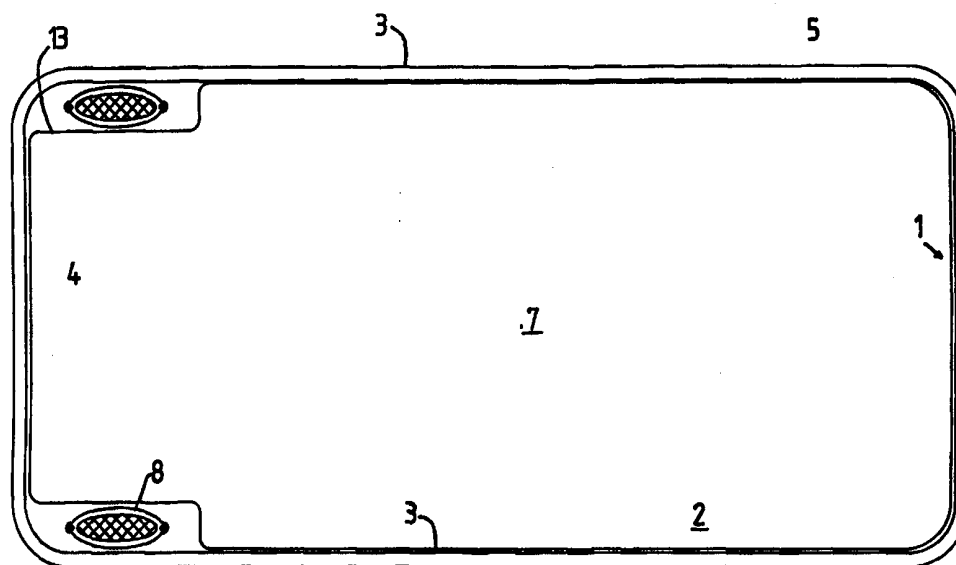




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(21) International Application Number: PCT/NO98/00073 (22) International Filing Date: 5 March 1998 (05.03.98) (71)(72) Applicant and Inventor: GIDTSKE, Karl [NO/NO]; Gardermoveien 201, N-2060 Gardermoen (NO). (74) Agent: TOFTING, Arild; Bryns Patentkontor A/S, Sentrum, P.O. Box 765, N-0106 Oslo (NO).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>In English translation (filed in Norwegian).</i>

(54) Title: DEVICE FOR VENTILATION OF BABY COT, CRADLE OR BAG FOR BABY CARRIAGE

**(57) Abstract**

An arrangement for ventilation of a cot, cradle, carrycot or perambulator carrycot, comprising a substantially flat bottom (2), closed side walls (3) extending vertically upwards from the bottom, and a substantially open top, and also a head end (4) and a foot end (5). At least one of the closed side walls (3) is equipped with at least one ventilation aperture (8) at the head end (4) of the cot or carrycot, close to the bottom (2) of the cot or carrycot at a level that is above any mattress (7) that might be placed therein, or the bottom (2) of the cot or carrycot is equipped with such an aperture (8), with a corresponding opening or slit in the mattress (7).

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DEVICE FOR VENTILATION OF BABY COT, CRADLE OR BAG FOR
BABY CARRIAGE

5 The present invention relates to an arrangement for ventilation of a cot, cradle, carrycot or perambulator carrycot, comprising a substantially flat bottom, closed sides extending vertically upwards from the bottom and a substantially open top, and also a head end and a foot end, in accordance with the preamble in claim 1, and a mattress for the same, in accordance with the preamble of claim 6.

10

The point of departure for the present invention is the many tragic deaths of infants that occur each year, and which as a rule are described as cot deaths.

The causes of cot death (Sudden Infant Death Syndrome - SIDS) have been discussed
15 and researched for quite a long time, and even though this phenomenon is still being researched, the majority of researchers are now agreed that at least a part of the cause is the increased concentration of CO₂ in the infant's inhaled air. It is a matter of common knowledge that infants have quite a small lung capacity and a less than fully developed respiratory system. Infants will therefore tolerate inspiration of inhaled air with a high
20 CO₂ concentration to a far lesser extent than older children and adults.

Statistics show that there is a greater frequency of cots deaths in Norway than in comparable countries. As a basis for this invention, special consideration has been given to what is particularly distinctive about the way Norwegian infants are placed when put
25 to bed. The distinguishing features have been found to include that in Norway relatively high sides are used on cots, perambulators etc. and that there is a clear tendency, in part because of the cold climate, to use thick quilts, which as a rule are packed tightly around the infant. This means that the air volume available in the immediate vicinity of the infant's head is relatively small. When the infant respire in this air volume, if there is
30 otherwise very little air circulation, an ever-increasing concentration of CO₂ will build up therein.

It is a matter of common knowledge that CO₂ is heavier than both oxygen and nitrogen, and the CO₂ concentration will therefore be higher close to the mattress than at a more
35 elevated level in the cot or carrycot. In particular when a baby lies on his stomach, his mouth and nose will be at a very small distance from the mattress, and he will inhale air having a higher CO₂ concentration than if he had, for example, been lying on his back.

Since it has become known that lying on the stomach might have a connection with cot death, more and more parents have started to put their baby to bed lying on his side or back. This has led to a clear reduction in the number of cot deaths. However, lying on the stomach does have its advantages. The baby feels more secure, since he will
5 constantly have "facial contact" with a soft underlying surface, in contrast to the insecure feeling some babies have when they lie on their back without anything to place their cheeks on. Furthermore, babies have on occasion been known to regurgitate milk or to vomit whilst lying in their cot or perambulator. If the infant is lying on his back, it will be difficult for the regurgitated matter or vomit to run out of his mouth, and it may run back
10 into his throat and obstruct the airway. At worst, this may result in choking. In addition, there are also some babies who cannot settle unless they are put down on their stomach.

It is true that on the market today there are already cots with barred sides which, of course, have an opening between each bar. However, these openings are disposed
15 around all sides of the cot, and this provides air exchange across the whole cot. In any case, the purpose of the openings between each bar has not been to remove CO₂ from the area around the infant's head, but to allow the infant to see out through the side walls of the cot. Insofar as carrycots or perambulator carrycots are concerned, these are basically constructed with closed side walls. One exception is disclosed in FR 2,460,651,
20 which makes known a carrycot having large openings in the side. However, between the lower edge of the openings and the mattress there is a sill which effectively prevents the escape of CO₂. There are also cots or carrycots which are equipped with a hole in the bottom, but the purpose of these holes is to transport moisture from the mattress. Virtually no movement of air takes place through these holes, since as a rule they will be
25 blocked by a mattress. US 4,923,104 teaches a rucksack-like carrier where again the air vents are not positioned to allow CO₂ to escape.

One object of the present invention is to provide an arrangement in a cot, carrycot or perambulator carrycot which completely eliminates the risk of a build-up in the
30 concentration of CO₂ around the infant's mouth and nose. This is achieved by the characterising features disclosed in claim 1. Another object of the invention is to provide a mattress in accordance with the characterising features disclosed in claim 6. According to a preferred embodiment, two opposite side walls or two opposite sides of the bottom are equipped with a ventilation aperture, so that the infant's nose or mouth will be close
35 to a ventilation aperture regardless of which side the infant is lying on.

The invention will be described in more detail below with reference to the attached figures, wherein:

Figure 1 is a schematic illustration of a perambulator carrycot seen from the side and in
5 section, which exhibits one embodiment of the invention;

Figure 2 shows a perambulator carrycot seen from the side, which exhibits a second
embodiment of the invention with open ventilation apertures;

10 Figure 3 shows the carrycot of Figure 2 with closed ventilation apertures;

Figure 4 shows a perambulator carrycot seen from above in a third embodiment of the
invention;

15 Figure 5 shows a fourth embodiment of the invention, with apertures in the bottom; and

Figure 6 shows the embodiment of Figure 5 seen from the side.

Figure 1 shows a perambulator carrycot 1 which comprises a bottom 2 and side walls 3
20 extending vertically upwards from the bottom. The carrycot has a head end 4 and a foot
end 5. An infant 6 lying on a mattress 7 is indicated schematically inside the carrycot. A
ventilation aperture 8 is provided in the side wall 3 of the carrycot 1, immediately above
the mattress and in the head end 4 of the carrycot 1.

25 Figure 2 shows a similar carrycot 1 equipped with two round ventilation apertures 8, and
a flap 9, which, as can be seen from Figure 3, is capable of being brought down over the
ventilation apertures 8 in order to close them. Closing the ventilation apertures may be
advantageous if it is windy, in order to prevent the infant from lying in a draught. When
there is movement of air around the carrycot, there will not be the same risk of a build-
30 up in the concentration of CO₂, and it is acceptable for the ventilation apertures to be
closed.

Figure 4 shows a further embodiment of the invention, wherein a carrycot 1 is equipped
with side walls 10 at the head end, which are spaced apart at a slightly greater distance
35 than side walls 11 which extend along the remaining length of the carrycot. In this way,
gaps 12 are formed where the side walls 10 and 11 meet each other. To close these

gaps, the side walls 10 may be arranged so that they can be pressed against the side walls 11 and abut thereon.

Figures 5 and 6 show an embodiment of the invention wherein ventilation apertures 8 are
5 provided in the bottom 2 of the carrycot 1. These apertures 8 are preferably made close to the side walls 3 of the carrycot 1. This allows the mattress 7 to be shaped so as to have a narrower head end portion 13, the width of which is adapted to the distance between the apertures 8 so as to ensure that these are exposed.

10 As illustrated, the ventilation aperture may be slit-shaped, rectangular or round, but may, of course, be of any other shape. The aperture should extend as far down towards the mattress as possible. Instead of a flap 9 on the outside of the carrycot, this flap may be arranged on the inside, or it may be replaced by a sliding flap which can be arranged slidably in grooves in the side wall or bottom. The ventilation apertures are preferably
15 arranged on both sides of the carrycot or cot, but may also be arranged on one side only, and/or in the end wall of the carrycot or cot.

The ventilation apertures may also be equipped with a mosquito net or another material that is gas-permeable, but which prevents the passage of insects, particles or dust.

P a t e n t c l a i m s

1.

An arrangement for ventilation of a cot, cradle, carrycot or perambulator carrycot,
5 comprising a substantially flat bottom (2), closed side walls (3) extending vertically
upwards from the bottom, and a substantially open top, and also a head end (4) and a
foot end (5), characterised in that at least one ventilation aperture (8) for the escape of
air having a high CO₂ concentration is arranged with its lower edge within an area at the
head end (4) of the cot or carrycot, which area is defined by the lower part of the side
10 walls (3), from the upper edge of a mattress (7) placed on the bottom (2), and the
bottom (2), which ventilation aperture (8), in the event that its lower edge is arranged
below the mattress (7) surface, interacts with an opening, slit or hollow in the mattress
(7).

15 2.

An arrangement according to claim 1, characterised in that the ventilation aperture (8) is
equipped with a flap (9) capable of being opened and closed.

3.

20 An arrangement according to claim 1 or 2, characterised in that the ventilation aperture
(8) is covered by a material which is gas-permeable, but which prevents the passage of
insects, particles or dust.

4.

25 An arrangement according to claim 1, 2 or 3, characterised in that the ventilation
aperture or apertures are formed in that the side walls (10) in the head part (4) of the cot
or carrycot are spaced apart at a greater distance than the distance between the side walls
(11) in the rest of the cot or carrycot, so that a gap (12) is formed between at least one
of the side walls (10) of the head part and the side wall (11) of the rest of the cot or
30 carrycot on the same side of the cot or carrycot.

5.

An arrangement according to claim 4, characterised in that the side walls (10) of the head
part (4) can be pressed together so as to close the gap or gaps (12).

6.

A mattress for a cot, cradle, carrycot or perambulator carrycot, which cot, cradle, carrycot or perambulator carrycot comprises a substantially flat bottom (2), closed side walls (3) extending vertically upwards from the bottom (2), and a substantially open top, and also a head end (4) and a foot end (5), characterised in that the mattress (7) is equipped with an opening, slit or hollow which is arranged to interact with at least one ventilation aperture (8) for the escape of air having a high CO₂ concentration, which is arranged within an area at the head end of the cot or carrycot, which area is defined by the lower part of the side walls (3), from the upper edge of a mattress (7) when placed on the bottom (2), and the bottom (2).

7.

A mattress according to claim 6, characterised in that it has a narrower head portion (13), the width of which is approximately the same as the distance between apertures (8) located on either side of the mattress.

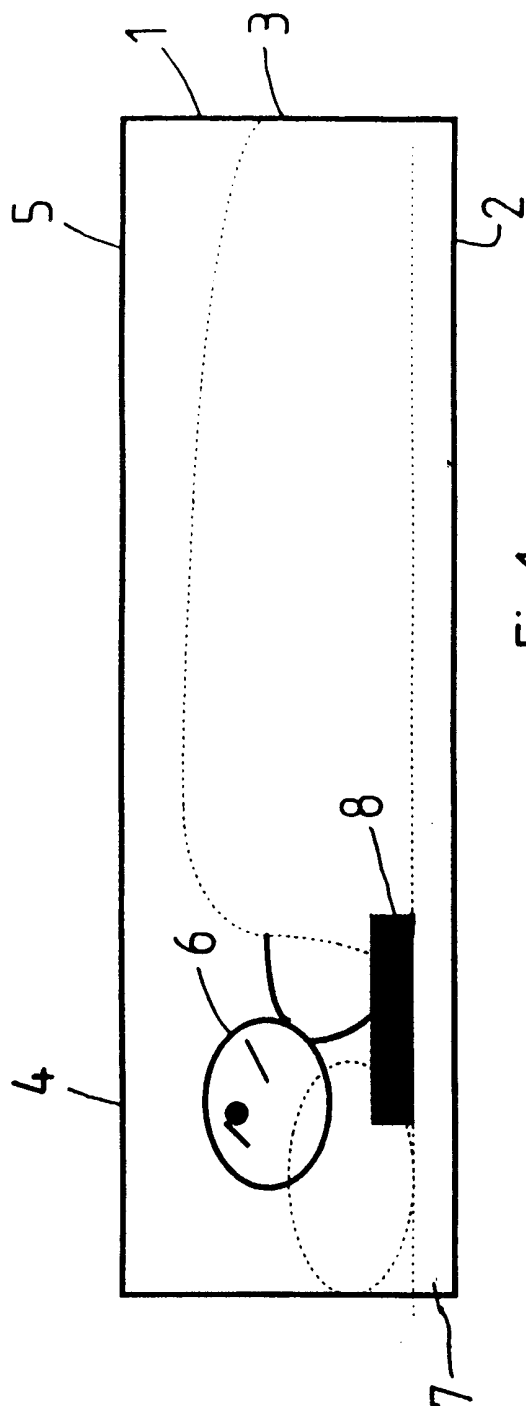


Fig.1

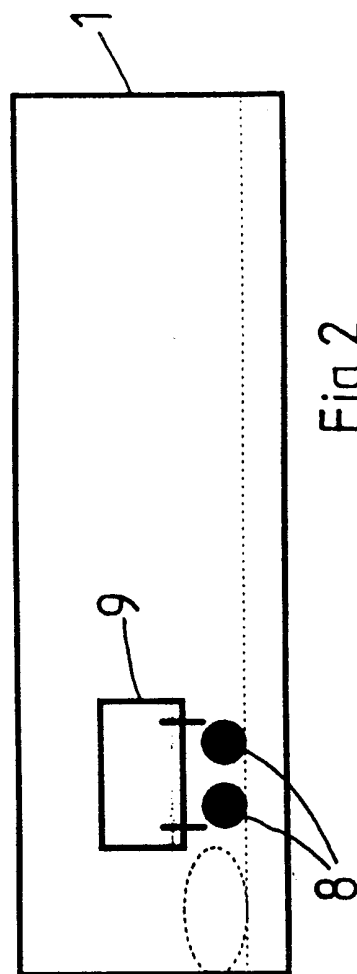
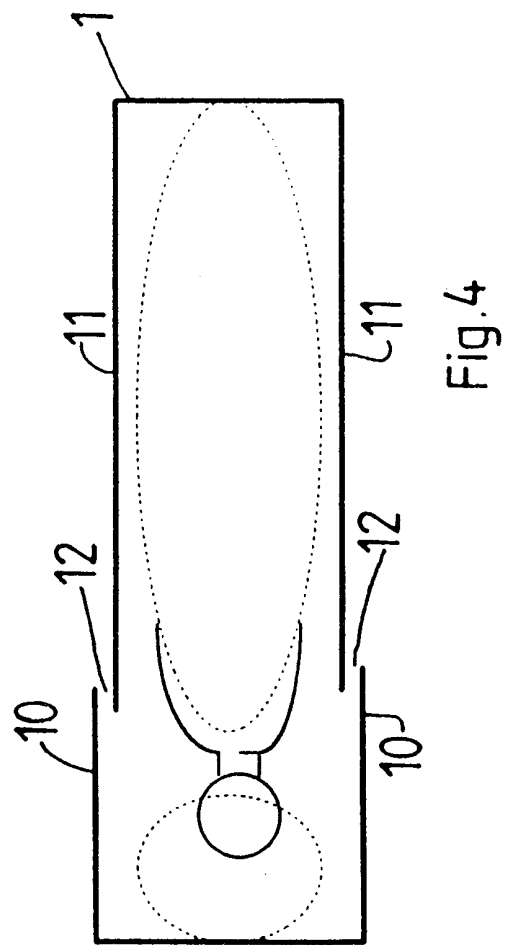
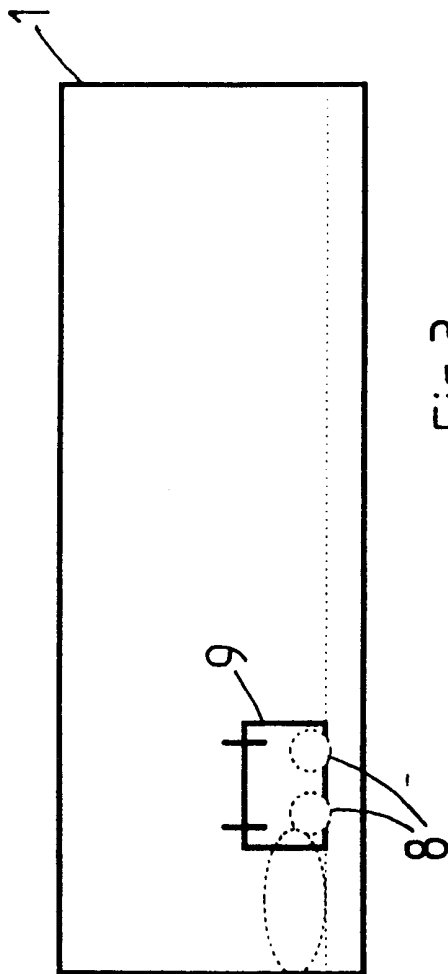


Fig.2



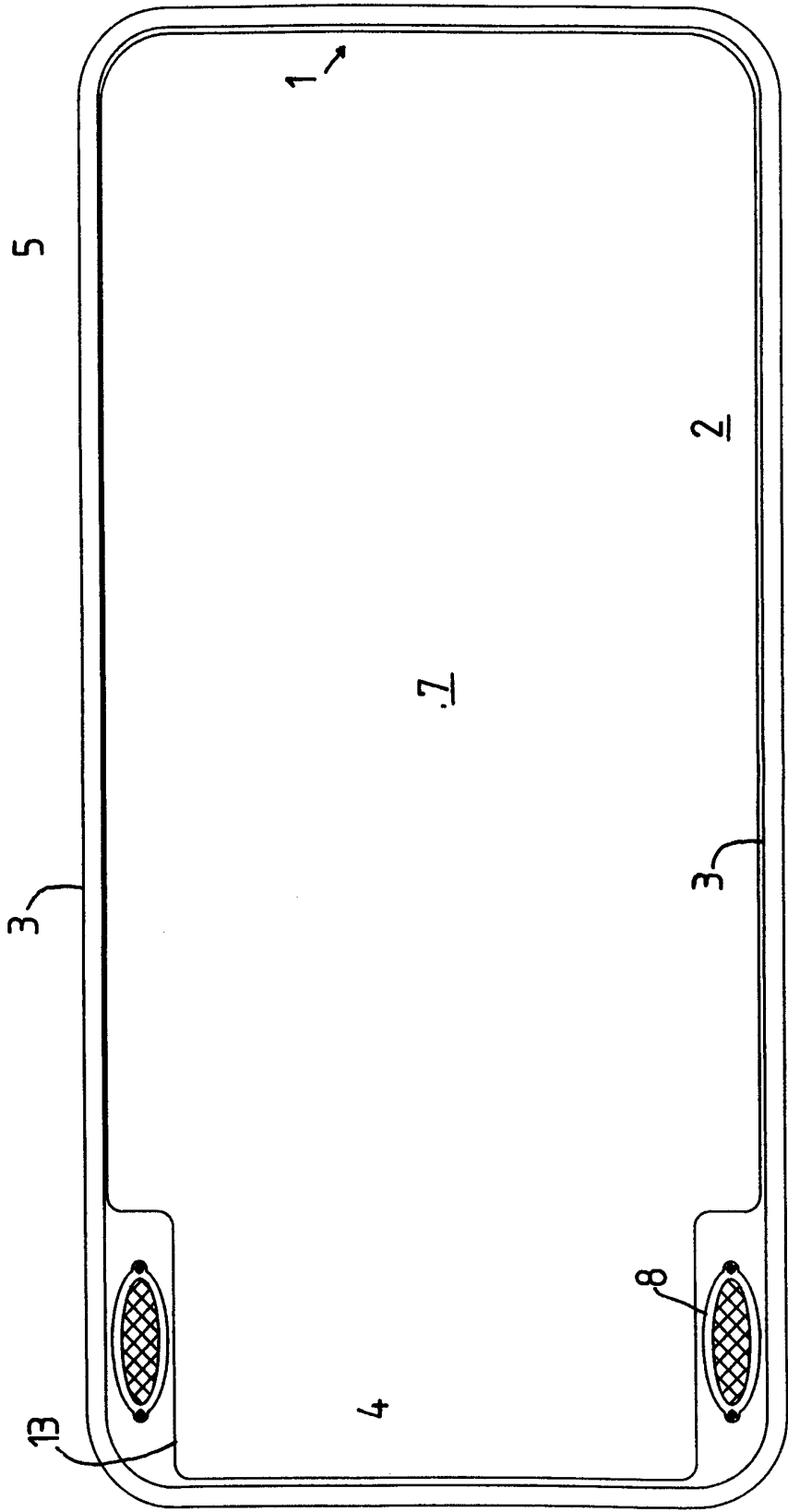
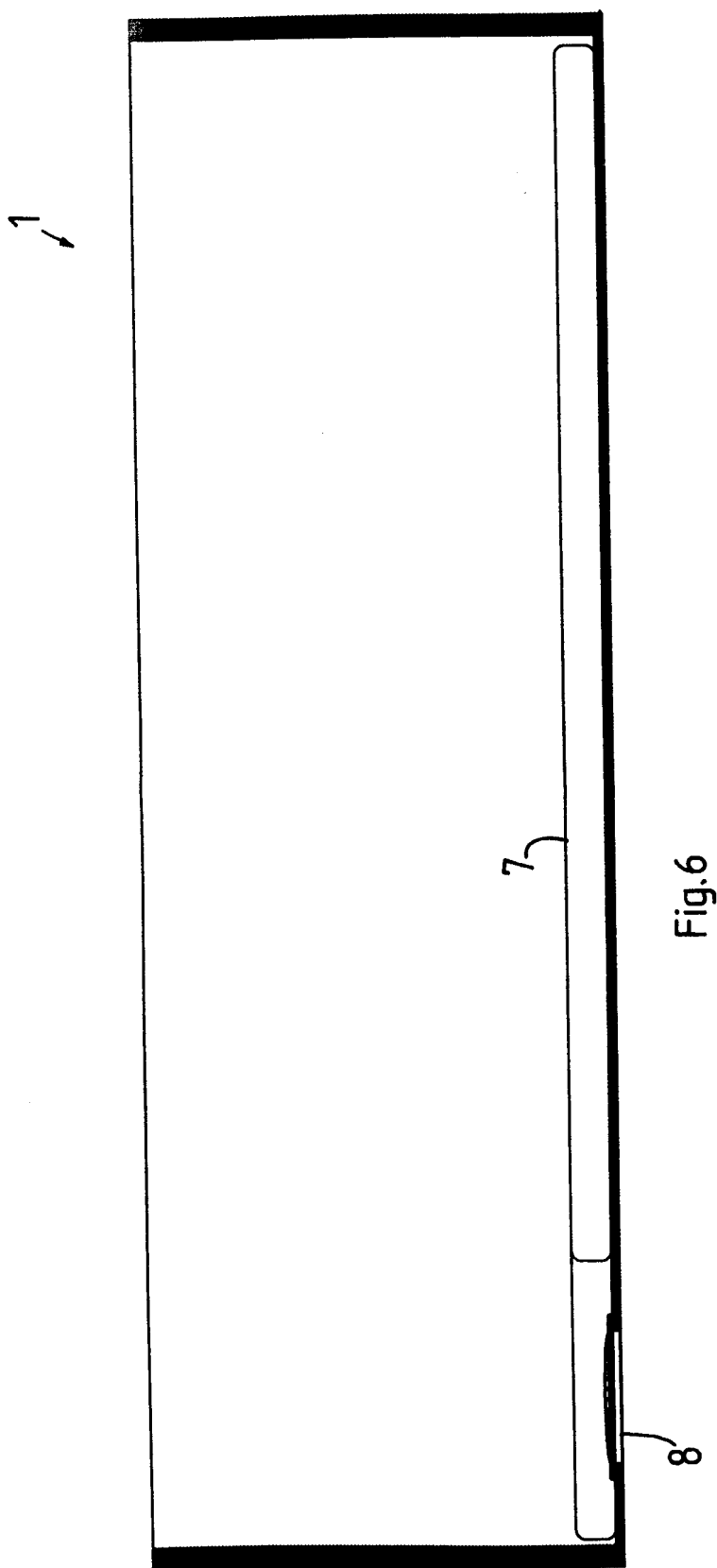


Fig. 5



INTERNATIONAL SEARCH REPORT

International application No.

PCT/NO 98/00073

A. CLASSIFICATION OF SUBJECT MATTER

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: A47D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 3025846 A1 (TAKATA KOJYO CO., LTD.), 29 January 1981 (29.01.81)	1-3
A	--	4-7
X	US 5566407 A (LIEN), 22 October 1996 (22.10.96)	1-3,6
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X	US 5561879 A (EVERALL), 8 October 1996 (08.10.96)	1,6
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 3025846 A1	29/01/81	AU 537745 B	12/07/84
		AU 6016280 A	15/01/81
		CA 1136979 A	07/12/82
		FR 2460651 A	30/01/81
		GB 2056286 A,B	18/03/81
		JP 1189650 C	13/02/84
		JP 56013224 A	09/02/81
		JP 58023256 B	13/05/83
		SE 8004884 A	10/01/81
		US 4366587 A	04/01/83

US 5566407 A	22/10/96	NONE	

US 5561879 A	08/10/96	GB 2283168 A	03/05/95
		GB 9400040 D	00/00/00
		GB 9400878 D	00/00/00
