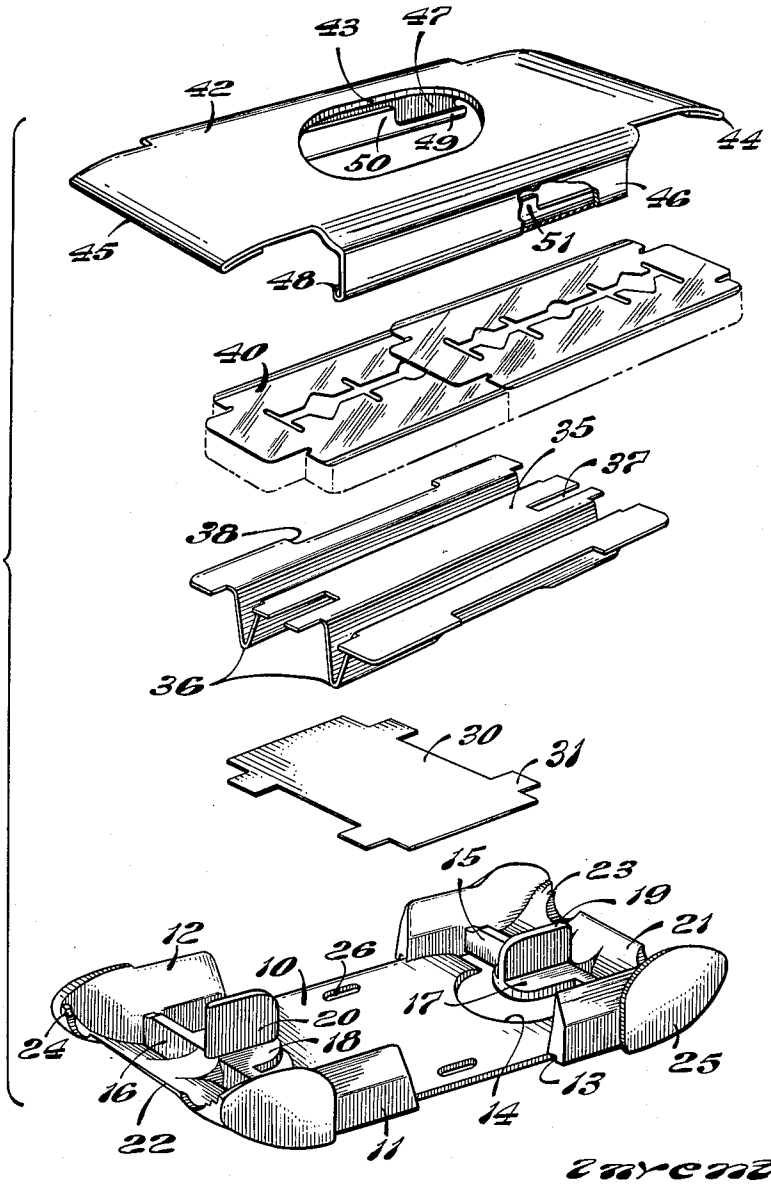
Nov. 1, 1955 R. L. SINCLAIR 2,722,308

BLADE DISPENSER

Filed Jan. 8, 1953 3 Sheets-Sheet 1

Fig. 1



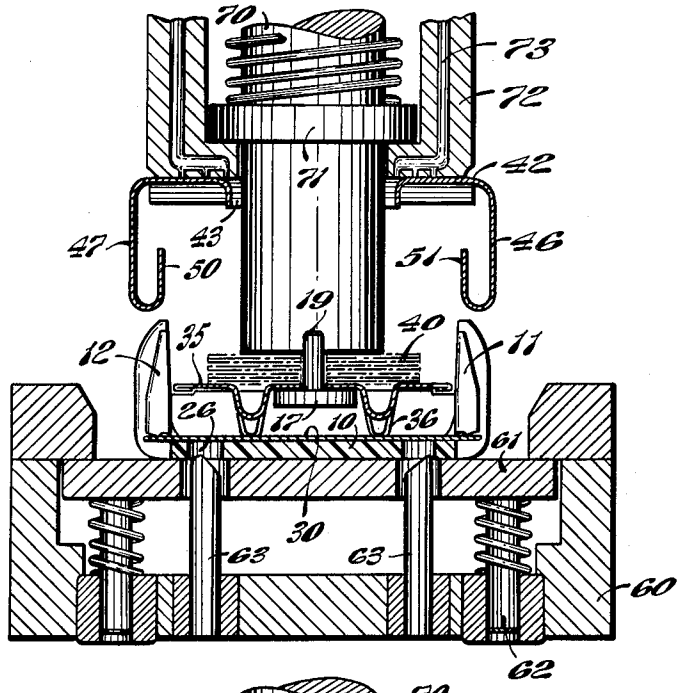
Inventor
Robert L. Sinclair
by
H. W. Conway Atty.

Nov. 1, 1955 R. L. SINCLAIR 2,722,308

BLADE DISPENSER

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Fig. 2



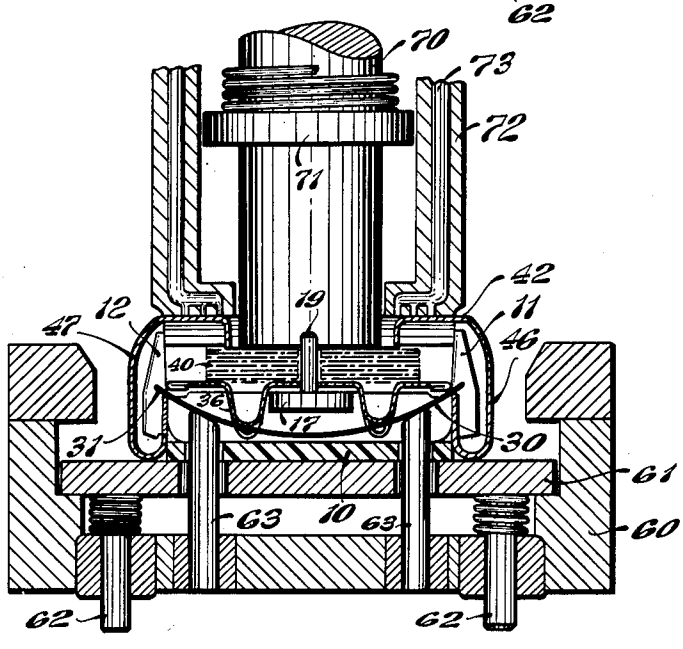


Fig. 3

Inventor
Robert L. Sinclair
By H. H. Kenway Atty.

Nov. 1, 1955 R. L. SINCLAIR 2,722,308

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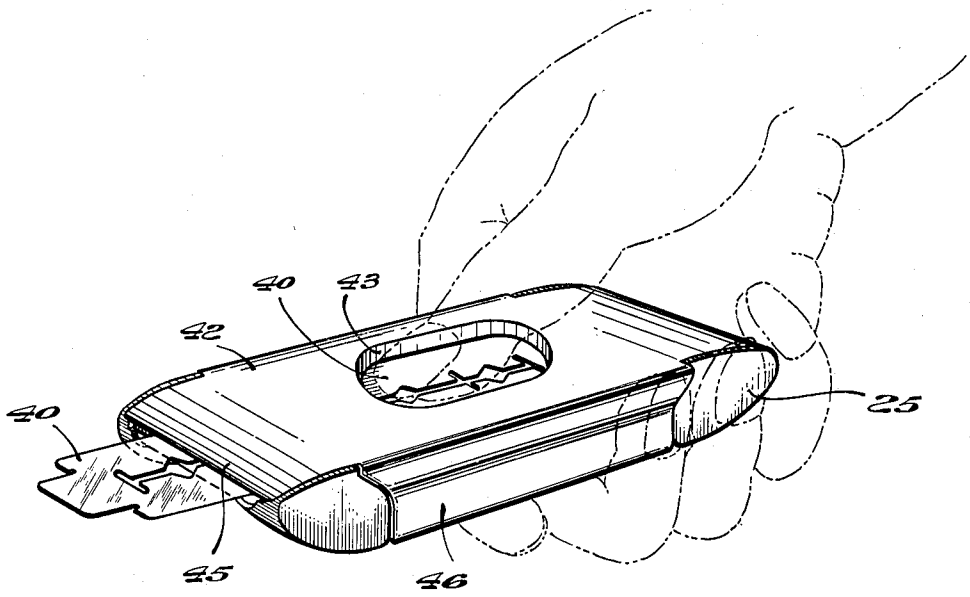


Fig. 4

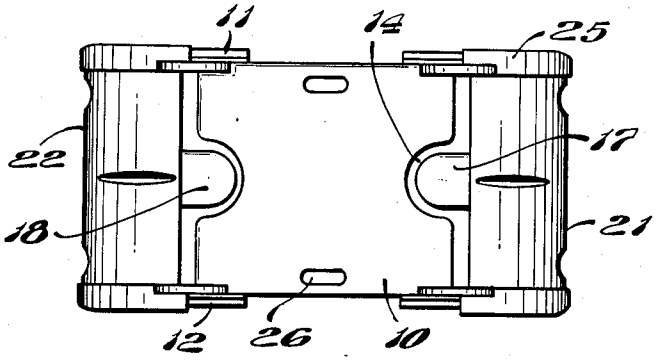


Fig. 5

Inventor
Robert L. Sinclair
by H. Hayenway Atty.

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2,722,308

BLADE DISPENSER

Robert L. Sinclair, Dedham, Mass., assignor to The Gillette Company, Boston, Mass., a corporation of Delaware

Application January 8, 1953, Serial No. 330,214

18 Claims. (Cl. 206—16)

This invention comprises a new and improved dispenser for thin sharp-edged blades, such as safety razor blades, constructed and arranged to contain a liberal supply of bare unwrapped blades without danger of damage to their keen sharp edges, and to facilitate the delivery of the blades one by one as required by the user.

The invention is herein shown in its application to a dispenser constructed at least in part of resinous plastic material that may be readily and accurately molded to shape. Such plastic materials have the advantage of being light in weight, moisture and corrosion proof and of low cost to the manufacturer. They are, however, under some conditions subject to deformation by cold flow of the plastic material when subjected to continuous stress, as for example, the pressure exerted by a spring located within the dispenser for positioning the blade stack. An object of the present invention is to obviate this weakness by providing in the dispenser a self-contained metallic system effective to exert continuous yielding pressure upon the blade stack independently of the plastic elements of the dispenser.

In the illustrative example herein shown, the main body of the dispenser may be molded from resinous plastic, and this combined with a sheet metal cover which is connected to the plastic body and provided with a thumb or finger opening. A bowed spring is disposed within the dispenser and supported entirely upon the metal cover independently of the plastic body and of the connection between the plastic body and the metal cover. The bowed spring is supported in such a position as to bias the blade stack always toward the finger opening of the cover, and in this manner a completely self contained metallic system including the spring is provided. The plastic body is, therefore, entirely relieved of continuous stress so that it may be relied upon to hold its shape for an indefinite period of time and is not subject to deformation regardless of changes in temperature that it may undergo.

The invention includes within its scope a novel process of loading dispensers of the character above described with thin flexible blades and assembling the elements of the dispensers. This process is characterized by the steps of superimposing a stack of blades upon a flat spring plate or blade, then curving or bowing the plate in situ, and finally latching or fastening the plate in its bowed and stressed condition while maintaining the blade stack undisturbed above it.

Preferably and as herein shown, the metal cover is flanged to support the opposite edges of the spring plate and under these circumstances, this plate may be bowed by pressure exerted on it through the superposed blades of the stack and brought into its flange-supported position while in bowed condition, all without imposing any stress upon the plastic body of the dispenser.

Going more into detail, it is proposed to assemble the blades in stack formation upon a flat spring plate within the dispenser, then to bow the spring transversely by pressure exerted in part through the blade stack, and finally, to transfer the spring-supporting function to the

flanges of the cover, thereby biasing the blade stack toward the finger-opening of the cover while leaving the plastic body of the dispenser entirely free of stress. The process above outlined is not herewith claimed but constitutes the subject matter of my divisional application Serial No. 497,211 filed March 28, 1955.

The dispenser has further novel features of construction, and among them are those that provide within the body of the dispenser a used blade compartment. This is effected, as herein shown, by forming at both ends of the plastic body tables raised above the bottom and shaped to locate a blade-supporting plate at a level suitable for the top of an underlying chamber. Blade inlet slots are provided in the bottom of the base at the inner end of each table. The tables not only locate the blade-supporting plate for this purpose, but also supply rests for it during the blade loading operation, although it may be temporarily lifted from the tables while the spring is being bowed in engaging it with the flanges of the sheet metal cover. A characteristic and desirable feature of this invention is that the dispenser employs a normally flat spring and that the maximum deformation of the spring is initially imparted to it. As it performs its function of progressively moving the uppermost blade of the stack into discharging position, the deformation and stress of the spring gradually decreases; that is to say, the spring approaches its normal flat condition as the number of blades in the stack approaches exhaustion.

These and other features of the invention will be best understood and appreciated from the following description of a preferred embodiment thereof selected for purposes of illustration and shown in the accompanying drawings in which:

Fig. 1 is a view in perspective of the elements of the dispenser shown in exploded relation.

Figs. 2 and 3 are views in cross section, partly in elevation, illustrating the loading and assembling steps.

Fig. 4 is a view in perspective of the loaded dispenser, and

Fig. 5 is a bottom view of the same.

In its illustrated form the dispenser comprises four elements in addition to the blade stack which it contains. These, as shown individually in Fig. 1, comprise a body molded of plastic resin, a metal spring plate which is initially substantially flat when unstressed, a ribbed supporting plate of sheet metal and a cover, also of sheet metal.

The plastic body, while not necessarily of uniform thickness in all its parts, is designed so that its mass is distributed as equally as possible throughout its entire area, since this is a condition facilitating both the molding operation and the sturdiness of the molded structure. The body comprises a flat bottom 10 substantially rectangular in contour and having upright side walls 11 and 12, both of which are interrupted so as to form a wide notch or recess symmetrically located in the walls on opposite sides of the body. The lower edges of the wall sections are provided with a downwardly opening channel 13 for the reception of flanges on the side walls of the cover as will presently appear. The bottom 10 terminates at each end in a semi-circular recess or opening 14 while the side walls 11 and 12 extend beyond these recesses and are connected by low end walls 15 and 16. From the end walls extend inwardly flat tables 17 and 18 with rounded inner ends, and from these tables extend upstanding studs 19 and 20. The tables 17 and 18 are located substantially above the level of the bottom 10 and serve initially to hold the supporting plate which underlies the blade stack.

Each end wall 15 and 16 merges into an upwardly curved bottom section shaped to supply at one end the lower edge 21 of a blade exit opening and at the other

end to provide a lower edge **22** for a corresponding exit opening. These bottom sections extend between the side walls **11** and **12** and are provided at each end with a projecting cover-supporting lug **23–24** which is located slightly below the top edge of the side walls. Both of the side walls are provided at each of their ends with external pads **25** which provide shoulders against the inner edges of which the end of the cover are to be fitted and which also supply a pleasing finish to the dispenser as a whole.

The bottom **10** is also provided with a pair of spaced parallel apertures in the form of slots **26** located symmetrically in the median transverse axis of the bottom and serving to admit the passage of spring flexing pins or tools as will be presently described.

The spring leaf or plate **30** as shown in Fig. 1 is rectangular in shape and provided with rectangular ears **31** in its front and rear edges. In assembling the dispenser, the leaf **30** is placed in a flat position upon the bottom **10**, being of the width to fit with clearance in the recesses formed by the interruption of the side walls **11** and **12**. The ears **31** are spaced to gauge the spring plate transversely and locate it symmetrically with respect to the bottom **10** by engaging the upstanding side walls of the base. As shown in Fig. 1, the spring leaf **30** is initially and normally flat. It is, however, bowed transversely in assembling the elements of the dispenser and remains in upwardly concave position in the loaded dispenser.

The supporting plate is rectangular in outline and comprises a flat central portion **35** connected by two downwardly converging ribs **36** to flat parallel side portions which lie in the same plane as the central portion **35**. This central portion is provided with long slots **37** at both ends shaped to receive with clearance the upstanding lugs **19** and **20** of the base. The ribs **36** are cut away at both ends so that the notched ends of the central portion **35** may rest flatly upon the tables **17** and **18** of the base and are reduced in depth throughout their central sections for a distance corresponding to the length of the recesses of the side walls **11** and **12**. The side sections of the supporting plate are provided with elongated notches or recesses **38** to afford clearance for the ends of the spring plate **30**, when the latter is subsequently bowed upwardly at its outer edges about the ribs **36** as fulcrums. A function of the plate **35** is to support the blade stack always in flat condition. This is important when only 2 or 3 blades remain in the stack as if the spring bore directly on them, it would cause bowing that might interfere with proper discharge of the blades. The plate keeps even the last blade of the stack in flat condition.

The cover is formed from a single integral blank of spring sheet metal and includes a flat rectangular portion provided symmetrically with an elongated thumb or finger opening having an inturned rim **43**, and is folded inwardly at both ends to provide edges **44** and **45** cooperating with the edges **21** and **22** to provide the upper edges of blade exit openings at opposite ends of the dispenser.

The cover is also provided with down-turned side walls **46** and **47** which correspond in length to the distance between the pads **25** of the base and are provided at the lower edges with up-turned flanges **48**, **49** designed to fit in the channels **13** already mentioned as being provided in the lower edges of the walls **11** and **12**. The down-turned side walls **46** and **47** are located symmetrically in the cover and the up-turned flanges, **48** and **49** as will be apparent from Fig. 1, have shallow end portions and central portions **50** and **51**, respectively, of substantial height. The high portions **50** and **51** of the up-turned flanges are symmetrically located in the transverse median axis of the cover and correspond in length approximately to the width of the spring plate **30** and the recesses formed in the side walls of the base. They are biased inwardly to positions beneath the outer edges of the spring leaf **30** as indicated in Fig. 3.

The dispenser is herein shown as designed to contain 12 to 20 unwrapped safety razor blades **40** of the type shown in Fig. 1, that is to say, doubled-edged longitudinally slotted blades having corner notches defining elongated unsharpened end portions. The blades are arranged in the dispenser alternately in longitudinal overlapping relation. The slots on one series of the blades are engaged by the abrupt outer shoulder or end edge of the stud **20** while the slots of the other series are correspondingly engaged by the shoulder or outer edge of the studs **19**. Each blade, therefore, is positively held against inward movement but may be readily displaced and ejected by outward movement under traction supplied by the thumb of the user and removed through its adjacent exit opening. While the blade stack rests upon the plate **35** it will be seen that the studs **19**, **20** pass through the end notches of the plate and enter the slots of the blades upon the plate.

It will be seen that (1) the recesses provided in the opposite side walls of the plastic base, (2) the elongated notches **38** in the opposite edges of the blade-supporting plate, (3) the sections of reduced depth in ribs **36**, and (4) the spring **30** are all of the same longitudinal dimension and are all located in transverse registered positions when assembled in the dispenser.

The loading and assembling steps are carried out to best advantage with the assistance of a fixture like that shown in Figs. 2 and 3. This comprises a base **60** containing a movable bed-plate **61** supported in an initial elevated position by spring-encircled studs **62** guided for vertical movement in bushings provided in the base **60**. The side walls of the base are flanged to limit the upward movement of the bed-plate **61** and hold it at a pre-determined level. A pair of spaced upstanding spring-flexing pins **63** project upwardly through holes in the bed-plate **61**, and these pins are designed to pass freely through the holes **26**, already described as provided in the bottom **10** of the plastic base of the dispenser.

The fixture also includes a vertically movable plunger **70** of such dimensions as to pass freely through the finger opening **43** of the sheet metal cover. The plunger is provided with the shoulder **71** and is surrounded by a sleeve **72**, which is initially engaged by the shoulder **71** and provided with vacuum passages **73** terminating in ports located in the end of the sleeves. The sleeve **72** is thus adapted to pick up the sheet metal cover **42** and to move it forcibly downward in registration with the plastic base which has already been presented to the bed-plate **61** in the position shown in Fig. 2.

The plastic base is positioned upon the bed-plate **61** with the blade-supporting plate **35** resting upon the raised tables **17** and with a stack of blades **40** positioned thereon by the studs **19** and **20** which pass upwardly through the end notches **37** of the ribbed plate. The elements above-described are shown in this position in Fig. 2.

In the actual assembling step the plunger **70** is first brought into contact with the blade stack and then the sleeve **72** descends with the sheet metal cover **46**. Then both the plunger and the sleeve descend together, depressing the bed-plate **61** and causing the pins **63** to engage the spring leaf **30** which until now has lain in flat condition upon the bottom **10** of the base with its side edges extending into the recesses in the side walls **11** and **12**. As this movement continues, the spring **30** is bowed upwardly at both edges to a position of maximum deformation over the ribs **36** of the blade-supporting plate which now acts as fulcrums. Meanwhile, the side walls **46** and **47** of the sheet metal cover encounter the upwardly tapering sections of the walls **11** and **12** of the base and are deflected outwardly with the result that the opposite edges of the bowed spring pass upwardly above the edges of the upstanding flanges **50** and **51**, while these flanges move inwardly beneath the edges of the spring as soon as the side walls **46** and **47** have passed downwardly

beneath the wall sections 11 and 12 so that they can snap into the channels 13 in the base of these walls. The elements are shown in this position in Fig. 3, and it will be apparent that when the parts of the fixture are now separated, the spring 30 will be left in bowed and stressed condition biasing the spring-supporting plate 35 upwardly and yieldingly holding the uppermost blade in the stack against the downturned rim 43 of the finger-opening and always in flat condition so that it may be properly discharged through the exit slot.

The side walls 46 and 47 of the cover have meanwhile filled the space between the end pads 25 of the side walls 11 and 12 of the base, and the shallow upturned flanges of these walls have snapped into the channels 13 thus permanently uniting the cover and base. The stack of blades 40 is enclosed within the dispenser and the spring 30 is mounted in bowed condition upon the upstanding flanges of the metal cover. The upward thrust of the spring is, therefore, carried entirely in a closed metallic system and the plastic base relieved of all continuing stress. While the spring is herein shown as a substantially flat leaf, any other form of spring may be employed with corresponding modification of its metal supporting structure.

Having thus disclosed my invention and described in detail an illustrative embodiment thereof, I claim as new and desire to secure by Letters Patent:

1. A blade dispenser comprising a plastic body having upstanding blade-locating ribs therein, a sheet metal cover having side walls with flanges and a symmetrically located finger opening therein, a stack of slotted blades engaged with said upstanding ribs, a floating slotted support beneath the blade stack having a downwardly projecting rib, and a spring leaf resting at its opposite edges on the flanges of the cover and bowed downwardly by the rib of the floating support, thereby yieldingly urging the blade stack toward the finger opening of the cover.

2. A blade dispenser comprising a plastic body and a sheet metal cover attached to said body and having a finger opening therein said body and cover co-operating in forming an elongated enclosure, a stack of thin flexible blades within the enclosure, and a spring supported by the metal cover and urging the blade stack toward said finger opening while leaving the plastic body of the dispenser free of stress.

3. A blade dispenser comprising a plastic body and a sheet metal cover connected to the body at its longitudinal edges and having a finger opening therein, said body and cover co-operating in forming an elongated enclosure, a stack of thin blades within the enclosure, and a bowed spring engaged and supported at its opposite edges upon the metal cover independently of the plastic body of the dispenser in position to urge the blade stack yieldingly toward the finger opening of the cover.

4. A blade dispenser comprising a plastic body and a metal cover connected thereto and having a finger opening therein, said body and cover cooperating in forming an elongated enclosure, a blade stack, a ribbed plate underlying the blade stack, and a bowed spring engaged and supported at its opposite sides by the metal cover independently of the plastic body of the dispenser and biased against said ribbed plate thereby imparting yielding pressure to the blade stack toward the said finger opening of the cover.

5. A blade dispenser comprising a plastic base having a raised table at each end, a sheet metal cover enclosing the base and having side walls with opposed flanges extending above the base, a blade-supporting plate overlying at its ends the tables of the base, and a bowed spring engaging the flanges of the cover, underlying the said blade-supporting plate and holding it above said table.

6. A blade dispenser as described in claim 5 in which the blade-supporting plate has a rib projecting downwardly below the level of said opposed flanges and engaged by said bowed spring.

7. A blade dispenser comprising a plastic base having a raised table at each end and formed with a blade receiving recess adjacent each of said tables, a cover enclosing the base and having up-turned flanges substantially level with said tables, a blade-supporting plate overlying the tables of the base, and a bowed spring engaging said up-turned flanges and biasing said plate upwardly.

8. A blade dispenser comprising a plastic base having a bottom with tables raised above the bottom at both ends, and a sheet metal cover enclosing the base and having inturned flanges disposed substantially at the level of said tables, a blade-supporting plate overlying said tables, and a spring underlying said plate and bowed into engagement with said flanges.

9. A blade dispenser of the character described in claim 8, in which the bottom of the plastic base is provided with apertures spaced apart transversely and disposed respectively adjacent to its opposite edges to permit the passage of spring-deflecting projections.

10. A blade dispenser of the character described in claim 8 in which the blade-supporting plate has a pair of spaced downwardly extending spring-deflecting ribs and the bottom of the plastic base has holes located below and in offset relation to the said ribs.

11. A blade dispenser comprising a plastic base having side walls interrupted to provide opposed recesses, a sheet metal cover enclosing the base and having upstanding flanges located in said recesses, a blade-supporting plate within the dispenser having elongated edge notches registering with the recesses of the side walls, and a spring bowed into engagement with said upstanding flanges and extending into the notches of the said blade-supporting plate.

12. A blade dispenser having a molded plastic base, a sheet metal cover attached thereto and forming an enclosure therewith, a stack of blades enclosed between the base and cover, and a normally flat spring engaged at its opposite ends with the cover and held thereby initially in bowed condition of maximum distortion against the blade stack.

13. A blade dispenser comprising a one-piece base, a sheet metal cover attached thereto and forming an enclosure therewith, a stack of blades enclosed beneath the cover, a supporting plate underlying the blade stack and presenting a fulcrum rib, and a spring biased over said rib and forming with the cover a closed metallic system.

14. A blade dispenser of the character described in claim 13 in which the cover has side walls biased inwardly normally occupying positions beneath the outer edges of the said spring.

15. A blade dispenser comprising a hollow body having portions of plastic material and portions of sheet metal cooperating to form an enclosure and presenting a finger opening, a stack of blades contained in the enclosure, and a spring supported solely by said sheet metal portions and constantly urging the blade stack toward the finger opening.

16. A blade dispenser comprising a plastic base having an apertured bottom, an elevated table at each end and an end wall beyond the table, in continuation with a cover of spring sheet metal forming with the base a blade enclosure and having side walls interlocking with the base and upturned side flanges disposed within said side walls, a stack of blades within the enclosure, and a spring underlying said blade stack and bowed beneath the stack by engagement with the side flanges of the cover, thus leaving the plastic base free of initial stress.

17. A blade dispenser comprising a hollow body having a blade exit opening, a stack of blades within said body, a spring substantially flat when unstressed and underlying said blade stack, and means within said body of the dispenser for holding said spring initially in a condition of substantial deformation and thrusting against the blade stack for maintaining the uppermost blade of the stack in discharging position and permitting

this spring to approach a substantially flat condition as successive blades are discharged.

18. A blade dispenser of the character described in claim 17 in which the substantially flat spring has a pair of spaced projecting ears at each edge which ears locate the spring symmetrically with respect to the body of the dispenser by engaging walls thereof.

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