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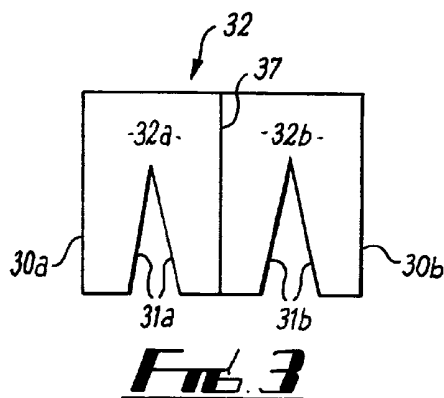
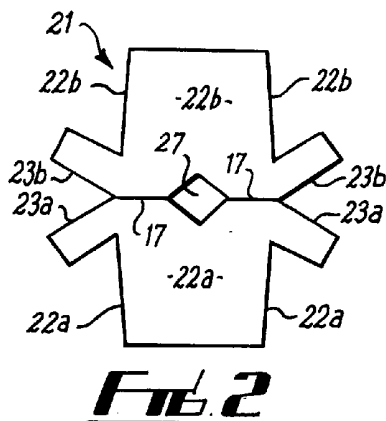
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(54) Abstract Title: **Protective garments**

(57) Protective garments 21,32 incorporate edges 30,31 which have fasteners such as hook and fleece patches or adhesive bands or clips in order that the seams can readily be broken and made in order to allow the garment to be put on by a user.

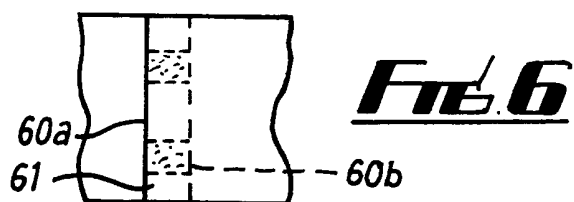
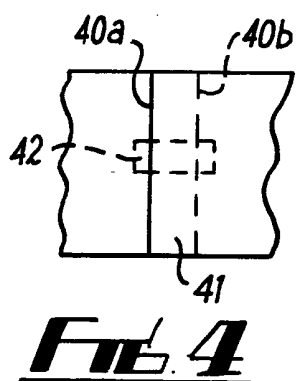
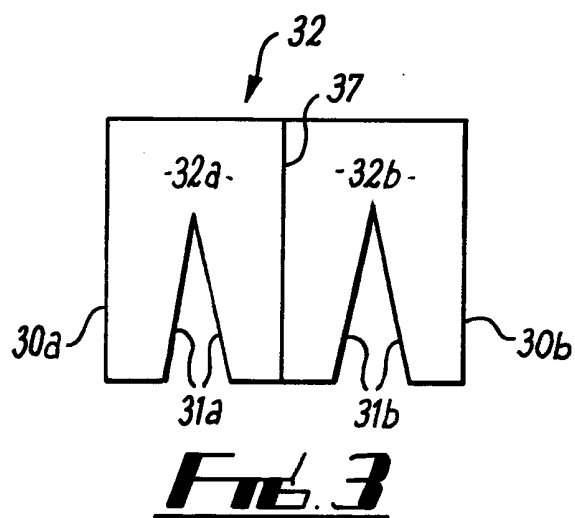
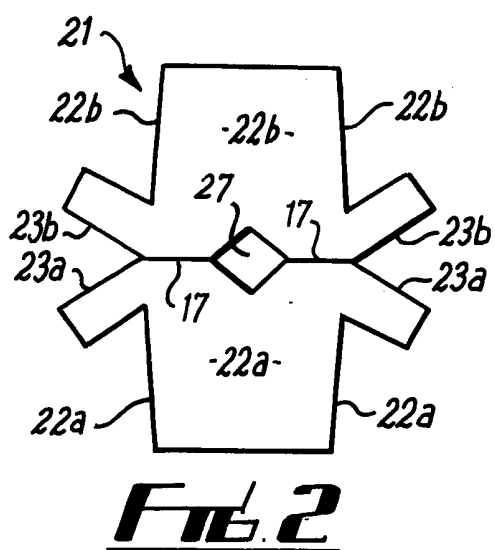
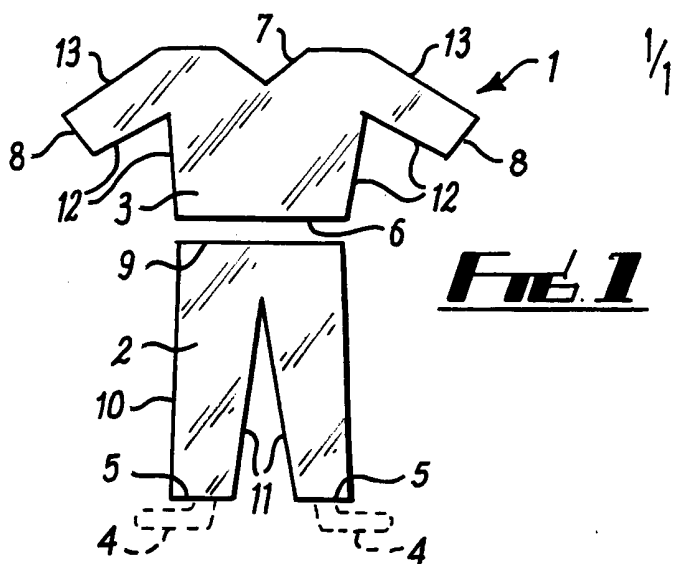


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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date but within the period prescribed by Rule 25(1) of the Patents Rules 1995.

Original Printed on Recycled Paper



Protective Garments

The present invention relates to protective garments and more particularly, to disposable protective garments for use when performing dirty cleaning operations.

5 It is customary to wear protective clothing when performing operations such as cleaning or repairing potentially dirty equipment or apparatus. Some protective clothing can take the form of fabric overalls which can be washed and cleaned for further use. The present invention particularly relates to disposable protective clothing and garments which are normally only used once and then
10 disposed of in order to avoid the costs of washing etc. Typically, the disposable garments have been formed from plastic sheeting with welded or otherwise formed seams in order to create the garment. In such circumstances, over-trousers would be formed by placing two sheets of plastic material side-by-side and then pressing, cutting and welding the necessary seams in order to form the
15 over-trousers. Garments such as torso smocks would be similarly formed.

 Unfortunately, such disposable garments are difficult to put on and take off by a user for a number of reasons. It will be understood that leggings, although sized broadly, may be a tight fit with some users, particularly if they are wearing bulky underclothing for thermal protection etc. The juxtaposed sheets of plastic
20 material which form the legging or smock may suction adhere together creating a necessity to either open the spacing between the juxtaposed sheets of plastic material to allow entry or again have problems with dressing with these protective garments.

 Despite the problems, the inherent lower cost advantages of using
25 disposable protective clothing and garments make it highly desirable to improve their acceptability to users.

 In accordance with the present invention there is provided a protective garment comprising at least one open seam for each garment enclosure, each

open seam comprising cooperative edges in order to provide a formed seam to form the garment being used.

Typically, the cooperating edges incorporate hook and fleece or adhesive bands or clips in order to form the seam in use.

- 5 Normally, the garment is formed from sheet plastic material cut to appropriately shape in order to present the open seam and in particular the edges appropriately to form the garment in use.

Possibly, the edges of the open seam may overlap for size adjustment in use.

- 10 Possibly, the seam formed in use by the edges is reinforced by appropriate means. Typically, such reinforcement may be through additional patch straps extending across the seam. Furthermore, strengthening ribs or other features may be provided at least on one edge of the formed seam in order to provide greater seam strength in use for the garment.

- 15 Typically, the protective garment comprises one or more of the following:-

- A jacket or torso smock;
- A pair of trousers or leggings;
- A waist coat;
- A boiler suit;
- 20 • Dungarees.

Also in accordance with the present invention, there is provided a method of making a protective garment comprising the following steps.

Cutting a flat sheet of material to define the open garment shape, forming or securing fixing means upon appropriate edges of that flat formed garment in

order that when such edges are brought into association, a garment is formed for appropriate protection.

Normally, the sheet material is a plastic. Typically, the fixing means comprises an adhesive or hook and fleece or interlocking edge in order to form the garment.

Possibly, the edges of the open seam which form the formed seam in use may be arranged whereby once formed then it is not possible to release that formed seam such that the garment is then ripped from the user for appropriate disposal.

Embodiments to the present invention will now be described by way of example and with reference to the accompanying drawings in which:-

Fig. 1 is a schematic front view illustrating protective garments in the form of leggings and a torso smock;

Fig. 2 is a schematic plan view of a torso smock as depicted in Fig. 1 in an open configuration;

Fig. 3 is a schematic illustration of leggings as depicted in Fig. 1 in an open configuration;

Fig. 4 is a schematic plan view of a first fixing arrangement for an open seam in a formed configuration;

Fig. 5 is an end plan view of a second fixing arrangement for an open seam in a formed configuration; and,

Fig. 6 is a schematic plan view of a third fixing arrangement for an open seam in a formed configuration.

The present invention relates to protective garments for a user performing dirty operations such as cleaning etc. Typically, these operations do not require a waterproof or complete protection to the user but simply acts as a barrier to prevent dirt and other ingress of dust etc upon the user's clothing.

5 Fig. 1 provides a schematic front view of a suit 1 which provides by combining leggings 2 and a torso smock 3 protection to a user. It will be appreciated that a user will locate the leggings 2 by extending their legs through the respective sleeve enclosing formed such that as illustrated by broken line 4, their feet project beyond bottom openings 5. As indicated above, there can be
10 problems in opening the leggings 2 to allow insertion of a user's legs. Similarly, with regard to the protective torso smock 3, generally, the user's head and torso is entered through an opening 6 such that the head eventually projects through a collar 7 whilst the arms extend through sleeves 8. It will be understood that when locating the smock 3 over a user, there is a possibility for the seams to be burst
15 by the necessity of manipulation in order to allow the user's arms to extend through the sleeves 8. Generally in use, the bottom opening 6 will extend over a waist 9 of the leggings 2 in order to provide protection for a user's midriff.

As indicated previously, protective garments such as leggings 2 and smock 3 were normally forwarded from respective sheets of plastic material
20 placed one on top of the other in order that the front and back portions of the garments 2, 3 are cut and welded along respective seams 10, 11, 12, 13. In such circumstances, the garments 2, 3 may be rapidly made and formed from relatively cheap materials such that the garments 2, 3 are disposable, light in use and readily distributed but with user problems with respect to location of the
25 garments about themselves in use.

Figs. 2 and 3 illustrate similar smock and legging protective garments to those depicted but formed in accordance with the present invention. In Fig. 2, a protective torso smock 21 is illustrated in which a flat sheet of typically plastic material is press cut in order to provide a flat open formation as illustrated. Thus,
30 a collar 27 is formed with an aperture whilst respective open seams 22, 23 have

edges which in use are brought together in order to form the protective garment as a torso smock. These open seam edges 22a, 22b, 23a, 23b incorporate fixing means. These fixing means as indicated later with respect to Fig. 4, 5, 6 may be of a number of forms such that in use the garment can be formed about a user.

5 In the embodiment depicted in Fig. 2, a fold seam 17 is provided about which the respective smock front 21a and back 21b fold in order to form the garment by securing the edges 22a, 23a to edges 22b, 23b respectively together. However, it will also be understood that this fold seam 17 itself may be formed from an open seam combination of edges in which fixing means are used in order
10 to define the flat garment shape as depicted in Fig. 2 which can then be located over a user's head in order to allow the respective seam edges 22, 23 to be secured together in order to provide an appropriate protective garment.

Fig. 3 is a schematic front view of a legging protective garment 32 in an open configuration in accordance with the present invention. Thus, the garment
15 32 comprises a front 32a and a back 32b formed by press cutting a flat sheet of material such as a plastics material. In the embodiment illustrated in Fig. 3, a fold seam 37 is provided about which the parts 32a, 32b may pivot and fold in order to form the garment by securing open seam edges 30, 31 together in use to form the garment 32. However, it will be understood that the folding seam 37 itself
20 could be formed as an open seam in which respective edges are brought together and fixed by appropriate fastening means in order to constitute the plan open shape as depicted in Fig. 3 and so enable a user to secure the legging garment 32 appropriately in use. The edges 30a, 30b, 31a, 31b are respectively formed such that these edges can be secured together in use to form the
25 garment. Fastening or fixing arrangements for such association in order to form a seam in use for the garment 32 are described later with respect of Figs. 4, 5 and 6. In use, the parts 32a, 32b formed about a folding edge 37 or as independent components pressed cut to an appropriate shape. Suitable fastening means is attached to one or both sides 30a, 30b, 31a, 31b of the open

seam such that in use, these edges 30, 31 can be brought together to form the garment.

By having an appropriate open configuration as depicted in Figs. 2 and 3, it will be understood it is far easy to locate the garments 22, 32 about a user's person for appropriate location and with less struggle such that the possibility is reduced of structural damage to the barrier created by the plastic material from which the parts 22a, 22b and 32a, 32b are formed.

It will be appreciated that the open seams formed by edges 22, 23; 30, 31 may be of such a nature that once formed, they are not readily releasable such that the formed garments may then be tear released from the user for appropriate disposal in a similar manner to previous disposable protective garments in which the seams were welded together upon forming the garment during the press cutting process.

As indicated above, Figs. 4, 5 and 6 respectively illustrate alternative embodiments of fastening arrangements for the open seam edges 22, 23; 30, 31 of the garment 22, 32 described above.

Fig. 4 is a schematic plan view of a portion of open seam edges in an overlapped configuration illustrative of a first embodiment of a fixing arrangement in accordance with the present invention. Thus, a first edge 40a overlaps a second edge 40b (shown in broken line) with an adhesive between them to secure such overlap configuration. In such circumstances, it will be appreciated that a fixing arrangement is provided whereby a closed seam can be provided from the open seam edges in use by a user in order to provide or form the protective garment in accordance with the present invention. The adhesion in the overlap portion 41 between the edges 40a, 40b may be provided by provision of a continuous adhesive along the edges 40a, 40b or spots of such adhesive or by securing an adhesive tape to one or both edges 40a, 40b and extending as a band inwards from that edge 40a, 40b. In such circumstances, in order to form a seam in use from the edges 40a, 40b, it will be understood that these edges 40a,

40b will be brought into an overlapped relationship and pressed in order to provide a sufficiently secure fastening between the edges 40a, 40b to form the protective garment in use. In order to further improve the strength of fastening between the edges 40a, 40b reinforcing straps or patches 42 may be additionally
5 located over the overlapping edges 40a, 40b to provide greater strength of association. Such patches may also be used in association with other means of fastening as described later and as otherwise.

Fig. 5 is a schematic end plan view of a second fixing arrangement in accordance with the present invention. Thus, edges 50a, 50b are curled and
10 possibly incorporate some means of adhesive or interference fit between the interlocking curls in order to provide a secure location between the edges 50a, 50b of an open seam in accordance with the present invention. In use, the edges 50a, 50b will be brought into overlapping and interlocking engagement in order to form the seal and so define the protective garment.

15 Fig. 6 is a schematic front view of a third embodiment of a fixing arrangement in accordance with the present invention. Thus, edges 60a, 60b of an open seam are arranged in an overlapping configuration with patches of hook and fleece fastenings secured between them in an overlapping band 61. It will also be understood that there will be a continuous band of hook and fleece
20 fastening (Velcro) or patches securing the edges 60a, 60b together to form a seam which defines the garment. In such circumstances, the edges 60a, 60b will be presented together by the user and then pressed in order to cause association between the respective hook and fleece sides of the fastening arrangement in order to define the seam.

25 For convenience, a protective garment in accordance with the present invention will be formed by a method by which a flat single sheet of material is press cut or otherwise shaped as a preform for the protective garment. Most conveniently, these press cut shapes will be as depicted in Figs. 2 and 3 with a foldable seam 17 or 37 such that a single component is provided. However, as
30 indicated, the folding seam 17 itself may be open such that use of appropriate

fastening arrangements may be used in order to define that folding seam 17, 37 in accordance with the present invention. Once press cut, the protective garment precursor or preform will then have one or more opposed edges of the open seams incorporated with a fastening arrangement element whereby those open
5 seams can be closed in order to define the garment by the user. Thus, as indicated adhesive or adhesive strips or Velcro or overlapping curled hook edges can be provided such that the user can define a formed seam from the open seam edges as required in use. These fastening means may be "one shot" such that once the open seam is closed by association between opposed edges, those
10 edges cannot then conveniently be released so the garment can be removed as a defined unit or rip released as required for appropriate disposal. It will be understood that the press cutting and association of the fastening arrangement elements can all be performed in a single operation in an appropriate machine. The protective garment will then be folded and packaged for appropriate
15 distribution. The garments may be secured upon a roll or in individual packets.

Although described with regard to a torso smock and leggings it will be appreciated that the present invention may also be applied to a protective garment in the form of a jacket, a waist coat, a boiler suit or dungarees etc.

Whilst endeavouring in the foregoing specification to draw attention to
20 those features of the invention believed to be of particular importance it should be understood that the Applicant claims protection in respect of any patentable feature or combination of features hereinbefore referred to and/or shown in the drawings whether or not particular emphasis has been placed thereon.

CLAIMS

1. A protective garment comprising at least one open seam for each garment enclosure, each open seam comprising cooperative edges in order to provide a formed seam to form the garment being used.
- 5 2. A garment as claimed in claim 1 wherein the cooperative edges incorporate hook and fleece or adhesive bands or clips in order to form the seam in use.
- 10 3. A garment as claimed in claim 1 or claim 2 wherein the garment is formed from sheet plastic material cut to appropriate shape in order to present the open seam and in particular the cooperative edges appropriately to form the garment in use.
4. A garment as claimed in any of claims 1 to 3 wherein the cooperative edges of the open seam overlap for size adjustment in use.
- 15 5. A garment as claimed in any preceding claim wherein the seam formed in use by the cooperative edges is reinforced by appropriate reinforcement means.
6. A garment as claimed in claim 5 wherein such reinforcement means comprises additional patch straps extending across the seam.
- 20 7. A garment as claimed in any preceding claim wherein strengthening ribs or other features are provided at least on one edge of the formed seam in order to provide greater seam strength in use for the garment.
8. A garment as claimed in any preceding claim wherein the protective garment comprises one or more of the following:-
 - A jacket or torso smock;

- A pair of trousers or leggings;
- A waist coat;
- A boiler suit;
- Dungarees.

5 9. A protective garment substantially as hereinbefore described with reference to the accompanying drawings.

10 10. A method of making a protective garment comprising the following steps, cutting a flat sheet of material to define the open garment shape, forming or securing fixing means upon appropriate cooperative edges of that flat formed garment in order that when such edges are brought into association a garment is formed for appropriate protection.

11. A method as claimed in claim 10 wherein the sheet material is a plastic which is press cut to define the shape.

15 12. A method as claimed in claim 10 or claim 11 wherein the fixing means comprises an adhesive or hook and fleece or interlocking edge in order to form the garment.

20 13. A method as claimed in any of claims 10, 11 or 12 wherein the edges of the open seam which form the formed seam in use may be arranged whereby once formed then it is not possible to release that formed seam such that the garment is then ripped from the user for appropriate disposal.

14. A method of making a protective garment substantially as hereinbefore described with reference to the accompanying drawings.

15. Whilst endeavouring in the foregoing specification to draw attention to those features of the invention believed to be of particular importance it should be understood that the Applicant claims protection in respect of any patentable feature or combination of features hereinbefore referred to and/or shown in the
5 drawings whether or not particular emphasis has been placed thereon.



INVESTOR IN PEOPLE

Application No: GB 0318301.9
Claims searched: 1-14

Examiner: Alex Littlejohn
Date of search: 22 October 2003

Patents Act 1977 : Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance	
X	1-6,8, 10-12	EP 0336271 A	(Safet) see whole document
X	1-6,8, 10-12	WO 96/18315 A	(Portessa) see whole document
X	1-4,8, 10-12	DE 3820716 A	(Schmidt) see whole document
X	1-4,8, 10-12	DE 29803290 U	(Anstotz) see whole document
X	1-4,8, 10-12	FR 2543802 A	(Martin) see whole document
X	1-4,8, 10-12	US 4258440	(McGowan) see whole document

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^V:

A3V

Worldwide search of patent documents classified in the following areas of the IPC⁷:

A41B, A41D, A42B

The following online and other databases have been used in the preparation of this search report:

EPODOC, JAPIO, WPI