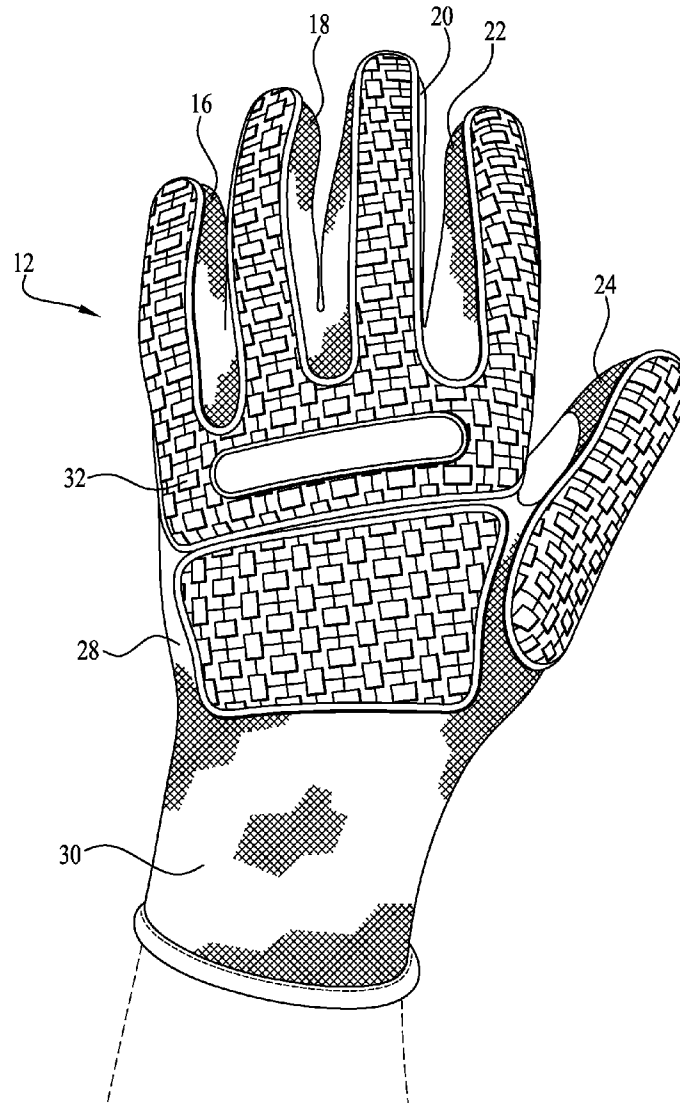




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Sheehy et al.(10) **Pub. No.: US 2016/0029721 A1**(43) **Pub. Date: Feb. 4, 2016**(54) **CONCEALED IMPACT GLOVE****Publication Classification**(71) Applicant: **GROUP INDUSTRY, LLC**, Culver
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A41D 31/00 (2006.01)(72) Inventors: **Brian Hart Sheehy**, Culver City, CA
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OR (US)(52) **U.S. Cl.**
CPC **A41D 19/01505** (2013.01); **A41D 31/0061**
(2013.01)(21) Appl. No.: **14/817,114**(57) **ABSTRACT**(22) Filed: **Aug. 3, 2015****Related U.S. Application Data**(60) Provisional application No. 62/032,745, filed on Aug.
4, 2014.

A glove having an inner glove formed in the shape of a human hand, a protective member secured to the inner glove; and an outer glove attached to at least one of the inner glove and the protective member, the outer glove being formed in the shape of a human hand and configured to fit over the protective member and the inner glove.



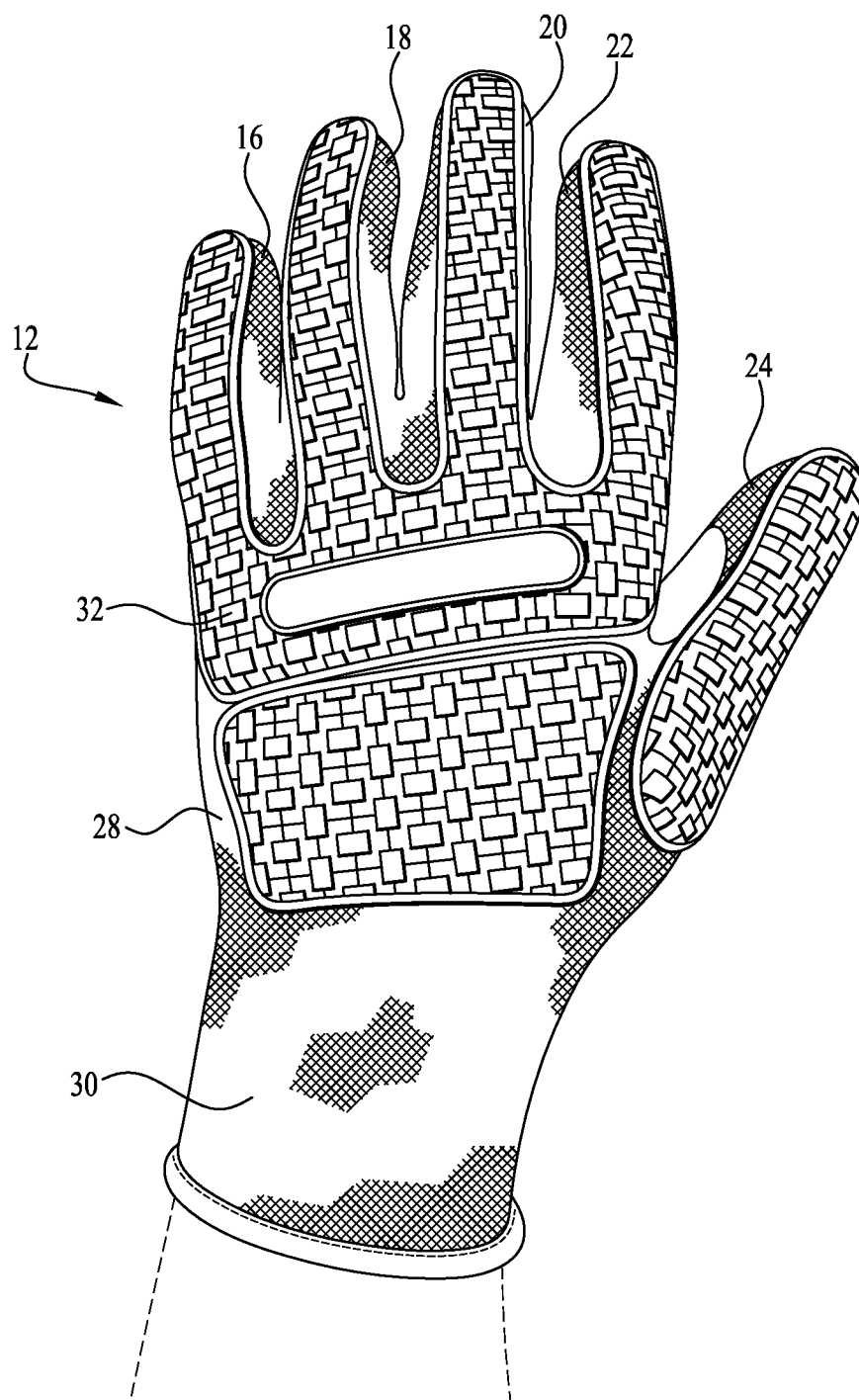


FIG. 1

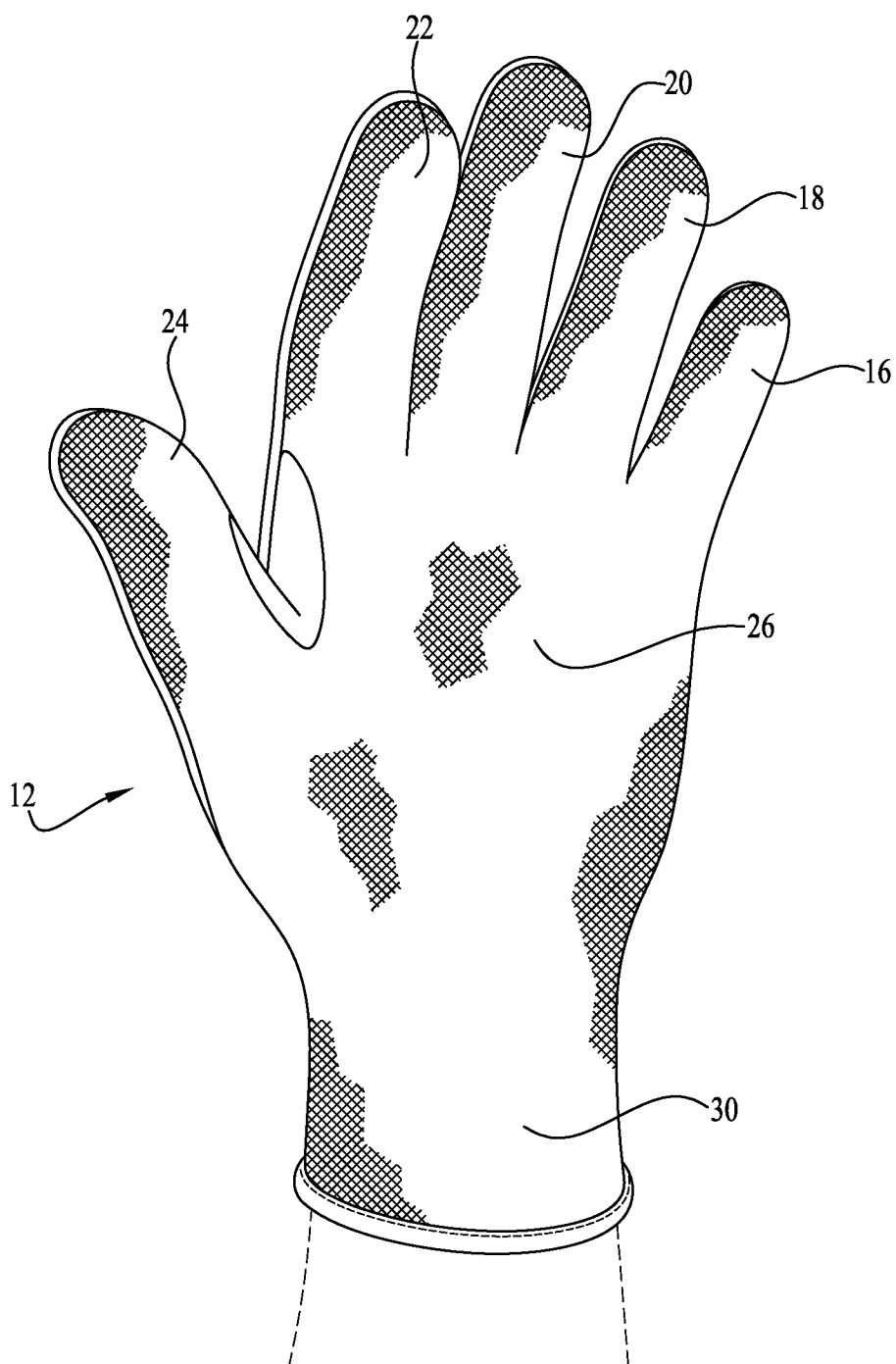


FIG. 2

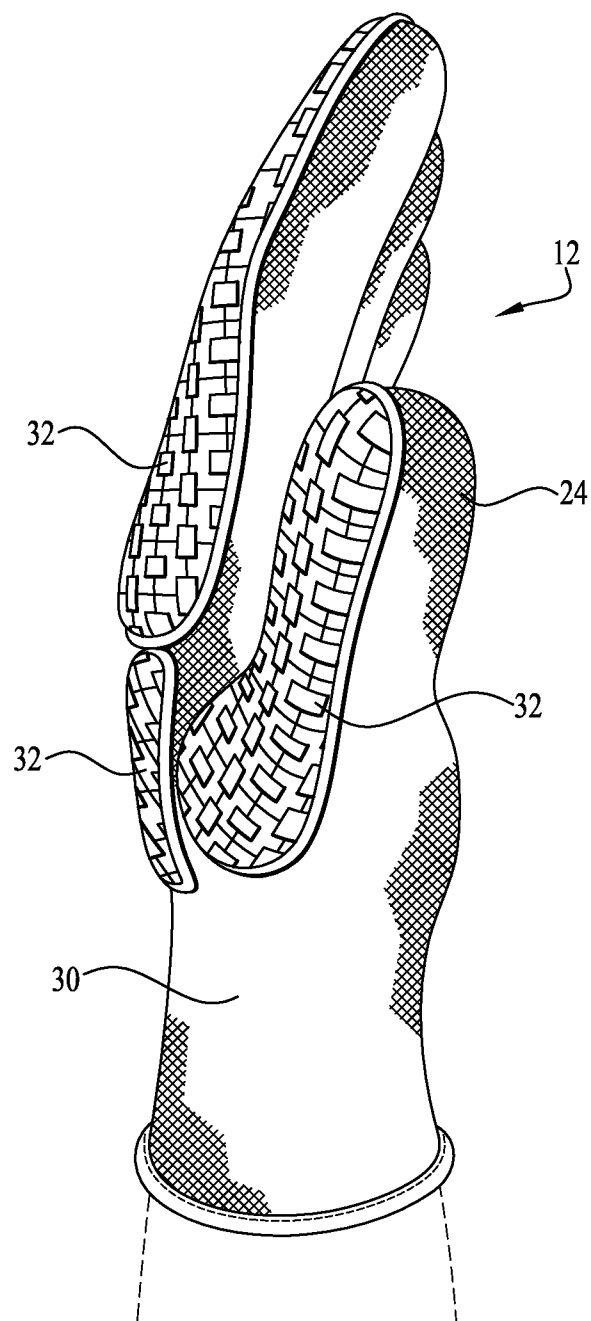


FIG. 3

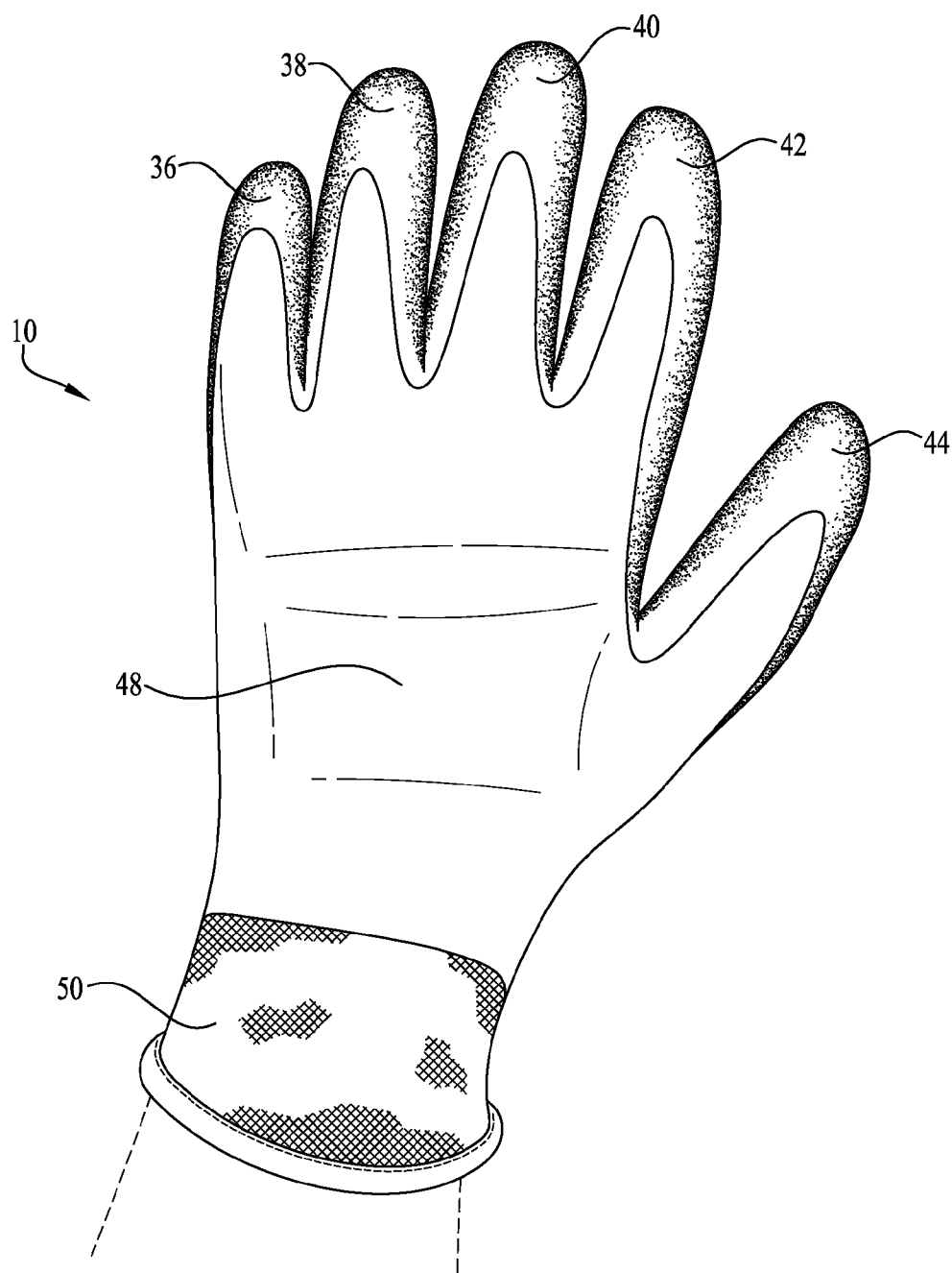


FIG. 4

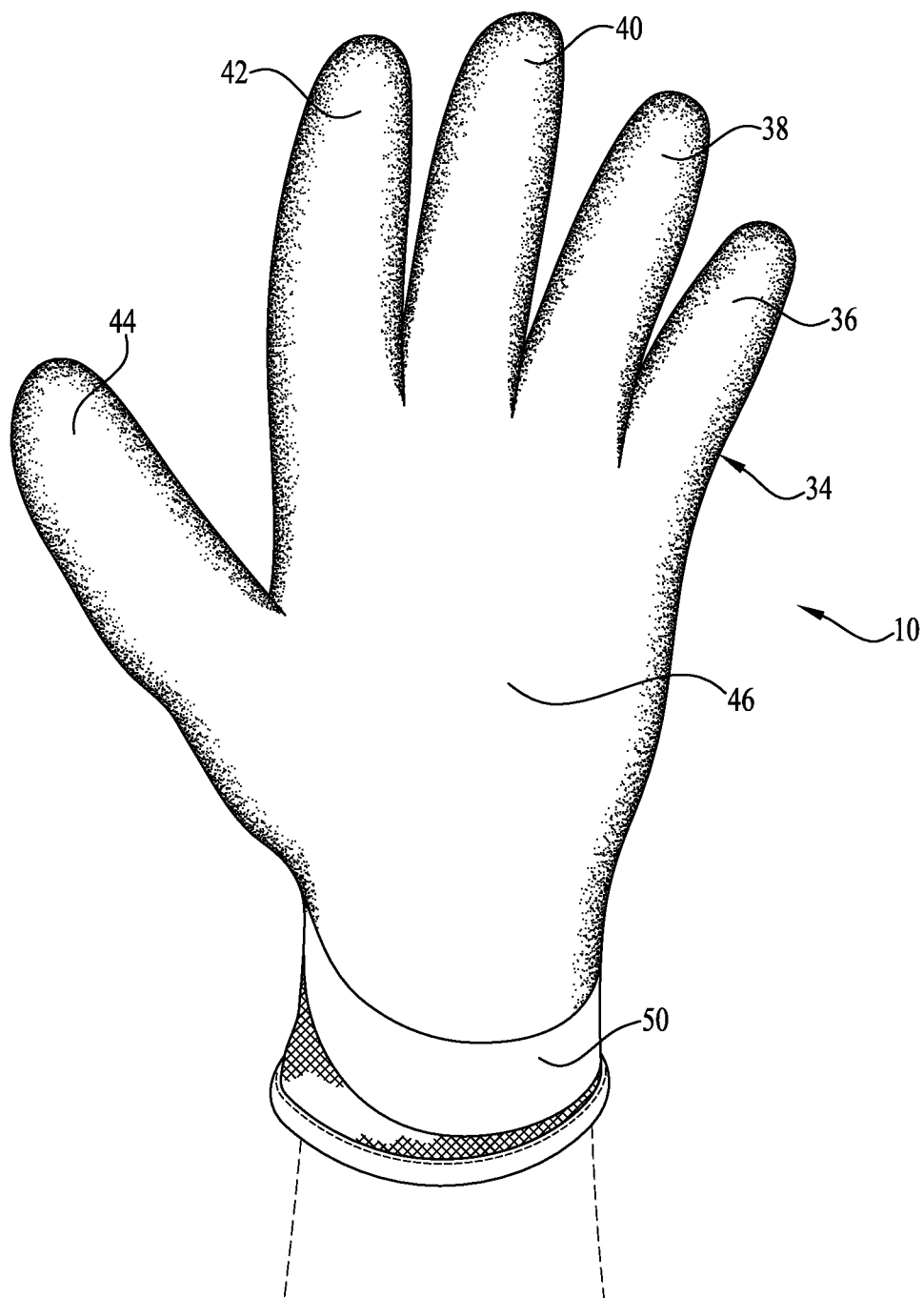


Fig. 5

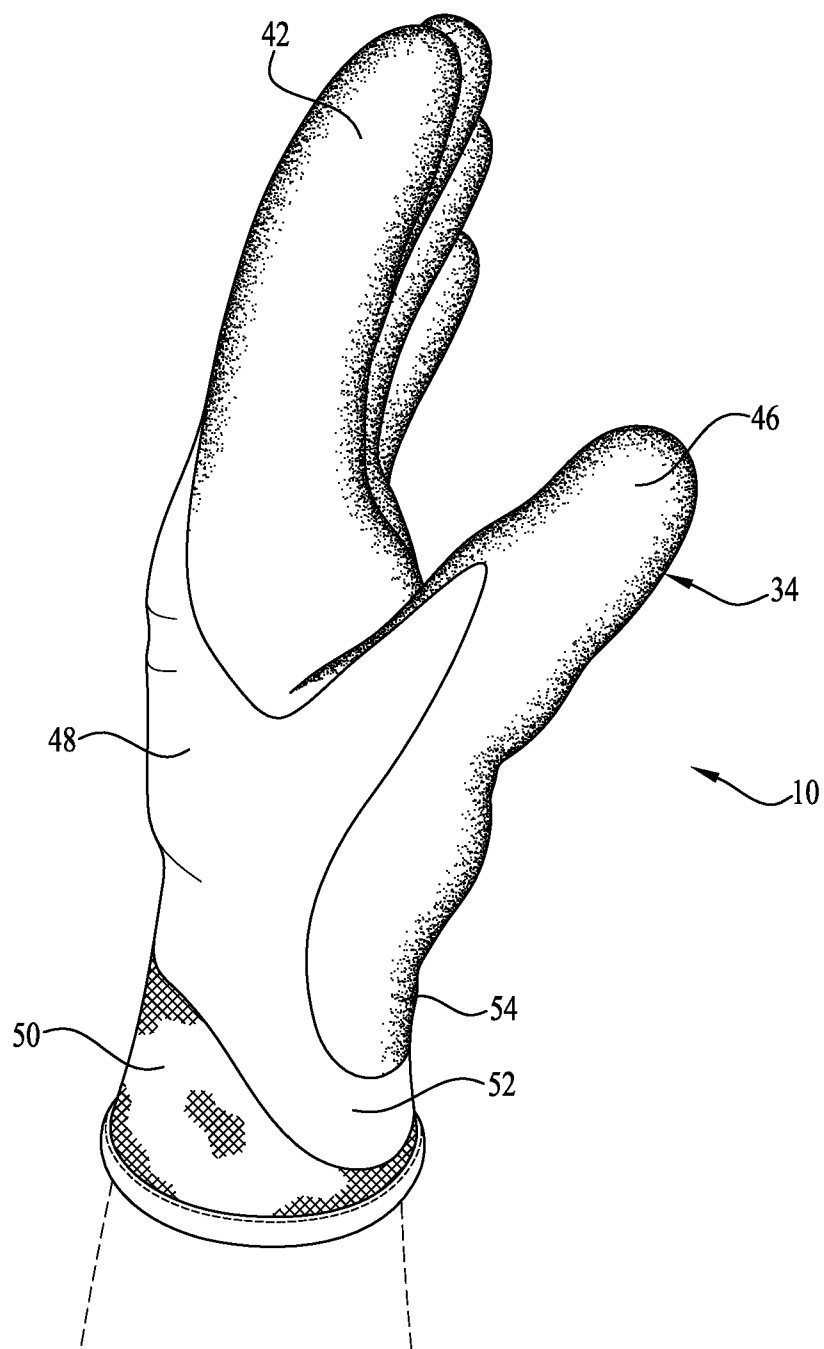


FIG. 6

CONCEALED IMPACT GLOVE

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application claims priority of U.S. Provisional Patent Application No. 62/032,745, filed on Aug. 4, 2014, entitled CONCEALED IMPACT GLOVE, the entire contents of which are hereby incorporated herein by reference.

BACKGROUND

[0002] The present invention relates to gloves and, more particularly, to a covered glove for protecting a wearer against impact.

[0003] In numerous industrial trades, workers run a risk of serious hand injuries. For example, in the oil and gas industry, workers in drilling and exploration are frequent victims of hand injuries. These workers often handle large pipes and heavy tools, such as wrenches. These items are typically used in mud, crude oil and lubricants. The difficulty in securely holding pipes and tools in the presence of mud, crude oil and lubricants often leads to impacts to the dorsal, or back, side of the hand. These impacts often lead to broken bones to the hand and fingers as well as the finger joints.

[0004] Gloves typically worn in the oil and gas industry are either cut and sewn, or knit gloves with an impact protective layer adhered to the exterior dorsal surface of the glove. This construction has several shortcomings. The gloves can be bulky, expensive and may not provide durable impact resistance and waterproofing. Often the impact protection material is not smooth or continuous and therefore snags on tools, machines and clothing, traps debris, and may break or chip when exposed to abrasive contact. Some gloves marketed as waterproof may feature waterproof membranes inside the glove. However, gloves with membranes inside the glove usually still absorb water and other liquids into the glove up to the membrane. While technically waterproof in that a user's hand does not get wet from the elements, the glove can act like a sponge soaking up water and weighing down the hand.

[0005] Thus, there exists a need for improved impact resistant gloves and waterproof gloves that remedy the shortcomings of the prior art.

SUMMARY

[0006] Accordingly, the present invention is directed to improved impact resistant gloves and waterproof gloves. The present invention, according to an embodiment, is directed to a glove comprising: an inner glove formed in the shape of a human hand; a protective member secured to the inner glove; and an outer glove attached to at least one of the inner glove and the protective member, the outer glove being formed in the shape of a human hand and configured to fit over the protective member and the inner glove. In an embodiment, the protective member is configured to protect at least one of metacarpal bones, fingers and a thumb of a wearer. In an additional embodiment, the protective member is configured to protect metacarpal bones, fingers and a thumb of a wearer.

[0007] The protective member may be a continuous piece. Alternatively, the protective member may comprise a plurality of separate pieces. Optionally, the protective member comprises at least one of the group consisting of rubber, silicone, polyvinyl chloride, polyurethane, polymers, plastic, gel, foam, metal, glass fibers, glass beads, carbon and aramid

fibers. Optionally, the thickness of the protective member is between about 0.1 mm and about 20 mm and more preferably between about 0.3 mm and 0.8 mm.

[0008] The inner glove may be a knitted glove comprising at least one material selected from the group consisting of: acrylic thread and high performance polyethylene thread. The outer glove may be a knitted glove comprising at least one material selected from the group consisting of: nylon thread and high performance polyethylene thread. In an embodiment of the present invention, the glove further comprises at least one coating on the outer glove. The coating may be nitrile, latex, polyurethane and neoprene.

[0009] The present invention, according to an embodiment, is also directed to a method for making a glove comprising the steps of: providing an inner glove formed in the shape of a human hand; securing a protective member to the inner glove; and attaching an outer glove formed in the shape of a human hand to at least one of the inner glove and the protective member. The method may further comprise the step of coating the outer glove with a coating.

[0010] The step of attaching the outer glove to at least one of the inner glove and the protective member may further comprise sewing a cuff on the outer glove to a cuff on the inner glove. The step of attaching the outer glove to at least one of the inner glove and the protective member may further comprise the steps of: coating at least one of the inner glove and the protective member with an adhesive; and positioning the outer glove around the inner glove and the protective member such that the adhesive attaches the outer glove to at least one of the inner glove and the protective member.

[0011] Optionally, the step of attaching the outer glove to at least one of the inner glove and the protective member further comprises the step of coating the outer glove with a coating that soaks through the outer glove and bonds the outer glove to the inner glove and the protective member. The method may also comprise the step of sewing a cuff on the outer glove to a cuff on the inner glove to finish the glove.

[0012] The present invention, according to another embodiment, is directed to a glove comprising an inner glove formed in the shape of a human hand, the inner glove comprising at least one material selected from the group consisting of natural fabric and synthetic fabric; a protective member secured to the inner glove, the protective member being configured to protect metacarpal bones, fingers and a thumb; an outer glove attached to at least one of the inner glove and the protective member, the outer glove being formed in the shape of a human hand and configured to fit over the protective member and the inner glove; and a first coating on the outer glove, the first coating being selected from the group consisting of: nitrile and polyvinyl chloride. The glove further comprises a second coating on the first coating, the second coating being selected from the group consisting of sandy nitrile, polyvinyl chloride, polyurethane, latex, silicone and neoprene. The protective member comprises at least one of the group consisting of rubber, silicone, polyvinyl chloride, polyurethane, polymers, plastic, gel, foam, metal, glass fibers, glass beads, carbon and aramid fibers. The outer glove comprising at least one material selected from the group consisting of: natural fabric, synthetic fabric, natural leather, synthetic leather, fire resistant fabric and cut resistant fabric. Optionally, the protective member has a first layer having a first hardness and a second layer having a second hardness, wherein the second hardness is greater than the first hardness.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] The features, aspects and advantages of the present invention will become better understood with regard to the following description, appended claims and accompanying figures wherein:

[0014] FIG. 1 is a perspective elevation view of a back side of an inner glove according to an embodiment of the present invention;

[0015] FIG. 2 is a perspective elevation view of a front side of the inner glove of FIG. 1;

[0016] FIG. 3 is a perspective elevation view of a side of the inner glove of FIG. 1;

[0017] FIG. 4 is a perspective elevation view of a back side of a glove according to an embodiment of the present invention;

[0018] FIG. 5 is a perspective elevation view of a front side of the glove of FIG. 4; and

[0019] FIG. 6 is a perspective elevation view of a side of the glove of FIG. 4.

DETAILED DESCRIPTION

[0020] A glove 10 according to an embodiment of the present invention is shown in FIGS. 1 to 6. As shown in FIGS. 1 to 3, the glove 10 has an inner glove 12 with fingers 16, 18, 20, 22, thumb 24, a front palm portion 26, a back portion 28 and a cuff 30. A dorsal (back) side of the inner glove 12 has a protective member 32 secured to the fingers 16, 18, 20, 22, thumb 24 and the back portion 28 (covering metacarpal bones of a hand). The protective member 32 may be a single continuous piece shaped to fit the fingers, thumb and back portion or may be separate pieces for one or more of the fingers, thumb and back portion. Additionally, the protective member 32 may be segmented to increase flexibility and mobility. There may be spaces between protective member segments, such as over joints.

[0021] The protective member 32 is preferably configured to protect both the metacarpal bones and the phalanges of a wearer as well as the metacarpophalangeal and interphalangeal joints. In an embodiment, the protective member 32 is formed of thermoplastic rubber (TPR). In another embodiment, the protective member 32 is formed of liquid silicone rubber (LSR). The protective member may be made from other materials, such as nitrile butadiene rubber (NBR), polyvinyl chloride (PVC), polyurethane (PU), polymers, rubber, silicone, plastic, gel, foams such as ethylene vinyl acetate (EVA) foams, polyvinyl alcohol (PVA) foams, and memory foams, metal, glass fibers, glass beads, carbon, high strength fibers and aramid fibers and combinations thereof, depending on factors such as, for example, the intended use of the gloves, the flexibility desired by a wearer and the weight desired by a wearer. Additionally, depending on the intended application and user preferences, the protective member may be configured to cover at least a subset of the fingers, thumb, back portion and palm portion.

[0022] Additionally, depending on the intended application and user preferences, the protective member 32 may have multiple layers with different properties. In an embodiment, the protective member 32 comprises an inner layer having a first hardness and an outer layer having a second hardness, the second hardness being greater than the first hardness.

[0023] In an embodiment, the protective member 32 is raised above a dorsal surface of the back portion 28 of the glove for increased protection. The protective member 32

may have a height of between about 0.1 mm and about 20 mm. In a preferred embodiment, the protective member 32 has a height of between about 0.3 mm and about 0.8 mm. The protective member 32 is secured to the inner glove 12 through stitching, heat application, sonic welding, use of an adhesive or other methods known to those of skill in the art.

[0024] As shown in FIGS. 4 to 6, once the protective member 32 is secured to the inner glove 12, an outer glove 34 is placed over both the protective member and the inner glove and secured to at least one of the protective member and the inner glove. Like the inner glove 12, the outer glove 34 is configured with fingers 36, 38, 40, 42, thumb 44, a front palm portion 46, a back portion 48 and a cuff 50. In a preferred embodiment, the outer glove 34 is sized to fit snugly over the inner glove 12 and the protective member 32 to avoid bunching of either the inner or outer gloves. In an embodiment, the outer glove 34 is placed over the inner glove 12 and the protective member 32, and the outer glove cuff 50 is sewn to the inner glove cuff 30 to join the outer glove to the inner glove.

[0025] In an additional embodiment, an adhesive is placed on the inner glove 12 and the protective member 32 prior to the outer glove 34 being placed thereon to bond the outer glove to the inner glove and the protective member. Once the outer glove 34 is placed over the inner glove 12 and the protective member 32, the outer glove cuff 50 is sewn to the inner glove cuff 30 so that the resulting glove 10 looks, fits and feels like a single glove.

[0026] In an additional embodiment, the outer glove 34 is placed over the inner glove 12 and the protective member 32 and the combined gloves are then coated in a polymer. The polymer soaks through the outer glove 34 and bonds the outer glove to the inner glove 12 and the protective member 32.

[0027] The outer glove 34 may have a first coating 52 on part or all of an outer surface to perform one or more functions. In an embodiment, the first coating 52 is nitrile for waterproofing. The outer glove 34 may have more than one coat of waterproofing material, such as for example, smooth nitrile. In addition to nitrile or as an alternative to nitrile, the first coating 52 may comprise a different waterproofing agent, such as polyvinyl chloride (PVC). In an embodiment, at least a portion of the glove, such as the front palm portion 46 of the outer glove 34, has a second coating 54 to impart certain desired characteristics such as, for example, improved grip. In an embodiment, the second coating 54 is sandy nitrile for improving grip. In additional embodiments the second coating 54 may be, for example, polyvinyl chloride (PVC), polyurethane (PU), latex, silicone and neoprene. Coatings may be placed on the outer glove prior to or after assembly of the overall glove 10.

[0028] In an embodiment, the inner glove is a knit glove of natural or synthetic fabric. In an embodiment, the outer glove is a knit glove of natural or synthetic fabric, natural or synthetic leather, fire resistant fabric or cut resistant fabric. In additional embodiments, the inner glove and the outer glove may be made from, for example: acrylic, fleece, wool, nylon, cotton, polyester, High Performance Polyethylene (HPPE), aramids (e.g. Kevlar), and blends of thereof.

[0029] Once assembled, the outer glove 34 conceals the inner glove 12 and the protective member 32. Concealing the protective member 32 makes the glove sleeker in look and performance. The protective member 32 will not snag on tools, machines and clothing, trap debris, or break or chip when exposed to abrasive contact. Also, when the outer glove

34 is coated for waterproofing, any water, oil, grease, or mud will not absorb into the material of the outer glove. Advantageously, the protective member **32** and the inner glove **12** will also be protected from water, oil, grease and mud and this allows for the use of more types of materials for the protective member **32** and the inner glove **12**. Also advantageously, the outer glove **34** allows the impact resistant protection to last as long as the glove's useful life.

[0030] There is disclosed in the above description and the drawings, a glove that fully and effectively overcomes the disadvantages associated with the prior art. However, it will be apparent that variations and modifications of the disclosed embodiments may be made without departing from the principles of the invention. The presentation of the preferred embodiments herein is offered by way of example only and not limitation, with a true scope and spirit of the invention being indicated by the following claims.

[0031] Any element in a claim that does not explicitly state "means" for performing a specified function or "step" for performing a specified function, should not be interpreted as a "means" or "step" clause as specified in 35 U.S.C. §112.

What is claimed is:

1. A glove comprising:
an inner glove formed in the shape of a human hand;
a protective member secured to the inner glove; and
an outer glove attached to at least one of the inner glove and the protective member, the outer glove being formed in the shape of a human hand and configured to fit over the protective member and the inner glove.
2. The glove of claim 1 wherein the protective member is configured to protect at least one of metacarpal bones, fingers and a thumb.
3. The glove of claim 1 wherein the protective member is configured to protect metacarpal bones, fingers and a thumb.
4. The glove of claim 1 wherein the protective member is a continuous piece is configured to protect metacarpal bones, fingers and a thumb.
5. The glove of claim 1 wherein the protective member further comprises a plurality of separate pieces configured to protect at least one of metacarpal bones, fingers and a thumb.
6. The glove of claim 1 wherein the protective member comprises at least one of the group consisting of rubber, silicone, polyvinyl chloride, polyurethane, polymers, plastic, gel, foam, metal, glass fibers, glass beads, carbon and aramid fibers.
7. The glove of claim 6 wherein the protective member has a thickness of from about 0.1 mm to about 20 mm.
8. The glove of claim 6 wherein the protective member has a thickness of from about 0.3 mm to about 0.8 mm.
9. The glove of claim 6 wherein the inner glove is a knitted glove comprising at least one material selected from the group consisting of: acrylic thread and high performance polyethylene thread.
10. The glove of claim 9 wherein the outer glove is a knitted glove comprising at least one material selected from the group consisting of: nylon thread and high performance polyethylene thread.
11. The glove of claim 1 further comprising a coating on the outer glove.
12. The glove of claim 11 wherein the coating further comprises at least one of the group consisting of: nitrile, latex, polyurethane and neoprene.
13. A method for making a glove comprising the steps of:

providing an inner glove formed in the shape of a human hand;

securing a protective member to the inner glove; and

attaching an outer glove formed in the shape of a human hand to at least one of the inner glove and the protective member.

14. The method of claim 13 further comprising the step of coating the outer glove with at least one coating.

15. The method of claim 13 wherein the step of attaching the outer glove to at least one of the inner glove and the protective member further comprises sewing a cuff on the outer glove to a cuff on the inner glove.

16. The method of claim 13 wherein the step of attaching the outer glove to at least one of the inner glove and the protective member further comprises: coating at least one of the inner glove and the protective member with an adhesive; and positioning the outer glove around the inner glove and the protective member such that the adhesive attaches the outer glove to at least one of the inner glove and the protective member.

17. The method of claim 16 further comprising the step of sewing a cuff on the outer glove to a cuff on the inner glove.

18. The method of claim 13 wherein the step of attaching the outer glove to at least one of the inner glove and the protective member further comprises: coating the outer glove with a coating that soaks through the outer glove and bonds the outer glove to the inner glove and the protective member.

19. A glove comprising:

an inner glove formed in the shape of a human hand, the inner glove comprising at least one material selected from the group consisting of natural fabric and synthetic fabric;

a protective member secured to the inner glove, the protective member being configured to protect metacarpal bones, fingers and a thumb;

an outer glove attached to at least one of the inner glove and the protective member, the outer glove being formed in the shape of a human hand and configured to fit over the protective member and the inner glove; and

a first coating on the outer glove, the first coating being selected from the group consisting of: nitrile and polyvinyl chloride; and

a second coating on the first coating, the second coating being selected from the group consisting of sandy nitrile, polyvinyl chloride, polyurethane, latex, silicone and neoprene;

wherein the protective member comprises at least one of the group consisting of rubber, silicone, polyvinyl chloride, polyurethane, polymers, plastic, gel, foam, metal, glass fibers, glass beads, carbon and aramid fibers;

wherein the outer glove comprises at least one material selected from the group consisting of: natural fabric, synthetic fabric, natural leather, synthetic leather, fire resistant fabric and cut resistant fabric.

20. The glove of claim 19 wherein the protective member further comprises a first layer having a first hardness and a second layer having a second hardness, wherein the second hardness is greater than the first hardness.

* * * * *