Claims

[Claim 1] A liquid cartridge configured to be inserted into a cartridge-attachment section, comprising:

a casing comprising:

a liquid chamber storing liquid therein;

a liquid passage extending in a first direction crossing a gravitational direction from a liquid chamber in an upright posture of the liquid cartridge; and

a top surface facing upward in the upright posture and formed with a recess defining a bottom portion;

a movable member having a light blocking portion configured to block or attenuate light emitted from the cartridge-attachment section and traveling in a widthwise direction crossing the first direction and the gravitational direction in the upright posture, the light blocking portion in the upright posture being configured to move between a first position and a second position, the light blocking portion in the second position being closer to the bottom portion than the light blocking portion in the first position is to the bottom portion, at least a part of the light blocking portion in the first position being positioned above the top surface in the upright posture;

an urging member (69, 70, 66A) configured to urge the movable member toward the first position; and

a circuit board positioned at the top surface at a position rearward relative to the movable member in the upright posture, the circuit board being configured to contact with an electrical contact positioned at the cartridge-attachment section in the upright posture,

wherein the movable member is positioned below the circuit board.

[Claim 2] The liquid cartridge according to claim 1, wherein the movable member in the upright posture is movable in the gravitational direction and supported to the casing; and

wherein the movable member has a first inclined surface facing upward in the upright posture and frontward in the first direction, and a second inclined surface facing upward in the upright posture and rearward opposite the first direction.

[Claim 3] The liquid cartridge according to claim 2, wherein the movable member further has an upper surface between the first inclined surface and the second inclined surface in the first direction, the upper surface being curved upward

to provide a convex shape when viewed in the widthwise direction in the upright posture.

[Claim 4] The liquid cartridge according to claim 1, wherein the movable member is supported to the casing;

wherein the movable member has a first surface facing frontward in the first direction, and has a second surface facing rearward in the first direction; and

wherein the movable member has an upper surface between the first surface and the second surface in the first direction, the upper surface being curved upward to provide a convex shape when viewed in the widthwise direction in the upright posture.

[Claim 5] The liquid cartridge according to claim 1, wherein the urging member comprises:

a first resilient member supporting the movable member; and

a second resilient member supporting the movable member at a position rearward relative to the first resilient member in the first direction.

[Claim 6] The liquid cartridge according to claim 1, wherein the urging member is positioned at the recess; and

wherein the movable member defines a first portion accommodated in the recess in the first position, and defines a second portion accommodated in the recess in the second position, the first portion having a volume smaller than a volume of the second portion.

[Claim 7] The liquid cartridge according to claim 1, wherein the urging member is positioned at the recess; and

wherein the movable member has a portion accommodated in the recess in the second position.

[Claim 8] The liquid cartridge according to claim 1, wherein an upper surface of the movable member is positioned below the circuit board.

[Claim 9] The liquid cartridge according to claim 1, wherein the liquid cartridge is inserted into the cartridge-attachment section against an urging force acting in a direction opposite to the first direction; and

wherein the liquid cartridge has a protrusion positioned rearward relative to the circuit board in the first direction, the protrusion and the light blocking portion defining a plurality of imaginary planes each of which passes through the protrusion and the light blocking portion, each of the plurality of imaginary planes extending in the widthwise direction, the plurality of imaginary planes including a specific imaginary plane defined by the

protrusion and the light blocking portion, the specific imaginary plane being positioned higher than any other imaginary plane between the protrusion and the light blocking portion, the circuit board being positioned downward relative to the specific imaginary plane in the gravitational direction in the upright posture.

[Claim 10] The liquid cartridge according to claim 9, wherein the protrusion comprises an engaging surface configured to engage with an engagement portion in the cartridge-attachment section in the upright posture;

wherein the liquid cartridge is movable between a first posture and a second posture relative to the cartridge-attachment section during insertion of the liquid cartridge into the cartridge-attachment section, the engaging surface in the first posture being in engagement with the engagement portion to hold the liquid cartridge in the cartridge-attachment section, the engaging surface being positioned below the engagement portion to be disengaged therefrom in the second posture.

[Claim 11] The liquid cartridge according to claim 1, wherein the light blocking portion is configured to be detected by an optical sensor provided in the cartridge-attachment section by blocking or attenuating light emitted from the optical sensor.

[Claim 12] A system comprising:

the liquid cartridge according to any one of claims 1 to 11; and

a printer including the cartridge-attachment section to which the liquid cartridge is configured to be inserted in the first direction and a consuming portion configured to consume the liquid stored in the liquid chamber of the liquid cartridge which is inserted to the cartridge-attachment section;

wherein the cartridge-attachment section includes:

an optical sensor configured to emit light; and

a liquid-supply tube having a tubular shape and protruding rearward, the liquid-supply tube having a base end in communication with the consuming portion, and an open tip end configured to be connected to the liquid passage of the liquid cartridge;

wherein the liquid-supply tube enters the liquid passage during insertion of the liquid cartridge into the cartridge-attachment section;

and

wherein the light blocking portion is positioned in an optical path of the light emitted from the optical sensor when the insertion of the liquid cartridge into

the cartridge attachment section is completed.