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(54) PROTECTIVE GLOVE

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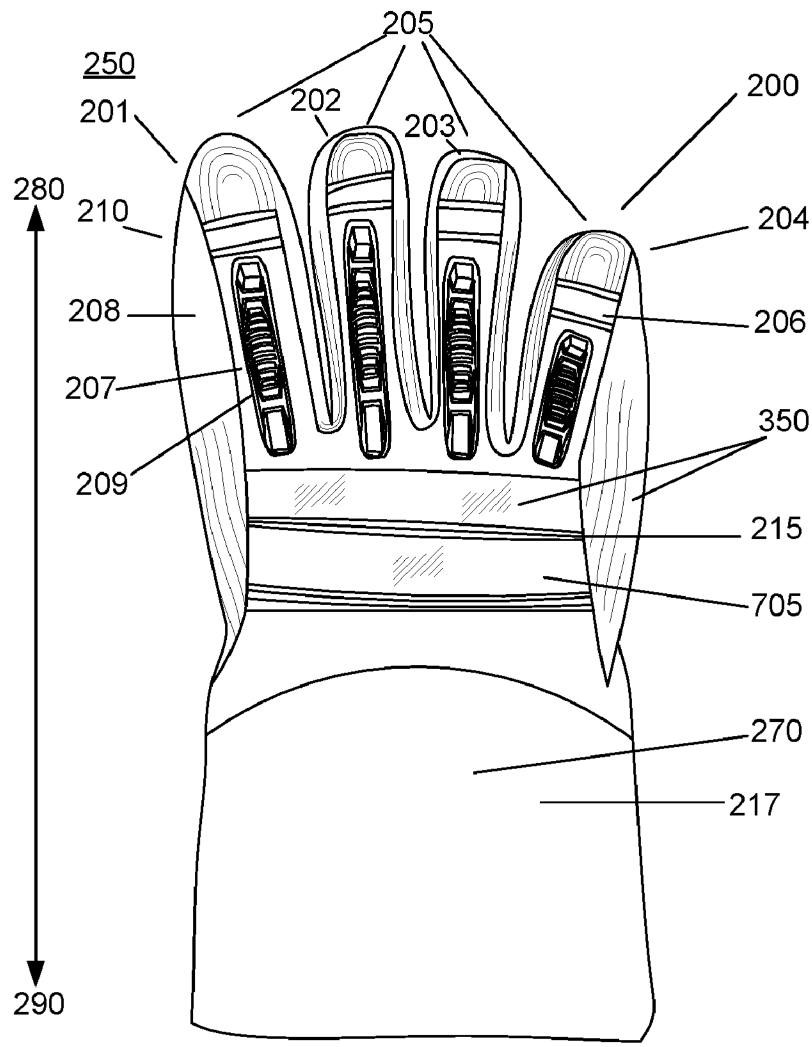
(57) **ABSTRACT**

A protective glove suitable for use in hazardous environments is provided. The glove may include multiple layers, each providing different aspects of protection to the wearer's hands. Multiple layers may include layers that improve grip, protect against cuts and impact, provide breathability, and/or provide waterproof and/or water resistant protection. Additional safety features may include reflective striping and impact disbursement pads and ridges. Further, the glove may be constructed to enhance user dexterity.



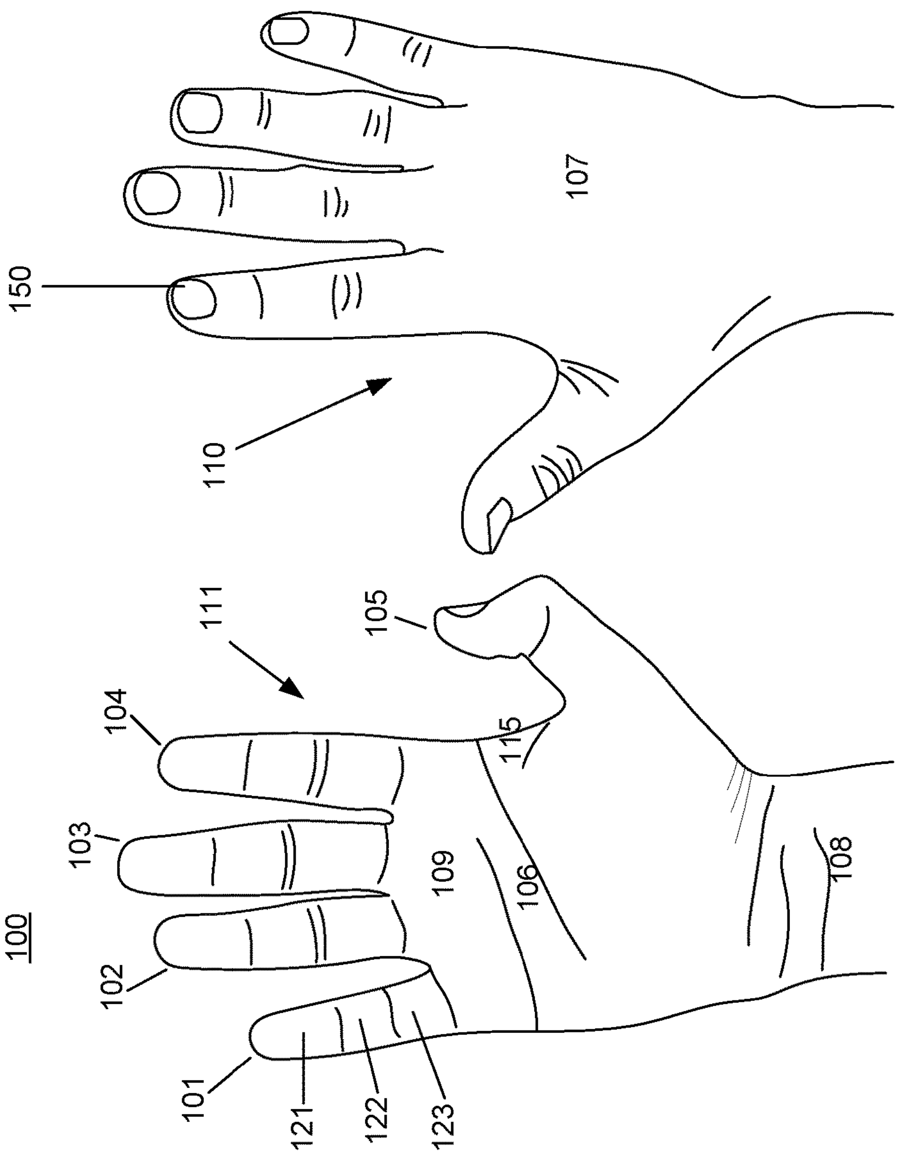

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FIG. 1

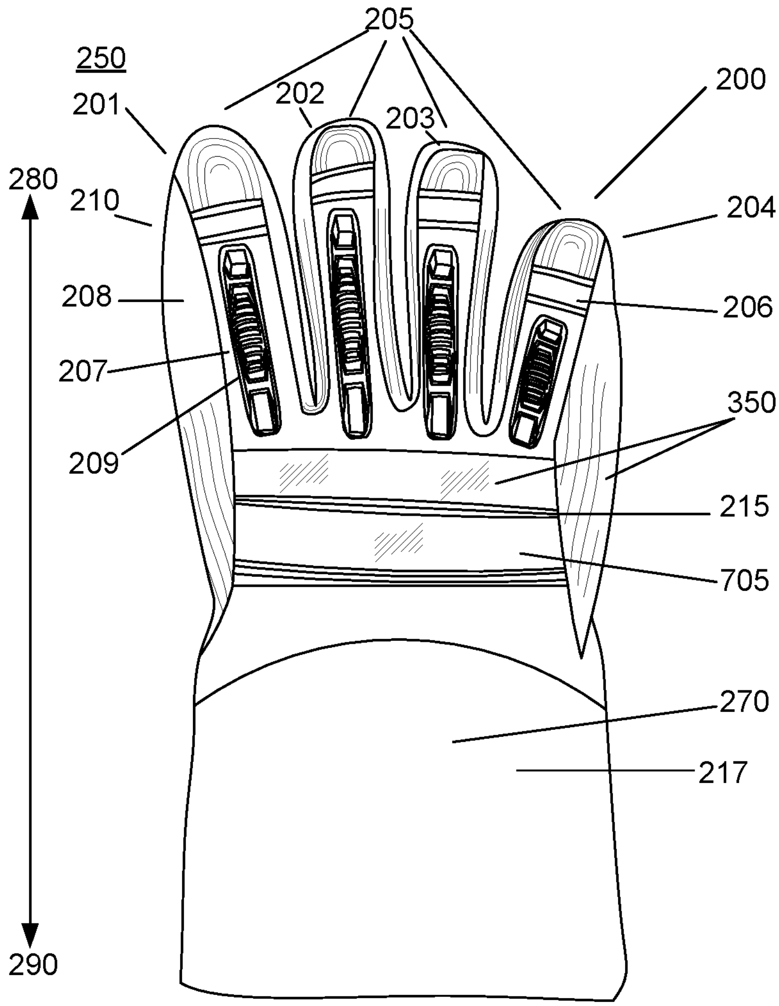
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FIG. 2

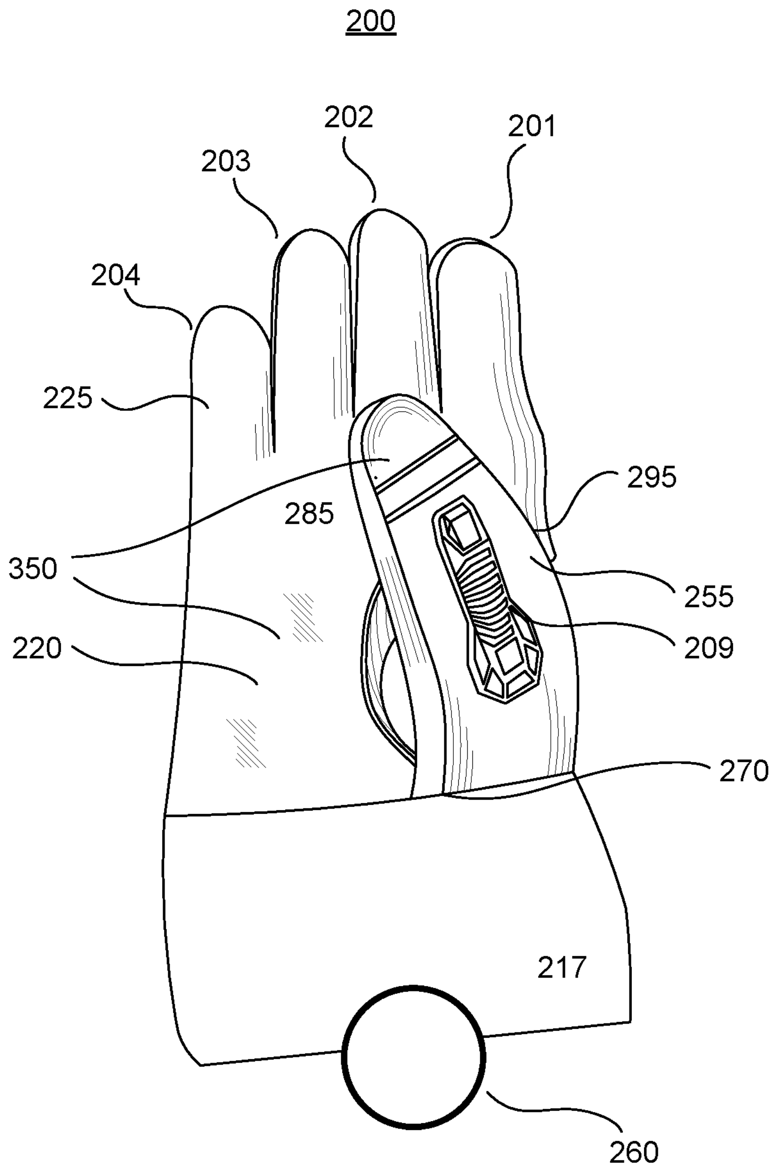

FIG. 3

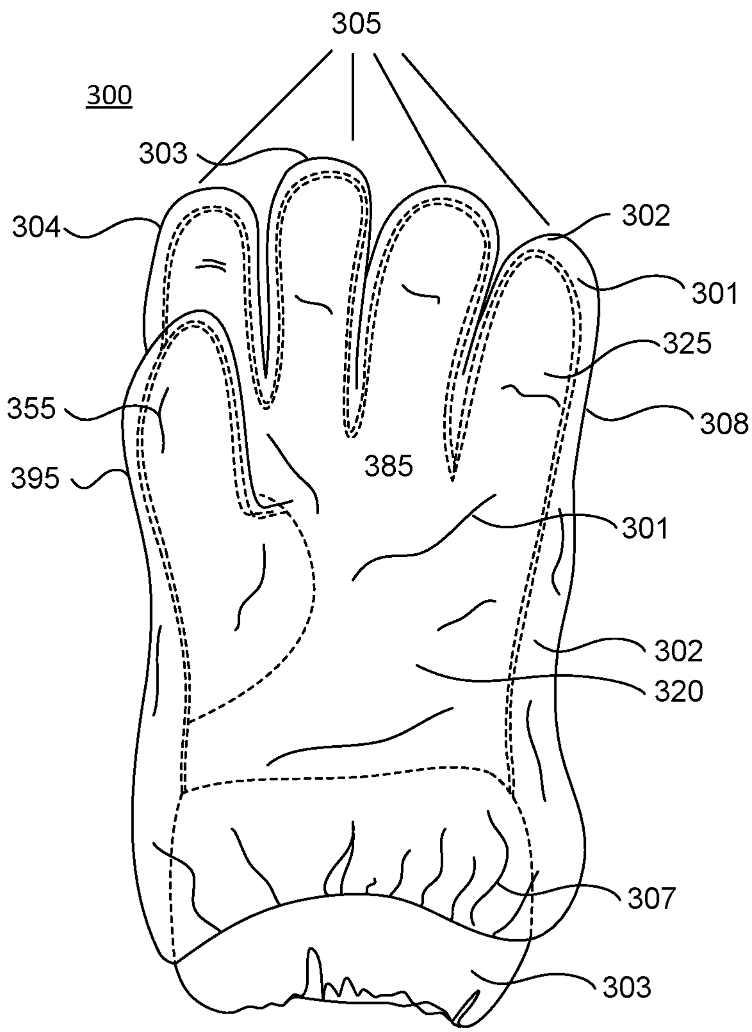

FIG. 4

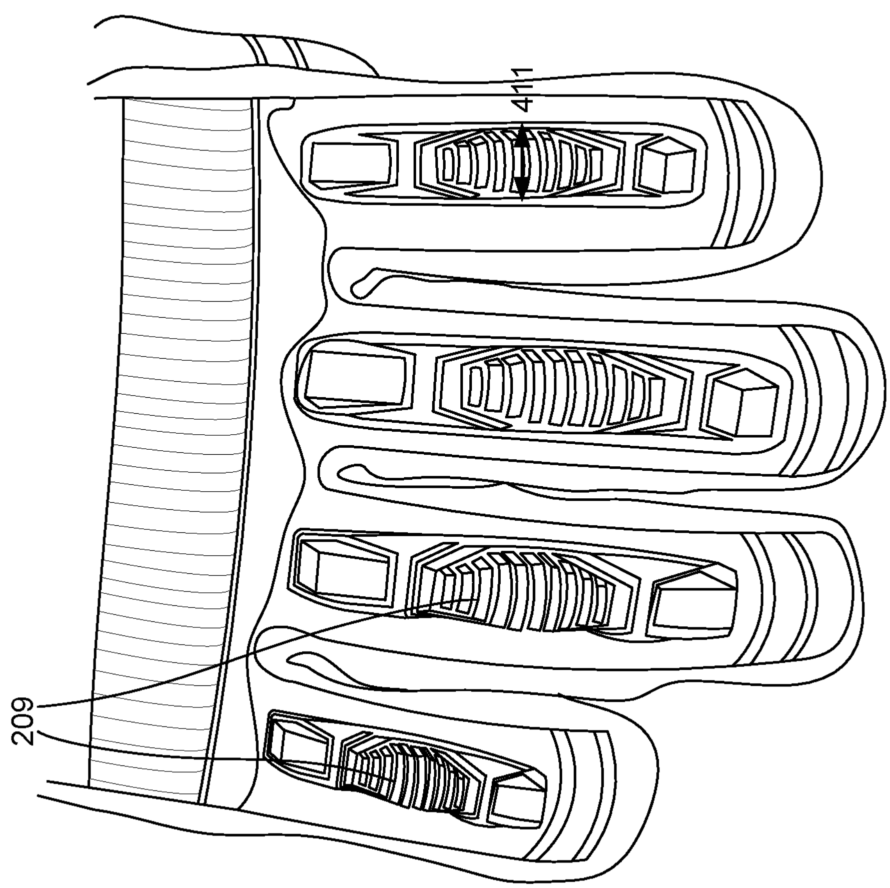

FIG. 5A

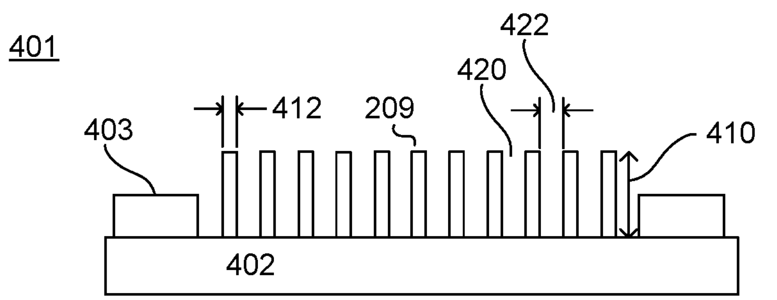

FIG. 5B

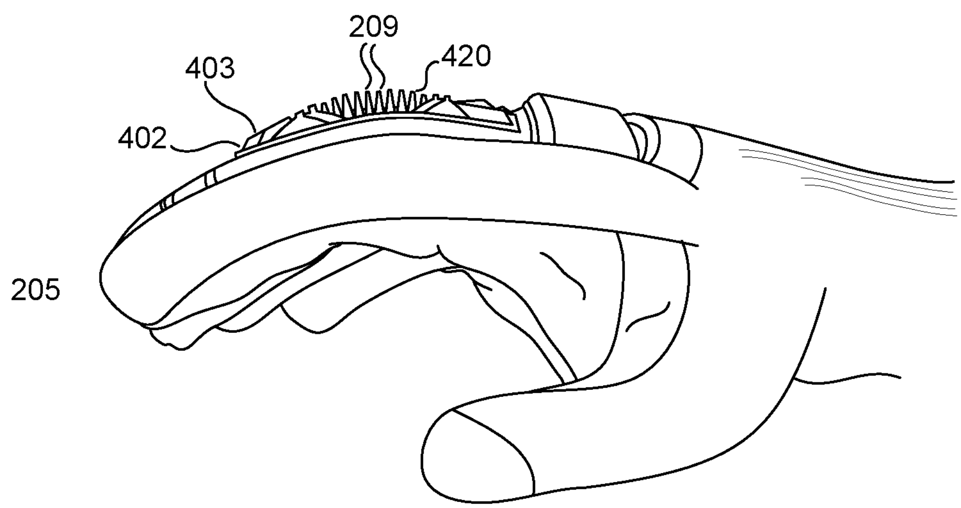

FIG. 5C

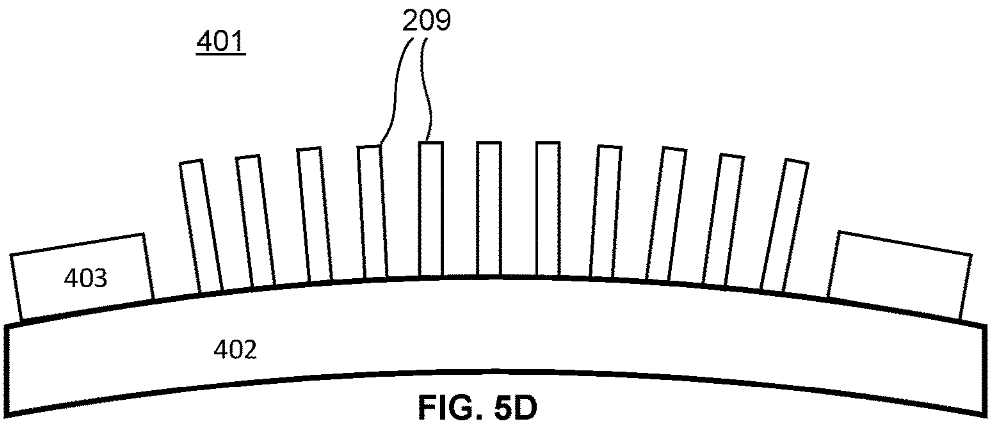

FIG. 5D

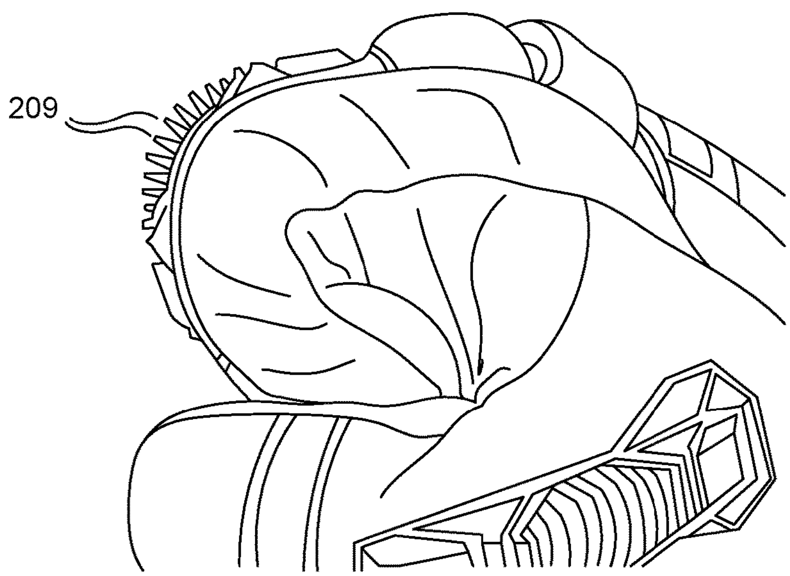

FIG. 5E

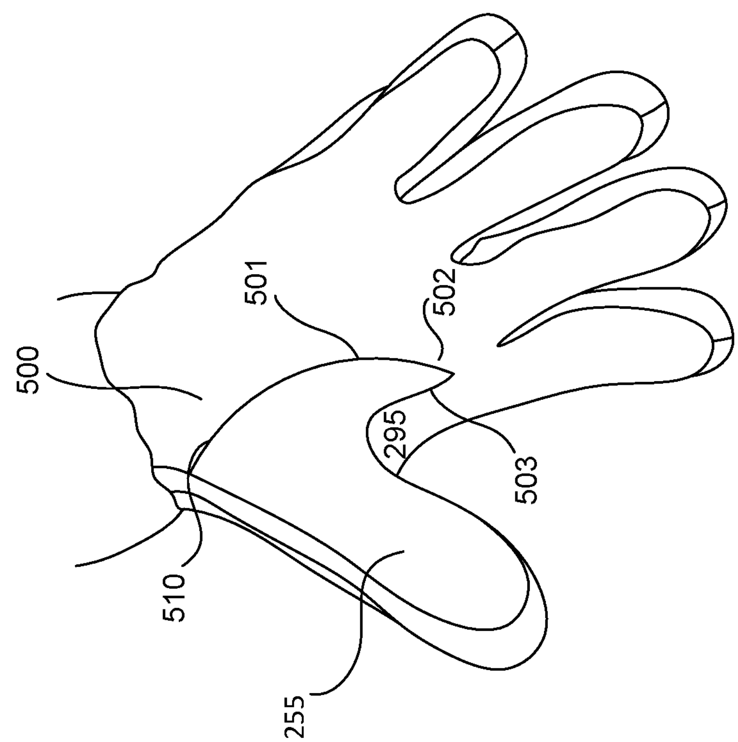

FIG. 6

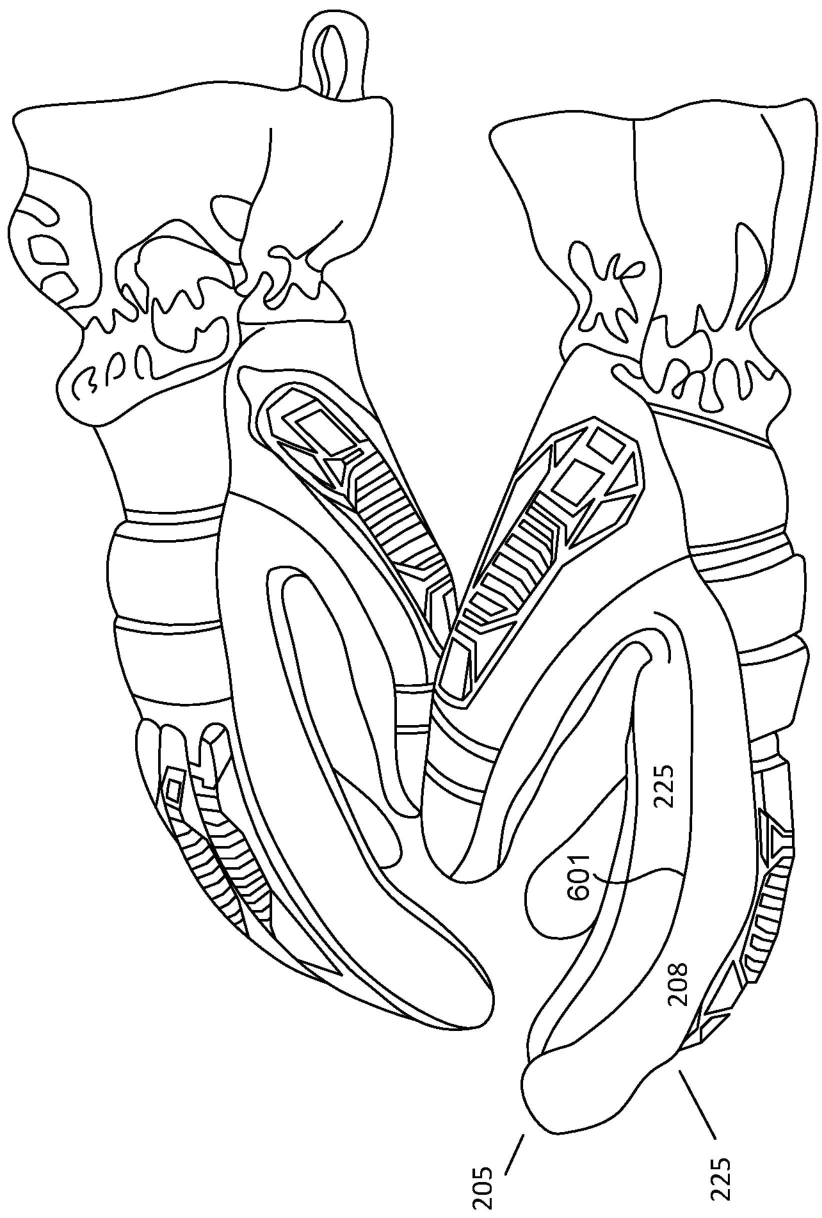

FIG. 7

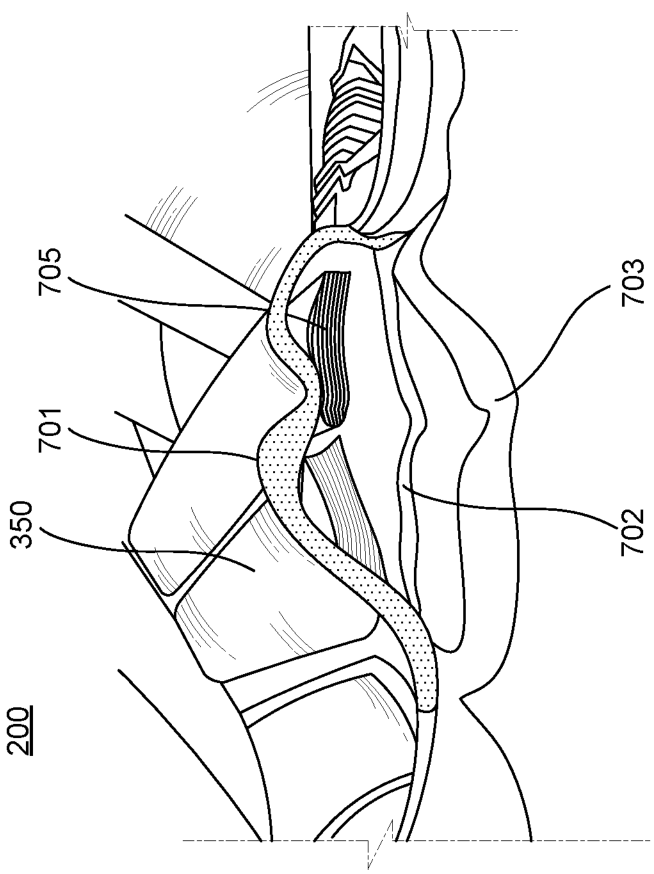

FIG. 8

PROTECTIVE GLOVE

RELATED APPLICATIONS

[0001] This application claims priority to U.S. Provisional Patent Application Ser. No. 62/323,304, filed Apr. 15, 2016, which is hereby incorporated by reference herein in its entirety.

FIELD OF THE INVENTION

[0002] The present invention relates generally to protective gloves, and more specifically, to protective gloves suitable for use in firefighting activities.

BACKGROUND

[0003] Traditional protective gloves for firefighters are constructed primarily of leather. While leather is a tough and durable material, it suffers from distinct drawbacks in the firefighting setting. Firefighters subject their equipment to harsh environments, including high heat, open flames, impacts, and water. Traditional firefighting gloves lose their efficacy and wear out quickly under the harsh conditions they are subject to by firefighters. For example, many gloves have a lifetime of less than three months before replacement is required. In addition, the leather of traditional gloves may expand and become slippery when wet, making it more difficult for a firefighter to retain a strong grip. When leather has been wet and then dried, it frequently becomes brittle and stiff. Further, the dark colors of traditional gloves may make it difficult for a firefighter and his or her team to see each other's hands in low light conditions. Traditional firefighting gloves also do not include significant impact protection or cut protection. These and other drawbacks are addressed by the embodiments of the invention consistent with the present disclosure.

SUMMARY

[0004] A glove according to some embodiments may be configured for protection of a wearer's hand. The glove may include a glove body having a proximal end and a distal end including a dorsal portion, a cuff portion, a palm portion, a thumb portion having a dorsal side and a palmar side, and finger portions each having a dorsal side, a palmar side, and a forchette, an inner liner including an interior liner and a waterproof membrane, reflective striping secured to finger portions of the outer shell, and a thumb-seam between the thumb portion and the palm portion, the seam having a curved length extending from a base of the thumb portion towards the finger portions, an apex portion describing an acute angle pointed at the finger portions, and a return length extending away from the finger portions, wherein the thumb-seam is configured to permit the inner layer of the glove body palm portion to lie flat against a palm of the wearer's hand when a thumb of the wearer's hand is rotated through a range of motion. At least one of the finger portions and thumb portion may include impact disbursement ridges on the dorsal side thereof, the impact disbursement ridges being elongated structures extending away from the dorsal side and configured to flex under impact.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] FIG. **1** illustrates a pair of human hands.

[0006] FIG. **2** illustrates a dorsal view of an exemplary glove body.

[0007] FIG. **3** illustrates a palmar view of an exemplary glove body.

[0008] FIG. **4** illustrates an inner liner of a glove consistent with the present disclosure.

[0009] FIGS. **5***a-e* illustrate impact disbursement ridges consistent with an embodiment of the present disclosure.

[0010] FIG. **6** illustrates an exemplary thumb seam consistent with the present disclosure.

[0011] FIG. **7** illustrates an exemplary curved finger seam consistent with the present disclosure.

[0012] FIG. **8** is a view of exemplary layering of a glove body consistent with an embodiment of the present disclosure.

DETAILED DESCRIPTION OF THE INVENTION

[0013] The invention relates generally to protective gloves. More specifically, this disclosure describes protective gloves suitable for use by a firefighter. Gloves consistent with the present disclosure may be fire retardant, impact resistant, water resistant, cut resistant, and otherwise strengthened and/or modified to protect the hands of a wearer from the rigors and dangers encountered during firefighting activities. Gloves consistent with the present disclosure may further include features to increase the dexterity and grip of a wearer with respect to conventional gloves. Gloves consistent with the present disclosure may further include aspects to enhance ease of use.

[0014] FIG. **1** illustrates a pair of human hands. Throughout the following description, the structure, fit, and function of gloves consistent with the present disclosure may be described with respect to and with reference to the anatomy of a wearer's hand or hands. FIG. **1** illustrates various aspects of a wearer's hand **100**. Hands typically include fingers, index finger **104**, middle finger **103**, ring finger **102**, pinky finger **101**, and an opposable thumb **105**. Each of the fingers includes three phalanges, a proximal phalange **123**, an intermediate phalange **122**, and a distal phalange **121**. The thumb **105** includes only a proximal phalange **123** and a distal phalange **121**. Each finger and the thumb **105** includes a nail **150**. Hands further include a palm region **106**, a dorsal region **107**, and a wrist region **108**. Each finger, and the thumb **105** also includes a palmar side **111** and a dorsal side **110**. The palmar side **111** of the fingers and thumb **105** is contiguous with the palm region **106** of the hand and the dorsal side **110** of the fingers and thumb **105** is contiguous with the dorsal region **107** of the hand. Palm region **106** includes grip region **109** and grip saddle region **115**. Grip region **109** is the upper-area of palm region **106** and forms an area that makes direct contact with an object when it is held by a close-gripped hand **100**. Grip saddle region **115** is the palm region **106** area between the index finger **104** and the thumb **105** and forms an area that makes direct contact with an object when it is held by a close-gripped hand **100**.

[0015] FIG. **2** illustrates a dorsal view of a glove body **200** of a protective glove **250** consistent with the present disclosure. Glove **250** may include glove body **200** and an liner **400**. Inner liner **400** cannot be seen in FIG. **2**, as it is inside and covered by glove body **200**. Inner liner **400** is described in more detail with respect to FIG. **4**.

[0016] Glove body **200** has a proximal end **290** closer to the arm of the wearer when the glove **250** is properly worn and a distal end **280** further from the arm of the wearer when the glove **250** is properly worn. Glove body **200** may include a cuff portion **217**, dorsal portion **215**, and finger portions **205**. Finger portions **205** may include an index finger portion **204**, a middle finger portion **203**, a ring finger portion **202**, and a pinky finger portion **201**. Each finger portion **205** may include a dorsal side **207**, a palmar side **225** (not shown in FIG. **2**), and two forchettes **208** joining the dorsal side **207** and the palmar side **225**. Cuff portion **217** generally corresponds to a wrist region **108** of the hand **100** of a wearer, dorsal portion **215** generally corresponds to a dorsal region of hand **100** hand of a wearer, and finger portions **205** generally correspond to the fingers of the hand **100**. FIG. **2** also illustrates some of the protective safety aspects consistent with some embodiments of glove **250**, including reflective stripes **206** and impact disbursement ridges **209**. These features are described in greater detail below.

[0017] FIG. **3**. illustrates a palmar view of a glove body **200** of a protective glove **250** consistent with the present disclosure. Further to FIG. **2**, FIG. **3** illustrates a thumb portion **255** of glove body **200** and a palm portion **220** of glove body **200**. FIG. **3** further illustrates the palmar sides **225** of finger portions **205** as well as the palmar side of cuff portion **217**. Pull-on ring **260** may further be included in glove **250**. Glove body **200** may further include a grip region **285** and a grip saddle region **295**, corresponding to grip region **109** and grip saddle region **115** of hand **200** of the glove wearer.

[0018] FIG. **4** illustrates portions of exemplary inner liner **300** consistent with the present disclosure. Inner liner **300** may include an interior liner **301**, a membrane **302**, and cuff **303**. Inner liner **300** may be configured to fit inside glove body **200**, and may include portions corresponding to each of the portions of glove body **200**. The interior liner **301** and membrane **302** may extend throughout inner liner **300**. For example, inner liner **300** may include a cuff portion **307**, a palm portion **320**, a dorsal portion **315** (not shown), finger portions **305**, and thumb portion **355**. Finger portions **305** and thumb portion **355** may include palmar sides **325**, dorsal sides **307** (not shown), and forchettes **308**. Finger portions **305** may include an index finger portion **304**, a middle finger portion **303**, a ring finger portion **302**, and a pinky finger portion **301**. Inner liner **300** may further include a grip region **385** and a grip saddle region **395**.

[0019] Interior liner **301** may form an innermost layer of glove **250**, and, therefore, may directly contact hand **100** of the wearer. Interior liner **301** may be made from a material chosen to have favorable characteristics under conditions in which the hand **100** of the wearer is sweating. For example, interior liner **301** may include a moisture absorbent material or a moisture wicking material. These features serve to keep the hand **100** of a wearer comfortable during use. Interior liner **301** may include a material that does not stick to the skin when the skin sweats. This feature permits a wearer's hand to be easily removed from glove **250** and prevents inner liner **300** from pulling out of glove body **200** when the glove **250** is removed from hand **100**. In some conventional protective gloves, an inner liner may stick to a sweaty wearer's hand and pull out of the glove when the hand is removed. Returning the liner to its original position can be a difficult and time-consuming task, creating a dangerous situation for a firefighter that must work quickly. In some embodiments, inner liner **300** may include a Kevlar knit material.

[0020] Membrane **302** may include a water-resistant or waterproof material. In some embodiments, membrane **302** may further include a breathable waterproof material. Breathable waterproof materials permit the passage of water vapor while denying the passage of liquid water. Such materials permit sweat to exit the glove vaporous form while preventing liquid water from reaching a hand **100** of the wearer. Breathability in the membrane allows a wearer's hands **100** to remain comfortable inside the gloves when they start to sweat. The water resistant or waterproof aspects of the membrane **302** promote comfort for the user and also reduce the possibility of heat conduction through a wet material, because wet materials more readily conduct heat. Membrane **302** may include a multilayer microporous material. The multiple layers of such a multilayer material may include a first layer with pores small enough to prevent the passage of water, for example, less than half a micron in diameter. A second layer may include moisture absorbing layer to absorb moisture for slow release through the pores of the first layer. The second layer may have a honeycomb structure to facilitate moisture absorption. A third layer may include an additional dense layer for added protection against water incursion and located for skin contact. Exemplary multilayer microporous materials include Hipora. Membrane **302** may include any other waterproof and breathable material, such as Gore-Tex and others.

[0021] Interior liner **301** and membrane **302** may be joined at a cuff region **307** by cuff **303**. Cuff **303** may be joined to both interior liner **301** and membrane **302**. When liner **300** is inserted into glove body **200**, cuff **303** may further be attached to liner **300**.

[0022] The foregoing description of the inner liner includes a non-limiting description of exemplary materials and their properties. Other materials exhibiting similar properties may be employed without departing from the scope of this disclosure.

[0023] FIGS. **5***a*-**5***e* illustrate exemplary impact disbursement ridges **209**. FIG. **5***a* illustrates a dorsal view of exemplary impact disbursement ridges **209**. FIG. **5***b* illustrates a schematic profile view of exemplary impact disbursement ridges **209**. FIG. **5***c* is a profile view of exemplary impact disbursement ridges **209**. FIG. **5***d* illustrates a schematic profile view of exemplary impact disbursement ridges **209** when finger portions **205** are flexed. FIG. **5***e* is a profile view of exemplary impact disbursement ridges **209** when finger portions **205** are flexed. Conventional firefighting gloves may rely only on thick glove material to protect the hands, and commonly lack any additional impact protection. This is a significant drawback for firefighters and other workers that are frequently using their hands in uncertain and hazardous situations. Impact disbursement ridges **209** may be located on the dorsal side of one or more of the finger portions **205** and thumb portion **255**. Impact disbursement ridges **209** may also be included in the dorsal region **215** of glove body **200**. When positioned on the finger portions **205** and/or thumb portion **255**, impact disbursement ridges **209** may extend from the dorsal region **215** to the distal end of finger portions **205** and/or thumb portion **255**. In some embodiments, impact disbursement ridges **209** may extend a portion of the distance from dorsal region **215** to the distal end of finger portions **205**. For example, impact disbursement ridges **209** may extend a distance along finger portions **205** corresponding to the proximal phalanges **123** and intermediate phalanges **122** of a wearer's hand, thus offering impact protection to the corresponding part of the wearer's hand **100**. In some embodiments, impact disbursement ridges **209** may extend a portion of the distance from dorsal region **215** to the distal end of thumb portion **255**. For example, impact disbursement ridges **209** may extend a distance along thumb portion **255** corresponding to the proximal phalange **123** of thumb **105** of a wearer's hand **100**.

[0024] Impact disbursement ridge structure **401** may include an impact ridge base **402**, at least one impact disbursement ridge **209**, and at least one impact disbursement end cap **403**. Impact ridge base **402** may be an elongated structure extending along at least a portion of a length of a finger portion **205** or thumb portion **255**. Impact disbursement ridge structure **401** may include as many as twenty or more impact disbursement ridges **209**. In a particular embodiment, impact disbursement ridge structure **401** may include between seven and fifteen impact disbursement ridges **209**. In some embodiments, a number of impact disbursement ridges **209** may be determined by a length of a finger portion **205** or thumb portion **255** that is protected by impact disbursement ridge structure **401**. Impact ridge base **402** may include a flexible material, such as a thermoplastic elastomer (TPE) or thermoplastic rubber (TPR), and may be flexible so as to permit the finger portions **205** and thumb portions **255** to bend and flex with relative ease. Impact disbursement ridges **209** may also include a flexible material, such as TPE or TPR. In some embodiments, the various aspects of each impact ridge structure **401** may be molded as a single piece.

[0025] Impact disbursement ridges **209** may be elongated structures extending away from impact ridge base **402**. Impact disbursement ridges may include a height **410** and depth **412**, as illustrated in FIG. **5***b*, as well as a width **411**, illustrated in FIG. **5***a*. In some embodiments, impact disbursement ridges **209** may have a height **410** greater than a depth **412**. For example, impact disbursement ridges **209**, may have a height **410** between two and twenty times as great as a depth **412**. Impact disbursement ridges **209** may additionally have gaps **420** between them. Gaps **420** may have a gap depth **422** of between approximately one half to three times as great as depth **412** of impact disbursement ridges **209**. The specific structure of impact disbursement ridges **209**, as described above, is exemplary only. Alternative structures, utilizing the same techniques described above may also be employed by a person of skill in the art without departing from the scope of this disclosure.

[0026] The structure and material of impact disbursement ridges **209** provide several functional advantages over conventional protective gloves, particularly for those used in the dangerous environments that firefighters may encounter. Dangers encountered by a firefighter may include high heat as well as frequent risk of impact from debris, tools, and structures. Impact disbursement ridges **209** are each connected to impact ridge base **402** along a relatively narrow depth **412**. As illustrated in FIGS. **5***c* and **5***d*, when hand **100** of a glove wearer flexes and bends finger portions **205**, impact ridge base **402** flexes and bends with the movement of finger portions **205**. The wearer must use force to bend impact ridge base **402** from its natural position. Due to gaps **420** between impact disbursement ridges **209** and the relatively narrow depth **412** of the connection between impact disbursement ridges **209** and impact ridge base **402**, however, impact disbursement ridges **209** may not experience significant bending when finger portions **205** are flexed. As can be seen in FIG. **5***d*, impact ridge base **402** is has a relatively short profile, and is thus easy to bend. Impact disbursement ridges **209** may extend perpendicularly from an arc of impact ridge base **402** when finger portions **205** are flexed and are not required to bend with impact ridge base **402**. This feature permits greater flexibility of finger portions **205** while still granting significant impact protection.

[0027] The fin-like structure of impact disbursement ridges **209** also provides additional impact protection. When the dorsal sides of the finger portions **205** are subject to an impact, impact disbursement ridges **209** serve to dissipate the energy of the impact before it reaches the hands **100** of the glove wearer. A solid impact protection structure may absorb some energy as the material itself compresses, but after the material has compressed, remaining energy may be transmitted to the hands **100** of the wearer, potentially resulting in injury. In contrast, the ridged design of impact ridge structure **401** may dissipate additional energy as impact disbursement ridges **209** bend and buckle as a result of impact. Thus, impact ridge structure **401** may dissipate impact energy not only through material compression, but through structural deformation. This feature grants additional impact protection to the hands **100** of a glove wearer.

[0028] Impact disbursement ridges **209** may comprise a TPE or TPR material. Conventional materials used in protective gloves for impact protection may include, for example, rubbers. Conventional rubbers, under high heat conditions common in a firefighting situation, may easily scorch, burn, melt, and/or otherwise lose their integrity. Even if the rubber is not melted or burned, high heat may alter the properties of vulcanized rubber, making it unsuitable for reuse. In contrast, TPE and TPR materials exhibit thermoplastic behavior under high heat conditions, and are less prone to suffering integrity loss in firefighting situations.

[0029] Returning now to FIG. **2**, reflective striping **206** is illustrated. Firefighters are often forced to work in low-light situations. Under these stressful conditions, it may be difficult for firefighters to see not only their own hands, but also the hands of their colleagues. As firefighters use tools, such as axes and crowbars, the lack of hand visibility may lead to significant injury if their hands are struck by these tools. Reflective striping **206** may be applied to finger portions **205** as well as dorsal region **215** of glove body **200**, permitting a wearer to quickly and easily distinguish the visual locations of their hands, including the terminal or near-terminal portions of the hands and/or fingers. Reflective striping **206** may be applied to any portion of finger portions **205**. In a particular embodiment, reflective striping **206** may be secured to a dorsal side of finger portions **205** at a position corresponding to the distal phalanges of a wearer's hand **100**. This positioning may permit the wearer to visually distinguish the location of the tips of their fingers, while still permitting room on the glove body **200** to accommodate impact disbursement ridges **209**. Additionally, because the fingers are the most frequently injured portion of the hand, visually highlighting the tips of the fingers can provide a firefighter with additional awareness. Alternative placement of reflective striping **206** may be employed without departing from the scope of the present disclosure.

[0030] FIG. **6** illustrates thumb seam **500** of protective glove **250**. As illustrated in FIG. **6**, thumb seam **500** is located between thumb portion **255** and palm portion **220**, and secures thumb portion **255** to glove body **200**. Thumb seam **500** includes a curved length **501** extending from a base **510** of the thumb portion towards a distal end **280** of glove body **200**, an apex portion **502** describing an acute peak pointed towards the distal end **280** of glove body **200**, and a return length **503** extending towards a proximal end **290** of glove body **200**. As used herein, the acute peak of apex portion **502** may be a sharp angle, e.g., less than 90 degrees, in the stitching of thumb seam **500**. However, due to the nature of stitching, apex portion **502** may form a sharp angle with a rounded vertex, as illustrated in FIG. **6**. The stitching pattern of thumb seam **500** prevents the glove material in grip saddle region **295** from bunching when the wearer flexes thumb **105** to grasp an object. This feature provides additional grip strength when the wearer grasps an object. As discussed below, glove **250** may include multiple layers of material. A conventional thumb seam in such a multi-layered glove can result in a significant amount of material bunching in the grip saddle region, which compromises the strength of the wearer's grip on an object. Thumb seam **500**, however, may prevent such material bunching, and thus provide the wearer with additional grip strength. Thumb seam **500** permits all or some layers of the of glove body **200** and interior liner **300** to lie flat against a palm **106** of the wearer's hand **100** when a thumb **105** of the wearer's hand **100** is rotated through a range of motion. The thumb seam **500** design described above is configured to improve a wearer's grip by preventing material bunching in the grip saddle region **295** and permitting layers of glove body **200** and interior liner **300** to remain flat against the wearer's palm when thumb **105** is rotated. The invention, however, is not limited to the exact design illustrated in FIG. **6**, as the specific design of thumb seam **500** may be slightly altered from the exemplary pattern shown herein while still retaining the described functionality.

[0031] FIG. **7** illustrates curved finger seams **601**. Finger portions **205** of glove body **200**, as discussed above, may include a palmar side **225** and a dorsal side **207**. Forchettes **208** may connect the palmar side **225** and dorsal side **207** of the finger portions **205**. In some embodiments consistent with the present disclosure, curved finger seams **601** may be located between forchettes **208** and at least one of the palmar side **225** and dorsal side **207** of any or all of finger portions **205** and/or thumb portion **255**. Such curved finger seams may be configured to permit finger portions **205** to maintain a curved aspect when glove **250** is not on the wearer's hand **100**. When held in a neutral position, the hand **100** typically exhibits finger curvature. Closing the fingers to a gripping position or opening them to a flat position requires flexing of muscles in the hand. Curved finger seams **601** may cause finger portions **205** and/or thumb portion **255** to exhibit a curved aspect corresponding to a neutral position of a wearer's fingers, thus making glove **250** both more comfortable and easier to use. In some embodiments, curved finger seams **601** may describe a radius of curvature of between 80 centimeters and 120 centimeters. A larger or smaller radius of curvature may be used for curved finger seams **601** to accommodate hands of different sizes and shapes without departing from the scope of this disclosure. Curved seams such as those disclosed herein require additional care and effort during the manufacturing process to prevent material from bunching and gathering at the site of the seams. The advantages discussed above provide specific benefits to a wearer in a glove including multiple layers that may otherwise be difficult to flex and unflex.

[0032] Returning now FIG. **3**, additional features of glove **250** are illustrated. Pull-on ring **260** may be included in some embodiments. Pull-on ring **260** enables a wearer to more easily and quickly pull on glove **250**. In particular, pull-on ring **260** may have a diameter larger than a finger portion **205** of glove **250**, which permits a wearer to use a first gloved hand to pull a glove **250** on to the second ungloved hand and with greater use. Pull-on ring **260** may have a diameter larger than an index finger portion **201** of glove **250**, as the index finger may be the most common finger used for pulling on a glove. Elasticized connection **270** is located at a location between cuff portion **217** and palm and dorsal portions **220** and **215**. Elasticized connection **270** is configured to cinch glove **250** against wrist **108** of the wearer's hand **100**. Elasticized connection **270** prevents debris from entering the glove from the wrist end.

[0033] FIG. **8** illustrates a layered structure of protective glove body **200**. Glove body **200** includes at least one layer, and as illustrated, may include several layers. Glove body **200** may include an inner layer **703**, an outer layer **701**, and a secondary inner layer **702**.

[0034] Glove body **200** may further include impact absorbing pads **705** located between layers. In some embodiments, impact absorbing pads **705** may be located in dorsal portion **215** between the glove body outer layer **701** and the glove body inner layer **703**. More particularly, impact absorbing pads **705** may be located between secondary inner layer **702** and outer layer **701**. Impact absorbing pads **705** may be positioned so as to extend across the knuckles of a wearer's hand **100**, as illustrated in FIG. **7** and FIG. **2**. Impact absorbing pads **705** provide additional impact protection to the knuckles of a glove wearer and serve to dissipate the energy of an impact to the back of the gloved hand **100**. Impact absorbing pads **705** may include, but are not limited to, open cell and closed cell foams, rubber, and any other suitable material.

[0035] Inner layer **703** may include a breathable membrane. Such a breathable membrane material may include, for example, oxypan. A breathable membrane permits airflow to the inner liner **300**, which serves to keep a wearer's hands **100** comfortable.

[0036] Outer layer **701** may include a cut resistant material such as aramid fibers, including meta aramid fibers such as Nomex and para aramid fibers such as Kevlar. In a particular embodiment, outer layer **701** in a cuff portion **217** may include a meta aramid fiber and an outer layer of dorsal portion **215**, palm portion **220**, thumb portion **255**, and finger portions **205** may include a para aramid fiber. Aramid fibers, such as Kevlar and Nomex are extremely resistant to cutting and tearing, and when employed in glove body **200**, serve to maintain the integrity of glove **250**. Additionally, cut resistant outer layer **701** serves to protect the hands of the wearer against many hazards that might be encountered in a firefighting situation, such as wooden splinters, shattered glass, sheared metal, and others. Additional and different cut resistant materials may be employed for outer layer **701** without departing from the scope of this disclosure.

[0037] In some embodiments, dorsal portion **215** of the glove body **200** may further include a secondary inner layer **702** comprising an aramid fiber located between the outer layer **701** and the inner layer **703**. Secondary inner layer **702** provides additional cut resistance to the areas of glove body **200** in which it is employed. Although illustrated in FIG. **8**

as being employed in dorsal portion **215** of glove body **200**, secondary inner layer **702** may be used in any portion of glove body **200**.

[0038] In some embodiments, at least a portion of outer layer **701** may include a silicone coating **350**, described in greater detail below. In some embodiments, a least a portion of outer layer **701** may include a waterproof breathable coating, for example, a coating of Hipora or Gore-Tex. A waterproof breathable coating may be employed in any area of glove body outer layer **701** where silicone coating **350** is not employed. The waterproof breathable coating over outer layer **701** provides significant advantages over conventional, non-waterproof gloves. Firefighters frequently work in a wet environment, as water is an important weapon against fire. Wet gloves, however, more readily conduct heat, decrease dexterity, and can become very uncomfortable and unwieldy. The waterproof coating over outer layer **701** serves to diminish or eliminate these disadvantages.

[0039] Although not illustrated in FIG. **8**, in some embodiments, the multiple layers of glove body **200** may each be constructed in a similar fashion. Thus, for example, thumb-seam **500** may be included in any or all of outer layer **701**, inner layer **702**, and secondary inner layer **703**. Likewise, curved finger seams **601** may be included in any or all of outer layer **701**, inner layer **702**, and secondary inner layer **703**. In some embodiments, layers of liner **300** may be constructed with a different seam pattern than glove body **200**. Liner **300** may be constructed and configured so as not to cause material bunching when located inside glove body **200**.

[0040] Returning again to FIG. **3**, silicone grip coating **350** is illustrated. Silicone grip coating **350** may be provided on palm portion **220** as well as palmar sides **225** of finger portions **205** and thumb portion **255**. Additionally, silicone grip coating **350** may be provided on a distal end of thumb portion **255**. Silicone grip coating **350** may further be provided on a dorsal portion **215** of glove body **200** and on forchettes **208**. Silicone grip coating **350** provides a glove wearer with increased friction in the grip, permitting the wearer to grasp objects more easily and thus reduce grip fatigue. Silicone grip coating **350** may be adhered to outer layer **701** of glove body **200**. Outer layer **701** may comprise an aramid fiber, and, more particularly, a para aramid fiber such as Kevlar. Thus, silicone grip coating **350** may be adhered directly to an aramid fiber outer layer **701**. Direct adherence of silicone grip coating **350** to outer layer **701**, i.e., instead of attachment via seams or stitching, may ensure that silicone grip coating **350** moves continuously with outer layer **701** with no relative movement between the two. Such relative movement would compromise a user's ability to grip and grasp objects. Thus, the combination of an aramid fiber outer layer **701** and silicone coating **350** may provide both cut protection and increased gripping ability. In some embodiments, silicone coating **350** may include abrasive material to provide additional friction to a user's grip. In some embodiments, silicone grip coating **350** may be fire retardant. The various material layers of glove body **200** discussed above are exemplary only, and the invention is not limited to these. Various combinations of the layers discussed above may be employed without departing from the scope of this disclosure, and additional or different materials providing similar properties may be used.

[0041] While this disclosure provides examples of various protective gloves including various combinations of the disclosed inventive features, the invention is not limited to the disclosed exemplary embodiments. The disclosure of embodiments of the invention of protective gloves are to be considered exemplary only. In its broadest sense, the invention may be used in for the protection of a wearer's hand under any conditions. Alternative embodiments will become apparent to those skilled in the art to which the present invention pertains without departing from its spirit and scope. The scope of the present invention is further defined by the following claims in addition to the foregoing description.

1. A glove for the protection of a wearer's hand comprising:

a glove body having a proximal end and a distal end including a dorsal portion, a cuff portion, a palm portion, a thumb portion having a dorsal side and a palmar side, and finger portions each having a dorsal side, a palmar side, and a forchette;

an inner liner including an interior liner and a waterproof membrane;

reflective striping secured to finger portions of the outer shell; and

a thumb-seam between the thumb portion and the palm portion, the seam having a curved length extending from a base of the thumb portion towards the finger portions, an apex portion describing an acute angle pointed at the finger portions, and a return length extending away from the finger portions, wherein the thumb-seam is configured to permit the inner layer of the glove body palm portion to lie flat against a palm of the wearer's hand when a thumb of the wearer's hand is rotated through a range of motion;

wherein at least one of the finger portions and thumb portion includes impact disbursement ridges on the dorsal side thereof, the impact disbursement ridges being elongated structures extending away from the dorsal side and configured to flex under impact.

2. The glove of paragraph **1**, wherein the waterproof membrane is waterproof and breathable.

3. The glove of paragraph **1**, wherein the interior liner is moisture absorbent.

4. The glove of paragraph **1**, wherein the interior liner is moisture wicking.

5. The glove of paragraph **1**, wherein the reflective striping is secured to the finger portion at a position covering distal phalanges of the wearer's hand.

6. The glove of paragraph **1**, wherein the glove body includes at least one layer, the at least one layer including at least an inner layer comprising a breathable membrane and an outer layer comprising an aramid fiber.

7. The glove of paragraph **6**, wherein the glove body outer layer of the cuff portion comprises a meta aramid fiber.

8. The glove of paragraph **6**, wherein the glove body outer layer of the dorsal portion, the palm portion, the thumb portion, and the finger portions comprise a para aramid fiber.

9. The glove of paragraph **6**, wherein at least a portion of the glove body outer layer includes a silicone coating.

10. The glove of paragraph **9**, wherein the para aramid fiber of the dorsal portion, the palm portion, the palmar side of the thumb portion, the palmar side of the finger portions, and the forchette of the finger portions includes the silicone coating.

11. The glove of paragraph **6**, wherein the dorsal portion of the glove body further includes a secondary inner layer aramid fiber located between the outer layer and the inner layer.

12. The glove of paragraph **1**, wherein the cuff portion includes an elasticized connection with the dorsal portion and the palm portion of the glove body, the elasticized connection configured to cinch against a wrist of the wearer's hand.

13. The glove of paragraph **1**, wherein the ridges comprise a thermoplastic elastomer material.

14. The glove of paragraph **6**, wherein the dorsal portion includes at least one impact absorbing pad located between the glove body outer layer and the glove body inner layer.

15. The glove of paragraph **1**, wherein at least one of the finger portions includes curved finger seams between the forchette portion and the palmar side and between the forchette portion and the dorsal side.

16. The glove of paragraph **15**, wherein the curved finger seams are configured to permit the at least one of the finger portions to maintain a curved aspect when the glove is not on the wearer's hand.

17. The glove of paragraph **15**, wherein the curved finger seams describe a radius of curvature of between 80 centimeters and 120 centimeters.

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