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SAFETY RAZOR

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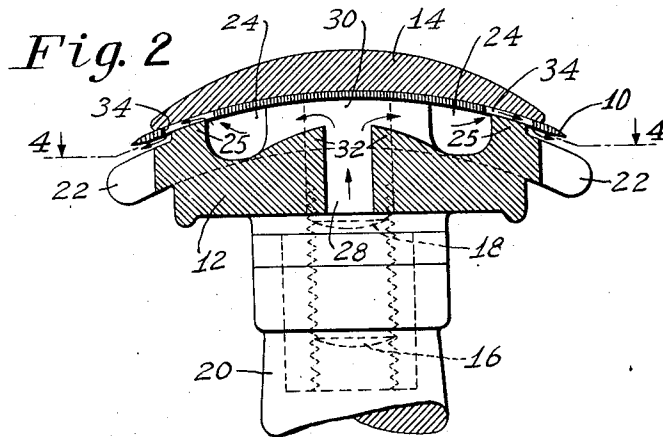
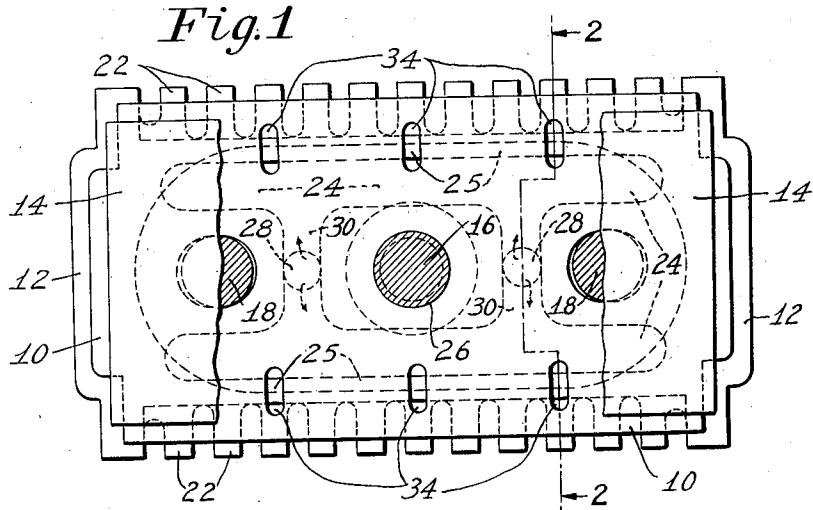


Fig. 3

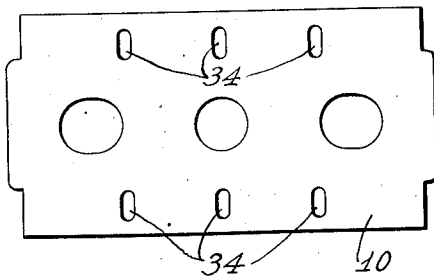
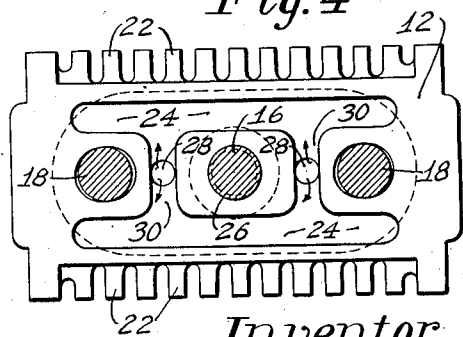


Fig. 4



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UNITED STATES PATENT OFFICE

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SAFETY RAZOR

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Application April 12, 1934, Serial No. 720,215

2 Claims. (Cl. 30—12)

The present invention relates to safety razors having separable blade and holder members, and more particularly to razors of that type having thin flexible blades requiring support adjacent the cutting edge.

The safety razor herein described and illustrated is similar in many respects to that disclosed in the present applicant's pending application Serial No. 692,615, having embodied therein a reservoir from which a supply of hot water is gradually fed to the cutting edge while shaving to heat and so to improve the cutting qualities of the blade, to moisten and soften the beard and generally to maintain a favorably moist condition of the skin and lather during the entire operation.

It is a principal object of the present invention to provide a novel and improved means for conducting the supply of hot water or other fluid from the reservoir to the blade edge which will insure an adequate distribution of the moisture over the blade edge and will at the same time so restrict the flow as to prevent an unduly rapid exhaustion of the supply or objectionable dripping while the razor is in use.

It is another object of the present invention to provide a novel and improved safety razor blade of this general description which is particularly adapted for use with a separable blade holder comprising guard and cap members which contain a liquid receiving channel extending lengthwise of the blade in a surface engaged by the central part of the blade and have cooperating clamping areas to engage and clamp the blade adjacent its edge and to form a closure for said channel, the blade when used in a holder of this description having the new and useful function of providing distributing channels for causing a uniform restricted flow of liquid to the blade edge.

With these and other objects in view as may hereinafter appear, the several features of the present invention consist in the devices, combinations and arrangement of parts hereinafter described and claimed, which together with the advantages to be obtained thereby will be readily understood by one skilled in the art from the following description taken in connection with the accompanying drawing, in which Fig. 1 is a plan view of an assembled safety razor embodying the several features of the present invention, a portion of the cap being broken away to show underlying parts; Fig. 2 is a sectional view of the assembled razor taken on the line 2—2 of Fig. 1,

a portion of the handle being broken off; Fig. 3 is a plan view of the blade illustrated in Fig. 1; and Fig. 4 is a plan view of the guard as shown in Fig. 1.

The razor illustrated in the drawing comprises a separable blade holder within which is secured a blade 10. The blade holder, having a guard 12 and an end cap 14, is secured together by fastenings in the form of a central threaded stud 16 and a pair of positioning lugs 18 rigidly connected to the end cap and passing through suitable perforations in the guard 12. The blade is secured in the holder by engaging the upper threaded end of a handle 20 with the stud 16 and rotating the handle until the parts are clamped in proper position. As in a common form of razor, the blade is sharpened on two opposite parallel edges and is flexible so that it will fit preformed surfaces of the cap and guard when clamped thereby. The guard is provided with a convex cylindrical surface evenly engaged by the blade and with a series of slots forming teeth 22 along the sides beneath the sharpened edges of the blade. The blade, when compressed against the cylindrical surface of the guard by the end cap, having a similarly shaped complementary surface, lies with its cutting edges along central portions of the teeth 22, as more clearly illustrated in Fig. 2, so that the edges of the blade will be properly exposed. The guard is also indented beneath the blade edges by removing, at least, portions of the upper surfaces of the teeth 22.

To retain a supply of hot water or other liquid in the razor illustrated, a pair of closed ended channels 24 are formed in the guard, each lying parallel to the edge of the blade and separated therefrom by a portion of the cylindrical guard surface 25 which forms a continuous clamping and supporting area for the blade adjacent its edge, and also forms a closure for that side of the channel towards the edge of the blade. The channels are separated from the openings indicated at 26 through which the holder fastenings pass, by portions of the cylindrical guard surface which surround the openings, so that when the blade is compressed against this surface, the liquid retained in the channels may not escape through these openings. The cylindrical surface surrounding the central opening 26 also prevents collapse of the guard when the handle 20 is rotated to draw the cap down tightly into position.

The liquid is supplied to the channels, according to the present invention, through inlet ports 28 passing through the guard and communicating

with the channels by a pair of transverse slots 30. The ports 28 enter the guard at an intermediate portion of the guard between the openings 26 for the fastenings, and in order to provide sufficient strength, the material of the guard increases in thickness towards the ports 28 so as to form upwardly inclined lips 32 about the inner edges of the ports. This formation also assists in preventing escape of liquid retained in the channels 24 through the inlet ports and retards the flow from one channel to another when the razor is held upright.

With the construction herein described embodying in a preferred form the several features of the present invention, the heated liquid in the channels is permitted to flow gradually and evenly during the shaving operation through conduits which are formed in the blade. For this purpose the blade has formed therein adjacent each cutting edge three narrow slots 34 which are arranged when the blade is assembled with the holder to extend across and slightly to each side of the ridge, or clamping area 25 above referred to.

The liquid passes from the channels 24 into the ends of the slots 30, then through the passageways which are formed between the edges of the slots 34 and the complementary clamping surfaces of the guard and cap, and is distributed gradually over the cutting edge of the blade. Inasmuch as the depth of the passageways is arbitrarily determined by the thickness of the blade and the consequent separation of the clamping surfaces of the guard and cap to several thousandths of an inch so that a capillary action is set up between the clamping surfaces referred to which acts to promote and control the flow of liquid, the amount of flow of liquid from the channel to the blade edge during the shaving operation, will depend entirely on the number and width of the slots 34. It has been found that this factor determining the rate of flow is not materially altered by variations in the thickness of the particular blade employed within a range which would be considered feasible in the manufacture of flexible razor blades of the type herein described. In order to secure the best results, it is found that three slots such as those illustrated in the figures of the drawing, are ample to provide the requisite flow of liquid while at the same time sufficiently restricting the rate of flow to prevent an unduly rapid draining of the liquid in the reservoir. It will be seen that the combined width of these slots is relatively small as compared with the length of the blade, amounting to about one-ninth of the entire length. In order to limit so far as possible the weakening effect of the slot upon the blade and also to assist in the flow of liquid to secure an even distribution thereof along the blade edge, the ends of the slots are rounded to eliminate all sharp corners and to promote the flow of liquid in all directions from the slot. It has been found also that the relatively wide, thin passageways provided by the present construction serve particularly well to promote a controlled flow of liquid through the passageways, and because of the relatively wide aperture adjacent the blade edge, is less likely to be plugged up by lather or extraneous materials during the shaving operation.

With this construction and mode of operation of the razor, it has been found also that it is relatively easy to clean the parts after or prior to the use of the razor, since there are no notches or small holes which are not readily accessible for cleaning.

The liquid supply in the channels 24 may with the construction of the razor above described, be used to the greatest advantage without requiring replenishment for a number of cutting strokes. When it is necessary to add to the supply of liquid, the blade holder is inverted so that the handle extends upwardly and is either immersed in a container holding hot water, or held under a stream of hot water, so that the water will be forced into the ports 28 to fill the channels 34. The inlet ports being larger than the distributing grooves are of sufficient size to quickly fill the supply channels 34 while the razor is assembled, and to permit use without further manipulation, so that no time is wasted. This construction particularly when used in connection with a guard composed of heat insulating material, also permits the use of very hot water, even to the boiling point without uncomfortable effects, because the flow to the blade edge through the distribution channels is restricted.

It will be understood that the invention is not limited to the specific embodiment shown, and that various deviations may be made therefrom without departing from the spirit and scope of the appended claims.

What is claimed is:

1. A flexible safety razor blade adapted for use with a separate blade holder comprising guard and cap members which contain a liquid receiving channel extending lengthwise of the blade in a surface engaged by the central part of the blade, and have cooperating clamping areas to engage and clamp the blade adjacent its edge and to form a closure for said channel, said blade having a thickness suitable to permit flexibility, and having cut therein slots located to extend across said clamping areas adjacent the blade edge, to provide conduits of blade thickness having a capillary action to promote a continuous but restricted flow of liquid from said channel across the clamping area to the underside of the blade edge during the act of shaving.

2. A safety razor blade for use in a separable blade holder comprising guard and end cap members, one at least of which is provided with an enlarged channel lengthwise of the blade in a surface engaged by the central part of the blade forming a reservoir for retaining a suitable supply of hot liquid to heat and moisten the blade, cooperating clamping areas formed on the cap and guard to engage and clamp the blade adjacent its edge and adapted to provide a closure for said channel, and an inlet port to said channel, said blade having formed therein channels extending across said clamping areas adjacent the edge of the blade, to provide conduits of blade thickness having a capillary action to promote a continuous but restricted flow of liquid from said channel across the clamping area to the underside of the blade edge during the act of shaving.

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