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2,931,099

ELECTRIC RAZOR HAVING AN OSCILLATING TAPERED BLADE

Filed April 17, 1958

2 Sheets-Sheet 1

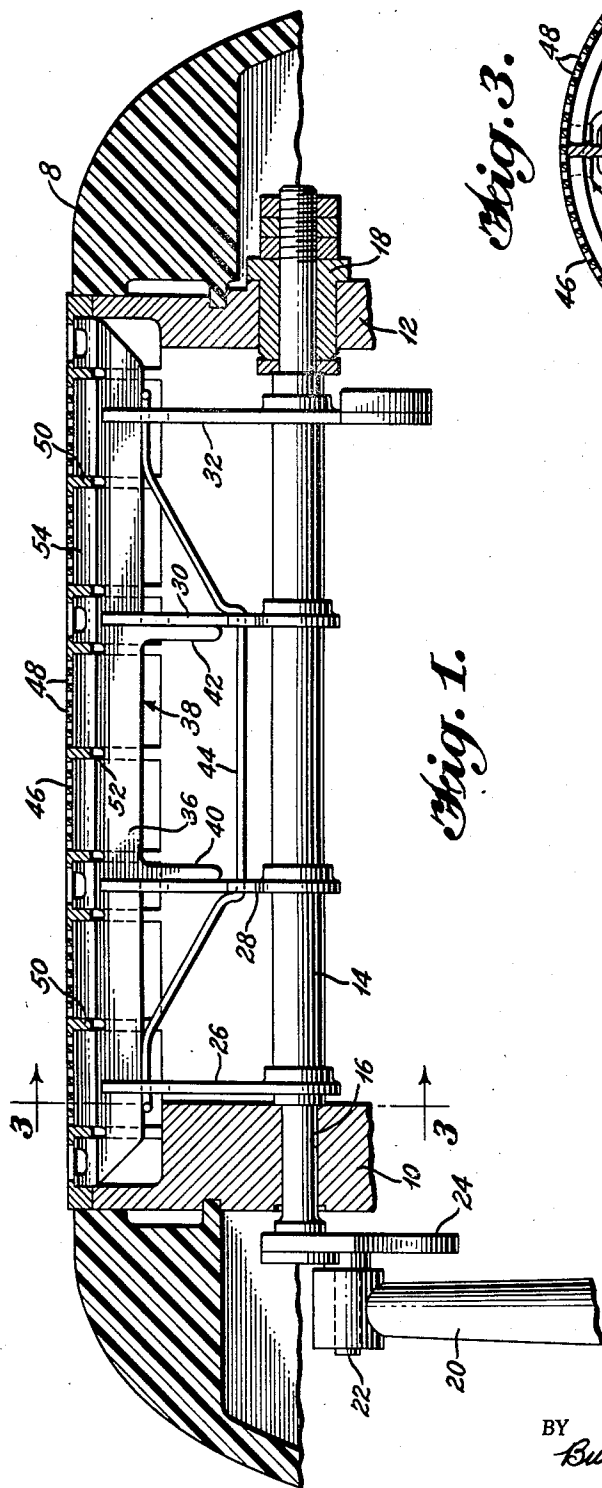


Fig. 1.

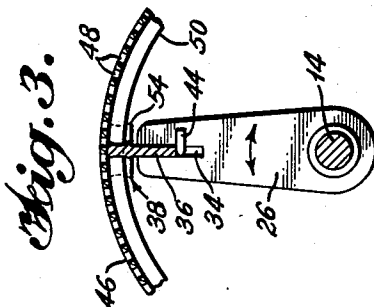


Fig. 3.

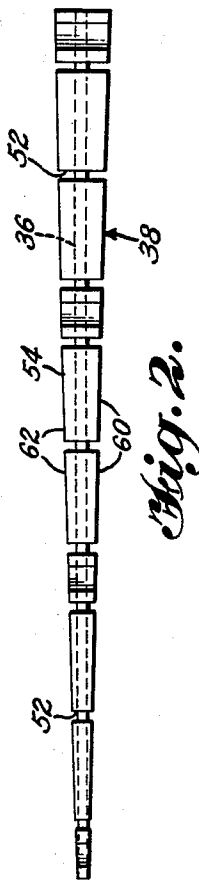


Fig. 2.

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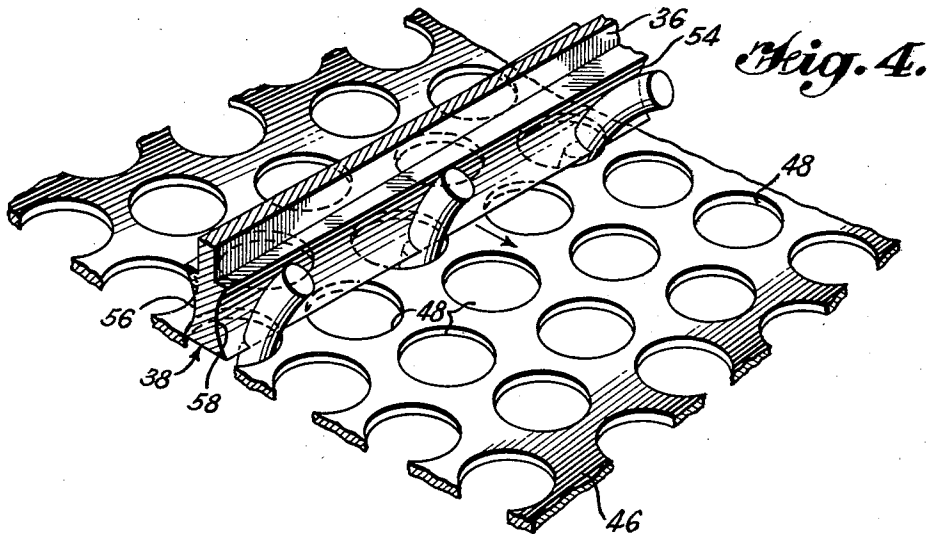
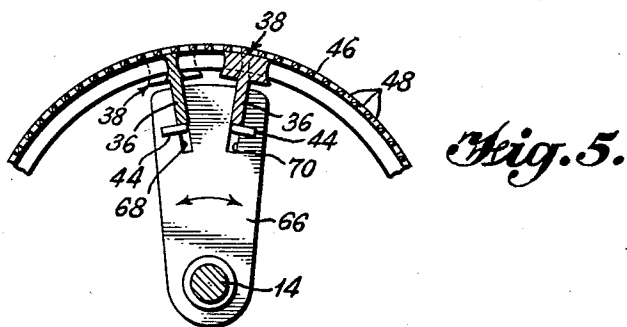
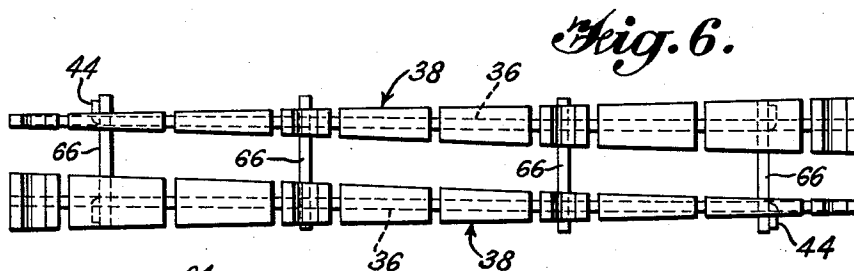
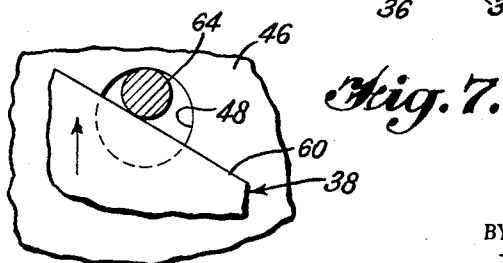
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ELECTRIC RAZOR HAVING AN OSCILLATING TAPERED BLADE

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2 Sheets-Sheet 2



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ELECTRIC RAZOR HAVING AN OSCILLATING TAPERED BLADE

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2 Claims. (Cl. 30—43)

The present invention relates to improvements in dry shavers. The invention relates particularly to improvements in dry shavers of the type in which an oscillating blade cooperates with an arcuate comb having hair receiving openings therethrough to achieve the shaving action.

The invention is particularly applicable to electric dry shavers of the type illustrated and described in United States Patent No. 2,797,479, issued July 2, 1957, to Ivar Jepson. The invention will be particularly described in connection with such a shaver.

The invention may be briefly described by stating that the cutting edges of a blade are made to diverge from one another along the length of the blade. The blade oscillates on an axis positioned axially of the concave inner surface of a comb with hair receiving openings therein. By such an arrangement one end of a cutting edge trails the opposite end thereof in either direction of oscillation of the blade. The fact that one end of the cutting edge trails the opposite end thereof provides a slicing action on the beard or other hairs. The shaver may be provided with two parallel blades, the cutting edges of which diverge in opposite directions to thereby provide slicing actions in opposite directions on the beard or other hairs.

A primary object of the invention is to improve the cutting action of razors of the general type described.

Another object of the invention is to provide a blade arrangement which produces a hair slicing action in razors of the type described.

Other objects and advantages of the invention will be set forth in the following detailed description which has reference to the accompanying drawings wherein:

Figure 1 is an enlarged vertical sectional view of the cutting head of a razor embodying the invention;

Figure 2 is an enlarged top plan view of a cutting blade of the invention;

Figure 3 is a sectional view taken in the direction of the arrows along the line 3—3 of Figure 1;

Figure 4 is a fragmentary view on a greatly enlarged scale of a perforated comb and a blade of the invention in slicing relationship therewith;

Figure 5 is a view similar to Figure 3 but illustrating a modification of the invention;

Figure 6 is a top plan view of the arrangement of the pair of blades in the modification of Figure 5; and

Figure 7 is a greatly enlarged fragmentary and diagrammatic view of a cutting edge and one perforation of a comb, the taper or trailing action of the blade being greatly exaggerated to better illustrate the principle of the invention.

The drawings illustrate only those portions of the shaver which are necessary to an understanding of the improvements involved in this invention. Reference may be made to the above mentioned United States Patent No. 2,797,479 for a disclosure of other elements of a shaver of the general type to which the invention relates.

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A casing 8 houses supporting standards 10 and 12. A shaft 14 is mounted for oscillation in a bearing 16 in standard 10 and a bearing 18 in standard 12. The shaft 14 is caused to oscillate by a connecting rod 20 connected to a pin 22 mounted eccentrically of the shaft 14 on a crank arm 24.

Rigidly fixed to the shaft 14 are radially extending blade supporting members 26, 28, 30 and 32. The blade supporting members 26, 28, 30 and 32 have notches 34 at their outer ends for reception of the shank 36 of a blade which is designated generally by the reference numeral 38. The blade 38 is provided with projections 40 and 42 which engage the blade supporting members 28 and 30, respectively, to prevent endwise movement of the blade. A generally U-shaped spring member 44 extends through openings in the blade supporting members 28 and 30 and extends into the slots 34 in the blade supporting members 26 and 32. The purpose of the spring member 44 is to urge the blade radially outwardly against the inner surface of a perforated comb 46. The comb 46 is arcuate in form, as best illustrated in Figure 3, and is provided with a large number of small hair receiving openings 48. The comb 46 is also provided with a plurality of reinforcing ribs 50.

The blade 38 is provided with longitudinally spaced notches 52 for receiving the reinforcing ribs 50 on the comb 46. The main body of the blade 38 is designated by the reference numeral 54 and tapers in width along the length of the blade in the manner best illustrated in Figure 2. The side edges of the body 54 of the blade are hollow ground as shown at 56 and 58 (Figure 4) to provide cutting edges 60 and 62 which diverge from each other along the length of the blade, as illustrated in Figure 2.

In either direction of oscillation of the shaft 14 a cutting edge 60 or 62 will cross the openings 48 in the comb, with one end of the cutting edge trailing the other end thereof to provide a slicing action. This slicing action is illustrated diagrammatically in exaggerated form in Figure 7 in which the cutting edge 60 of the blade 38 is shown crossing an opening 48 in the comb 46 to cut with slicing action a hair 64. Although the slicing action is exaggerated in Figure 7, that figure does serve to illustrate the principle of the invention. It will be found that the arrangement of the cutting edges illustrated in Figure 2 will provide sufficient slicing action to greatly improve the performance of the shaver.

The modification illustrated in Figures 5 and 6 differs from that described above in that a pair of generally parallel blades are provided. Mounted on the shaft 14 are a plurality of blade supporting members 66 similar to the blade supporting members 26, 28, 30 and 32 described above. Each blade supporting member 66 is provided with two radially extending slots 68 and 70 for reception of the shanks 36 of a pair of blades 38. Each blade 38 is urged toward the comb 46 by a U-shaped spring member 44. As best shown in Figure 6 of the drawings, the wider end of one blade is positioned adjacent the narrower end of the second blade. In this arrangement, the adjacent cutting edges of the two blades are parallel and the remote cutting edges are also parallel. In either direction of oscillation of the shaft 14 a pair of cutting edges will be operative, with one of those cutting edges providing a slicing action in one direction and the other cutting edge providing a slicing action in the opposite direction.

It will be noted that the cutting edges 60 and 62 are straight even though they diverge from each other. The fact that the cutting edges are straight facilitates the hollow grinding of the blade as indicated at 56 and 58. The slicing action provided by the novel arrangement

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or disposition of the cutting edges is a distinct improvement over the cutting action of prior razors of this general type. In such prior razors the cutting edges operate at right angles to the direction of movement of the blade. This results in a pinching off or squeezing off of the hairs with mangling of the ends of the hairs. This mangling causes the skin to feel rough after shaving and also results in irritation of the skin. The slicing action obtained by the present invention slices the hairs cleanly without mangling the ends and leaves the skin with a smooth feeling for a longer interval after shaving.

I have illustrated and described what I now consider to be the preferred forms of the invention. It will be appreciated, however, that various modifications may be resorted to without departing from the broader scope of the invention as defined by the following claims.

Having thus described my invention, I claim:

1. A shaver having a stationary, arcuate comb with hair receiving openings therethrough, an oscillatory shaft positioned axially of said comb, blade supporting means fixed to and extending radially of said shaft, and a pair of blades carried by said blade supporting means in generally parallel relationship to each other and to said shaft, each of said blades having a radially outwardly facing surface in engagement with the concave surface of said comb, each of said outwardly facing surfaces of said blades tapering in width along its length and having a straight cutting edge along each side edge thereof, the direction in which the outwardly facing surface of one of said blades tapers being opposite to the direction of taper of the outwardly facing surface of the other blade, whereby in either direction of oscillatory movement of said blades a cutting edge on a first blade crosses said openings in said comb with one end of such cutting edge trailing to provide a slicing action in one direction

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for hairs extending through said openings and a cutting edge on the second blade crosses said openings with the opposite end trailing to provide a slicing action in the opposite direction for such hairs.

2. A shaver having a stationary, arcuate comb with hair receiving openings therethrough, an oscillatory shaft positioned axially of said comb, blade supporting means fixed to and extending radially of said shaft, and a pair of blades carried by said blade supporting means in generally parallel relationship to each other and to said shaft, each of said blades having a radially outwardly facing surface in engagement with the concave surface of said comb, each of said outwardly facing surfaces of said blades tapering in width along its length and having a straight cutting edge along each side edge thereof, the adjacent cutting edges of said blades being parallel and the remote cutting edges of said blades being parallel, whereby in either direction of oscillatory movement of said blades a cutting edge on a first blade crosses said openings with one end of such cutting edge trailing to provide a slicing action in one direction for hairs extending through said openings and a cutting edge on the second blade crosses said openings with the opposite end trailing to provide a slicing action in the opposite direction for such hairs.

References Cited in the file of this patent

UNITED STATES PATENTS

30	1,251,925	Scheithe	Jan. 1, 1918
	2,220,800	Jepson	Nov. 5, 1940
	2,247,661	Moscovics et al.	July 1, 1941
	2,797,479	Jepson	July 2, 1957

FOREIGN PATENTS

35	810,971	Germany	Aug. 16, 1951
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