

Personal Protection

5 This invention relates to personal protection for
infants.

10 The invention is concerned especially with affording
infants protection against air pollution when for example
in a pram, baby-buggy or carry-cot.

15 Babies and other infants when transported in a pram,
baby-buggy or carry-cot in the street are often exposed
to air that is polluted with high levels of motor-vehicle
exhaust fumes. The levels of pollution to which they are
20 exposed are generally higher than those experienced by
adults since the infant breathes air from a lower level,
closer to the source of emission of the fumes into the
atmosphere. The matter is of particular concern because
25 an infant is physically less able even than an adult to
cope with pollution and is more likely to develop
respiratory disorders from exposure to exhaust fumes, and
it is one of the objects of the present invention to
provide equipment by which such exposure can be reduced.

25 According to the present invention there is provided
equipment for affording an infant protection against
ambient-air pollution, wherein a compartment for
enclosing the infant involves a base-support which is of
30 a configuration to support the infant in an appropriate
sitting or other posture within the compartment, and a
canopy that is transparent throughout at least a
substantial part thereof, for extension over the infant
on the base-support to close-up the compartment except to
35 the extent of leaving one or more openings to the ambient
atmosphere, and wherein the equipment also includes means
carried with the base-support for blowing filtered



ambient-air into the compartment at a location spaced from said one or more openings to create positive pressure in the compartment relative to the ambient air-pressure with the filtered air flowing lengthwise of the infant on the base-support.

The canopy may extend fully over the base-support, and may comprise flexible transparent sheeting supported on arched stays that are pivotable for selective extension of the canopy over the base-support. An element of mesh may be inset into the canopy for venting air from the compartment and avoiding build up of heat within the compartment.

The base-support, which may be mounted on a wheeled chassis, may be of an elongate dished configuration and may be suspended within an open frame element that carries the canopy. More particularly, it may include a substantially-rigid panel that is suspended on fabric sections which define walls of the base-support; one of the sections may provide a seat for the infant, with the panel as backrest.

For seating the infant, the base-support may be mounted to have an inclined attitude, and in these circumstances the means for blowing the filtered ambient-air into the compartment may be mounted at the upper, head end of the base-support to blow the filtered air to flow downwardly of the base-support within the compartment. In the latter circumstances, an opening of said one or more openings may be located towards the lower, foot end of the base-support; the canopy may in this regard extend over the base-support and hang open beneath it.

The means for blowing filtered air into the compartment may comprise a filter and a battery-powered electric fan for drawing ambient-air through the filter. The filter



may include a dust filtrant for removing particulates from the ambient-air.

5 A baby-buggy equipped in accordance with the present invention to afford an infant protection against ambient-air pollution, will now be described, by way of example, with reference to the accompanying drawings, in which:

10 Figure 1 is a general perspective view of the baby-buggy according to the invention;

Figure 2 is a schematic illustration showing operation of equipment of the baby-buggy of Figure 1 for affording an infant protection against ambient-air pollution; and

15 Figure 3 is a perspective view of the seat-unit of the baby-buggy of Figure 1 adapted for use as a carry-cot.

20 Referring to Figure 1, the baby-buggy has a tubular-metal chassis 1 that is fitted with a tubular-metal handle 2 for pushing and manoeuvring the buggy on the wheels 3 of the chassis 1. An elongate seat-unit 4 for supporting the infant in a sitting or reclining posture, is mounted on a generally-elliptical frame 5 that is hung within the
25 chassis 1 from two diametrically-opposed pivot mounts 6.

To the extent the buggy has so far been described it is of a generally conventional form, and any infant carried in it near motor vehicles would, because of his/her
30 location low down, be closely exposed to exhaust-fume emissions from those vehicles. The buggy of the present invention, however, acts to minimise such exposure, and in this respect incorporates a transparent plastics-sheeting canopy 7 that in conjunction with the unit 4
35 defines a compartment 8 to enclose the infant. A powered filter-unit 9 mounted on the frame 5 blows filtered air into the compartment 8 to ensure that the compartment 8

is kept substantially free of pollution, for protection of the infant.

The powered filter-unit 9 includes, as illustrated in Figure 2, a fan 10 that is powered from a rechargeable or standard battery 11 to draw ambient-air through a filter 12 and blow it into the compartment 8 at the head of the unit 4. The filter 12, which includes a dust-filtrant and polyurethane foam impregnated with carbon spheres or carbon-impregnated cloth, is effective to remove pollutants (particulates, together with carbon-, nitrogen- and sulphur-dioxide, and hydrocarbons) to a substantial extent from the ambient-air so that the filtered air blown into the compartment 8 defined within the canopy 7, is of significantly-enhanced breathability.

The canopy 7 is made up of three flexible gores 13 to 15 and an apron portion 16 all of clear polyvinyl chloride sheets that are sewn and sealed together on three flexible rods or stays 17 to 19. The stays 17 to 19 are arched with the two ends of each pivoted to the frame 5 to enable them to be opened out from one another to stretch the sheeting of the gores 13 to 15 taut and close-up the compartment 8. In this respect, the gore 13 is attached to the unit 9 and also to the frame 5, but the canopy 7 is otherwise free of close attachment below this so that the apron portion 16 hangs round, but spaced from, the infant's legs and lower part of the body; provision may be made for securing the sheeting of the apron portion 16 to the chassis 1 to maintain the spacing, if necessary. The lack of sealing and the spacing of the apron portion 16, ensures that the compartment 8 as a whole is adequately ventilated. However, additional ventilation is provided through a mesh inset 20 in the gore 14 above the infant's head. The inset 20 also provides a degree of shading from the sun; in inclement weather a rolled-up cover 21 attached

to the gore 14 can be unrolled and secured across the inset 20 to protect the infant.

5 The possibility of entry of ambient, polluted air into the compartment 8, is obviated by operating the unit 9 to maintain a positive pressure within the compartment 8 with respect to the ambient air-pressure. The filtered-air outlet 22 of the unit 9 is set back slightly over the infant's head at the top of the compartment 8, and waste
10 air is vented to atmosphere through the open lower-part of the canopy 7 provided by the apron portion 16, so that a good air-flow is established downwardly of the infant's face and body. The added, balanced ventilation through the mesh-inset 20 helps further to ensure that there is
15 no build up of carbon dioxide, or of heat, within the compartment 8. The filter 12 opens from the top of the unit 9 away from the discharge of air through the mesh 20, and the unit 9 incorporates indicators 23 and 24 for showing respectively the state of charge of the battery
20 11 and air flow into the compartment 8 so as to enable operation of the equipment to be readily monitored. Provision may also be made for an audio alarm that warns when the state of charge of the battery 11 is low.

25 The seat-unit 4 has a substantially rigid back formed by a fabric-covered panel 25 that is suspended within the frame 5 by top and bottom sections 26 and 27, and two side-wall sections 28, all of fabric. The section 27 provides the seat of the unit 4, and the panel 25 is
30 tipped slightly forward within the frame 5 by lugs 29 (Figure 2) that latch to the frame 5, so that the section 26 above the infant's head is angled back slightly to the unit 9. The lower portions of the side-wall sections 28 rise up either side of the panel 23 to afford arm
35 restraint and side-protection for the infant seated on the panel 25 within the unit 4. The orientation of the unit 4 as a whole on the chassis 1 can be adjusted

between that suitable for the infant to sit up (as illustrated) or to recline backwardly for sleep.

- According to an advantageous feature of the buggy, seat-unit 4 can be readily adapted for use in the form of a carry-cot mounted substantially horizontally on the chassis 1; the age range for which the buggy can be utilised is thereby extended to cover the period before the infant can sit. For such use the lugs 29 are unlatched from the frame 5 so that, as illustrated in Figure 3, the panel 25 hangs on the fabric section 27 and side-wall sections 28, flat with the section 26 within the frame 5. The infant is placed on the panel 25 within the unit 4 with its head towards the section 27 and feet extending towards the unit 9. The unit 9 is operated in the same manner as previously described to maintain a positive air pressure within the compartment, but the canopy 7 is replaced by a canopy 30.
- The canopy 30 has three transparent gores 31 to 33 with a mesh inset 34 for enhanced ventilation in the gore 33. However, instead of having an apron-opening around the section 27, the canopy 30 has a fabric gore 35 that attaches to the frame 5. Adequate ventilation is provided even when the inset 34 is covered by its rolled-up cover 36, through holes 37 in the gore 35. The holes 37 ensure that there is good flow of air over the infant from the unit 9.
- The seat-unit 4 when configured as in Figure 1 for sitting or reclining, or as in Figure 3 as a carry-cot, may be removed from the chassis 1, for use independently thereof. There is no disturbance to the unit 9 in this or any other use, so operational effectiveness and integrity in keeping the infant's environment substantially free from the ambient-air pollutants, is maintained.

Although the invention has been described above in terms of protection against traffic-produced pollution, it may also be used to protect infants against pollen and other allergens in the atmosphere.



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Claims:

1. Equipment for affording an infant protection against ambient-air pollution, wherein a compartment for enclosing the infant involves a base-support which is of a configuration to support the infant in an appropriate sitting or other posture within the compartment, and a canopy that is transparent throughout at least a substantial part thereof, for extension over the infant on the base-support to close-up the compartment except to the extent of leaving one or more openings to the ambient atmosphere, and wherein the equipment also includes means carried with the base-support for blowing filtered ambient-air into the compartment at a location spaced from said one or more openings to create positive pressure in the compartment relative to the ambient air-pressure with the filtered air flowing lengthwise of the infant on the base-support.
2. Equipment according to Claim 1 wherein the canopy comprises flexible transparent sheeting supported on arched stays that are pivotable for selective extension of the canopy over the base-support.
3. Equipment according to Claim 1 or Claim 2 wherein the canopy extends to cover the base-support fully.
4. Equipment according to any one of Claims 1 to 3 wherein the base-support is of an elongate dished configuration and is suspended within an open frame element that carries the canopy.
5. Equipment according to any one of Claims 1 to 4 wherein the base-support is mounted on a wheeled chassis.

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6. Equipment according to any one of Claims 1 to 5 wherein the means for blowing filtered air into the compartment comprises a filter and a battery-powered electric fan for drawing ambient-air through the filter.
7. Equipment according to Claim 6 wherein the filter includes a dust filtrant for removing particulates from the ambient-air.
8. Equipment according to any one of Claims 1 to 7 wherein the base-support is mounted to have an inclined attitude for seating the infant, and the means for blowing filtered ambient-air into the compartment is mounted at the upper, head end of the base-support to blow the filtered air to flow downwardly of the base-support within the compartment, and wherein an opening of said one or more openings is located towards the lower, foot end of the base-support.
9. Equipment according to Claim 8 wherein the canopy extends over the base-support to hang open beneath it as an apron for the infant's legs.
10. Equipment according to any one of Claims 1 to 9 wherein the base-support includes a substantially-rigid panel that is suspended on fabric sections that define walls of the base-support.
11. Equipment according to Claim 10 wherein one of said fabric sections provides a seat for the infant with the panel as backrest.
12. Equipment according to Claim 10 or Claim 11 wherein an element of mesh is inset into the canopy for venting air from the compartment.

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