Sept. 27, 1966 L. W. SACHS 3,274,683

PLASTIC DISPOSABLE SAFETY RAZOR HAVING SEPARABLE PARTS RELEASABLY SECURED TOGETHER

Filed Oct. 26, 1964

FIG. 1

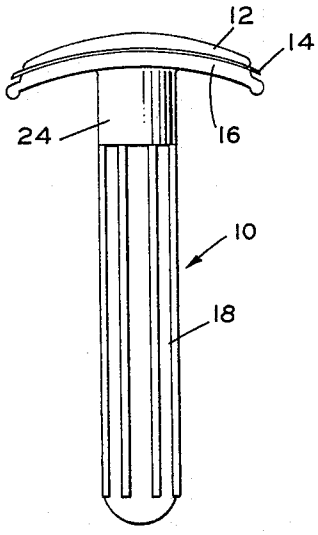


FIG. 2

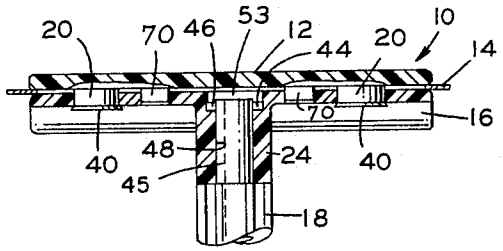


FIG. 3

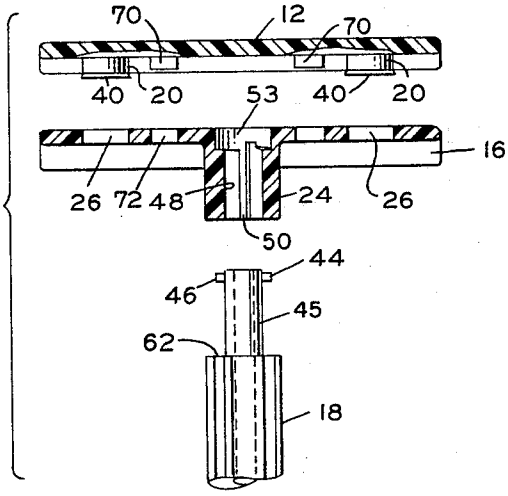


FIG. 5

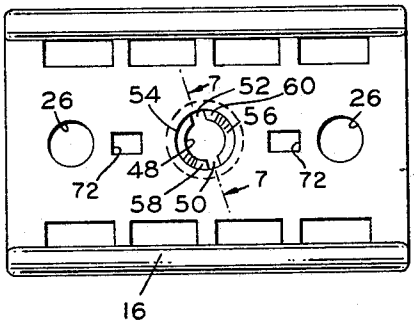


FIG. 6

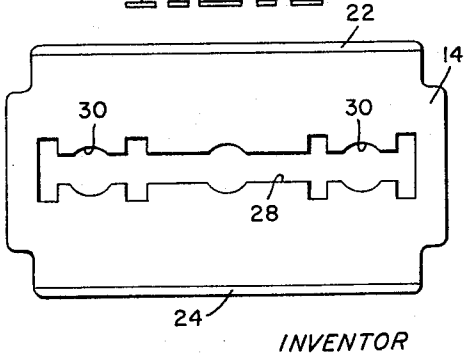


FIG. 7

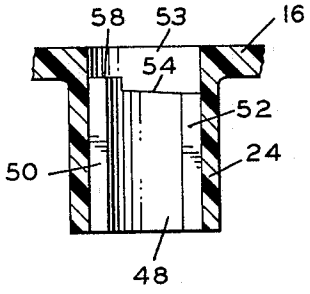
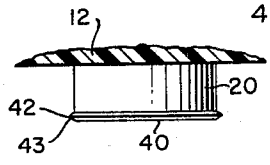


FIG. 4



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PLASTIC DISPOSABLE SAFETY RAZOR HAVING SEPARABLE PARTS RELEASABLY SECURED TOGETHER

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4 Claims. (Cl. 30—51)

This application is a continuation-in-part of my co-pending application Serial No. 293,056, filed July 5, 1963, and the invention relates generally to razors and refers more particularly to a plastic disposable safety razor.

It is an essential object of this invention to provide a razor which is inexpensive and therefore may be thrown away after being used one or two times.

Another object is to provide a razor composed of a head, guard, and a blade interposed between the head and guard, the three parts being secured together in an assembly.

Another object is to provide a razor in which the head and guard are formed of an inexpensive easily molded material such as plastic.

Another object is to provide a disposable safety razor having an integral part, preferably in the form of a pin shaped member, extending from the plastic head and engaging the guard.

Another object is to provide a plastic disposable safety razor in which at least one, and preferably two integral pins extend from the head through clearances in the blade and in the guard, the pin or pins have outer ends which are larger than the clearances in the guard to engage the underside of the guard and lock the assembled head, blade and guard together.

Another object is to provide a plastic disposable safety razor in which the outer ends of the pins are initially enlarged so as to have a tight or press fit with the holes in the guard during assembly and on final assembly to be disposed in partially overlying relation to the remote side of the guard to hold the parts together yet to permit them to be disassembled. The parts will, on final assembly, snap together and be releasably held in that condition by the enlarged heads.

Other objects and features of the invention will become apparent as the description proceeds, especially when taken in conjunction with the accompanying drawing, wherein:

FIGURE 1 is a side elevational view of a safety razor constructed in accordance with my invention.

FIGURE 2 is a fragmentary sectional view of the razor in FIGURE 1.

FIGURE 3 is an exploded view of the parts in FIGURE 2, omitting the blade.

FIGURE 4 is a fragmentary view showing the pin contour.

FIGURE 5 is a top plan view of the guard.

FIGURE 6 is a top plan view of the razor blade on a reduced scale.

FIGURE 7 is a sectional view taken on the line 7—7 of FIG. 5.

Referring now more particularly to the drawing, the razor is generally designated **10** and is composed of a head **12**, blade **14**, guard **16** and handle **18**.

The head **12** is in the form of a relatively thin elongated member which is straight in longitudinal section, as will be apparent in FIGURES 2 and 3, but downwardly curved or arched transversely as shown in FIGURE 1. The head **12** has integral pins **20** projecting downwardly from the concave undersurface thereof. The pins are spaced apart longitudinally of the head. The pins are located equal distances from the ends of the head and are disposed on the longitudinal center line of the head which

is midway between the opposite side edges thereof, as will be apparent in FIGURES 2 and 3. The head **12** also has integral lugs **70** disposed in spaced relation on the longitudinal center line of the head between pins **20**. The lugs project downwardly from the concave undersurface of the head.

The blade **14** may be an ordinary double-edged flexible metal blade having the two shaving edges **22** and **24**. The outline of the razor blade is similar to the outline of the head **12**, as will be appreciated by a comparison of FIGURES 1 and 2. Thus the razor bade is of thin stock and relatively long and its side and end edges will be seen to project slightly beyond the corresponding edges of the head when the parts of the razor are assembled. The blade may be similar to the type which is sold separately for use and replacement in the conventional safety razor, although it will be understood that the blade when used as a part of the razor herein described will ordinarily be disposed of when the entire assembly is thrown away.

The guard **16** is in the form of a relatively thin elongated member which is approximately equal in length to the head although slightly wider than the head to underlie the cutting edges of the blade when the parts of the razor are assembled. The guard is straight in longitudinal section, as seen in FIGURES 2 and 3, and arched or downwardly curved transversely as shown in FIGURE 1. The guard has on its underside a central downwardly extending hollow boss **24** formed as an integral part of the guard. The end of the elongated handle **18** is releasably connected to the boss **24** in a manner more fully described hereinafter.

The guard **16** has a pair of holes **26** on its longitudinal center line spaced apart the same distance as pins **20** to receive the pins, and also has a pair of holes **72** on its longitudinal center line spaced apart the same distance as lugs **70** to receive the lugs.

The razor blade has an elongated slot or cut-out portion **28** formed with generally circular portions **30** likewise spaced apart the same distance as pins **20** and of a size to freely receive the pins.

The head **12**, guard **16** and handle **18** may be formed of any suitable material, but preferably are formed of an inexpensive plastic which can be readily molded. A number of the well-known thermoplastic resins are suitable. Suitable materials are polyethylene, polypropylene, and styrene. Styrene is preferred because it is less expensive. The pins **20** and lugs **70**, being integral parts of the head **12**, are of course molded at the same time as the head and formed of the same material. An inexpensive material for these parts of the razor is preferred because it is intended that the razor will be a throw-away item. In other words, it will be used once or twice, or until the edges of the blade become dull, and then the entire razor will be thrown away. Obviously, of course, the handle **18** would not have to be thrown away since it is separable from the head, blade and guard.

The parts of the razor are shown in FIGURE 3 before assembly. Considering FIGURES 2 and 3, the parts **12**, **14** and **16** of the razor are moved together during assembly so that the blade **14** is clamped between the head **12** and guard **16** and the pins **20** project through the openings **30** in the blade and **26** in the guard. In this condition of the parts the guard **16** underlies the head **12** and the blade is sandwiched between. The blade will flex, as shown in FIGURE 1, to lie in surface-to-surface relation with the opposite faces of the head and guard. The integral pins **20** are cylindrical as shown and initially formed with enlarged ends **40**. These enlarged ends **40** are, in their free state, slightly larger in diameter than holes **26** in the guard **16**. The material of the pins, however, is slightly resilient and compressible so that the pins may be pushed through the openings or holes **26** by the

application of pressure. In effect, the enlarged ends **40** have a press fit in the holes **26**. When the guard **16** is pressed fully on the pins so that it clamps the blade **14** tightly against the head **12**, the enlarged ends **40** of the pins snap through the openings **26** and are disposed on the side of the guard **16** remote from the head (FIG. 2). The enlarged ends are, at full assembly, free to assume their natural free state diameter which is slightly larger than the openings **26**. The shoulders **42** at the inner sides of the enlarged ends **40** bear against the side of the guard **16** remote from the head **12** to maintain the assembly. The shoulders **42** flare slightly in an outward direction, that is in a direction away from head **12**, for two reasons. First, the guard **16** may be more easily removed from the pins, and secondly, the flare provides a yielding wedging action on the guard assuring a tight clamping engagement of blade **14** between the guard and the head.

Preferably the outer extremities of the enlarged ends of the pins are beveled at **43** to pilot the pins into holes **26**.

The assembly thus formed may be thrown away after it has been used a few times. For this reason the parts of the assembly are made of inexpensive material.

The handle **18** has a reduced inner end **45** which is cylindrical except for the two diametrically opposite lugs **44** and **46** at the inner extremity thereof. The cavity **48** in the boss **24** is cylindrical and adapted to have a slidable, rotatable fit with the inner end **45** of the handle. The cavity **48** has two longitudinally extending diametrically opposite grooves **50** and **52** which slidably receive the lugs **44** and **46** during the assembly of the parts. The cavity **48** opens into a counterbore **53** of enlarged diameter which opens through the upper wall of the guard. The grooves **50** and **52** extend into the counterbore. The counterbore **53** has two substantially half circular ramps **54** and **56** which terminate in diametrically opposed stops or abutments **58** and **60**. The ramps are inclined upwardly as viewed in FIGURES 3 and 7 from the grooves to the stops. The lugs **46** and **48** can turn in the counterbore.

To assemble the handle, its reduced inner end **45** is inserted straight into the cavity, the longitudinally extending grooves providing clearance for the lugs. The handle is then rotated causing the lugs to ride up the ramps. This draws the handle upward until its shoulder **62** abuts the end of boss **24**, as in FIGURE 2. At this point, which is reached is about a ¼ turn of the handle, the handle is frictionally held from reverse rotation by the lugs and ramps. The stops positively prevent too much handle rotation, precluding too tight a wedging and also preventing the lugs from turning a full 180° and reaching the opposite groove.

The pins **20** provide a rough location for the blade and extend through the end blade clearances **30**. The lugs **70** provide an accurate location for the blade transversely, that is in a direction from one edge **22** to the other edge **24** so that the edges are properly located with respect to the guard for shaving. The lugs extend through the slot **28** and fit closely therein in the narrow spaces immediately adjacent and on opposite sides of the center circular recess **30**.

What I claim as my invention is:

1. A disposable razor comprising a head, blade and guard member secured together in assembly, a handle projecting from said guard member at right angles thereto, and a connection between said guard member and handle comprising a socket on said guard member having a generally cylindrical cavity therein, said handle having a generally cylindrical inner end portion adapted to rotatably fit in said socket, a shoulder separating said inner end portion of said handle from the remainder thereof, said handle also having a locking lug projecting laterally outwardly from the generally cylindrical inner end portion thereof, said cavity in said socket having a longitudinally extending groove and at the inner end of said groove a circumferentially extending generally helical ramp, said groove being of sufficient width to clear said locking lug, whereby said inner end of said handle can be inserted in said cavity and during such insertion the longitudinal groove will clear said locking lug, and said handle can be thereupon rotated causing said locking lug to climb said ramp and draw said handle shoulder against the end of said socket to frictionally retain said handle.

2. The disposable razor defined in claim **1**, wherein said inner end of said handle has a second laterally projecting locking lug diametrically opposed to the first such locking lug, and said cavity has a second longitudinally extending groove diametrically opposed to the first such groove and a second circumferentially extending generally helical ramp at the inner end thereof, said second mentioned longitudinally extending groove clearing said second locking lug during insertion of the inner end of said handle in said cavity, said second locking lug climbing said second ramp upon subsequent rotation of said handle, and stops at the ends of said ramps adapted to be engaged by said locking lugs to prevent further rotation of said handle.

3. A disposable razor comprising a head in the form of a relatively thin elongated member, a separate guard likewise in the form of a relatively thin elongated member underlying said head member, said head and guard members being formed of a resinous plastic material, a blade interposed and clamped between said head and guard members, and means releasably securing said head member, guard member and blade together, said releasable securing means including a pair of integral cylindrical pins extending from said head member at right angles thereto in spaced relation to one another longitudinally of said head member and on the longitudinal center line of said head member, said pins extending through clearances in said blade and through holes in said guard member, said pins and clearances roughly locating said blade, the outer ends of said pins being enlarged and of larger diameter than said holes so as to have a press fit therein, said enlarged ends projecting beyond said holes and having shoulders engaging the side of said guard member remote from said head member to retain said head member, guard member and blade in assembled relation, said shoulders having an outward flare to wedge against said remote side of said guard member and hold the same firmly in contact with said blade, the enlarged outer ends of said pins having terminal bevels serving as pilots to facilitate the entry thereof into the holes of said guard member, said head member having a pair of integral lugs in spaced relation to one another longitudinally of said head member and located on the longitudinal center line of said head member, said lugs extending through registering openings in said blade and in said guard member, said lugs fitting closely in said openings to accurately position said blade relative to a longitudinal edge of said guard member, a handle projecting from said guard member at right angles thereto, and a connection between said guard member and handle comprising a socket on said guard member having a generally cylindrical cavity therein, said handle having a generally cylindrical inner end portion of reduced diameter adapted to rotatably fit in said socket, a shoulder separating said inner end portion of said handle from the remainder thereof, said handle having a pair of locking lugs projecting laterally outwardly from diametrically opposite sides of the generally cylindrical inner end portion thereof, said cavity in said socket having a pair of diametrically opposite longitudinally extending grooves and at the inner ends of said grooves a pair of circumferentially extending, generally helical ramps, said grooves being of sufficient width to clear said locking lugs whereby said inner end of said handle can be inserted in said cavity and during such insertion the longitudinal grooves will clear said locking lugs, and said handle can be thereupon rotated causing said locking lugs to climb said ramps and draw said handle shoulder against the end of said socket to frictionally retain said handle, and stops at the ends of said ramps adapted to be engaged by said

locking lugs to positively prevent further rotation of said handle.

4. A razor comprising a head in the form of a relatively thin elongated member, a guard separable from said head and likewise in the form of a relatively thin elongated member underlying said head member, said head and guard members being formed of a resinous plastic material, a blade interposed and clamped between said head and guard members, means releasably securing said head member, guard member and blade together, said means including a pair of integral cylindrical pins extending from said head member at right angles thereto in spaced relation to one another on the longitudinal center line of said head member, said pins extending through clearances in said blade and through holes in said guard member, the outer ends of said pins being enlarged and of larger diameter than said holes so as to have a press fit therein, said enlarged ends projecting beyond said holes and having shoulders engaging the side of said guard member remote from said head member to releasably retain said head member, guard member and blade in assembled relation, said shoulders having an outward flare to wedge against said remote side of said guard member and hold the same firmly in contact with said blade, said outer ends of said pins having terminal bevels serving as pilots to facilitate the entry thereof into the holes of said guard member during assembly of said razor, said head member having a pair of integral lugs in spaced relation

to one another on the longitudinal center line of said head member between said pins, said lugs extending through registering openings in said blade and in said guard member, said lugs fitting closely in said openings to accurately position said blade relative to a longitudinal edge of said guard member, said guard member having a centrally located connection part, and a handle projecting at right angles from said guard member and releasably secured at one end to said connection part.

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