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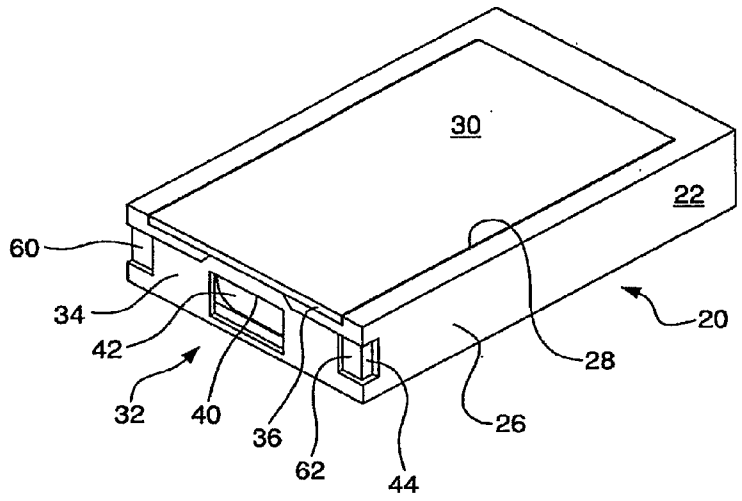
(54) Title: SLIDING CHILD SAFETY FEATURE



(57) **Abstract:** The invention is a container (20) having a base (26), a lid (30) that can be opened or closed, first and second latch portions (40, 42), and a guard (44). One of the latch portions (40, 42) is associated with the base (26), and the other of the latch portions (40, 42) is associated with the lid (30). The second latch portion (42) is positionable to engage the first latch portion (40) when the lid (30) covers the opening, and is movable to disengage the first latch portion (40). The guard (44) is associated with the second latch portion (42) and normally is in a blocking position keeping the second latch portion (42) engaged with the first latch portion (40). The guard (44) is movable laterally, relative to the first latch portion (40), from its blocking position to a releasing position allowing the second latch portion (42) to disengage the first latch portion (40).

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SLIDING CHILD SAFETY FEATURE

BACKGROUND OF THE INVENTION

[0001] The invention relates to child-safe closures for containers, intended to be opened relatively easily by an adult but with much more difficulty by a young child.

[0002] There is an increasing awareness of the need to protect children from inadvertently gaining access to medications, especially prescribed medications. Ingestion of only one or two pills of a prescribed medication can prove fatal to a child. There is an increasing awareness of the necessity to provide containers for prescribed medications that are readily and easily opened by an adult, that is, any person having the cognitive ability to understand the instructions for opening a pill container, which requires certain manipulation and manual dexterity. Such persons are assumed to have the ability to understand that the act of opening a pill container to gain access to the prescribed medication is a deliberate action, and is only undertaken when there is a necessity to attain access to the prescribed medication in the pill container.

[0003] Prior-art child safety feature designs typically employ a cap and container, which are separate from each other. It has been found desirable in the consumer and pharmaceutical industries to offer product packages with a unitary container and cap assembly (i.e., a flip-top lid). Since the cap and container are unitary, that is, in some way remain attached (even when opened) the cap cannot be misplaced when the container is opened. This promotes the maintaining of the container in a closed state at all times, except when contents are added or removed from the container.

BRIEF SUMMARY OF THE INVENTION

[0004] An aspect of the invention is a container having a base, a lid that can be opened or closed, first and second latch portions, and a guard.

[0005] The base has an opening, and the lid is configured to cover the opening when closed. One of the latch portions is associated with the base, and the other latch portion is associated with the lid. The second latch portion is positionable to engage the first latch portion when the lid covers the opening, and is movable to disengage the first latch portion.

[0006] The guard is associated with the second latch portion and normally is in a blocking position keeping the second latch portion engaged with the first latch portion. The guard is movable laterally, relative to the first latch portion, from its blocking position to a releasing position allowing the second latch portion to disengage the first latch portion.

[0007] In some embodiments, the guard and second latch portion are relatively immovable in normal operation of the latch. In other embodiments the two are relatively movable parts in normal operation of the latch.

BRIEF DESCRIPTION OF SEVERAL VIEWS OF THE DRAWINGS

[0008] Fig. 1 is a perspective, schematic view of a container including the latching mechanisms of the present invention.

[0009] Fig. 2 is a schematic front elevation, with underlying parts shown in phantom section, of one embodiment of the invention according to claim 1, sometimes referred to here as the Slide, Push Latch, and Lift Embodiment. The latch is engaged and guarded.

[0010] Fig. 3 is a view similar to Fig. 2, showing the guard displaced laterally to the left. The latch is still engaged but not guarded against disengagement.

[0011] Fig. 4 is a section taken along section line 4—4 of Fig. 2.

[0012] Fig. 5 is a view similar to Fig. 4 of an alternative embodiment of the latch mechanism.

[0013] Fig. 6 is a view similar to Fig. 2 showing an alternative embodiment. The latch is engaged and guarded.

[0014] Fig. 7 is a view similar to Fig. 3 of another embodiment of the guard. The latch is engaged but not guarded against disengagement.

[0015] Fig. 8 is a view similar to Fig. 2 of another embodiment sometimes referred to here as the Slide and Lift Embodiment. The latch is engaged and guarded.

[0016] Fig. 9 is a view similar to Fig. 8, but with the guard displaced laterally to an unlatched position.

[0017] Fig. 10 is a section taken along section line 10—10 of Fig. 8.

Drawing References

20. Container
22. Outside (of 20)
24. Inside (of 20)
26. Base (of 20)
28. Opening (of 26)
30. Lid (of 20)
32. Latching mechanism
34. Front (of 26)
36. Front (of 30)
40. First latch portion
42. Second latch portion
44. Guard
46. Abutment (of 40)
48. Abutment (of 42)
50. Abutment (of 42)
52. Snap-fit latch
54. Inner cover
56. Projection (of lid 30)
60. Lateral portion (of 44)
62. Lateral portion (of 44)

64. Central portion (of 44)

66. Guard (Fig 5)

68. Projection

72. Guard (Fig 6)

74. Lug

76. Lug

78. Stop

80. Stop

82. Sliding finger

84. Sliding finger

86. Area of overlap

88. Abutment finger

90. Abutment finger

92. Area of registration

100. Guard (Fig. 7)

102. Slot

104. Slot

106. Peg

108. Peg

110. Barb 6 of 42

112. Inside surface 40

114. Guard (Figs. 8-10)

116. Second latch portion (8-10)

118. Downward-facing abutment (of 122)

120. Lid

122. Upward-facing abutment

124. First latch portion

126. Chamfer

128. Lift tab

DETAILED DESCRIPTION OF THE INVENTION

[0018] The invention is broadly defined to include all embodiments included by the words of the claim, read without reference to the specification. This description provides representative embodiments of the invention. All variations of those embodiments reasonably within the words of the claim are contemplated to be protected.

[0019] In one embodiment, the present invention relates to a child safety feature for a unitary container that incorporates a sliding mechanism that prevents the movement of a latch or lid. By utilizing at least two independent motions (i.e. sliding and lifting the lid), a reduction in the amount of force needed to open the container may be provided (to facilitate senior friendliness) while still providing the Child Safety Features.

[0020] As generally used herein, a "child-resistant" cap or closure for a container means that the cap or closure was tested in the following manner. When a child-resistant package is tested by a group of five year old children, the child-resistant package cannot be opened by at least 85% of those children prior to a demonstration to them of the proper means of opening the package; and still cannot be opened by at least 80% of those children after they receive a demonstration of the proper means for opening the package. In the case where a child-resistant package is provided to a test group of adults, at least 90% of those adults must be capable of opening the package. Where the package is designed so that it may be re-closed, it can be re-closed by at least 90% of those adults but still cannot be opened by at least 85% of children to whom no demonstration of the proper method of opening the package has been given, nor by 80% of those children after a demonstration has been made.

[0021] The description and drawings of the present invention are directed at a container that is substantially flat, but the releasing mechanism described could be utilized on a wide variety of containers, vials and bottles.

[0022] In one embodiment, the invention is a closed container used to house a product where it is desirable to provide a child safety feature. The container can be

opened and reclosed. The container is filled with product and has an opening for product removal, which is smaller than the overall perimeter of the container. There is a lid, attached to the container, which covers the opening, preventing product from being removed. To access the product, the lid is opened. In order to provide the Child Safety Feature, there is a sliding element. In the closed position, the sliding element interfaces with a feature on the Lid that does not allow the lid to be opened.

[0023] In one embodiment, the use of a sliding element allows for freedom in the aesthetic design of the container. The location of the sliding element of the container can be, for example, on the front or the sides of the container as desired. The feature that blocks the lid is located on the sliding element. The user actuates the slider at a distal end and not directly with the feature that blocks the movement of the Lid.

[0024] There is a sliding element that in Position 1, referred to as the 'Home Position', blocks the movement of a feature on the lid. A slider moves from one side to the other side. The slider incorporates a means (spring element) of returning the slider to the Home Position after being depressed. In one embodiment the spring functionality is an integral part of the slider part design. As the slider is moved to one side or the other, it no longer blocks the movement of the feature on the lid, allowing it to be opened. The slider can be moved to one side of the other to allow right or left handed use.

[0025] The drawings are merely illustrative and are not meant to limit the invention. For example, the drawings show a few of the possible embodiments of the lid. One has a latch that is pressed in to release. Another is simply raised to open.

[0026] **Slide, Push Latch, and Lift Embodiments**

[0027] In the embodiments of Figs. 1-7, the Lid has a flexible element, a latch, which is depressed to move past a locking feature of another part of the container. There is a rib on the latch that blocks the movement when the sliding element is in the Home Position. When the sliding element is moved to one side, the rib is not obstructed, so the latch of the Lid can be pushed in to clear the feature on the other part of the container. When the sliding element is released it returns to the Home position. To close the container, the lid is simply closed and the latch deflects away the locking feature as it closes. The locking feature springs back, securing the Lid in the closed position.

[0028] Referring now to Figures 1-4, the container 20 has an outside 22 and an inside 24, a base 26 having an opening 28 and a movable lid 30 configured to cover the opening 28 when closed. The container 20 is shown latched closed in Figs. 1-4 by a latching mechanism 32 located in or near the fronts 34 and 36 of the base 26 and lid 30.

[0029] The latching mechanism 32 includes first latch portion 40, a second latch portion 42, and a guard 44. The first latch portion 40 is associated with one of the base and the lid 30 (in the illustrated embodiment it is associated with the base). The second latch portion 42 is associated with the other of the base and the lid 30 (in the illustrated embodiment it is associated with the lid 30). The first and second latch portions 40 and 42 can be reversed, if desired.

[0030] The second latch portion 42 is positionable in the position shown in Figures 1-4, to engage the first latch portion 40 when the lid 30 covers the opening. As shown particularly by Fig. 4, the illustrated first latch portion 40 has a downward facing abutment 46 ("downward" here meaning facing away from the direction in which the lid 30 opens, and not necessarily referring to the orientation of the container relative to its surroundings). The illustrated second latch portion 42 has an upward facing abutment 48 ("upward" here meaning facing in the direction in which the lid 30 opens, and not necessarily referring to the orientation of the container 20 relative to its surroundings). The abutments 46 and 48 overlap and thus interfere, preventing the lid 30 from opening.

[0031] The second latch portion 42 has an inwardly projecting abutment or rib 50 that engages or disengages the guard 44, as explained below. The first latch portion 40 also overlaps the second latch portion 42 in the sense that the first latch portion 40 is at least partially outboard (relative to the container), or to the left as shown in Fig. 4, of the second latch portion 42.

[0032] In the illustrated embodiment, in addition to the latching mechanism 40, the container 20 also has a secondary snap-fit latch 52 defined by a rib on an inner cover 54 of the container and a facing groove in a projection 56 of the lid 30. In an embodiment, this snap-fit latch 52 provides a seal between the base 26 and the lid 30 when the container 20 is closed.

[0033] The guard 44 is a separate part from the latch portions 40 and 42 in the embodiment of Figs. 1-4. The guard 44 is associated with the second latch portion

42 and normally is in a blocking position, as shown in Fig. 2, keeping the second latch portion 42 engaged with the first latch portion 40.

[0034] The guard 44 is laterally elongated from left to right, generally "E" shaped as shown in Figs. 2 and 3, and has first and second laterally spaced portions or projections 60 and 62, here near the ends of the guard 44, and a central portion or projection 64.

[0035] A channel is defined in one of the base 26 and the lid 30 in which the guard 44 is slidable. In the illustrated embodiment, the channel is defined in the base 26 between the front wall 34 and an outside flange of the inner cover 54.

[0036] Fig. 5 shows an alternative embodiment 66 of the guard. The guard 66 has an outwardly projecting abutment 68 located adjacent to the second latch portion 42 and having the same function as the abutment 64 shown in Fig. 4.

[0037] Figures 6 and 7 show additional embodiments of the guard and the cooperating structure mounted in the channel in which it slides. Referring to Fig. 6, the guard 72 includes lateral portions 60 and 62 exposed at the ends of the channel for pushing the guard laterally in either direction. The guard 72 also has a pair of lugs 74 and 76 positioned to limit the travel of the guard 72 laterally by engaging the stops 78 and 80 at the normal extremities of travel of the guard 72.

[0038] The guard 72 has integral sliding fingers 82 and 84 that bear against the abutment fingers 88 and 90 mounted in fixed relation to the channel. The guard 72 has a projection 64 overlapping and registered with the abutment 50 of the second latch member 42 in an area of partial registration 92. The fingers 82 and 88 and the fingers 84 and 90 respectively cooperate to normally center the guard 72, with the projection 64 and abutment 50 biased into at least partial registration, unless a sufficient force is applied to either lateral portion 60 or 62 to displace the projection 64 and the abutment 50 out of registration.

[0039] The guard 100 has similar construction to the guard 72 of Fig. 6, except that the sliding travel of the guard 100 is limited by the engagement of the slots 102 and 104 of the guard 100 with the pegs 106 and 108 fixed with respect to the slot in which the guard 100 slides. The guard 100 is displaced to the left in Fig. 7, so the sliding finger 82 is out of contact with the abutment finger 88. The sliding finger 84 has engaged and deformed the abutment finger 90 to the left, providing a bias tending to return the guard 100 to its centered position when the lateral portion

62 is no longer pushed to the left, as by a user disabling the guard 100 to open the container.

[0040] The embodiments of Figs. 1-7 work as follows.

[0041] Referring in particular to Figs. 1-4, the container 20 is closed and the latch is guarded as shown in Fig. 2. Optionally, the guard 44 is biased into the centered position shown in Figs. 2 and 4. The abutment or rib 50 of the second latch portion 42 and the central portion 64 of the guard 44 are in at least partial registration. Referring to Fig. 4, when the rib 50 and the central portion 64 are in at least partial registration, the central portion 64 blocks the rib 50, preventing the latch portions 40 and 42 from being disengaged.

[0042] Fig. 1 shows that the first and second laterally spaced portions 60 and 62 are accessible from outside the container 20, and can be manipulated to move the guard 44 laterally relative to the first latch portion 40. The guard 44 can thus be slid laterally from its blocking position to a releasing position allowing the second latch portion 42 to disengage the first latch portion 40. In the illustrated embodiment, the guard 44 is slidable laterally in opposed directions from its blocking position to a first releasing position in one direction and a second releasing position in the other direction.

[0043] When the guard 44 is displaced in either direction, as to the left in Fig. 3, the rib 50 and the central portion 64 are no longer in even partial registration. The latching mechanism 32 can then be released at the same time as the bias is maintained on the guard 44.

[0044] To release the latching mechanism 32, the second latch portion 42 is disengaged from the first latch portion 40 by displacing the abutment 48 of the second latch portion 40 inboard, or to the right in Fig. 4, as the lid 30 is raised. This displacement of the abutment 48 can be executed, when opening the container, by pressing the exposed end of the latch portion 42 inwardly to clear the first latch portion 40 until the barb or cam 110 bears against the inside surface 112 of the latch portion 40. In an embodiment, the latch portion 40, 42, or both are made of resilient material, so no separate springs or other parts are needed to allow the latch to function. This is conventional construction for molded plastic parts, for example.

[0045] The second latch portion 42 is movable (when the guard 44 is displaced, as shown in Fig. 3) to disengage the first latch portion 40. In this

embodiment, the portion of the second latch portion 42 defining the abutment 48 is movable to the right as shown in Fig. 4.

[0046] Slide and Lift Embodiment

[0047] In the second embodiment, the lid has a feature that engages the sliding element directly. When the sliding element is moved to one side or the other, the second latch portion moves laterally, no longer engages the lid 30, and the lid can be opened. The unlatching action is thus a lateral release in this embodiment, instead of an inward release. When the sliding element is released, it returns to the home position. When the container is closed, the feature on one of the slide or on the lid is chamfered or angled so that the sliding element is again pushed to one side by the closing force, allowing the feature on the lid to pass. Then the sliding element returns to the home position, engaging the feature on the lid and blocking the opening movement of the lid.

[0048] The "slide and lift" embodiment is illustrated schematically in Figs. 8-10. In this embodiment, best characterized in Fig. 10, the guard 120 and the second latch portion 122 are relatively substantially immovable. While they could be two separate parts joined together, in this embodiment the guard 120 and the second latch portion 122 are integral portions of one part. The guard 120 is again laterally slidable, and biased to its home or center position, as in previous embodiments.

[0049] In the embodiment of Figs. 8-10 the second latch portion 122 has a downward-facing abutment 124, and the lid 126 has an upward-facing abutment 128 defined by the first latch portion 130. Lateral sliding of the guard 120 carries the second latch portion 122 out of alignment with the first latch portion, directly disengaging the latch. The lid 126 can then be raised without interference between the abutments 124and 128.

[0050] Referring to Figs. 8 and 9, the top of the second latch portion 122 is relieved by a chamfer 132. The chamfer 132 is engaged by the first latch portion 130 as the lid 126 is closed, biasing the slide to the left, though not as far as shown in Fig. 9, until the first latch portion 130 passes below the second latch portion 122 and the lid is closed. At that point the chamfer 132 is no longer engaged, and the guard 120 returns to its home or centered position shown in Fig. 8.

[0051] As in the previous embodiments, many changes can be made without departing from the present invention, such as additional latching functionality that must be concurrently manipulated to open the container.

[0052] **Materials**

[0053] The parts that compose the container 20 can, for example, be made of a thermoplastic material. Depending on the requirements of the product, barrier materials such as high density polyethylene, polypropylene, or cyclo-olefin copolymers could be used. Alternatively, non-barrier materials might also be used. Non-barrier thermoplastic materials include polystyrene, polyester terephthalate, or polyvinyl chloride.

[0054] The slider may be made of different materials. By making it out of a thermoplastic material such as polycarbonate or polystyrene, spring features as illustrated in the Figures can be incorporated directly into the design, eliminating the need for additional components and assembly work.

[0055] The slider preferably is assembled to the container 20 so that it is not readily removable by a user.

[0056] **Resealability Option**

[0057] In another embodiment, the present invention relates to a container 20 that is moisture-tight and resealable. The term "resealable" means that the container 20 can be opened/reopened and closed/reclosed a numerous amount of times (e.g. more than 5 times) and still retain its moisture-tight properties. The term "moisture tight" means the moisture ingress of the container 20 is less than about 1500 micrograms/day of water, determined by the following test method: (a) place approximately one gram of molecular sieve in the container and record the weight; (b) close the resealable mechanism; (c) place the sealed container in an environmental chamber at conditions of 80% relative humidity and 22 deg. C (72 deg. F); (c) after one day, weigh the container containing the molecular sieve; (d) after approximately two weeks, weigh the container (e) subtract the first day sample from the value obtained and divide by the number of days to calculate the moisture ingress of the container in units of micrograms of water.

[0058] In one embodiment, the container with a reclosable lid 30 that has a child safety feature with the followings actions:

[0059] A sliding part, when moved, allows a flexible lid element to be depressed, which allows the lid to be opened.

[0060] The sliding element can move in each direction.

[0061] A sliding element interferes with a feature on the lid 30 and is moved to allow the lid 30 to be opened

[0062] In another embodiment, the sliding element incorporates a spring element to bring it back to the home position, blocking the latch mechanism from being depressed. In yet another embodiment, the sliding element is assembled onto the container so it can not be readily removed. For example, movement of the slider does not have to be side to side. In another example, the container has a reclosable lid 30 that creates a moisture tight seal.

CLAIMS

What is claimed is:

1. A container having an outside and an inside, and comprising:
   a. a base having an opening;
   b. a movable lid configured to cover the opening when closed;
   c. a first latch portion associated with one of the base and the lid;
   d. a second latch portion associated with the other of the base and the lid,
   e. the second latch portion being positionable to engage the first latch portion when the lid covers the opening;
   f. the second latch portion being movable to disengage the first latch portion; and
   g. a guard associated with the second latch portion and having a blocking position keeping the second latch portion engaged with the first latch portion;
   h. the guard being movable laterally, relative to the first latch portion, from its blocking position to a releasing position allowing the second latch portion to disengage the first latch portion.

2. The container of any preceding claim, in which the first latch portion overlaps the second latch portion.

3. The container of any preceding claim, in which the second latch portion overlaps the guard.

4. The container of any preceding claim, in which the guard is slidable laterally in opposed directions from its blocking position to a first releasing position in one direction and a second releasing position in the other direction.

5. The container of any preceding claim, further comprising a channel in one of the body and the lid in which the guard is slidable.

6. The container of any preceding claim, in which the guard is laterally elongated and has first and second laterally spaced portions.

7. The container of claim 6, in which the first laterally spaced portion is accessible from outside the container, and can be manipulated to move the guard laterally.

8. The container of claim 6 or 7, in which the second laterally spaced portion is accessible from outside the container, and can be manipulated to move the guard laterally.

9. The container of any preceding claim, in which the guard and the second latch portion are relatively substantially immovable.

10. The container of claim 9, in which the guard in its blocking position prevents the second latch portion from being pushed inward sufficiently to disengage the first latch portion.

11. The container of claim 9 or 10, in which the second latch portion can be moved inward from outside the container.

12. The container of claim 9, 10, or 11, in which the first latch portion comprises an opening in one of the base and the lid and the second latch portion has a projection that projects into the opening to define a latched position.

13. The container of claim 1, 2, 3, 4, 5, 6, 7, or 8, wherein the second latch portion and the guard are separate parts.

14. The container of claim 13, in which the second latch portion is movable inward to disengage the first latch portion.

15. The container of claim 13 or 14, in which the guard is slidable laterally, relative to the second latch portion.

16. The container of claim 13, 14, or 15, in which the guard has an abutment projecting toward and at least partially registered with the second latch portion when the guard is in its blocking position and movable laterally out of

registration with the second latch portion when the guard is in the releasing position.

17. The container of claim 13, 14, 15, or 16, in which the second latch portion has an abutment projecting toward and at least partially registered with the guard when the guard is in its blocking position.

18. The container of claim 17, in which the guard has an abutment projecting toward and at least partially registered with the second latch portion abutment when the guard is in its blocking position and movable laterally out of registration with the second latch portion abutment when the guard is in the releasing position.

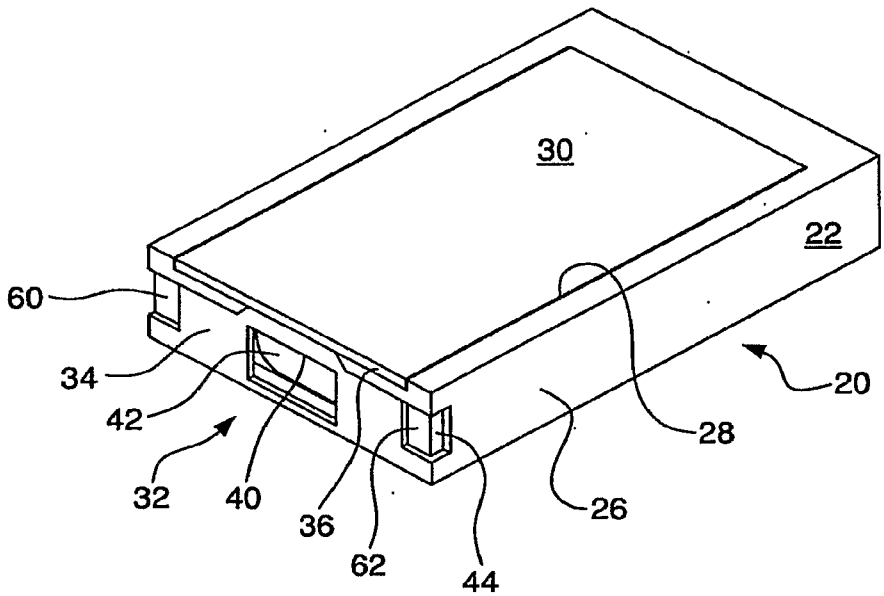

FIG. 1

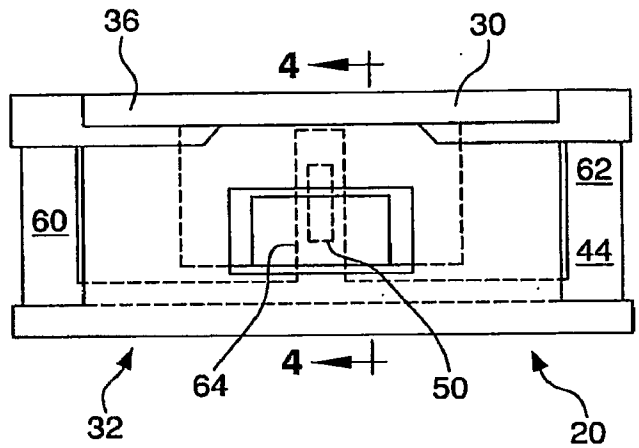

FIG. 2

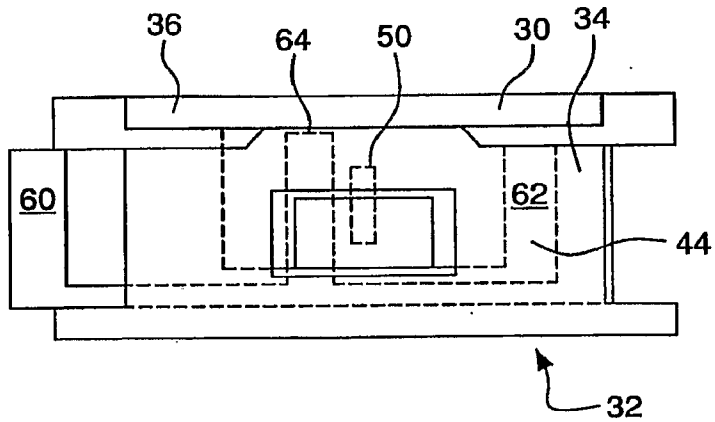

FIG. 3

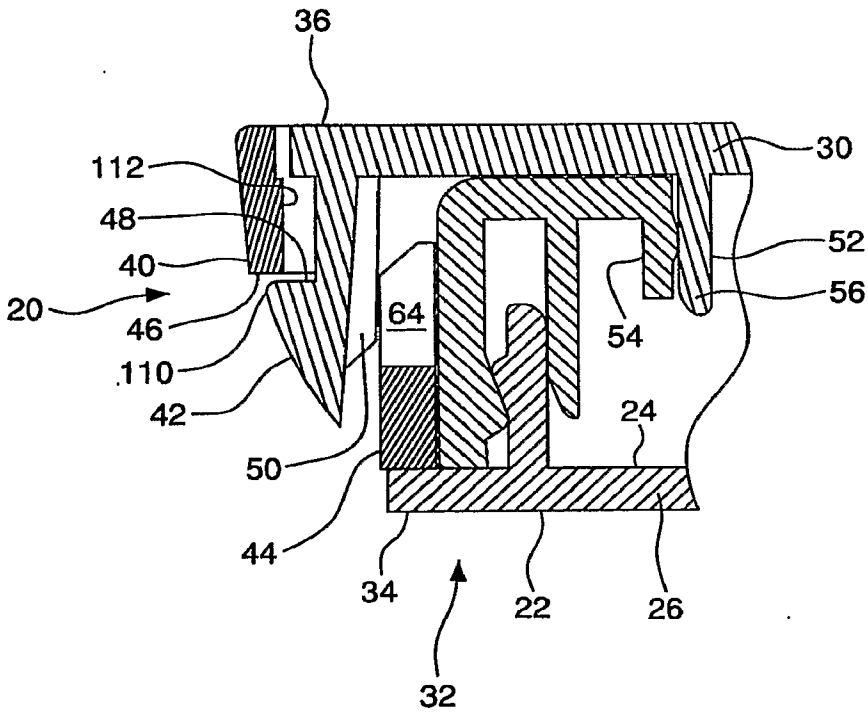

FIG. 4

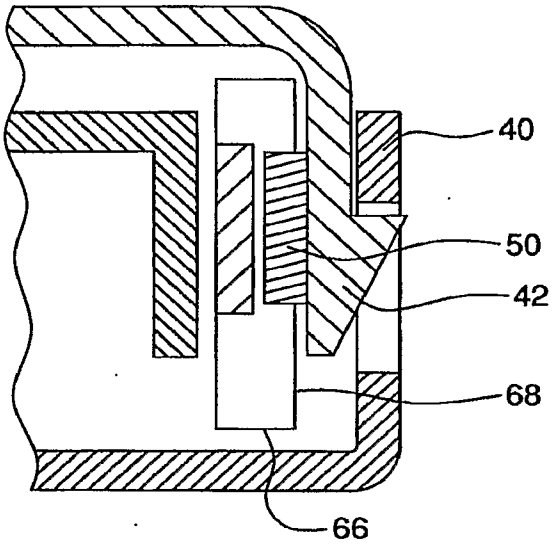

FIG. 5

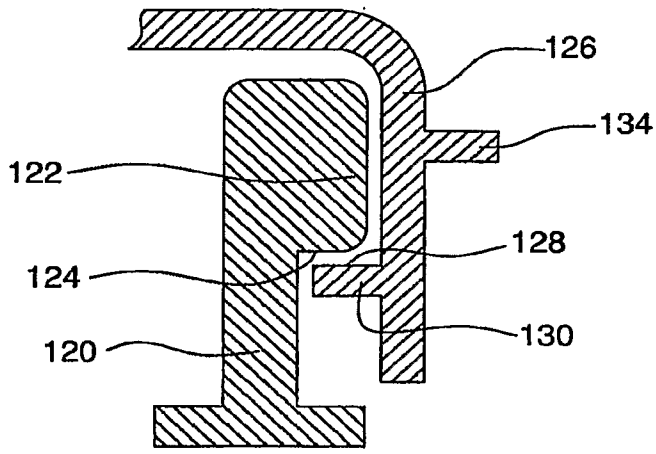

FIG. 10

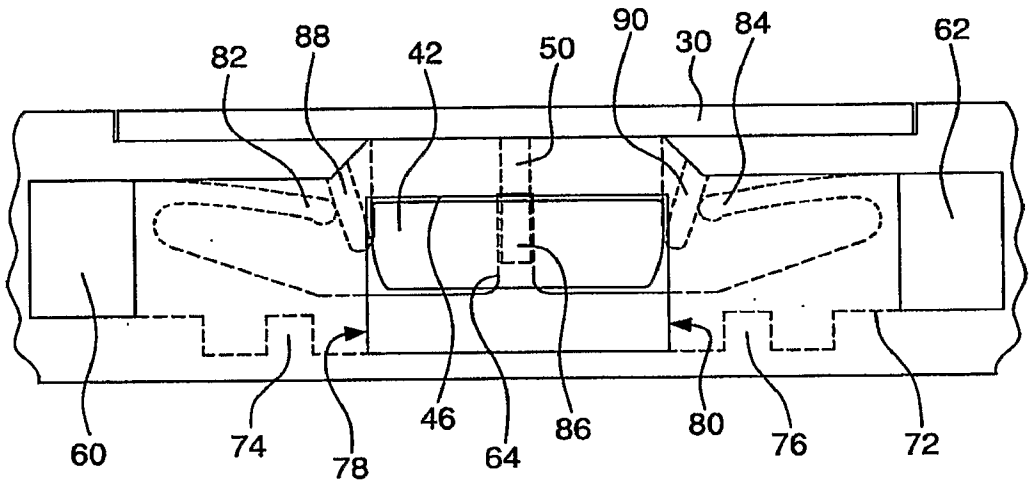

FIG. 6

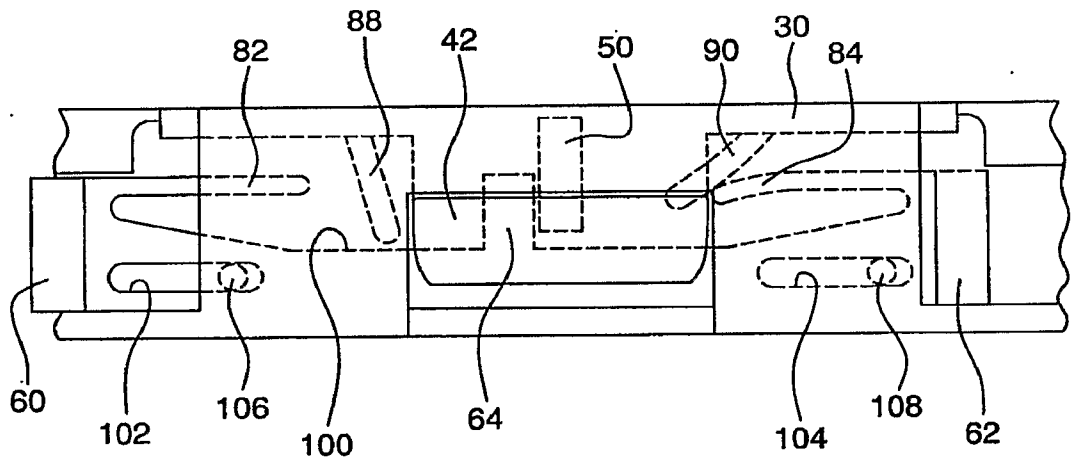

FIG. 7

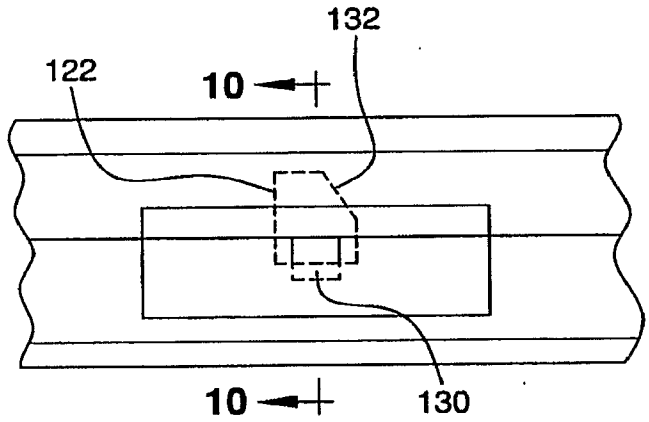

FIG. 8

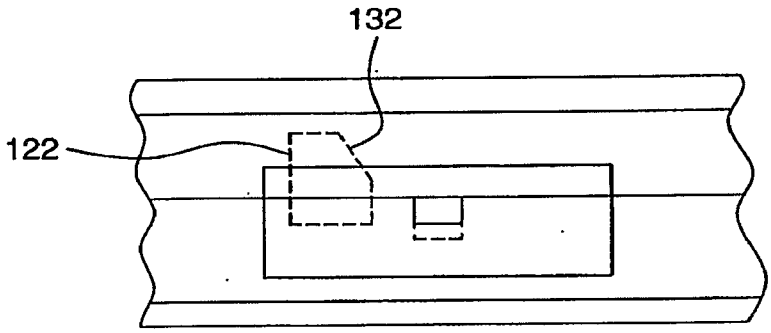

FIG. 9