

CLAIMS:

1. An auto-injector assembly (100) comprising:

a housing (102) having a proximal end (104) and a distal end (106);

5 a syringe assembly (202) disposed adjacent to the proximal end (104) of the housing (102) and adapted to store a predetermined volume of a drug to be administered through a needle (406);

a needle guard (212) disposed to surround the syringe assembly (202) such that a portion of the needle guard (212) is adapted to extend out of the housing (102) in an
10 initial state and to retract into the housing (102) when the portion is pressed on to an injection site;

a spring holder (218) disposed adjacent to the distal end (106) of the housing (102) and adapted to hold a dose delivery spring (216) in a compressed state;

a locking unit (220) disposed inside the spring holder (218) and adapted to keep
15 the spring holder (218) in a locked state with the housing (102); and

a plunger (222) engaged with the spring holder (218) and adapted to move towards the syringe assembly (202) when the spring holder (218) is unlocked, wherein a position of engagement of the plunger (222) with the spring holder (218) is adapted to change for controlling a travelling distance of the plunger (222) within the housing (102) based
20 on the predetermined volume of the drug in the syringe assembly (202),

wherein the needle guard (212), when being retracted, is adapted to push the locking unit (220) further into the spring holder (218), unlocking the spring holder (218) from the housing (102) such that the plunger (222) is moved towards the syringe assembly (202) for administering the drug into the injection site.

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2. The auto-injector assembly (100) as claimed in claim 1, wherein the needle guard (212) is adapted to be pressed against the injection site to extend the needle (406) of the syringe assembly (202) for being inserted into the injection site and to return to an original position when the drug is administered.

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3. The auto-injector assembly (100) as claimed in claim 1, comprising

a syringe holder (210) adapted to support the syringe assembly (202) within the housing (102); and

a needle guard spring (214) adapted to be disposed between an inner surface of the housing (102) and an outer surface of the needle guard (212), wherein the needle guard spring (214) is adapted to support the movement of the needle guard (212) within the housing (102) for administering the drug.

4. The auto-injector as claimed in claim 1, comprising:

the housing (102) having a pair of stoppers (402) formed on an inner surface; and

the spring holder (218) comprising a pair of arms (404) adapted to engage with the pair of stoppers (404) for locking the spring holder (218) with the housing (102), restricting the movement of the plunger (222).

5. The auto-injector as claimed in claim 1, comprising:

the plunger (222) having a plurality of threads formed on an outer surface; and

the spring holder (218) comprising a nut adapted to engage with the plurality of threads of the plunger (222), wherein the plunger (222) is rotated into the nut for controlling the travelling distance of the plunger (222) within the housing (102) to administer the drug into the injection site based on the predetermined volume of the drug in the syringe assembly (202).

6. The auto-injector as claimed in claim 1, comprising:

the plunger (222) having a plurality of threads formed on an inner surface; and

the spring holder (218) comprising a shaft (224) adapted to engage with the plurality of threads of the plunger (222), wherein the plunger (222) is rotated into the shaft (224) for controlling the travelling distance of the plunger (222) within the housing (102) to administer the drug into the injection site based on the predetermined volume of the drug in the syringe assembly (202).

7. The auto-injector assembly (100) as claimed in claim 1, wherein the spring holder (218) is adapted to unlock, releasing the dose delivery spring (216) from the compressed state

and pushing the plunger (222) towards the syringe assembly (202) based on a compressive force of the dose delivery spring (216).

8. The auto-injector assembly (100) as claimed in claim 1, comprising:

5 a needle shield (408) adapted to encapsulate the needle (406); and

a cap (208) fixed with the needle shield (408) and adapted to close the proximal end (104) of the housing (102) when not in use,

wherein the cap (208) and the needle shield (408) are adapted to be removed before pressing the needle guard (212) against the injection site for administering the drug.

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9. The auto-injector assembly (100) as claimed in claim 3, comprising:

the syringe holder (210) having a lock portion (802) formed on an outer surface; and

the needle guard (212) comprising:

15 a longitudinal groove (804) adapted to receive the lock portion (802) of the syringe holder (210), wherein the lock portion (802) is adapted to travel along the longitudinal groove (804) for accommodating relative movement of the needle guard (212) with respect to the syringe holder (210) when the needle guard (212) retracts into the housing (102); and

20 a longitudinal slot (806) formed adjacent to the longitudinal groove (804) and adapted to accommodate return travel of the lock portion (802) when the needle guard (212) is moving back to the original position after administering of the drug, wherein the longitudinal slot (806) comprising a stopper slot (808) that is adapted to hold the lock portion (802) at the end of return travel, restricting further movement of the needle guard (212) once the drug is administered.

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10. The auto-injector assembly (100) as claimed in claim 1, comprising a viewing slot (112) formed on the housing (102) to view the movement of the plunger (222) from outside.

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