[0009] ~~Another aspect of the present disclosure provides~~ There is disclosed a housing having an opening, a drug storage container, a plunger, and a plunger biasing member. The drug storage container may include a delivery member having an insertion end configured to extend at least partially through the opening. The plunger may have an inner surface defining an axial chamber. The plunger biasing member may be disposed at least partially within the axial chamber of the plunger and may be initially retained in an energized state. Releasing the plunger biasing member may drive the plunger in a distal direction to expel a drug from the drug storage container through the delivery member.

[0010] ~~An additional aspect of the present disclosure provides~~ There is also disclosed a housing having an opening, a drug storage container, a guard moveable positioned adjacent to the opening, a plunger, a plunger biasing member, and a releaser member. The drug storage container may include a delivery member having an insertion end configured to extend at least partially through the opening. The drug storage container may be coupled with the housing such as to resist relative movement therebetween. The plunger may be moveable in a distal direction to expel a drug from the drug storage container through the delivery member. The releaser member may be operably coupled to the guard and the plunger. Further, the releaser member may be configured to utilize inertial forces from a user to drive the housing and the drug storage container toward an injection site of the user.

[0011] ~~A further aspect of the present disclosure provides~~ There is further disclosed a drug delivery device including a housing having an opening, a drug storage container, a plunger, a plunger biasing member, and a brake member. The drug storage container may include a body portion defining a longitudinal axis and a delivery member having an insertion end configured to extend at least partially through the opening during a delivery state. The plunger may be moveable in a distal direction to expel a drug from the drug storage container through the delivery member. The plunger biasing member may be configured to urge the plunger in the distal direction. The brake member may be operably coupled to the plunger. Movement of the plunger in the distal direction may cause the plunger and/or the brake member to rotate about the longitudinal axis.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] It is believed that the disclosure will be more fully understood from the following description taken in conjunction with the accompanying drawings. Some of the drawings may have been simplified by the omission of selected elements for the purpose of more clearly showing other elements. Such omissions of elements in some drawings are not necessarily indicative of the presence or absence of particular elements in any of the exemplary embodiments, except as may be explicitly delineated in the corresponding written description. Also, none of the drawings is necessarily to scale.

[0013] Fig. 1 is a perspective view of a drug delivery device according to an embodiment of the present disclosure.

[0014] Fig. 2 is cross-sectional view of the drug delivery device in Fig. 1.

[0015] Fig. 3 is an exploded assembly view of the drug delivery device in Fig. 2.

[0016] Figs. 4 and 5 are different perspective views of a plunger guide illustrated in Fig. 2.

[0017] Figs. 6 and 7 are different perspective views of a releaser member depicted in Fig. 2.

[0018] Fig. 8 is a partial perspective view of a plunger, a plunger biasing member, and a plunger guide shown in Fig. 2.

[0019] Fig. 9A is a cross-sectional view taken along line Z-Z in Fig. 9B.

[0020] Fig. 9B is perspective view of a plunger retaining arrangement prior retraction of a guard member. In Fig. 9B, the releaser member is illustrated as being semi-transparent. Also, in Fig. 9B, the guard extension and the guard biasing member are omitted for clarity.

[0021] Fig. 9C is a perspective view of a distal end of the plunger retaining arrangement in Fig. 9B. In Fig. 9C, each of the guard and the guard extension is illustrated as being semi-transparent. Also, in Fig. 9C, the guard biasing member, the plunger, and the plunger guide are omitted for clarity.

[0022] Fig. 9D is a cross-sectional view taken along line Y-Y in Fig. 9C.

[0023] Fig. 9E is perspective view of a proximal end of the retaining arrangement in Fig. 9B. In Fig. 9E, the releaser member is illustrated as being semi-transparent. Also, in Fig. 9E, the guard biasing member is omitted for clarity.

What is claimed is:

1. A drug delivery device comprising:

a housing;

a drug storage container fixed relative to the housing and including an interior surface and a stopper slidable along the interior surface;

a biasing member; and

a plunger operably coupled to the biasing member and configured to:

selectively rotate from an initial rotational position to a second rotational position under a biasing force exerted by the biasing member, and

translate linearly in a distal direction to drive the stopper through the drug storage container after rotating from the initial rotational position to the second rotational position.

2. The drug delivery device of claim 1, comprising a biasing member disposed at least partially within the plunger.

3. The drug delivery device of claim 2, the biasing member comprising a compression spring.

4. The drug delivery device of any one of claims 2 or 3, wherein the plunger is configured to translate linearly in the distal direction while rotating from the initial rotational position to the second rotational position.

~~5. The drug delivery device of any one of claims 1 to 4, wherein the plunger is rotationally fixed relative to the housing after rotating from the initial rotational position to the second rotational position.~~

~~6~~5. The drug delivery device of any one of claims 1 to ~~5~~4, comprising a plunger guide fixed relative to the housing, the plunger being disposed at least partially within the plunger guide.

~~7~~6. The drug delivery device of claim ~~6~~5, wherein one of the plunger and the plunger guide comprises a cam and the other one of the plunger and the plunger guide comprises a cam follower.

~~8~~7. The drug delivery device of claim ~~7~~6, wherein the biasing force of the biasing member urges the cam follower against the cam to urge the plunger to rotate from the initial rotational position toward the second rotational position.

~~9~~8. The drug delivery device of claim ~~8~~7, wherein the plunger includes the cam follower and the plunger guide includes the cam, and wherein the cam follower is formed by at least one projection extending outwardly from the plunger.

~~10~~9. The drug delivery device of claim ~~9~~8, wherein the plunger guide comprises an annular wall, wherein the cam is formed by a proximally facing surface of the annular wall.

~~11. The drug delivery device of claim 10, wherein an opening is formed in the annular wall distal to the proximally facing surface, and wherein the opening slidably receives the projection after the plunger rotates from the initial rotational position to the second rotational position.~~

~~12~~10. The drug delivery device of any one of claims ~~6~~5 to ~~11~~9, comprising:

a releaser member operably coupled to the plunger and configured to selectively rotate relative to the housing, wherein each of the plunger and the plunger guide is disposed at least partially within the releaser member; and

a guard moveably positioned adjacent to an opening in the housing and operably coupled to the releaser member.

~~13~~11. The drug delivery device of claim ~~12~~10, wherein the guard has an extended position wherein the guard extends at least partially through the opening in the housing and a retracted position wherein the guard is positioned away from the extended position toward the housing.

~~14~~12. The drug delivery device of claim ~~13~~11, wherein the releaser member is prevented from rotating in at least one rotational direction when the guard is in the extended position, and wherein the releaser member is allowed to rotate in the at least one rotational direction when the guard is in the retracted position.

~~15~~13. The drug delivery device of any one of claims ~~13~~11 or ~~14~~12, wherein moving the guard from the extended position to the retracted position allows the releaser member and the plunger to rotate jointly from the initial rotation position toward the second rotation position under the biasing force exerted by the biasing member.

~~16. The drug delivery device of any one of claims 1 to 15, comprising an indicator configured to generate an audible signal indicating an end of drug delivery, the indicator being configured to rotate jointly with the plunger from the initial rotational position to the second rotational position.~~

~~17. The drug delivery device of claim 16, wherein the indicator is configured to translate linearly in a proximal direction while rotating from the initial rotational position toward the second rotational position.~~

~~18. The drug delivery device of claim 17, wherein the indicator is configured to rotate independently of the plunger from the second rotational position to a third rotational position.~~

~~19. The drug delivery device of claim 18, wherein the indicator is configured to translate linearly in the proximal direction while rotating from the second rotational position toward the third rotational position.~~

~~20. The drug delivery device of any one of claims 18 or 19, wherein the indicator, upon reaching the third rotational position, comes into contact with the housing or a structure fixed relative to the housing to generate the audible signal.~~

~~21. The drug delivery device of claim 21, wherein the indicator contacts a distally facing surface of the housing or the structure fixed relative to the housing in the third rotational position to generate the audible signal.~~

~~22. The drug delivery device of any one of claims 1 to 21, wherein the housing comprises an opening, and wherein the drug storage container comprises a delivery member having an insertion end configured to extend at least partially through the opening.~~

~~23. The drug delivery device of claim 22, wherein the guard is moveably positioned adjacent to the opening.~~

~~24. The drug delivery device of claim 23, wherein the guard has an extended position wherein the guard extends at least partially through the opening in the housing and a retracted position wherein the guard is positioned away from the extended position toward the housing.~~

~~25. The drug delivery device of claim 24, comprising a guard biasing member configured to bias the guard toward the extended position.~~

~~26. The drug delivery device of claim 25, comprising an indicator operably coupled to the guard biasing member and configured to generate an audible signal indicating an end of drug delivery.~~

~~27. The drug delivery device of claim 26, comprising a second cam and a second cam follower, wherein the indicator comprises a second cam follower.~~

~~28. The drug delivery device of claim 27, wherein a biasing force of the guard biasing member urges the second cam follower against the second cam to urge the indicator to rotate relative to the housing.~~

~~29. The drug delivery device of claim 28, wherein the indicator is configured to rotate jointly with the plunger from the initial rotational position to the second rotational position, and rotate independently of the plunger from the second rotational position to a third rotational position.~~

~~30. The drug delivery device of claim 29, wherein the indicator, upon reaching the third rotational position, comes into contact with the housing or a structure fixed relative to the housing to generate the audible signal.~~

~~31~~14. A drug delivery device comprising:

a housing having an opening;

a drug storage container including a delivery member having an insertion end configured to extend at least partially through the opening;

a guard moveably positioned adjacent to the opening;

a plunger moveable in a distal direction to expel a drug from the drug storage container through the delivery member;

a plunger biasing member; and

a releaser member operably coupled to the guard and the plunger, wherein the releaser member is configured to rotate from an initial rotational position to a second rotational position under a biasing force exerted by the plunger biasing member.

~~32~~15. The drug delivery device of claim ~~31~~14, wherein the guard has an extended position wherein the guard extends at least partially through the opening in the housing and a retracted position wherein the guard is positioned away from the extended position toward the housing.

~~33~~16. The drug delivery device of claim ~~32~~15, wherein the releaser member is prevented from rotating from the initial rotational position toward the second rotation position when the guard is in the extended position, and wherein the releaser member is allowed to rotate from the initial rotational position toward the second rotational position when the guard is in the retracted position.

~~34~~17. The drug delivery device of any one of claims ~~32~~15 or ~~33~~16, wherein moving the guard from the extended position to the retracted position allows the releaser member and the plunger to rotate jointly from the initial rotation position to the second rotation position under the biasing force exerted by the plunger biasing member.

~~35~~18. The drug delivery device of any one of claims ~~32~~15 to ~~34~~17, comprising a guard extension, wherein the releaser member is disposed at least partially within the guard extension.

~~36~~19. The drug delivery device of claim ~~35~~18, comprising a first projection extending outwardly from the releaser member and a second projection extending inwardly from the guard extension, wherein the first and second projections engage one another to retain the releaser member in the initial rotational position.

~~37~~20. The drug delivery device of claim ~~36~~19, wherein the second projection slides out of engagement with the first projection to allow the releaser member to rotate away from the initial rotational position toward the second rotational position when the guard is in the retracted position.

~~38. The drug delivery device of any one of claims 35 to 37, wherein the guard extension is separate from the guard and the guard acts on the guard extension when the guard moves from the extended position to the retracted position.~~

~~39. The drug delivery device of any one of claims 31 to 38, wherein the releaser member is configured to translate linearly in a proximal direction while rotating from the initial rotational position to the second rotational position.~~

~~40. The drug delivery device of any one of claims 31 to 39, wherein the releaser member is configured to selectively rotate from the second rotational position to a third rotational position.~~

~~41. The drug delivery device of claim 40, wherein the releaser member and the plunger rotate jointly from the initial rotational position toward the second rotational position, and wherein the releaser member rotates independently of the plunger from the second rotational position toward the third rotational position.~~

~~42. The drug delivery device of any one of claims 40 or 41, wherein the releaser member is configured to translate linearly in the proximal direction while rotating from the second rotational position toward the third rotational position.~~

~~43. The drug delivery device of any one of claims 40 to 42, wherein the releaser member, upon reaching the third rotational position, comes into contact with the housing or a structure fixed relative to the housing to generate the audible signal.~~

~~44. The drug delivery device of any one of claims 31 to 43, comprising a third projection extending outwardly from the plunger and received in a recess formed in the releaser member.~~

~~45. The drug delivery device of claim 44, wherein the third projection is prevented from sliding through the recess when the releaser member is in the initial rotational position, and wherein the third projection is allowed to slide through the recess in the distal direction when the releaser member is in the second rotational position.~~

~~46. The drug delivery device of any one of claims 31 to 45, comprising a plunger guide fixed relative to the housing, wherein the plunger is disposed at least partially within the plunger guide.~~

~~47. The drug delivery device of claim 46, wherein one of the plunger and the plunger guide comprises a cam and the other one of the plunger and the plunger guide comprises a cam follower.~~

~~48. The drug delivery device of claim 47, wherein the biasing force of the plunger biasing member urges the cam follower against the cam to urge the plunger to rotate from the initial rotational position toward the second rotational position.~~

~~49. The drug delivery device of claim 48, wherein the plunger includes the cam follower and the plunger guide includes the cam, and wherein the cam follower is formed by at least one projection extending outwardly from the plunger.~~

~~50. The drug delivery device of claim 49, wherein the plunger guide comprises an annular wall, wherein the cam is formed by a proximally facing surface of the annular wall.~~

~~51. The drug delivery device of claim 50, wherein an opening is formed in the annular wall distal to the proximally facing surface, and wherein the opening slidably receives the projection after the plunger rotates from the initial rotational position to the second rotational position.~~

~~52. The drug delivery device of any one of claims 31 to 51, wherein the plunger biasing member is disposed at least partially within the plunger.~~

~~53. The drug delivery device of claim 52, wherein the plunger biasing member comprises a compression spring.~~

~~54~~21. A drug delivery device comprising:

a housing having an opening;

a drug storage container including a delivery member having an insertion end configured to extend at least partially through the opening;

a plunger;

a plunger biasing member initially retained in an energized state, wherein releasing the plunger biasing member drives the plunger in a distal direction to expel a drug from the drug storage container through the delivery member; and

an indicator having an initial position wherein the indicator retains the plunger biasing member in the energized state, and a second position wherein the indicator generates an audible signal indicating an end of drug delivery.

~~55. The drug delivery device of claim 54, wherein the second position is proximal to the initial position.~~

~~56. The drug delivery device of any one of claims 54 or 55, wherein the indicator, upon reaching the second position, comes into contact with the housing or a structure fixed relative to the housing to generate the audible signal.~~

~~57~~22. The drug delivery device of ~~any one of~~ claim~~s 54 to 56~~ 21, comprising an indicator biasing member configured to bias the indicator in the proximal direction.

~~58~~23. The drug delivery device of claim ~~57~~22, comprising a cam and a cam follower, wherein the indicator includes the cam follower.

~~59~~24. The drug delivery device of claim ~~58~~23, wherein a biasing force of the indicator biasing member urges the cam follower against the cam to urge the indicator to rotate relative to the housing.

~~60~~25. The drug delivery device of claim ~~59~~24, wherein the indicator, when moving from the initial position to the second position, rotates relative to the housing and translates linearly in the proximal direction.

~~61. The drug delivery device of any one of claims 58 to 60, wherein the indicator is configured to rotate from the initial position to an intermediate position at least under a biasing force of the plunger biasing member.~~

~~62. The drug delivery device of claim 61, wherein the plunger is prevented from moving in the distal direction when the indicator is in the initial position, and the plunger is allowed to move in the distal direction when the indicator is in the intermediate position.~~

~~63. The drug delivery device of any one of claims 61 or 62, wherein the plunger rotates jointly with the indicator from the initial position to the intermediate position.~~

~~64. The drug delivery device of any one of claims 61 to 63, wherein the indicator is configured to rotate from the intermediate position to the second position at least under a biasing force of the indicator biasing member.~~

~~65. The drug delivery device of claim 64, wherein the indicator is configured to rotate independently of the plunger from the intermediate position to the second position.~~

~~66. The drug delivery device of claim 65, wherein the indicator is configured to translate linearly in the proximal direction while rotating from the intermediate position toward the second position.~~

~~67. The drug delivery device of any one of claims 54 to 66, comprising a guard moveably positioned adjacent to the opening.~~

~~68. The drug delivery device of claim 67, wherein the guard has an extended position wherein the guard extends at least partially through the opening in the housing and a retracted position wherein the guard is positioned away from the extended position toward the housing.~~

~~69. The drug delivery device of claim 68, wherein moving the guard from the extended position to the retracted position allows the indicator to move at least partially from the initial position toward the second position.~~

~~70. The drug delivery device of any one of claims 68 or 69, comprising a guard extension, wherein the indicator is disposed at least partially within the guard extension.~~

71. The drug delivery device of claim 70, comprising a first projection extending outwardly from the indicator and a second projection extending inwardly from the guard extension, wherein the first and second projections engage one another to retain the indicator in the initial position.

72. The drug delivery device of claim 71, wherein the second projection slides out of engagement with the first projection to allow the indicator to rotate away from the initial position toward the second position when the guard is in the retracted position.

73. The drug delivery device of claim 72, comprising a guard biasing member configured to bias the guard in the distal direction and bias the indicator in the proximal direction.

74. A drug delivery device comprising:

a housing having an opening;

a drug storage container including a delivery member having an insertion end configured to extend at least partially through the opening;

a plunger having an inner surface defining an axial chamber; and

a plunger biasing member disposed at least partially within the axial chamber of the plunger, the plunger biasing member initially retained in an energized state, wherein releasing the plunger biasing member drives the plunger in a distal direction to expel a drug from the drug storage container through the delivery member.

75. The drug delivery device of claim 74, wherein at least a portion of the plunger has a hollow tubular shape.

76. The drug delivery device of any one of claims 74 or 75, wherein the plunger has a proximal end and a distal end, the proximal end having at least one radially outwardly extending flange.

77. The drug delivery device of claim 76, wherein the distal end of the plunger has an inner surface defining a seat for the plunger biasing member.

78. The drug delivery device of claim any one of claims 76 or 77, wherein the plunger has a middle portion between the proximal end and the distal end, wherein at least the middle portion is made of metal.

79. The drug delivery device of any one of claims 78, wherein the distal end of the plunger is made of a non-metal material.

80. The drug delivery device of any one of claims 74 to 79, wherein the plunger is rotatable relative to the housing.

81. The drug delivery device of any one of claims 74 to 80, wherein the plunger is configured to:

selectively rotate from an initial rotational position to a second rotational position under a biasing force exerted by the plunger biasing member, and

translate linearly in the distal direction under the biasing force exerted by the plunger biasing member to expel the drug from the drug storage container after rotating from the initial rotational position to the second rotational position.

82. The drug delivery device of claim 81, wherein the plunger is configured to translate linearly in the distal direction while rotating from the initial rotational position to the second rotational position.

83. The drug delivery device of any one of claims 81 or 82, wherein the plunger is rotationally fixed relative to the housing after rotating from the initial rotational position to the second rotational position.

84. The drug delivery device of any one of claims 81 to 83, comprising a plunger guide fixed relative to the housing, the plunger being disposed at least partially within the plunger guide.

85. The drug delivery device of claim 84, wherein one of the plunger and the plunger guide comprises a cam and the other one of the plunger and the plunger guide comprises a cam follower.

86. The drug delivery device of claim 85, wherein the biasing force of the plunger biasing member urges the cam follower against the cam to urge the plunger to rotate from the initial rotational position toward the second rotational position.

87. The drug delivery device of claim 86, wherein the plunger includes the cam follower and the plunger guide includes the cam, and wherein the cam follower is formed by at least one flange extending radially outwardly from the plunger.

88. The drug delivery device of claim 87, wherein the plunger guide comprises an annular wall, wherein the cam is formed by a proximally facing surface of the annular wall.

89. The drug delivery device of claim 88, wherein an opening is formed in the annular wall distal to the proximally facing surface, and wherein the opening slidably receives the flange after the plunger rotates from the initial rotational position to the second rotational position.

90. The drug delivery device of any one of claims 84 to 89, comprising:

a releaser member operably coupled to the plunger and configured to selectively rotate relative to the housing, wherein each of the plunger and the plunger guide is disposed at least partially within the releaser member; and

a guard moveably positioned adjacent to an opening in the housing and operably coupled to the releaser member.

91. The drug delivery device of claim 90, wherein the guard has an extended position wherein the guard extends at least partially through the opening in the housing and a retracted position wherein the guard is positioned away from the extended position toward the housing.

92. The drug delivery device of claim 91, wherein the releaser member is prevented from rotating in at least one rotational direction when the guard is in the extended position, and wherein the releaser member is allowed to rotate in the at least one rotational direction when the guard is in the retracted position.

93. The drug delivery device of any one of claims 90 to 92, wherein moving the guard from the extended position to the retracted position allows the releaser member and the plunger to rotate jointly from the initial rotation position toward the second rotation position under the biasing force exerted by the biasing member.

94. The drug delivery device of any one of claims 74 to 93, the drug storage container being fixed relative to the housing.

95. The drug delivery device of any one of claims 74 to 94, the plunger biasing member including a compression spring.

96. A drug delivery device comprising:

a housing having an opening;

a drug storage container including a delivery member having an insertion end configured to extend at least partially through the opening, the drug storage container coupled with the housing such as to resist relative movement therebetween;

a guard moveably positioned adjacent to the opening;

a plunger moveable in a distal direction to expel a drug from the drug storage container through the delivery member;

a plunger biasing member; and

a releaser member operably coupled to the guard and the plunger, wherein the releaser member is configured to utilize inertial forces from a user to drive the housing and the drug storage container toward an injection site of the user.

97. A drug delivery device comprising:

a housing having an opening;

a drug storage container including a body portion defining a longitudinal axis and a delivery member having an insertion end configured to extend at least partially through the opening during a delivery state;

a plunger moveable in a distal direction to expel a drug from the drug storage container through the delivery member;

a plunger biasing member configured to urge the plunger in the distal direction; and

a brake member operably coupled to the plunger, wherein movement of the plunger in the distal direction causes at least one of the plunger and the brake member to rotate about the longitudinal axis.

98. The drug delivery device of claim 97, wherein the brake member surrounds at least a portion of the plunger and includes a radially inwardly facing surface which threadably engages a radially outwardly facing surface of the plunger.

99. The drug delivery device of claim 98, wherein the plunger includes a central rod and annular wall surrounding at least a portion of the central rod, the central rod having the radially outwardly facing surface which threadably engages the radially inwardly facing of the brake member.

100. The drug delivery device of claim 97, wherein the plunger surrounds at least a portion of the brake member and includes a radially inwardly facing surface which threadably engages a radially outwardly facing surface of the brake member.

101. The drug delivery device of claim 100, wherein the brake member includes a rod having a proximal end coupled to the housing and a distal end having the radially outwardly facing surface which threadably engages the radially inwardly facing surface of the plunger.

102. The drug delivery device of claim 101, wherein the rod is fixedly secured to the housing such that the rod does not move relative to the housing during operation of the drug delivery device.

103. The drug delivery device of any of claims 97 to 102, wherein the brake member is operably coupled to the plunger such that movement of the plunger in the distal direction causes the brake member to rotate.

104. The drug delivery device of any of claims 97 to 102, wherein the brake member is operably coupled to the plunger such that movement of the plunger in the distal direction causes the plunger to rotate.

105. The drug delivery device of any of claim 97 to 104, comprising a lock having an initial position wherein the lock prevents at least one of the plunger and the brake member from rotating, and a second position wherein the lock does not prevent the at least one of the plunger and the brake member from rotating.

106. The drug delivery device of claim 105, wherein the lock is configured to move in a proximal direction while moving from the initial position to the second position.

107. The drug delivery device of any one of claims 105 or 106, comprising a guard member moveably positioned adjacent to the opening, wherein the guard member has an extended position wherein the guard member extends at least partially through the opening in the housing and a retracted position wherein the guard member is positioned away from the extended position toward the housing.

108. The drug delivery device of claim 107, wherein moving the guard member from the extended position to the retracted position causes the lock to move from the initial position to the second position.

109. The drug delivery device of claims 97 to 118, wherein plunger biasing member includes at least one compression spring.

110. The drug delivery device of claims 97 to 109, wherein the plunger has a hollow tubular shape and the plunger biasing member is at least partially disposed within the plunger.

111. The drug delivery device of claim 110, wherein a distal end of the plunger has an inner surface upon which the plunger biasing member exerts an axially directed biasing force.

112. The drug delivery device of claim 111, comprising a bearing disposed between the plunger biasing member and the inner surface of the plunger, wherein the bearing allows relative rotation between the plunger and the plunger biasing member.

113. The drug delivery device of any of claims 97 to 112, comprising a stopper moveably disposed within the drug storage container, wherein a distal end of the plunger is initially spaced from a proximal end of the stopper by a gap.

114. The drug delivery device of claim 113, wherein, in the delivery state, the plunger biasing member moves the plunger in the distal direction to close the gap between the distal end of the plunger and the proximal end of the stopper and subsequently the plunger moves the stopper through the drug storage container to expel the drug from the drug storage container.

~~115. The drug delivery device of claim 114, wherein the at least one of the plunger and the brake member rotates about the longitudinal axis while the plunger moves in the distal direction to close the gap between the distal end of the plunger and the proximal end of the stopper.~~

~~116. The drug delivery device of any of claims 114 or 115, wherein the at least one of the plunger and the brake member rotates about the longitudinal axis while the plunger moves the stopper through the drug storage container to expel the drug from the drug storage container.~~