United States Patent [19]

Dawidowicz et al.

[11] **3,834,018**

[45] **Sept. 10, 1974**

[54] **DISPENSING SYSTEM FOR RAZOR BLADE CARTRIDGES**

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

[22] Filed: **Sept. 21, 1973**

[21] Appl. No.: **399,786**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 258,682, June 1, 1972, Pat. No. 3,771,223, which is a continuation-in-part of Ser. No. 236,723, March 21, 1972, Pat. No. 3,785,051.

[52] **U.S. Cl.** **30/40.2,** 206/356, 206/359

[51] **Int. Cl.** **B26b 21/24,** A45d 27/24

[58] **Field of Search** 30/40, 40.2; 206/354–360

[56] **References Cited**

UNITED STATES PATENTS

2,347,237	4/1944	Benjamin	206/356
2,744,317	5/1956	Borden	30/40.2 X
3,388,831	6/1968	Hansom	30/40.2 UX
3,696,915	10/1972	Douglas	30/40 X

OTHER PUBLICATIONS

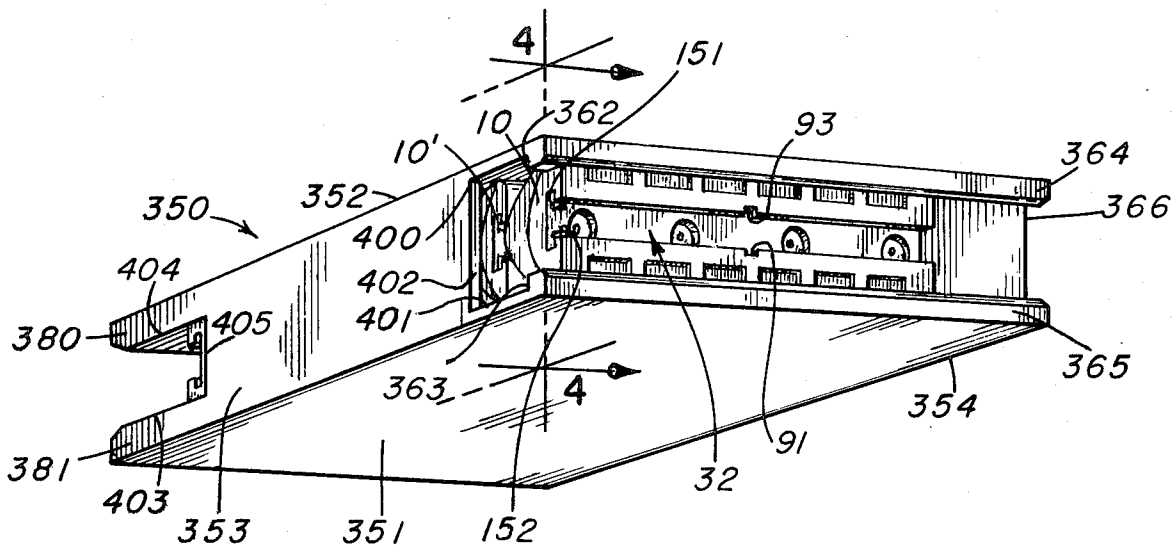
Instruction Sheet for Persona Twin Blade System, American Safety Razor Co., a Division of Philip Morris, Inc.

Primary Examiner—Al Lawrence Smith
Assistant Examiner—Gary L. Smith
Attorney, Agent, or Firm—James F. Powers, Jr.; Albert H. Graddis

[57] **ABSTRACT**

The specific disclosure provides a dispensing system for razor blade cartridges comprising a dispenser, a plurality of cartridges in the dispenser, and a holder having a plurality of transverse supporting surfaces on top of a frame member for sliding engagement with surfaces extending transversely of each cartridge. The dispenser has a used cartridge storage end comprising a transverse opening between a used cartridge entrance port in one side wall and a holder exit port in the other side wall. A used cartridge is positioned in the used cartridge storage end through the used cartridge entrance port by means of the holder. The frame member of the holder is moved through the transverse opening to abut a side of the used cartridge against wall surfaces forming the holder exit port. Continued movement of the holder disengages the transverse supporting surfaces of the holder from the used cartridge, and such holder surfaces are removed from the storage end through the holder exit port.

10 Claims, 8 Drawing Figures



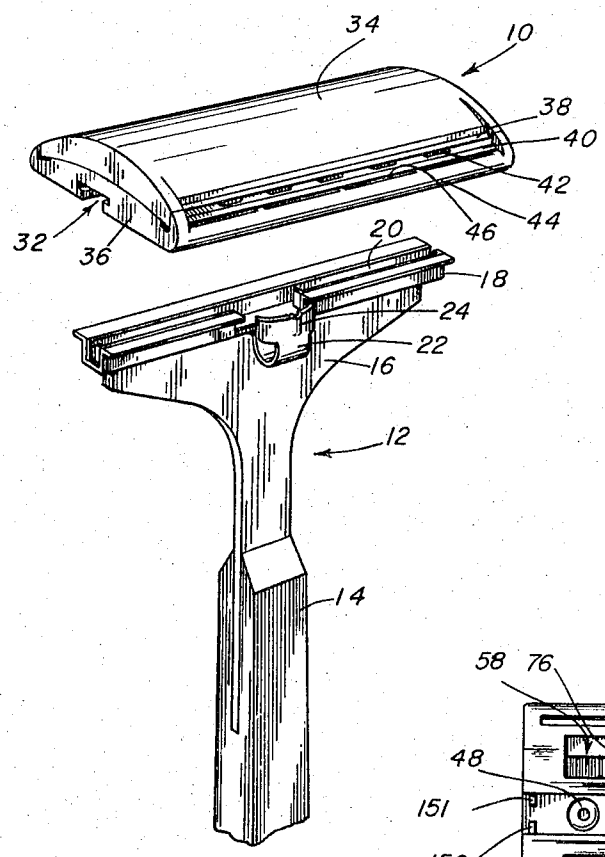


Fig. 1

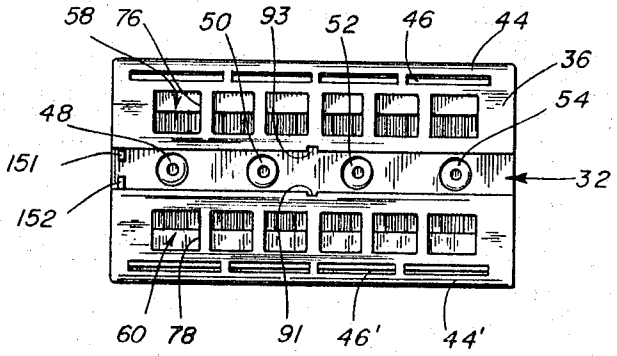


Fig. 2

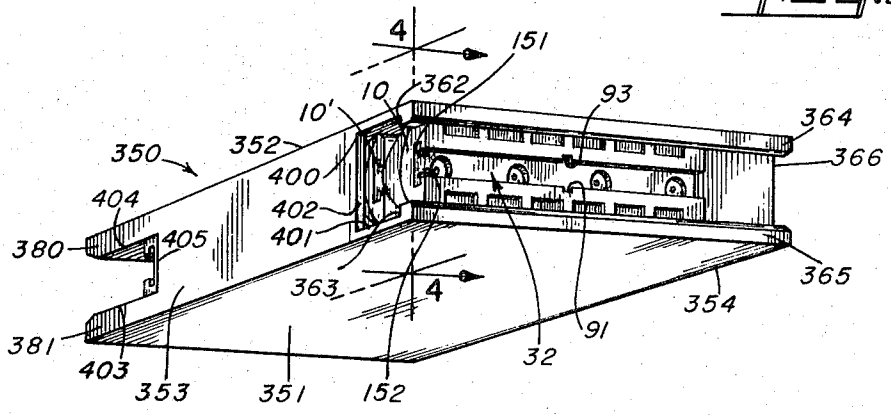


Fig. 3

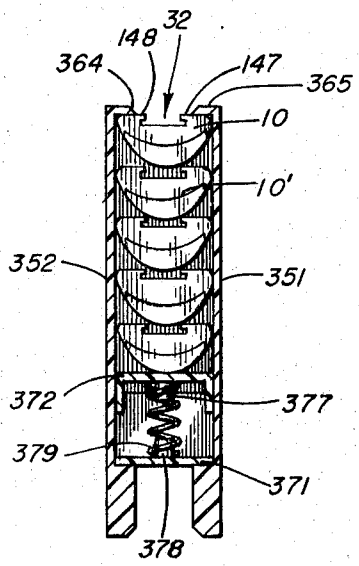


Fig. 4

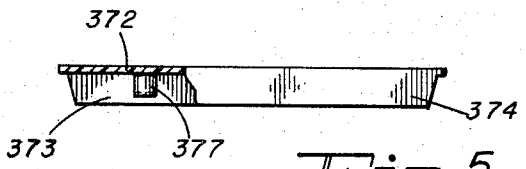


Fig. 5

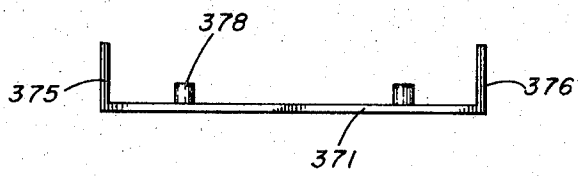


Fig. 6

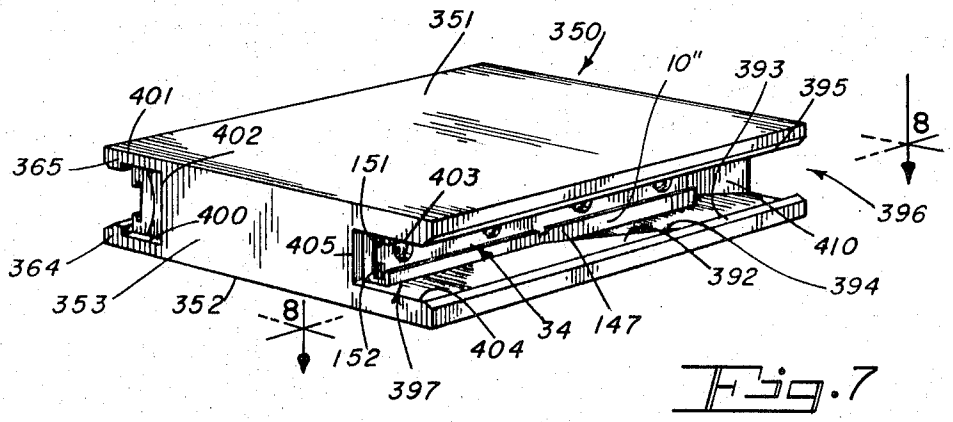


Fig. 7

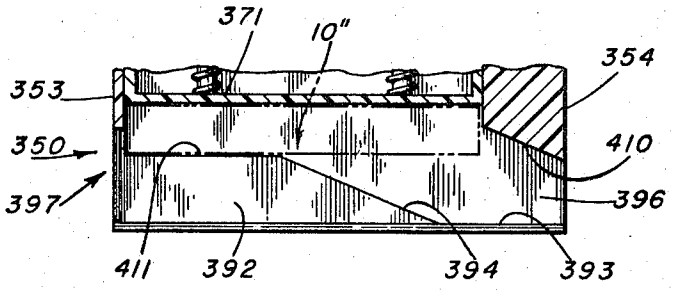


Fig. 8

DISPENSING SYSTEM FOR RAZOR BLADE CARTRIDGES

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation-in-part of U.S. Pat. application Ser. No. 258,682, filed June 1, 1972, now U.S. Pat. No. 3,771,223 which, in turn, is a continuation-in-part of U.S. Pat. application Ser. No. 236,723, filed March 21, 1972, now U.S. Pat. No. 3,785,051.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to safety razors of a type having at least one blade permanently bonded in a disposable cartridge. More particularly, the present invention relates to a dispenser and a dispensing system which include means for storing used razor blade cartridges.

2. Description of the Prior Art

It is known to permanently bond a razor blade in or on a disposable cartridge which includes a guard surface situated downwardly and outwardly from the cutting edge of the blade. Such cartridges are releasably attached to a handle or holder, and are replaced on the handle when the cutting edge becomes unsuitable for use. For example, U.S. Pat. No. 1,864,995 discloses double edge blades bonded in plastic and metallic cartridges. U.S. Pat. Nos. 2,563,802 and 2,800,713 provide single edge blades permanently secured to plastic or metallic cartridges. U.S. Pat. No. 3,388,831 discloses plastic cartridges with single edge blades, and also cartridge dispensing systems. The dispensers of U.S. Pat. No. 3,388,831 include means for storing used cartridges.

SUMMARY OF THE INVENTION

In accordance with the present invention, there is provided a razor blade cartridge dispenser comprising a used cartridge storage end opposite a cartridge dispensing end. The dispenser is used in a shaving system which comprises a plurality of razor blade cartridges, and a holder. The holder has a plurality of transverse surfaces at an upper end of a frame member. The transverse surfaces are adapted for sliding engagement with transverse slidably engageable surfaces on each cartridge. The storage end of the dispenser includes a used cartridge entrance port formed in a side wall of the dispenser, a holder exit port formed in another side wall opposite the entrance port, and a transverse opening extending between the entrance port and the holder exit port for passage of the holder frame therethrough. The holder exit port is dimensioned to permit passage therethrough of the transverse surfaces on the holder, and to preclude removal of a used cartridge therethrough. The used cartridge is positioned in the used cartridge storage end through the used cartridge entrance port by means of the holder, and the frame member is moved through the transverse opening to remove the holder transverse surfaces through the holder exit port.

The invention provides an improved cartridge storage means which permits a user to safely dispose of used cartridges without handling them.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an exploded view of a cartridge and a cartridge holder;

FIG. **2** is a bottom plan view of the cartridge of FIG. **1**;

FIG. **3** is a perspective view of a dispenser embodiment;

FIG. **4** is a cross-sectional view of the dispenser taken along lines **4—4** of FIG. **3**;

FIG. **5** is a side elevational view of a movable wall for the dispenser with a portion broken away;

FIG. **6** is a side elevational view of another movable wall of the dispenser;

FIG. **7** is another perspective view of the dispenser showing the used cartridge storage end of the dispenser; and

FIG. **8** is a cross-sectional view taken along lines **8—8** of FIG. **7** 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, 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. Cartridge supporting surfaces shown as a generally U-shaped flanged channel member **18,** and a stop and spring member **20** are transversely positioned and secured to an upper end of the frame member **16.** The cartridge **10** is removably secured to the holder **12** by sliding the flanged U-shaped member **18** into slidably engageable surfaces shown as 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 (not shown) in the upper blade **38,** apertures (not shown) in the spacer **42,** a slot (not shown) in the lower blade **40,** and apertures in the blade seat member **36.** The bottom portions of the posts **48 – 54** are staked, for example, by ultrasonic, mechanical or heat energy, to deform the lower ends as shown in FIG. **4,** and thereby bond the components of the cartridge **10** together.

The spacer **42** has a plurality of longitudinally extending teeth on each end thereof which protrude a slight distance in front of the cutting edges of the upper blade **38.** The teeth have spaces 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 between the spacer teeth, the perforations **58, 60,** and the apertures **76, 78.**

With reference to FIG. **2,** the T-shaped channel **32** formed in the lower side of the blade seat member **36**

has a pair of opposing notches **91, 93** therein. One of the notches **91, 93** receives a detent **24** on a spring **22** of the stop and spring member **20** (FIG. **1**) when the cartridge supporting surfaces or U-shaped member **18** is in sliding engagement with the T-shaped channel **32** to minimize the possibility of the cartridge **10** from accidentally sliding off the holder **12.**

With reference to FIGS. **3 – 8,** a dispenser **350** has a top wall **352** and an opposing base or 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. **4,** the cartridges **10, 10'** are arranged in abutting relationship in the dispenser **350** and are biased upwardly such that opposing inwardly directed members **147, 148,** which define the T-shaped channel **32** 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 springs **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. **4.** 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 counter-radial 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 **366** is formed on the upper surface of the side wall **354.** When properly orientated, the holder **12** is slid or moved to the left in sliding engagement with the T-shaped channel **32** in the bottom of the cartridge **10** until the detent **24** (FIG. **1**) is in abutting engagement with one of the recesses **91, 93** 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 manner 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, 152** formed in the left side of the T-shaped channel **32.** 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. **7** and **8.** With reference to FIGS. **7** and **8,** 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. **8** can be continued. Transverse movement of the used cartridge **10''** is continued until the inwardly directed surfaces **147, 148** defining the T-shaped channel **32** 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. **8.** When a subsequent used cartridge is ready for placement in the used cartridge end of the dispenser, the above procedure is repeated to push the used cartridge **10''** upwardly and to locate the subsequent cartridge in the position shown in dashed lines in FIG. **8.**

The lower end **410** of the side wall **354** can be sloped or beveled as shown in FIG. **8** 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 members **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 **403, 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. **8.**

Modifications of the disclosed embodiments of the invention will be obvious to those skilled in the art without departing from the scope and spirit of the present invention. For example, the port defined by surfaces **400, 401, 402** can be eliminated and at least one tab can be substituted for the flange member **364.** In this instance, the U-shaped channel member **18** is positioned in the T-shaped channel of the new cartridge **10** as described hereinabove and the new cartridge is thereafter removed by rotating the handle in a clockwise manner as viewed in FIG. **4.** Such rotation will disengage the new cartridge **10** from the substituted tab or tabs, and thus permit removal of the cartridge from the dispenser **350.**

Although specific embodiments have been described hereinabove with reference to two double edge blades in a disposable cartridge, it is obvious that all the as-

pects of the invention are equally suitable for a dispenser and dispensing system for one or any number of single edge blades bonded in a disposable cartridge or for one or any number of double edge blades bonded in a disposable cartridge. Single edge blade cartridges are disclosed in U.S. Pat. application Ser. Nos. 191,665 and 236,723, filed Oct. 22, 1971, and Mar. 21, 1972, and now U.S. Pat. Nos. 3,783,510 and 3,785,051, respectively. Alternative double edge blade cartridges are shown in U.S. Pat. application Ser. No. 258,682, filed June 1, 1972, now U.S. Pat. No. 3,771,223. U.S. Pat. application Ser. Nos. 191,665, 236,723 and 258,682 are incorporated herein by reference.

What is claimed is:

1. In a razor blade cartridge shaving system comprising a cartridge dispenser, a plurality of razor blade cartridges, and a holder, each of said cartridges including slidably engageable surfaces extending transversely thereof, and said holder including an upwardly extending frame member and a plurality of transverse supporting surfaces at an upper end of said frame member, said transverse supporting surfaces being adapted for sliding engagement with said slidably engageable surfaces; the combination comprising said dispenser including 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 cartridge dispensing end, means at said cartridge dispensing end for releasably maintaining unused ones of said cartridges in said dispenser, and a used cartridge storage end opposite said cartridge dispensing end; said used cartridge storage end comprising a used cartridge entrance port formed in one of said side walls, a holder exit port formed in the other one of said side walls, said holder exit port being dimensioned to permit passage of said transverse supporting surfaces therethrough and to preclude removal of a used cartridge therethrough, and a transverse opening for passage of said frame member therethrough, said transverse opening extending between said used cartridge entrance port and said holder exit port; whereby a used one of said cartridges is positioned in said used cartridge storage end through said used cartridge entrance port by means of said holder, and said frame member is moved through said transverse opening to remove said transverse supporting surfaces through said holder exit port.

2. The system of claim **1** wherein said transverse opening is formed by opposing flanges extending inwardly from said base and top walls.

3. The system of claim **1** wherein said used cartridge storage end further comprises means for spacing said used cartridge from said transverse opening.

4. The system of claim **3** wherein said spacing means comprises a pair of ramp members having said transverse opening therebetween, each of said ramp members including a ramp surface which extends inwardly in the general direction of said cartridge dispensing end and transversely in the general direction of said holder exit port.

5. The system of claim **4** wherein each of said ramp members further includes a used cartridge rest surface between the ramp surface thereof and said holder exit port.

6. The system of claim **1** wherein said dispenser further includes means for biasing said unused cartridges in an abutting arrangement to said cartridge dispensing end with said slidably engageable surfaces of one of said unused cartridges in position for engagement.

7. In a razor blade cartridge shaving system comprising a cartridge dispenser, a plurality of razor blade cartridges, and a cartridge holder, each of said cartridges including at least one double edge blade bonded therein and a plurality of underside surfaces forming a channel transversely thereof, and said holder including an upwardly extending frame member and a plurality of transverse supporting surfaces on top of said frame member, said transverse supporting surfaces being adapted for sliding engagement with said channel surfaces; the combination comprising said dispenser including 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 cartridge dispensing end, means at said cartridge dispensing end for releasably maintaining unused ones of said cartridges in said dispenser, and a used cartridge storage end opposite said cartridge dispensing end; said used cartridge storage end comprising a used cartridge entrance port formed in one of said side walls, a holder exit port formed in the other one of said side walls, said holder exit port being dimensioned to permit passage of said transverse supporting surfaces therethrough and to preclude removal of a used cartridge therethrough, and a transverse opening extending between said used cartridge entrance port and said holder exit port, said transverse opening being formed by opposing flanges extending inwardly from said base and top walls; whereby a used one of said cartridges is positioned in said used cartridge storage end through said used cartridge entrance port by means of said holder, and said frame member is moved through said transverse opening to abut an end of the used cartridge against the side wall about said holder exit port and to remove said transverse supporting surfaces through said holder exit port after disengagement from said channel surfaces on the used cartridge.

8. The system of claim **7** wherein said used cartridge storage end further comprises means for spacing said used cartridge from said transverse opening.

9. The system of claim **8** wherein said spacing means comprises a pair of ramp members having said transverse opening therebetween, each of said ramp members including a ramp surface which extends inwardly in the general direction of said cartridge dispensing end and transversely in the general direction of said holder exit port.

10. The system of claim **9** wherein each of said ramp members further includes a used cartridge rest surface between the ramp surface thereof and said holder exit port.

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