

SPECIFICATION

Safety razors

5 This invention is concerned with safety razors of the kind comprising at least one blade and a blade support of moulded polymeric material which together form a shaving unit which is discarded as a whole when the cutting edge of the or each blade becomes dulled. The support is designed to form skin-engaging guard and cap surfaces for engaging the skin respectively ahead and rearwardly of the blade edge or edges.

10 The shaving unit may be of the disposable cartridge type adapted for coupling to and uncoupling from a razor handle or may be integral with the handle so that the complete razor is discarded as a unit when the blade or blades become dulled.

20 We have found that if the cap and/or the guard portion of the blade support is provided with an insert located in a recess in the respective portion, the insert being formed of a moulded mixture of at least one hydrophobic polymeric material and at least one water-soluble polymeric material which is capable of forming an aqueous lubricant, comfortable and effective shaving can be obtained by simply wetting the shaving area with water prior to shaving, that is without using conventional shaving soap or cream. The water present on the shaving area leaches out a proportion of the water-soluble material which serves as a lubricant in place of shaving soap or cream.

35 The present invention accordingly comprises a shaving unit which comprises at least one blade and a blade support of moulded polymeric material which provides skin-engaging guard and cap surfaces, the cap and/or the guard portion of the blade support being provided with a recess in which is located an insert formed of a moulded mixture of at least one hydrophobic polymeric material and at least one water-soluble polymeric material which is capable of forming an aqueous lubricant.

40 Apart from the insert, the blade support is formed of a polymer as conventionally used in shaving units, preferably one suitable for injection moulding, such as polystyrene.

45 The nature and relative proportions of the water-soluble and hydrophobic polymeric materials in the polymeric mixture used for the insert should be such that there is sufficient water-soluble material to provide lubrication for substantially the whole of the expected life of the blade or blades. The mixture should, of course, be mouldable to form the insert and is preferably such that it can be injection moulded.

50 Suitable water-soluble materials include, for example, polyethylene oxide, polyvinyl pyrrolidone, polyacrylamides, hydroxypropyl cellu-

lose, polyvinyl imidazoline and polyhydroxyethylmethacrylate.

55 Suitable hydrophobic materials include for example, polyethylene, polypropylene, polystyrene and polyacetal.

60 Suitable proportions of the materials are, for example, 85 to 5% by weight of the hydrophobic material and 15 to 95% by weight of the water-soluble material, preferably from 50 to 60% by weight of the hydrophobic material and from 50 to 40% by weight of the water-soluble material.

65 The shaving unit may be assembled from a number of parts in substantially the same way as the shaving units described and illustrated in UK Specification 1 362 443, subject to the modification that the cap and/or the guard portion is provided with a recess in which the polymer mixture insert is located.

70 Alternatively, the blade support may be moulded as a single article, the cap and/or the guard portion of the support being provided with the recess, and the or each blade is pushed into the support and retained in position mechanically. This enables the manufacturing and assembly costs of the unit to be kept very low.

75 The edge of the or each blade opposite the cutting edge thereof is preferably formed with spaced projections to assist penetration of the moulded blade support and may also have barbs to assist secure retention of the blade(s).

80 The moulded blade support may be formed with a slot to receive the or each blade, the latter having a hole or holes through it and the blade is secured in the slot by punching or "coining" the polymeric material locally to upset material into the hole or holes.

85 In other embodiments, the or each blade is pushed into a planar gap defined by two opposed rows of spaced projections integral with the moulded support, which bear against the inserted blade from above and below, each projection being positioned opposite a gap between adjacent projections in the opposite row. This arrangement permits accurate sizing of the gap and also has the advantage of weight saving compared with a simple slit being formed in the support.

90 In preferred embodiments of this last kind, tandem blades are provided, at least some of the projections acting to set the spacing between the blades and preferably to define soap slots between the blades for the passage of shaving debris away from the cutting edges.

95 A preferred form of razor in accordance with the invention will now be described, by way of example, with reference to the accompanying drawing, in which the single Figure is a cross-section of a disposable cartridge type shaving unit.

100 The shaving unit shown in the Figure is adapted for coupling to and uncoupling from a razor handle (not shown). The shaving unit,

generally indicated at 33, comprises a moulded support made up of a guard portion 34 and a cap portion 35, both formed of a conventional polymeric material, such as polystyrene. Located between the guard portion 34 and the cap portion 35 are tandem blades 36 and 37 and a spacer 38 therebetween. The portions 34 and 35 are secured together, and the blades 36, 37 and spacer 38 are secured therebetween, by polymeric material rivets (not shown) in a generally conventional manner.

The cap portion 35 is provided with a recess 39 which extends longitudinally parallel to the cutting edges of the blades and which is terminated at each end by an end wall provided by the cap portion. Making a snap fit within the recess 39 is a moulded insert 40 of a polymer mixture as described above, the insert 40 being provided with a forwardly projecting lug 41 and a rearwardly projecting lug 42 which engage corresponding undercut channels 43 and 44 in the recess 39.

CLAIMS

1. A shaving unit which comprises at least one blade and a blade support of moulded polymeric material which provides skin-engaging guard and cap surfaces, the cap and/or the guard portion of the blade support being provided with a recess in which is located an insert formed of a moulded mixture of at least one hydrophobic polymeric material and at least one water-soluble polymeric material which is capable of forming an aqueous lubricant.

2. A shaving unit according to claim 1, in which the mixture of polymeric materials comprises 85 to 5% by weight of the hydrophobic material(s) and 15 to 95% by weight of the water-soluble material(s).

3. A shaving unit according to claim 1 or 2, in which the mixture of polymeric materials comprises from 50 to 60% by weight of the hydrophobic material(s) and 50 to 40% by weight of water-soluble material(s).

4. A shaving unit according to any of claims 1 to 3, in which the hydrophobic polymeric material is polystyrene, polyethylene, polypropylene or polyacetal.

5. A shaving unit according to any of claims 1 to 4, in which the water-soluble polymeric material is polyethylene oxide, polyvinyl pyrrolidone, polyacrylamide, hydroxypropyl cellulose, polyvinyl imidazoline or polyhydroxyethyl methacrylate.

6. A shaving unit substantially as herein described with reference to the accompanying drawing.



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2. A shaving unit according to claim 1, in which the mixture of polymeric materials comprises 85 to 5% by weight of the hydrophobic material(s) and 15 to 95% by weight of the water-soluble material(s).

3. A shaving unit according to claim 1 or 2, in which the mixture of polymeric materials comprises from 50 to 60% by weight of the hydrophobic material(s) and 50 to 40% by weight of water-soluble materials(s).

4. A shaving unit according to any of claims 1 to 3, in which the hydrophobic polymeric material is polystyrene, polyethylene, polypropylene or polyacetal.

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