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SHOE CREAM APPLICATORS WITH LAMINATED PLASTIC SPONGE PADS

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The present invention relates to a spreading cap for a container for pasty material and more particularly to a spreading cap for a tube used for pasty shoe dressing.

Tube caps incorporating a spreading device are already known and may comprise a bottom member, screwed into the tube, on which a spreading device, usually a porous pad, is secured. A cover which fits the bottom member encloses the spreading device when the tube is not in use. This cover usually carries a central rod which when the cover is in place extends through a central hole in the spreading device into the neck of the tube to seal the tube and to reduce drying of the paste in the tube during storage.

There are disadvantages, however, in the use of such a cap and porous pad spreading device in connection with tubes containing a pasty shoe dressing. When a tube with the spreading device is used, a small amount of the shoe dressing is squeezed out of the tube and forced as a thin ribbon through the central hole of the porous pad. During this squeezing, and particularly during the spreading of the shoe dressing, part of the shoe dressing is absorbed in the pores of the pad which normally is formed of a resilient porous cellular resin or rubber material. During the spreading, the cell walls of the spreader pad are pressed together and because of the adhesive power of the shoe dressing some of the cell walls cling together so that when the pressure is released the spreader pad does not resume its original form and size.

When not in use, the solvent of the shoe paste absorbed in the cellular material evaporates wholly or partly, since there is not a tight closure by the cover. The cell walls already adhering to each other are still more firmly retained in the compressed condition. The shoe dressing absorbed by the spreader pad also dries, making it hard and no longer absorbent for the shoe dressing and thus less suited for its purpose.

It is the object of the present invention to provide a spreading device of the class described in which the difficulties encountered due to hardening of the pasty material are minimized.

The spreader cap of the present invention includes a base adapted to be secured to a dispensing container and a novel multilayer resilient pad of cellular rubbery material secured in turn to the base of the cap. This multilayer pad has a bottom layer of closed-cell, cellular rubbery material adhered to the base of the cap, the closed cells preventing the entry and hardening of the pasty material, and an outermost layer adhered to the bottom layer, and consisting of an interconnecting-cellular rubbery material which allows the pasty material to be taken up and then transferred to the surface to be polished.

The invention will be described with reference to the accompanying drawing, in which

The figure is a side view with parts broken away of a shoe cream tube and an applicator cap according to the present invention.

The spreader cap 10 has a base member 12 which may be formed of a rigid plastic material such as polystyrene, polyethylene or other plastic materials which are not affected by solvent or other components of shoe paste.

The base member 12 is provided with suitable means for securing it to a dispensing container. As shown in the drawing, this may be an internally threaded cylindrical section 14 for cooperation with the external thread 18 of the nozzle 19 of a collapsible paste tube 20 or other dispensing container. A cylindrical flange 22 on the base member 12 concentric with the threaded portion 14 is proportioned and disposed to constitute a shoulder portion for cooperation with the end portion 24 of the paste tube 20 to provide lateral support for the base.

The base member 12 is provided with a flat face 26 to which the multilayer cellular pad 28 is secured. Suitably a cylindrical guide flange 30 for the cavity 22 is also provided, extending up from the flat face 26 of the base 12. An opening 34 extends through the base member 12 and is positioned over the open end of the nozzle 18 of the tube 20 in alinement with a passageway 36 through the cellular pad to provide a common passageway for the extrusion of the shoe paste. The cover 32 is provided with a central rod 38 to keep the passageway 36 clear and also to seal the nozzle 18 when the tube is covered.

The multilayer cellular pad 28 is bonded to the face 26 and the flange 30 of the cap 10. The pad includes layers 40 and 42 which are joined to each other by suitable adhesives so that the paste cannot penetrate between the layers. The bottom layer 40 of the spreading device is formed of a closed-cell resilient rubbery material which cannot absorb the paste of the tube. The top layer 42 is formed of a resilient interconnected-cellular rubbery material which absorbs the paste.

Suitable cellular rubbery materials include polymers and copolymers of vinyl chloride, polyurethane, and solvent-resistant rubber. The specific cellular material used depends upon the contents of the tube. For instance, a spreading device for use with a pasty shoe dressing including a volatile organic solvent should be resistant to volatile organic solvents, particularly turpentine, since this is often a component in the shoe dressing.

A preferred material for the porous top layer 42 is a cellular flexible polyurethane foam made from the combination of a polyester and a diisocyanate. The foam is formed by the gas producing reactions of the isocyanate group with the hydroxyl and/or carboxyl acid content of the ester and water. The foam is made by stirring the diisocyanate, usually meta-toluylene diisocyanate and water, into the viscous polyester, preferably having an acid value of at least 30, until an exothermic reaction which forms the urethane linkages takes place, and liberates the carbon dioxide gas which expands the mixture creating the cellular construction. A foam of sufficient softness for the purpose of a spreading device for a shoe cream is obtained by using a polyester of a relatively high acid number.

Polyvinyl chloride may be used for either or both parts of the laminate, and is a preferred material for the lower layer 40. Its use in the laminate depends upon its cellular structure, a closed cell structure for the lower layer 40, or an open-cell structure for the upper layer 42.

Foamed polyvinyl chloride may be made by various known procedures such as forming a plastisol, i.e., a fluid mixture of finely divided polyvinyl chloride and a plasticizer, incorporating a blowing agent, i.e., an agent which liberates gas when heated, and heating the composition to solidify the plastisol and liberate the blowing gas to form a resilient rubbery closed-cell cellular product.

In use the bottom layer 40 remains firm and resilient since it absorbs no shoe paste but serves as a cushioning agent for the upper layer 42. The bottom layer 40 is
thicker than the upper layer 42, preferably from about one and a half to four times as thick as the upper layer. The upper layer 42 is so thin, e.g., one-eighth inch, that it absorbs only enough of the shoe dressing to supply paste to its exposed surface 44 as the surface is wiped over a shoe or other article to be coated with the paste material. Because of the thinness of the layer 42, heavy deposits of solidified paste are not built up in the cells. On the other hand if the entire pad were made of a non-absorbent foam with the non-connecting cells, the upper portions of the pad would not retain the paste and would merely smear the paste unevenly over a surface.

In use, the paste material of the container 20 is squeezed through the nozzle 18 of the container and the opening 34 of the cap base 12 and through the passageway 36 of the multilayer pad 28 to the surface 44 of the spreading pad 42. It is there absorbed by the porous top layer 42 of the pad 28 and transferred to the desired surface area by rubbing the pad over the surface. Paste also bed in the cells is squeezed out by the pressure used in spreading. The lower layer 40 of the pad 28, which can retain none of the paste material due to its closed-cell cellular construction, is resilient, acting as a base-cushion for the absorbent spreading pad 42 during the spreading of the paste.

The top layer 42 is sufficiently thin to hold only the small amount of the paste material necessary to insure uniform spreading. Although the cap 10 is covered while not in use, the closure is not sufficiently tight to prevent evaporation of the solvent in the paste, and the top layer 42 of the pad 28 dries out at least partially and hardens. However, since this top layer is thin, the solids of the surface are easily redissolved in the solvent of the next paste extrusion, and the pad is reabsorbed for continued usage.

The cap 10 containing the multilayer pad 28 may be removed from an exhausted container and be re-used on a full container of preferably the same material. Also, since there is a slight amount of material dried out in only the thin top layer, it may be easily removed by quickly cleaning in a suitable solvent whenever it is desired to clean the pad between applications of the paste. Throughout continued use, the use of the cap retains its shape, and remains resilient, thus increasing the use-span and efficiency of the cap.

It is to be understood that this special example of use, i.e., for shoe cream, is not to be recognized as limiting the invention to a special application.

Having thus described my invention, what I claim as new and desirable to secure by Letters Patent of the United States is:

1. A spreader cap for cooperation with a container for dispensing paste material including a volatile solvent, said cap comprising a rigid base adapted to be secured to a dispensing container and being formed with an opening therefor through cooperation with and passage of paste material from a discharge opening in said container, and a multilayer, resilient, cellular pad of rubbery material secured on said base and formed with a passage extending completely through said pad and communicating with the opening in said base, the layers of said pad being adhered together, said cellular pad comprising a first layer of closed-cell cellular rubbery material adhered to said base, the closed cells preventing entry and hardening of said mixture in the cells thereof, and an outermost layer of interconnecting-cell cellular rubbery material, the interconnecting cells enabling said outermost layer to take up said paste material and to spread it on a desired surface, said outermost layer being approximately one-eighth inch thick and said first closed-cell cellular layer being approximately one and one-half to four times greater in thickness than said outermost layer.

2. A spreader cap for cooperation with a container for dispensing a mixture of paste consistency including a volatile solvent, said cap comprising a rigid base adapted to be secured to a dispensing container and being formed with an opening therefor through cooperation with and passage of paste material from a discharge opening in said container, and a multilayer, resilient, cellular pad of rubbery material secured to said base and being formed with a passage extending completely through said pad and communicating with the opening in said base, the layers of said pad being adhered together, said cellular pad comprising a first layer of closed-cell cellular rubbery material adhered to said base, the closed cells preventing entry and hardening of said mixture in the cells thereof, and an outermost layer of interconnecting-cell cellular rubbery material, the interconnecting cells enabling said outermost layer to take up said mixture and to spread it on a desired surface, said outermost interconnecting-cell cellular layer being approximately one-eighth inch thick and said first closed-cell cellular layer being approximately one and one-half to four times greater in thickness than said outermost layer.

3. A spreader cap for cooperation with a collapsible dispensing tube equipped with a nozzle for dispensing a mixture of paste consistency including a volatile solvent, said cap comprising a rigid base formed with an opening therefor, means for securing said cap to said nozzle of said dispensing tube with said opening in communication with the orifice in said tube, said cap comprising a first layer of closed-cell cellular rubbery material adjacent said base, the closed cells preventing entry and hardening of said mixture in the cells thereof, and an outermost layer of interconnecting-cell cellular resin adhered to said first layer, the interconnecting cells enabling said outermost layer to take up said mixture and to spread it on a desired surface, said outermost interconnecting-cell cellular layer being approximately one-eighth inch thick and said first closed-cell cellular layer being approximately one and one-half to four times greater in thickness than said outermost layer.

4. A spreader cap for cooperation with a collapsible dispensing tube equipped with an externally threaded nozzle for dispensing a mixture of paste consistency including a volatile solvent, said cap comprising a rigid base formed with an opening therefor having an internally threaded portion for assembly with the external threads on said nozzle, said opening being positioned in said base for communication with the orifice in said nozzle when said cap and said tube are assembled, said base comprising shoulder portions constricted and arranged to bear against end portions of said tube to provide lateral support for said base when said cap and said tube are secured together and said base also having a surface extending out from around said opening on the side opposite said shoulder portions, and a multilayer, resilient, cellular pad of rubbery material adhesively secured to said surface, said pad being formed with a passage extending completely through said pad and communicating with the opening in said base, the layers of said pad being adhered together, said cellular pad comprising a first layer of closed-cell cellular rubbery material adjacent said base, the closed cells preventing entry and hardening of said mixture in the cells thereof, and an outermost layer of interconnecting-cell cellular resin adhered to said first layer, the interconnecting cells enabling said outermost layer to take up said mixture and to spread it on a desired surface, said outermost interconnecting-cell cellular layer being approximately one-eighth inch thick and said first closed-cell cellular layer being approximately one and one-half to four times greater in thickness than said outermost layer.
5. A spreader cap for cooperation with a collapsible dispensing tube equipped with an externally threaded nozzle for dispensing a mixture of pasty consistency including a waxy material and volatile solvent, said cap comprising a rigid base formed with an opening therethrough having an internally threaded portion for assembly with the external threads on said nozzle, said opening being positioned in said base for alignment with the orifice in said nozzle when said cap and said tube are assembled, said base comprising shoulder portions constructed and arranged to bear against end portions of said tube to provide lateral support for said base when said cap and said tube are assembled and said base also having a surface extending out from around said opening on the side opposite said shoulder portions, a cylindrical flange projecting normal to said surface defining an area surrounding said opening, a lid including cylindrical side walls for sealing engagement with said flange, and a multilayer, resilient, cellular pad of rubbery material adhesively secured to said surface in the space outlined by said flange, said flange being in contact with and supporting portions of said pad adjacent said surface, said pad being formed with a passage extending completely through said pad and communicating with the opening in said base, the layers of said pad being adhered together, said cellular pad comprising a first layer of closed-cell cellular rubbery material adjacent said base, the closed cells preventing entry and hardening of said mixture in the cells thereof, and an outermost layer of interconnecting-cellular resin, the interconnecting cells enabling said outermost layer to take up said mixture and to spread it on a desired surface, said outermost interconnecting cell layer being approximately one-eighth inch thick and said first closed-cell cellular layer being approximately one and one-half to four times greater in thickness than said outermost layer.

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