CLAIMS

1. A syringe attachment/detachment mechanism for a discharge device, wherein a syringe including an attachment part and an upper connection part is attached to the discharge device through screwing,

wherein the attachment part includes an inner cylindrical portion having an outlet opening, an outer cylindrical portion surrounding the inner cylindrical portion, and a screw portion,

the attachment/detachment mechanism includes a support member nonrotatably fixed to the discharge device and including a cylindrical part having an opening into which the inner cylindrical portion is inserted, the support member having a channel formed therein for communication between the outlet opening and a nozzle of the discharge device,

the attachment/detachment mechanism includes a rotation member rotatably fitted on an outer surface of the cylindrical part of the support member so as to rotate about an axis of the cylindrical part, the rotation member including a screw portion engaging with the screw portion of the attachment part, and

the syringe is attached to the discharge device with rotation of the rotation member.

2. The syringe attachment/detachment mechanism according to claim 1, wherein the support member has an annular groove formed in a lateral peripheral surface thereof,

the rotation member has a lateral insertion hole positioned in an opposing relation to the annular groove, and

the attachment/detachment mechanism further includes one or

more slip-off preventers each extending through both the lateral insertion hole and the annular groove.

3. The syringe attachment/detachment mechanism according to claim 1, wherein the inner cylindrical portion has a tapered outer peripheral surface becoming thinner toward the outlet opening, and

the cylindrical part is provided with an upper insertion hole having a tapered inner peripheral surface that is contacted with the tapered outer peripheral surface of the inner cylindrical portion.

4. The syringe attachment/detachment mechanism according to claim 1, wherein the support member includes a support portion having a larger diameter than the cylindrical part, and

the rotation member includes a raised portion having a through-hole into which the cylindrical part is inserted, an operating portion having a larger diameter than the raised portion, and a recess into which the support portion is fitted.

5. The syringe attachment/detachment mechanism according to claim 4, wherein a lateral surface of the operating portion is treated with a process for anti-slipping.

6. A discharge device comprising:

a nozzle having a discharge port;

a liquid chamber that is communicated with the discharge port, and that is supplied with a liquid material;

a main body including the liquid chamber formed therein;

a coupling member connected to the main body and including a channel formed therein to be communicated with the nozzle;

a propulsion force applier arranged in the liquid chamber and giving a propulsion force necessary for discharge to the liquid material;

a propulsion-force applier driver configured to operate the propulsion force applier; and a discharge controller,

wherein the discharge device includes the syringe attachment/detachment mechanism according to claim 1.

7. An application apparatus comprising the discharge device according to claim 6;

a compressed gas source that supplies compressed gas for applying pressure to a syringe;

the syringe including an attachment part and an upper connection part, and being attached to the syringe attachment/detachment mechanism through screwing;

an adapter connected to a tube that communicates the syringe and the compressed gas source with each other, and being mounted to the upper connection part;

a worktable on which an application object is placed;

XYZ-axis drive devices that relatively move the discharge device and the worktable; and

an application controller that controls operations of the XYZ-axis drive devices.

8. The application apparatus according to claim 7, wherein the upper connection part of the syringe is constituted by an elongate flange

extending in one straight line.

9. The application apparatus according to claim 7, wherein the discharge device is constituted by a plurality of discharge devices arranged in such a state that coupling members of respective discharge devices are positioned parallel to each other.