Claims:

1. Drug delivery device, having a body (9, 11), the body comprising a resettable dose setting mechanism, a cartridge holder (7) for receiving a cartridge (8) containing at least one medicinal product, and means (13, 14, 17, 18) for releasably coupling the cartridge holder (7) to the body (9, 11) or the dose setting mechanism, wherein said means are adapted and arranged such that an initial rotational coupling movement of the cartridge holder (7) relative to the body (9, 11) or the dose setting mechanism causes the cartridge holder (7) to move in a first axial direction relative to the body (9, 11) or the dose setting mechanism and that a continued rotational coupling movement of the cartridge holder (7) relative to the body (9, 11) or the dose setting mechanism causes the cartridge holder (7) to move in a second axial direction, which is contrary to the first axial direction, relative to the body (9, 11) or the dose setting mechanism.

2. Drug delivery device according to claim 1, characterized in that the means (13, 14, 17, 18) for releasably coupling the cartridge holder (7) to the body (9, 11) or the dose setting mechanism comprise at least one lug (13) and a corresponding groove (14) or slot for receiving and guiding the lug (13) and for effecting the relative axial movements of the cartridge holder (7) and the body (9, 11) or the dose setting mechanism upon relative rotation between the cartridge holder (7) and the body (9, 11) or the dose setting mechanism.

3. Drug delivery device according to claims 1 or 2, characterized in that the means (13, 14, 17, 18) for releasably coupling the cartridge holder (7) to the body (9, 11) or the dose setting mechanism comprise corresponding bayonet features (13, 14) formed on the cartridge holder (7) and the body (9) or the dose setting mechanism, respectively.

4. Drug delivery device according to any of the preceding claims, characterized in that the means (13, 14, 17, 18) for releasably coupling the cartridge holder (7) to the body (9, 11) or the dose setting mechanism comprise a bayonet lug (13) formed on the cartridge holder (7) and a groove (14) or slot formed on or in the body (9, 11) or the dose setting mechanism.

5. Drug delivery device according to any of the preceding claims, characterized in that the means (13, 14, 17, 18) for releasably coupling the cartridge holder (7) to the body (9, 11) or the dose setting mechanism comprise a groove (14) or slot having a first helical section (14a) having a first pitch and a second helical section (14b) having a second pitch, with the first pitch being contrary to the second pitch.

6. Drug delivery device according to claim 5, characterized in that the first helical section (14a) and the second helical section (14b) have a different lead.

7. Drug delivery device according to claims 5 or 6, characterized in that a third section (14c) of the groove (14) or slot is provided between the first helical section (14a) and the second helical section (14b) with the third section (14c) having a lead differing from the leads of the first helical section (14a) and the second helical section (14b).

8. Drug delivery device according to any of the preceding claims further comprising means (15, 16) for releasably rotationally fixing the cartridge holder (7) to the body (9, 11) or the dose setting mechanism.

9. Drug delivery device according to claim 8, characterized in that the means (15, 16) for releasably rotationally fixing the cartridge holder (7) to the body (9, 11) or the dose setting mechanism comprise corresponding detent features (15, 16) provided on the cartridge holder (7) and the body (9, 11) or the dose setting mechanism, respectively.

10. Drug delivery device according to any of the preceding claims, characterized in that the means (13, 14, 17, 18) for releasably coupling the cartridge holder (7) to the body (9, 11) comprise corresponding pairs of ramps (17, 18) or helical features provided on respective front faces of the body (9) and cartridge holder (7) to move the cartridge holder (7) in the second axial direction relative to the body (9, 11) or the dose setting mechanism.

11. Drug delivery device according to claim 10, characterized in that at least four pairs of corresponding ramps (17, 18) are provided on respective front faces of the body (9) and cartridge holder (7).

12. Drug delivery device according to any of the preceding claims, the dose setting mechanism comprising a piston rod (10) and a driver (2, 3), wherein the driver comprises two driver components (2, 3) which are rotationally coupled to each other during dose setting and dose dispensing and which are rotationally de-coupled from each other during resetting of the dose setting mechanism.

13. Drug delivery device according to claim 12, characterized in that a clutch (5, 6) is provided for coupling and de-coupling the two driver components (2, 3), wherein de-coupling of the two driver components (2, 3) requires a relative axial movement between the two driver components (2, 3).

14. Drug delivery device according to claims 12 or 13, characterized in that the relative axial movement between the two driver components (2, 3) to effect de-coupling is provided by the axial or helical movement of a piston rod (10).

15. Drug delivery device according to claims 12 or 13, characterized in that a spring means (4) is provided biasing the two driver components (2, 3) into the coupled position.

16. Drug delivery device according to claims 12 or 13, characterized in that a spring means is provided biasing the two driver components (2, 3) to de-couple,

wherein the cartridge holder (7) causes the two driver components (2, 3) to couple if the cartridge holder (7) is coupled to the body (9, 11) or the dose setting mechanism.

17. Drug delivery device according to claim 1 wherein the movement of the cartridge holder in the second axial direction is significant so as to ensure that the drive mechanism can re-couple after reset.

18. Drug delivery device according to any of the preceding claims furthercomprising a medicament which is preferably contained in a cartridge (8).

CLAIMS

1. A drug delivery device, having a body, the body comprising a resettable dose setting mechanism, a cartridge holder for receiving a cartridge containing at least one medicinal product, and a releasable coupling connecting the cartridge holder to the body or the dose setting mechanism, wherein the releasable coupling is adapted and arranged such that an initial rotational coupling movement in a rotating direction of the cartridge holder relative to the body or the dose setting mechanism causes the cartridge holder to move in a first axial direction relative to the body or the dose setting mechanism and that a continued rotational coupling movement in the rotating direction of the cartridge holder relative to the body or the dose setting mechanism causes the cartridge holder to move in a second axial direction, which is in an opposite direction compared to the first axial direction, relative to the body or the dose setting mechanism,

wherein the releasable coupling further comprises corresponding pairs of ramps or helical features provided on respective end faces of the body and cartridge holder to move the cartridge holder in the second axial direction relative to the body or the dose setting mechanism.

2. The drug delivery device according to claim 1, characterized in that the releasable coupling comprises at least one lug and a corresponding groove or slot for receiving and guiding the lug and for effecting the movement of the cartridge holder in the first and second axial directions upon relative rotation between the cartridge holder and the body or the dose setting mechanism.

3. The drug delivery device according to claim 1, characterized in that the releasable coupling comprises corresponding bayonet features formed on the cartridge holder and the body or the dose setting mechanism, respectively.

4. The drug delivery device according to claim 1, characterized in that the releasable coupling comprises a bayonet lug formed on the cartridge holder and a groove or slot formed on or in the body or the dose setting mechanism.

5. The drug delivery device according to claim 1, characterized in that the releasable coupling comprises a groove or slot having a first helical section having a first pitch and a second helical section having a second pitch, with the first pitch being contrary to the second pitch.

6. The drug delivery device according to claim 5, characterized in that the first helical section and the second helical section have a different lead.

7. The drug delivery device according to claim 6, characterized in that a third section of the groove or slot is provided between the first helical section and the second helical section with the third section having a lead differing from the leads of the first helical section and the second helical section.

8. The drug delivery device according to claim 1 further comprising detents configured to releasably rotationally fix the cartridge holder to the body or the dose setting mechanism.

9. The drug delivery device according to claim 8, characterized in that the detents are provided on the cartridge holder and the body or the dose setting mechanism, respectively.

10. The drug delivery device according to claim 1, characterized in that at least four pairs of the corresponding pairs of ramps are provided on respective end faces of the body and cartridge holder.

11. The drug delivery device according to claim 1, the dose setting mechanism comprising a piston rod and a driver, wherein the driver comprises two driver components which are rotationally coupled to each other during dose setting and dose dispensing and which are rotationally decoupled from each other during resetting of the dose setting mechanism.

12. The drug delivery device according to claim 11, characterized in that a clutch is provided for coupling and decoupling the two driver components, wherein decoupling of the two driver components requires a relative axial movement between the two driver components.

13. The drug delivery device according to claim 12, characterized in that the relative axial movement between the two driver components to effect de-coupling is provided by the axial or helical movement of the piston rod.

14. The drug delivery device according to claim 11, characterized in that a spring is provided biasing the two driver components into a coupled position.

15. The drug delivery device according to claim 11, characterized in that a spring is provided biasing the two driver components to decouple, wherein the cartridge holder causes the two driver components to couple if the cartridge holder is coupled to the body or the dose setting mechanism.

16. The drug delivery device according to claim 1 further comprising a medicament contained in a cartridge.