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1

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STERILIZED FOOTWEAR

Rune Edberg, Orebro, Sweden, assignor to Arbesko Aktiebolag, Orebro, Sweden
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6 Claims

ABSTRACT OF THE DISCLOSURE

Footwear such as a shoe has a wooden sole to which is secured an upper made of a fabric coated with emulsified polyvinylchloride containing a softening agent and a stabilizing agent. Such footwear is capable of being repeatedly sterilized for a period between 15 and 60 minutes and at a temperature between 100° C. and 150° C. without substantially changing its shape, and is hence particularly suitable for use in an environment requiring the use of sterilized footwear.

At, for instance, the manufacture of pharmaceuticals, and in operating rooms in hospitals, it is of very great importance that both people and their garments, as well as instruments, are sterilized. However, it has hitherto not been possible to sterilize the footwear used by personnel in operating rooms and the personnel in the sterile rooms in factories where pharmaceuticals are made. This is an obvious disadvantage, and attempts have been made to find sterilized footwear somewhere in the world. However, this has not led to any success. Extensive research has also been carried on to develop sterilizable footwear. Regrettably, this has not led to any results.

In the above-mentioned dismal situation, it has become possible, through the present invention, to produce footwear that will withstand being sterilized a number of times. Sterile footwear has thereby been obtained which also has an economic life.

The sterilization to which the footwear is to be subjected is to take place at a temperature of between 100° and 150° C., particularly between 128° and 130° C. The sterilization is to last for a time of between 15 and 60 minutes, particularly, however, 30 minutes.

According to the invention, the sterilizable footwear is of the clog-bottom type, consisting of a bottom made of wood and an upper made of flexible material, which is applied to the bottom in a conventional way. By choosing a suitable combination of materials among known materials, it has been possible to develop footwear that can be sterilized. Making such a choice can be regarded as the result of perseverance, of a non-patentable nature, but with consideration to what has been stated above, the combination chosen must not be an obvious measure. The combination consists of choosing a kind of wood for the bottom that can be subjected to the above-mentioned sterilization without becoming distorted. Nails, if any, in the bottom must not loosen. Moreover, the bottom is to be made of such material that it retains its shape and flexibility.

It has now proved that the kind of wood that meets the above-mentioned requirements, according to the invention should be beech-wood, and then particularly common, ordinary beech-wood. It has also proved that the upper should consist of a plastic material which is available commercially and is sold under the trade name Gekalit. For fastening the upper to the bottom it is appropriate to use copper nails.

Gekalit consists of a woven fabric, particularly cotton fabric, to which has been applied a plastic, and then

2

polyvinyl chloride with a softener and a stabilizer. The plastic should appropriately be applied so that a coherent layer is formed. It has proved to be advantageous to use a fabric with a weight of 200 grammes per square metre. The softener can consist of a phthalic acid ester. A barium-cadmium compound is a suitable stabilizer.

Before its application to the fabric, the polyvinyl chloride has been obtained through emulsion polymerization.

On the inside of the Gekalit, i.e. the upper, a moisture-absorbing layer can be applied through gluing. Also this layer consists of a fabric, which has been impregnated with an elastomer. The moisture-absorbing layer also consists of a cotton fabric, which appropriately has a weight of 200 grammes per square metre. The elastomer consists of polyurethane. A suitable glue for fastening the two layers together is a polyurethane glue.

The bottom according to the present invention can have exactly more or less the same form as the bottom of ordinary clogs. The bottom can moreover be provided with a tread, which can either be a wear tread or a friction tread. This tread can be applied with glue or with nails. The tread should then have the form of a sole, but the bottom can of course also be coated with a liquid layer that can stiffen. The requirement for the tread is that it will withstand being sterilized. Further, it is appropriate to allow the bottom to have arrangements by means of which static electricity in the bottom can be removed.

The upper should appropriately be nailed on to the bottom by means of copper nails. It is then the edge of the upper which is nailed to the bottom. It is then advisable to have a nylon band under the heads of all of the nails. Over the bottom the upper forms a band or a cavity under which the user's foot can be inserted, so that the bottom can be secured to said foot.

It has proved that a shoe according to the present invention, i.e. consisting of beech-wood, although not red-beech, and said upper made of Gekalit, can be sterilized at least a hundred times. With consideration to the frequency of the sterilizations, such a sterilizable shoe will have a life corresponding to that of a similar shoe which is not subjected to sterilization.

What is claimed is:

1. Footwear capable of being repeatedly sterilized comprising:
 - a wooden sole; and
 - an upper secured to said sole, and made of a fabric coated with emulsified polyvinylchloride containing a softening agent and a stabilizing agent whereby the coated fabric upper and the wooden sole substantially retain shape when repeatedly subjected to sterilizing treatments for a period of 15 to 60 minutes and at a temperature of 100° C. to 150° C.
2. The footwear according to claim 1 wherein said softening agent is a phthalic acid ester.
3. The footwear according to claim 1 wherein said stabilizing agent is a barium-cadmium compound.
4. The footwear according to claim 1 wherein said upper is secured to said sole by copper nails.
5. The footwear according to claim 1 wherein said sole consists of beechwood.
6. The footwear according to claim 1 wherein said fabric is a woven fabric containing primarily cotton fibers.

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PATRICK D. LAWSON, Primary Examiner