

(12) UK Patent Application (19) GB (11) 2 146 230 A

(43) Application published 17 Apr 1985

(21) Application No 8422396  
(22) Date of filing 5 Sep 1984  
(30) Priority data  
(31) 8323824 (32) 6 Sep 1983 (33) GB

(51) INT CL<sup>4</sup>  
A41B 13/02  
(52) Domestic classification  
A3V 1B3B  
(56) Documents cited  
GB 1083211 GB 0673984 GB 0665676  
GB 0990600 GB 0671106  
GB 0833254 GB 0667483  
(58) Field of search  
A3V

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(54) **Pants adapted for holding absorbent pads**

(57) Pants comprise a sheet of impermeable, eg plastics, material shaped to define front and rear waist band portions 1, 2 joined by a crotch portion 3 which is of reduced width at its central part. Pockets 6 are defined at the waist band portions which receive the ends of an absorbent pad 10 laid along the inside of the crotch portion 3. Preferably the rear waist band portion 2 is longer than the front one and the crotch portion 3 is wider adjacent to that waist band portion than adjacent to the front one. End parts of the waist band portions, which carry fastening means 8, 9, can thus be detachably secured together in overlapping relationship with adjacent parts of the crotch portion overlapping to ensure a snug fit of the crotch portion about the legs of the wearer.

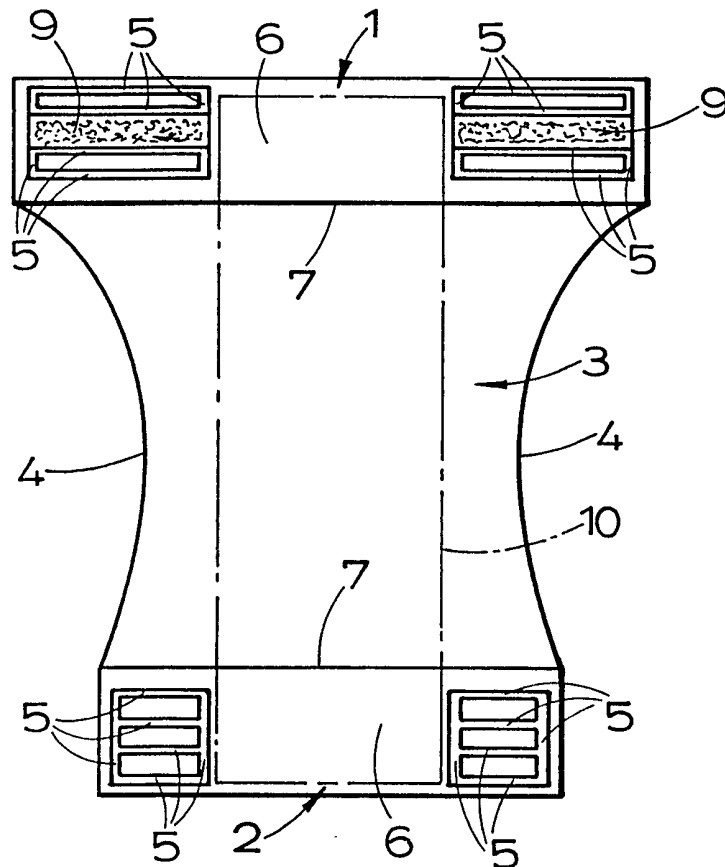


FIG. 1.

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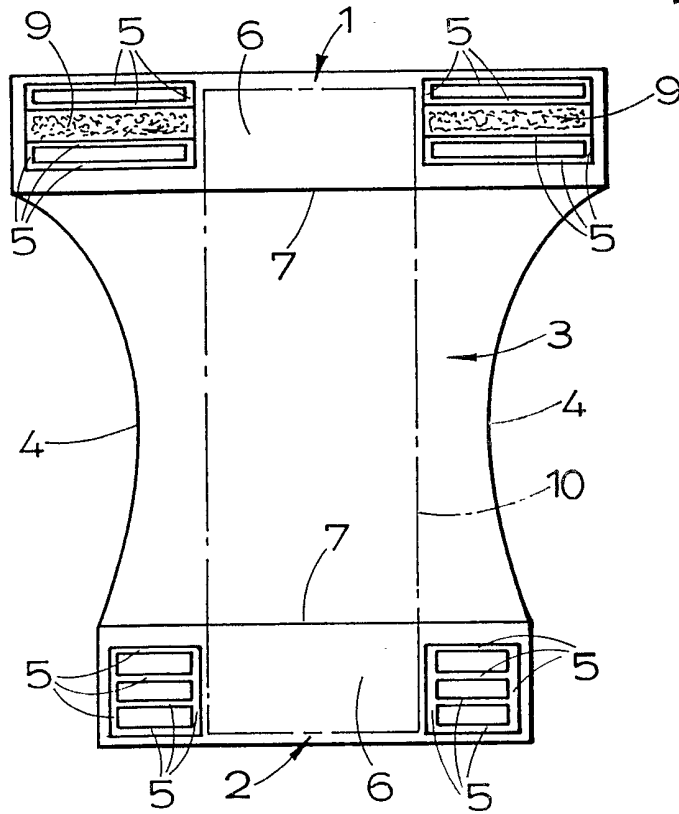


FIG. 1.

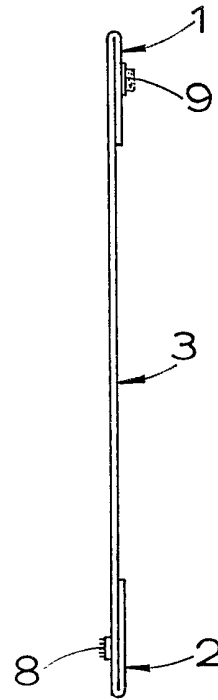


FIG. 2.

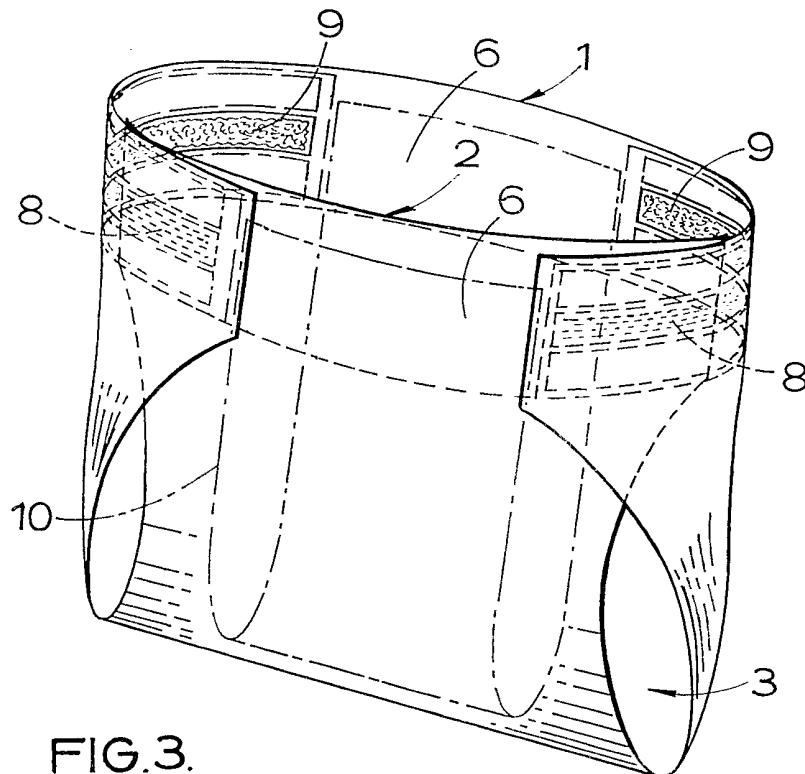


FIG. 3.

## SPECIFICATION

**Pants adapted for holding absorbent pads**

5 This invention relates to pants adapted for holding absorbent pads. The absorbent pads may, for example, be such as provided for babies or incontinent persons, or sanitary wear.

10 There are known pants made of sheets of plastics material comprising crotch portions in which the absorbent pads are located as linings and front and rear portions which may be folded over the ends of the absorbent pads to help to retain them in position and have end portions which form ties for fastening the pants about the waists of the wearers. Pants are also known which include elastics at the edges of the crotch portion to cause the crotch portion to fit closely around the thighs of the wearer. Instead of ties, press fastenings are known and, in respect of disposable pants, self-adhesive tape strips.

25 According to a first aspect the present invention consists in pants adapted for holding an absorbent pad, comprising a sheet of impermeable material shaped to define front and rear waist band portions joined by a crotch portion, and there being at each waist band portion a pocket at an inner side of the pants having an entry directed towards the pocket of the other waist band portion, the pockets being able to receive and locate opposite ends of the absorbent pad fitted along the crotch portion at the inner side of the pants for use, each waist band portion having fastening means adjacent opposite ends thereof adapted for detachably securing the waist band portions together about the waist of a wearer with the end parts of one of the waist band portions overlapping those of the other waist band portion, and the crotch portion being narrower at its central part than it is adjacent to at least one of the waist band portions and arranged such that when the waist band portions are detachably secured together parts of the crotch portion adjacent the waist band portions overlap.

50 According to a second aspect the invention consists in a combination of pants in accordance with the first aspect set forth and an absorbent pad extending along the crotch portion at the inner side of the pants and having its opposite ends received and located in the pockets of the pants.

55 Where the sheet is of plastics material the material is preferably plain polyvinyl chloride for cheapness.

60 Conveniently the sheet is folded over at each waist band portion and fixed in the folded condition to define the pocket at the waist band portion. The sheet may be fixed in the folded condition by means of adhesive or by welding or heat sealing the folded sections of the sheet together. It is desirable for the

70 fixing to be done in such a manner that the sheet remains imperforate at the waist band portions, thereby to avoid introducing points of weakness into the sheet where tearing might be induced in use and points where moisture or fluid could pass through the sheet. In such a construction the pockets, as well as locating the ends of the absorbent pad fitted in the pants for use, help to contain moisture and fluid absorbed by the pad during use within the pants and prevent it from spreading on to clothing worn over the pants.

75 Folding the sheet over at the waist band portions reinforces the pants where the fastening means are applied. Resistance of the sheet to tearing caused by forces exerted on its during attaching and detaching of the fastening means is accordingly enhanced.

80 As an alternative to folding the sheet to define the pockets, each pocket may be defined compositely by the sheet at least at the respective waist band portion and by an additional piece of sheet material which is secured over the sheet. The additional pieces may be of similar material, or similar type of material, to the sheet or be of another material. Where the sheet and additional pieces are of suitable plastics material the pieces may be secured to the sheet by heat sealing or welding. The pieces may be adhesively secured to the sheet. Pieces which are of another material from that of the sheet may be of a permeable material which will allow fluid to pass through to the absorbent pad in the pockets when the pants are in use. The material may, for example, be a non-woven fabric, or tissue. The material should be soft for the comfort of the wearer of the pants.

85 Whether the sheet is folded to define the pockets or additional pieces are secured over the sheet for the purpose, the pockets may possibly continue from the waist band portions partially over the crotch portion. The pockets may therefore be deeper than the waist band portions.

90 Preferably the rear waist band portion is longer than the front waist band portion, although they may be of similar lengths, and the crotch portion is wider adjacent to the rear waist band portion than adjacent to the front waist band portion. In this preferred form the ends of the rear waist band portion fasten over the ends of the front waist band portion, and parts of the crotch portion which are adjacent to the rear waist band portion and bordering on longitudinal edges of the crotch portion extending between the two waist band portions, overlap parts of the crotch portion adjacent to the front waist band portion.

95 Preferably the fastening means are arranged so that the extents to which the end parts of the one waist band portion overlap the end parts of the other waist band portion when the waist band portions are secured together can be varied to suit the size of the waist of

the wearer of the pants. Thus the pants may be fitted to babies of varying sizes, and if made for older wearers in any one size the pants may fit wearers of a range of sizes.

5 Conveniently the fastening means comprise patches of the well-known hook and loop type interengaging materials such as are available under the registered trade mark VELCRO, the patches extending longitudinally of the waist band portions to, or being of such sizes as to, provide for the varying extents of overlap of the said end parts. Such patches provide secure fastenings and yet can be readily engaged and released without imposing undue forces on the supporting parts of the waist band portions. The patches may be adhesively secured to the waist band portions. The patches may extend across the full widths of the waist bands, or only partially across the widths. Where the pants are to be worn by older children and adults it may be desirable for the patches to extend across the widths of the waist bands for the greater security of fastening required.

25 Press fastener elements may possibly be applied to the waist band portions, in particular those made of a plastics material, but they will normally result in appreciably greater forces being exerted on the end parts as the mating elements are pressed into and out of engagement with one another. Self-adhesive tape strips may also be applied as the fastening means. They are particularly convenient if the pants are made with the intention that they should be disposable.

30 Preferably the longitudinal edges of the crotch portion are inwardly curved such that the crotch portion decreases in width towards the central part. By having the longitudinal edges inwardly curved and because the parts of the crotch portion adjacent the waist band portions overlap, the crotch portion can fit closely about the thighs of the wearer to prevent or minimise the escape of moisture or fluid from the pants at the legs. This close fitting can be achieved without the discomfort that pants with elastication at the crotch portions commonly cause to the wearers.

An embodiment of the invention will now be described by way of example with reference to the accompanying drawings in which:

*Figure 1* is an inside plan view of pants in accordance with the present invention in a flat position,

55 *Figure 2* is an edge view of the pants as shown in Fig. 1, and

*Figure 3* is a perspective view showing the pants fastened for use.

The pants are intended to be worn by a baby. They are made from a sheet of plain, transparent or opaque, polyvinyl chloride cut to a generally diaboloid shape in plan comprising parallel, rectangular front and rear waist band portions 1 and 2 respectively between which extends a crotch portion 3 having in-

wardly-curved longitudinal edges 4 such that the crotch portion decreases in width towards its central part. The rear waist band portion 2 is longer than the front waist band portion 1 although the two portions are of similar depths. The curved longitudinal edges 4 of the crotch portion 3 meet the waist band portions adjacent their respective end edges.

70 At each waist band portion 1, 2 the sheet is folded over double for the complete length and depth of the waist band portion, the folding being over onto that side of the sheet which will form the inside of the pants when they are fitted for use. The folded sheet is retained in that condition by heat sealing the overlapping parts of the sheet together along lines 5 arranged in rectangular configurations at the opposite end parts of the waist band portion. Between the rectangular configurations of the heat seal lines 5 a pocket 6 is defined in the waist band portion the entry 7 into which is directed towards the pocket in the other waist band portion. The pockets 6 of the two waist band portions are of similar depths and widths.

90 Within the confines of the rectangular configurations of the heat seal lines 5 fastening strips 8, 9 of VELCRO (R.T.M.) material are secured by adhesive to the respective waist band portions. There is one fastening strip 8, 9 to each rectangular configuration extending centrally thereof lengthwise of the respective waist band portion to within a short distance of the adjacent end edge of the waist band portion. The fastening strips 8, 9 on each waist band portion are similar and complementary to those on the other waist band portion. Those fastening strips 9 which are on the rear waist band portion are longer than the ones on the front waist band portion (as shown they are approximately twice as long), and they are disposed on the inside of the pants whereas the fastening strips 8 on the front waist band portion are disposed on the outside of the pants. The longer fastening strips 9 are of the softer VELCRO (R.T.M.) material containing the loops.

100 For use of the pants an absorbent pad 10, of any suitable kind, of elongated form is placed on the inside of the pants extending centrally longitudinally of the crotch portion 3. The ends of the pad 10 are tucked into the pockets 6 in the waist band portions thereby to locate the pad correctly and positively in position in the pants. Even at its narrowest central part the longitudinal edges 4 of the crotch portion are well spaced from the adjacent edges of the pad 10. The pants are fitted to the baby with the crotch portion extending between its legs and the front and rear waist band portions are fastened around the baby's waist by means of the fastening strips 8, 9, as shown in Fig. 3. The end parts of the rear waist band portion overlap the end parts of the front waist band portion at the front of the

pants. The fastening strips enable the extent of the overlap to be adjusted to suit the baby's waist size. Although portions of the longer fastening strips 9 on the rear waist band portion may not overlap the front waist band portion and so be exposed for possible direct contact with the baby, they will not cause discomfort because they are of the softer VELCRO material. By reason of the curved shapes of the longitudinal edges 4 of the crotch portion and the overlapping of the edges as they near the overlapping ends of the waist band portions a close, but comfortable, fit of the pants around the baby's thighs is obtained which prevents or minimises the escape of moisture or fluid from the pants when the absorbent pad 10 becomes soiled.

#### CLAIMS

1. Pants adapted for holding an absorbent pad, comprising a sheet of impermeable material shaped to define front and rear waist band portions joined by a crotch portion, and there being at each waist band portion a pocket at an inner side of the pants having an entry directed towards the pocket of the other waist band portion, the pockets being able to receive and locate opposite ends of the absorbent pad fitted along the crotch portion at the inner side of the pants for use, each waist band portion having fastening means adjacent opposite ends thereof adapted for detachably securing the waist band portions together about the waist of a wearer with the end parts of one of the waist band portions overlapping those of the other waist band portion, and the crotch portion being narrower at its central part than it is adjacent to at least one of the waist band portions and arranged such that when the waist band portions are detachably secured together parts of the crotch portion adjacent the waist band portions overlap.

2. Pants according to claim 1 wherein the sheet is folded over at each waist band portion and fixed in the folded condition to define the pocket at the waist band portion.

3. Pants according to claim 2 wherein the sheet is fixed in the folded condition at the waist band portions by heat sealing the folded sections of the sheet together.

4. Pants according to claim 2 or claim 3 wherein the sheet is fixed imperforately in the folded condition at the waist band portions.

5. Pants according to any of claims 2 to 4 wherein the sheet is folded over for the complete length and depth of each waist band portion and fixed in the folded condition at each waist band portion by securing the folded sections of the sheet together at the end parts of the waist band portion, the fastening means being applied to the folded sheet at the end parts of the waist band portions.

6. Pants according to claim 1 wherein each pocket is defined compositely by the

sheet at least at the respective waist band portion and by an additional piece of sheet material which is secured over said sheet.

7. Pants according to claim 6 wherein the additional piece of sheet material used in the defining of each pocket is a soft permeable material which will allow fluid to pass through to the absorbent pad in the pockets when the pants are in use.

8. Pants according to any of claims 1 to 4, 6 and 7 wherein each pocket continues from the respective waist band portion partially over the crotch portion.

9. Pants according to any preceding claim wherein the rear waist band portion is longer than the front waist band portion.

10. Pants according to any preceding claim wherein the crotch portion is wider adjacent to the rear waist band portion than adjacent to the front waist band portion.

11. Pants according to any preceding claim wherein opposite longitudinal edges of the crotch portion extending between the waist band portions are inwardly curved such that the crotch portion decreases in width towards the central part.

12. Pants according to any preceding claim wherein the fastening means are arranged to allow the extents to be varied to which the end parts of the one waist band portion overlap the end parts of the other waist band portion when the waist band portions are secured together.

13. Pants according to any preceding claim wherein the fastening means comprise patches of hook and loop interengaging materials secured to the waist band portions.

14. Pants according to claim 13 as dependent from claim 12 wherein patches of the loop material are secured to the rear waist band portion, and patches of the hook material are secured to the front waist band portion, the patches secured to the rear waist band portion being longer than the patches secured to the front waist band portion and extending longitudinally of the rear waist band portion.

15. Pants according to any of claims 1 to 12 wherein the fastening means comprise press fastener elements secured to the waist band portions.

16. Pants according to any of claims 1 to 12 wherein the fastening means comprise self-adhesive tape strips secured to the waist band portions.

17. In combination pants according to any preceding claim and an absorbent pad extending along the crotch portion at the inner side of the pants and having its opposite ends received and located in the pockets of the pants.

18. Pants adapted for holding an absorbent pad and substantially as described herein with reference to and as illustrated by the accompanying drawings.

Printed in the United Kingdom for  
Her Majesty's Stationery Office, Dd 8818935, 1985, 4235.  
Published at The Patent Office, 25 Southampton Buildings,  
London, WC2A 1AY, from which copies may be obtained.