# United States Patent [19]

**Ferraro**

[11] **3,849,882**

[45] **Nov. 26, 1974**


[54] **SHAVING UNIT FOR SAFETY RAZOR**


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[73] Assignee: **Warner-Lambert Company,** Morris Plains, N.J.



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[52] **U.S. Cl.** ..... **30/346.58,** 30/50

[51] **Int. Cl.** ..... **B26b 21/54,** B26b 21/22

[58] **Field of Search** ..... 30/50, 346.57, 346.58, 30/346.59



[56] **References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 1,911,378 | 5/1933 | Martin | 30/50 |
| 1,975,757 | 10/1934 | Gray | 30/346.58 X |

FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 772,532 | 4/1957 | Great Britain | 30/346.58 |



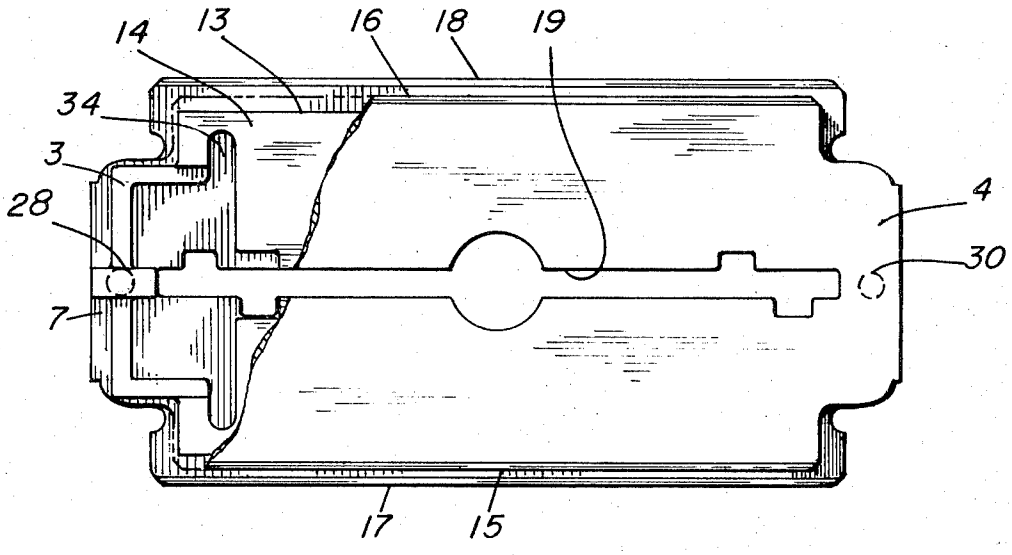
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[57] **ABSTRACT**

The specific disclosure provides a shaving unit comprising two superimposed double edge razor blades with the cutting edges of the top blade being set back a slight distance from the cutting edges of the bottom blade. The top blade has a transversely elongated aperture in vertical alignment with a transversely elongated aperture in the bottom blade. A spacer is positioned between the blades and has a transversely elongated aperture in alignment with the apertures of the blades. An outwardly extending loop is formed at each end of the spacer aperture. The outer portion of each loop has a thickness greater than the thickness of the remainder of the loop, but approximately equal to the thickness of the non-loop portions of the spacer. The blades are permanently bonded to the spacer at the outer portions of the loops.


**10 Claims, 2 Drawing Figures**



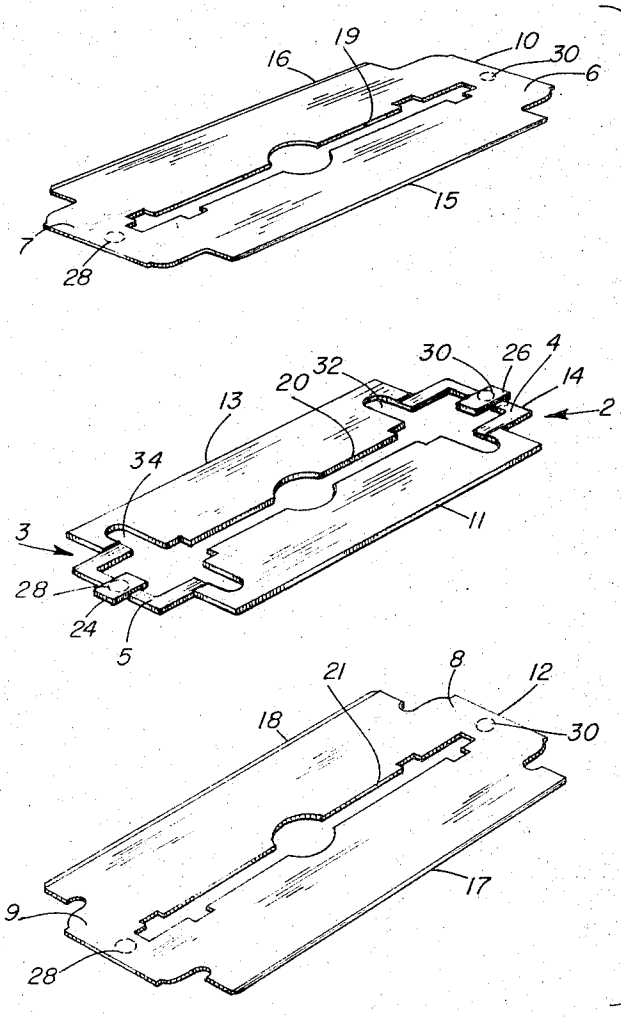

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Fig. 1

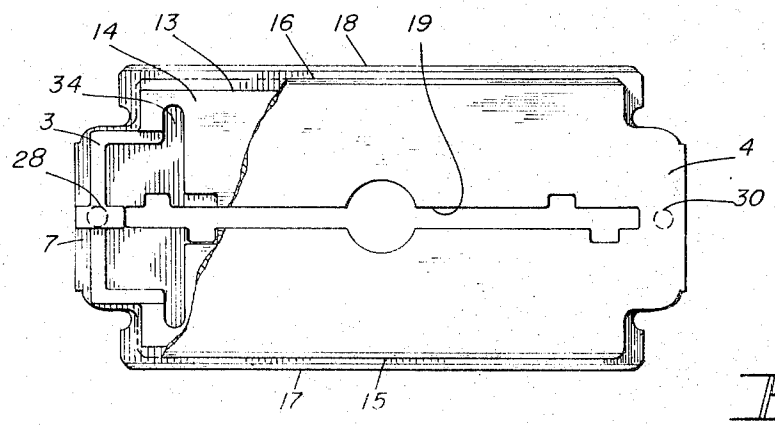

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Fig. 2

# SHAVING UNIT FOR SAFETY RAZOR

## BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to shaving units having a plurality of cutting edges for use in a safety razor. More particularly, the present invention relates to safety razor shaving units having a plurality of double cutting edge members bonded together.

2. Description of the Prior Art

Double edge safety razors are well known in the art, and are in many forms. For example, U.S. Pat. Nos. 3,293,745, 3,466,746 and 3,708,879 disclose a razor having sectional caps, an adjustable razor and a razor having a hinged cap, respectively. Such razors act to clamp a thin, flexible double edge razor blade in the razor head with each cutting edge oriented with respect to a guard bar surface.

U.K. Pat. No. 772,532 discloses a shaving unit having two double edge razor blades which are vertically separated by a flexible spacer. The cutting edges of the top blade are set back a slight distance from the cutting edges of the bottom blade to provide tandemly arranged cutting edges on each side of the shaving unit.

The spacer of U.K. Pat. No. 772,532 is flat, and the blades and the spacer are bonded together.

Commercially available flexible steel double edge razor blades having an elongated central slot parallel to the cutting edges are arcuately flexed at tab portions at each end of the slot when firmly seated in double edge razors having manually operated mechanisms for opening and closing the cap portion. However, as shown in FIG. 4 of U.S. Pat. No. 3,708,879, the portions of the razor between the slot and the cutting edges are substantially flat.

Thus, it is desirable that the spacer tabs have a relatively high degree of flexibility. However, when the spacer thickness is greater than that of the blades, a spacer tab flexibility problem is raised.

## SUMMARY OF THE INVENTION

In accordance with the present invention, there is provided a shaving unit comprising a first transversely elongated member including a pair of oppositely disposed transversely extending cutting edges and a transversely elongated aperture, and a second transversely elongated member also including a pair of oppositely disposed transversely extending cutting edges and a transversely elongated aperture. The aperture of the second member is positioned above the aperture of the first member, and the cutting edges of the second member are set inwardly a slight distance from the cutting edges of the first member. A spacer member is positioned between the first and second members and has a transversely elongated aperture in alignment with the apertures of the first and second members. A tab in the form of an outwardly extending loop is formed at each end of the spacer aperture, and the outer portion has a thickness greater than the thickness of the remainder of the loop and at least approximately equal to the non-loop portions of the member. The first and second members are permanently bonded to the spacer member at the outer portions of the loops.



The degree of flexibility is increased by providing portions of the tabs or loops with reduced thickness to thereby avoid a problem of tab flexibility.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an exploded perspective view of an embodiment of a shaving unit constructed in accordance with the present invention; and

FIG. **2** is a top plan view of the shaving unit with portions of the component parts of the unit cut away.

## DESCRIPTION OF SPECIFIC EMBODIMENTS

With reference to the figures, one representative embodiment of the present invention has first and second members **12, 10** in the form of double edge razor blades, and a spacer member **14** for vertically separating the second member **10** from the first member **12.**

As clearly shown in FIG. **2,** the cutting edges **15, 16** of the top blade **10** are set back a slight distance from the cutting edges **17, 18** of the bottom blade **12.** The cutting edges **15, 16** of the top blade **10** are parallel to the cutting edges of the bottom blade **14.** The spacer member **14** has a pair of blunt surfaces **11, 13** which are set back a slight distance from the cutting edges **15, 16** of the top blade **10.**

The blades **10, 12** and the spacer member **14** have vertically aligned transversely elongated apertures **19, 20, 21** for locating the shaving unit in double edge razors such as disclosed in U.S. Pat. Nos. 3,293,745, 3,466,746 and 3,708,879. The spacer aperture **20** is longitudinally elongated in the direction of the cutting edges **15 – 18** at the outer ends **32, 34** thereof.

Tab portions **2, 3** in the form of outwardly extending U-shaped ribs bridge the longitudinally elongated portions **32, 34** of the spacer aperture **20.** The ribs **2, 3** have a centrally raised outer portion **26, 24** having a vertical thickness greater than a recessed remainder **4, 5** of the ribs **2, 3** and equal to the thickness of the portions of the spacer member **14** between the spacer aperture **20** and the spacer blunt surfaces **11, 13.** The recessed portions **4, 5** of the ribs **2, 3** can be made by an embossing process.

The top and bottom blades **10, 12** are joined to the spacer member **14** by permanently bonding tab portions **6 – 9** on the blades **10, 12** to the upper and lower surfaces of the raised outer portions **26, 24** of the ribs **2, 3,** for example, by welds as indicated by dashed circles **28, 30.**

The blades **10, 12** and the spacer member **14** can be composed of martensitic stainless steel commonly used for safety razor blades. The thickness of the blades can be 0.0039 inch. The distance between the cutting edges **15, 16** of the top blade **10** can be 0.832 inch when the distance between the cutting edges **17, 18** of the bottom blade is 0.87 inch. The distance between the blunt surfaces **11, 13** of the spacer member **14** can be 0.78 inch. The spacer member **14** can be 0.02 inch in thickness, and the rib recesses **4, 5** can have a thickness of 0.01 inch.

The blades **10, 12** can be bonded to the raised outer portions **24, 26** of the ribs **3, 4** by spot, projection, arc, laser or other welding techniques. Alternatively, the components can be bonded together at the raised outer portions **24, 26** by adhesives.

The present invention contemplates more than two double edge razor blades with spacers constructed in

accordance with the invention between adjacent blades.

What is claimed is:

**1.** A shaving unit for a double edge safety razor, said shaving unit comprising:

a. a first transversely elongated member including a pair of transversely extending opposite sides and a transverse aperture, each one of the first member opposite sides having a cutting edge;

b. a second transversely elongated member including a pair of transversely extending opposite sides and a transverse aperture, each one of the second member opposite sides having a cutting edge, said second member being positioned above said first member with the aperture of said second member being positioned above the aperture of said first member and with the cutting edges of said second member being positioned upwardly and inwardly of the cutting edges of said first member;

c. a transversely elongated spacer member positioned between said first member and said second member and comprising a transversely extending aperture vertically aligned with the apertures of said first and second members, and a rib at each end of said spacer aperture, each one of the ribs including a raised portion having a thickness greater than the remainder of the rib and at least approximately equal to the thickness of the non-rib portions of the spacer member; and

d. means for permanently bonding said first and second members to said spacer member at the raised portion of each one of the ribs.

**2.** The unit of claim **1** wherein the ribs extend outwardly.

**3.** The unit of claim **2** wherein the ribs are generally U-shaped.

**4.** The unit of claim **2** wherein the raised portions are centrally located on the ribs.

**5.** The unit of claim **1** wherein said spacer aperture has a longitudinally elongated portion at each end thereof, and wherein the ribs bridge the longitudinally elongated portions of said spacer aperture.

**6.** The unit of claim **1** wherein the cutting edges of said first member and said second member are parallel.

**7.** The unit of claim **1** wherein said first and second members are flexible, metallic members.

**8.** The unit of claim **1** wherein said spacer member is a flexible, metallic member.

**9.** The unit of claim **1** wherein said first and second members are double cutting edge safety razor blades.

**10.** The unit of one of **1** wherein said spacer member is thicker than each of said first and second members.

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