Abstract Title: Means of Preventing Contamination of Gloves

A device 1 for dispensing gloves 26 comprising a container 25 having an internal volume that holds a stack of gloves 5, a dispensing aperture 3 in the container for allowing a user to pull out a topmost glove from the stack of gloves 5, and at least one edge 7 and/or surface adjacent the aperture that is externally exposed to user contact when a glove is pulled from the stack of gloves 5. A spacing means 4 is provided to provide a gap between the topmost glove and the edge 7 and/or surface adjacent the aperture that is externally exposed to user contact. A separate embodiment shows spacers used on both the upper and lower internal surfaces (104,11). The present invention relates to a device and method by which gloves to be used in an environment where hygiene is important can be prevented from becoming contaminated on dispense from a container.
Means of Preventing Contamination of Gloves

BACKGROUND

5 a. Field of the Invention

The present invention relates to a device and method by which gloves to be used in an environment where hygiene is important can be prevented from becoming contaminated on dispense from a container.

10 b. Related Art

The control of infection of patients in hospitals, clinics, and doctors' surgeries has become an ever more pressing concern with the rise of infectious bacteria resistant to multiple antibiotics, in particular methicillin-resistant staphylococcus aureus (MSRA) and Clostridium difficile (C. difficile). In the United Kingdom alone there are thought to be about 5,000 deaths a year from infections caught in hospitals but some experts believe the number could be as high as 20,000.

20 Research has shown that high levels of MSRA and C. difficile are present on everyday items in hospitals. Samples taken from an intensive care unit at a London hospital found MSRA on charts, bins, pens, medical notes, phones and computer keyboards. There was also MSRA present on staff aprons and hands. The most common route for MSRA infection is between patients or via a doctor or nurse. Hospital staff can spread MSRA by using such items after having contact with patients.

25 Research has also shown that if someone has MSRA or C. difficile on their hands, the bacteria would be left on the next four surfaces touched by that person. Once MSRA is on an item it will remain there for up to 80 days unless that item is cleaned. C. difficile will remain active on surfaces much longer than that.
Disposable medical gloves can help prevent cross-contamination, but a problem arises if external parts of the glove touch the same areas of a dispensing container as have previously been touched by hands which are contaminated with harmful micro-organisms. Such external parts of the gloves can then become contaminated prior to contact with a patient, if these external parts are the fingers or palm area of the glove the likelihood of a patient being contaminated is dramatically increased.

Most gloves used in hospitals and clinics are examination gloves, and these are used in large numbers. Such gloves are supplied not in individual sterile packages, but in relatively inexpensive cardboard dispensing boxes. Because of the enhanced infection control properties the preferred method of dispensing these gloves is now Cuff 1st, where the user can only remove the gloves from the container by the cuffs rather than by the fingers etc. However in order to remove the gloves by the cuff there is a danger that the users hands will contaminate the edges of the area of the box through which the gloves have to pass, increasing the possibility that any contamination on the hands of the user can then be transferred to the gloves if they touch these areas when removing them from the container.

It is an object of the present invention to provide a means by which during removal of the gloves from the container, the gloves can be prevented from contact with the areas which could have been previously contaminated by user's hands.

SUMMARY OF THE INVENTION

According to the invention there is provided a device for dispensing gloves, comprising:
- a container having an internal volume that holds a stack of gloves;
- a dispensing aperture in the container for allowing a user to pull out a topmost glove from the stack of gloves;
- at least one edge and/or surface adjacent the aperture that is externally
exposed to user contact when a glove is pulled from the stack of gloves; and
- a spacing means arranged to provide a gap between said topmost glove and said edge and/or surface.

5 Also according to the invention there is provided a method of controlling contamination imparted to external surfaces of a glove during dispensing of the glove from a glove dispenser, the method comprising the steps of:
- partially or fully filling an internal volume of a container with a stack of gloves;
- providing a dispensing aperture in the container for allowing a user to pull out a topmost glove from the stack of gloves, said aperture having at least one edge and/or surface adjacent the aperture that is externally exposed to user contact when a glove is pulled from the stack of gloves; and
- providing a spacing means that is arranged to provide a gap between said topmost glove and said edge and/or surface, such that a topmost glove may be manually pulled from the stack out of the aperture without contacting said edge and/or said surface.

The dispensing aperture may be formed entirely or partially by outer surfaces of a box-like container.

The spacer may also provide a gap between the topmost glove and a surface underneath a top outer surface of a container or a movable plate within the container, the plate helping to define the dispensing aperture.

The spacer is provided in the general the area where the gloves are to be dispensed to keep the top surface of the top glove in the glove stack within the container away from an inner opposing or external top surface of the container. This spacer can also be set back from an edge of a dispensing cut-out in the top surface of the container, so that in use the spacer is not contacted by the fingers of a user pulling a glove from the dispenser.
BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be further described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of the arrangement according to a first preferred embodiment of the invention;

Figure 2 is a section through II – II Figure 1, showing the glove stack and spacing plate where the gloves are stacked in a flat uniform arrangement;

Figure 3 is a perspective view of a similar arrangement according to a second preferred embodiment of the invention where the gloves are dispensed by pressure from a biasing device via an aperture predominantly in the top surface of the container;

Figure 4 is a section through IV - IV Figure 3, showing the glove stack and spacing plate where the gloves are stacked flat in a uniform arrangement with a biasing device which urges the gloves towards the dispensing area;

Figure 5 shows a perspective view of a version of the spacing device which can move down on top of the gloves within the container as the gloves are dispensed;

Figure 6 shows a perspective view with a springably biased spacing device where the area where the smaller cut-out is positioned can move in an arc;

Figure 7 shows a cross section VII - VII through Figure 6;

Figure 8 shows the underneath view of the device in Figure 7 with the device compressed;
Figure 9 shows a spacing device with a separate biasing element; and

Figure 10 shows a section X - X through Figure 9.

5 DETAILED DESCRIPTION

Figure 1 shows a device for dispensing gloves 1, comprising an elongate container 25 which is here a box formed from card or any other rigid or semi-rigid material. The box container 25 contains a stack 5 of gloves 26 each of which has a cuff 2 showing through an aperture 3 in the front of the box 1 ready for removal. Not shown in the drawings is a removable cover which, prior to use, covers the aperture 3. The cover is removed to permit dispensing of gloves from the aperture.

Figure 2 is a section II - II through the container 25 Figure 1, showing a spacing device assembly 8 that comprises a movable plate 12 on an underside 26 of which is fixed a spacer element 4 positioned above the stack of gloves 5. A concave front edge 6 of the spacer 4, relative to the aperture 3, is set back from a similarly concave front edge 7 of the movable plate 12. This set back arrangement can continue along the front edge 6 of the spacer 4 (indicated in Figure 1 by a dotted line), although the spacer 4 need not be continuous but can have gaps along its length or slots between which the spacer contacts the gloves 26.

This configuration of spacing device 8 is shown in more detail in Figure 5. The spacing device 8 is independent from the container 25 of Figure 2 and sits on top of the stack of gloves 5 with a smaller cut-out 9 formed by the concave front edge 7 of the movable plate 12 as shown in Figure 5 being set over a larger similarly shaped cut-out area 10 formed by the concave front edge 8 of the spacer element 4. In use, the cut-out 9 defines a dispensing area. This assembly 8 will travel downwards under its own weight maintaining contact with a top glove 26 in the stack 5 as gloves are dispensed one at a time through the aperture 3. The spacer plate 12 preferably extends along the full internal length of the container 25 while the spacer element 4 can be any length between that shown and the whole length
of the internal length of the container 25 of Figure 2. The top of the spacer plate 12 can be shorter than the spacer element 4 with the spacer element continuing up to the full internal length of the container 25.

Figures 4 and 4 show a second embodiment of a device for dispensing gloves 101 similar to that of Figure 1, in which features similar to those of the first embodiment are indicated using reference numerals incremented by 100. The second embodiment differs from the first in that there is no movable plate 12 and in that the gloves 126 are urged upwards towards a dispensing area 109 by a biasing device 11 extending upwards from a floor 30 of the container 125. Figure 4 shows a spacer element 104 fixed to an underside 132 of the top of the container 125 and above the stack of gloves 5. A concave front edge 106 of the spacer 104 is set back from a concave front edge 107 cut-out in a top panel 34 of the container 125, which therefore defines the dispensing area 109. This set back arrangement can continue along the front edge 106 of the spacer 104 as shown by the dotted line in Figure 3, although the spacer need not be continuous but can have gaps along its length or slots between which the spacer contacts the gloves 126.

A further embodiment of a spacing device 208 is shown in Figure 6, in which features similar to those of Figure 5 are indicated using reference numerals incremented by 200. Here the spacing device 208 has a movable plate formed by a top plate 39 and a bottom plate 40. The top plate 39 has a smaller cut-out area 209 that is pivotably connected at a front edge 14 of the device to the bottom plate 40 so that the top plate 39 is able to move in an arc pivoting about the front edge 14 of the spacing device 208. There can be a solid spacer element 204 inserted between the bottom plate 40 of the spacing device 208 and the hinged part 14 to prevent the hinge area 14 crushing when the container is full of gloves. Alternatively the upper and lower plates 39, 40 can be formed by a single piece of semi rigid material such as card or plastic.

Figure 7 shows a cross section VII - VII of the spacer device of Figure 6 when used with the container 25 of the first embodiment described above. The lower
plate 40 of the spacer device 208 rests on the top surface of the glove stack 5. The top plate 39 will be springably biased by the fold at 14 to move in an arc about the fold 14 and remain firmly in contact with underside of an inner top surface 32 of the container 25. Conversely this will keep the lower plate 40 firmly in contact with the glove stack 5.

Figure 8 shows the underneath view of the spacing device 208 of Figure 6 when compressed, clearly showing that the upper plate 39 has a cut-out 207 that protrudes over and in front of a larger cut-out 17 in the lower plate 40.

As another alternative, shown in Figures 9 and 10, more pressure can be applied to the top surface of the glove stack 5 by using a spacer device 308 that includes an elastic strip or band 18. Here, the spacer device 308 is inserted into the container 25 of the first embodiment. The spacer device 308 has an upper plate 139 and a lower plate 140 that are formed from one piece of material or two pieces joined together.

The upper plate 139 has a hinge 114 that extends transverse to the length of the container 25. The hinge 114 is formed by a fold in the material between a forwards section 20 and a rearwards section 22. The band 18 pulls the two sections 20 and 21 towards each other, the hinge 22 abutting the underside 32 of the container 25, and consequently applying downwards pressure to the glove stack 5. It will be noticed that the same configuration of cut-out in the front of the device as described above is evident with an upper cut-out 307 in the top plate 139 being, forwards of a larger cut-out 306 in the lower plate 40 of the device 308. This is shown again in Figure 10 where the upper cut-out edge 307 is set over and forwards of the lower cut-out edge 306.

In any of the embodiments described above, the spacer element can be any suitable thickness in order to provide the required minimum separation between the topmost glove being dispensed and contaminated edges or surfaces around the dispensing aperture. The spacer element thickness, and hence the gap this
provides, should be at least 2 mm. In preferred embodiments of the invention, the spacer thickness is 5 mm.

Any of the previously mentioned spacing devices can be used in containers of gloves where the gloves are folded in half so that the cuff area is under or over the fingers – or where the gloves are interfolded.

The invention therefore provides a convenient and effective means by which during removal of the gloves from the container, the gloves can be prevented from contact with the areas which could have been previously contaminated by user’s hands.
Claims

1. A device for dispensing gloves, comprising:
   - a container having an internal volume that holds a stack of gloves;
   - a dispensing aperture in the container for allowing a user to pull out a topmost glove from the stack of gloves;
   - at least one edge and/or surface adjacent the aperture that is externally exposed to user contact when a glove is pulled from the stack of gloves; and
   - a spacing means arranged to provide a gap between said topmost glove and said edge and/or surface.

2. A device as claimed in Claim 1, in which the spacing means also provides a gap between the topmost glove and a surface underneath a top outer surface of a container.

3. A device as claimed in Claim 1, in which the spacing means also provides a gap between the topmost glove and a movable plate within the container, the plate helping to define the dispensing aperture.

4. A device as claimed in any preceding claim, in which, the dispensing aperture is formed entirely or partially by outer surfaces of a box-like container.

5. A device as claimed in any preceding claim, in which the spacing means is set back from an edge of a dispensing cut-out that defines a portion of the dispensing aperture.

6. A device as claimed in Claim 5, in which said portion of the dispensing aperture is provided by a movable plate within the container.

7. A device as claimed in Claim 5, in which said portion of the dispensing aperture is provided by an inner surface of the container.
8. A device as claimed in any preceding claim, in which the spacing means includes a spacer element, said element having a thickness that defines the gap between said topmost glove and said edge and/or surface, said thickness being at least 2 mm.

9. A device as claimed in Claim 8, in which said thickness is 5 mm.

10. A method of controlling contamination imparted to external surfaces of a glove during dispensing of the glove from a glove dispenser, the method comprising the steps of:
    - partially or fully filling an internal volume of a container with a stack of gloves;
    - providing a dispensing aperture in the container for allowing a user to pull out a topmost glove from the stack of gloves, said aperture having at least one edge and/or surface adjacent the aperture that is externally exposed to user contact when a glove is pulled from the stack of gloves; and
    - providing a spacing means that is arranged to provide a gap between said topmost glove and said edge and/or surface, such that a topmost glove may be manually pulled from the stack out of the aperture without contacting said edge and/or said surface.

11. A device for dispensing gloves, substantially as herein described, with reference to or as shown in the accompanying drawings.

12. A method of controlling contamination imparted to external surfaces of a glove during dispensing of the glove from a glove dispenser, substantially as herein described, with reference to the accompanying drawings.
Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

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|   |     | (RUTTGER) Abstract  
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| A | --- | US3243079 A  
|   |     | (RETTMER) - Figs 1-3 All of document.  
| A | --- | CA2105245 A  
|   |     | (ANNAND) - Figs 1-4 and 8. Abstract.  

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**Field of Search:**

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC:

| A61B; B65D |

Worldwide search of patent documents classified in the following areas of the IPC:

| WPI, EPODOC |

The following online and other databases have been used in the preparation of this search report:

**International Classification:**

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