CLAIMS

1. A plunger for a dispenser, the plunger being slidably fitted in a syringe,

wherein the plunger is made of an elastic resin material and includes a large diameter body portion provided with a ring-shaped contact surface that contacts an inner wall surface of the syringe, a rear opening formed in a backside of the large diameter body portion, and a small diameter body portion provided with a front opening, and

wherein the front opening is formed in a size allowing a propulsion force of the plunger to be weakened with reduction of a pressure receiving area, allowing a liquid material to be pressed under pressurization required for discharging the liquid material, the pressurization being obtained with both pressing applied to the liquid material by the propulsion force of the plunger and pressing applied by the pressurized air through the front opening, and allowing at least the plunger to move following a fall in water head position, which is caused with discharge and consumption of the liquid material.

2. The plunger for the dispenser according to claim 1, wherein the front opening provides communication from a side close to the liquid material toward a side close to the rear opening,

the small diameter body portion is disposed to extend forward from the large diameter body portion and contacts the liquid material in the syringe when the plunger is fitted in the syringe, and

the small diameter body portion has a pressure receiving surface that receives an action of the pressing applied by the pressurized air having passed

through the rear opening.

3. The plunger for the dispenser according to claim 1 or 2, wherein the front opening is formed in a size allowing the liquid material, which remains in a discharge port of the syringe when the plunger is present at a most advanced position, to be discharged by the pressurized air.

4. The plunger for the dispenser according to claim 1 or 2, wherein the front opening has an opening area of 5 mm^2 or more.

5. The plunger for the dispenser according to claim 1 or 2, wherein the front opening has an opening area of 10 mm^2 or more.

6. The plunger for the dispenser according to claim 1 or 2, wherein the front opening is made up of a plurality of openings that are divided by one or more bridging members.

7. The plunger for the dispenser according to claim 1 or 2, wherein the plunger includes a pressurization passage that is communicated with the front opening, and that functions as a buffer passage acting to avoid a response delay of the liquid material when the pressurized air is not supplied.

8. The plunger for the dispenser according to claim 7, wherein the plunger includes a tubular raised portion having the pressurization passage therein.

9. The plunger for the dispenser according to claim 1 or 2, wherein the small diameter body portion includes a tapered portion.

10. The plunger for the dispenser according to claim 1 or 2, wherein a lateral surface of the large diameter body portion is constituted by an upper contact surface, a lower contact surface, and an intermediate region positioned between the upper contact surface and the lower contact surface, and when the

pressurized air is supplied to the rear opening, the large diameter body portion is expanded such that a part or a whole of the intermediate region contacts the inner wall surface of the syringe.

11. The plunger for the dispenser according to claim 1 or 2, wherein a ratio of an opening area of the front opening to the pressure receiving area is 1 : 80 to 1 : 0.5.

12. The plunger for the dispenser according to claim 1 or 2, wherein a ratio of an opening area of the front opening to the pressure receiving area is 1 : 40 to 1 : 1.

13. A dispenser comprising:

the plunger for the dispenser according to claim 1 or 2;

a syringe having a discharge port; and

a controller that supplies pressurized air to the syringe.

14. The dispenser according to claim 13, wherein the front opening of the plunger has a larger opening area than the discharge port of the syringe.

15. A method for discharging a liquid material by employing the dispenser according to claim 13, the method including a step of discharging the liquid material by supplying the pressurized air to the plunger that is fitted in the syringe.

16. A method for discharging a liquid material by employing a dispenser comprising the plunger for the dispenser according to claim 3, a syringe having a discharge port, and a controller that supplies pressurized air to the syringe,

wherein the liquid material remaining in the discharge port after the plunger has reached the most advanced position is discharged by the pressurized air.

17. The method for discharging the liquid material according to claim 16, wherein the front opening of the plunger has a larger opening area than the discharge port of the syringe.

18. The method for discharging the liquid material according to claim 15, wherein the liquid material is a liquid material having high viscosity.

19. The method for discharging the liquid material according to claim 16, wherein the liquid material is a liquid material having high viscosity.

20. The method for discharging the liquid material according to claim 17, wherein the liquid material is a liquid material having high viscosity.

21. A plunger for a dispenser, the plunger being slidably fitted in a syringe,

wherein the plunger is made of an elastic resin material and includes a large diameter body portion provided with a ring-shaped contact surface that contacts an inner wall surface of the syringe, a rear opening formed in a backside of the large diameter body portion, and a small diameter body portion provided with a front opening, and

wherein the front opening is made up of a plurality of openings that are divided by one or more bridging members.

22. A plunger for a dispenser, the plunger being slidably fitted in a syringe,

wherein the plunger is made of an elastic resin material and includes a large diameter body portion provided with a ring-shaped contact surface that contacts an inner wall surface of the syringe, a rear opening formed in a backside of the large diameter body portion, and a small diameter body portion provided with a front opening, and

wherein the front opening of the plunger has a larger opening area than

a discharge port of the syringe.

23. The plunger for the dispenser according to claim 21 or 22, wherein the front opening provides communication from a side close to the liquid material toward a side close to the rear opening,

the small diameter body portion is disposed to extend forward from the large diameter body portion and contacts the liquid material in the syringe when the plunger is fitted in the syringe, and

the small diameter body portion has a pressure receiving surface that receives an action of the pressing applied by the pressurized air having passed through the rear opening.