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(54) **CLEANING GLOVE**

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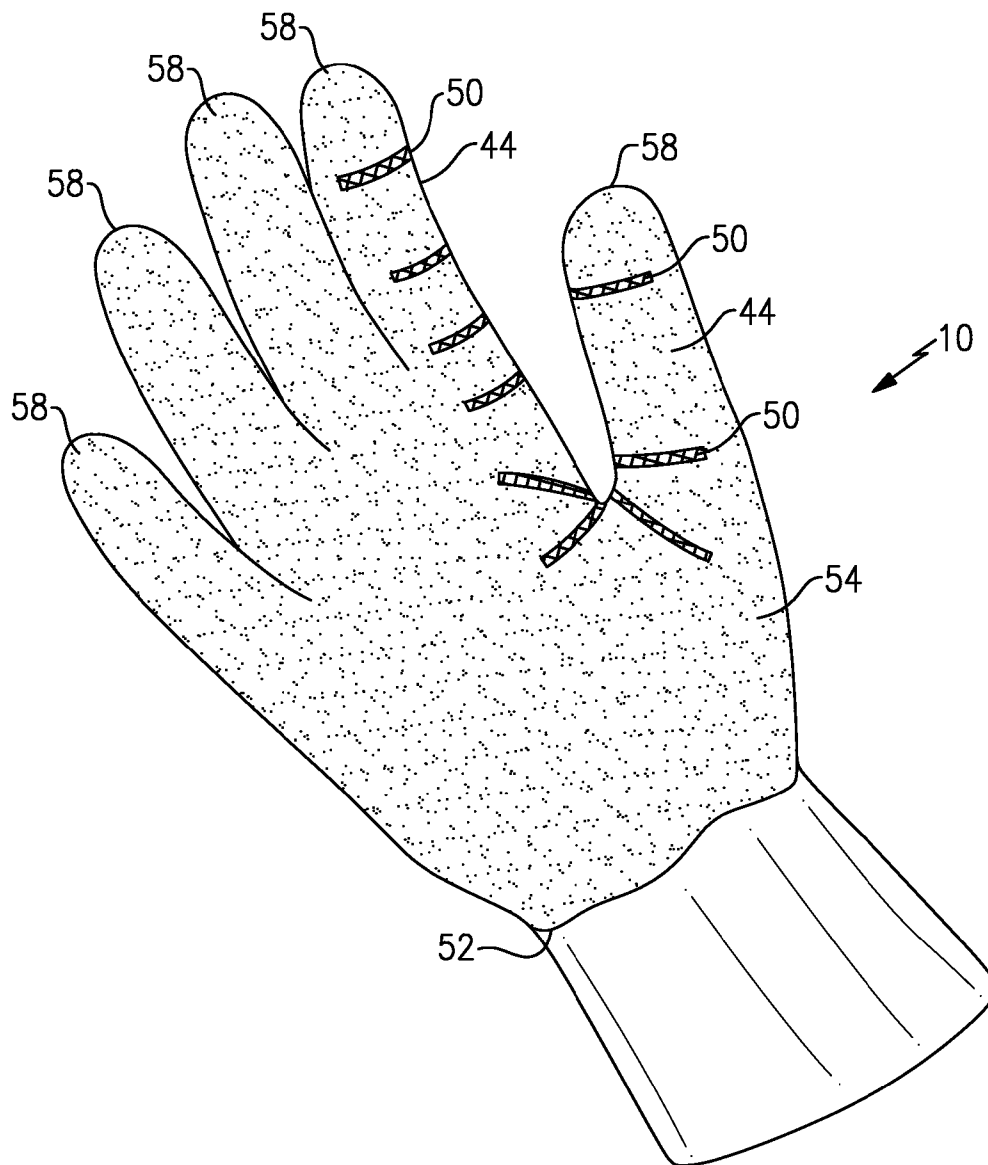
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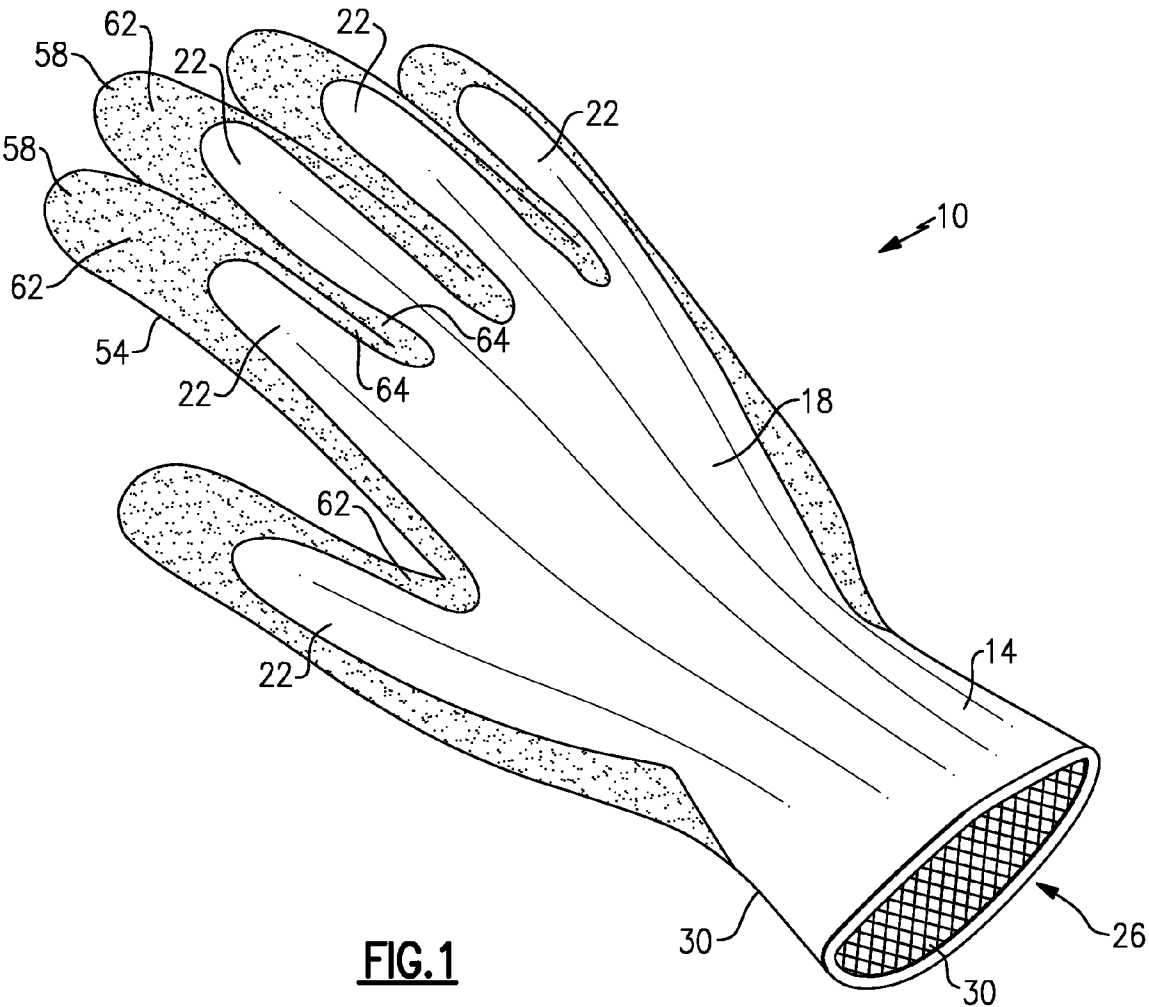
(57) **ABSTRACT**

An example cleaning glove includes a glove having a palm portion and at least one finger portion extending from the palm portion. Each of the palm portion and the finger portion has a front surface and a back surface. An abrasive layer is secured to the front surface of the palm portion, and the front surface and the back surface of the finger portion. The example cleaning glove may be used to clean many surfaces (e.g., dishes, countertops, etc.) and in many cleaning environments (e.g., public areas, restrooms, hospitals, etc.).

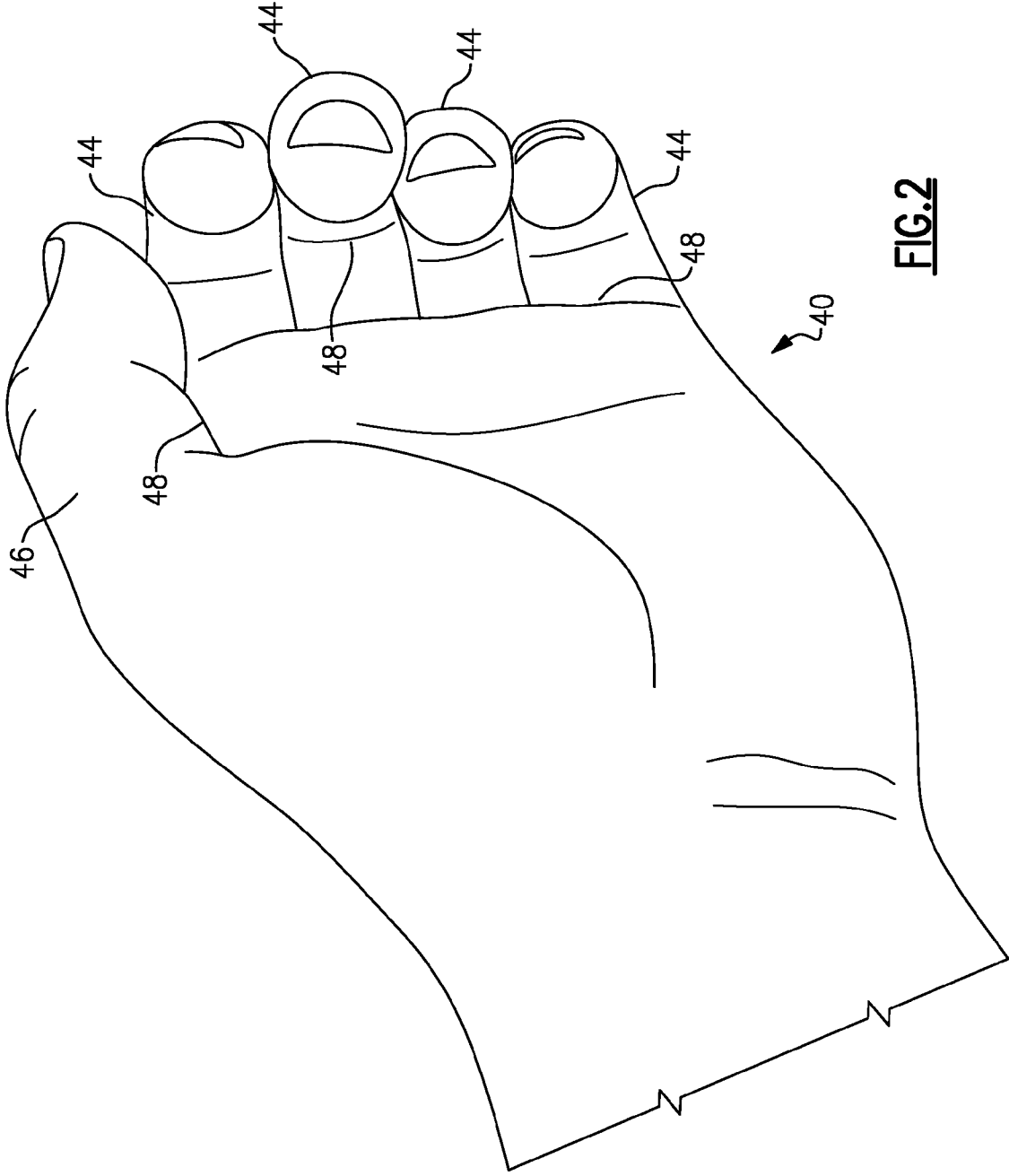
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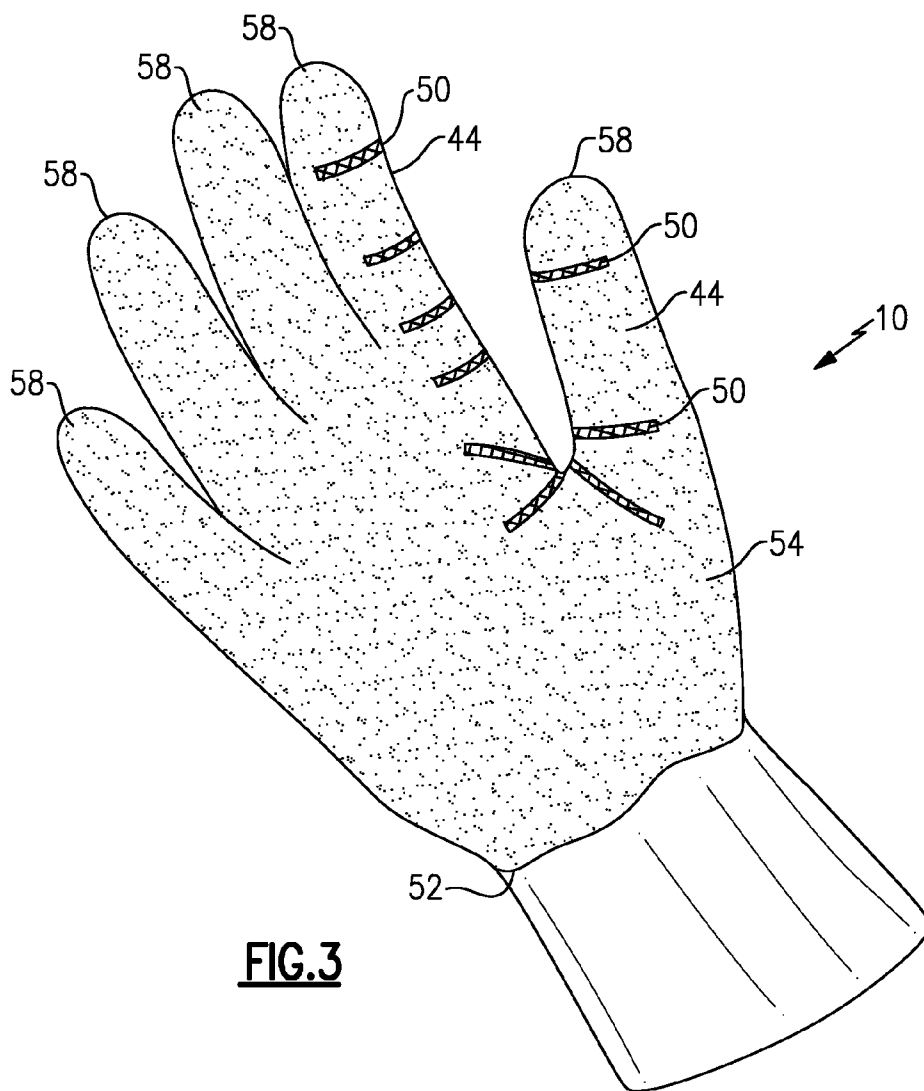




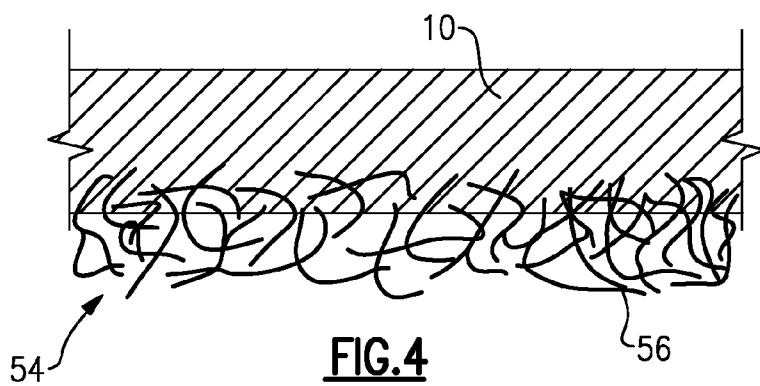
**FIG. 1**



**FIG. 2**



**FIG. 3**



**FIG. 4**

## CLEANING GLOVE

### BACKGROUND OF THE INVENTION

**[0001]** This invention relates generally to a cleaning glove. More particularly, this invention relates to a glove having an area incorporating an abrasive layer or surface.

**[0002]** Gloves are commonly worn when cleaning. Gloves protect a user's hands from exposure to harmful cleaning agents, damaging environments, or both. Some gloves protect the user's hands from water, such as gloves worn when washing dishes. If unprotected, prolonged exposure to water, other liquids, or chemicals may damage the user's hands. Additionally, the gloves protect the user's hands from injuries caused by broken dishes, other sharp edges, or other abrasive cleaning surfaces.

**[0003]** In some cases, wearing gloves may introduce challenges to cleaning. Grasping various items, such as soap or an abrasive sponge, may prove difficult when wearing gloves in a wet environment. That is, the water repelling glove surface protecting the user's hands from water damage also may cause slipping when trying to grasp an item. This challenge is especially relevant to the user wearing gloves while washing dishes. Slipping when washing dishes may result in broken dishes, which have sharp edges capable of injuring the user.

**[0004]** Another challenge of cleaning while wearing gloves is effectively cleaning in confined areas. More specifically, it is difficult to scrub or scour confined areas with a sponge, brush, or other cleaning device. Also, wearing gloves effectively increases the user's overall hand size and can prevent accessing some areas, such as the interior surfaces of a drinking glass.

**[0005]** Grasping a cleaning pad, (e.g., scouring pad, sponge, scrubbing pad) also complicates cleaning these areas. When grasping a cleaning pad, a clenched hand may be too large or awkward to extend within an article to be cleaned. Even if extendable within the article, the user may be unable to effectively maneuver their hand within the article to adequately scrub or scour. In some cases, the only way to access the entire interior of the article is to release the cleaning pad. This is not an effective or efficient way to clean as it eliminates the benefits of the cleaning pad. The user may utilize another type of cleaning tool, such as a long handled brush, but this approach adds time, and an additional tool, to the cleaning process. Further, the cleaning brush may not provide the detailed cleaning capable with a cleaning pad.

**[0006]** What is needed is a cleaning device that facilitates cleaning confined areas and combines a cleaning pad with a protective glove.

### SUMMARY OF THE INVENTION

**[0007]** An example cleaning glove includes a glove having a palm portion and at least one finger portion extending from the palm portion. Each of the palm portion and the finger portion has a front surface and a back surface. An abrasive layer is secured to the front surface of the palm portion, and the front surface and the back surface of the finger portion. The example cleaning glove may be used to clean many surfaces (e.g., dishes, countertops, etc.) and in many cleaning environments (e.g., public areas, restrooms, hospitals, etc.).

**[0008]** In another example, a cleaning glove includes a glove having a palm portion and at least one finger portion extending from the palm portion. Each of the palm portion

and the finger portion has a front surface and a back surface. The abrasive material is melt bonded to the palm portion and the finger portion.

**[0009]** Further examples of the cleaning glove are waterproof and include antimicrobial or antifungal properties. The example glove may include gripping features, which aid in handling items and facilitate movement of the hand within the glove.

**[0010]** Various features and advantages of this invention will become apparent to those skilled in the art from the following detailed description. The drawings that accompany the detailed description can be briefly described as follows.

### BRIEF DESCRIPTION OF THE DRAWINGS

**[0011]** FIG. 1 illustrates a back view of an example cleaning glove.

**[0012]** FIG. 2 illustrates a user's hand.

**[0013]** FIG. 3 illustrates a front view of the example cleaning glove.

**[0014]** FIG. 4 illustrates a cross-sectional view of an abrasive layer melt bonded to the example cleaning glove.

### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

**[0015]** An example cleaning glove **10** of FIG. 1 includes a wrist portion **14**, a palm portion **18**, and at least one finger portion **22**. The palm portion **18** connects the wrist portion **14** and the finger portions **22**. The example glove **10** may be a waterproof glove such as a latex (synthetic or natural) rubber glove. The wrist portion **14** includes an opening **26** providing access to the interior of the glove **10**.

**[0016]** Referring now to FIG. 2 with continuing reference to FIG. 1, a user's hand **40** enters through the opening **26** to put on the glove **10**. The interior surface of the glove **10** may include a liner **30** having a smooth or flocked surface, which aids in sliding the glove **10** over the hand **40**. The liner **30** lessens contact between the hand **40** and the latex portions of the glove **10**. The example liner **30** may include pores, a hydrophilic material, or both, that absorb moisture, such as perspiration from the hand or wick moisture away from the user's hand **40**. Fingers **44** and a thumb **46** on the user's hand **40** are received into the respective finger portions **22** of the glove **10**.

**[0017]** Referring now to FIG. 3, the glove **10** includes an abrasive layer **54** located on the palm portion **18** and the finger portions **22**. The abrasive layer **54** enhances the abrasive properties of the cleaning glove **10**. In this example, the abrasive layer **54** primarily covers the front of the glove **10**. More specifically, the abrasive layer **54** extends across the front of the palm portion **18** to a tip portion **58** of the finger portions **22**. Near the tip **58**, the abrasive layer **54** wraps around the finger portions **22** (FIG. 1), i.e., the abrasive layer **54** covers the front and back of the finger portions **22** near the tip **58**.

**[0018]** This manner of covering the front and back of the finger portions **22** with the abrasive layer **54** facilitates accessing and cleaning confined areas. For example, a user can scrub the interior surfaces of a narrow glass by extending a gloved index finger into the glass and using the entire circumference of the tips **58** to scrub the surfaces.

**[0019]** The example abrasive layer **54** also covers other areas of the glove **10**. For example, the abrasive layer **54** may extend along side portions **64** of the finger portions **22** of the

glove **10**. Of course, the exact location of the abrasive layer **54** on the palm portion **18** and the finger portions **22** may reflect the particular cleaning needs. For example, a user may desire that the abrasive layer **54** does not extend to the finger portions **22** corresponding to the user's thumb, but does extend to the finger portions **22** corresponding to the user's fingers. Further, the abrasive layer **54** may vary in thickness. As an example, the abrasive layer **54** on the finger portions **22** may be thinner than the abrasive layer **54** on the palm portion **18** of the glove **10**.

[0020] In one example, the abrasive layer **54** includes a plurality of non-woven fibers having a random orientation, which are melt bonded to the cleaning glove **10**. The example fibers are polymer, metal, or both. Melt bonding techniques are known. Alternatively various adhesion techniques may secure the abrasive layer **54** to the palm portion **18** and the finger portions **22** of the cleaning glove **10**, such as an adhesive layer **52**, spray bonding, heat staking, etc. Given this description, one of ordinary skill in the art may be able to develop additional suitable techniques for securing the abrasive layer **54**.

[0021] FIG. 4 illustrates a sectional view through a portion of the glove **10** including the abrasive layer **54**. In this example, the abrasive layer **54** includes a plurality of loosely assembled fibers **56** melt bonded to the glove **10**. The fibers **56** do not contact the user's hand **40** when the user wears the glove **10**. Melt bonding the abrasive layer **54** to the glove **10** embeds portions of the fibers **56** within the glove **10**. Thus the fibers **56** are mechanically interlocked with the glove **10**.

[0022] In this example, the fibers **56** of the abrasive layer **54** are loosely assembled. Thus when gripping a dish or similar object, the abrasive layer **54** compresses, which may cause the dish to slip from the user's grasp, as the user is unable to judge the actual position of the dish due to the compressing abrasive layer. That is, the user's perceived position of the dish within their grasp may not be the actual position of the dish.

[0023] In addition to cleaning dishes, the glove **10** can be used to clean in various other environments. Janitors may use the glove **10** to clean bathroom fixtures (e.g., tubs and sinks). A user could additionally clean countertops or sanitize various areas, such as frequently cleaned areas within a hospital.

[0024] Optionally, the glove **10** includes antimicrobial properties, such as incorporating an antimicrobial agent into the abrasive layer **54**, the material of the glove **10**, or both. Antifungal properties may be similarly incorporated. Techniques of incorporating antibacterial properties and antifungal properties in a glove are known. As the example glove **10** is typically worn in environments that are conducive to fungal growth, such as moist environments, incorporating antifungal properties into the glove **10** discourages fungal formation. U.S. Pat. No. 6,560,782 to Hourihan discloses an example technique for incorporating antimicrobial properties in latex based gloves. The technique of Hourihan incorporates an antimicrobial agent, such as diiodomethyl-p-tolylsulfone, into layers of material forming the glove.

[0025] Optionally, the glove **10** includes gripping features **50** to aid the user in judging the position of the dish (FIG. 3). The example gripping features **50** are raised ridges of the finger portions **22** or palm portion **18**. The gripping features **50** are thicker than other areas of the glove **10**. In another example, the gripping feature **50** is an area of the cleaning glove **10** void of abrasive layer **54**. The gripping features **50** provide a substantially direct path from the user's hand **40**

through the glove **10** to the dish, which enhances the tactile properties of the glove. In so doing, the gripping features **50** help to match the user's perceived position of the dish with the actual position. The gripping features **50** may further include a textured pattern on the surface.

[0026] The fingers **44** and thumb **46** of the user's hand **40** include several joints having hinge points **48** such as knuckles. In one example, the gripping features **50** generally align with the hinge points **48** of the user's hand **40**. Eliminating the abrasive layer **54** from areas of the cleaning glove **10** adjacent to the hinge point **48** facilitate movement of the user's hand **40** and, more specifically, the user's fingers **44** and thumb **46**.

[0027] The preceding description is exemplary rather than limiting in nature. Various modifications to the disclosed examples can be apparent to those skilled in the art that do not necessarily depart from the essence of this disclosure. The scope of legal protection given to this disclosure can only be determined by studying the following claims.

1. A cleaning glove, comprising:
  - a glove including a palm portion and at least one finger portion extending from said palm portion, each of said palm portion and said at least one finger portion having a front surface and a back surface;
  - an abrasive layer secured to said front surface of said palm portion, and said front surface and said back surface of said at least one finger portion, said abrasive layer having an antimicrobial agent, an antifungal agent, or both; and
  - at least one gripping feature located on said palm portion, said at least one finger portion, or both.
2. The cleaning glove of claim 1, wherein said glove is waterproof.
3. (canceled)
4. The cleaning glove of claim 1, wherein said abrasive layer is further secured to a side, a tip, or both, of said at least one finger portion.
5. The cleaning glove of claim 4, wherein said abrasive layer extends on the back surface from said tip to an area of said at least one finger portion corresponding in location to a knuckle of a user's hand.
6. The cleaning glove of claim 1, wherein said abrasive layer is further secured to a side of said palm portion.
7. (canceled)
8. The cleaning glove of claim 7, wherein said gripping feature is a ridge of said glove portion, an area of said glove without said abrasive layer, or both.
9. The cleaning glove of claim 7, including a texture pattern on a surface of said at least one gripping feature.
10. The cleaning glove of claim 7, wherein said gripping feature generally corresponds in location on said at least one finger portion to a knuckle of a user's hand.
11. The cleaning glove of claim 1, wherein said glove comprises a moisture absorbent liner.
12. The cleaning glove of claim 1, wherein a surface portion of said glove is mechanically interlocked with fibers of said abrasive layer such that said surface portion at least partially surrounds said fibers to secure said abrasive layer and said glove together.
13. The cleaning glove of claim 1, including an adhesive layer between said abrasive layer and said glove, said adhesive layer securing said abrasive layer to said glove.

**14-20.** (canceled)

**21.** A cleaning glove, comprising:

a glove including a palm portion and at least one finger portion extending from said palm portion, each of said palm portion and said at least one finger portion having a front surface and a back surface;

an abrasive layer secured to said front surface of said palm portion, and said front surface and said back surface of said at least one finger portion, said abrasive layer having an antimicrobial agent, an antifungal agent, or both; and

at least one gripping feature located on said at least one finger portion, said at least one gripping feature located to generally correspond with the position of a knuckle of a user's hand.

**22.** The cleaning glove of claim **21**, wherein said gripping feature includes a ridge.

**23.** The cleaning glove of claim **21**, wherein said gripping feature is an area without said abrasive layer.

**24.** The cleaning glove of claim **21**, including a textured pattern on a surface of said at least one gripping feature.

**25.** The cleaning glove of claim **21**, wherein said at least one gripping feature is thicker than an adjacent area of said glove.

**26.** The cleaning glove of claim **21**, wherein said at least one gripping feature includes a multiple of gripping features.

**27.** The cleaning glove of claim **26**, wherein each of said multiple of gripping features define a ridge which generally correspond to the position of a knuckle of a user's hand.

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