

CLAIMS

1. An inhaler for delivery of a medicament by inhalation, the inhaler comprising:
 - an inhaler body for receiving a canister having a dispensing valve;
 - 5 a drive mechanism comprising a biasing means and a moving component, the drive mechanism for driving the canister, when received in the inhaler body, from a rest position in which the valve is closed to at least an actuating position in which the valve is open, the drive mechanism driving the canister when the biasing means is released from a loaded configuration to move the moving
 - 10 component from a first position to a second position;
 - a resetting mechanism for resetting the drive mechanism by moving the moving component from the second position to the first position and reloading the biasing means to the loaded configuration; and
 - 15 a return mechanism for returning the canister from the actuating position to the rest position;
- wherein the return mechanism comprises a damping system, the damping system configured to enable the canister to automatically return from the actuating position to the rest position within a predetermined time period measured from the release of the biasing means from the loaded configuration; wherein the damping system
- 20 comprises a rotary damper comprising a rod, the rod coupled with a shaft of the rotary damper such that the rod rotates with the shaft, the rod rotation being controlled by the shaft rotation in at least a first direction of rotation, wherein the rod is moveable relative to the shaft in an axial direction, wherein the moving component comprises a cam follower and the rod comprises a cam track for
- 25 receiving the cam follower, the cam track and the cam follower being configured such that the cam follower abuts an edge of the cam track and applies an axial moving force to the rod when the moving component moves from the first position to the second position, wherein the cam track is configured such that a first section of the cam track is configured such that the damping system enables the canister
- 30 to automatically return from the actuating position to the rest position initially at a first speed and is further configured such that the damping system enables the canister to automatically return from the actuating position to the rest position at a second speed at a later time within the predetermined time period.

2. The inhaler of any one of the preceding claims, further comprising a load-relieving mechanism configured to support the moving component and the damping system in a spaced apart position in which the moving component and/or the part of the damping system is not in contact with the canister, when the canister is received in the inhaler body.
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3. The inhaler of claim 2, wherein the load-relieving mechanism is configured to release the moving component and/or the part of the damping system to thereby bring the moving component and/or the part of the damping system, under the load of the biasing means, into contact with the canister, when the canister is received in the inhaler body.
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4. The inhaler of any one of the preceding claims, further comprising a breath-triggering mechanism configured to hold the biasing means in the loaded configuration and to release the biasing means to move the moving component from the first position to the second position in response to airflow in the inhaler.
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5. The inhaler of claim 4, wherein the breath-triggering mechanism comprises a vane configured to pivot in response to airflow in the inhaler and a latch configured to release the biasing means when the vane pivots.
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6. A method of dispensing medicament from an inhaler, the method comprising:
releasing a biasing means of a drive mechanism of the inhaler from a loaded configuration;
25 moving, by the released biasing means, a moving component of the drive mechanism from a first position to a second position to drive a canister, received in a body of the inhaler, from a rest position, in which a valve of the canister is closed, to at least an actuating position, in which the valve is open;
automatically returning the canister from the actuating position to the rest position within a predetermined time period measured from the release of the
30 biasing means from the loaded configuration, the automatic return of the canister being regulated by a return mechanism comprising a damping system;
and

5 resetting the drive mechanism with a resetting mechanism that moves the moving component from the second position to the first position and reloads the biasing means to the loaded configuration, wherein the step of automatically returning the canister within the predetermined time period comprises automatically returning the canister during a first time segment during which movement of the canister from the actuating position to the rest position is slower than during a second time segment.

10 7. The method of claim 6, wherein the first time segment is at least about 0.20 secs, optionally at least about 0.30 secs, optionally at least about 0.40 secs.

15 8. The method of claim 6 or claim 7, wherein the second time segment is in the range of about 0.10 to 2.00 secs, optionally in the range of about 0.30 to 1.80 secs, optionally in the range of about 0.40 to 1.70 secs, optionally in the range of about 0.60 to 1.60 secs, optionally in the range of about 0.80 to 1.50, optionally in the range of about 1.00 to 1.40 secs.

20 9. The method of any one of claims 6 to 8, wherein the second time segment is less than about 2.0 secs, optionally less than about 1.75 secs, optionally less than about 1.50 secs, optionally less than about 1.25 secs, optionally about 1.20 secs.

25 10. The method of any one of claims 6 to 9, wherein the first time segment combined with the second time segment is a total time of less than about 2.5 secs, optionally less than about 2.00 secs, optionally less than about 1.75 secs, optionally less than about 1.50 secs.

11. The method of any one of claims 6 to 10, wherein the damping system comprises a rotary damper.

30 12. The method of claim 11, wherein the damping system further comprises a rod, the rod coupled with a shaft of the rotary damper and wherein the rod rotates with the shaft, the rod rotation being controlled by the shaft rotation in at least a first direction of rotation.

13. The method of claim 12, wherein the rod moves relative to the shaft in an axial direction.
- 5 14. The method of claim 13, wherein the moving component comprises a cam follower and the rod comprises a cam track for receiving the cam follower, the cam follower abutting an edge of the cam track and applying an axial moving force to the rod when the moving component moves from the first position to the second position.
- 10 15. The method of claim 14, wherein the axial moving force applied by the cam follower to the edge of the cam track axially moves the rod in a direction away from the shaft and the rod thereby applies a driving force to the canister to drive the canister from the rest position to at least the actuating position.
- 15 16. The method of claim 14 or claim 15, wherein the cam track comprises at least a first section and a second section, the first section being substantially aligned with the axis of the rod and the second section being curved about a portion of the outer surface of the rod in a direction substantially away from the first section of the track.
- 20 17. The method of claim 16, wherein the first section of track allows axial movement of the rod relative to the cam follower and the second section of the track allows axial and rotational movement of the rod relative to the cam follower.
- 25 18. The method of claim 17, wherein the rotational damper damps the rotational movement of the rod but not the axial movement of the rod.
19. The method of claim 16, 17 or 18, wherein the second section of the track is substantially helical about the portion of the outer surface of the rod.
- 30 20. The method of any one of claims 15 to 19, wherein the rod comprises a pair of cam tracks diametrically opposed on the rod outer surface, optionally wherein the second sections of the cam tracks are helical and the helices are either both right-handed or both left-handed.

21. The method of any one of claims 15 to 19, wherein the canister automatically returns from the actuating position to the rest position initially at a first speed along a first section of the cam track and automatically returns from the actuating position to the rest position at a second speed at a later time along a second section of the cam track within the predetermined time period.
22. The method of claim 21, further comprising supporting the moving component and a part of the damping system in a spaced apart position by a load-relieving mechanism, the moving component and/or the part of the damping system not directly contacting the canister when supported by the load-relieving mechanism.
23. The method of claim 22, further comprising releasing the moving component and/or the part of the damping system to thereby bring the moving component and/or the part of the damping system, under the load of the biasing means, into contact with the canister.