

Sept. 25, 1951

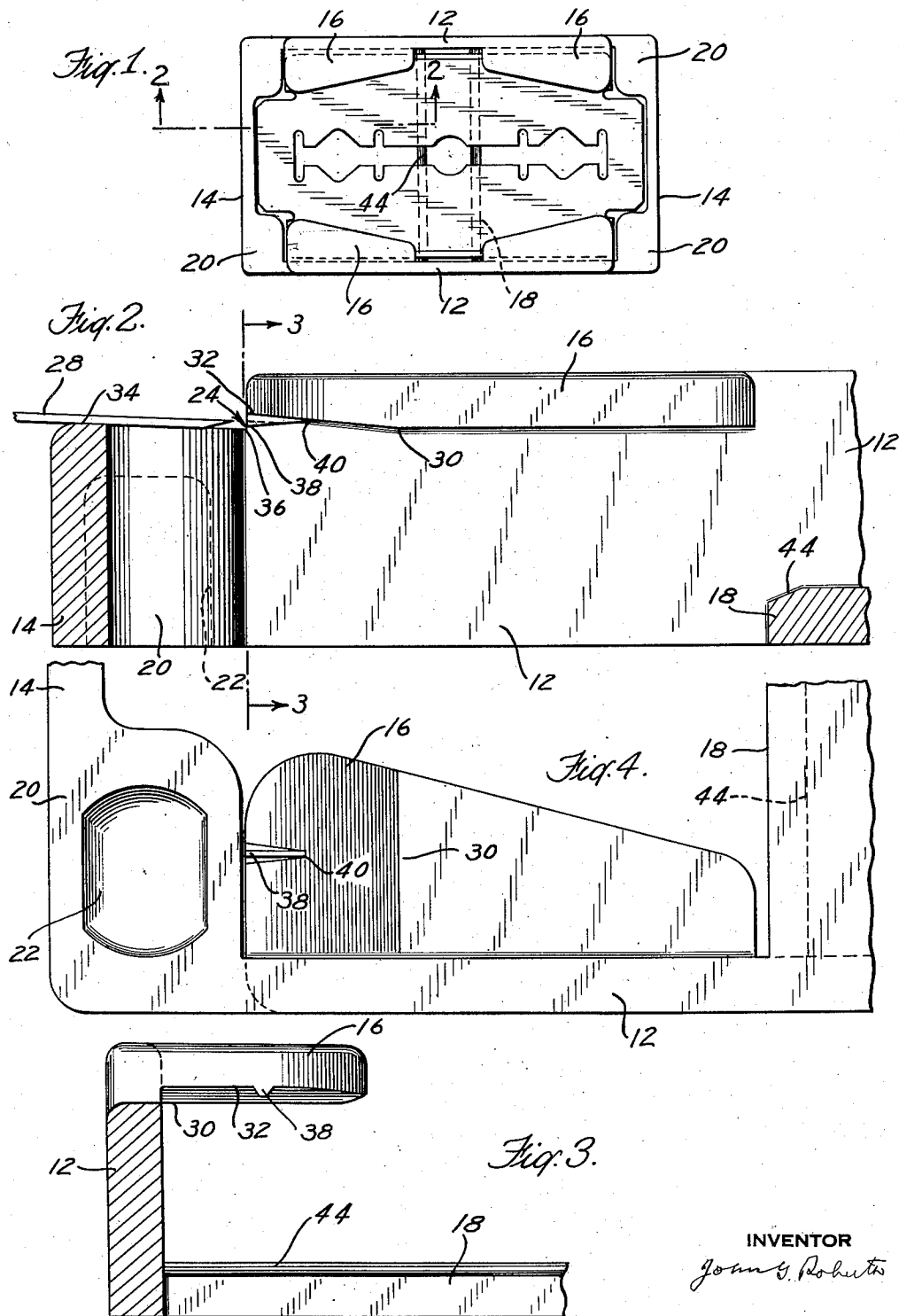
J. G. ROBERTS

2,569,072

RAZOR BLADE DISPENSER

Filed April 12, 1946

2 Sheets-Sheet 1



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Fig. 5.

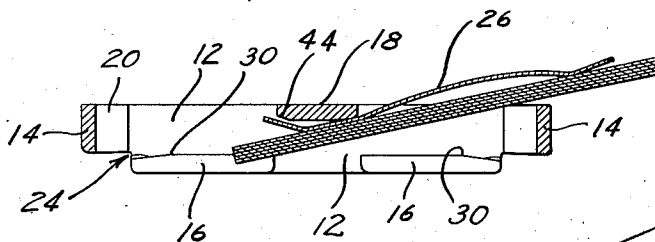


Fig. 8.

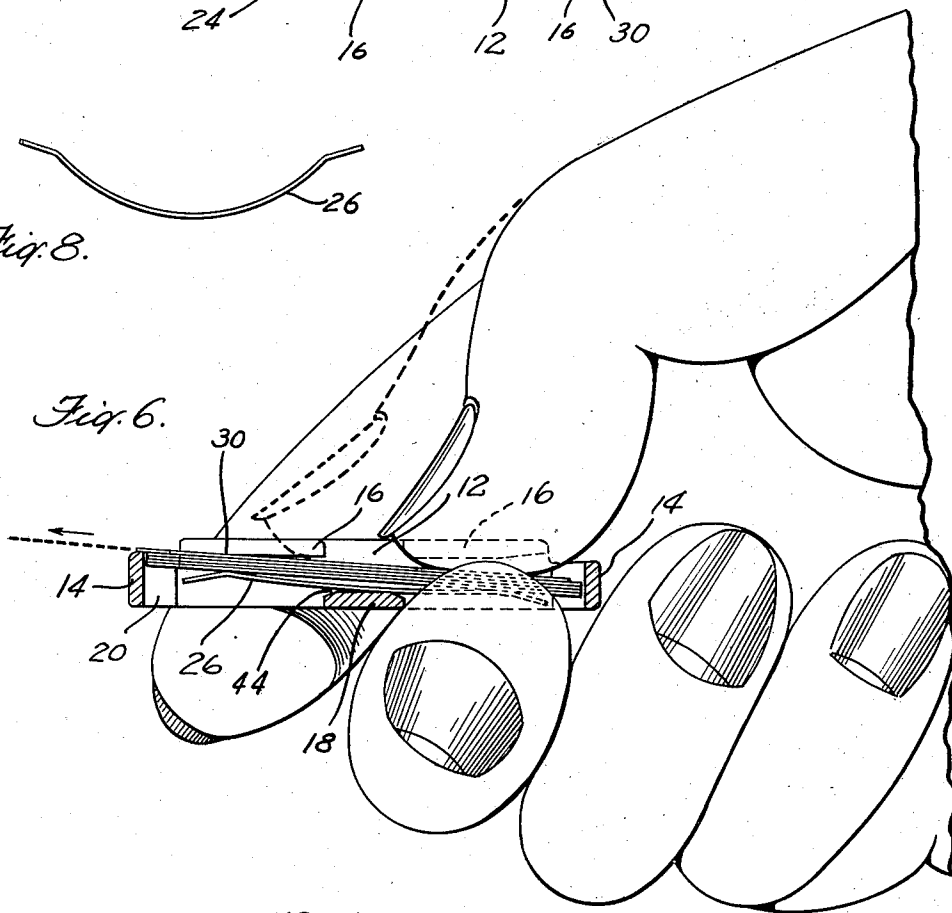


Fig. 6.

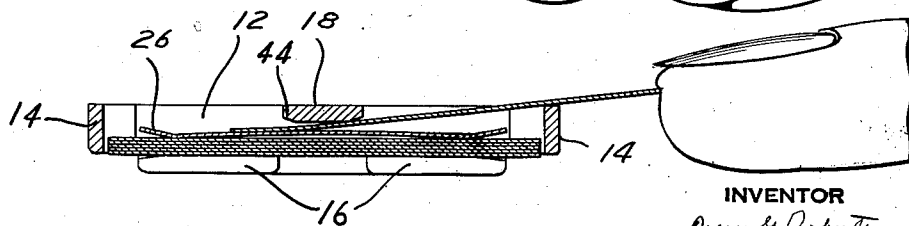
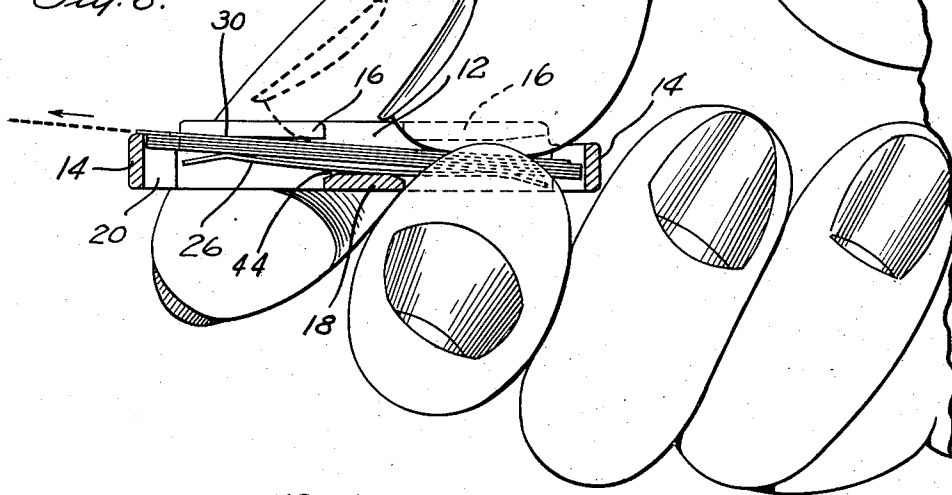


Fig. 7.

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RAZOR BLADE DISPENSER

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1 Claim. (Cl. 206—16)

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This application relates to the packaging of razor blades and is a continuation-in-part of Patent 2,411,669, issued November 26, 1946. The invention has for its objects to simplify and economize in the manufacture of the container element, to facilitate assembly of the blades therein, to provide better regulation of blade withdrawals, to render blade disposals easier, and to give the blades better protection.

In the drawings, which show, for illustrative purposes only, a preferred form of the invention:

Fig. 1 is a plan view of an assembled package; Figs. 2, 3, and 4 are enlarged fragmentary views of the container of Fig. 1, Fig. 2 being a sectional view taken in the plane 2—2 of Fig. 1, Fig. 3 a sectional view taken in the plane 3—3 of Fig. 2, and Fig. 4 a bottom view of the arrangement in Fig. 2;

Fig. 5 illustrates a method of assembling the package with fresh blades;

Fig. 6 shows the method of extracting a fresh blade;

Fig. 7 shows the method of inserting a used blade for disposal thereof; and

Fig. 8 is a side elevation of an unstressed, preferred blade-lifting means.

Broadly speaking, my invention contemplates a razor-blade container in which a stack of blades is resiliently held against a top portion of the container and in which the blades are removable through an opening only when the stack is tilted with respect to the container. Thus, when not in use, the container may provide complete blade protection, while additionally affording protection to the user against accidental displacement of blades. In the form to be described, the tilting is accomplished by finger depression of one end of the stack, while the other end remains resiliently held in abutment with the top portion. The lower surface of the top portion is so formed, however, that the undepressed end of the stack rocks about a fulcrum on said lower surface; since this fulcrum is preferably spaced toward the midsection of the container and away from the blade-removal opening, the undepressed end of the topmost blade may (when tilted) be positioned in line with the opening, for sliding removal from the stack, as by thrusting finger engagement.

Further in accordance with the invention, a method is described for the precise fabrication of a razor-blade container of the above nature in which only one blade can be removed at a time. The method includes a step involving the shearing off of excess container material, so as to

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define accurately the final dimension of the blade-removal slot. This method is considered well adapted to the construction of molded-plastic containers in which molding considerations impose severe limitations on allowable tolerances.

Also, in the arrangement specifically described, the blades are pre-soaked with a highly fluid lubricant. The resilient holding force is preferably so designed with respect to viscous and other properties of the lubricant that this force is sufficient to overcome the force of gravity on the stack of blades and to hold the topmost blade in abutment with the top portion of the container; at the same time, however, the holding force is insufficient to overcome the force of capillarity required to retain a substantial body of said lubricant between the blade faces.

Referring now to the drawings, the container element is shown molded in one piece, preferably of plastic such as cellulose acetate, and is generally rectangular in shape. The container is formed of front and rear side walls 12, end walls 14, and top and bottom portions. The purpose of the top and bottom portions is to provide means for retaining a stack of blades within the container, the top portion being substantially cut away to permit effective finger engagement with the topmost blade. In the specific form shown, the top portion does not include bridge members, but rather four ears 16, supported at the corners of the container from front and rear side walls 12; also, the bottom portion does not include ears, but rather a centrally located bridge member 18 spanning the side walls 12.

At each corner is an enlarged section 20 of the walls; the section 20 is preferably cored out as at 22. At least one end and preferably both ends of the container are reduced in height to permit placement of dispensing slots 24 adjoining the underneath surface of the ears 16. The top portion preferably is open throughout except at the ears 16, and the bottom portion preferably is open throughout except at the bridge 18.

As thus constructed, the container defines a blade chamber approximately the dimensions of a stack of double-edge razor blades. There is enough open space around the edges of the blades to permit free motion of the stack up and down within the container and to avoid contact of the cutting edges with the front and rear side walls. Also, there is sufficient extra space vertically to permit the insertion and free operation of blade-lifting means, such as a leaf spring 26.

The chamber may be considered as made up of three sections, the ears overlying the end sec-

tions and the bridge underlying the mid-section. Thus, in projecting the ears 16 and the bridge 18 onto a horizontal plane, there is no overlap of these members, one with another. This construction is such that the container can be fashioned in a simple two-part mold.

Frequently, in the simple and relatively inexpensive plastic-molding processes which are contemplated for fabrication of my container, variations occur in the dimensions of the cavities and shrinkages occur in the material as it sets, with the result that close tolerances are often difficult to meet or to maintain. Such close tolerances are particularly desirable in the formation of the blade-dispensing slots 24, through which only one blade is to be removed at a time.

The blade-exit slots 24 are, therefore, preferably sized after molding, as by a cutting tool 28 (see Fig. 2). The portion of each ear nearest an end of the container slopes upwardly from a fulcrum line 30 to its end edge at 32, and the ends of the container, including the enlarged corners thereof, slope downwardly from the extreme end edge 34 to the edge 36 beneath edge 32. Between the edges 32 and 36 there is thus formed by the mold an opening which is considerably greater than the thickness of a blade. However, in accordance with the invention, the sloping underneath surface of each ear is provided with an excess of plastic, such as a depending rib 38 formed by the mold. Rib 38 may slope upwardly from the opening 24 to juncture at a point 40 with the bevel of ear 16, between fulcrum 30 and the end edge 32; in any case, however, the rib or projection 38 is first formed with a sufficient excess of material to prevent removal of even a single blade through slot 24. The distance in height between the edge 36 and the untrimmed extremity of the rib 38 is, thus, considerably less than the thickness of a blade. The purpose of the cutting tool 28 is to shear off or trim away a portion of the rib 38 to size the slot 24 precisely so that it will invariably permit the exit of a single blade, while blocking more than one blade at a time. In the form shown, tool 28 is slightly thicker than a razor blade but less than the combined thickness of two blades; this construction permits effective utilization of the relatively flat surface of end portion 34 as a guide for the precise spacing of the shorn edge of rib 38 from the edge 36, as will be clear.

The bridge 18 is beveled as at 44 to facilitate the entrance of blades into the bottom of the container. In assembling the blades in the container, the entire stack (usually of about 10 to 12 blades) may be inserted partway, as shown in Fig. 5, by passing it under the bridge 18. Upon further insertion, the stack is flexed slightly in order that the forward end of it may slide over (in the sense shown in Fig. 5) the underneath surface of the ears 24. The spring 26 may be inserted along with the stack, or later, as desired. In Fig. 7 it will be seen that used blades may be suitably stored or disposed of by insertion into the bottom of the container in a manner similar to a loading of the stack.

Since my improved razor-blade container, including the employment of relatively soft plastic material, is inherently not harmful to exposed sharp razor edges, I prefer to package blades without the customary paper or other wrappings. In my preferred method of packaging, the blade stock is saturated with a lubricant which permanently protects the blades from moisture while permitting easy withdrawals. I have obtained

satisfactory results by employing as this lubricant a non-corrosive, non-drying, refined, and highly fluid 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 capillarity a substantial body of this lubricant is drawn in between the blade faces. The maintenance of such a body of lubricant between blades is considered essential, as the blades must not adhere one to another with frictional effect sufficient to interfere with the withdrawal forces. The highly fluid state of this liquid insures continuous, blade-edge protection as it flows freely out to and spreads over the edges.

The lifting force of the spring 26 is determined to be not excessively greater than that sufficient to overcome the opposing force of gravity exerted by the stack. A rectangular bowed spring, three or four thousandths inch thick, of cold rolled steel, for example, provides a lifting force upon the full stack which is at least twice that of the opposing force of gravity. This amply meets the blade-lifting requirement and is insufficient to overcome the force of capillarity that holds a good body of the above-described lubricant in place.

Normally, the topmost blade of the stack lies slightly below the upper surface of the end portions of the container so that it will not readily become misplaced. To withdraw a blade, as shown in Fig. 6, the package is grasped in the fingers with the thumb pressing down through the open top at one end, thereby tilting the stack about the fulcrum line 30. This action brings the topmost blade into line with the dispensing slot 24, and on pushing the thumb forward this blade is caused to emerge over the end wall 34 of the container. The partially withdrawn blade may then be grasped and pulled the rest of the way out.

For purposes of clarity, the blade-lifting spring 26 has not been shown in Fig. 1. It will be appreciated, however, that this spring is preferably the full width of the blades—in order to provide a good distribution of lifting forces on the blades, and to provide for positional stability. The spring 26 is shown in its unflexed condition in the side elevation of Fig. 8, and Figs. 5, 6, and 7 illustrate its flexed shapes for the various functions represented in these views. It is clear that, when flexed, spring 26 is bowed upwardly for the greater part of its length; near each end it is turned slightly downward to form a line of contact with the bottom of the blade stack approximately directly beneath the fulcrum line 30 of the ears 16. As so formed, the spring has no tendency to bow the ends of the uppermost blade into line with the dispensing slot; furthermore, the spring itself is barred from passing into the slot 24. It is also clear that spring 26 holds the stack in operating position in abutment with one of fulcrum lines 30 when downward and ejecting pressures are applied by finger engagement with the top of the stack at the other end (see Fig. 6).

It will be understood that I have provided an extremely simple and rugged razor-blade container and that I have devised simple, and at the same time relatively inexpensive, methods of fabricating the same. The container provides a maximum of safety to the user and to the blade edges themselves, and construction features lend

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themselves to a ready and convenient use of the device.

It is clear that although the ears 16 forming the top portion of the container chamber are shown and described as being four in number, other satisfactory arrangements may be devised to accomplish similar functions. For example, two diagonally opposite ears could be omitted without impairing the ability of the remaining ears (a) to hold the stack of blades against the upward forces of spring 26 and (b) to limit, as by the shorn-off ridge 38, extraction of blades through slot 24 to one at a time.

The preferred embodiment of the invention as herein illustrated is well adapted for the packaging of conventional double-edged blades. Such blades are approximately four, five or six thousandths inch thick and of standard lateral dimensions. By the precision method of sizing, as described, it is possible to adopt a single size, about seven thousandths inch, for the slot that will accommodate any of these blades. The underneath surfaces of the ears extending from the fulcrum line 30 outwardly have slopes of about one in twelve, the upper surfaces of the ends of the container have slopes of about one in twenty four and the ribs 38, before being shorn by the tool 28, slope at about one in twelve. Where shorn these ribs will slope at about one in twenty four. These slope characteristics have been determined as those presently preferred for accurately controlling the dispensing of any of these thin wafer-like blades.

Although I have described the invention with particular reference to a preferred form and to preferred methods of fabrication and of assembly, it will be appreciated that modifications may be made without departure from the scope of the invention as defined in the claim which follows.

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I claim:

A razor blade container comprising two side walls, an end wall, a top portion and a bottom portion defining a chamber conforming to a stack of such blades, said container having a dispensing opening at one end adjacent said top portion, said chamber having end sections and a mid-section, said top portion consisting of ears extending part way inwardly from said side walls and overstanding said end sections but not said mid-section, and said bottom section bridging said side walls and underlying said mid-section but not said end sections.

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