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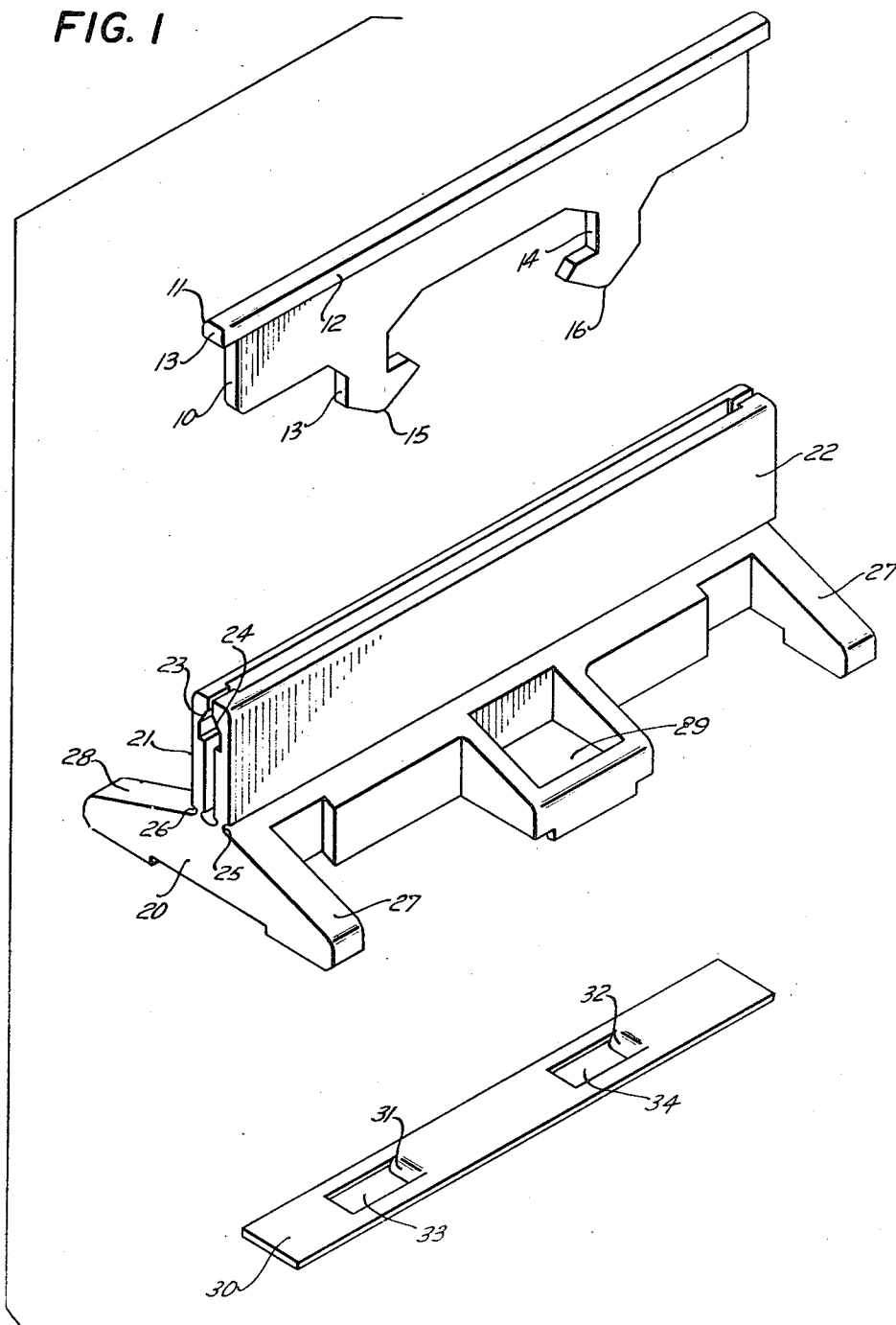
3,552,009

ANGULAR ADJUSTABLE SHAVER HEAD ASSEMBLY FOR ELECTRIC RAZOR

Filed March 3, 1969

3 Sheets-Sheet 1

FIG. 1



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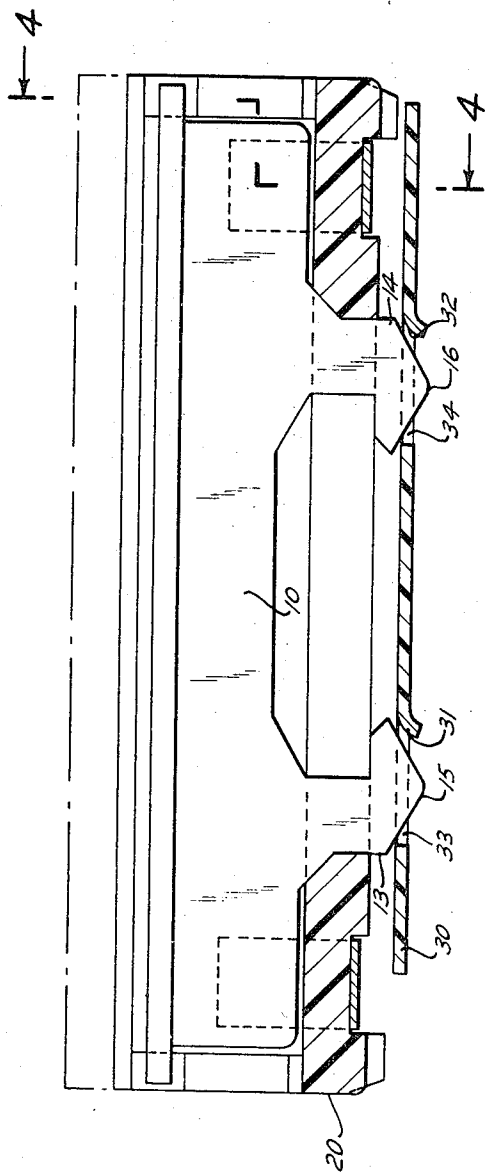


FIG. 2

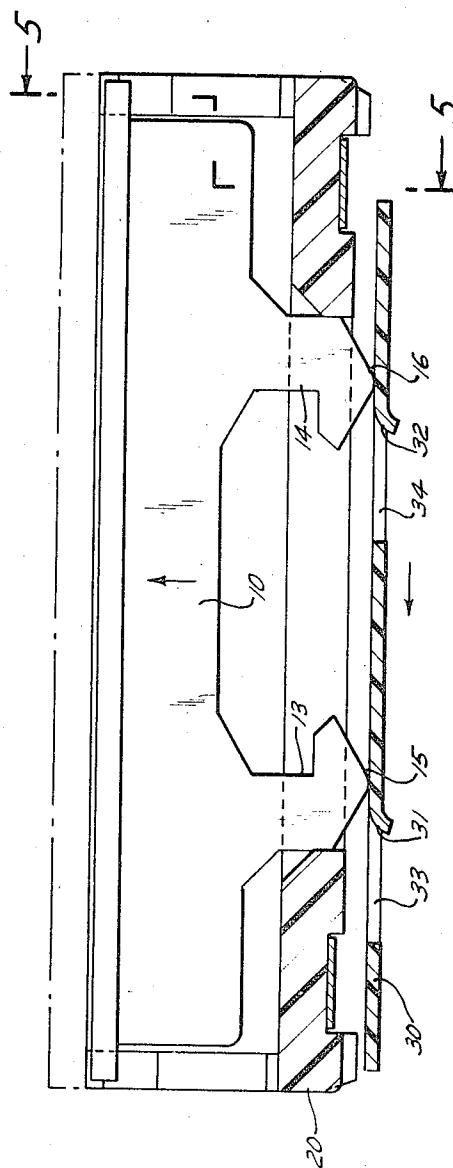


FIG. 3

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FIG. 4

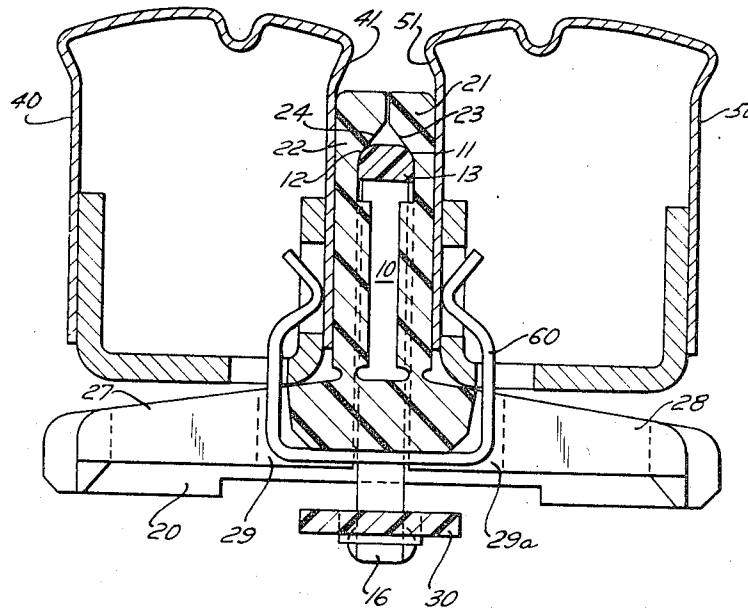
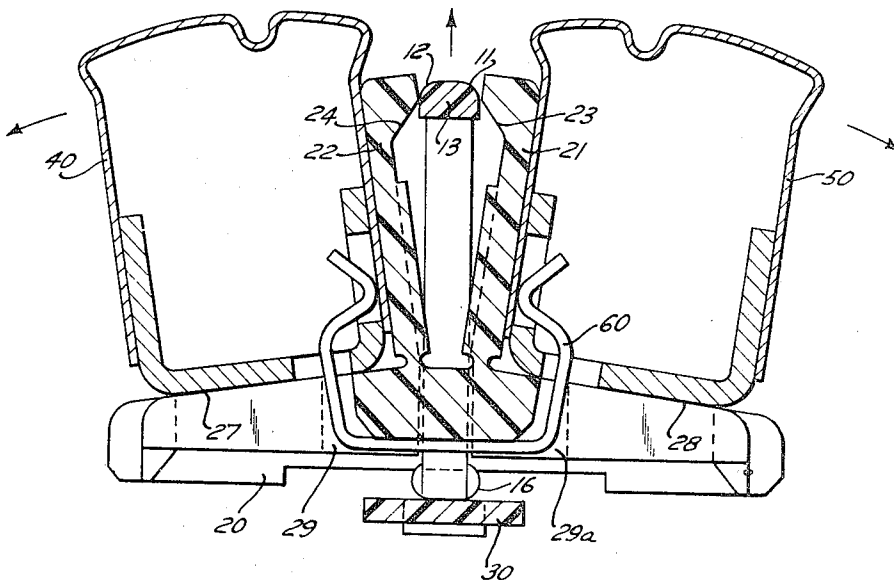


FIG. 5



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## ANGULAR ADJUSTABLE SHAVER HEAD ASSEMBLY FOR ELECTRIC RAZOR

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7 Claims

### ABSTRACT OF THE DISCLOSURE

A shaver head assembly for an electric razor includes means for adjusting the angular relationship between the shaver heads to increase or decrease the exposure of the side cutting surfaces of the heads and thus substantially eliminate irritation to the skin of the user while providing close shaving action. The assembly includes a pair of shaver heads mounted in opposing relationship on a cradle. The cradle has a pair of upright, movable guide members to which the shaver heads are pressed into contact. A spreader bar is movably mounted between the guide members and, through camming action rotates the shaver heads to control the exposure of the side cutting surfaces of opposing faces of the shaver heads.

### BACKGROUND OF THE INVENTION

This invention relates to shaver heads for electric razors and, more particularly, to a shaver head assembly provided with means for changing the angular relationship between the heads.

Electrically driven shavers utilizing driven cutters are extensively used to cut hair. Such shavers can be provided with one or more substantially flat shaver heads. By substantially flat shaver heads it is meant that the shaver head may have a slight curvature or crown but for the most part is essentially flat. The common cutter structure of the shaver head consists of one or more rectangular like units which include inner and outer cutters having open ends. In operation, the inner cutter is reciprocally driven with respect to the outer cutter along their individual axes and hair clippings fall into the cutter interior where they are ejected toward the open ends of the cutters by the reciprocal movement. Well known electric razor assemblies include a plurality or multiple of substantially flat shaver heads separated by a movable spacer bar such, for example, as those shown and described in U.S. Patent No. 3,056,198.

In the utilization of shaver heads of this type, it has been found that the skin tends to penetrate deepest in the zone of the side cutting surfaces often resulting in discomfort to the user depending upon the degree of closeness of shave desired and the sensitivity of the user's skin.

Although many attempts were made to overcome the foregoing and other difficulties, none was entirely satisfactory when carried into practice commercially.

### BRIEF SUMMARY

An improved multiple shaver head assembly has now been developed which permits close shaving action and substantially eliminates irritation caused by the shaving action of the side cutting surfaces.

An object of this invention is to provide a shaver head assembly for electric razors which permits close shaving action with a minimum of irritation to the user's skin.

Another object of this invention is to provide a multiple shaver head assembly for electric razors which permits close shaving action by the side cutting surfaces with a minimum of irritation and discomfort to the user.

Other objects and advantages will become apparent

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from the following description taken in conjunction with the accompanying drawings in which:

FIG. 1 is an exploded perspective view of the cradle, spreader bar and sliding bar;

FIG. 2 is a longitudinal sectional view of the assembled spreader bar, cradle and sliding bar showing the spreader bar in the down or retracted position;

FIG. 3 is a longitudinal sectional view of the assembled spreader bar, cradle and sliding bar showing the spreader bar in the raised or extended position;

FIG. 4 is a sectional view showing a pair of shaver heads mounted on the cradle with the spreader bar in the retracted position;

FIG. 5 is a sectional view showing a pair of shaver heads mounted on the cradle with the spreader bar in the extended position causing the shaving heads to be rotated away from one another in opposite directions.

### DESCRIPTION OF THE INVENTION

In accordance with this invention, an adjustable shaver head assembly includes a cradle having laterally extending platforms. A pair of flexible, oppositely disposed guide members extend vertically from the cradle to separate the platforms and are provided with cam surfaces on their opposing faces. A spreader bar is adjustably mounted between the guide members on the cradle and is provided with cooperating cam surfaces which engage the cam surfaces of the guide members when the spreader bar is in the extended position. Also included are means for vertically moving the spreader bar between the cam surfaces of the guide members. A pair of shaver heads are movably mounted in opposed relationship on the platforms of the cradle, and are provided with cutting surfaces on their opposing faces. In addition, a flexible clamping means holds each shaver head in engagement with a rear or outer face of a guide member so that when the spreader bar is moved upward from a predetermined position, the cooperating camming surfaces of the spreader bar and guide members engage causing the guide members to separate and the shaver heads to rotate in opposite directions to move the side cutting surfaces of the shaver heads into more exposed positions for close shaving by the user without substantial skin irritation.

The invention also contemplates a method of improving the closeness of shaving action using a multiple head electric razor having shaver heads movably mounted in opposing relationship and provided with cutting surfaces on opposing side faces. Also included are a spreader bar separating the heads and means for changing the angular relationship between the heads. The method includes the steps of rotating the shaver heads in opposite directions to move the side cutting surfaces of the shaver heads into more exposed positions, and then engaging the hair of the user with the exposed side cutting surfaces of the shaver heads to provide close shaving action without substantial irritation to the user's skin.

### PREFERRED EMBODIMENT

Referring now to the drawings, FIG. 1 shows spreader bar 10 provided with spreader bar head 13 having cam surfaces 11 and 12. Extending downwardly from spreader bar 10 are legs 13 and 14 provided with cam surfaces 15 and 16, respectively, defining the lower ends of the legs. Cradle 20 is provided with downwardly sloping platforms 27 and 28 to accommodate rotation of the shaver heads. A pair of oppositely disposed, upright guide members 21 and 22 rise vertically from the cradle 20 and separate platforms 27 and 28. Guide members 21 and 22 are provided with reduced sections 25 and 26 to accommodate bending movement of guide members 21 and 22 away from each other when cooperating cam surfaces 11 and

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12 of spreader bar head 13 engage cam surfaces 23 and 24, respectively, of the guide members.

FIGS. 2 and 3 show a sectional view of cradle 20 with spreader bar 10 in the retracted position. Legs 13 and 14 extend downwardly through openings 33 and 34, respectively, of sliding bar 30. As shown in FIG. 3, when sliding bar 30 is moved to the left, cam surface 31 of sliding bar 30 engages cooperating cam surface 15 of leg 13 and cooperating cam surface 32 engages cam surface 16 of leg 14. Cam surfaces 15 and 16 of legs 13 and 14 respectively, are caused to ride upwardly on sliding bar 30 forcing spreader bar 10 upwardly as shown in FIG. 3.

FIGS. 4 and 5 show how shaver heads 40 and 50 are rotated from upright positions to move side cutting surfaces 41 and 51, respectively, into more exposed positions for close shaving action without substantial irritation to the user's skin. Shaver heads 40 and 50 are movably mounted in opposing relationship on cradle 20. Flexible clamp 60 is U-shaped and passes through openings 29 and 29a of the cradle to urge shaver heads 40 and 50 into upright positions against the rear or outer faces of guide members 22 and 21, respectively. FIG. 4 shows spreader bar 10 in the retracted position and shaving heads 40 and 50 in normally upright shaving positions with no angular difference therebetween. In the retracted position of FIG. 4, the shaving action of side cutting surfaces 41 and 51 is close but skin irritation is generally greater. FIG. 5 shows spreader bar 10 moved upward in the direction of the vertical arrow in a raised or extended position so that cam surface 12 of spreader bar head 13 engages cam surface 24 of guide member 22 and cam surface 11 of spreader bar head 13 engages cam surface 23 of guide member 21 causing guide members 21 and 22 to separate or move away from one another a short distance. This causes shaver heads 40 and 50 to rotate away from one another in opposite directions (following the directions of the horizontally directed arrows of FIG. 5) to further expose side cutting surface 41 of shaver head 40 and side cutting surface 51 of shaver head 50. Side cutting surfaces 41 and 51 are each provided with a rounded protrusion or ridge which, when the shaver heads are rotated to further expose the side cutters, cause the skin of the user to be stretched which, in turn, orients the whiskers for closer shaving action. When the side cutting surfaces are in the more exposed positions shown in FIG. 5, skin irritation of the user is greatly reduced or substantially eliminated with only minor loss in close shaving action. FIG. 5 also shows each shaver head rotated through approximately 8 degrees making a total angular separation between shaver heads of about 16 degrees. Intermediate positions of rotation of shaver heads 40 and 50 between those shown in FIGS. 4 and 5 are useful depending on the sensitivity of the user's skin and the degree of beard growth.

Although the present invention has been described in conjunction with preferred embodiments, it is to be understood that modifications and variations may be resorted to without departing from the spirit and scope of the invention as those skilled in the art will readily understand.

What is claimed is:

1. An adjustable shaver head assembly which comprises:

- a cradle having laterally extending platforms;
- a pair of flexible, oppositely disposed guide members extending from the cradle and spaced between the platforms, said members having cam surfaces on their opposing faces;

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a spreader bar adjustably mounted between said members on the cradle, said bar having cooperating cam surfaces for engaging the cam surfaces of said guide members;

means for vertically moving the spreader bar from a retracted to a raised position to permit engagement of the cam surfaces of said bar and said guide members;

a pair of shaver heads each movably mounted in opposing relationship on a platform of the cradle and in engagement with an outer face of a guide member, said shaver heads provided with hair-cutting surfaces on opposing side faces;

flexible clamping means holding each shaver head in engagement with the outer faces of said guide members, so that when the spreader bar is moved upward from a predetermined position, the camming surfaces of the spreader bar and guide members engage causing the shaver heads to rotate in opposite directions, whereby the opposing side cutting surfaces of the shaver heads are moved into more exposed positions permitting close shaving action without substantial skin irritation to the user.

2. An adjustable shaver head assembly in accordance with claim 1 wherein the means for vertically moving the spreader bar include legs extending downwardly from the spreader bar and provided with cam surfaces, and a sliding bar positioned beneath the spreader bar and having cooperating cam surfaces for engagement of the cam surfaces of the legs so that when the cam surfaces of the sliding bar engage the cam surfaces of the legs, the legs are moved upwardly causing the spreader bar to be moved from a retracted to a raised position.

3. An adjustable shaver head assembly in accordance with claim 2 wherein the platforms extend downwardly from the guide members to accommodate rotation of the shaver heads.

4. An adjustable shaver head assembly in accordance with claim 3 wherein the flexible clamping means comprise a U-shaped member.

5. An adjustable shaver head assembly in accordance with claim 4 wherein the shaver heads are rotatable to positions separated by about 16 degrees.

6. An adjustable shaver head assembly in accordance with claim 5 wherein each guide member is provided with a reduced section at the base to accommodate bending of the guide member when the guide members are separated by the spreader bar.

7. An adjustable shaver head assembly in accordance with claim 6 wherein the side cutters of the shaver heads are each provided with a rounded protrusion for stretching the user's skin during shaving to improve close shaving action of the side cutters.

#### References Cited

##### UNITED STATES PATENTS

3,056,198	10/1962	Ream	30—43.1
3,166,842	1/1965	Christensen et al.	30—43.1
3,172,200	3/1965	Ream	30—43.1
3,003,233	10/1961	Baelen	30—43.92
3,044,168	7/1962	Kachline	30—43.92

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