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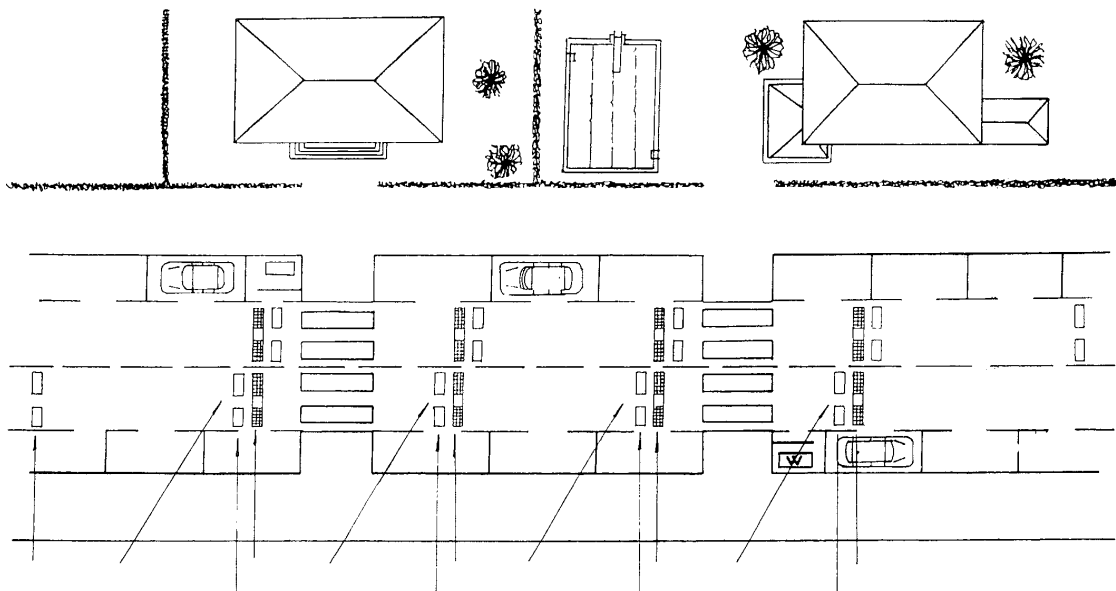
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(54) **Speed reduction system**

(57) It incorporates an external warning signal of the reduction system, as well as a variety of probes (8) arranged consecutively which precede an equal number

of reduction sensors (SR), and also lateral indicators (11), a compressor and an electrical cabinet (AR), in addition to lamps incorporated in the reduction sensors (SR).

FIG. 20



Description

OBJECT OF THE INVENTION

[0001] The present invention for a speed reduction system belongs to the group of several devices intended for regulating vehicle traffic.

[0002] The system is based on independent evaluations of the speed of each automobile and is characterised in that it constitutes a true active means of speed regulation, by providing electropneumatic means which allow a systematic reduction of the speed, guarantee a perfect circulation of the automobiles so that, if the speed is correct, it will not prevent or hinder its circulation, but if the speed is excessive the system will act directly on the infractor forcing the speed to be corrected, and thereby reducing the chances of an accident.

BACKGROUND OF THE INVENTION

[0003] Several devices are known which attempt to regulate speed in urban streets: school accesses, residential areas and all roads with a large presence of pedestrians.

[0004] In this sense, devices can be mentioned which regulate speed based on traffic lights which change depending on the speed of the vehicle, which have the disadvantage that the infractor may exceed the allowed speed without incurring in any type of responsibility.

[0005] Likewise, another device is known which is based on radar speed control, so that if there is an infraction the driver is fined. This system has a number of disadvantages, such as its lack of constancy, since the radar is not permanently located in the road and it only fines the infractor, without correcting the speed, which is the main way of protecting the road and therefore the pedestrian.

[0006] The remaining existing devices: vertical prohibition signs, sound bands, luminous speed limit indicators, etc. only serve to try to convince the driver, without having any means of guaranteeing a systematic speed reduction, with which protection of the urban road is left to each driver's conscience, thus aggravating the chance of an accident.

[0007] The applicant is unaware of any speed reduction systems having the characteristics which are described below.

DESCRIPTION OF THE INVENTION

[0008] The system is designed to prevent and hinder circulation only to those vehicles which exceed the speed limit, without affecting other vehicles, not even due to the presence of infractors, traffic jams, queues, etc.

[0009] The device of the invention is based on two previous measures, an adequate indication of the presence in the road of the speed reduction system by ver-

tical signs which alert of its presence, together with the corresponding standard traffic signs, or any other sign (lights, pavement paint, etc.) which ensure that drivers are aware that they are entering an area protected by this system.

[0010] Once the presence of the system is indicated and the speed limit is shown, the second measure is established, by means first of a conventional automobile detector which detects the presence of a vehicle in the area protected by the system, activating a timer and which, in the event that the vehicle exceeds the speed limit shown in the signs, will automatically act on the first reduction sensor, warning infractors that the speed must be reduced.

[0011] Once the first reduction sensor is passed and in the event the driver should accelerate, another timer will act similarly on the second sensor, and so on until the end of the protected area.

[0012] If the driver respects the speed limit set for the road and does not exceed it in any later segment of it the system will not act on the reduction sensors, allowing a comfortable and safe circulation.

[0013] The system's reduction sensors are activated pneumatically by electrovalves which act on the pneumatic pistons of each reduction sensor.

[0014] Each reduction sensor is provided with two lateral indicators attached to the sensor which, the first by means of a green light in the active part when passage is allowed and the second by means of a red light, make vehicles arriving from the opposite direction aware of its presence.

[0015] It is also possible to allow ambulances or other vehicles to pass at a speed faster than the limit, to which end these vehicles will incorporate an ultrasound emitter which will activate a detector installed in the system.

[0016] Another of the system's possibilities is a systematic and technical link to pedestrian crossing lights, road crossings, parking garage exits or any increase or reduction in the number of vehicles on the protected road.

DESCRIPTION OF THE DRAWINGS

[0017] Figure 1 shows a top view of a reduction sensor with the metal grid.

[0018] Figure 2 shows a front view of the reduction sensor showing the lateral drains, the pneumatic piston, the tray-anchoring plate, the mechanisms board, the grid tray, the reduction sensor case and the drain tray.

[0019] Figure 3 shows a side view of the same.

[0020] Figure 4 shows a partial side view of the reduction sensor at rest and with the pneumatic piston anchoring system and the rubber protection.

[0021] Figure 5 shows a partial side view of the reduction sensor when activated, where the anchor bolts of the pneumatic piston to the anchor plate are seen, as well as the rubber protections, with the dotted lines and the arrow indicating the lateral drain.

[0022] Figure 6 shows a partial front view of half a re-

duction sensor where the side anchoring of the rubber protection can be seen.

[0023] Figure 7 shows a top view of the case of the reduction sensor, with the piston anchoring to the case and the other side anchorings for the rubber protection and the auxiliary plates to be placed during failures, as well as the plates which support the drain trays.

[0024] Figure 8 shows the plate which anchors the tray on the pneumatic piston.

[0025] Figure 9 is a top view of the pneumatic piston where its properties and anchoring can be seen.

[0026] Figure 10 shows the anchor rims for the rubber protectors for the pneumatic pistons.

[0027] Figure 11 shows a top view of the piston rubber protection.

[0028] Figure 12 shows a side view of the piston rubber protection.

[0029] Figure 13 shows a front view of the rubber protection.

[0030] Figure 14 shows a front view of the side indicator, in the preferred example sealed and made from PVC with two side orifices for attaching the lamps, a conduit box for connecting these and two orifices for anchoring the indicator to the pavement.

[0031] Figure 15 shows a top view of the side indicator.

[0032] Figure 16 shows lamp (P) which can be attached to the side indicator, with a space for the 20W signal lamp and red or green glass depending on the situation.

[0033] Figure 17 shows the auxiliary plates for use in failures which can be attached to the reduction sensors by screws.

[0034] Figure 18 shows a possible drain for the system.

[0035] Figure 19 shows the signal which indicates that the vehicle is entering the area protected by the system.

[0036] Figure 20 shows a scale diagram of the description of the preferred embodiment where one can see the mechanisms box for the compressor, the electrical circuit and the emergency plates, the location of the four probes and the four reduction sensors.

[0037] Figures 21 to 25 show the electrical diagrams of the example chosen, for protection of an urban street 275 metres long and with a speed limit of 50 km/h, by using a reduction system with four reduction sensors and five detection probes.

PREFERRED EMBODIMENT OF THE INVENTION

[0038] The invention proposed, for a speed reduction system, belongs to the group of those devices intended for regulation of vehicle traffic which in this example of a preferred embodiment consists of a speed reduction system (figure 20) for a section of an urban street 275 m long and with a speed limit of 50 Km/h, previously provided with signalling which indicates the driver the speed limit and that the reduction system is present.

[0039] The system is characterised by incorporating an initial probe (S.E) before one of the probes (S), from among several placed consecutively, in this example, four probes (S.A), (S.B), (S.C), (S.D), which in turn precede an equal number of reduction sensors (SR), specifically and respectively (SR.A), (SR.B), (SR.C) and (SR.D), which are provided with two side drains (1), a pneumatic piston (2) with rubber protections (9) and respective anchorings (2.1) and (9.1), an anchoring plate (3) to tray (5), a mechanisms box (4), a tray (5) for grid (8), a case (6) which incorporates any reduction sensor (RS), also having anchorings (2.1) and (9.1), and anchoring plates (10) for trays (5) and (7), in addition to the drain tray (7) and the respective metallic grids (8), aside from side indicators (11) which are sealed and made from PVC, and have two orifices (11.1) in their side for attaching the lamps, record box (11.2) and orifices (1.3) for attaching it to the pavement; reduction sensors (SR.A), (SR.B), (SR.C) and (SR.D) being controlled by the corresponding electrovalves (EV), in this case (EV1), (EV2), (EV3), and (EV4). (Figures 21 to 25).

[0040] Once the system mechanisms are connected, both the compressor and the cabinet (AR) electrical circuit (see figure 20), a vehicle (V) is detected by the first probe (S.E.), which activates a timer, in this case (T3), which starts its six second count which at the indicated speed of 50 Km/h corresponds to the time required to cover the distance between the first two sensors.

[0041] After this time a contact is opened in timer (T3), which, if the vehicle is detected by probe (S.A.) before said contact is opened, will activate electrovalve (EV.1), activating the first reduction sensor which will hinder the infractor's vehicle, making it reduce its speed and at the same time will activate timer (T8), which carries out the same functions as the previous timer while cancelling it. And so on until the last timer (t10) is reached, which is cancelled automatically.

[0042] All circuits, electrical diagrams, activation times, etc. are subject to changes since they are directly in function of the road to be protected and its characteristics, so that once all installation possibilities are calculated the system can be automated by means of a programmable robot, which will give the system greater coverage of future changes.

[0043] Figures 21 to 25 show normal contacts both open and closed and other timers open and closed; the latter ones having an asterisk are contacts on disconnection, while those without an asterisk are time contacts open for connection. Lamps (P), here (P1), (P2), (P3), and (P4) are those found in the reduction sensors and inform the driver of the status of the reduction sensor.

[0044] The push button (U) in figure 20 receives the ultrasound signal from ambulances, police cars, etc.

Claims

1. Speed reduction system, among the different devices for speed control and reduction, essentially characterised in that it incorporates in the section of the urban road, with an allowed speed limit indication, an indicator warning the driver of the existence of this reduction system in the road, as well as an initial probe (S.E.) before a set of probes (S) placed consecutively which in turn precede an equal number of reduction sensors (SR), operated by the corresponding electrovalves (EV), in addition to side indicators (11), a compressor and an electrical cabinet (AR), as well as a number of circuits, with the possibility of incorporating a programmable robot as well as lamps included in reduction sensors (SR), which indicate the reduction sensor status, so that once both the compressor and the electrical circuit of cabinet (AR) are connected, vehicle (V) is detected by the first probe (S.E.), which activates timer (T3), which begins its count in seconds according to the speed limit of the road corresponding to the time required to cover the distance between the two first sensors, and after this time opens a contact in timer (T3), so that if vehicle (V) is detected by probe (S.A.) before the contact is opened, electrovalve (EV.1) activates the first reduction sensor which will hinder the infractor vehicle, forcing it to reduce its speed, and also activates timer (T8) which will carry out the same functions as the previous timer while cancelling this previous timer, and so on until the final timer is reached which is automatically cancelled.

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2. Speed reduction system, as in the previous claim, characterised in that reduction sensors (SR) are provided with lateral drains (1); a pneumatic piston (2) with rubber protections (9) and respective anchoring means (2.1) and (9.1); an anchoring plate (3) for tray (5); a mechanisms box (4); a tray (5) of grids (8); a case (6) for any reduction sensor (SR) with anchorings (2.1) and (9.1), as well as plates (10) for anchoring trays (5) and (7); and the corresponding metal grids (8).

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3. Speed reduction system, as in claim 1, characterised in that lateral indicators (11), which are sealed and made from PVC, are provided with two side orifices (11.1) for attaching the lamps, a record box (11.2) and orifices (1.3) for attaching it to the pavement.

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4. Speed reduction system, as in claim 1, characterised in that a push button (U) which receives the ultrasound signal from an emitter placed on authorised vehicles allows these to pass at a speed above the allowed limit.

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FIG.1

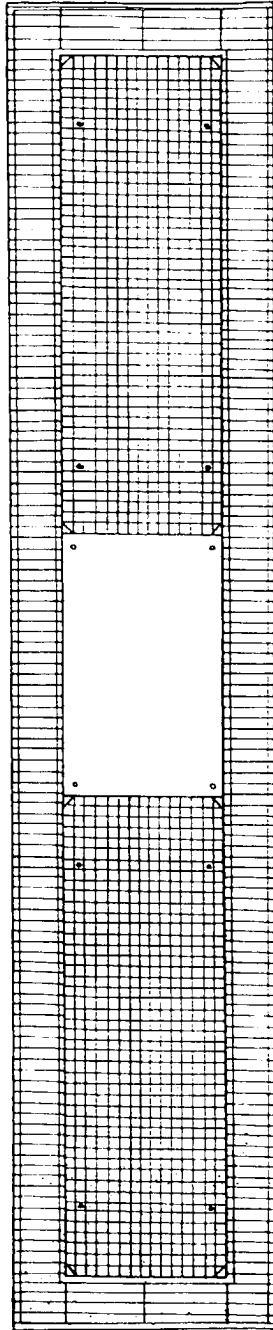
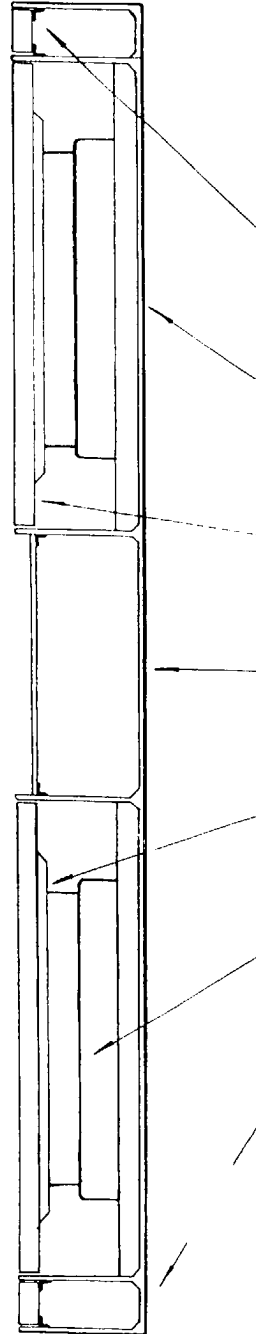


FIG.2



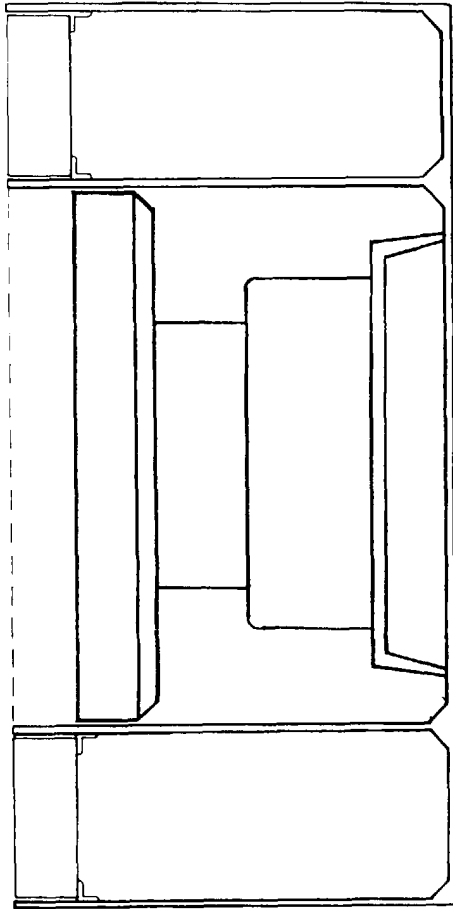


FIG. 3

FIG. 4

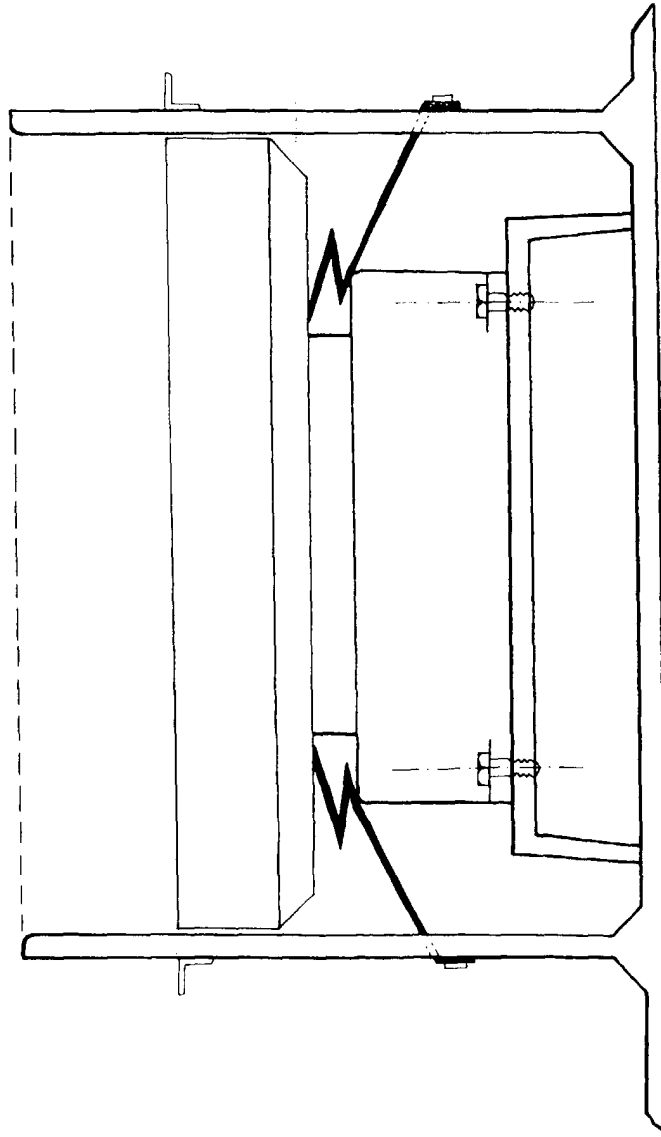
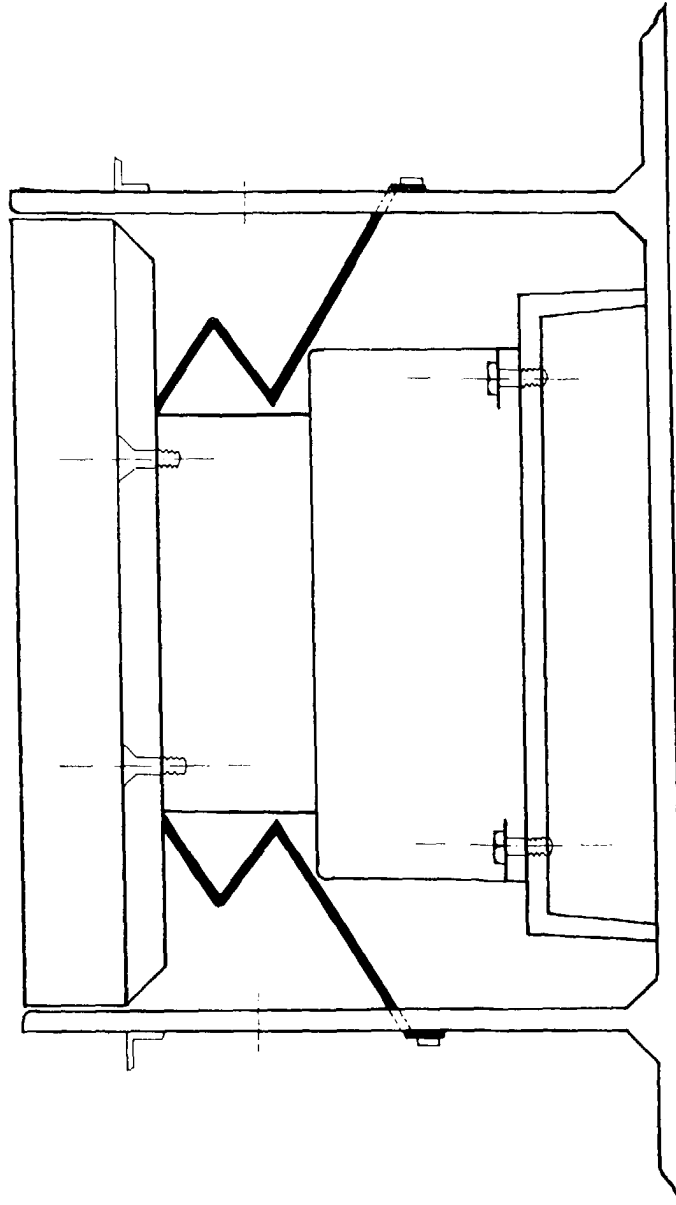


FIG. 5



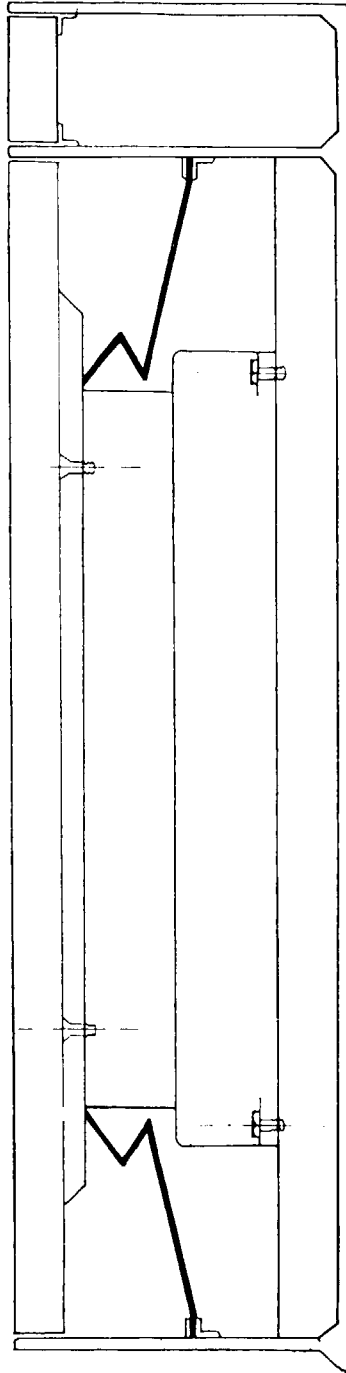
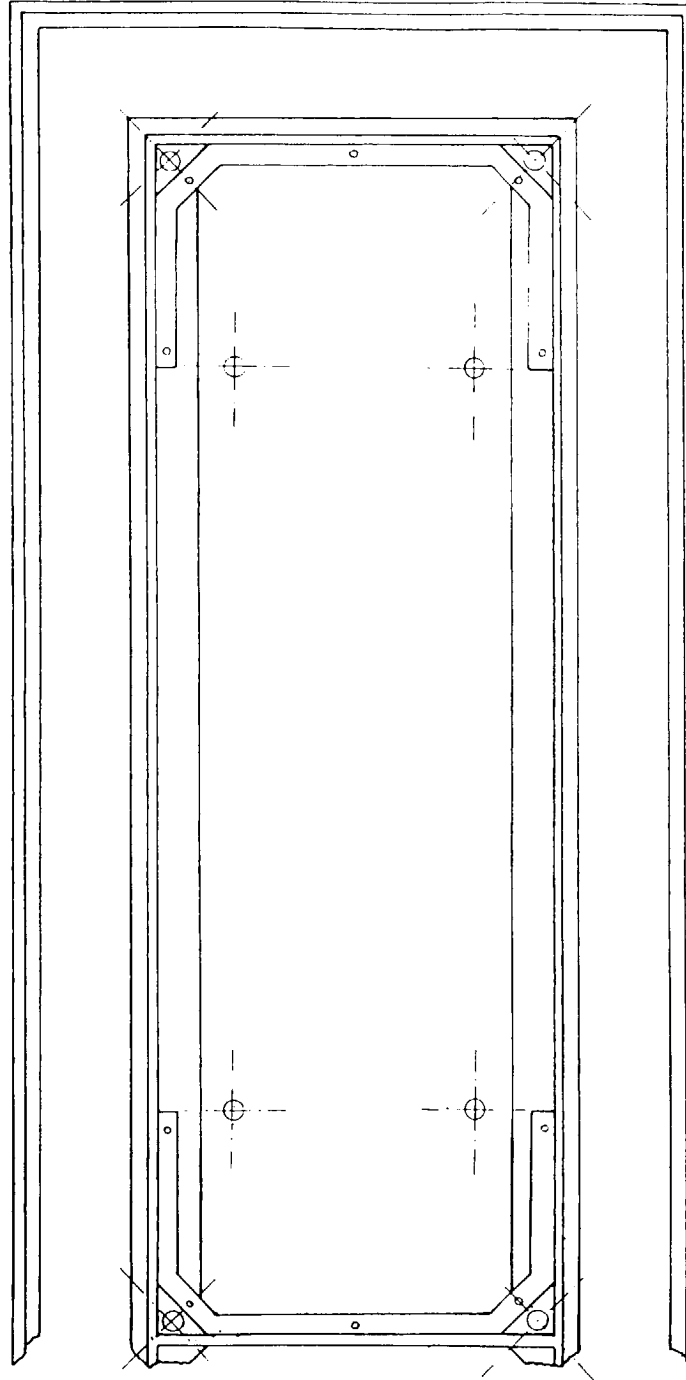


FIG. 6

FIG. 7



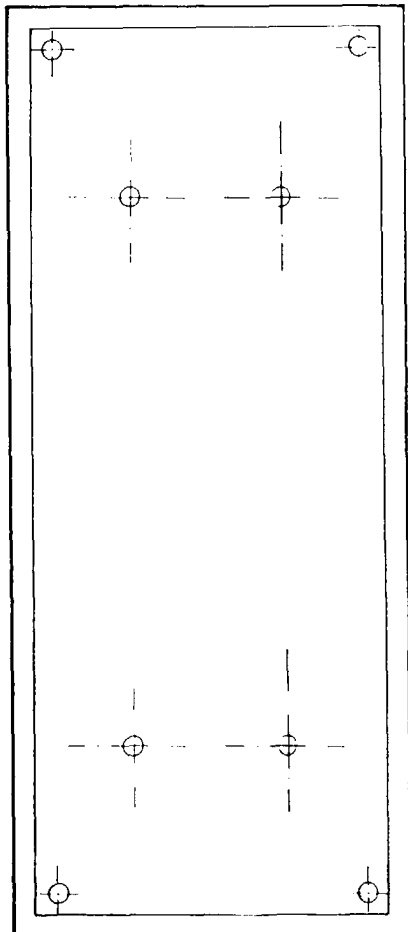


FIG. 8

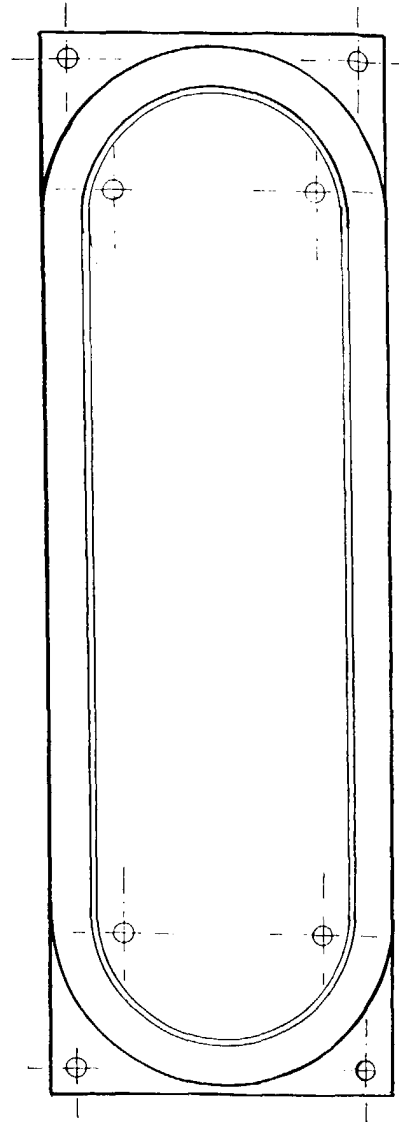
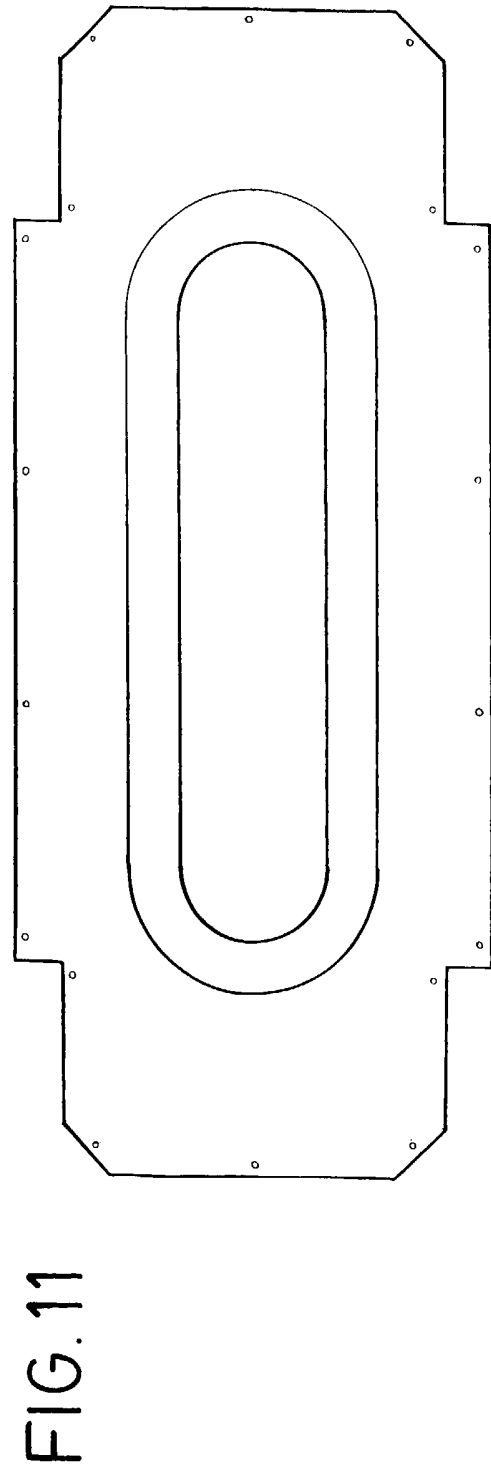
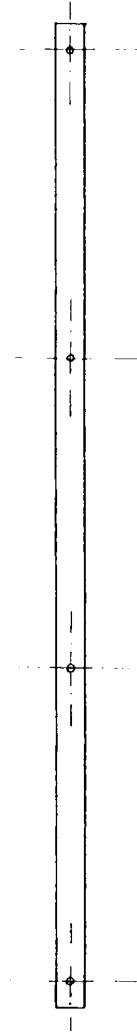
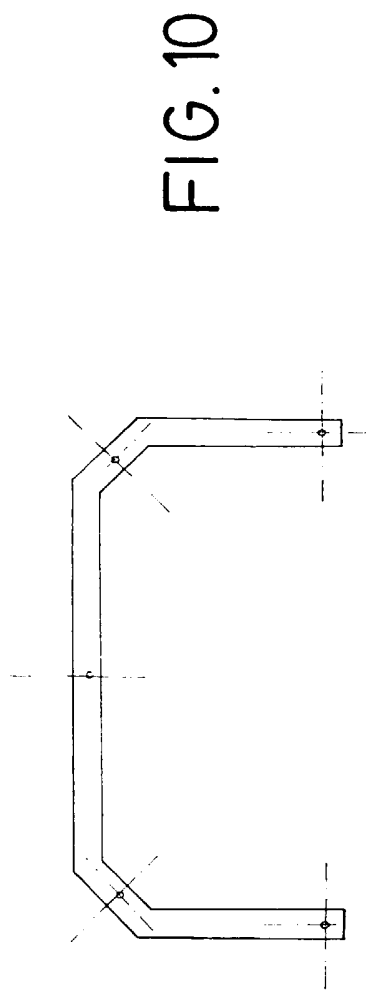


FIG. 9



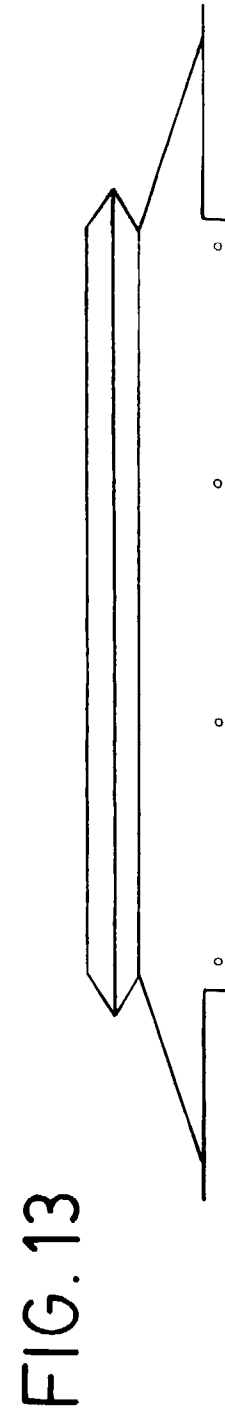
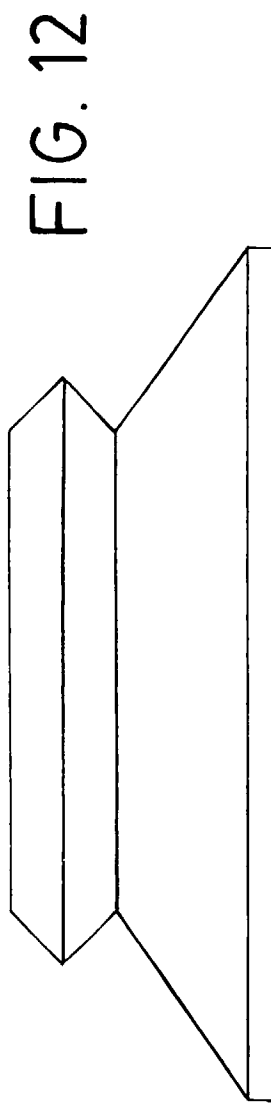


FIG. 14

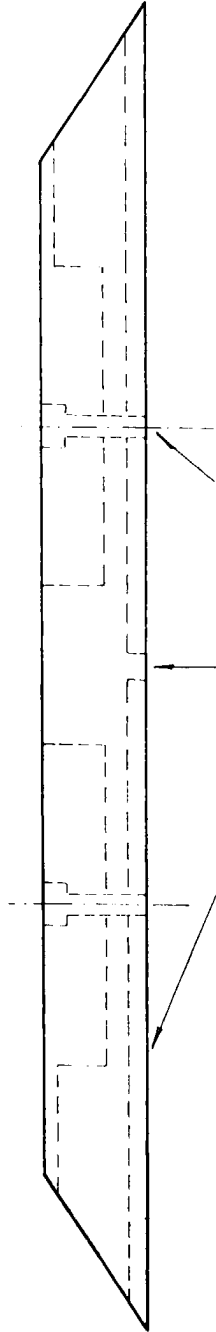
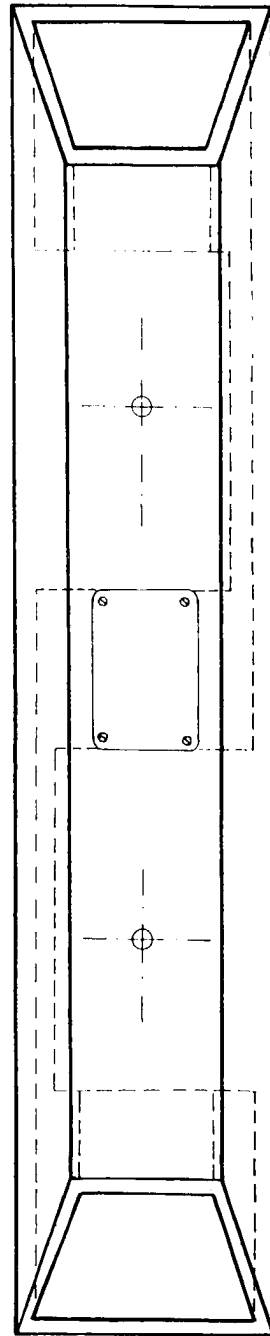


FIG. 15



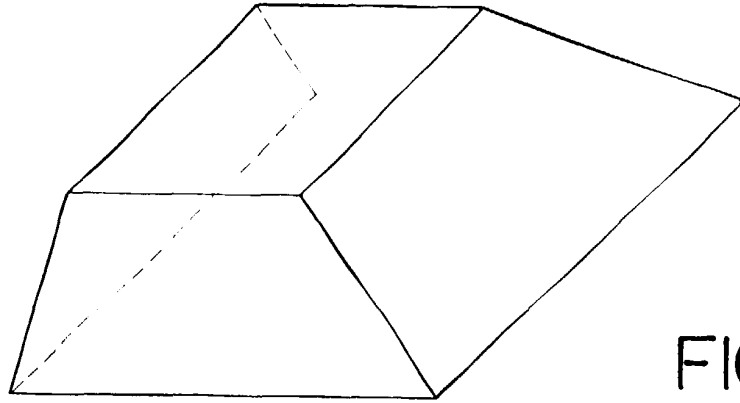


FIG.16

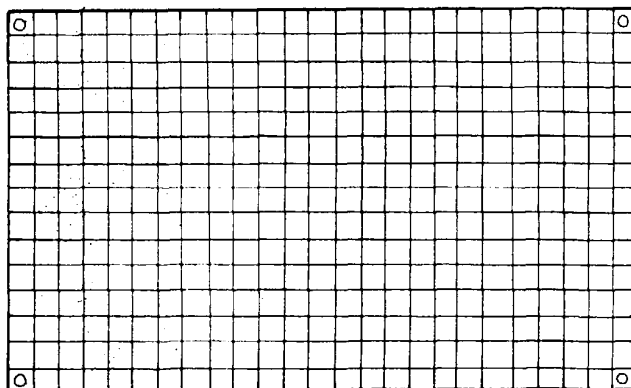
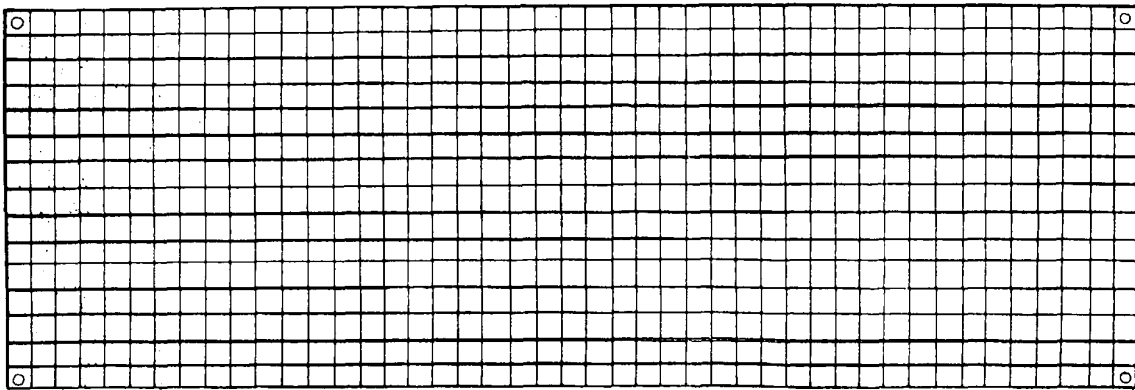


FIG.17

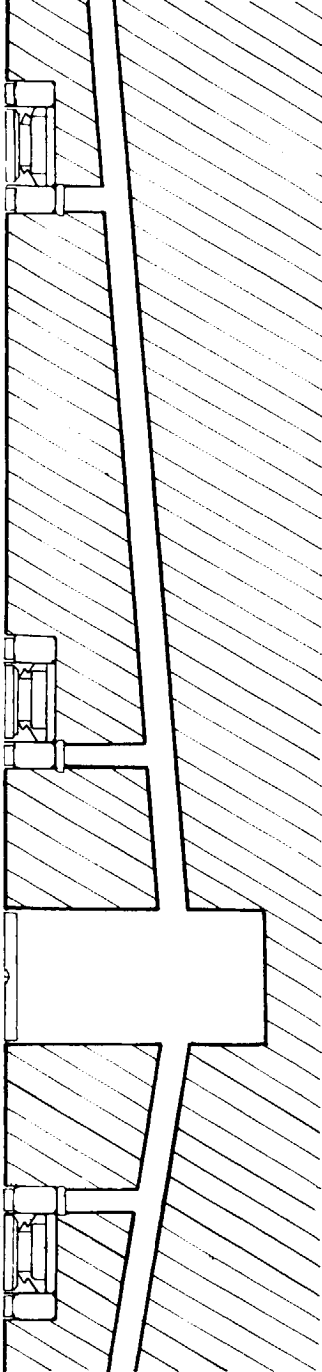


FIG. 18

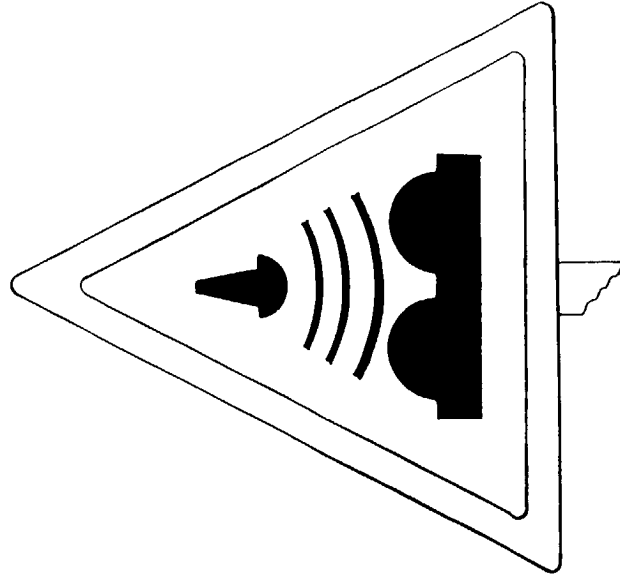


FIG. 19

FIG. 20

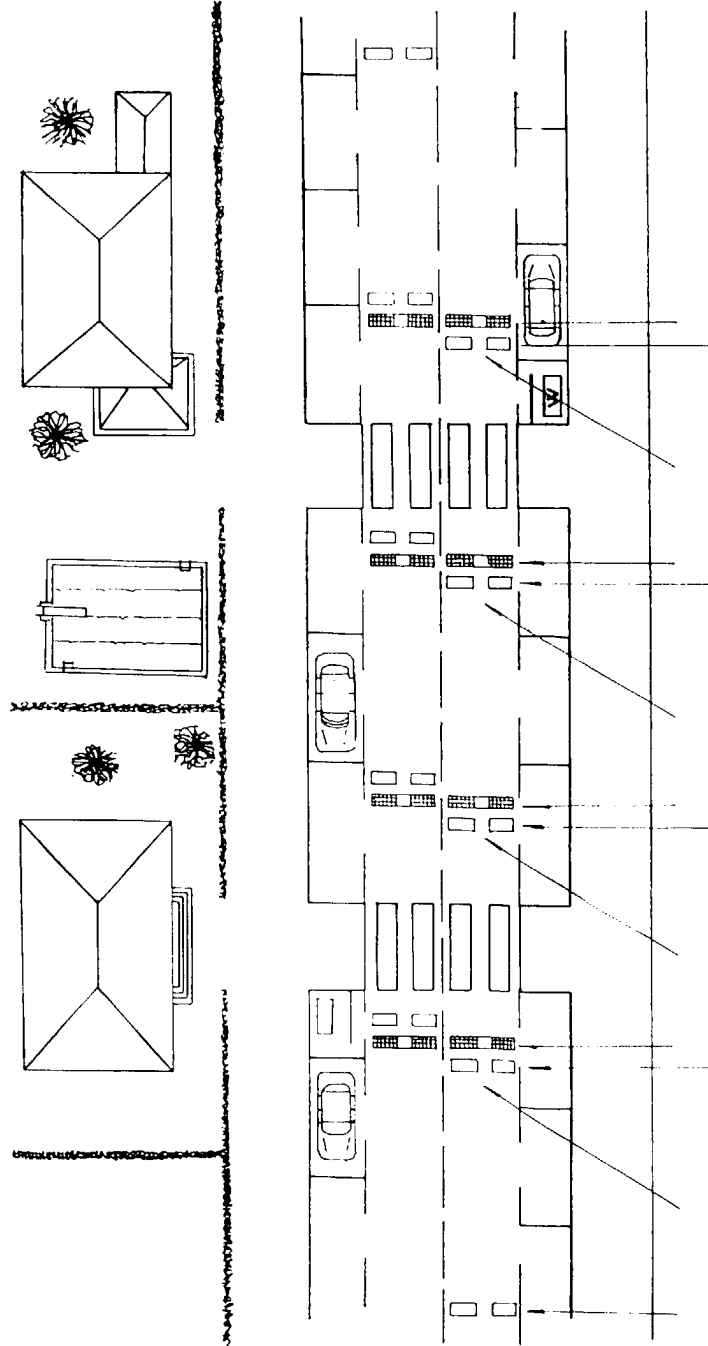
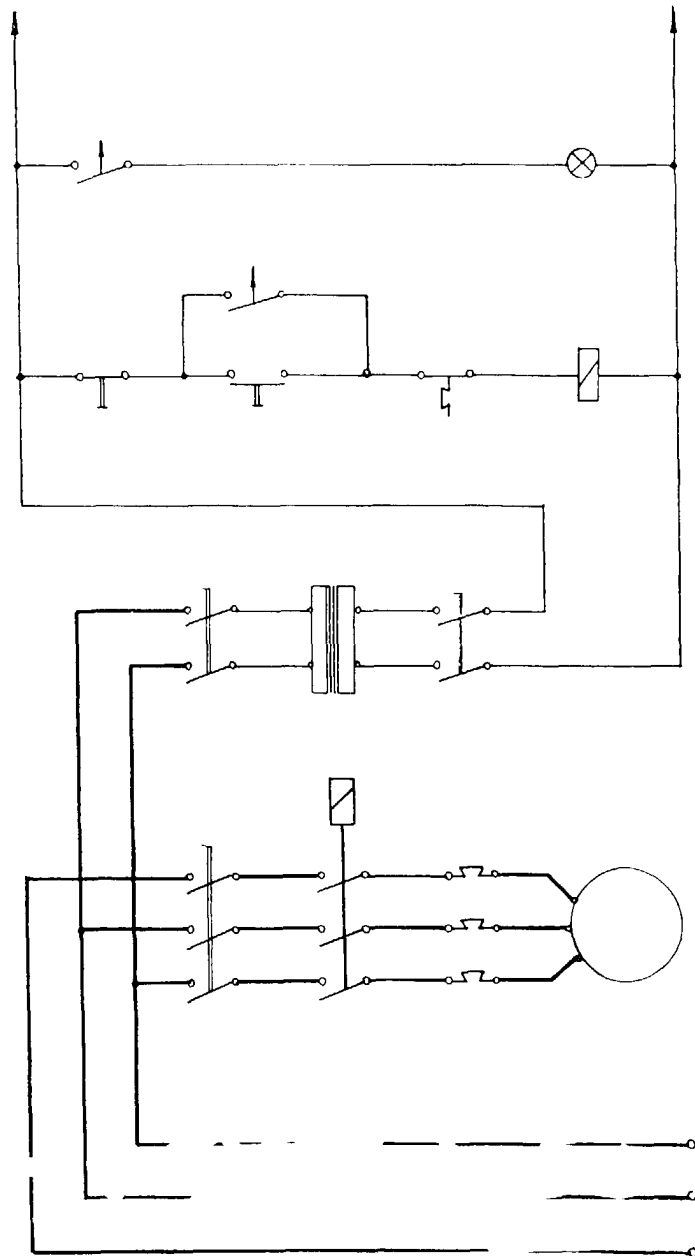


FIG. 21



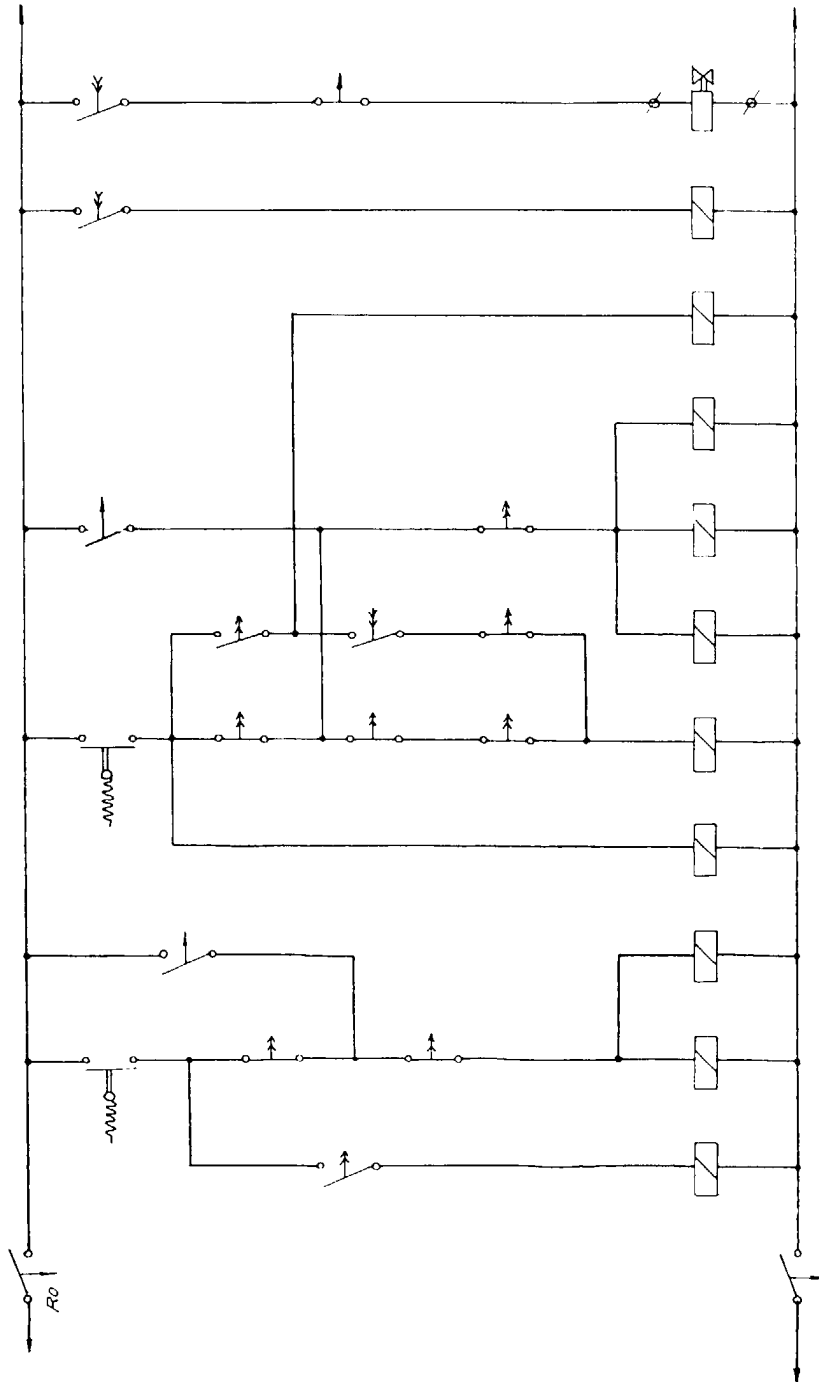


FIG. 22

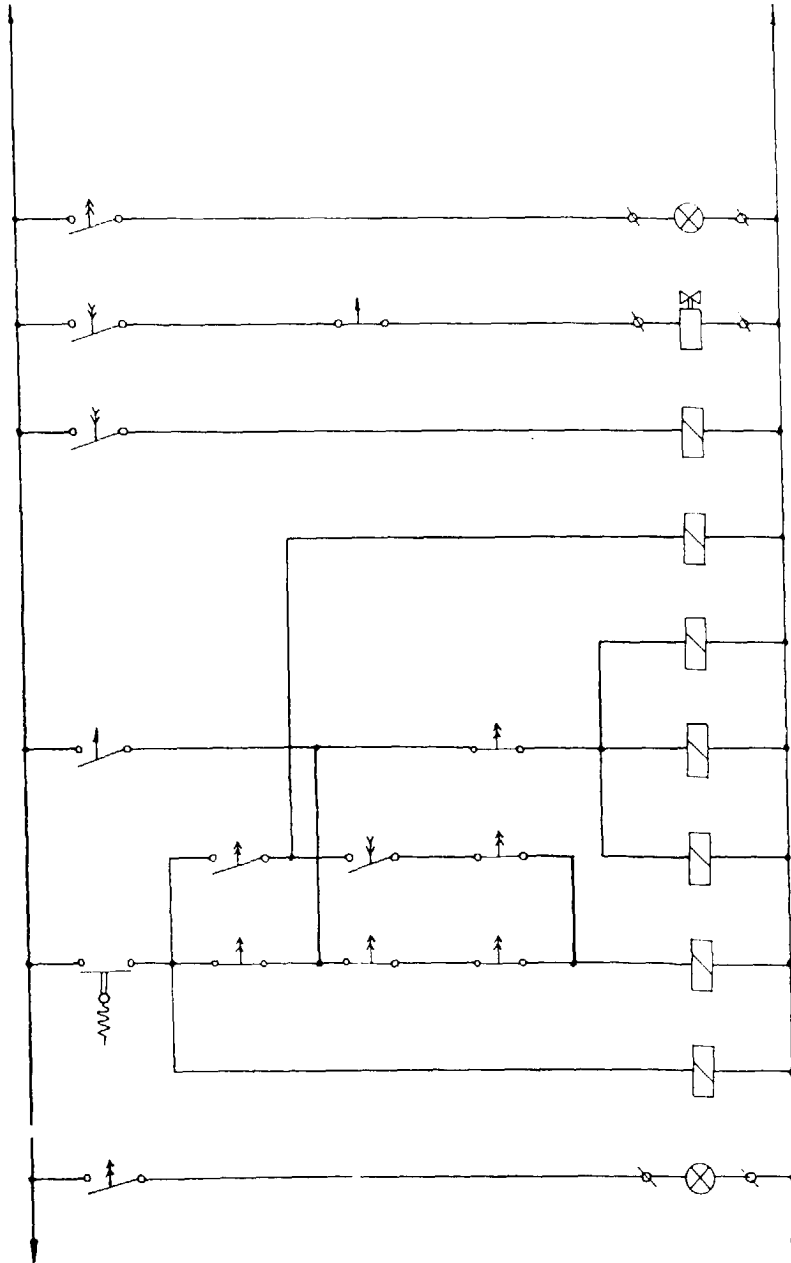


FIG. 23

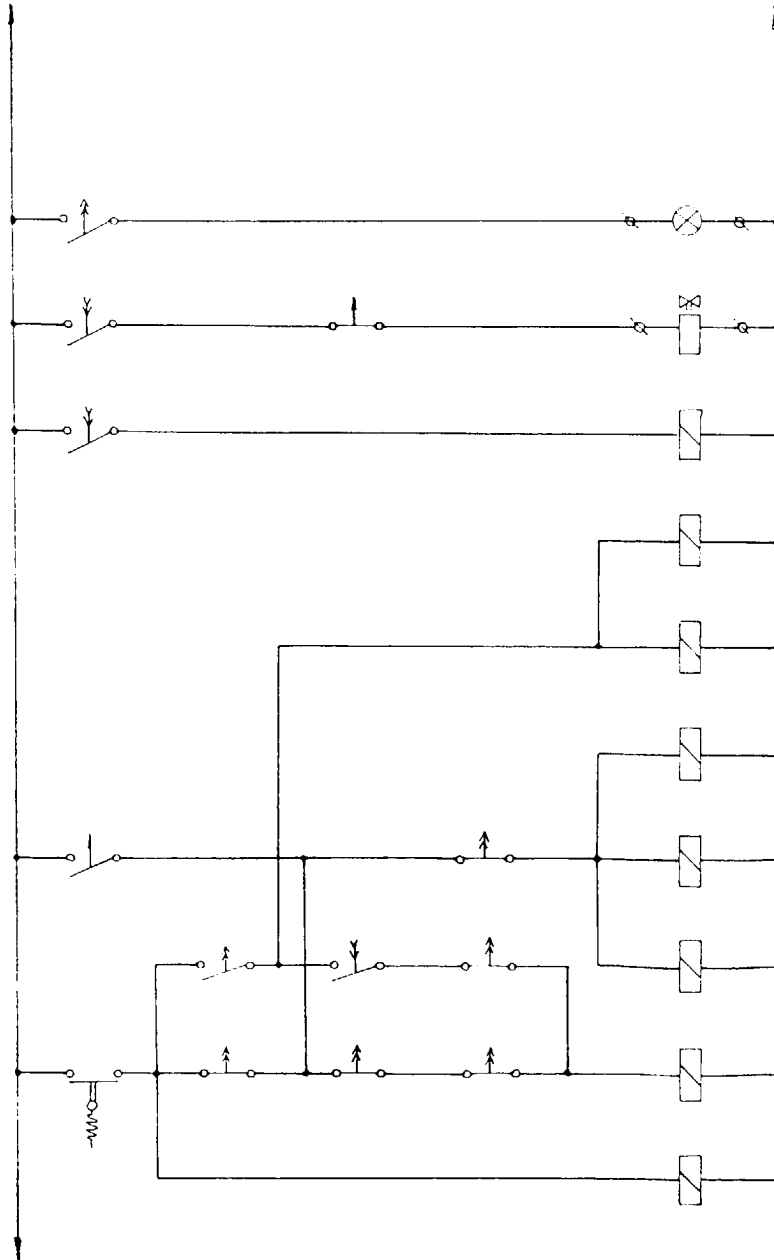


FIG. 24

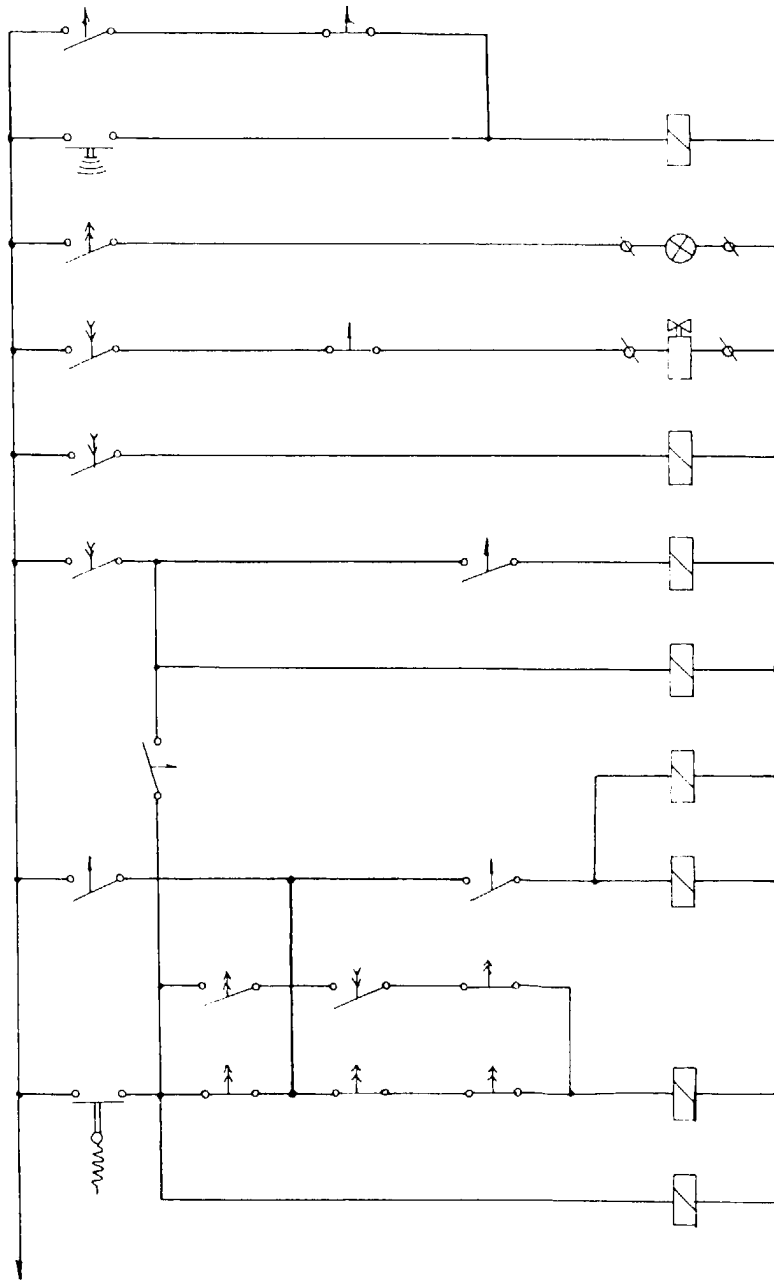


FIG. 25



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 99 50 0119

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	GB 2 079 356 A (WILSON COLIN HUTCHINSON) 20 January 1982 (1982-01-20) * the whole document *	1-4	G08G1/052 G08G1/042
A	DE 195 49 003 C (MOTZKO FRIEDRICH DIPL ING FH) 13 February 1997 (1997-02-13) * figure 1 *	1-4	
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			G08G E01F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 26 January 2000	Examiner Crechet, P
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EP 99 50 0119

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26-01-2000

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