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OREFICE

(54) **METHOD AND APPARATUS FOR DISPENSING CLEANROOM WIPES**

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(57) **ABSTRACT**

A cleanroom wipe dispenser is provided. The cleanroom wipe dispenser may include a housing forming a compartment for removably storing a plurality of cleanroom wipes. The plurality of cleanroom wipes may be uniquely folded so that they are not interfolded so as not to abrade the adjacent cleanroom wipe when being dispensed, thereby eliminating cross contamination of cleanroom wipes. A bottom wall of the housing may define a generally elongated elliptical dispensing opening adapted to limit access to the plurality of cleanroom wipes so as to prevent wasteful usage.

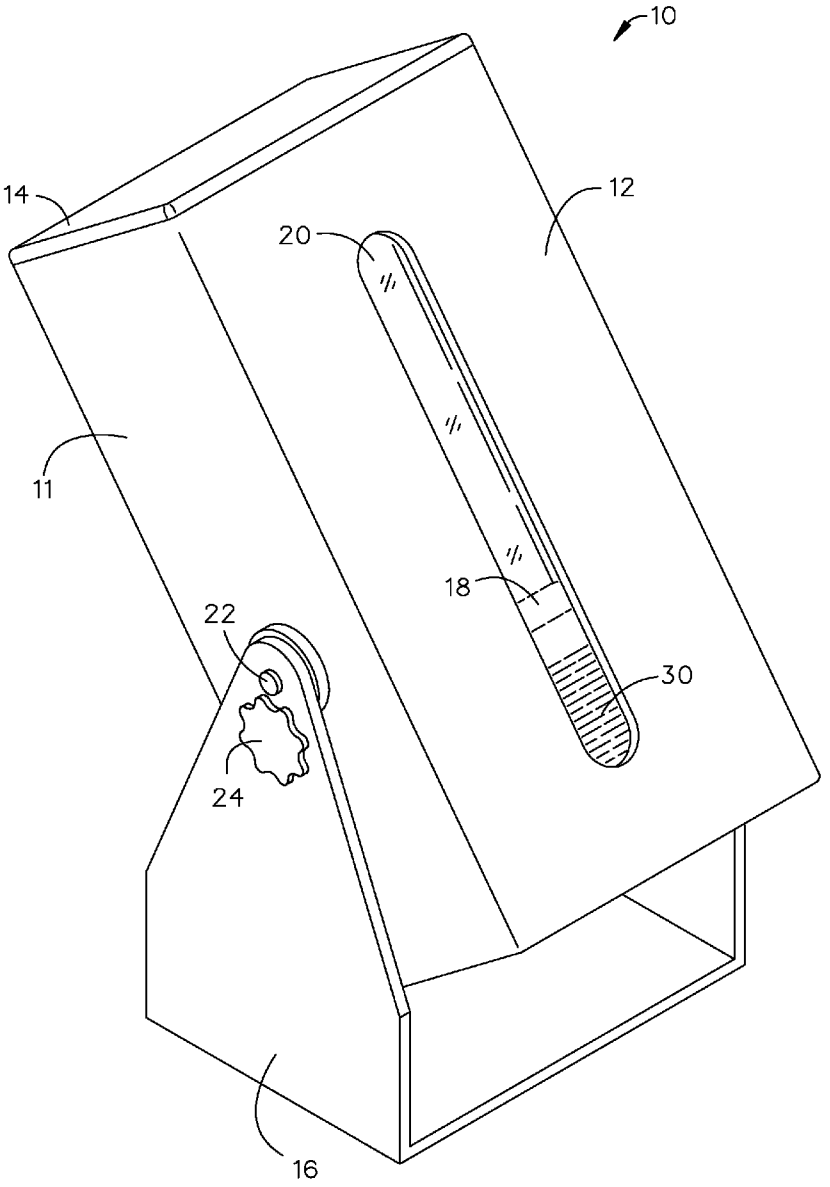
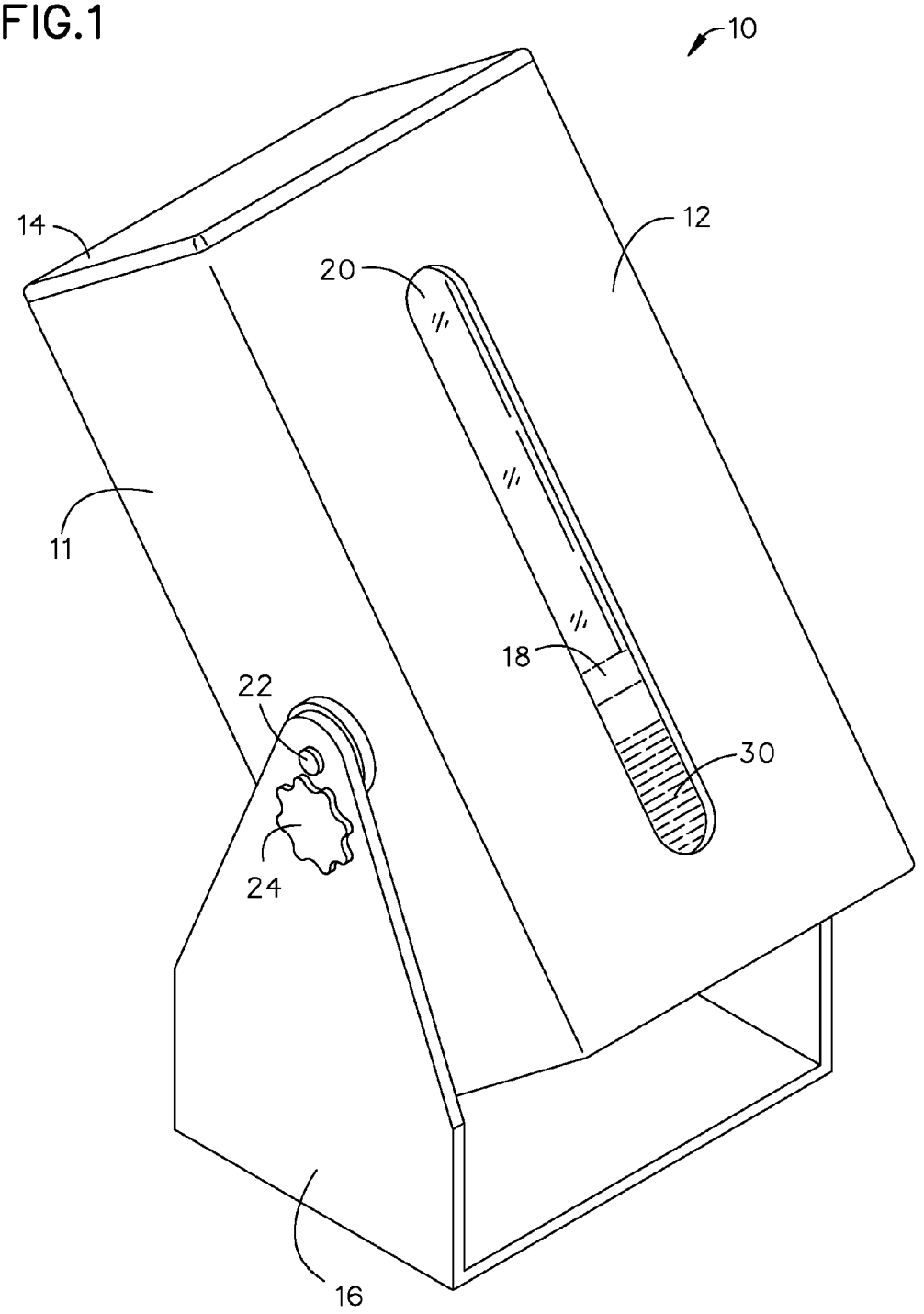


FIG.1



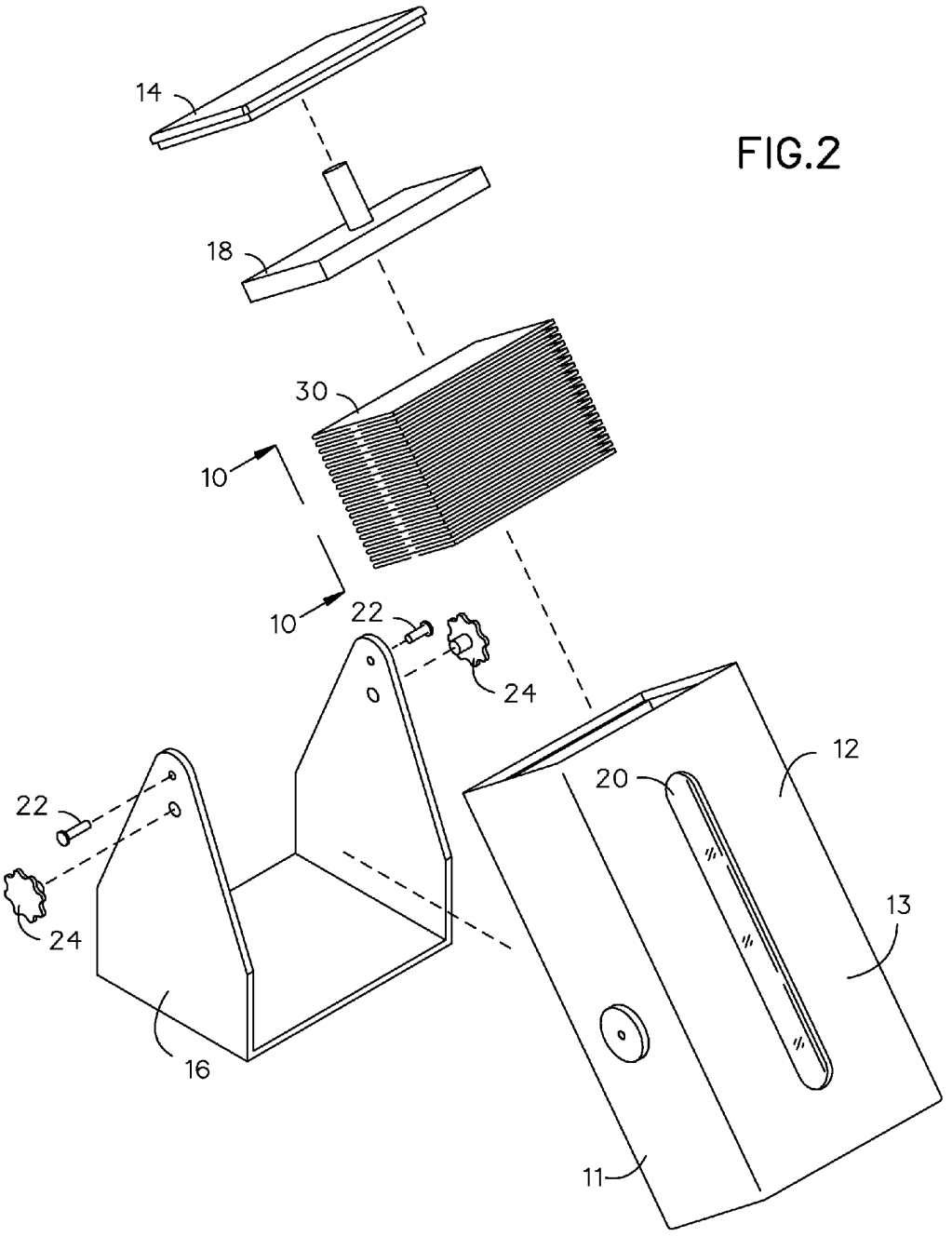


FIG.2

FIG.3

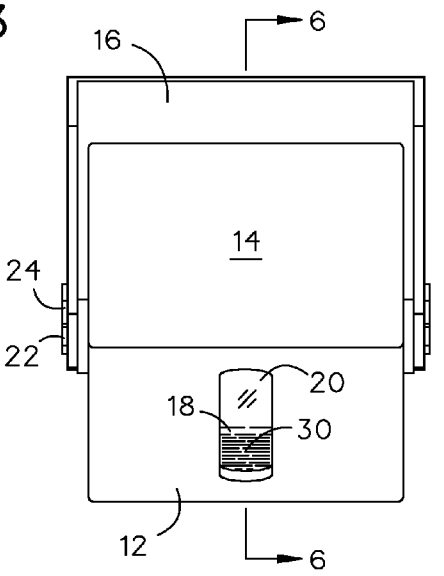
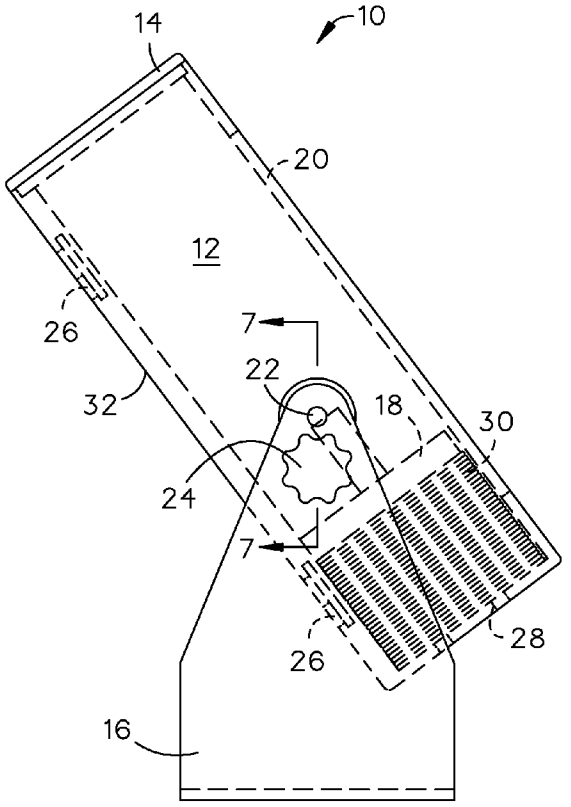


FIG.4



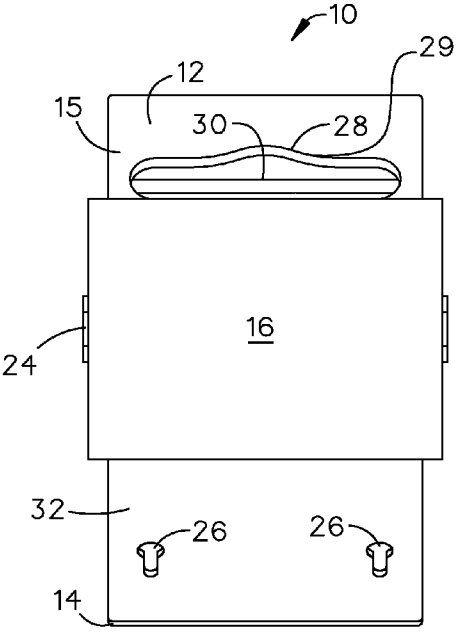


FIG.5

FIG.6

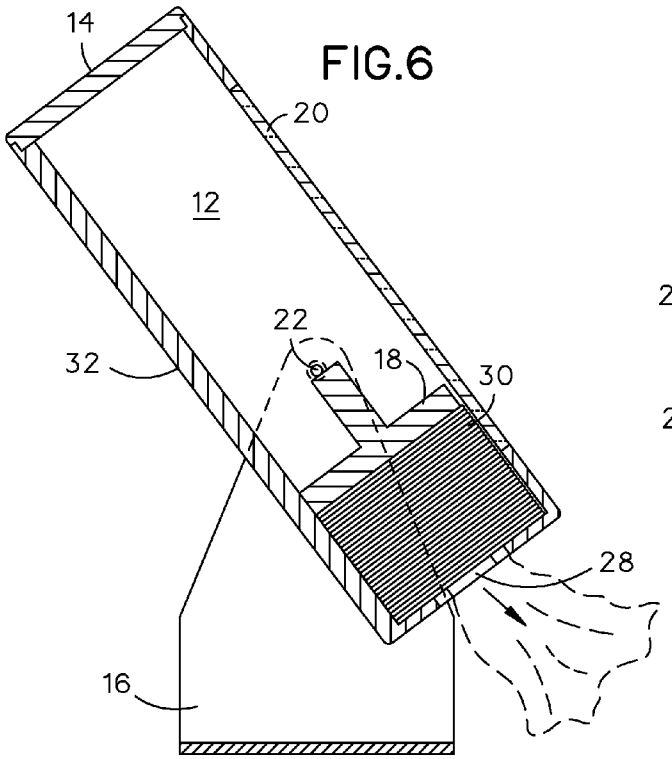


FIG.7

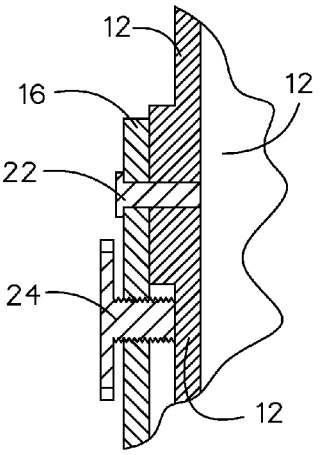


FIG.8

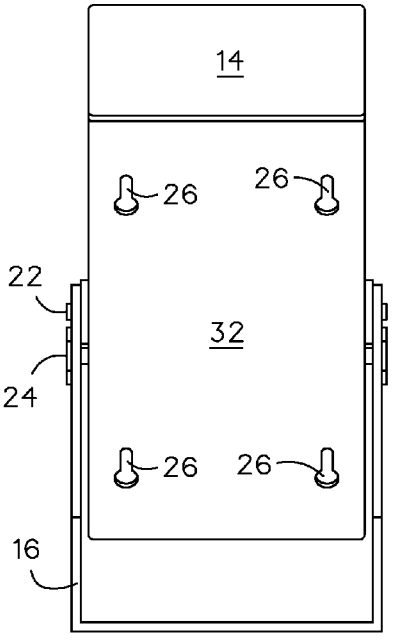


FIG.9

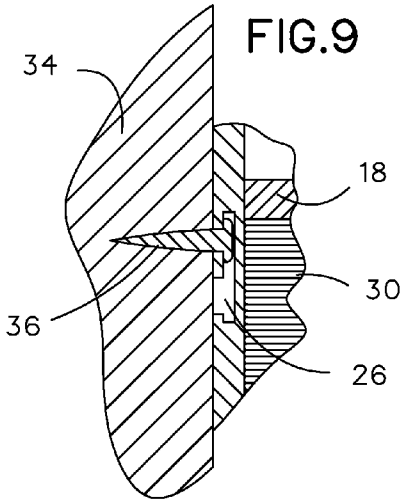


FIG.10

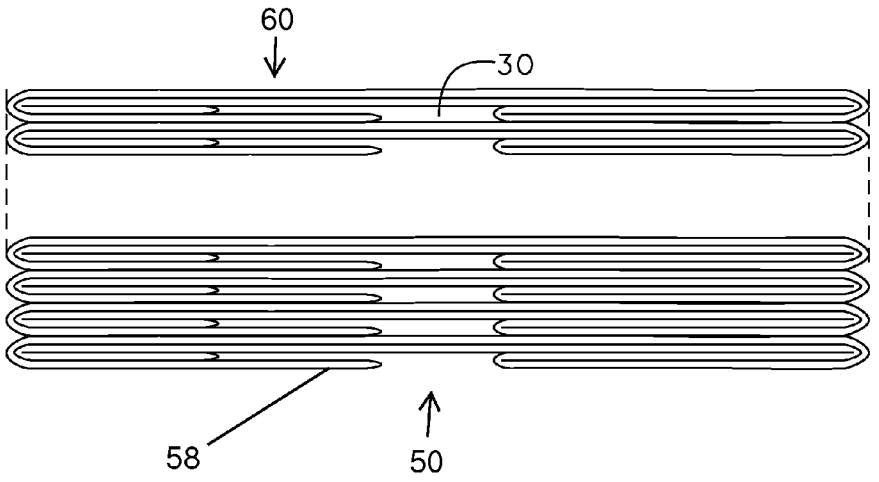
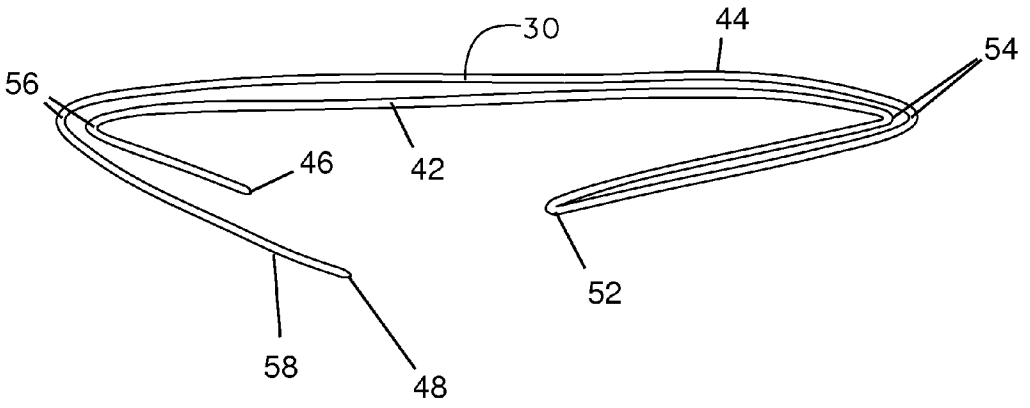


FIG.11



METHOD AND APPARATUS FOR DISPENSING CLEANROOM WIPES

BACKGROUND OF THE INVENTION

[0001] The present invention relates to the distribution of cleanroom wipes and, more particularly, to a dispenser that prevents wasteful usage and eliminates cross contamination of cleanroom wipes.

[0002] Within particular industries, such as pharmaceuticals, biomedical, micro-electronics and the like, it is imperative that exposure to microbial contaminants, electrostatic discharge (ESD) and the like are minimized at every turn of the manufacturing process and in and around the workspace, such as a cleanroom, where they are manufactured and handled. As a result, the use of cleanroom wipes within such workspaces and associated cleanrooms is vital in implementing this imperative.

[0003] However, it is human nature for people to use more wipes than necessary, especially when they are not paying for them. This is especially a problem in cleanrooms where cleanroom wipes are extremely expensive and typically stacked in a pile. All too frequently, cleanroom workers will take many more wipes than the one wipe that is needed. And they usually "fan" through the top twenty or more sheets then take two or more. This typical behavior not only wastes wipes, but cross contaminates the "fanned" wipes, which is hazardous to good manufacturing practices, particularly when the cleanroom is manufacturing pharmaceuticals, biomedical or organ transplantation tissues and materials. Another problem is that cleanroom wipes are typically sitting on a bench, or cart exposed to the environment, susceptible to environmental contamination. Furthermore, they are sitting in plain non ESD bags that contain static electricity, which is harmful to a cleanroom that produces microelectronics.

[0004] As can be seen, there is a need for a dispenser that prevents wasteful usage and eliminates cross contamination of cleanroom wipes.

SUMMARY OF THE INVENTION

[0005] In one aspect of the present invention, a cleanroom wipe dispenser comprises: a housing having a plurality of walls that form a compartment; a generally elongated elliptical shaped dispensing opening defined by at least one of the plurality of walls; and a plurality of cleanroom wipes stored within the compartment, each comprising a sheet uniquely folded in an "C" shape defining an upper leg and a lower leg, and wherein the lower leg of each cleanroom wipe abuts the upper leg of an adjacent cleanroom wipe, so that each cleanroom wipe abrades the adjacent cleanroom wipe when dispensed through the dispensing opening.

[0006] In another aspect of the present invention, method of preventing cross contamination of cleanroom wipes comprises: providing a housing having a plurality of walls that form a compartment; and a generally elongated elliptical shaped dispensing opening defined by at least one of the plurality of walls; folding a plurality of cleanroom wipes, wherein each cleanroom wipe is a sheet uniquely folded in a "C" shape defining an upper leg and a lower leg, and wherein the lower leg of each cleanroom wipe abuts the upper leg of an adjacent cleanroom wipe so that each cleanroom wipe abrades the adjacent cleanroom wipe when dispensed through the dispensing opening; and storing the plurality of cleanroom wipes within the compartment.

[0007] These and other features, aspects and advantages of the present invention will become better understood with reference to the following drawings, description and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. **1** is a perspective view of an exemplary embodiment of the present invention;

[0009] FIG. **2** is an exploded view of an exemplary embodiment of the present invention;

[0010] FIG. **3** is a top view of an exemplary embodiment of the present invention, illustrating hidden information;

[0011] FIG. **4** is a side view of an exemplary embodiment of the present invention;

[0012] FIG. **5** is a bottom view of an exemplary embodiment of the present invention;

[0013] FIG. **6** is a section view of an exemplary embodiment of the present invention, taken along line **6-6** in FIG. **3**;

[0014] FIG. **7** is a detailed section view of an exemplary embodiment of the present invention taken along line **7-7** in FIG. **4**;

[0015] FIG. **8** is a rear view of an exemplary embodiment of the present invention;

[0016] FIG. **9** is a detailed section view of an exemplary embodiment of the present invention;

[0017] FIG. **10** is a side view of an exemplary embodiment of the present invention, taken along line **10-10** FIG. **2**, illustrating a stacking of a plurality of cleanroom wipes; and

[0018] FIG. **11** is a detailed view of an exemplary embodiment of the present invention, illustrating a Double C fold of a cleanroom wipe.

DETAILED DESCRIPTION OF THE INVENTION

[0019] The following detailed description is of the best currently contemplated modes of carrying out exemplary embodiments of the invention. The description is not to be taken in a limiting sense, but is made merely for the purpose of illustrating the general principles of the invention, since the scope of the invention is best defined by the appended claims.

[0020] Broadly, an embodiment of the present invention provides a cleanroom wipe dispenser. The cleanroom wipe dispenser may include a housing forming a compartment for removably storing a plurality of cleanroom wipes. The plurality of cleanroom wipes may be uniquely folded so that they are not interfolded so as not to abrade the adjacent cleanroom wipe when being dispensed, thereby eliminating cross contamination of cleanroom wipes. A bottom wall of the housing may define a generally elongated elliptical dispensing opening adapted to limit access to the plurality of cleanroom wipes so as to prevent wasteful usage.

[0021] Referring to FIGS. **1** through **9**, the present invention may include a cleanroom wipe dispenser **10**. The cleanroom wipe dispenser **10** may include a housing **12** made out of ESD-resistant material, having side walls **11** generally perpendicularly joined to a front wall **13**, a bottom wall **15** and a back wall **32**. The housing **12** may form a compartment for removably storing a plurality of cleanroom wipes **30**.

[0022] The front wall **13** may include a viewing slot **20** along a substantial portion thereof so that a user my visually determine when the plurality of cleanroom wipes **30** within the compartment are getting depleted, as well as aiding in the loading the compartment by allowing the user to use two hands while guiding the plurality of cleanroom wipes **30** into the compartment.

[0023] The housing **12** may include a top wall **14** that removably encases the compartment. In certain embodiments, the top wall **14** may be pivotably joined to the housing **12**.

[0024] The bottom wall **15** may define a generally elongated elliptical dispensing opening **28** therein. In certain embodiments, any wall of the housing **12** may define the dispensing opening **28**. The dispensing opening **28** has a generally increasing width toward the central portion thereof which is greater than its width at the ends. The dispensing opening **28** may include a back edge and a front edge **29**. The front edge **29** may be in the form of elliptical or curved shape, as illustrated in FIG. **5**, so that the dispensing opening **28** may be wider at its central portion so as to allow limited access to the lowest of the plurality of cleanroom wipes **30** to be dispensed. This elliptical or curved shape is designed so that a portion of the flap **58** or lower leg of the lowest of the plurality of cleanroom wipes **30** protrudes slightly through the dispensing opening **28**. The dispensing opening **28** may be of a size such that a limited number of fingers of a person using the device may be inserted in the dispensing opening **28**. The dispensing opening **28** may be adapted to accommodate the dispensing of other wipes, such as paper towels, wet wipes and the like.

[0025] In certain embodiments, the housing **12** may be pivotally mounted along at least one side wall **11** to a stand **16**. The stand **16** may be adapted to support the cleanroom wipe dispenser **10** on a supporting surface, such as a workbench, cart or the like so that the cleanroom wipe dispenser **10** may be portable yet operably supported when seated on a moving or new supporting surface. The pivotable connection may provide at least one pin **22** and at least one adjustment knob **24**. The at least one pin **22** and the at least one adjustment knob **24** may be adapted to rotatably move about the axis of the at least one pin **22** so that the angle of the housing **12** relative to a plane normal to the supporting surface may be adjusted at least 90 degrees thereof in either direction. In this manner the opening of the compartment and the dispensing opening **28** may be presented to users in a myriad of positions and angles.

[0026] In an alternative embodiment, the housing **12** cooperates with the back wall **32** so that the cleanroom wipe dispenser **10** may be suitable for attachment to a wall **34** or other support means. The back wall **32** may provide a plurality of mounting elements **26** for such suitable attachment. The plurality of mounting elements **26** may include slots adapted to secure a wall fastener **36**, such as a screw, nail or the like, therein, as illustrated by FIGS. **8** and **9**. It should be understood that the plurality of mounting elements **26** may be any fastener known in the art for fastening or removably securing one object to another including, for example, standard push-button snaps, Velcro-type fasteners, adhesive substances, combinations thereof, and the like. It should also be that the plurality of mounting elements **26** may be configured in any array and/or number, so long as the fasteners function in accordance with the present invention as described herein.

[0027] Referring to FIGS. **10** and **11**, the plurality of cleanroom wipes **30** may be uniquely folded so that they are not interfolded or interleaved when stacked for use in the cleanroom wipe dispenser **10**, as illustrated in FIG. **10**. By not being interfolded and so not abraded when they are dispensed, the plurality of cleanroom wipes **30** eliminate cross contamination of cleanroom wipes. Each cleanroom wipe **30** may be folded in a generally "Double C" shape. Each cleanroom wipe **30** may be a unitary sheet having a first portion **42** and a second portion **44** both defined by a first fold **52** on one end and a first edge **46** and a second edge **48**, respectively, on the opposing end, as illustrated in FIG. **11**. The first portion **42** and the second portion **44** may substantially overlap from the first fold **52** extending to at least the first edge **46** of the first portion **42**. Between the first fold **52** and the first end **46**, the first portion **42** and the second portion **44** may be complementarily folded at two complementarily second folds **54** and two complementarily third folds **56** so that both overlapping portions **42**, **44** form a "C" shape, as illustrated in FIG. **11**. A distance from the third folds **56** to the second edge **48** of the second portion **44** may be longer than a distance from the third folds **56** to the first edge **46** of the first portion **42** forming a flap **58** at the second edge **48** of the second portion **44**.

[0028] The plurality of cleanroom Double C-folded cleanroom wipes **30** may include an open side **50**, comprising the second edge **48**, the first edge **46** and the first fold **52**; opposite the open side **50**, the Double C-folded cleanroom wipes **30** may include a closed side **60**, as illustrated in FIGS. **10** and **11**. Each open side **50** of the "C" shape may face toward the dispensing opening **28**, so as to be easily obtained with a gloved hand or a non-gloved hand through the dispensing opening **28**. In certain embodiments, the flap **58** of the cleanroom wipe **30** may be adapted to protrude through the dispensing opening **28** when adjacent thereto.

[0029] Each cleanroom wipe **30** may be disposed relative to an adjacent cleanroom wipe **30**, when in the cleanroom wipe dispenser **10**, wherein the open side **50** abuts the closed side **60** of the adjacent cleanroom wipe **30** so as not to be interfolded or interleaved thereto, thereby not abrading the adjacent cleanroom wipe **30** when being dispensed from the dispensing opening **28**.

[0030] Each cleanroom wipe **30** may be made from a unitary sheet of cleaning wipe material that minimizes or eliminates microbial contaminants, electrostatic discharge (ESD) and the like. In certain embodiments, the plurality of cleanroom wipes **30** are custom made. In certain embodiments, the plurality of cleanroom wipes **30** may be adapted so that large wipes **30** fit in a small dispenser **10**.

[0031] A method of using the present invention may include the following. The cleanroom wipe dispenser **10** disclosed above may be provided. The user may detach the top wall **14** and place the plurality of cleanroom wipes **30** within the empty compartment. Then the user may attach the top wall **14** and either seat the stand **16** on the supporting surface or connect the back wall **32** to the wall **34**.

[0032] In certain embodiments, the user may insert a weight **18** on the plurality of cleanroom wipes **30**. The weight **18** may be shaped to be slidably received by the compartment. The weight **18** may ensure proper pressure against the dispensing opening **28**, by the downward depression force that the mass of the weight **18** applies, for when the plurality of cleanroom wipes **30** get low.

[0033] It should be understood, of course, that the foregoing relates to exemplary embodiments of the invention and that modifications may be made without departing from the spirit and scope of the invention as set forth in the following claims.

What is claimed is:

1. A cleanroom wipe dispenser comprising:

a housing made out of ESD-resistant material formed by a plurality of walls so as to define a compartment; and

a dispensing opening formed in one of the plurality of walls and defined by a front edge and a back edge, wherein the front edge has a generally elongated elliptical shape so that its width toward a central portion thereof is greater than its width at its ends,

whereby access through the dispensing opening is afforded at the central portion thereof, comparatively to its ends.

2. The cleanroom wipe dispenser of claim **1**, wherein the back edge has a generally elongated elliptical shape so that its width toward a central portion thereof is greater than its width at its ends.

3. The cleanroom wipe dispenser of claim **1**, further including a viewing window formed in one of the plurality of walls.

4. The cleanroom wipe dispenser of claim **1**, wherein the plurality of walls comprises a bottom wall and a front wall.

5. The cleanroom wipe dispenser of claim **4**, wherein the bottom wall forms the dispensing opening.

6. The cleanroom wipe dispenser of claim **5**, wherein the front wall forms the viewing window.

7. The cleanroom wipe dispenser of claim **1**, further including a plurality of cleanroom wipes housed within the compartment.

8. The cleanroom wipe dispenser of claim **7**, wherein each cleanroom wipe is double-c folded having an open side and a closed side.

9. The cleanroom wipe dispenser of claim **8**, wherein each cleanroom wipe is disposed so that their open side faces the dispensing opening.

10. The cleanroom wipe dispenser of claim **8**, wherein each cleanroom wipe is disposed so that its closed side abuts the open side of an adjacent cleanroom wipe.

11. The cleanroom wipe dispenser of claim **8**, wherein each cleanroom wipe forms a flap configured to protrude out of dispensing opening when adjacent thereto.

12. A unitary sheet of cleanroom wipe material for stacking a plurality thereof, comprising:

a first portion of the unitary sheet of cleanroom wipe material, wherein the first portion comprises a first edge;

a second portion of the unitary sheet of cleanroom wipe material, wherein the second portion comprises a second edge,

wherein the first portion and the second portion are connected along a first fold so that the first portion and the second portion substantially overlap from the first fold extending to at least the first edge of the first portion, and wherein the first portion and the second portion are complementarily folded at two complementarily second folds and two complementarily third folds so that the first portion and the second portion form a general C-shape.

13. The unitary sheet of cleanroom wipe material for stacking a plurality thereof of claim **12**, wherein a distance from the third folds to the second edge of the second portion is longer than a distance from the third folds to the first edge of the first portion forming a flap at the second edge of the second portion.

14. The unitary sheet of cleanroom wipe material for stacking a plurality thereof of claim **12**, wherein the C-shape comprises an open side and a closed side, and wherein the open side abuts the closed side of an adjacent unitary sheet of cleanroom wipe material for stacking a plurality thereof.

15. A method of preventing cross contamination of a plurality of cleanroom wipes comprising when being distributed, comprising:

providing a unitary sheet of cleanroom wipe material;

folding the unitary sheet along a first fold so that a first portion having a first edge overlaps a second portion having a second edge; and

complementarily folding the overlapped first and second portions at two complementarily second folds and two complementarily third folds so that the overlapped first and second portions form a general C-shape, wherein a distance from the third folds to the second edge of the second portion is longer than a distance from the third folds to the first edge of the first portion forming a flap at the second edge of the second portion.

16. The method of **15**, further including stacking an open side of the general C-shape cleanroom wipe on top of a closed side an adjacent general C-shape cleanroom wipe.

17. The method of **16**, further including providing a housing made out of ESD-resistant material formed by a plurality of walls so as to define a compartment; and a dispensing opening formed in one of the plurality of walls and defined by a front edge and a back edge, wherein the front edge has a generally elongated elliptical shape so that its width toward a central portion thereof is greater than its width at its ends.

18. The method of **17**, further including housing the plurality of cleanroom wipes within the housing so that the open side of each cleanroom wipe faces the dispensing opening.

19. The method of **18**, wherein a portion of the flap of the cleanroom wipe adjacent the dispensing opening is protruding out of said dispensing opening.

* * * * *