CLAIMS

1. A syringe device comprising:

an administration holder including a first storage chamber, the first storage chamber including a first cartridge mounted therein, the first cartridge being configured to store a first substance and having a sealing member formed at a front end portion thereof;

a hollow cylinder portion; and

a double-ended needle assembly including a first needle point and a second needle point, wherein

the cylinder portion includes:

a holder sliding portion configured to slidably retain the administration holder inserted at least partly from one end of the cylinder portion;

a second storage chamber provided on the other end side of the cylinder portion, the second storage chamber including a second cartridge mounted therein, the second cartridge being configured to store a second substance and having a sealing member formed at a front end portion thereof; and

a double-ended needle sliding portion formed between the holder sliding portion and the second storage chamber, the double-ended needle assembly being capable of sliding in the double-ended needle sliding portion from a first position to a second position in a state in which the first needle point faces the holder sliding portion and the second needle point faces the second storage chamber;

wherein when the administration holder is pushed inward in the holder sliding portion toward the second storage chamber, the double-ended needle assembly moves from the first position by the first needle point being pushed in a state of pricking the sealing member of the first cartridge without unsealing the same, and

wherein while the double-ended needle assembly moves to the second position, the first and second needle points unseal sealing members of the first and second cartridges respectively via a closed state in which the first needle point is maintained in the state and the

second needle point pricks the sealing member of the second cartridge without unsealing the same.

2. The syringe device according to claim 1, wherein the first and second cartridges communicate with each other via the double-ended needle assembly after the closed state by unsealing of the sealing member of the first cartridge by the first needle point and unsealing of the sealing member of the second cartridge by the second needle point.

3. The syringe device according to claim 1 or 2, wherein the administration holder includes a projecting portion on an outer peripheral portion,

wherein the holder sliding portion includes a punched hole configured to receive the projecting portion and retain the administration holder at an initial position, and a slit extending in the longitudinal direction and configured to guide the projecting portion when moving the administration holder from the initial position.

4. The syringe device according to claim 3, wherein a diameter of the punched hole is smaller than a width of the projecting portion,

the projecting portion includes an inclined portion at a distal portion thereof, and an initial speed of pushing the administration holder is controlled by the inclined portion engaging the punched hole.

5. The syringe device according to claim 3 or 4, wherein a width of the slit relative to the width of the projecting portion is set to control the speed of the administration holder while being pushed.

6. The syringe device according to any one of claims 1 to 5, wherein the double-ended needle sliding portion comprises:

a hollow body configured to define an internal space in which the double-ended

needle assembly slides;

a wall formed at a boundary between the hollow body and the second storage chamber and including a hole which allows the second needle point to pass through; and

a guide groove formed on an inner peripheral wall of the hollow body and extending in a longitudinal direction, the guide groove being configured to guide the projecting portion formed on the double-ended needle assembly therealong.

7. The syringe device according to any one of claims 1 to 6, wherein the first substance is a solid state drug, the second substance is a solvent capable of dissolving the drug, or

the second substance is a solid state drug, and the first substance is a solvent capable of dissolving the drug, or

both of the first substance and the second substance are mixable liquid-state drugs.

8. The syringe device according to any one of claims 1 to 7, wherein each of the first and second cartridges comprises:

a cartridge container having a distal end opening, a bottom opening, and a hollow portion;

a rubber packing as the sealing member configured to seal the distal end opening of the cartridge container;

a cap configured to fix the rubber packing; and

a piston configured to be slidably inserted from the bottom opening to the hollow portion, the piston allowing a substance to be stored between the rubber packing and the piston.

9. The syringe device according to claim 7, comprising a plunger rod configured to be mounted on the piston.

10. The syringe device according to any one of claims 1 to 9, wherein the administration

holder includes a needle insertion portion formed at a position adjacent to the first storage chamber.

11. A method of communicating a first substance and a second substance to each other using a syringe device,

the syringe device comprising

an administration holder including a first cartridge configured to store the first substance;

a hollow cylinder portion; and

a double-ended needle assembly including a first needle point and a second needle point, and

a second cartridge configured to store the second substance,

the first cartridge and the second cartridge including sealing members respectively,

the method including:

sliding the administration holder inserted into the cylinder portion along a longitudinal direction of the cylinder portion;

allowing the first needle point to prick the sealing member without unsealing the sealing member of the first cartridge;

sliding the double-ended needle assembly by sliding the administration holder in a state in which the first needle point pricks a sealing member of the first cartridge,

allowing the second needle point to prick the sealing member without unsealing the sealing member of the second cartridge before the first needle point unseals the sealing member of the first cartridge, thereby forming a closed state of the double-ended needle assembly; and

unsealing the sealing members of the first and second cartridges by the first needle point and the second needle point by further sliding the administration holder, thereby allowing the first and second cartridges to communicate with each other through the double-ended needle assembly.

12. The method according to claim 11, wherein the sliding the administration holder includes sliding the administration holder along a longitudinal direction of the cylinder portion in one-step operation.

13. The method according to claim 11 or 12, wherein after allowing the first and second cartridges to communicate with each other through the double-ended needle assembly includes:

mixing the first and second substances by pushing a substance in one of the first and second cartridges outward into the other cartridge through the double-ended needle assembly,, and then pushing the first and second substances mixed in the other cartridge into the one of the cartridge to mix the first and second substances.

14. The method according to claim 13, wherein mixing the first and second substances is repeatedly performed by a plurality of times.

15. The method according to claim 13 or 14, wherein the substance in the one of cartridges to be pushed out first is a liquid, and the substance in the other cartridge is a solid or a liquid.

16. The method according to any one of claims 11 to 15, further comprising:

holding the administration holder at an initial position in the cylinder portion before sliding the administration holder, and

controlling an initial speed of the administration holder by adjusting a resistance force generated when starting the administration holder to slide from the initial position.

17. The method according to claims 11 to 16, wherein sliding the administration holder further including

adjusting a frictional force generated between the administration holder and the

cylinder portion so as to control a sliding speed while pushing the administration holder.

18. The method according to claims 11 to 17, wherein in the allowing the first and second cartridges to communicate with each other through the double-ended needle assembly, one of the following aspects is performed:

a first aspect in which the first needle point unseals the sealing member of the first cartridge and then the second needle point unseals the sealing member of the second cartridge;

a second aspect in which the second needle point unseals the sealing member of the second carriage and then the first needle unseals the sealing member of the first cartridge; or

a third aspect in which the first needle point unseals the sealing member of the first cartridge and simultaneously, the second needle point unseals the second cartridge.