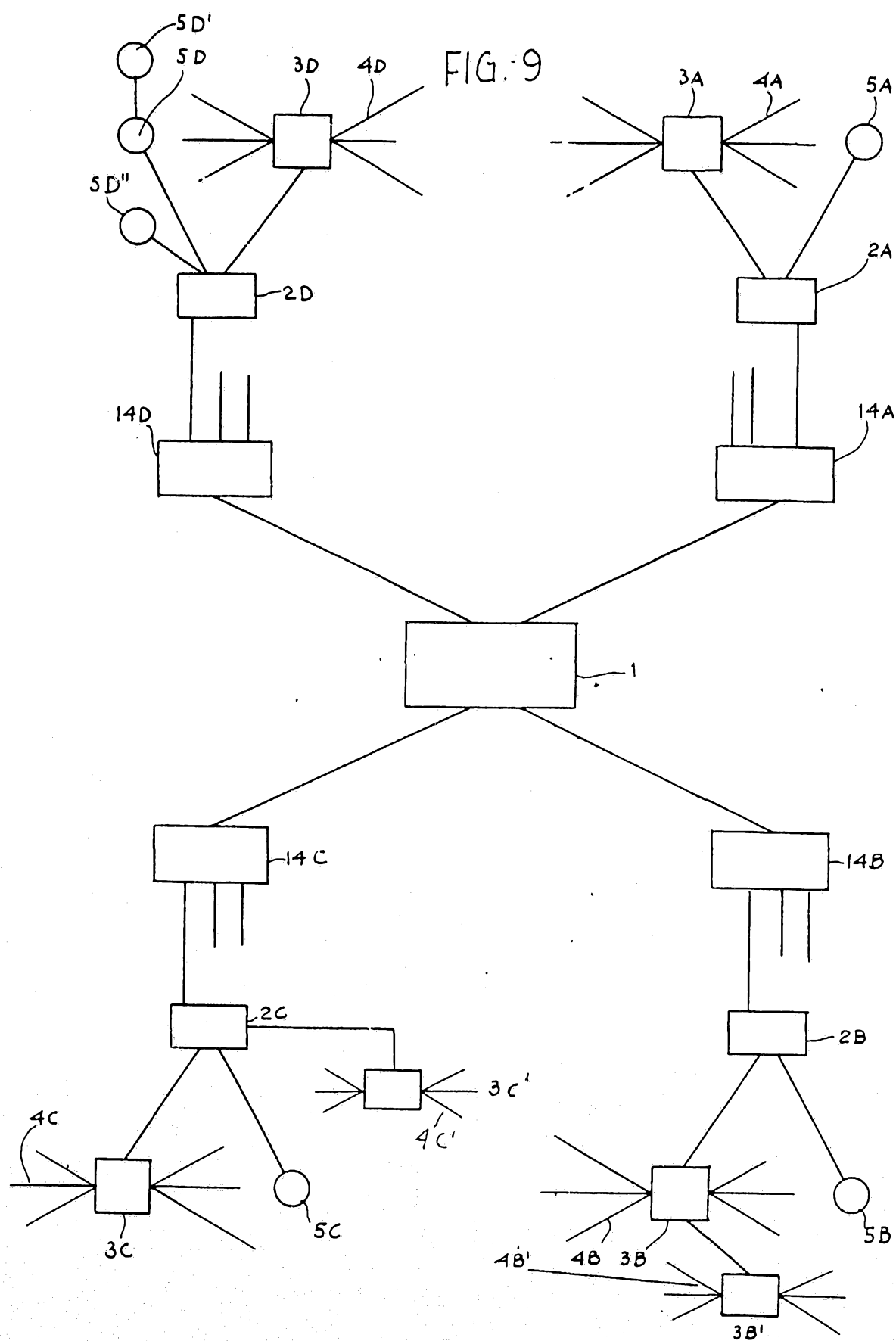


FIG. 8





INTERNATIONAL SEARCH REPORT

PCT/SE86/00359

International Application No

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) *		
According to International Patent Classification (IPC) or to both National Classification and IPC 4		
G 08 B 13/02, 25/00		
II. FIELDS SEARCHED		
Minimum Documentation Searched 7		
Classification System	Classification Symbols	
IPC 4	G 08 B 13/02, /10, /12, 25/00	
US C1	340:272, 273, 279, 282, 416, 541, 565, 566, 573	
Documentation Searched other than Minimum Documentation to the extent that such Documents are included in the Fields Searched *		
SE, NO, DK, FI classes as above		
III. DOCUMENTS CONSIDERED TO BE RELEVANT*		
Category *	Citation of Document, 11 with indication, where appropriate, of the relevant passages 12	Relevant to Claim No. 13
X Y	DE, A1, 2 335 772 (MICROWAVE AND ELECTRO- NIC SYSTEMS LTD.) 30 January 1975	1 2-5
X Y	DE, A1, 2 923 732 (FRITZ FUSS KG) 8 January 1981 & EP, 0021232 AT, 5352	1 2-5
X Y	EP, A1, 0 063 876 (EMI LTD) 3 November 1982	1 2-5
X Y	US, A, 4 092 643 (L. G. STOLARCZYK) 30 May 1978	1 2-5
X Y	US, A, 4 321 592 (R. E. CRANDALL ET AL) 23 March 1982 & GB, 2022301 FR, 2427655 DE, 2922008 AU, 47312/79 CA, 1119276 AU, 525038	1, 3 2, 4-5
<p>* Special categories of cited documents: 10</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&" document member of the same patent family</p>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
1986-11-11	1986-11-13	
International Searching Authority	Signature of Authorized Officer	
Swedish Patent Office	Stig Edhborg	

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)		
Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No
Y	FR, A5, 2 080 125 (SOCIÉTÉ NOUVELLE D'ÉTUDE ET D'EXPLOITATION WATTSON) 12. November 1971	2, 4, 5
Y	SE, B, 364 791 (A E A LARSSON) 4 March 1974 & DE, 2334993 US, 3858131 GB, 1411509	4, 5