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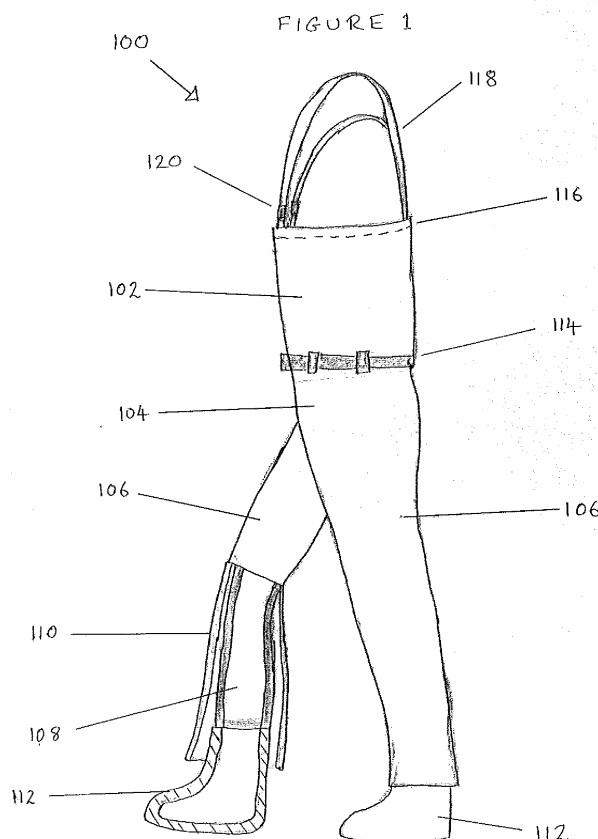
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(54) **Waders**

(57) Waders (100) comprising an upper body section (102), lower body section (104), upper leg sections (106), lower leg sections (108) and sock sections (112), wherein the wader (100) comprises at least one of a waist con-

striction (114) and a chest constriction (116) adapted to impede ingress of fluid into the waders (100) during use, and the sock sections (112) are adapted to compress against the feet of a wearer during use. The waders (100) may further be provided with a wading jacket (150).



Description

[0001] The present invention relates to waders, and more particularly to waders suitable for use in hazardous environments.

BACKGROUND

[0002] Waders are widely used by fishermen and emergency workers in flood disasters. A common type of wader is the chest height wader, which is a pair of waterproof trousers that extend to the upper chest region and armpit of a wearer and are held up by a pair of braces.

[0003] Broadly, two different designs of foot arrangement are known for waders, being the stocking-foot type and the boot-foot type of wader. In the case of the stocking foot type, the wader is provided with a thin integrated sock region for wearing within boots, such as wellington boots or working boots. In the case of the boot-foot type, the wader comprises a pair of robust boots sealed to waterproof trousers to prevent the ingress of water. Exemplary stocking-foot waders are disclosed in US6154884, and boot-foot waders are disclosed in GB178619.

[0004] In both fishing and emergency work waders are worn in various hazardous situations, with many instances of drowning occurring annually around the world. Potential hazards including water currents, rising water levels, water contamination, unseen foot hazards such as trip hazards, unexpected changes in water depth, and sources of entrapment of the wearer's feet.

[0005] One cause of drowning results from water flowing into the waders and becoming trapped therein, preventing the wearer from rising out of the water, and enabling the wearer more easily to be dragged down beneath the surface. A further cause of drowning is that after falling-over the wearer can become inverted, in which case air trapped within the waders provides rises to the feet of the wearer trapping the wearer upside down with the wearer's head beneath the water. The risk of entrapment of air is especially problematic within the boot of boot-foot waders or within the loose fabric of the sock section of stocking-foot waders.

[0006] Escaping from the waders is commonly the only solution for a wearer encountering such dire situations. However, escaping from the waders can be hampered by the difficulty of removing the wearer's feet from the boots. Further, escaping from the waders or wader boots typically leaves the wearer at risk of contamination from the water and exposure from cold.

[0007] A yet further cause of drowning is that a wearer's foot may become trapped in an underwater obstruction (such as a drain) preventing the wearer from escaping a rising water level. In the case of boot-foot waders removal of the feet from the integrated boots can be difficult.

[0008] Various prior art proposals have sought to address some of the above difficulties.

[0009] US4117609 discloses a rip-cord running the length of a boot-foot wader, and in operation leaving the wearer exposed to the surrounding water.

5 [0010] US3154800 and GB2387572 disclose waders having built in buoyancy, which will restrict the wearer's movement in general use, but will not prevent the ingress of water.

[0011] US3465375 discloses a system intended to provide both buoyancy at the top of the waders and to seal around the top of the waders to prevent ingress of water between the waders and the wearer's body. However, flooding of waders can occur suddenly, and it is likely that significant water will already have entered the waders before the wearer has reacted and brought about inflation of inflatable buoyancy region.

15 [0012] US20040133960 discloses an all in one boot-foot wader suit. However, such a suit is difficult to remove in the event that a boot should become trapped by a submerged obstacle.

20 [0013] Diving drysuits typically have integrated sturdy soled boots sealed to the leg sections, and air-tight cuffs around the wrist and neck. However, such drysuits are also difficult to remove in the event of a foot becoming trapped.

25 [0014] A further disadvantage of the known designs is that they are bulky in storage, for example within the confined space of a vehicle such as a fire engine.

30 [0015] Disadvantageously, stocking-foot waders are not adapted for wearing with a choice of ankle boots and knee high boots. Such stocking-foot waders do not allow the easy removal of the boots.

SUMMARY OF THE DISCLOSURE

35 [0016] The present invention seeks to overcome at least some of the disadvantages of known waders.

[0017] The present invention provides waders comprising:

40 an upper body section, lower body section, upper leg sections, lower leg sections and sock sections, wherein the wader comprises at least one of a waist compression region and a chest compression region adapted to impede ingress of fluid into the waders during use, and

45 the sock sections are adapted to compress against the feet of a wearer during use.

[0018] Advantageously, the waders prevent or impede the ingress of water. Further advantageously, the waders prevent entrapment of air, thereby diminishing the risk of inversion of the wearer. Yet further the wader provides the wearer with the choice of wearing ankle height boots or knee high boots.

55 [0019] Further, advantageously, the waders of the present invention are light-weight, readily cleanable, readily transportable, flexible, compact, easy to put on, easily removable, enables quick and easy removal of the

boots should the wearer get a foot trapped, and keep the wearer dry in the event that a boot requires to be removed. Advantageously, the seals of the neck region, waist band and arm cuffs of the wading jacket prevent ingress of water into the jacket in the event of immersion, and thereby further impede the ingress of water into the waders.

[0020] The waders may comprise both a waist compression region and a chest compression region adapted to impede ingress of fluid into the waders during use.

[0021] The waders may be provided with a gaiter surrounding the lower leg section and sealed to the upper leg section.

[0022] The waist compression region may be an elasticated region. The waist compression region may be a belt. The chest compression region may be an elasticated region.

[0023] The waders may be provided with braces for suspending the waders from the shoulders of a wearer.

[0024] The waders may further comprise a wading jacket. The wading jacket may be provided with a compressive neck band, compressive waist band, compressive arm cuffs.

BRIEF DESCRIPTION OF THE DRAWINGS

[0025] Embodiments of the invention are further described hereinafter with reference to the accompanying drawings, in which:

- Figure 1 shows a partially cut-away side view of waders according to the present invention;
- Figure 2 shows front view of waders according to the present invention;
- Figure 3 shows front view of a jacket according to the present invention;
- Figure 4 shows rear view of a jacket according to the present invention.

DETAILED DESCRIPTION

[0026] Like numbers refer to like elements throughout.

[0027] Waders 100 of the present invention are illustrated in Figures 1 and 2. The sock-foot waders 100 comprise a body section having an upper body section 102 and a lower body section 104, leg sections having upper leg sections 106 and lower leg sections 108, over gaiters 110, sock sections 112, belt 114 and corresponding belt loops, elasticated upper edge 116, braces 118, and zip 120. Figure 1 shows one lower leg in a cut-away view to expose the arrangement of layers.

[0028] The upper body section 102, lower body section 104, upper leg sections 106, lower leg sections 108 and sock sections 112 are integrated to form a waterproof stocking-foot wader.

[0029] The elasticated edge 116 forms a seal with the torso of the wearer in use. For example the upper edge may be provided by an elasticated fabric, such as a ne-

oprene™ seal. Advantageously the elasticated upper edge 116 compresses the upper edge of the waders 100 against the torso of the wearer, preventing or substantially impeding the ingress of water in the event that the surrounding water level should cross the upper edge, and thus preventing flooding of the waders.

[0030] The braces 118 support the waders on the wearer and have quick release buckles 122. The braces are elasticated and adjustable. It will be appreciated that by provision of the braces 118 the compress of the elasticated edge 116 need only be sufficient to form a seal against the torso of the wearer, and need not be sufficiently firm to support the weight of the waders 100, which would be uncomfortable to the wearer and restrict chest expansion when the wearer inhales.

[0031] Advantageously the belt 114 provides a further seal between the waders 100 and the torso of the wearer, preventing or substantially impeding the ingress of water in the event that water should penetrate the upper body section 102.

[0032] Alternatively to the belt 114 illustrated, the waders 100 may be provided with an elasticated waist section between the upper body section 102 and the lower body section 104. In a further alternative the belt 114 may be replaced by a drawstring or a Velcro® tightening arrangement to tighten the waders about the wearer.

[0033] The gaiter 110 is elasticated and sealed to the socking-foot wader 100 above the level of the knee of the wearer, and extends to the ankle level of the wearer.

The gaiter 110 may be formed from neoprene™. In use the gaiter 110 is compressive about the lower leg of the wearer, thereby substantially preventing the entrapment of air within the lower leg region of the waders 100. The gaiter 110 may be provided with a hook 124 (Figure 2 only) for attachment of the bottom of the gaiter to the boot.

[0034] In use, the gaiter 110 is rolled up prior to putting on boots, allowing the wearer to put on either ankle height or knee height boots (not shown), and the gaiter is rolled down across the top of the boots to form a guard against the ingress of debris into the boots. The gaiter 110 provides further protection for the lower leg of the wearer against contact of the lower leg with under-water obstacles.

[0035] In an alternative arrangement the gaiter comprises the lower portion of a layer of material running the full length of the legs, being bound to the upper leg section 106 above the knee, and below the knee being unbound from the lower leg section 108. Advantageously such an arrangement would reduce provide enhanced protection to the upper leg regions 106 of the wader 100.

[0036] The sock sections 112 are neoprene™ sock that seals with the lower leg section 108. The sock sections 112 are a compressive fit with the wearer's feet, preventing the entrapment of water within the sock in the event of ingress of water into the wader 100. Also, the compressive fit of the sock sections 112 prevents entrapment of air within the wader 100, thereby providing enhanced stability compared with known waders, and re-

ducing the danger of inversion of the wearer.

[0037] The upper body section 102, lower body section 104, upper leg sections 106, and lower leg sections 108 are formed of waterproof PVC coated nylon. The lower body section 104 and the leg sections 106 and 108 are formed of wear resistant, thick material, e.g. 420 Denier material. The upper body section is formed of thinner material providing enhanced mobility of the wearer, e.g. 210 Denier material. Advantageously, such material is compact and lightweight, in particular compared with garment having corresponding sections formed from neoprene™.

[0038] The zip is formed from polyurethane and is provided with a Velcro® zip lock strap 126. The wader 100 may be provided with pockets 128, reflective strips 130 and a loop 132 for hanging up the suit when not being worn.

[0039] A wading jacket 150 of the present invention is illustrated in Figures 3 and 4. The jacket 150 comprises torso and arm sections, a neck region 152, a waist band 154, arm cuffs 156, and an opening 158.

[0040] The panels of the wading jacket 150 are formed from PVC coated nylon. The neck region 152 has a neoprene™ seal with a Velcro® closure. The opening 158 is a Velcro® opening extending downwardly from the neck 152, and which is sealed behind by a V-shaped piece of waterproof fabric to facilitate donning of the jacket and preventing water ingress.

[0041] The cuffs 156 are neoprene™ seals to prevent ingress of water. The waist band 154 is also a neoprene™ seal, which is provided with Velcro® side adjusters 158.

[0042] Advantageously, the provision of the main panels of the jacket 150 from PVC coated nylon provides a jacket that is more compact than a corresponding jacket would be, if formed entirely from neoprene™.

[0043] The jacket 150 is adapted to be worn with the waders 100 to provide a wading suit. The seals of the neck region, waist band and arm cuffs prevent ingress of water into the jacket in the event of immersion, and thereby further impede the ingress of water into the waders.

[0044] The seams of the waders and wading jacket are taped to provide waterproof seams. Bellows pockets with drainage or safety dump valves may also be provided (not illustrated).

[0045] The figures provided herein are schematic and not to scale.

[0046] Throughout the description and claims of this specification, the words "comprise" and "contain" and variations of them mean "including but not limited to", and they are not intended to (and do not) exclude other moieties, additives, components, integers or steps. Throughout the description and claims of this specification, the singular encompasses the plural unless the context otherwise requires. In particular, where the indefinite article is used, the specification is to be understood as contemplating plurality as well as singularity, unless the context requires otherwise.

[0047] Features, integers, characteristics, compounds, chemical moieties or groups described in conjunction with a particular aspect, embodiment or example of the invention are to be understood to be applicable to any other aspect, embodiment or example described herein unless incompatible therewith. All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive. The invention is not restricted to the details of any foregoing embodiments. The invention extends to any novel one, or any novel combination, of the features disclosed in this specification (including any accompanying claims, abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.

[0048] The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.

Claims

1. Waders comprising:

an upper body section, lower body section, upper leg sections, lower leg sections and sock sections,
wherein the wader comprises at least one of a waist constriction and a chest constriction adapted to impede ingress of fluid into the waders during use, and
the sock sections are adapted to compress against the feet of a wearer during use.

2. Waders according to claim 1, wherein the waders comprise both a waist compression and a chest compression adapted to impede ingress of fluid into the waders during use.

3. Waders according to claims 1 or 2, wherein the waders are provided with a gaiter surrounding the lower leg section and sealed to the upper leg section.

4. Waders according to any one of claims 1 to 3, wherein the waist compression region is an elasticated region.

5. Waders according to any one of claims 1 to 3, wherein the waist compression region is a belt.

6. Waders according to any preceding claim, wherein the chest compression region is an elasticated re-

gion.

7. Waders according to any preceding claim, wherein the waders are provided with braces for suspending the waders from the shoulders of a wearer. 5
8. Waders according to any preceding claim further comprising a wading jacket.
9. Waders according to claim 8, wherein the wading jacket is provided with a compressive neck band, compressive waist band, compressive arm cuffs. 10
10. Waders substantially as hereinbefore described with reference to the accompanying description and any one of the Figures. 15

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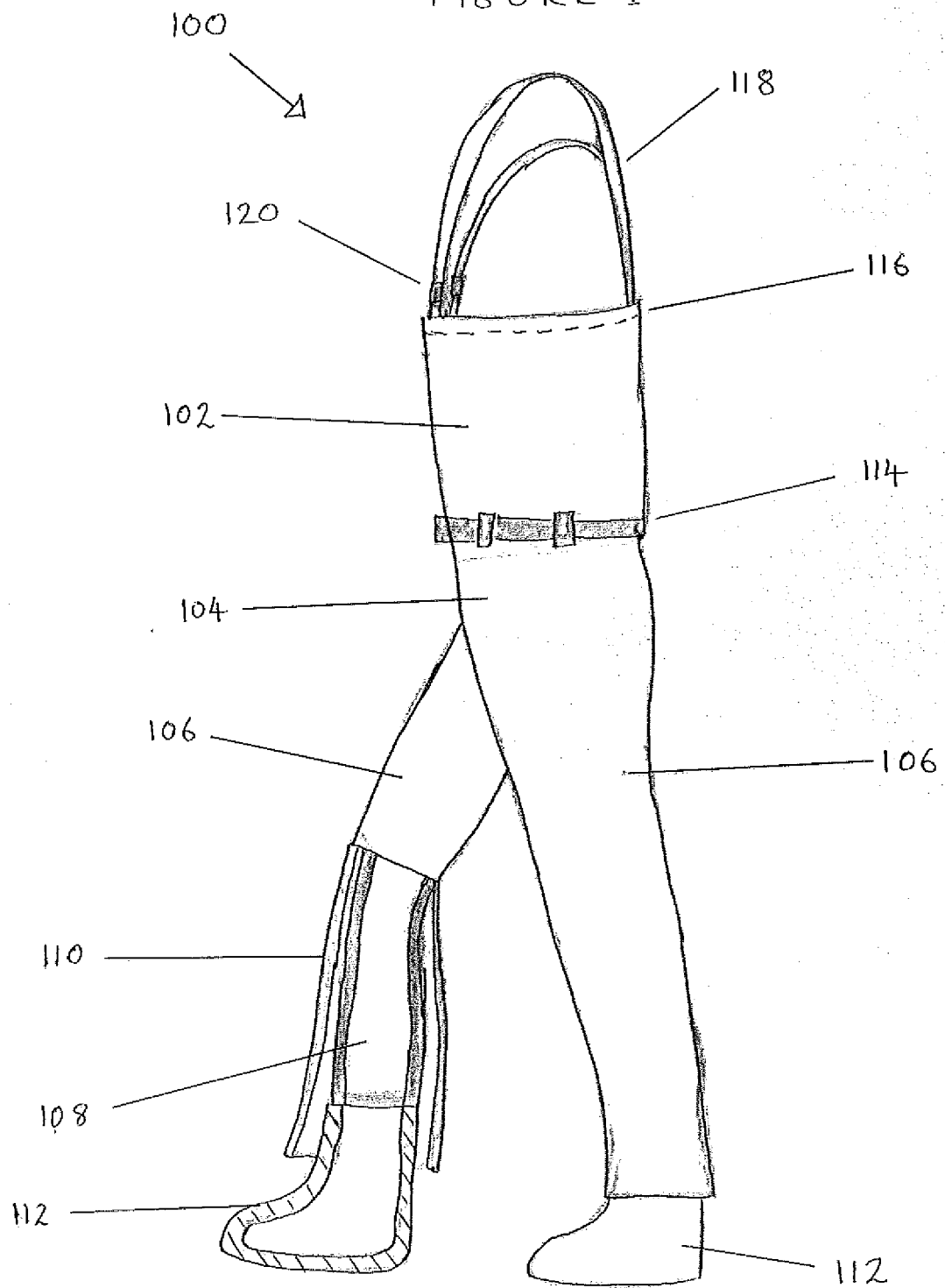
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FIGURE 1



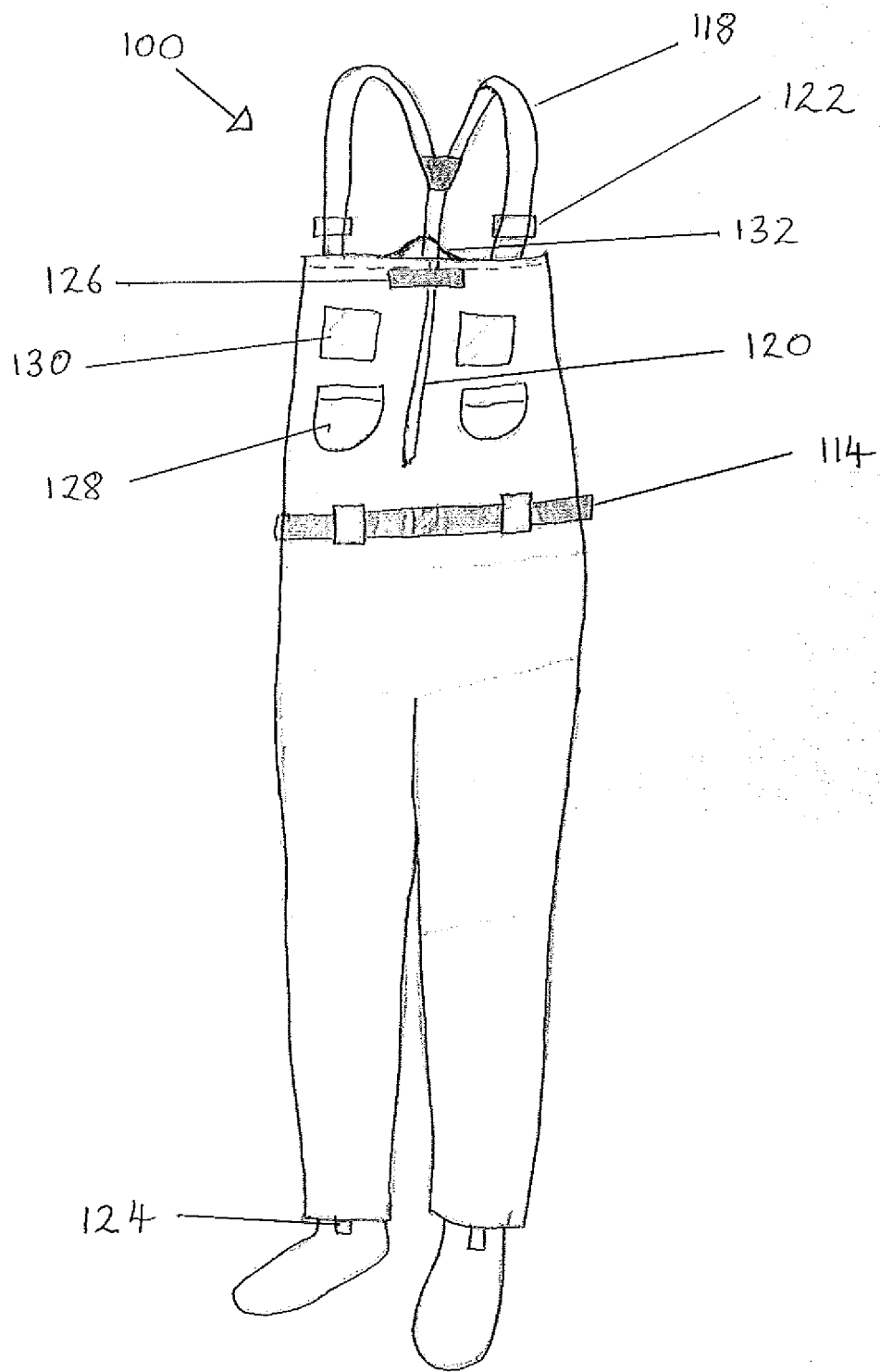


FIGURE 2

FIGURE 3

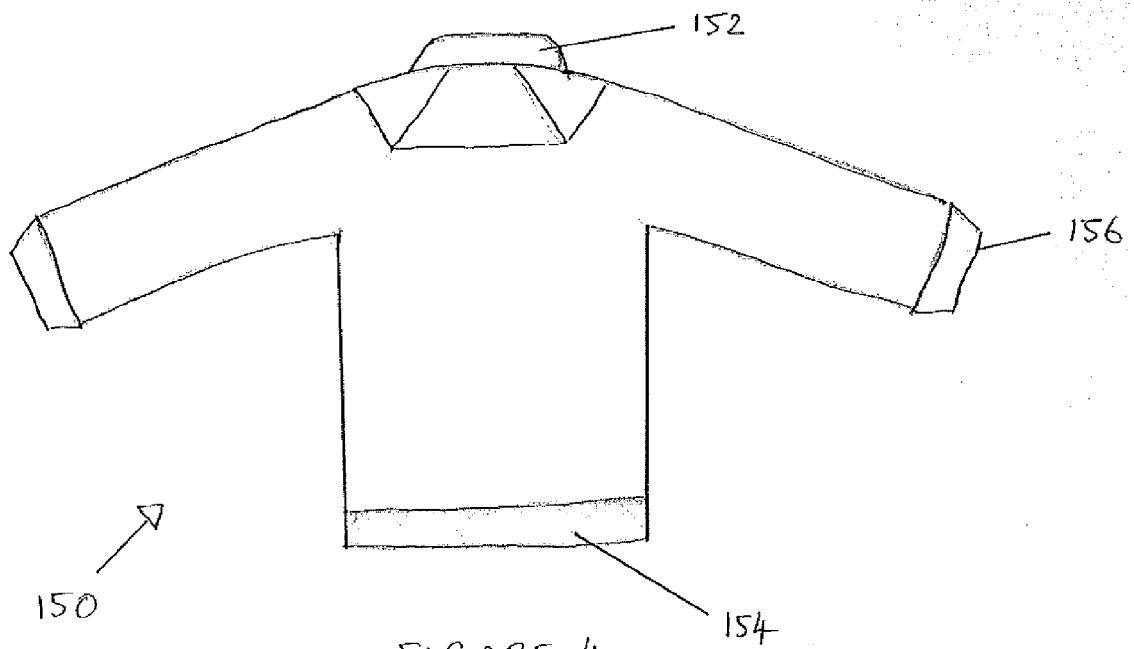
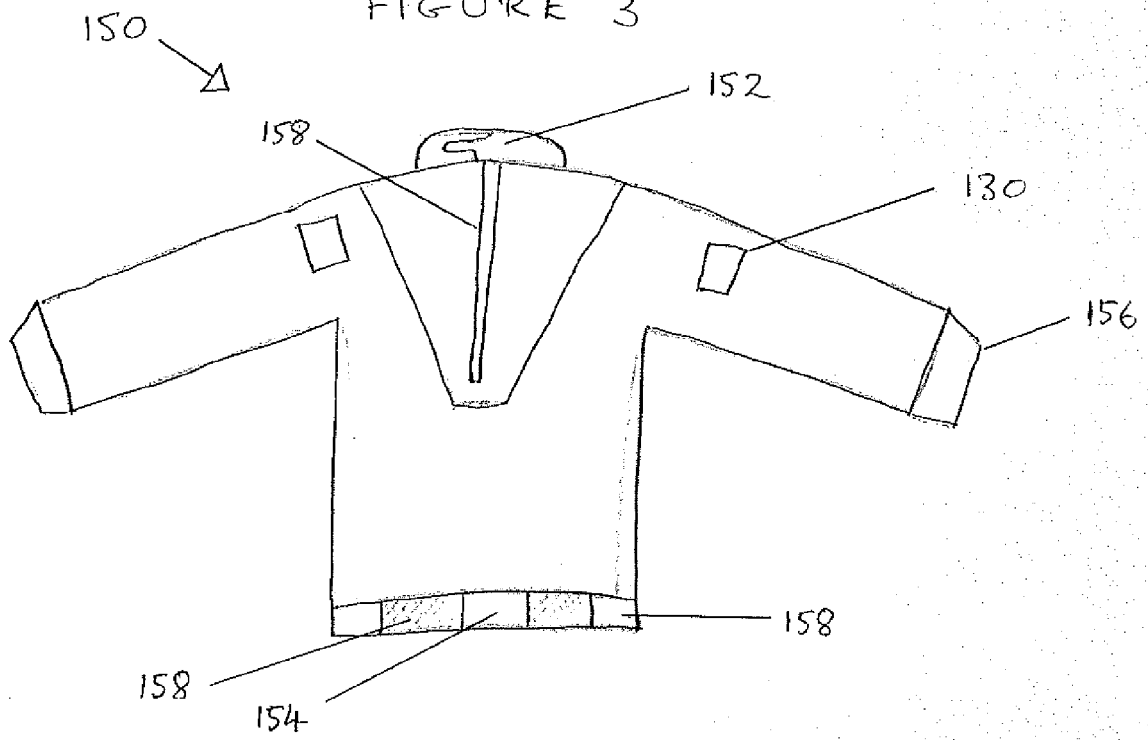


FIGURE 4

REFERENCES CITED IN THE DESCRIPTION

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