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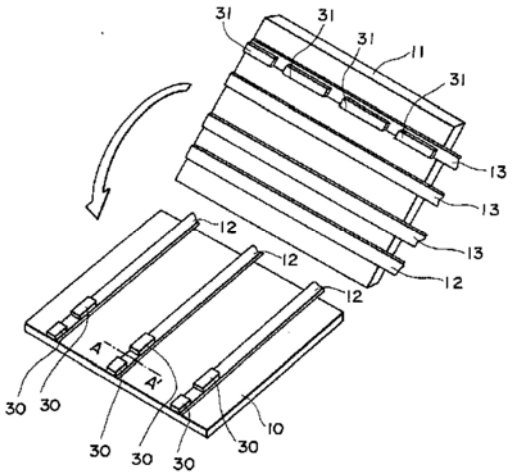
(54) **[Title of the device]** Seat Load Detection Apparatus

(57) **[Abstract]**
[Purpose] To provide a seat load detection apparatus that can accurately distinguish between sitting on a seat unit and placing baggage or the like onto the seat unit, without the load detection unit operating, for example due to the tension of the surface sheet of the seat unit, when the load detection units are not directly pressed.
[Configuration] A load detection body A has multiple load detection units S1 to S12 disposed on the inner side of a surface sheet 5 of a seat unit 2 of a seat 1. These multiple load detection units are formed arranged in a matrix shape resulting from the intersections of conductors 12 and 13, which are disposed at right angles on the opposite sides of a pair of flexible sheets 10 and 11 that are overlaid one atop the other and, based on the output values from these multiple load detection units, it is distinguished whether a person is sitting. Among the multiple load detection units S1 to S12, spacers 30 are disposed at least around the load detection units S10, S11, and S12, which, are disposed near the front edge of the seat unit 2.



[Claims]

[Claim 1] In a seat load detection unit having multiple load detection units disposed at least on the inner side of the surface sheet of the seat unit of the seat, which distinguishes, based on the output values of these multiple load detection units, whether a person is sitting, the seat load detection apparatus characterized in that, among the multiple load detection units, spacers are disposed at least around load detection units disposed near the front edge of the seat unit.

[Claim 2] A seat load detection apparatus as recited in claim 1, characterized in that the multiple load detection units are formed arranged in a matrix shape resulting from the intersections of conductors disposed perpendicular to each other on the facing surfaces of a pair of flexible sheets that are overlaid one atop the other.

[Claim 3] A seat load detection apparatus as recited in claim 1 or 2, characterized in that among the multiple load detection units, the peripheries of at least the load detection units disposed near the front edge of the seat unit are affixed to each other.

[Claim 4] In a seat load detection apparatus having multiple load detection units disposed at least on the inner side of the surface sheet of the seat unit of the seat, these multiple load detection units being formed arranged in a matrix shape resulting from the intersections of conductors disposed perpendicular to each other on the facing surfaces of a pair of flexible sheets that are overlaid one atop the other, which distinguishes, based on the output values of these multiple load detection units, whether a person is sitting, the seat load detection apparatus characterized in that, among the multiple load detection units, a pair of flexible sheets is affixed to the surface sheet at least around load detection units disposed near the front edge of the seat unit.

[Brief Description of the Drawings]

[FIG. 1] A partially broken oblique view of a seat, showing a working example of the present device.

[FIG. 2] An exploded oblique view, showing the structure of the load detection unit in FIG. 1.

[FIG. 3] An enlarged exploded oblique view of the main parts of the load detection unit in FIG. 2.

[FIG. 4] An enlarged cross-sectional view, along line A-A' in FIG. 3, of the seat load detection unit.

[FIG. 5] An oblique view of a flexible sheet.

[FIG. 6] A block diagram showing the sitting distinguishing operation.

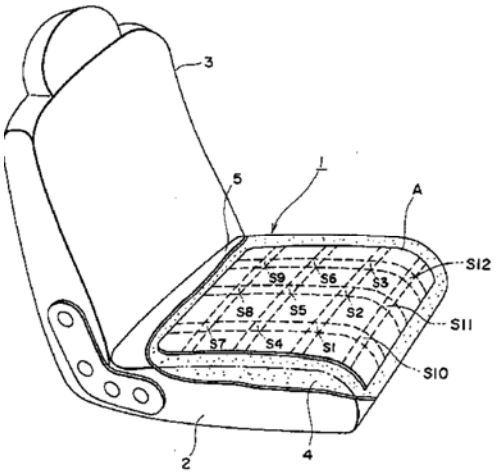
[FIG. 7] A flowchart showing the detection and distinguishing processing circuit that is connected to a load detection unit.

[FIG. 8] A top view showing the disposition of multiple load detection units disposed in a matrix arrangement on the seat unit of a conventional seat.

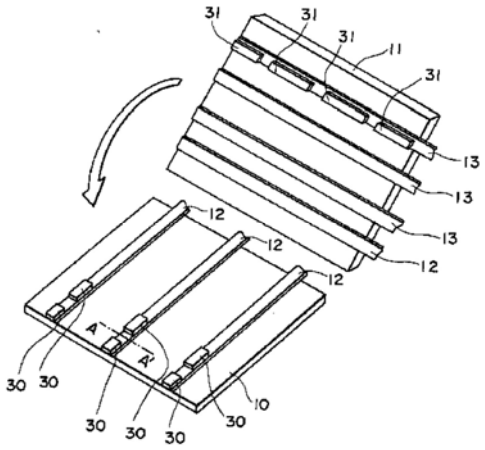
[Explanation of the symbols]

1 seat
2 seat unit
3 backrest unit
4 cushion material
5 surface sheet (covering)
A load detection body
S1 to S12 load detection units
10, 11 flexible sheets
12, 13 conductors
14, 15 spacer patterns
20 detection and distinguishing processing circuit
23 microprocessor
30, 31 spacers
42 adhesive

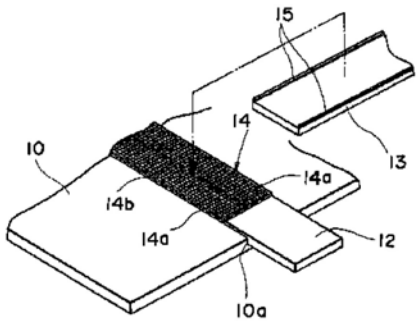
[FIG.1]



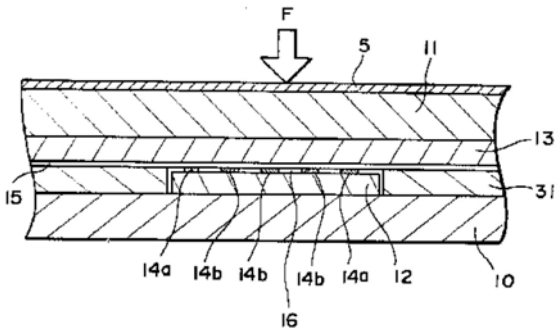
[FIG.2]



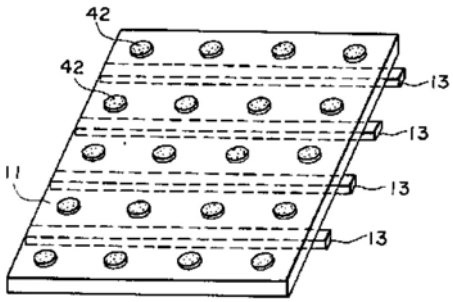
[FIG. 3]



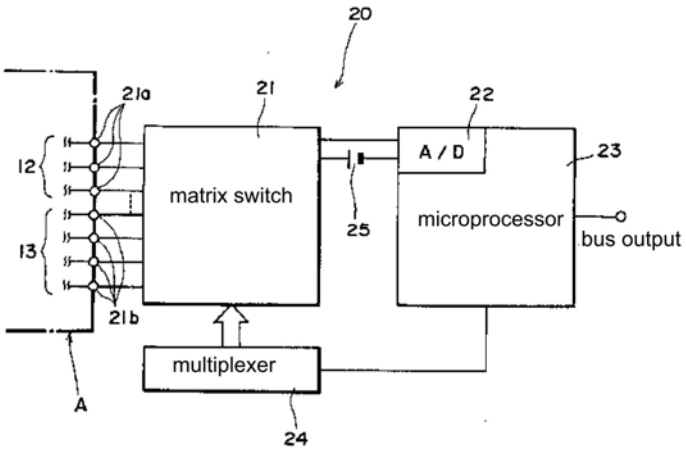
[FIG. 4]



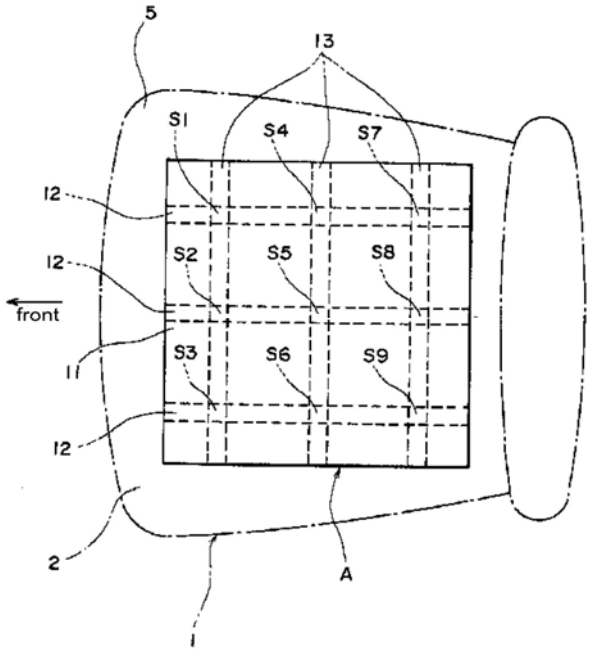
[FIG. 5]



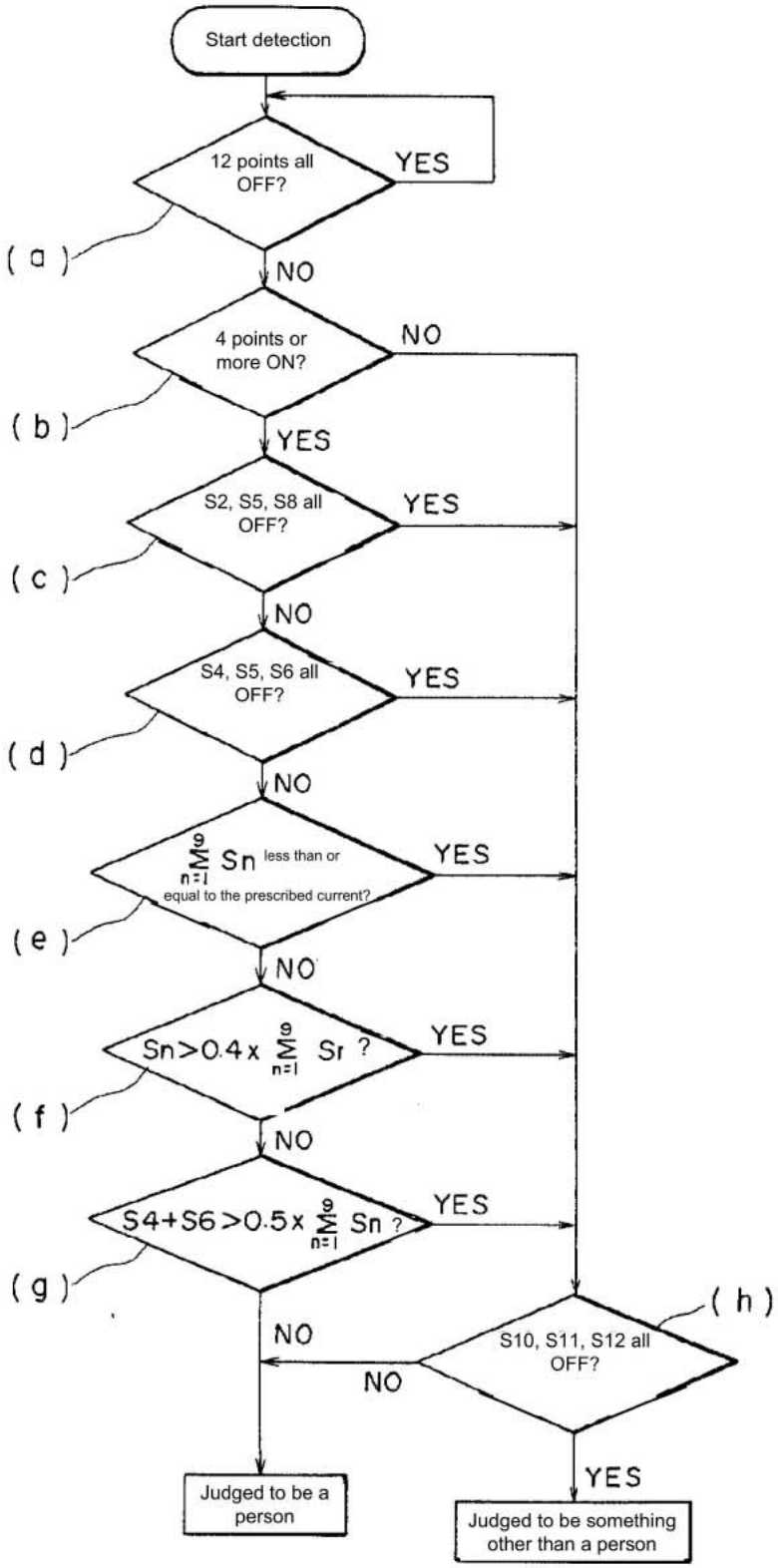
[FIG. 6]



[FIG. 8]



[FIG. 7]



[Detailed Description of the Device]

[0001]

[Field of Industrial Application]

The present device relates to a seat load detection apparatus, used in a seat of an automobile such as a private vehicle, for detecting the presence or absence of sitting by a passenger.

[0002]

[Prior Art]

Recently the present applicant's patent application H3-254527 has disclosed an apparatus in which multiple load detection units S1 to S9 are disposed on the inner side of a surface sheet 5 of a seat unit 2 of an automobile seat 1 as shown in FIG. 8, which can distinguish, by the output pattern from the load detection units S1 to S9, whether a driver or passenger is sitting in the automobile seat 1 or whether only baggage has been placed there, as well as whether there is nothing on the seat 1. With this apparatus, by distinguishing the output pattern from the load detection units S1 to S9 that are disposed on the top surface of the seat, it can be distinguished whether an adult is sitting or whether baggage has been placed. But children, who do not weigh much, have frequently been identified as baggage. To detect such a child, it is effective to dispose load detection units on the front edge of the seat 1. This is because this front edge is never pressed if baggage is placed on the seat 1. But because a surface sheet 5 is stretched over the seat 1 for esthetic reasons, due to the tension, a pressure is imposed on the load detection units that are disposed on the front edge. And even if a pressing pressure is imposed only on the center part of the seat 1, because the four edges of the surface sheet 5 are stretched, a load acts on the load detection units that are disposed at the edges, due to this tension. Because of this, pressing is imposed on the load detection units at the edges of the seat, where properly speaking it should not be imposed. Therefore, even if a child or adult is not aboard, this is detected as a body weight having been imposed, which results in incorrectly distinguishing that a driver or passenger has sat there.

[0003]

[Problems to be Solved by the Device]

Thus, the purpose of the present device is to provide a seat load detection apparatus that can easily distinguish sitting by a driver or passenger (hereafter called a person) and placement of baggage or another

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