Nov. 26, 1946. J. G. ROBERTS 2,411,669

RAZOR BLADE PACKAGE

Filed June 11, 1942 3 Sheets-Sheet 1

Fig. 1.

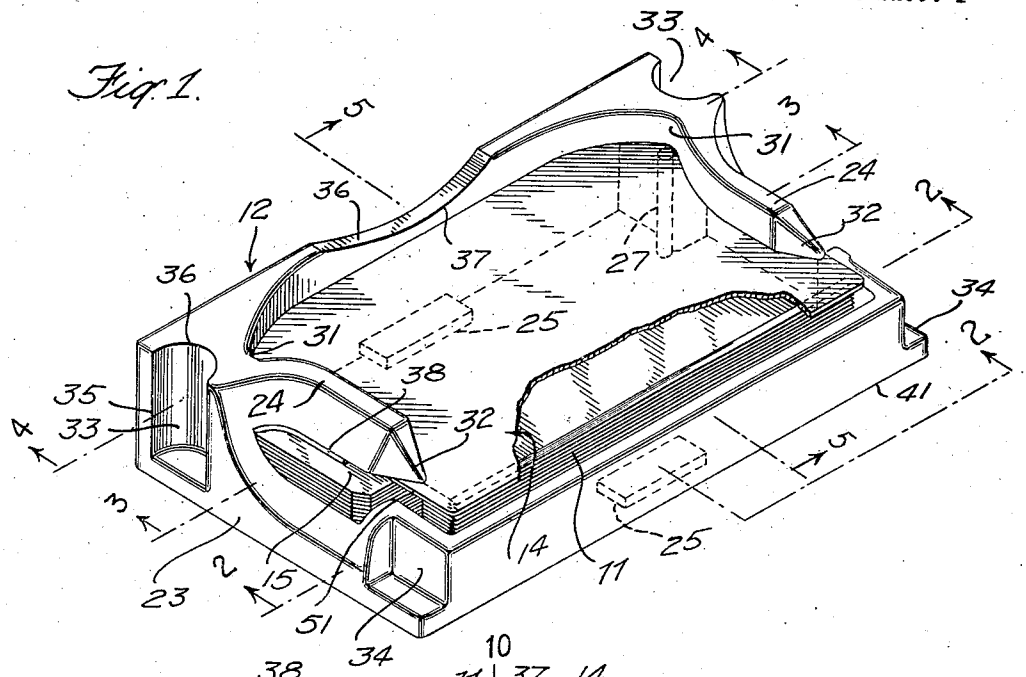


Fig. 2.

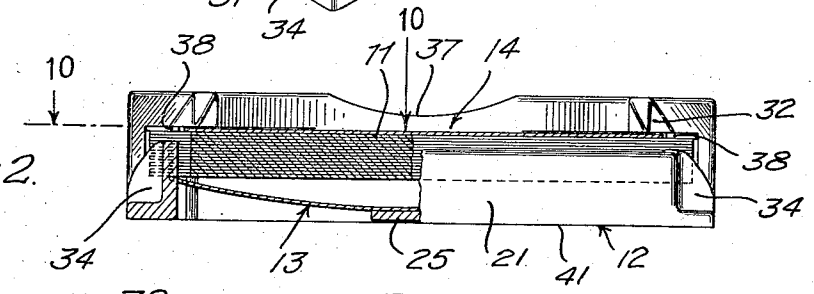


Fig. 3.

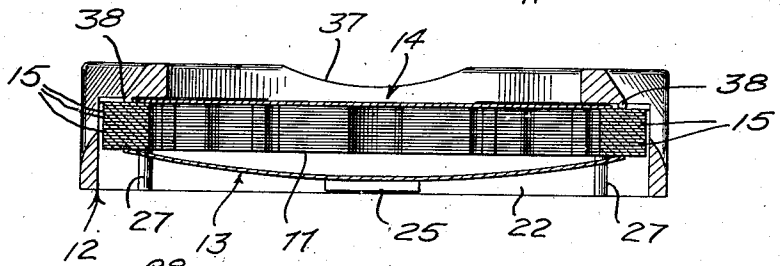
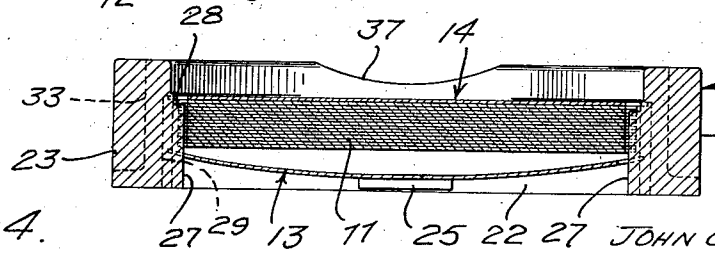


Fig. 4.



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Fig. 5.

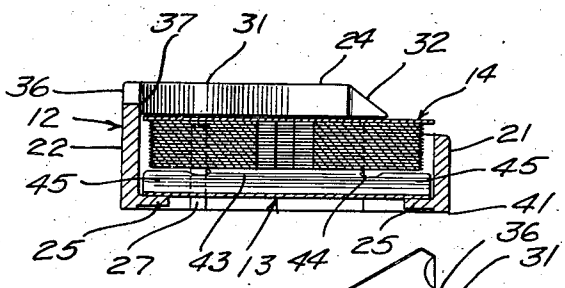


Fig. 6.

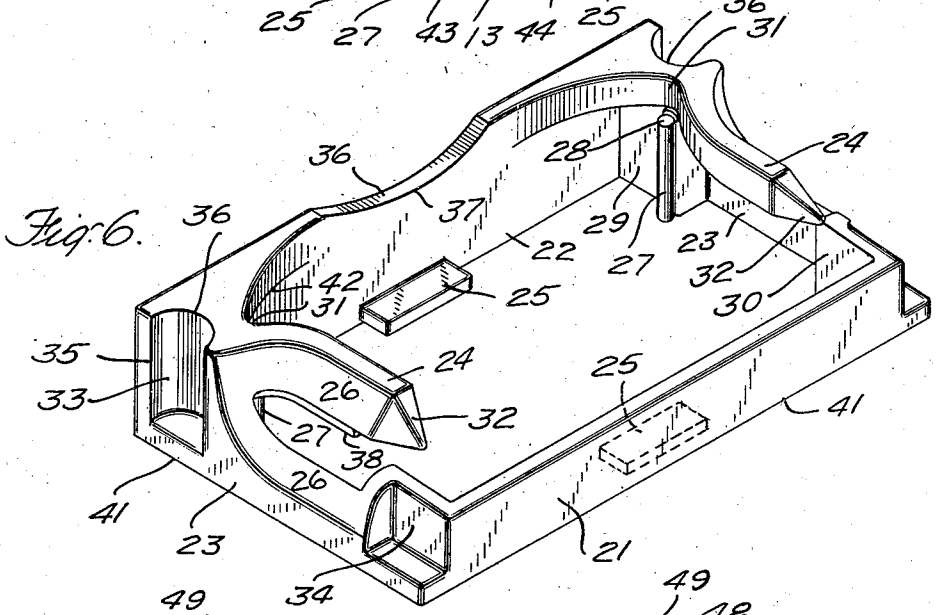


Fig. 7.

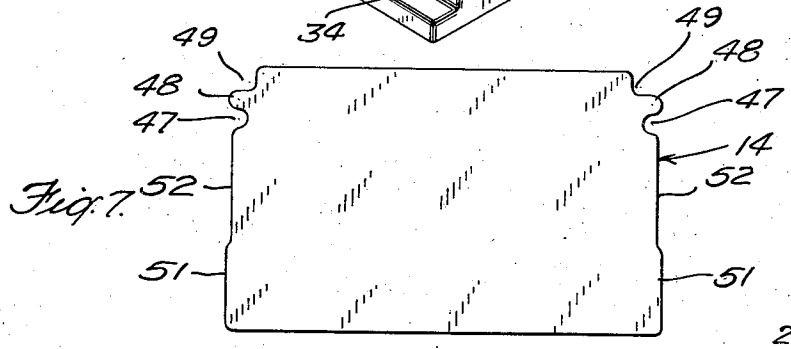


Fig. 8.

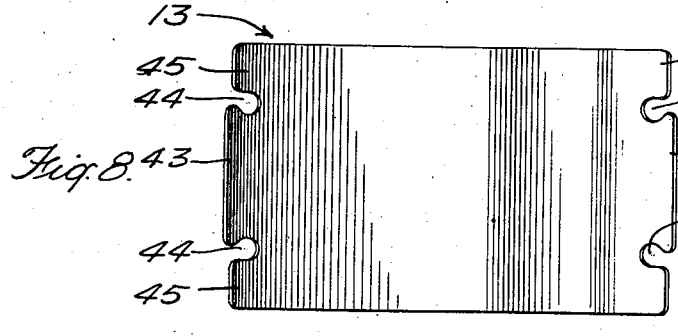
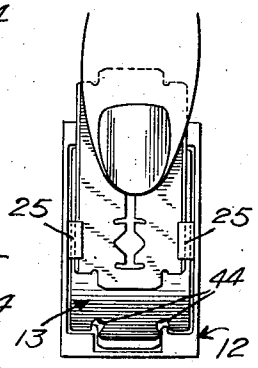


Fig. 9.



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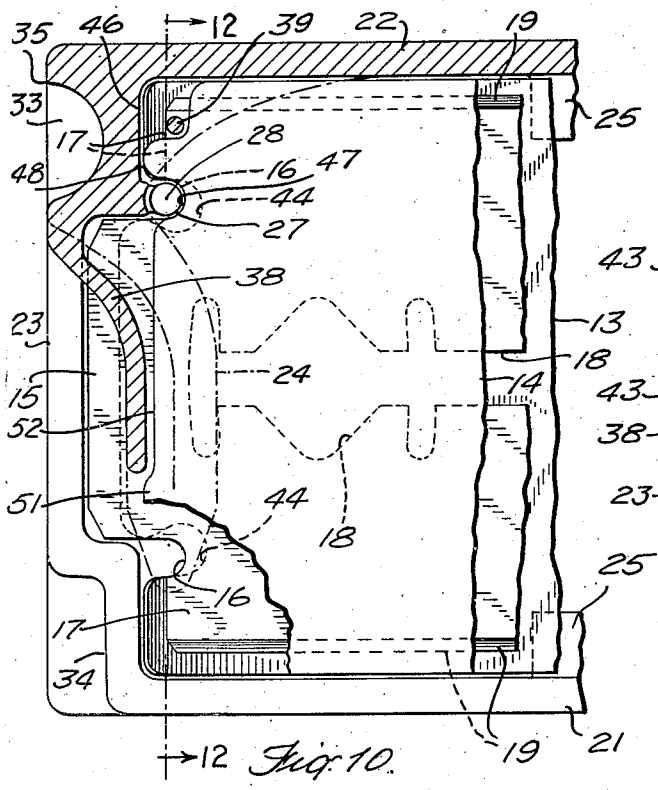


Fig. 10.

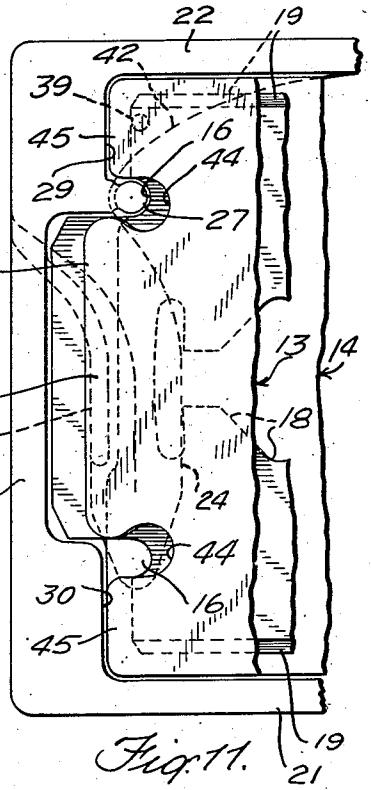


Fig. 11.

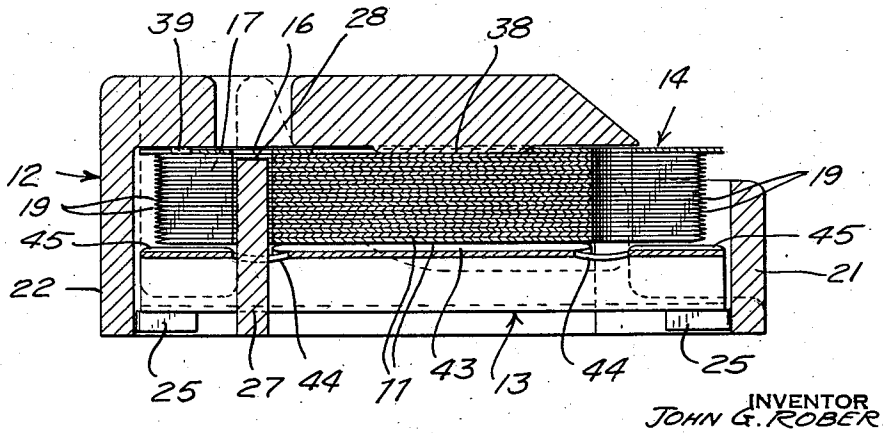


Fig. 12.

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UNITED STATES PATENT OFFICE

2,411,669

RAZOR BLADE PACKAGE

John G. Roberts, Dobbs Ferry, N. Y.

Application June 11, 1942, Serial No. 446,613

8 Claims. (Cl. 206—16)

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This invention relates to the packaging of safety razor blades and is directed particularly to improvements over the type of packaging device described in applicant's Patents No. 2,287,-487, issued June 23, 1942, and No. 2,300,596, issued November 3, 1942, wherein unwrapped blades are stacked face to face in a container from which they are withdrawable one at a time laterally under the control of finger engagement at the blade ends.

One well known double edge blade, to hold which the invention is applicable, is made with narrow end extensions and recesses in the adjacent shoulder portions. In the container described in said patents admittance gaps of substantially blade thickness dimensions for regulating the dispensing operation are located in the forward or exit side of the chamber in front of the end extension portions of such blades. In the container herein described the admittance gaps are provided for in the rearward portion of the chamber behind these extensions by sized openings in abutment members or flanges that are integral parts of the container and adapted except at the gaps therein to obstruct lateral movements of the blade stack. These members or flanges engage the blades edgewise within the recesses thereof that lie behind the end extensions.

The top portion of the container is beveled at its ends to expose the blade end extensions as in the prior structures and preferably also cut away throughout its mid-section, leaving only a pair of forwardly extending prongs that overlie the stack near the blade ends. These prongs point prominently in the direction of the blade dispensing movement and the topmost blade is clearly visible. The lower faces of the prongs are shaped to provide two plane surfaces at different levels to accommodate a transparent cover plate. The surface at the lower level is that against which the blade stack is urged by a blade lifting spring. The bottom portion of the container is, preferably, entirely cut away except for a pair of ears projecting inwardly from the side walls. The spring bows upwardly at its ends and abuts the ears at its middle portion. This construction permits used blades to be thrust longitudinally into the blade chamber between the spring and the ears and thus safely disposed of.

The container is of one piece and may be completely formed of plastic material in a simple two part mold. It is extremely light in weight and advantageously somewhat flexible to tor-

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tional forces while being entirely rigid at the location of the admittance gaps at the bases of the prongs. All of these characteristics contribute materially to the adaptability of the container for its intended purposes and to the low cost of the complete assembly. Its formation permits of automatic machine loading as the blades, several at a time, and then the spring may be thrust longitudinally into place through the open bottom.

The blades are permanently protected from moisture while permitting easy withdrawals by virtue of a non-corrosive, non-drying, highly refined mineral oil. In practice it has been found desirable to add to the mineral oil base a small amount of indus oil, about 3%, to give extra penetrating qualities and a small amount of pine oil, about 2%, to serve as a deodorant. Under the force of capillary attraction a substantial body of this lubricant is drawn in between the blade faces. The maintenance there of such a body is essential as the blades must not adhere one to another with any frictional effect sufficient to interfere with the finger withdrawal forces. Also, the highly fluid state of this liquid insures continuous, long lasting protection as it flows freely out to and actually spreads over the cutting edges of the blades. The blade lifting force is determined to be not excessively greater than that sufficient to overcome the opposing force of gravity exerted by the stack. A bowed spring of three thousandths inch thick of cold rolled steel, for example, provides a lifting force upon a full stack (about twenty five .006'' blades) which is approximately twice that of the opposing force of gravity. This amply meets the blade lifting requirement and is insufficient to overcome the force of capillary attraction that holds a good body of the lubricant in place.

Tokens of the general dimensions of blades may be placed in the stack or below the spring to satisfy any commercially desirable requirements.

An embodiment of the invention in assembled state is illustrated in the accompanying drawings, Figs. 1 to 5 and 10 to 12. Figs. 6, 7 and 8 show separate parts. Fig. 1 is an isometric view of the assembled package with a piece of the cover part broken away. Fig. 2 is a front view partly in section on line 2—2 of Fig. 1. Figs. 3, 4 and 5 are sectional views on lines 3—3, 4—4 and 5—5, respectively, of Fig. 1. Fig. 6 is an isometric view of the container, Fig. 7 a plan view of the separate cover part and Fig. 8 a plan view of the spring. Fig. 9 shows the manner of insert-

ing used blades. Fig. 10 is a fragmentary view in section on line 10—10 of Fig. 2, Fig. 11 a fragmentary bottom view, and Fig. 12 a sectional view on line 12—12 of Fig. 10.

The assembled blade package may comprise merely a stack of the blades 11, a container 12 and a spring 13. In addition, a separate transparent cover part 14 is preferably used. As illustrated in the several assembly views the container is of the approximate size needed to hold a stack of about 25 .006" conventional double edge safety razor blades. Such blades are of generally rectangular contour and have narrow end extensions 15 with recesses 16 in the shoulder portions 17 adjoining the end extensions and usually are punched out of strip steel and provided with perforations 18. The lateral edges 19—19 are sharpened and the ends unsharpened.

The container proper, as shown separately in Fig. 6, is of cellulose acetate or other readily moldable material and is shaped to provide for mass production in a finished state by the injection process, using a simple two part mold. It comprises a front wall 21, a rear wall 22, end walls 23, a top portion restricted to a pair of forwardly extending prongs 24 near the ends of the container and a bottom portion restricted to a pair of ears 25 inwardly projected from the middle portions of the front and rear walls. The end edges of the container are partially bevelled. The cut away is along the forward and mid-sections of these edges. A bevelled finger track surface 26 is thus provided for in position to expose the end extensions of the blades to finger engagement, as appears in Fig. 1 and other views. The front wall and the forward portions of the end walls are reduced in height sufficiently to permit edgewise movement of the blades over it under the control of finger engagement of the blades at their ends. The top edge of the front wall is well below the underneath surface of the top portion of the container so as to provide an opening wide enough vertically for edgewise dispensing of several blades at a time. This allowance is to take care of any likely variations in width of the opening which might occur in manufacture or thereafter.

In order to restrict the forward movement of the several uppermost blades of the stack towards the exit opening or of the lower blades toward and in contact with the front wall, the container is provided at each end with an abutment member 27 in position to engage the blades edgewise within the rearwardly positioned shoulder recesses 16. See Figs. 10 to 12. This member is reduced in height as shown at 28 sufficiently only to provide for the removal of a single blade at a time. It preferably extends uniformly from the bottom edge of the container to the top surface 28 and thus acts as a guide permitting the gradual upward movement of the stack as the blades are successively withdrawn. The position, shape and cross sectional dimension of the abutment member is such that it nearly fills the vertical groove in the stack provided by the recesses 16. The shape is preferably cylindrical for about three fourths of its cross sectional circumference, the purpose of this being to facilitate molding. The rear corner portions 29 of the container are reentrant enlargements to partially fill the space about the stack at the rear of the blade end extensions 15. Similarly the front corners 30 are reentrant enlargements. The abutment members 27 project inwardly from the rear corners 29. All the blades of the stack are prevented from moving rearwardly into contact with the rear wall 22 by the engagement of the end extensions 15 of the blades with the rear corners 29.

The prongs 24 extend forwardly from the rear corners where they merge in curved fashion into the rear and end walls. Above each abutment member 27 the base of the prong is partly cut away as at 31 to facilitate the molding operation. The forward ends 32 of the prongs are sloped down to a point. By their shape and pointing position they indicate the manner of removal of the blades. In order to equalize to a considerable extent the thickness of material, to facilitate molding and to save weight, the container may be provided with cavities 33 at the rear corners and 34 at the forward corners. Cavities 33 provide convenient gripping places for the thumb and finger of one hand while removing blades with the other. The vertical edge 35 and upper edge 36 of the rear corner cavities are made sharp to increase the friction to finger contact. The middle portion of the upper edge of the rear wall may be cut down somewhat, as indicated at 36. The inner edge 37 of such cut down part is preferably sharp also. This provides a convenient grasping position for the thumb when the package is held flatwise.

Ears 25 extend inwardly far enough (see Fig. 9) to overlap the lateral edges of the spring and likewise the lateral edges of used blades when disposed of below the spring. The stack of blades is urged upwardly by the spring 13 so that the topmost blade will lie just above the level of the top surface 28 of the abutment member 27. The precise level of the topmost blade is determined by a track 38, shown in section Fig. 10 and appearing in other views. This track lies along the outer lower edge of the prongs 24. It is slightly higher (about .003") than the thickness of the separate cover part 14. The blade stack comes into pressure contact with the track rather than with the separate cover part which occupies the space provided between the main lower surface level of the prongs and the lower surface of the track. An additional blade resting point, or separate track element, 39 is provided at the rear of the abutment members. The height of this separate track element is the same as that of the main part 38. It serves to prevent excessive tilting of the remaining blades of the stack when the topmost blade is being withdrawn.

It will be noted by reason of the described construction of the container that the middle part of the top portion is substantially all cut out, i. e., all except that part which is the pair of forwardly extending prongs 24, and that the bottom portion of the container is all cut out except for the two inwardly projecting ears 25. In molding the container the main dividing line between the two parts of the mold occurs along the lower outer edges 41. A supplemental parting line may be provided for along the plane of the main lower surface of the prongs 24. It is apparent that no solid part of the top portion of the container occurs above the ears 25 or above the top surfaces 28 of the abutment members 27 and no solid portion of the bottom of the box occurs below the prongs 24, so that the two parts of the mold can separate readily.

Spring 13 is of sheet material a little less than the length of the blade and nearly the width of the container. It is snugly embraced by the side

walls of the container and serves to support them against pressure by the user of the package which might otherwise cause injury to the blade edges. The central portion of the spring is provided with end extensions **43** which press upwardly against the lowermost blade. It is provided with recesses **44** similar to the recesses **16** of the blades but preferably bulging inwardly to provide for good mechanical engagement of the spring to pull it into place within the container during the assembly process. The shoulder portions **45** of the spring are extended outwardly nearly as far as the central end extensions **43**. They thus tend to abut the rear corner enlargements **29** of the container. Thus the spring can not slip endwise into an overlapping position at the extreme ends of the blades. The spring is a simple bow pressing upwardly at its ends sufficiently to provide a lifting force against the last remaining blade in the stack in case the user of the package does not dispose of the used blades in the manner provided. The spring may be of spring steel, phosphor bronze, cold rolled steel or any suitable resilient material. If of metal about .003'' is the proper thickness. When in place in the container the central portion of the spring abuts the ears **25**.

The separate cover part **14**, Fig. 7, is preferably punched out of transparent plastic material of about .010'' thickness. It is provided near the rear corners with recesses **47** corresponding to the recesses **16** of the blades. Adjacent the recess **47** is a projection **48** which reaches behind the abutment members **27** far enough to lock the cover part against forward movement. The extreme rear corners are indented at **49** to avoid overlapping the track element **39**, and the front portion may be a little longer, as shown at **51**, than at the mid-section **52**. The contour of this cover part is such that it fits into place without overlapping the track elements **38** and **39**, interlocks behind the abutment members **27** and overlaps the face of the topmost blade and its sharpened edges entirely, except at the blade end extensions.

The standard dimensions of double edge safety razor blades are approximately as follows: Length over all, 1.685''; length at shoulders, 1.462''; width centrally .865''; width of end extensions .502''; lengthwise distance between inner edges of shoulder recesses, 1.400'' and diameter of semi-circular recesses, .062''. The following principal dimensions of a container molded of medium soft cellulose acetate are suitable for blades of these dimensions or reasonably close variations thereof: The vertical thickness of the prongs, .110''; the thickness of the front and rear walls, .052''; and the thickness of the end walls, .057''. The diameter of the cylindrical portion of the abutment members may be .040''; the extreme length inside of the container, 1.708'', and the width inside at the central portion .936''. This latter dimension gives about $\frac{1}{32}$ of an inch clearance between the blade edges and the adjacent side walls. The width at the container ends occupied by the end extensions of the blades may be .512'' and the length of the container in line with the blade shoulders, 1.544''. The distance between the inner edges of the abutment members **27** may be 1.412''. The height inside from the level of the upper surface of the ears **25** to the level of the lower surface of the tracks **38** may be .237''. The overall dimensions of the container are, length 1.830'', width 1.040'' and height .400''. Some variations in shape and different dimensions would, of course, be found

suitable for the practice of the invention in the packaging of blades of other types and dimensions than those described and set forth specifically.

A container of the given dimensions fits a stack of the described conventional double edge blades closely enough but with sufficient clearance for freedom of all necessary movements. Such a container has a considerable degree of flexibility in its walls, though fairly rigid at the corners and prongs. The blade admittance gaps are invariable. Should there be a tendency to tortional distortion the upward pressure of the blade stack against the prongs and the downward pressure of the spring upon the ears would tend to restore the shape of the container by flexing the walls reversely.

Fig. 9, which shows the container in inverted position, illustrates the manner of disposal of used blades. One such blade appears part way in above the spring **13** and with its edges overlapped by the ears **25**. The operator's thumb is in contact with the face of the blade and in process of sliding the blade the remainder of the way in. The sliding movement will be stopped when the forward end of the blade abuts the end of the container. And then the following end of the blade will snap down into place adjacent the other end of the container and cover substantially the face of the spring. Other blades may be inserted over this first one in the same manner. New blades are inserted in the same general manner, the only difference being that in the factory, to satisfy speed and economy requirements, the loading may be by machine from a supply stack of freshly sharpened blades. About five blades at a time are thus pushed into the container preferably from the bottom of the supply stack. In factory practice the separate cover part is first inserted and endwise also. This is preferably also a machine operation. Then the blades are inserted, five units of five blades each at a time, for a twenty five blade package. Then comes the spring which may be partially inserted by being pushed endwise from a stack and then pulled the rest of the way in by mechanically engaging the spring at forward bulging recesses **44** until it snaps into place above the stack and beneath the ears **25**.

I claim:

1. A container for a stack of double edge safety razor blades having a generally rectangular contour, narrow end extensions and recesses in the shoulder portions adjacent such extensions, said container comprising front and rear side walls to lie adjacent the cutting edges of the blades and a top portion defining a chamber having its transverse dimensions in length and width approximately those of the blade, said top portion being supported at the rear side of the container and extending more than half way toward the front side thereof and being cut away along the forward and mid-sections of the end edges thereof sufficiently to expose the end extensions of the blades to finger engagement, said container having a continuous coplanar blade dispensing opening below said top portion extending the entire length of said front wall and around the adjacent corners and into the forward and mid-sections of the container at the ends thereof to permit edgewise movement of the blades over said front wall under the control of such engagement, and said container having at each end thereof an abutment member in position to engage the blades edgewise within their

rearwardly positioned shoulder recesses and thereby to restrain the blades from transverse movements, at least one of said members being cut away transversely at the level provided in said chamber for the topmost blade sufficiently to admit the shoulder portion of that blade behind said abutment member to forward movement without admitting the end extension thereof to rearward movement.

2. A container for a stack of double edge safety razor blades having a generally rectangular contour, narrow end extensions and recesses in the shoulder portions adjacent such extensions, said container comprising front and rear side walls to lie adjacent the cutting edges of the blades and a top portion defining a chamber having its transverse dimensions in length and width approximately those of the blade, said front wall of the container being spaced below the top portion to provide an opening for edgewise blade dispensing movements over said front wall, and said container having at each end thereof an abutment member in position to engage the blades edgewise within their rearwardly positioned shoulder recesses and thereby to restrain the blades from transverse movements, each of said members being cut away transversely at the level provided in said chamber for the topmost blade sufficiently to admit the shoulder portion of that blade behind said abutment member to forward movement without admitting the end extension thereof to rearward movement.

3. A container for a stack of safety razor blades of generally rectangular contour, said container comprising front and rear side walls and a top portion defining a chamber having its transverse dimensions in length and width approximately those of the blade, said top portion being supported at the rear side of the container and extending more than half way toward the front side thereof and being cut away along the forward and mid-sections of the end edges thereof sufficiently to expose the mid-sections of the ends of the blades to finger engagement, said container having a continuous coplanar blade dispensing opening below said top portion extending the entire length of said front wall and around the adjacent corners and into the forward and mid-sections of the container at the ends thereof to permit edgewise movement of the blades over said front wall under the control of such engagement, the middle part of said top portion being substantially all cut out leaving only a pair of forwardly extending prongs to overlie the stack near the ends thereof.

4. A container for a stack of safety razor blades of generally rectangular contour, said container comprising front and rear side walls and a top portion defining a chamber having its transverse dimensions in length and width approximately those of the blade, said top portion being supported at the rear side of the container and extending more than half way toward the front side thereof and being cut away along the forward and mid-sections of the end edges thereof sufficiently to expose the mid-sections of the ends of the blades to finger engagement, said container having a continuous coplanar blade dispensing opening below said top portion extending the entire length of said front wall and around the adjacent corners and into the forward and mid-sections of the container at the ends thereof to permit edgewise movement of the blades over said front wall under the control of such engagement, the middle part of said top portion being substantially all cut out leaving only a pair of forwardly extending prongs to overlie the stack near the ends thereof, and a separate cover part for the stack held under said top portion and provided with interlocking means to retain it in place against transverse movements.

5. A container for a stack of double edge safety razor blades having a generally rectangular contour, narrow end extensions and recesses in the shoulder portions adjacent such extensions, said container comprising front and rear side walls to lie adjacent the cutting edges of the blades and a top portion defining a chamber having its transverse dimensions in length and width approximately those of the blade, said top portion being supported at the rear side of the container and extending more than half way toward the front side thereof and being cut away along the forward and mid-sections of the end edges thereof sufficiently to expose the end extensions of the blades to finger engagement, said container having a continuous coplanar blade dispensing opening below said top portion extending the entire length of said front wall and around the adjacent corners and into the forward and mid-sections of the container at the ends thereof to permit edgewise movement of the blades over said front wall under the control of such engagement, and said container having at each end thereof an abutment member in position to engage the blades edgewise within their rearwardly positioned shoulder recesses and thereby to restrain the blades from transverse movements, at least one of said members being cut away transversely at the level provided in said chamber for the topmost blade sufficiently to admit the shoulder portion of that blade behind said abutment member to forward movement without admitting the end extension thereof to rearward movement, the middle part of said top portion being substantially all cut out leaving a pair of forwardly extending prongs to overlie the stack near the ends thereof, the lower part of said top portion being shaped to provide two plane surfaces at different levels and a separate cover part for the stack under said top portion fitting into the space between said two plane surfaces and having a pair of tongues projecting into the rear corner portions of said chamber behind said abutment members.

6. A one piece container of molded plastic material for a stack of safety razor blades of generally rectangular contour, said container comprising front and rear side walls, and top and bottom portions defining a chamber having its transverse dimensions in length and width approximately those of the blade, said top portion being supported at the rear side of the container and extending more than half way towards but short of the front wall thereof and being cut away along the end edges thereof sufficiently to expose the ends of the blades to finger engagement, said container having a continuous coplanar blade dispensing opening below said top portion extending the entire length of said front wall and around the adjacent corners and into the container at the ends thereof to permit edgewise movement of the blades over said front wall under the control of such engagement, the middle part of said top portion being substantially all cut out leaving only a pair of forwardly extending prongs to overlie the stack near the ends thereof, said bottom portion underlying the longitudi-

nal mid-section of said chamber and being substantially all cut out under the two adjoining end sections thereof, the dimension of each of said end sections lengthwise of the container being greater than that of said mid-section.

7. A container holding a stack of safety razor blades of generally rectangular contour, said container comprising front and rear side walls, and top and bottom portions defining a chamber at least as long as and a little wider than the blade, said container having a blade dispensing opening adjoining said top portion, said bottom portion comprising a pair of ears and being substantially all cut out otherwise, said ears underlying the longitudinal mid-section of said chamber and projecting inwardly from said two side walls, respectively, far enough to support the blades at their lateral edges, and a spring of sheet material approximately the length of the blade and the width of the chamber, said spring being held upon said ears and pressing upwardly at its ends against said stack.

8. A one-piece container of molded plastic material for a stack of safety razor blades having a generally rectangular contour, narrow end extensions and recesses in the shoulder portions adjacent such extensions, said container comprising front and rear side wall, and top and bottom portions defining a chamber having its transverse dimensions in length and width approximately those of the blade, said top portion being supported at the rear side wall of the container and extending more than half way toward the front side wall thereof and being cut away along the

forward and mid-sections of the end edges thereof sufficiently to expose the end extensions of the blades to finger engagement, said container having a continuous coplanar blade dispensing opening below said top portion extending the entire length of said front wall and around the adjacent corners and into the forward and mid-sections of the container at the ends thereof to permit edgewise movement of the blades over said front wall under the control of such engagement, and said container having at each end thereof an abutment member in position to engage the blades edgewise within their rearwardly positioned shoulder recesses and thereby to restrain the blades from transverse movements, each of said members being cut away transversely at the level provided in said chamber for the topmost blade sufficiently to admit the shoulder portion of that blade behind said abutment member to forward movement without admitting the end extension thereof to rearward movement, said bottom portion underlying the longitudinal mid-section of said chamber and being substantially all cut out under the two adjoining end sections thereof, the dimension of each of said end sections lengthwise of the container being greater than that of said mid-section, said top portion being entirely cut out over said bottom portion where not open and over said abutment members where transversely cut, and said bottom portion being entirely cut out under said top portion where not open.

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