United States Patent [19]

Dawidowicz et al.

[11] **3,771,223**

[45] **Nov. 13, 1973**

[54] **BONDED BLADE CARTRIDGES AND A CARTRIDGE DISPENSING SYSTEM**

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

[22] Filed: **June 1, 1972**

[21] Appl. No.: **258,682**

Related U.S. Application Data

[63] Continuation-in-part of Ser. Nos. 191,665, Oct. 22, 1971, and Ser. No. 236,723, March 21, 1972.

[52] **U.S. Cl.** ..... **30/40,** 206/16 BC, 221/102, 30/50

[51] **Int. Cl.** **B26b 21/22,** B65d 85/54

[58] **Field of Search** ..... 30/32, 40, 40.2, 30/34 R, 90, 50; 206/16 BC; 220/20, 22; 312/35; 221/110, 279, 307, 52

[56] **References Cited**

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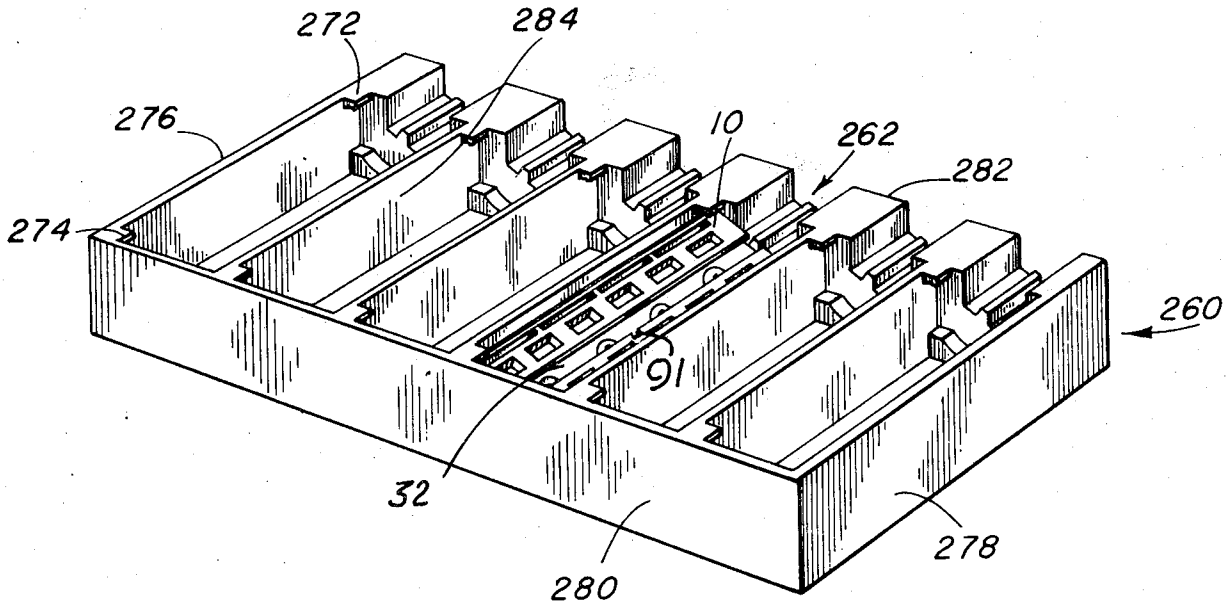
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Primary Examiner—Othell M. Simpson
Assistant Examiner—Gary L. Smith
Attorney—James F. Powers, Jr. et al.

[57] **ABSTRACT**

The specific disclosure provides a dispensing system for bonded double edge razor blade cartridges comprising a dispenser, a plurality of disposable double edge cartridges in the dispenser, and a cartridge holder. Each of the cartridges has a plurality of double edge blades, and a T-shaped channel formed transversely thereof. The holder has a plurality of supporting surfaces formed transversely thereof for sliding engagement with the T-shaped channel. The dispenser has a plurality of guide surfaces for aligning the supporting surfaces of the holder with a T-shaped channel of at least one of the cartridges.

12 Claims, 27 Drawing Figures



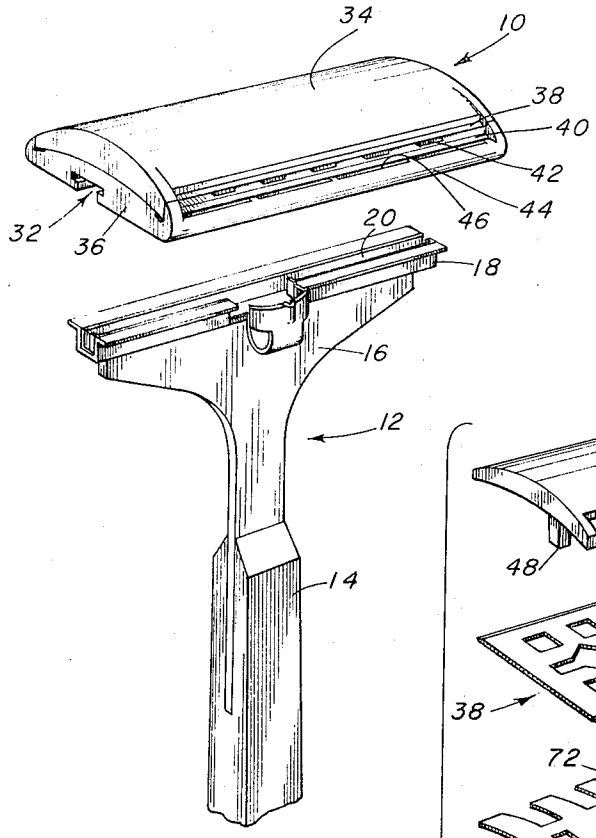


Fig. 1

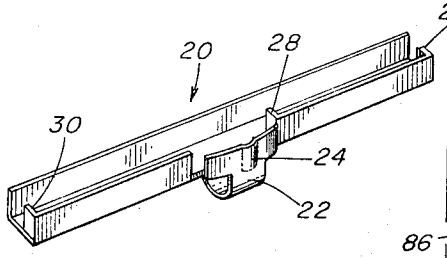


Fig. 3

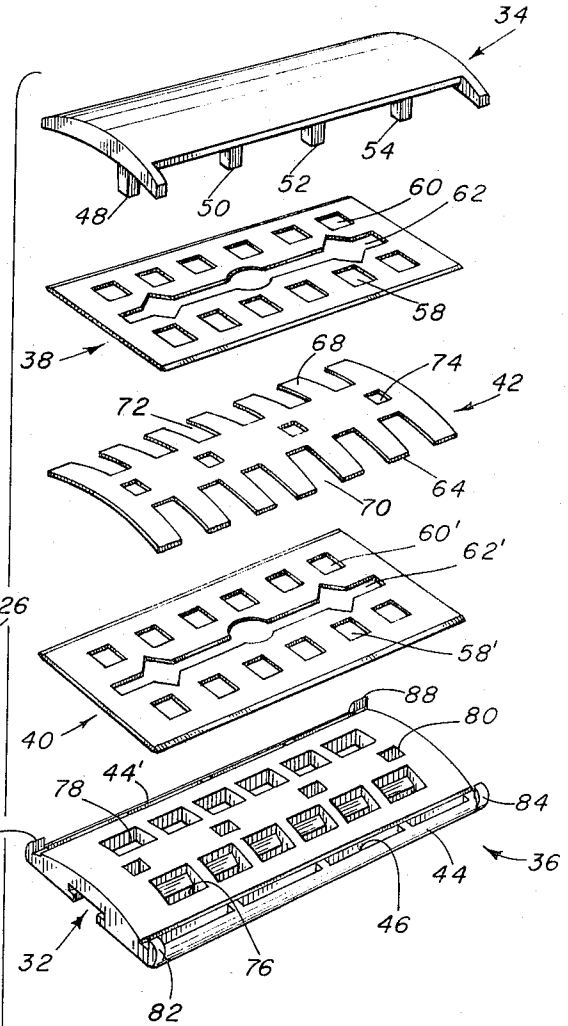


Fig. 2

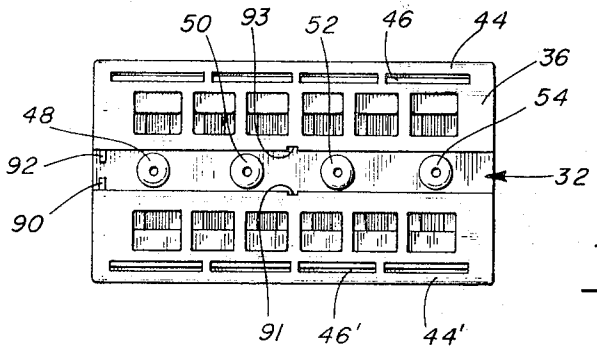


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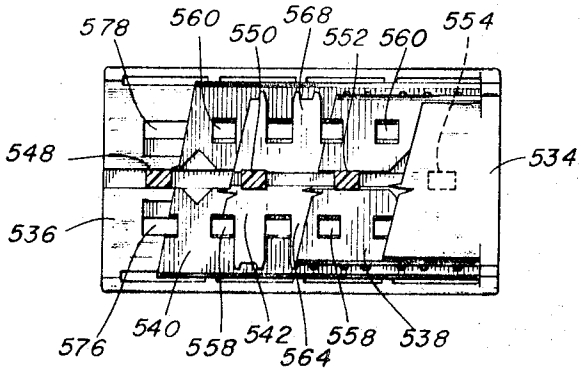


Fig. 5

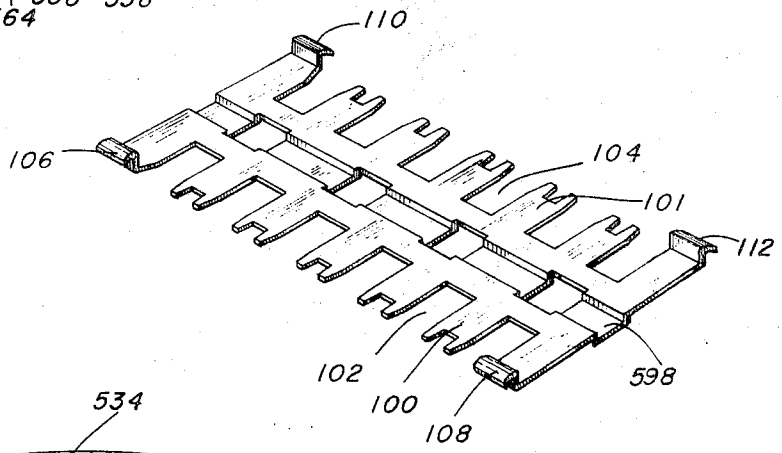


Fig. 6

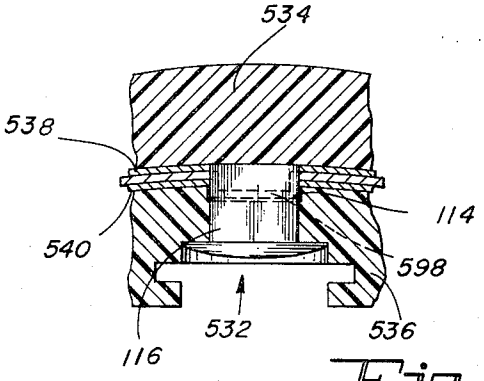


Fig. 7

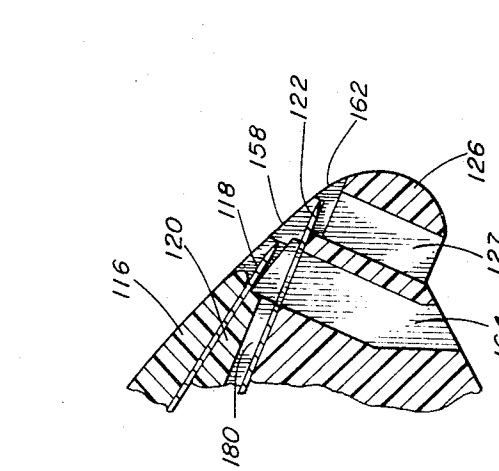


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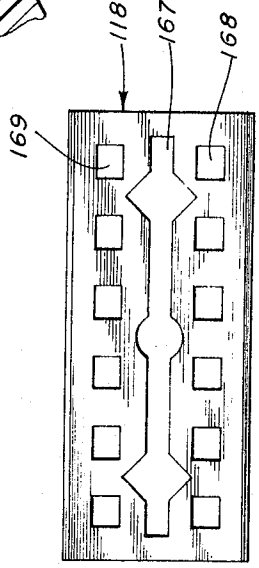


Fig. 13

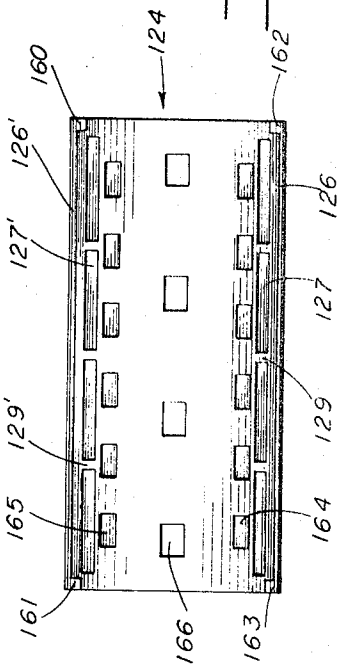


Fig. 14

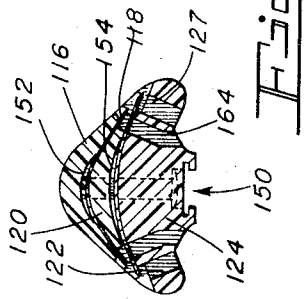


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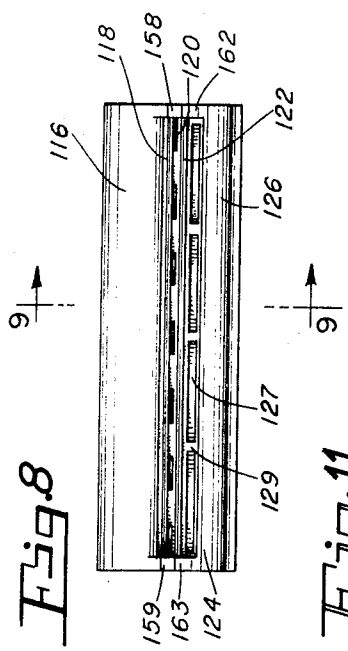


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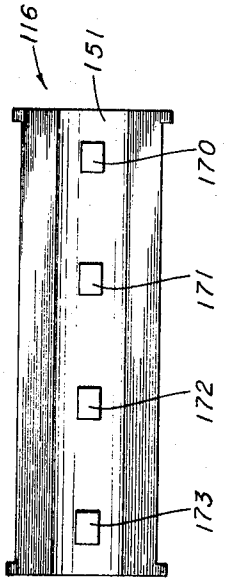


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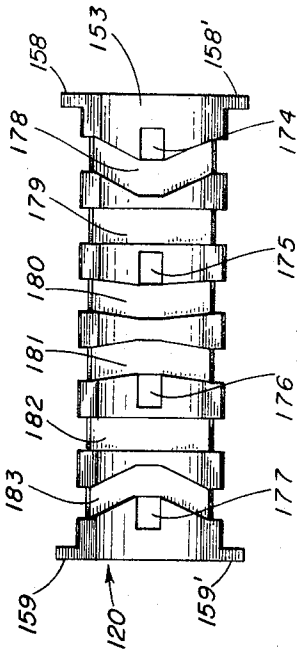


Fig. 12

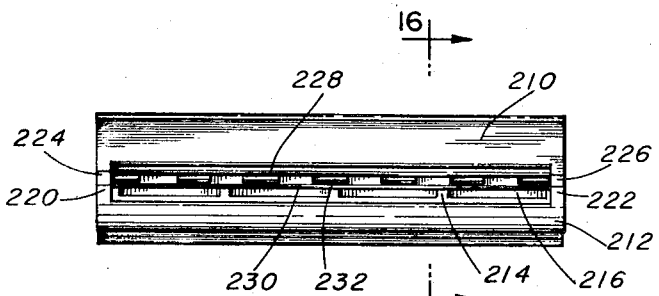


Fig. 15

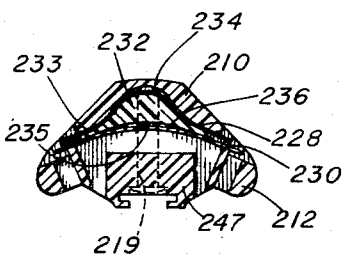


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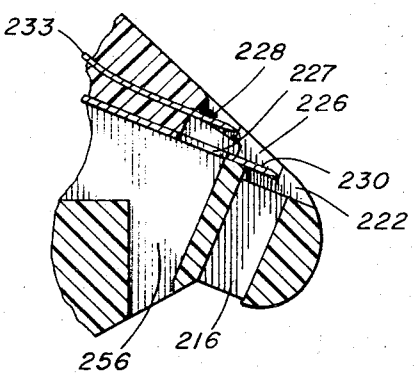


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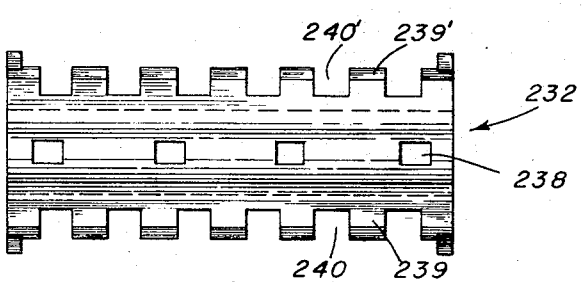


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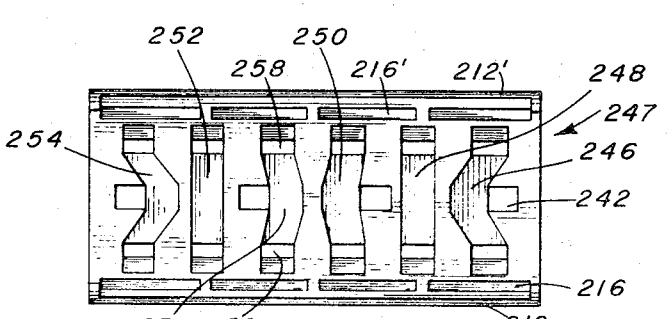


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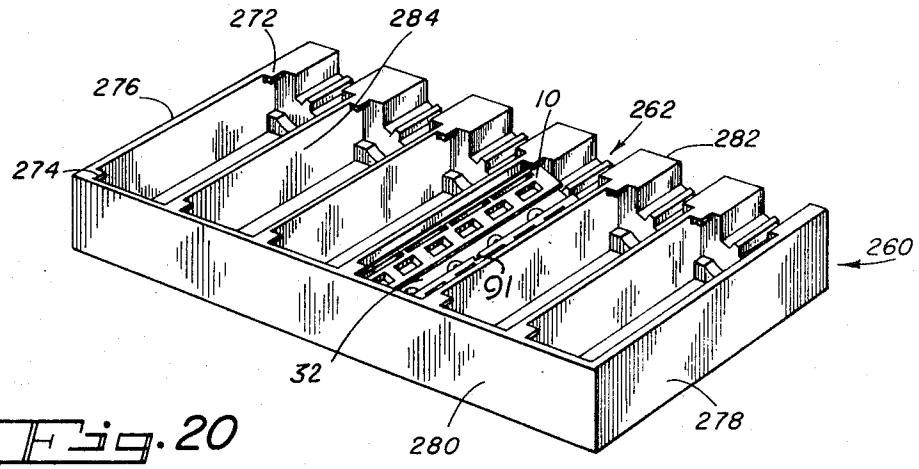


Fig. 20

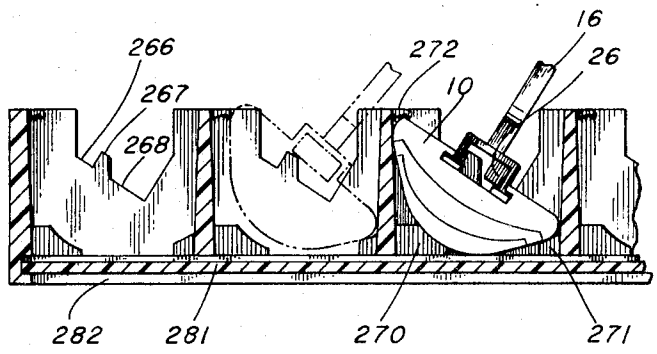


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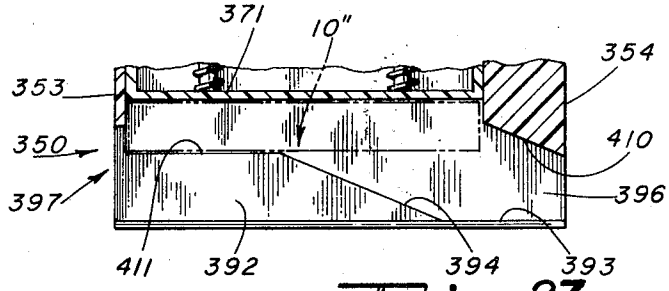


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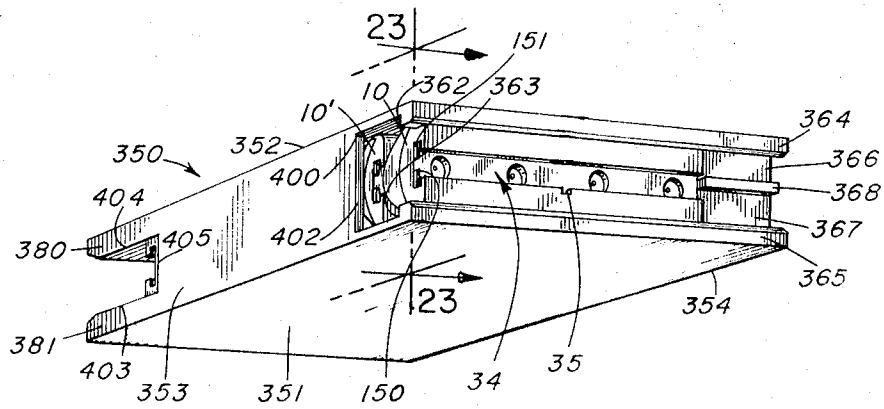


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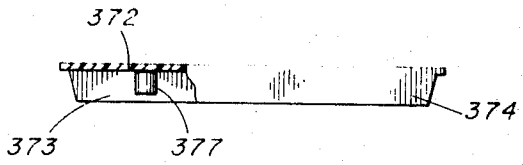


Fig. 24

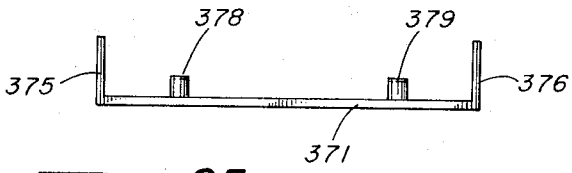


Fig. 25

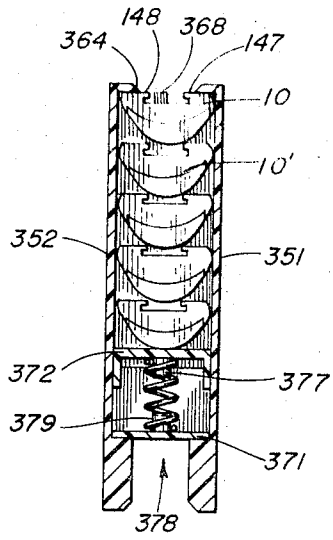


Fig. 23

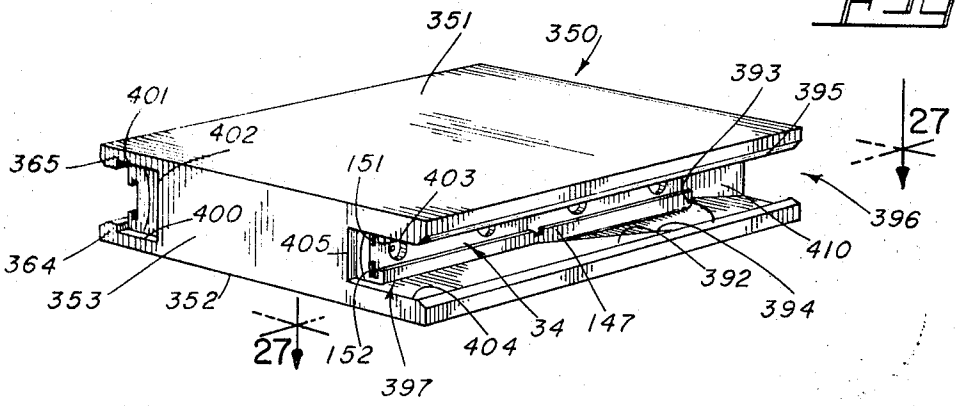


Fig. 26

BONDED BLADE CARTRIDGES AND A CARTRIDGE DISPENSING SYSTEM

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation-in-part of U. S. Pat. application Ser. No. 191,665, filed Oct. 22, 1971, for Razor Having Tandemly Mounted Blades Bonded In A Disposable Cartridge, and of U. S. Pat. application Ser. No. 236,723, filed Mar. 21, 1972, for Dispenser and Dispensing System For Bonded Razor Blade Cartridges.

BACKGROUND OF THE INVENTION

The present invention relates to safety razors of a type having a plurality of blades permanently bonded in a disposable cartridge. More particularly, the present invention relates to a dispenser and dispensing system for cartridges having a plurality of double edge blades.

It is known to permanently bond a blade having a single edge in a disposable cartridge. For example, U. S. Pat. Nos. 2,654,148 and 3,388,831 each disclose a razor blade permanently bonded in a disposable cartridge. Typically, a safety razor has a guard surface situated downwardly and outwardly from the cutting edge of a blade and parallel to the cutting edge. The guard surface may be of the comb variety, such as in U. S. Pat. No. 2,654,148, or formed by the outer surface of an elongated guard bar, such as shown in U. S. Pat. No. 3,388,831. An advantage of providing a blade permanently bonded in a cartridge is that it is possible to optimize the shaving angle defined by the relationship between the cutting edge and the guard surface to minimize the possibility of nicks and cuts and to maximize shaving efficiency.

SUMMARY OF THE INVENTION

In accordance with an aspect of the present invention, there is provided a dispensing system for bonded razor blade cartridges comprising, in combination, a dispenser, a plurality of disposable double edge cartridges in the dispenser, and a holder. Each of the cartridges has a plurality of double edge blades, and slidably engageable surfaces. The holder comprises means for sliding engagement with the slidably engageable surfaces. The holder additionally comprises stop means for preventing sliding engagement with the engageable surfaces when the sliding engagement means is in an improper orientation with respect to the dispenser. The dispenser has means formed thereon for guiding the sliding engagement means into sliding engagement with the slidably engageable surfaces, and means for abutting the stop means when the sliding engagement means is in an improper orientation to thereby prevent the sliding engagement means from engaging the engageable surfaces.

The invention thereby provides proper orientation of the holder with respect to each cartridge for removal from the dispenser.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an exploded view of a cartridge and a cartridge holder of an embodiment of the present inention;

FIG. 2 is an exploded view of the cartridge of FIG. 1;

FIG. 3 is a perspective view of a spring and stop member of the holder of FIG. 1;

FIG. 4 is a bottom plan view of the cartridge of FIG. 1;

FIG. 5 is a top view of another embodiment of a cartridge with portions removed;

FIG. 6 is a perspective view of a spacer used to separate the blades of the cartridge of FIG. 5;

FIG. 7 is a cross-sectional view of the cartridge of FIG. 5;

FIG. 8 is a side elevation view of still another embodiment of a cartridge;

FIG. 9 is a sectional view of the cartridge of FIG. 8 taken along lines 9 — 9 of FIG. 8;

FIG. 10 is an exploded view of a portion of FIG. 9;

FIG. 11 is a bottom plan view of a cap member of the cartridge embodiment of FIG. 8;

FIG. 12 is a bottom plan view of a blade separator used in the embodiment of FIG. 8;

FIG. 13 is a top plan view of a blade used in the embodiment of FIG. 8;

FIG. 14 is a top plan view of a blade seat member used in the embodiment of FIG. 8;

FIG. 15 is a side elevation view of yet another embodiment of a cartridge;

FIG. 16 is a cross-sectional view of the embodiment of FIG. 15 taken along lines 16 — 16 of FIG. 15;

FIG. 17 is an exploded view of a portion of FIG. 16;

FIG. 18 is a top plan view of a spacer for separating the blades of the embodiment of FIG. 15;

FIG. 19 is a top plan view of a blade seat member of the embodiment of FIG. 15;

FIG. 20 is a perspective view of a dispenser of one dispensing embodiment of the present invention;

FIG. 21 is a side view with an outer wall broken away of a portion of the dispenser of FIG. 20;

FIG. 22 is another embodiment of a dispenser for dispensing cartridges in accordance with the present invention;

FIG. 23 is a side view of the dispenser of FIG. 22 with a side wall broken away;

FIG. 24 is a side elevation view of a movable wall for the dispenser of FIG. 22 with a portion broken away;

FIG. 25 is a side elevation view of another movable wall of the dispenser of FIG. 22;

FIG. 26 is another perspective view of the dispenser of FIG. 22 showing the used cartridge storage end of the dispenser; and

FIG. 27 is a cross-sectional view taken along lines 27 — 27 of FIG. 26 showing the used cartridge storage end of the dispenser.

DESCRIPTION OF SPECIFIC EMBODIMENTS

FIG. 1 shows an exploded view of a blade cartridge **10** and a cartridge holder **12**. The blade cartridge **10** has a pair of double edge blades **38, 40** bonded permanently between a cap **34** and a blade seat member **36**. The blades **38, 40** are maintained in a separated state by a spacer **42**. A guard bar **44** is spaced outwardly from opposite longitudinal sides of the blade seat member **36** to provide a plurality of downwardly extending shaving residue channels **46** beneath the cutting edge of the lower blade **40**.

The holder **12** includes a handle **14** to which a frame member **16** is secured. A generally U-shaped flanged channel member **18** and a stop and spring member **20** are secured to the upper portion of the frame member **16**. The cartridge **10** is removably secured to the holder **12** by sliding the flanged U-shaped member **18** into a

T-shaped channel 32 formed transversely along the underside of the blade seat 36.

With reference to FIG. 2, the cap member 34 has a plurality of transversely spaced posts 48, 50, 52, 54 extending downwardly from the lower surface thereof. The posts 48 – 54 extend through a slot 62 in the upper blade 38, apertures 74 in the spacer 42, a slot 62′ in the lower blade 40, and apertures 80 in the blade seat member 36. As shown in FIG. 4, the bottom portions of the posts 48 – 54 are staked, for example, by ultrasonic, mechanical or heat energy, to deform the lower ends and thereby bond the components of the cartridge 10 together.

The spacer 42 has a plurality of longitudinally extending teeth 64, 68 on each end thereof which protrude a slight distance in front of the cutting edges of the upper blade 38. The teeth 64, 68 have spaces 70, 72 therebetween which are in flow communication with perforations 58′, 60′ in the lower blade 40. The perforations 58′, 60′ are in fluid communication with downwardly extending apertures 76, 78 in the blade seat member 36. Shaving residue generated between the cutting edges of the blades 38, 40 passes through flow paths defined by the spaces 70, 72, the perforations 58′, 60′, and the apertures 76, 78.

The upper blade 38 is also shown with perforations 58, 60 which may be formed during a blade construction process. However, the upper blade perforations 58, 60 do not carry out a flow path function in the described embodiment.

The upper blade 38 has a cutting edge-to-cutting edge dimension less than that of the lower blade 40, and the spacer 42 has a constant cross-sectional distance along its longitudinal axis. The narrower upper blade 38 and the constant cross-sectional thickness of the spacer 42 act to provide tandemly mounted cutting edges at each longitudinal end of the cartridge 10 when assembled. In this embodiment, the cutting edges of both the upper and lower blades 38, 40 have the same cutting angle as defined by their relative position with respect to corresponding guard bars 44, 44′.

The blade seat member 36 has upwardly extending posts 82, 84, 86, 88 at the outer four corners thereof. The posts 82 – 88 are provided to prevent the corners of the lower blade 40 from engaging the skin. In this embodiment, the components of the cartridge 10 are aligned and orientated by the downwardly extending posts 48, 50, 52, 54. Thus, it is preferred that the blade seat posts 82 – 88 are spaced a slight distance outwardly from the cutting edges of the lower blade 40 to avoid the possibility of interfering with the alignment of the lower blade 40 on the posts 48 – 54 of the cap member 34.

With reference to FIG. 4, then T-shaped channel formed in the lower side of the blade seat member 36 may have a pair of opposing notches 91, 93 therein. One of the notches 91, 93 receives a detent 24 on the spring 22 of the member 20 (FIG. 3) when the U-shaped member 18 is in sliding engagement with the T-shaped channel to minimize the possibility of the cartridge 10 from accidentally sliding off the holder 12.

A pair of stops 90, 92 are positioned in the T-shaped channel 32 at one end thereof to prevent passage of the U-shaped channel member 18 therethrough, and to aid in centrally locating the U-shaped member 18 in the T-shaped channel 32.

FIGS. 5 through 7 show another embodiment of a cartridge having tandemly mounted double edge blades. In this embodiment, a spacer has a plurality of longitudinally extending fingers 100, 101 which protrude a slight distance from beneath the cutting edges of an upper blade 538. The spacer also includes upwardly extending posts 106, 108, 110, 112 at the outer four corners thereof for protecting a user from the corners of the upper blade 538. The fingers 100, 101 have slots 102, 104 therebetween. The slots 102, 104 are in fluid communication with perforations 558, 560 in a lower blade 540 and downwardly extending apertures 576, 578 in a blade seat member 536 to provide a flow path for shaving residue from between the cutting edges of the blades 538, 540.

The upper blade 538 may also have perforations 558, 560. The cartridge embodiment of FIGS. 5 through 7 is also assembled by orientating the blades 538, 540, the spacer 598, and the blade seat member 536 on posts 548, 550, 552, 554 extending downwardly from the cap member 534, and staking the lower ends of the posts 548 – 554 as shown at 116 in FIG. 7 to rigidly bond the components of the cartridge together. As shown in FIG. 7, this cartridge embodiment also has a T-shaped channel 532 for sliding engagement with the holder 12 of FIG. 1.

FIGS. 8 through 14 show another cartridge embodiment in which equally dimensioned double edge blades 118, 122 are separated by a spacer 120 and rigidly bonded between a cap member 116 and a blade seat member 124. The bond is provided by staking the lower ends of posts 170 – 173 which extend downwardly from the cap member 116 through a slot 167 in the upper blade 118, apertures 174 – 177 in the spacer 120, a slot 167 in the lower blade 122, and apertures 166 in the blade seat member 124.

As shown in FIG. 12, the spacer 120 has longitudinal channels 178 – 183 for the passage of shaving residue from between the cutting edges of the upper and lower blades 118, 122 on opposite sides thereof. At least the lower blade 122 has perforations 168, 169 which are in fluid communication with the spacer channels 178 – 183 and with downwardly extending apertures 164, 165 in the blade seat member 124 to provide yet another series of flow paths for shaving residue generated between the cutting edges of the blades 118, 122. The guard bars 126, 126′ are spaced from the blade seat 124 by a plurality of ribs 129, 129′ to provide residue flow channels 127 below the cutting edges of the lower blade 122.

In the embodiment shown in FIGS. 8 – 14, the lower blade 122 has the outer ends of the cutting edges in abutting engagement with stops 160 – 163 formed on the blade seat member 124. Similarly, the upper blade 118 has its cutting edges in abutting engagement with stops 158, 159, 158′, 159′ extending upwardly from the outer four corners of the spacer 120.

The upper surface of the spacer 120 is longitudinally upwardly curved and has a pre-determined radius of curvature. The lower surface of the cap member 116 has a transverse center portion 151 (FIG. 11) with a radius of curvature less than the pre-determined radius of curvature of the upper surface of the spacer 120. Similarly, the upper surface of the blade seat member 124 has a pre-determined radius of curvature, and the lower surface of the spacer 120 has a transverse center portion 153 (FIG. 12) with a radius of curvature less than

that of the upper surface of the blade seat **124**. As shown in FIG. **9**, the relatively smaller radii of curvature in the transverse center portions **151, 513** provide transverse gaps **152, 154** between the cap member **116** and the upper blade **118**, and between the spacer **120** and the lower blade **122**.

The transverse gaps **152, 154** compensate for manufacturing tolerances in the formation of the components of the cartridge which may be in the order of **0.002 – 0.003** inch. The compensation is accomplished by absorbing the tolerances in the gaps **152, 154** after the blade edges are in abutting engagement with respective pairs of stops **158, 159; 158', 159'; 160, 161; 162, 163** on the spacer **120** and the blade seat member **124**. In this manner, the relationship between the cutting edges and the guard bars **126, 126'** on each side of the blade seat member **124** is predetermined by the relative positions of the blade stops on the spacer **120** and the blade seat member **124**.

Since the dimensions of the blades **118, 122** are equal, the radius of curvature of the upper surface of the spacer **120** is less than the radius of curvature of the upper surface of the blade seat member **124** to narrow the assembled distance between the cutting edges of the upper blade **118** to less than the distance between the cutting edges of the lower blade **122** such that the blades are tandemly mounted in the cartridge. As clearly shown in FIG. **10**, this configuration situates the cutting edges of the upper blade **118** to a cutting angle with respect to the guard bars **126, 126'** which is less than the cutting angle of the edges of the lower blade **122**.

The embodiment of FIGS. **15** through **19** provides for equalizing the cutting angles of the upper and lower blades by reversed curves at **236** and **233** in the upper blade to orientate the outer ends thereof parallelly with the outer ends of the lower blade. The embodiment of FIGS. **15 – 19** is similar to that of FIGS. **8 – 15** in that equally dimensioned double edge blades **228, 230** are vertically separated by a spacer **232** and rigidly maintained between a cap member **210** and a blade seat member **247**. As in the preceding embodiment, the cap member **210** has a plurality of downwardly extending posts which pass through an elongated slot (not shown) in the upper blade **228**, apertures **238** in the spacer **232**, an elongated slot (not shown) in the lower blade **230**, and apertures **242** in the blade seat member **247**, and are staked at the lower ends thereof.

Guard bars **212, 212'** are spaced from the blade seat member **247** by a plurality of ribs **214** to provide downwardly extending shaving residue flow channels **216, 216'** below the cutting edges of the lower blade **230**. As shown in FIG. **19**, the blade seat member **247** has a plurality of longitudinally extending shaving residue flow channels **246, 248, 250, 251, 252, 254** which are in flow communication with another plurality of downwardly extending channels **256, 258** in the blade seat member **247**. The spacer **232** has a plurality of longitudinally extending teeth **239, 239'** which protrude a slight distance from beneath the cutting edges of the upper blade **228**, and which provide a plurality of spacers **240, 240'** between adjacent teeth. Shaving residue from between the cutting edges of the blades **228, 230** passes into the spaces **240, 240'** and downward through perforations **227** (FIG. **17**) in the lower blade **230** to the downwardly extending flow channels **256, 258** in the blade seat member **247**.

It is contemplated that the longitudinally extending channels **246, 248, 250, 251, 252, 254** in the blade seat member **247** can extend to the guard bar channels **216, 126'** to provide shaving residue flow paths beneath the lower blade **230** between the cutting edges thereof. It is also contemplated that the spacer **232** can additionally have longitudinally extending channels such as shown in FIG. **12**.

As shown in FIG. **16**, transverse center portions of the lower surfaces of the cap member **210** and of the spacer **232** have a radius of curvature less than that of respective corresponding transverse center portions of the upper surfaces of the spacer **232** and of the blade seat member **247**. The smaller radii of curvature provide transverse gaps **234, 235** between the cap member **210** and the upper blade **228**, and between the spacer **232** and the lower blade **230**. The transverse gaps **234, 235** compensate for manufacturing tolerances as described with reference to the embodiment of FIGS. **8 – 14** by absorbing the tolerances in the gaps **234, 235** after the blade edges are in abutting engagement with respective pairs of stops **224, 226; 220, 222** on the spacer **232** and on the blade seat member **247**.

A dispenser **260** suitable for storing used and dispensing unused cartridges **10** is shown in FIGS. **20** and **21**. The dispenser **260** has a pair of opposing end wals **276, 278**, and a pair of opposing side walls **280, 282**. Cartridge chambers are formed within the dispenser **260** by transverse partitions **284**. Each of the chambers has a pair of wedge-shaped rest members **270, 271** formed along the inside surfaces of each of the side walls **280, 282**. The wedge-shaped members **270, 271** prevent the cutting edges of the cartridge blades from contacting the surfaces of the chamber.

Stop members **272, 274** are formed on the top portion of each of the end wall **276** and of the partitions **284** for engaging an underside portion of the guard bar of the cartridge **10** to maintain the cartridge **10** in the chambers in abutting engagement with the rests **270, 271** as shown in FIG. **21**.

The side wall **282** has a plurality of guide channels **262** transversely formed in the top surface thereof. As shown in FIG. **21**, each of the channels **262** has an upwardly extending transverse guide top **267** formed between guide surfaces **266, 268**. The upper guide surface **266** is narrower than the lower guide surface **268** such that a plurality of stop tabs **26, 28, 30** (FIG. **3**) on the member **20** can pass over the lower guide surface **268** without hitting or abutting the guide stop **267**. However, the stop tabs **26, 28, 30** cannot pass over the upper guide surface **266** without abutting the guide stop **267**. Thus, the combination of the guide stops **267** and of the holder stop tabs **26, 28, 30** prevents inserting a cartridge in an inverted position on the holder **12**.

By way of example, the dispenser **260** can initially have a cartridge in each one of the lower chambers as viewed in FIG. **20**, and the guide channels **262** for the lower five chambers can be numbered from **1** to **5**. A new holder **12** may have a dummy cartridge (not shown) having the same general outer configuration as that of the cartridge **10**. The dummy cartridge (not shown) or a used cartridge (not shown) from a prior dispenser is inserted in the top chamber by initially inserting the guard bar portion in the chamber and rotating the holder **12** in a counter-clockwise manner as viewed in FIG. **21** until the lower portion of a guard bar snaps under the stops **272, 274**. The holder **12** can then

be slid to the right with the holder channel member **18** (FIG. **1**) passing outwardly through the guide channel of the upper chamber.

A new cartridge is removed by positioning the portion of the U-shaped channel member **26** of the holder **12** in one of the lower five guide channels **26** with the holder stop tabs **26, 28, 30** orientated to pass over the lower guide surface **268** as described hereinabove. The holder **12** is then moved to the left for sliding engagement with the T-shaped channel in the lower part of the cartridge **10.** The new cartridge is then removed from the chamber by rotating the holder **12** clockwise as shown by the dashed lines in FIG. **21,** and the holder **12** can then be lifted upwardly for use.

As noted above, the lower five guide channels **262** can be numbered. The numbers are provided as a guide for use. Specifically, the dummy cartridge (not shown) or a used cartridge (not shown) is initially placed in the upper chamber, and an unused cartridge in the next lower chamber having numeral **1** (not shown) is first used. When this cartridge is no longer useful, it is retunred to its chamber, and the next lower cartridge identified by numeral **2** (not shown) is used. This process is continued until all of the cartridges are used.

An alternative dispenser **350** is shown in FIGS. **22 – 27.** With refernce to FIGS. **22 – 27,** the dispenser **350** has a top wall **352** and an opposing bottom wall **351,** as well as opposing side walls **353** and **354.** A new cartridge dispensing end is formed of opposing inwardly directed flange portions **364, 365** extending transversely of the dispenser **350.** As shown in FIG. **23,** the cartridges **10, 10'** are arranged in abutting relationship in the dispenser **350** and are biased upwardly such that the opposing inwardly directed members **147, 148** defining the T-shaped channel of the uppermost cartridge **10** are in abutting engagement with the undersides of the flange portions **364, 365.** The cartridges **10, 10'** are biased upwardly by a pair of springs **379** (only one shown) extending vertically between a pair of movable walls **371, 372.** The upper movable wall **372** has downwardly extending side walls **373, 374** that are in sliding engagement with the inner surfaces of the top and bottom walls **351, 352** of the dispenser **350.** Similarly, the bottom movable wall **371** has a pair of opposed upwardly extending wall portions **375, 376** that are positioned in sliding engagement with the interior surfaces of the side walls **353, 354** of the dispenser **350.** Each of the spings **379** are vertically positioned and held in vertical alignment by posts **377, 378** which extend in an opposing manner from the upper and lower movable walls **372, 371.** The springs **379** preferably should have a sufficient bias to move the lowermost cartridge into an abutting engagement with the inner surfaces of the inwardly directed flange portions **364, 365** while the lower movable wall **371** remains in the position shown in FIG. **23.** It is obvious that the biasing means may take other forms than the pair of springs **379.** For example, such biasing means may be a single spring having a coiled biasing member at one end thereof and a pair of elongated members extending tangentially from the coiled member and tending to rotate in counterradial directions about the axis of the coiled member such that the biasing force is applied to the opposing surfaces of the two movable walls **372, 371.**

A single guide channel defined by guide surfaces **366, 367** and a guide stop **368** is formed on the upper surface of the side wall **354.** The guide stop **368** is located such that the stop tabs **26, 28, 30** will pass over the guide surface **367** without abutting the guide stop **368.** However, the guide surface **366** is dimensioned such that the stop tabs **26, 28, 30** on the holder **12** will not pass over the guide surface **366** without abutting the guide stop **368.** When properly orientated, the holder **12** is slid or moved to the left in sliding engagement with the T-shaped channel **34** in the bottom of the cartridge **10** until the detent **24** (FIG. **3**) is in abutting engagement with the recess **35** of the cartridge **10.**

A new cartridge exiting port is formed in the dispenser side wall **353** by opposing parallel surfaces **400, 401** which are interconnected at the lower end by a surface **402** which is perpendicular to the surfaces **400, 401.** Inwardly directed tabs **362, 363** extend in an opposing ammner from the opposite surfaces **400, 401** and beneath the flange portions **364, 365.** The tabs **362, 363** are sufficiently flexible to permit the passage of the cartridge **10** to the left out of the dispenser **350** by movement of the holder **12** to the left such that the left sides of the flanges on the holder U-shaped channel member **18** are in abutting engagement with stops **151, 150** formed in the left side of the T-shaped channel **34.** When the uppermost cartridge **10** is removed from the dispenser **350,** the next cartridge **10'** is moved into abutting engagement with the undersides of the flange portions **364, 365** by action of the springs **379.**

A used blade end of the dispenser **350** is shown in FIGS. **26** and **27.** With reference to FIGS. **26** and **27,** the used blade access port **396** has inwardly directed opposing flange members **393, 395.** Opposing ramp elements **392** are formed on the inner surfaces of the top and bottom walls **352 351** (the ramp element of wall **351** is not shown). A used cartridge **10''** is inserted through the port **396** above the opposing flange members **393, 395** while the holder **12** is still secured to the cartridge **10''.** The left side of the cartridge **10''** slides up a ramp surface **394** on each of the ramp members **392** and moves the lower movable wall **371** upwardly such that transverse movement of the cartridge **10''** to the left as viewed in FIG. **27** can be continued. Transverse movement of the used cartridge **10''** is continued until the inwardly directed surfaces **147, 148** defining the T-shaped channel of the used cartridge **10''** rest on horizontal surfaces **411** of the ramp members **392,** and the used cartridge **10''** is in the position as shown in dashed lines in FIG. **27.**

The lower end **410** of the side wall **354** can be sloped or beveled as shown in FIG. **27** to provide relatively free movement of the used cartridge **10''** up the ramp surfaces **394** during transmovement thereof into the used cartridge end **396** of the dispenser **350.**

When the used cartridge **10''** is seated on the horizontal upper surfaces **411** of the ramp member **392,** the holder **12** can be removed by transverse movement to the right while maintaining the right side of the used cartridge **10''** in abutting engagement with the inner surface of the side wall **354.** Alternatively, the stop members **151, 152** can be designed to yield to a pressure on the left side of the U-shaped holder channel member **18,** and thus provide for removal of the holder **12** out a port **397** defined by opposing vertical surfaces **402, 404** and a horizontal surface **405** interconnecting the opposing surfaces **403, 404.** Further, the stop members **151, 152** can be eliminated and the U-shaped holder channel member **18** can be removed through the port **397** because the left side of the used cartridge

10'' is in abutting engagement with an inner surface of the side wall 353 as shown in FIG. 27.

What is claimed is:

1. A dispensing system for razor blade cartridges comprising, in combination:

a dispenser;

a plurality of disposable blade cartridges in said dispenser, each of said cartridges comprising a cap member, a blade seat member, and at least two double cutting edge blades separated by a spacer, said blades and said spacer being bonded between said cap member and said blade seat member, said blade seat member having a plurality of underside surfaces forming a channel transversely thereof;

a holder having a plurality of supporting surfaces formed transversely thereof for sliding engagement with said channel surfaces, and stop means for preventing said supporting surfaces from engaging said channel surfaces when said supporting surfaces are in an improper orientation;

a plurality of guide surfaces formed on said dispenser for aligning said supporting surfaces with said channel surfaces; and

means on said dispenser for abutting said stop means when said supporting surfaces are in said improper alignment and for clearing said stop means when said supporting surfaces are in a proper alignment.

2. The system of claim 1 wherein said channel surfaces are T-shaped in cross-section, and wherein said supporting surfaces comprise forwardly and rearwardly extending flange members formed at an opened end of a U-shaped transversely extending support member, said stop means being located between a pair of opposing walls of said supporting member, and said abutting means being located between said guide surfaces.

3. The system of claim 2 further comprising opposing recesses formed in said channel surfaces, and biasing means extending through an opening in one of said walls for abutting engagement in one of said recesses.

4. The system of claim 3 wherein each of said cartridges further comprises means extending into said channel at one end thereof for abutting engagement with an end of at least one of said flanges to prevent passage to said flanges through said one end of said channel.

5. The system of claim 1 wherein said dispenser comprises a base, a pair of opposing side walls extending from said base, a plurality of transverse parallel partitions extending from said base and interconnecting said side walls to provide a plurality of cartridge chambers, means in each of said chambers for releasably maintaining one of said cartridges therein with said channel surfaces psoitioned for engagement, said plurality of guide surfaces formed transversely in one of said side walls in alignment with each of said chambers.

6. The system of claim 1 wherein said dispenser comprises a base wall, a top wall in opposing relationship to said base wall, a pair of opposing side walls interconnecting said base and top walls, a transverse opening formed at one end of said dispenser for permitting transverse movement therein of said supporting surfaces of said holder, means for biasing said cartridges in abutting relationship to said one of said dispenser with said channel surfaces of one of said cartridges in position for engagement, and means at said one end of said dispenser for releasably maintaining said cartridges in said dispenser, said plurality of guide surfaces being formed transversely in one of said side walls at said one end of said dispenser.

7. The dispenser of claim 6 further comprising a cartridge exit port in the other of said side walls at said one end of said dispenser, whereby further transverse movement of said holder after said supporting surfaces and said channel surfaces are engaged will remove said one cartridge from said dispenser through said exit port.

8. The dispenser of claim 6 further comprising a used cartridge transverse opening formed at the other end of said dispenser for permitting transverse movement therein of a holder having a used cartridge slidably engaged therewith.

9. The system of claim 1 wherein each of said cartridges has at least two tandemly mounted cutting edges on opposite longitudinal sides thereof, and wherein said spacer comprises a plurality of channels extending longitudinally of said cartridge between said opposite sides.

10. The system of claim 1 wherein each of said cartridges has at least two tandemly mounted cutting edges on opposite longitudinal sides thereof, and wherein said blade seat member comprises a plurality of channels extending longitudinally of said cartridge between said opposite sides.

11. The system of claim 9 wherein the lower blade has a plurality of perforations spaced inwardly from each cutting edge thereof, and wherein said blade seat member has a plurality of downwardly extending channels in fluid communication with said perforations to provide a shaving residue flow path from between the tandemly mounted cutting edges.

12. The system of claim 10 wherein the lower blade has a plurality of perforations spaced inwardly from each cutting edge thereof, and wherein said blade seat member has a plurality of downwardly extending channels in fluid communication with said perforations to provide a shaving residue flow path from between the tandemly mounted cutting edges.

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