

dust or oxide coating on the surface of the terminal on the circuit board 40, the wiping amount is preferably not less than 1 mm. According to the graph of Fig. 42A, the board inclination angle ϕ is preferably not less than 25 degrees to ensure the wiping amount of not less than 1 mm.

[0141] Fig. 43A shows the relation of upward force F by the apparatus-side ground terminal 737 to the board inclination angle ϕ in consideration of preventing half insertion of the cartridge. The calculation of Fig. 43A is also on the assumption that the distance L_0 is equal to 63 mm, like the calculation of Fig. 42A. The weight of the cartridge (including the weight of ink) is assumed to be 30 grams. This value is the standard weight of the cartridge for inkjet printing apparatuses for household use. The "half insertion of the cartridge" denotes the state where the engagement portion 810 of the lever 80 is located just beside the elastic member 682 as shown in Fig. 25, i.e., the state immediately before the complete engagement. This state of half insertion is also called "half engagement". In this state of half engagement, only the apparatus-side ground terminal 737 among the plurality of apparatus-side contact forming members 731-739 applies the upward force to the circuit board 40. It should be noted that in the printing apparatus shown in Fig. 1, the holder 60 does not have a cover. When the user releases the hand in this state of half engagement, the cartridge 20 may be kept in this state of half engagement. The plot of Fig. 43A shows the calculation result of the upward force by the apparatus-side ground terminal 737 to prevent such half insertion of the cartridge 20. Fig. 43B shows the relation of the upward force F to the board inclination angle ϕ .

[0142] The upward force by the apparatus-side ground terminal 737 is a +Z-direction vector component (vertically upward vector component in this embodiment) of the force applied from the apparatus-side ground terminal 737 to the circuit board 40 (and the cartridge 20) in the state of half engagement of Fig. 26. When the ground terminal 437 of the circuit board 40 is pressed against the apparatus-side ground terminal 737, a pressing force in a direction perpendicular to the board surface of the circuit board 40 is applied to the ground terminal 437 by the elastic force of the apparatus-side ground terminal 737. The calculation of the upward force of Fig. 43A is on the assumption that pressing force F_0 of the apparatus-side ground terminal 737 is 0.2 N in the direction perpendicular to the board surface. Since the upward force F ($=F_0 \sin \phi$) is the +Z-direction vector component of the pressing force F_0 , $F = F_0 \sin \phi$ holds at the board inclination angle $\phi = 0$ degree as shown by the broken line in Fig. 43B. The upward force F varies according to the curve $F = F_0 \sin \phi$ with a variation in board inclination angle ϕ . The curve of Fig. 43A is the curve $F = F_0 \sin \phi$. With an increase in board inclination angle ϕ (ϕ approaching 90 degrees), the board

Claims

[Claim 1]

An ink cartridge adapted to be detachably mounted on an ink jet printing apparatus, the ink jet printing apparatus comprising a plurality of apparatus-side contact forming members constructed and arranged to apply elastic force to the ink cartridge when the ink cartridge is pressed against the apparatus-side contact forming members, the ink jet printing apparatus also comprising a lever having an engagement portion, the ink cartridge, comprising:

a cartridge body including a first surface, second surface, third surface and fourth surface, wherein the first surface and second surface are opposite each other and the third surface and fourth surface are opposite each other;

an electrical device;

an ink chamber for storing ink;

an ink supply structure positioned at the fourth surface of the cartridge body, adapted and configured to supply ink from the ink chamber to the ink jet printing apparatus, the ink supply structure having a mounting direction leading edge defining a plane of the ink cartridge;

a terminal bearing structure located proximate to the first surface of the cartridge body, the terminal bearing structure having a plurality of electrically conductive terminals coupled to the electrical device, the terminals adapted and arranged on the terminal bearing structure to make contact with and receive elastic force from the contact forming members when the ink cartridge is mounted on the printing apparatus, the terminals arranged substantially in a terminal plane which is neither parallel nor perpendicular to the plane defined by the leading edge; and a first restriction portion adapted to engage with the engagement portion of the lever so as to restrict movement of the ink cartridge in a direction opposite the mounting direction, the engagement portion of the first restriction portion located adjacent the terminal bearing structure.

[Claim 2]

The ink cartridge of claim 1, wherein the terminal plane is at an angle of between about 25 and 40 degrees to the plane defined by the leading edge.

[Claim 3]

The ink cartridge of claim 1, wherein when the first surface of the cartridge body is viewed with the ink supply structure facing down, the engagement portion of the first restriction portion is located to the left

of a right edge of a rightmost terminal of the plurality of terminals and to the right of a left edge of a leftmost terminal of the plurality of terminals.

[Claim 4] The ink cartridge of claim 1 further comprising a second restriction portion on the second surface of the ink cartridge, the second restriction portion adapted and configured to engage with a respective portion of the ink jet printing apparatus, wherein the distance between the engagement portion of the second restriction portion and the plane defined by the leading edge is more than the distance between the engagement portion of the first restriction portion and the plane defined by the leading edge, when the distances are measured in an orthogonal direction to the plane defined by the leading edge.

[Claim 5] The ink cartridge of claim 1, wherein when viewing the ink cartridge from the side with the engagement portion of the first restriction portion to the right and the ink supply structure facing down, the distance between the engagement portion of the first restriction portion and the plane defined by the leading edge is less than the distance between a pivot point of the lever and the plane defined by the leading edge when the cartridge is mounted, when the distances are measured in an orthogonal direction to the plane defined by the leading edge.

[Claim 6] The ink cartridge of claim 1 wherein when viewing the ink cartridge from the side with the engagement portion of the first restriction portion to the right and the ink supply structure facing down, the engagement portion of the first restriction portion is to the left of a pivot point of the lever when the cartridge is mounted.

[Claim 7] The ink cartridge of claim 1, wherein when the first surface of the cartridge body is viewed with the ink supply structure facing down, at least a portion of the engagement portion of the first restriction portion is located substantially at the widthwise center of the ink cartridge when the cartridge is mounted.

[Claim 8] The ink cartridge of claim 1, wherein the plane defined by the leading edge is substantially flush with the fourth surface.

[Claim 9] A combination of an ink cartridge and a portion of an ink jet printing apparatus, the combination comprising:
a portion of an ink jet printing apparatus, the portion comprising:
a plurality of apparatus-side contact forming members applying an elastic force to the ink cartridge; and
a lever having an engagement portion;

an ink cartridge, the ink cartridge comprising:

a cartridge body including a first surface, second surface, third surface and fourth surface, wherein the first surface and second surface are opposite each other and the third surface and fourth surface are opposite each other;

an electrical device;

an ink chamber for storing ink;

an ink supply structure positioned at the fourth surface of the cartridge body, adapted and configured to supply ink from the ink chamber to the ink jet printing apparatus, the ink supply structure having a mounting direction leading edge defining a plane of the ink cartridge;

a terminal bearing structure located proximate to the first surface of the cartridge body, the terminal bearing structure having a plurality of electrically conductive terminals coupled to the electrical device, the terminals on the terminal bearing structure contacting with and receiving elastic force from the contact forming members, the terminals arranged substantially in a terminal plane which is neither parallel nor perpendicular to the plane defined by the leading edge; and

a first restriction portion engaged with the engagement portion of the lever so as to restrict movement of the ink cartridge in a direction opposite the mounting direction, the engagement portion of the first restriction portion located adjacent the terminal bearing structure.

[Claim 10] The combination of claim 9, wherein the terminal plane is at an angle of between about 25 and 40 degrees to the plane defined by the leading edge.

[Claim 11] The combination of claim 9, wherein when the first surface of the cartridge body is viewed with the ink supply structure facing down, the engagement portion of the first restriction portion is located to the left of a right edge of a rightmost terminal of the plurality of terminals and to the right of a left edge of a leftmost terminal of the plurality of terminals.

[Claim 12] The combination of claim 9 further comprising a second restriction portion on the second surface of the ink cartridge, the second restriction portion engaged with a respective portion of the ink jet printing apparatus, wherein the distance between the engagement portion of the second restriction portion and the plane defined by the leading edge is more than the distance between the engagement portion of the first restriction portion and the plane defined by the leading edge, when the

distances are measured in an orthogonal direction to the plane defined by the leading edge.

[Claim 13]

The combination of claim 9, wherein the lever has two ends and a pivot point intermediate the two ends and wherein when viewing the ink cartridge from the side with the engagement portion of the first restriction portion to the right and the ink supply structure facing down, the distance between the engagement portion of the first restriction portion and the plane defined by the leading edge is less than the distance between the pivot point of the lever and the plane defined by the leading edge, when the distances are measured in an orthogonal direction to the plane defined by the leading edge.

[Claim 14]

The combination of claim 9, wherein the lever has two ends and a pivot point intermediate the two ends and wherein when viewing the ink cartridge from the side with the engagement portion of the first restriction portion to the right and the ink supply structure facing down, the engagement portion of the first restriction portion is to the left of the pivot point of the lever.

[Claim 15]

The combination of claim 9, wherein when the first surface of the cartridge body is viewed with the ink supply structure facing down, at least a portion of the engagement portion of the first restriction portion is located substantially at the widthwise center of the ink cartridge.

[Claim 16]

The combination of claim 9, wherein the plane defined by the leading edge is substantially flush with the fourth surface.

[Claim 17]

A cartridge detachably attached to a printing apparatus, the printing apparatus comprising:

a cartridge mounting structure configured to have: (i) a apparatus-side bottom wall member; (ii) a first apparatus-side side wall member provided to intersect the apparatus-side bottom wall member; and (iii) a second apparatus-side side wall member provided to intersect the apparatus-side bottom wall member and to be opposed to the first apparatus-side side wall member;

a printing material supply tube structured to have a base end provided on the apparatus-side bottom wall member and a peripheral end to be connected with the cartridge and configured to supply a printing material contained in the cartridge to a head;

a plurality of apparatus-side terminals provided in a apparatus-side corner section where the apparatus-side bottom wall member intersects the first apparatus-side side wall member; and

a lever provided on the first apparatus-side side wall member in a rotatable manner to be used for attachment and detachment of the cartridge to and from the printing apparatus, wherein

a Z axis represents an axis parallel to a central axis C of the printing material supply tube, an X axis represents an axis, along which the printing material supply tube and the apparatus-side terminals are arrayed and which is orthogonal to the Z axis, and a Y axis represents an axis orthogonal to both the Z axis and the X axis, wherein a +Z-axis direction represents a direction along the Z axis going from the base end to the peripheral end of the printing material supply tube, a -Z-axis direction represents a reverse direction to the +Z-axis direction, a +X-axis direction represents a direction along the X axis going from the printing material supply tube to the apparatus-side terminals, a -X-axis direction represents a reverse direction to the +X-axis direction, a +Y-axis direction represents a direction along the Y axis going to one end, and -Y-axis direction represents a direction along the Y axis going to the other end, wherein

the apparatus-side terminals are in contact with the cartridge to apply a force to the cartridge in a specified direction including the +Z-axis direction component in an attached state of the cartridge to the cartridge mounting structure, and

the lever has an operating member at the +Z-axis direction end and a first apparatus-side restriction element at the -Z-axis direction end to lock the cartridge and thereby restrict motion of the cartridge in the +Z-axis direction, the lever rotating about a specified position between the operating member and the first apparatus-side restriction element as an axis of rotation, wherein

the X axis, the Y axis and the Z axis relative to the cartridge in the attached state respectively correspond to an X axis, a Y axis and a Z axis of the cartridge,

the cartridge comprising:

a first face located on the -Z-axis direction side and a second face located on the +Z-axis direction side, as two faces opposed to each other in the Z-axis direction;

a third face located on the +X-axis direction side and a fourth face located on the -X-axis direction side, as two faces opposed to each other in the X-axis direction and intersecting the first face and the second face;

a corner section arranged to connect the first face with the third face;
a sloped surface provided to form part of the corner section and inclined in a specific direction including the +X-axis direction component and the -Z-axis direction component;
a printing material supply structure provided on the first face to be connected with the printing material supply tube;
a plurality of cartridge-side terminals provided corresponding to the respective apparatus-side terminals and located on the sloped surface to receive a force in a specified direction including the +Z-axis direction component from the apparatus-side terminals; and
a first cartridge-side restriction portion configured to be locked by the first apparatus-side restriction element and thereby restrict motion of the cartridge in the +Z-axis direction, wherein
the first cartridge-side restriction portion is provided at a specific position on the third face close to an intersecting part, where the third face intersects the sloped surface.

[Claim 18]

The cartridge according to claim 17, further comprising:
a circuit board configured to have the cartridge-side terminals provided on a surface and a memory unit provided on a rear face, wherein
the sloped surface is formed by the surface of the circuit board, and
the first cartridge-side restriction portion is located close to a board end on the +Z-axis direction side of the circuit board.

[Claim 19]

The cartridge according to either one of claims 17 and 18, wherein
the first cartridge-side restriction portion is provided at a position intersecting a plane, which passes through center of a width or the Y-axis direction length of the cartridge and is parallel to the Z axis and the X axis.

[Claim 20]

The cartridge according to any one of claims 17 to 19, wherein
the cartridge-side terminals comprise:
a first terminal including a first outer part located at the most +Y-axis direction end; and
a second terminal including a second outer part located at the most -Y-axis direction end, wherein
at least part of the first cartridge-side restriction portion is located between the first outer part and the second outer part in the Y-axis direction.

[Claim 21]

The cartridge according to claim 20, wherein
the first cartridge-side restriction portion is located not outside but

inside of a range between the first outer part and the second outer part in the Y-axis direction.

[Claim 22]

The cartridge according to any one of claims 17 to 21, further comprising:

a second cartridge-side restriction portion configured to be locked by a second apparatus-side restriction element provided on the second apparatus-side side wall member and thereby restrict motion of the cartridge in the +Z-axis direction, and

the second cartridge-side restriction portion is provided on the fourth face.

[Claim 23]

The cartridge according to claim 22, wherein the second cartridge-side restriction portion is a projection to be inserted in the second apparatus-side restriction element formed as a recess or a through hole.

[Claim 24]

The cartridge according to any one of claims 17 to 23, wherein the first cartridge-side restriction portion is located on the -X-axis direction side of the axis of rotation of the lever.

[Claim 25]

The cartridge according to claim 24, wherein the first cartridge-side restriction portion has a first abutting part that abuts a first portion of the first apparatus-side restriction element to restrict motion of the cartridge in the +Z-axis direction, and a second abutting part that abuts a second portion of the first apparatus-side restriction element to restrict motion of the cartridge in the +X-axis direction.

[Claim 26]

The cartridge according to any one of claims 17 to 25, further comprising:

a projection configured to abut the operating member of the lever and receive a force including the +Z-axis direction component during detachment of the cartridge attached to the cartridge mounting structure from the cartridge mounting structure, and

the projection is provided on the +Z-axis direction side of the first cartridge-side restriction portion on the third face.

[Claim 27]

The cartridge according to any one of claims 17 to 26, wherein the corner section has a step extended from the first face in the +Z-axis direction,

the step is located on the -X-axis direction side and the -Z-axis direction side of the sloped surface, and

the step has a third cartridge-side restriction element that is in contact

with a third apparatus-side restriction element provided on the cartridge mounting structure, so as to restrict motion of the cartridge in the Y-axis direction.

[Claim 28]

The cartridge according to claim 27, wherein the third cartridge-side restriction element comprises a pair of projection members configured to receive the third apparatus-side restriction element protruded from the apparatus-side bottom wall member in the +Z-axis direction, and the pair of projection members are protruded from the step in the +X-axis direction.

[Claim 29]

The cartridge according to either one of claims 27 and 28, wherein part of the third cartridge-side restriction element overlaps the sloped surface, when the cartridge is viewed from the first face side in the +Z-axis direction.

[Claim 30]

The cartridge according to any one of claims 17 to 29, wherein the printing material supply structure is provided at a specific position on the first face closer to the fourth face than the third face.

[Claim 31]

The cartridge according to any one of claims 17 to 30, wherein the first cartridge-side restriction portion is a projection.

[Claim 32]

The cartridge according to any one of claims 17 to 31, wherein the cartridge-side terminals include a cartridge-side ground terminal that is in contact with a apparatus-side ground terminal of the apparatus-side terminals, which is connected with a ground line, and the cartridge-side ground terminal is provided on center of the width or the Y-axis direction length of the cartridge and is configured to be in contact with the apparatus-side ground terminal before any other cartridge-side terminal is in contact with a corresponding apparatus-side terminal in the course of attachment of the cartridge to the cartridge mounting structure.

[Claim 33]

The cartridge according to claim 32, wherein a Z-axis direction length of the cartridge-side ground terminal is longer than the Z-axis direction length of the other cartridge-side terminal.

[Claim 34]

A cartridge detachably attached to a printing apparatus, the printing apparatus comprising:
a cartridge mounting structure configured to allow attachment and detachment of the cartridge;
a printing material supply tube structured to have a base end provided on a bottom of the cartridge mounting structure and a peripheral end to

be connected with the cartridge and configured to supply a printing material contained in the cartridge to a head;
a plurality of apparatus-side terminals provided to be in contact with the cartridge; and
a lever provided to be used for attachment and detachment of the cartridge, wherein
a Z axis represents an axis parallel to a central axis C of the printing material supply tube, an X axis represents an axis, along which the printing material supply tube and the apparatus-side terminals are arrayed and which is orthogonal to the Z axis, and a Y axis represents an axis orthogonal to both the Z axis and the X axis, wherein a +Z-axis direction represents a direction along the Z axis going from the base end to the peripheral end of the printing material supply tube, a -Z-axis direction represents a reverse direction to the +Z-axis direction, a +X-axis direction represents a direction along the X axis going from the printing material supply tube to the apparatus-side terminals, a -X-axis direction represents a reverse direction to the +X-axis direction, a +Y-axis direction represents a direction along the Y axis going to one end, and -Y-axis direction represents a direction along the Y axis going to the other end, wherein
the apparatus-side terminals are in contact with the cartridge to apply a force to the cartridge in a specified direction including the +Z-axis direction component in an attached state of the cartridge to the cartridge mounting structure, and
the lever has an operating member at the +Z-axis direction end and a first apparatus-side restriction element at the -Z-axis direction end to lock the cartridge and thereby restrict motion of the cartridge in the +Z-axis direction, the lever rotating about a specified position between the operating member and the first apparatus-side restriction element as an axis of rotation, wherein
the X axis, the Y axis and the Z axis with respect to the cartridge in the attached state respectively correspond to an X axis, a Y axis and a Z axis of the cartridge,
the cartridge comprising:
a printing material supply structure located at the -Z-axis direction end of the cartridge to be connected with the printing material supply tube;
a circuit board located on the +X-axis direction side of the printing material supply structure and has a surface inclined in a specified

direction including the +X-axis direction component and the -Z-axis direction component;

a plurality of cartridge-side terminals provided corresponding to the respective apparatus-side terminals and located on the surface of the circuit board to receive a force in a specified direction including the +Z-axis direction component from the apparatus-side terminals; and
a first cartridge-side restriction portion configured to be locked by the first apparatus-side restriction element and thereby restrict motion of the cartridge in the +Z-axis direction and located on the +X-axis direction side of the printing material supply structure, wherein the first cartridge-side restriction portion is provided at a specific position close to a board end, the board end being located on the +Z-axis direction side of the surface of the circuit board.

[Claim 35]

A printing material supply system, comprising:

a printing apparatus; and

the cartridge according to any one of claims 17 to 34,

the printing apparatus comprising:

a cartridge mounting structure configured to have: (i) a apparatus-side bottom wall member; (ii) a first apparatus-side side wall member provided to intersect the apparatus-side bottom wall member; and (iii) a second apparatus-side side wall member provided to intersect the apparatus-side bottom wall member and to be opposed to the first apparatus-side side wall member;

a printing material supply tube structured to have a base end provided on the apparatus-side bottom wall member and a peripheral end to be connected with the cartridge and configured to supply a printing material contained in the cartridge to a head;

a plurality of apparatus-side terminals provided in a apparatus-side corner section where the apparatus-side bottom wall member intersects the first apparatus-side side wall member; and

a lever provided on the first apparatus-side side wall member in a rotatable manner to be used for attachment and detachment of the cartridge to and from the printing apparatus, wherein

a Z axis represents an axis parallel to a central axis C of the printing material supply tube, an X axis represents an axis, along which the printing material supply tube and the apparatus-side terminals are arrayed and which is orthogonal to the Z axis, and a Y axis represents an axis orthogonal to both the Z axis and the X axis, wherein a +Z-axis

direction represents a direction along the Z axis going from the base end to the peripheral end of the printing material supply tube, a -Z-axis direction represents a reverse direction to the +Z-axis direction, a +X-axis direction represents a direction along the X axis going from the printing material supply tube to the apparatus-side terminals, a -X-axis direction represents a reverse direction to the +X-axis direction, a +Y-axis direction represents a direction along the Y axis going to one end, and -Y-axis direction represents a direction along the Y axis going to the other end, wherein

the apparatus-side terminals are in contact with the cartridge to apply a force to the cartridge in a specified direction including the +Z-axis direction component in an attached state of the cartridge to the cartridge mounting structure, and

the lever has an operating member at the +Z-axis direction end and a first apparatus-side restriction element at the -Z-axis direction end to lock the cartridge and thereby restrict motion of the cartridge in the +Z-axis direction, the lever rotating about a specified position between the operating member and the first apparatus-side restriction element as an axis of rotation.

[Claim 36]

A cartridge detachably attached to a printing apparatus, the printing apparatus comprising:

a cartridge mounting structure configured to have: (i) a apparatus-side bottom wall member; (ii) a first apparatus-side side wall member provided to intersect the apparatus-side bottom wall member; and (iii) a second apparatus-side side wall member provided to intersect the apparatus-side bottom wall member and to be opposed to the first apparatus-side side wall member;

a printing material supply tube structured to have a base end provided on the apparatus-side bottom wall member and a peripheral end to be connected with the cartridge and configured to supply a printing material contained in the cartridge to a head;

a plurality of apparatus-side terminals provided in a apparatus-side corner section where the apparatus-side bottom wall member intersects the first apparatus-side side wall member; and

a lever provided on the first apparatus-side side wall member in a rotatable manner to be used for attachment and detachment of the cartridge to and from the printing apparatus, wherein

a Z axis represents an axis parallel to a central axis C of the printing

material supply tube, an X axis represents an axis, along which the printing material supply tube and the apparatus-side terminals are arrayed and which is orthogonal to the Z axis, and a Y axis represents an axis orthogonal to both the Z axis and the X axis, wherein a +Z-axis direction represents a direction along the Z axis going from the base end to the peripheral end of the printing material supply tube, a -Z-axis direction represents a reverse direction to the +Z-axis direction, a +X-axis direction represents a direction along the X axis going from the printing material supply tube to the apparatus-side terminals, a -X-axis direction represents a reverse direction to the +X-axis direction, a +Y-axis direction represents a direction along the Y axis going to one end, and -Y-axis direction represents a direction along the Y axis going to the other end, wherein

the apparatus-side terminals are in contact with the cartridge to apply a force to the cartridge in a specified direction including the +Z-axis direction component in an attached state of the cartridge to the cartridge mounting structure, and

the lever has an operating member at the +Z-axis direction end and a first apparatus-side restriction element at the -Z-axis direction end to lock the cartridge and thereby restrict motion of the cartridge in the +Z-axis direction, the lever rotating about a specified position between the operating member and the first apparatus-side restriction element as an axis of rotation, wherein

the X axis, the Y axis and the Z axis with respect to the cartridge in the attached state respectively correspond to an X axis, a Y axis and a Z axis of the cartridge,

the cartridge comprising:

a first face located on the -Z-axis direction side and a second face located on the +Z-axis direction side, as two faces opposed to each other in the Z-axis direction;

a third face located on the +X-axis direction side and a fourth face located on the -X-axis direction side, as two faces opposed to each other in the X-axis direction and intersecting the first face and the second face;

a corner section arranged to connect the first face with the third face;

a sloped surface provided to form part of the corner section and inclined in a specific direction including the +X-axis direction component and the -Z-axis direction component;

a printing material supply structure provided on the first face to be connected with the printing material supply tube;
a plurality of cartridge-side terminals provided corresponding to the respective apparatus-side terminals and located on the sloped surface to receive a force in a specified direction including the +Z-axis direction component from the apparatus-side terminals; and
a first cartridge-side restriction portion configured to be locked by the first apparatus-side restriction element and thereby restrict motion of the cartridge in the +Z-axis direction, wherein
the first cartridge-side restriction portion is provided on the third face, and
the cartridge-side terminals comprise:
a first terminal including a first outer part located at the most +Y-axis direction end; and
a second terminal including a second outer part located at the most - Y-axis direction end, wherein
the first cartridge-side restriction portion is located not outside but inside a range between the first outer part and the second outer part in the Y-axis direction.

[Claim 37] The cartridge according to claim 36, wherein
the first cartridge-side restriction portion is provided at a specific position close to an intersecting part, where the third face intersects the sloped surface.

[Claim 38] The cartridge according to either one of claims 36 and 37, further comprising:
a circuit board configured to have the cartridge-side terminals provided on a surface and a memory unit provided on a rear face, wherein
the sloped surface is formed by the surface of the circuit board, and
the first cartridge-side restriction portion is located close to a board end on the +Z-axis direction side of the circuit board.

[Claim 39] The cartridge according to any one of claims 36 to 38, wherein
the first cartridge-side restriction portion is provided at a position intersecting a plane, which passes through center of a width or the Y-axis direction length of the cartridge and is parallel to the Z axis and the X axis.

[Claim 40] The cartridge according to any one of claims 36 to 39, further comprising:
a second cartridge-side restriction portion configured to be locked by a

second apparatus-side restriction element provided on the second apparatus-side side wall member and thereby restrict motion of the cartridge in the +Z-axis direction, and the second cartridge-side restriction portion is provided on the fourth face.

[Claim 41] The cartridge according to claim 40, wherein the second cartridge-side restriction portion is a projection to be inserted in the second apparatus-side restriction element formed as a recess or a through hole.

[Claim 42] The cartridge according to any one of claims 36 to 41, wherein the first cartridge-side restriction portion is located on the -X-axis direction side of the axis of rotation of the lever.

[Claim 43] The cartridge according to any one of claims 36 to 42, wherein the first cartridge-side restriction portion has a first abutting part that abuts a first portion of the first apparatus-side restriction element to restrict motion of the cartridge in the +Z-axis direction, and a second abutting part that abuts a second portion of the first apparatus-side restriction element to restrict motion of the cartridge in the +X-axis direction.

[Claim 44] The cartridge according to any one of claims 36 to 43, further comprising:
a projection configured to abut the operating member of the lever and receive a force including the +Z-axis direction component during detachment of the cartridge attached to the cartridge mounting structure from the cartridge mounting structure, and the projection is provided on the +Z-axis direction side of the first cartridge-side restriction portion on the third face.

[Claim 45] The cartridge according to any one of claims 36 to 44, wherein the corner section has a step extended from the first face in the +Z-axis direction,
the step is located on the -X-axis direction side and the -Z-axis direction side of the sloped surface, and
the step has a third cartridge-side restriction element that is in contact with a third apparatus-side restriction element provided on the cartridge mounting structure, so as to restrict motion of the cartridge in the Y-axis direction.

[Claim 46] The cartridge according to claim 45, wherein the third cartridge-side restriction element comprises a pair of

projection members configured to receive the third apparatus-side restriction element protruded from the apparatus-side bottom wall member in the +Z-axis direction, and
the pair of projection members are protruded from the step in the +X-axis direction.

[Claim 47] The cartridge according to either one of claims 45 and 46, wherein part of the third cartridge-side restriction element overlaps the sloped surface, when the cartridge is viewed from the first face side in the +Z-axis direction.

[Claim 48] The cartridge according to any one of claims 36 to 47, wherein the printing material supply structure is provided at a specific position on the first face closer to the fourth face than the third face.

[Claim 49] The cartridge according to any one of claims 36 to 48, wherein the first cartridge-side restriction portion is a projection.

[Claim 50] The cartridge according to any one of claims 36 to 49, wherein the cartridge-side terminals include a cartridge-side ground terminal that is in contact with a apparatus-side ground terminal of the apparatus-side terminals, which is connected with a ground line, and the cartridge-side ground terminal is provided on center of the width or the Y-axis direction length of the cartridge and is configured to be in contact with the apparatus-side ground terminal before any other cartridge-side terminal is in contact with a corresponding apparatus-side terminal in the course of attachment of the cartridge to the cartridge mounting structure.

[Claim 51] The cartridge according to claim 50, wherein a Z-axis direction length of the cartridge-side ground terminal is longer than the Z-axis direction length of the other cartridge-side terminal.

[Claim 52] A cartridge detachably attached to a printing apparatus, the printing apparatus comprising:
a cartridge mounting structure configured to allow attachment and detachment of the cartridge;
a printing material supply tube structured to have a base end provided on a bottom of the cartridge mounting structure and a peripheral end to be connected with the cartridge and configured to supply a printing material contained in the cartridge to a head;
a plurality of apparatus-side terminals provided to be in contact with the cartridge; and
a lever provided to be used for attachment and detachment of the

cartridge, wherein

a Z axis represents an axis parallel to a central axis C of the printing material supply tube, an X axis represents an axis, along which the printing material supply tube and the apparatus-side terminals are arrayed and which is orthogonal to the Z axis, and a Y axis represents an axis orthogonal to both the Z axis and the X axis, wherein a +Z-axis direction represents a direction along the Z axis going from the base end to the peripheral end of the printing material supply tube, a -Z-axis direction represents a reverse direction to the +Z-axis direction, a +X-axis direction represents a direction along the X axis going from the printing material supply tube to the apparatus-side terminals, and a -X-axis direction represents a reverse direction to the +X-axis direction, wherein

the apparatus-side terminals are in contact with the cartridge to apply a force to the cartridge in a specified direction including the +Z-axis direction component in an attached state of the cartridge to the cartridge mounting structure, and

the lever has an operating member at the +Z-axis direction end and a first apparatus-side restriction element at the -Z-axis direction end to lock the cartridge and thereby restrict motion of the cartridge in the +Z-axis direction, the lever rotating about a specified position between the operating member and the first apparatus-side restriction element as an axis of rotation, wherein

the X axis, the Y axis and the Z axis with respect to the cartridge in the attached state respectively correspond to an X axis, a Y axis and a Z axis of the cartridge,

the cartridge comprising:

a printing material supply structure located at the -Z-axis direction end of the cartridge to be connected with the printing material supply tube; a plurality of cartridge-side terminals provided on the +X-axis direction side of the printing material supply structure and corresponding to the respective apparatus-side terminals and located on a sloped surface inclined in a specified direction including the +X-axis direction component and the -Z-axis direction component to receive a force in a specified direction including the +Z-axis direction component from the apparatus-side terminals; and

a first cartridge-side restriction portion configured to be locked by the first apparatus-side restriction element and thereby restrict motion of

the cartridge in the +Z-axis direction and located on the +X-axis direction side of the printing material supply structure and on the -Z-axis direction side of the axis of rotation of the lever, wherein the cartridge-side terminals comprise:

a first terminal including a first outer part located at the most +Y-axis direction end; and

a second terminal including a second outer part located at the most -Y-axis direction end, wherein

the first cartridge-side restriction portion is located not outside but inside a range between the first outer part and the second outer part in the Y-axis direction.

[Claim 53]

A printing material supply system, comprising:

a printing apparatus; and

the cartridge according to any one of claims 36 to 52,

the printing apparatus comprising:

a cartridge mounting structure configured to have: (i) a apparatus-side bottom wall member; (ii) a first apparatus-side side wall member provided to intersect the apparatus-side bottom wall member; and (iii) a second apparatus-side side wall member provided to intersect the apparatus-side bottom wall member and to be opposed to the first apparatus-side side wall member;

a printing material supply tube structured to have a base end provided on the apparatus-side bottom wall member and a peripheral end to be connected with the cartridge and configured to supply a printing material contained in the cartridge to a head;

a plurality of apparatus-side terminals provided in a apparatus-side corner section where the apparatus-side bottom wall member intersects the first apparatus-side side wall member; and

a lever provided on the first apparatus-side side wall member in a rotatable manner to be used for attachment and detachment of the cartridge to and from the printing apparatus, wherein

a Z axis represents an axis parallel to a central axis C of the printing material supply tube, an X axis represents an axis, along which the printing material supply tube and the apparatus-side terminals are arrayed and which is orthogonal to the Z axis, and a Y axis represents an axis orthogonal to both the Z axis and the X axis, wherein a +Z-axis direction represents a direction along the Z axis going from the base end to the peripheral end of the printing material supply tube, a -Z-axis

direction represents a reverse direction to the +Z-axis direction, a +X-axis direction represents a direction along the X axis going from the printing material supply tube to the apparatus-side terminals, a -X-axis direction represents a reverse direction to the +X-axis direction, a +Y-axis direction represents a direction along the Y axis going to one end, and -Y-axis direction represents a direction along the Y axis going to the other end, wherein
the apparatus-side terminals are in contact with the cartridge to apply a force to the cartridge in a specified direction including the +Z-axis direction component in an attached state of the cartridge to the cartridge mounting structure, and
the lever has an operating member at the +Z-axis direction end and a first apparatus-side restriction element at the -Z-axis direction end to lock the cartridge and thereby restrict motion of the cartridge in the +Z-axis direction, the lever rotating about a specified position between the operating member and the first apparatus-side restriction element as an axis of rotation.

[Claim 54]

A cartridge adapted to be mounted on an printing apparatus having the following structures: the printing apparatus comprising a plurality of apparatus-side contact forming members arranged to apply elastic force to the cartridge, the printing apparatus also comprising a lever having an engagement portion, the cartridge, comprising:
a first face, second face, third face, and fourth face, wherein the first face and second face are opposite each other and the third face and fourth face are opposite each other;
an electrical device;
a liquid chamber for storing liquid;
an liquid supply structure positioned at the fourth face, configured to supply liquid from the liquid chamber to the printing apparatus, the liquid supply structure having a mounting direction leading edge defining a plane of the cartridge;
electrically conductive terminals located closer to the first face than to the second face and coupled to the electrical device, the terminals arranged to make contact with and to receive elastic force from the contact forming members at contact portions of the terminals when the cartridge is mounted on the printing apparatus, the contact portions of the terminals arranged substantially in a contact portion plane which is neither parallel nor perpendicular to the plane defined by the leading

edge; and

a first restriction portion adapted to engage with the engagement portion of the lever so as to restrict movement of the cartridge in a direction opposite the mounting direction, the engagement portion of the first restriction portion located at a position closer to the contact portions than to an intersection of the third face and the first face.

[Claim 55] The cartridge according to claim 54, wherein the engagement portion of the first restriction portion is located at a position closer to the contact portions than to the midpoint between an intersection of the first face and the contact portion plane and an intersection of the third face and the first face .

[Claim 56] The cartridge according to claim 54 or 55, wherein the contact portion plane is at an angle of between 25 and 40 degrees to the plane defined by the leading edge.

[Claim 57] The cartridge according to any one of claims 54 to 56, wherein when the first face of the cartridge is viewed with the liquid supply structure facing down, the engagement portion of the first restriction portion is located to the left of an extended line of a right edge of a rightmost terminal of the plurality of terminals and to the right of an extended line of a left edge of a leftmost terminal of the plurality of terminals.

[Claim 58] The cartridge according to any one of claims 54 to 57, further comprising a second restriction portion on the second face of the cartridge, the second restriction portion adapted to engage with a respective portion of the printing apparatus, wherein the distance between the engagement portion of second restriction portion and the plane defined by the leading edge is more than the distance between the engagement portion of the first restriction portion and the plane defined by the leading edge, when the distances are measured in an orthogonal direction to the plane defined by the leading edge.

[Claim 59] The cartridge according to any one of claims 54 to 58, wherein when viewing the cartridge from the angle with the engagement portion of the first restriction portion to the right and the liquid supply structure facing down, the distance between the engagement portion of the first restriction portion and the plane defined by the leading edge is less than the distance between a pivot point of the lever and the plane defined by the leading edge when the cartridge is mounted, when the distances are measured in an orthogonal direction to the direction to the plane defined by the leading edge.

- [Claim 60] The cartridge of claim 59, wherein when viewing the cartridge from the angle with the engagement portion of the first restriction portion to the right and the liquid supply structure facing down, the engagement portion of the first restriction portion is to the left of the pivot point of the lever when the cartridge is mounted.
- [Claim 61] The cartridge according to any one of claims 54 to 60, wherein when the first face of the cartridge body is viewed with the liquid supply structure facing down, at least a portion of the engagement portion of the first restriction portion is located substantially at the widthwise center of the cartridge when the cartridge is mounted.
- [Claim 62] The cartridge according to any one of claims 54 to 61, wherein the plane defined by the leading edge is substantially flush with the fourth face.
- [Claim 63] The cartridge according to any one of claims 54 to 62, comprising an adapter wherein the contact portions of the terminals and the first restriction portion are positioned on the adapter and the liquid chamber is adapted and configured to be mated with the adapter.
- [Claim 64] An cartridge adapted to be mounted on an printing apparatus, the printing apparatus comprising a plurality of apparatus-side contact forming members arranged to apply elastic force to the cartridge, the printing apparatus also comprising a lever having an engagement portion, the cartridge, comprising:
a first face, second face, third face, and fourth face, wherein the first face and second face are opposite each other and the third face and fourth face are opposite each other;
an electrical device;
a liquid chamber for storing liquid;
an liquid supply structure positioned at the fourth face, configured to supply liquid from the liquid chamber to the printing apparatus, the liquid supply structure having a mounting direction leading edge defining a plane of the cartridge;
electrically conductive terminals located closer to the first face than to the second face and coupled to the electrical device, the terminals arranged to make contact with and receive elastic force from the contact forming members at contact portions of the terminals when the cartridge is mounted on the printing apparatus, the contact portions of the terminals arranged substantially in a contact portion plane which is neither parallel nor perpendicular to the plane defined by the leading

edge; and

a first restriction portion adapted to engage with the engagement portion of the lever so as to restrict movement of the cartridge in a direction opposite the mounting direction, the first restriction portion provided at a position closer to a first intersection where the first face intersects the contact portion plane than to a second intersection where the first face intersects the third face.

[Claim 65] The cartridge according to claim 64, wherein the engagement portion of the first restriction portion is located at a position closer to the first intersection than to the midpoint between the first intersection and the second intersection.

[Claim 66] The cartridge according to claim 64 or 65, wherein the contact portion plane is at an angle of between 25 and 40 degrees to the plane defined by the leading edge.

[Claim 67] The cartridge according to any one of claims 64 to 66, wherein when the first face of the cartridge is viewed with the liquid supply structure facing down, the engagement portion of the first restriction portion is located to the left of an extended line of a right edge of a rightmost terminal of the plurality of terminals and to the right of an extended line of a left edge of a leftmost terminal of the plurality of terminals.

[Claim 68] The cartridge according to any one of claims 64 to 67, further comprising a second restriction portion on the second face of the cartridge, the second restriction portion adapted to engage with a respective portion of the printing apparatus, wherein the distance between the engagement portion of second restriction portion and the plane defined by the leading edge is more than the distance between the engagement portion of the first restriction portion and the plane defined by the leading edge, when the distances are measured in an orthogonal direction to the plane defined by the leading edge.

[Claim 69] The cartridge according to any one of claims 64 to 68, wherein when viewing the cartridge from the angle with the engagement portion of the first restriction portion to the right and the liquid supply structure facing down, the distance between the engagement portion of the first restriction portion and the plane defined by the leading edge is less than the distance between a pivot point of the lever and the plane defined by the leading edge when the cartridge is mounted, when the distances are measured in an orthogonal direction to the direction to the plane defined by the leading edge.

- [Claim 70] The cartridge of claim 69, wherein when viewing the cartridge from the angle with the engagement portion of the first restriction portion to the right and the liquid supply structure facing down, the engagement portion of the first restriction portion is to the left of the pivot point of the lever when the cartridge is mounted.
- [Claim 71] The cartridge according to any one of claims 64 to 70, wherein when the first face of the cartridge body is viewed with the liquid supply structure facing down, at least a portion of the engagement portion of the first restriction portion is located substantially at the widthwise center of the cartridge when the cartridge is mounted.
- [Claim 72] The cartridge according to any one of claims 64 to 71, wherein the plane defined by the leading edge is substantially flush with the fourth face.
- [Claim 73] The cartridge according to any one of claims 64 to 72, comprising an adapter wherein the contact portions of the terminals and the first restriction portion are positioned on the adapter and the liquid chamber is adapted and configured to be mated with the adapter.
- [Claim 74] A cartridge adapted to be mounted on a printing apparatus having the following structures: the printing apparatus comprising a plurality of apparatus-side contact forming members arranged to apply elastic force to the cartridge, the printing apparatus also comprising a lever having an engagement portion and a pivot point, the cartridge, comprising: a first face, second face, third face, and fourth face, wherein the first face and second face are opposite each other and the third face and fourth face are opposite each other;
an electrical device;
a liquid chamber for storing liquid;
an liquid supply structure positioned at the fourth face, configured to supply liquid from the liquid chamber to the printing apparatus, the liquid supply structure having a mounting direction leading edge defining a plane of the cartridge;
electrically conductive terminals located closer to the first face than to the second face and coupled to the electrical device, the terminals arranged to make contact with and to receive elastic force from the contact forming members at contact portions of the terminals when the cartridge is mounted on the printing apparatus, the contact portions of the terminals arranged substantially in a contact portion plane which is neither parallel nor perpendicular to the plane defined by the leading

edge; and

a first restriction portion adapted to engage with the engagement portion of the lever so as to restrict movement of the cartridge in a direction opposite the mounting direction, the engagement portion of the first restriction portion is disposed such that when the cartridge is mounted onto the printing apparatus, the engagement portion of the first restriction portion is engaged with the lever at a position beneath the pivot point of the lever.

[Claim 75] The cartridge of claim 74, wherein the contact portion plane is at an angle of between 25 and 40 degrees to the plane defined by the leading edge.

[Claim 76] The cartridge according to claim 74 or 75, wherein when the first face of the cartridge is viewed with the liquid supply structure facing down, the engagement portion of the first restriction portion is located to the left of an extended line of a right edge of a rightmost terminal of the plurality of terminals and to the right of an extended line of a left edge of a leftmost terminal of the plurality of terminals.

[Claim 77] The cartridge according to any one of claims 74 to 76, further comprising a second restriction portion on the second face of the cartridge, the second restriction portion adapted to engage with a respective portion of the printing apparatus, wherein the distance between the engagement portion of second restriction portion and the plane defined by the leading edge is more than the distance between the engagement portion of the first restriction portion and the plane defined by the leading edge, when the distances are measured in an orthogonal direction to the plane defined by the leading edge.

[Claim 78] The cartridge according to any one of claims 74 to 77, wherein when viewing the cartridge from the angle with the engagement portion of the first restriction portion to the right and the liquid supply structure facing down, the engagement portion of the first restriction portion is to the left of the pivot point of the lever when the cartridge is mounted.

[Claim 79] The cartridge according to any one of claims 74 to 78, wherein when the first face of the cartridge body is viewed with the liquid supply structure facing down, at least a portion of the engagement portion of the first restriction portion is located substantially at the widthwise center of the cartridge when the cartridge is mounted.

[Claim 80] The cartridge according to any one of claims 74 to 79, wherein the plane defined by the leading edge is substantially flush with the fourth

face.

[Claim 81]

The cartridge according to any one of claims 74 to 80, comprising an adapter wherein the contact portions of the terminals and the first restriction portion are positioned on the adapter and the liquid chamber is adapted and configured to be mated with the adapter.

[Claim 82]

An cartridge adapted to be mounted on an printing apparatus, the printing apparatus comprising a plurality of apparatus-side contact forming members arranged to apply elastic force to the cartridge, the printing apparatus also comprising a lever having an engagement portion, the cartridge comprising:
a front, a rear, a top, and a bottom, wherein the front and rear opposite each other and the top and bottom opposite each other;
an electrical device;
a liquid chamber for storing liquid;
an liquid supply structure positioned at the bottom, configured to supply liquid from the liquid chamber to the printing apparatus, the liquid supply structure having a mounting direction leading edge defining a plane of the cartridge;
electrically conductive terminals located closer to the front than to the rear and coupled to the electrical device, the terminals arranged to make contact with and receive elastic force from the contact forming members at contact portions of the terminals when the cartridge is mounted on the printing apparatus, the contact portions of the terminals arranged substantially in a contact portion plane which is neither parallel nor perpendicular to the plane defined by the leading edge; and
a first restriction portion adapted to engage with the engagement portion of the lever so as to restrict movement of the cartridge in a direction opposite the mounting direction, the first restriction portion provided at a position located closer to the contact portion plane than to the top.

[Claim 83]

The cartridge according to claim 82, wherein the engagement portion of the first restriction portion is located at a position closer to the contact portions than to the midpoint between an intersection of the front and the contact portion plane and the intersection of the top and the front .

[Claim 84]

The cartridge according to claim 82 or 83, wherein the contact portion plane is at an angle of between 25 and 40 degrees to the plane defined by the leading edge.

[Claim 85]

The cartridge according to any one of claims 82 to 84, wherein when

the front of the cartridge is viewed with the liquid supply structure facing down, the engagement portion of the first restriction portion is located to the left of an extended line of a right edge of a rightmost terminal of the plurality of terminals and to the right of an extended line of a left edge of a leftmost terminal of the plurality of terminals.

[Claim 86] The cartridge according to any one of claims 82 to 85, wherein the engagement portion is adapted to engage with a rotatable lever having a pivot point above the engagement portion of the first restriction portion.

[Claim 87] The cartridge according to any one of claims 82 to 86, further comprising a second restriction portion on the rear of the cartridge, the second restriction portion adapted to engage with a respective portion of the printing apparatus, wherein the distance between the engagement portion of second restriction portion and the plane defined by the leading edge is more than the distance between the engagement portion of the first restriction portion and the plane defined by the leading edge, when the distances are measured in an orthogonal direction to the plane defined by the leading edge.

[Claim 88] The cartridge according to claim 87, wherein the second restriction portion is adapted to serve as a pivot point of rotation when the cartridge is turned to be detached from a holder of the printing apparatus.

[Claim 89] The cartridge according to any one of claims 82 to 88, wherein when viewing the cartridge from the angle with the engagement portion of the first restriction portion to the right and the liquid supply structure facing down, the distance between the engagement portion of the first restriction portion and the plane defined by the leading edge is less than the distance between a pivot point of the lever and the plane defined by the leading edge when the cartridge is mounted, when the distances are measured in an orthogonal direction to the direction to the plane defined by the leading edge.

[Claim 90] The cartridge of claim 89, wherein when viewing the cartridge from the angle with the engagement portion of the first restriction portion to the right and the liquid supply structure facing down, the engagement portion of the first restriction portion is to the left of the pivot point of the lever when the cartridge is mounted.

[Claim 91] The cartridge according to any one of claims 82 to 90, wherein when the front of the cartridge body is viewed with the liquid supply structure facing down, at least a portion of the engagement portion of

- the first restriction portion is located substantially at the widthwise center of the cartridge when the cartridge is mounted.
- [Claim 92] The cartridge according to any one of claims 82 to 91, wherein the plane defined by the leading edge is substantially flush with the bottom.
- [Claim 93] The cartridge according to any one of claims 82 to 92, comprising an adapter wherein the contact portions of the terminals and the first restriction portion are positioned on the adapter and the liquid chamber is adapted and configured to be mated with the adapter.
- [Claim 94] Use of the cartridge of any one of claims 82 to 93, wherein the engagement portion of the cartridge is engaged with a movable lever of a printing apparatus in such a way that the lever has a pivot point above the engagement portion.
- [Claim 95] The combination of a cartridge and a printing apparatus, the combination comprising:
a cartridge according to any one of claims 82 to 93; and
a printing apparatus including a plurality of apparatus-side contact forming members applying an elastic force to the cartridge, and a lever having an engagement portion adapted to engage with the engagement portion of the first restriction portion of the cartridge so as to restrict movement of the cartridge in a direction opposite the mounting direction.
- [Claim 96] The combination of claim 95, wherein the lever has two ends and a pivot point intermediate the two ends, the pivot point of the lever is provided above the engagement portion of the first restriction portion of the cartridge.
- [Claim 97] The combination of claim 96, wherein the pivot point of the lever is provided to the right of the engagement portion of the first restriction portion of the cartridge.
- [Claim 98] A liquid supply system adapted to supply liquid to a printing apparatus, the printing apparatus comprising a plurality of apparatus-side contact forming members, the liquid supply system comprising:
an electrical device;
a liquid source;
an liquid supply structure adapted and configured to supply liquid from the liquid source to the printing apparatus, the liquid supply structure having a mounting direction leading edge defining a plane;
an adapter having: electrically conductive terminals coupled to the electrical device, the terminals arranged to make contact with and

receive elastic force from the contact forming members at contact portions of the terminals when the supply system supplies liquid to the printing apparatus, the contact portions of the terminals arranged substantially in a contact portion plane which is neither parallel nor perpendicular to the plane defined by the leading edge; and a first restriction portion provided on a front of the adapter and adapted to engage with the engagement portion of the lever so as to restrict movement of the adapter in a direction opposite the mounting direction, the first restriction portion positioned adjacent the contact portion plane.

[Claim 99] The liquid supply system of claim 98, wherein the contact portion plane is at an angle of between 25 and 40 degrees to the plane defined by the leading edge.

[Claim 100] The liquid supply system of claim 98 or claim 99, wherein when the front of the adapter is viewed with the liquid supply structure facing down, the engagement portion of the first restriction portion is located to the left of an extended line of a right edge of a rightmost terminal of the plurality of terminals and to the right of an extended line of a left edge of a leftmost terminal of the plurality of terminals.

[Claim 101] The liquid supply system according to any one of claims 98 to 100, further comprising a second restriction portion on a rear of the adapter, the second restriction portion adapted to engage with a respective portion of the printing apparatus, wherein the distance between the engagement portion of second restriction portion and the plane defined by the leading edge is more than the distance between the engagement portion of the first restriction portion and the plane defined by the leading edge, when the distances are measured in an orthogonal direction to the plane defined by the leading edge.

[Claim 102] The liquid supply system according to any one of claims 98 to 101, wherein when viewing the adapter from the angle with the engagement portion of the first restriction portion to the right and the liquid supply structure facing down, the distance between the engagement portion of the first restriction portion and the plane defined by the leading edge is less than the distance between a pivot point of the lever and the plane defined by the leading edge when the adapter is mounted, when the distances are measured in an orthogonal direction to the direction to the plane defined by the leading edge.

[Claim 103] The liquid supply system of claim 102, wherein when viewing the

adapter from the angle with the engagement portion of the first restriction portion to the right and the liquid supply structure facing down, the engagement portion of the first restriction portion is to the left of the pivot point of the lever when the adapter is mounted.

[Claim 104] The liquid supply system according to any one of claims 98 to 103, wherein when the front of the adapter is viewed with the liquid supply structure facing down, at least a portion of the engagement portion of the first restriction portion is located substantially at the widthwise center of the adapter when the adapter is mounted.

[Claim 105] The liquid supply system according to any one of claims 98 to 104, further comprising a container assembly having the liquid source therein and adapted to be mated with the adapter.

[Claim 106] The liquid supply system of claim 105, wherein the liquid supply structure is provided on the container assembly.

[Claim 107] The liquid supply system according to any one of claims 98 to 104, further comprising:
a tank having the liquid source therein;
an auxiliary adapter having the liquid supply structure; and
a tube connecting the tank and the auxiliary adapter.

Claims:

1. An ink cartridge for mounting on an ink jet printing apparatus, the ink jet printing apparatus comprising a plurality of apparatus-side contact forming members constructed and arranged to apply elastic force to the ink cartridge when the ink cartridge is pressed against said apparatus-side contact forming members, the ink jet printing apparatus also comprising a lever adapted to move with respect to the printing apparatus as the ink cartridge is mounted on the ink jet printing apparatus, the lever having an engagement portion, the ink cartridge comprising:

10 a cartridge body including a first surface, a second surface, a third surface and a fourth surface, wherein the first surface and the second surface are opposite each other, and the third surface and the fourth surface are opposite each other;

an ink supply structure positioned at the fourth surface of the cartridge body, the ink supply structure having a mounting direction leading edge defining a plane of the ink cartridge;

15 a plurality of terminals located proximate to the first surface of the cartridge body, the terminals arranged to make contact with and receive elastic force from the contact forming members at contact portions of said plurality of terminals

when the ink cartridge is mounted on the ink jet printing apparatus, the contact portions arranged substantially in a contact portion plane which is neither parallel nor perpendicular to the plane defined by the mounting direction leading edge; and

a first restriction portion including an engagement portion adapted to
5 engage with the engagement portion of the lever so as to restrict movement of the ink cartridge in a direction opposite the mounting direction, the engagement portion of the first restriction portion located adjacent the plurality of terminals.

2. The ink cartridge according to claim 1, wherein the contact portion plane is at
10 an angle of between about 25 and about 40 degrees to the plane defined by the mounting direction leading edge.

3. The ink cartridge according to claim 1 or 2, wherein when the first surface of the cartridge body is viewed with the ink supply structure facing down, the engagement
15 portion of the first restriction portion is located to the left of the rightmost contact portion of the plurality of terminals and to the right of the leftmost contact portion of the plurality of terminals.

4. The ink cartridge according to any one of claims 1 to 3, further comprising a second restriction portion on the second surface of the ink cartridge, the second restriction portion including an engagement portion adapted to engage with a respective portion of the ink jet printing apparatus, wherein the distance between the engagement
5 portion of the second restriction portion and the plane defined by the mounting direction leading edge is more than the distance between the engagement portion of the first restriction portion and the plane defined by the mounting direction leading edge, when the distances are measured in an orthogonal direction to the plane defined by the mounting direction leading edge.

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5. The ink cartridge according to any one of claims 1 to 4, wherein when viewing the ink cartridge from the side with the engagement portion of the first restriction portion to the right and the ink supply structure facing down, the distance between the engagement portion of the first restriction portion and the plane defined by the
15 mounting direction leading edge is less than the distance between a pivot point of the lever and the plane defined by the mounting direction leading edge when the cartridge is mounted, when the distances are measured in an orthogonal direction to the plane defined by the mounting direction leading edge.

6. The ink cartridge according to any one of claims 1 to 5, wherein when viewing the ink cartridge from the side with the engagement portion of the first restriction portion to the right and the ink supply structure facing down, the engagement portion of the first restriction portion is to the left of a pivot point of the lever when the cartridge is mounted.

7. The ink cartridge according to any one of claims 1 to 6, wherein when the first surface of the cartridge body is viewed with the ink supply structure facing down, at least a portion of the engagement portion of the first restriction portion is located substantially at the widthwise center of the ink cartridge.

8. The ink cartridge according to any one of claims 1 to 7, wherein the plane defined by the mounting direction leading edge is substantially flush with the fourth surface.

9. A combination of an ink cartridge and a portion of an ink jet printing apparatus, the combination comprising:

the portion of an ink jet printing apparatus, comprising:

a plurality of apparatus-side contact forming members for applying an elastic force to the ink cartridge; and

a lever having an engagement portion; and

5 the ink cartridge, comprising:

a cartridge body including a first surface, a second surface, a third surface and a fourth surface, wherein the first surface and the second surface are opposite each other, and the third surface and the fourth surface are opposite each other;

10 an ink supply structure positioned at the fourth surface of the cartridge body, the ink supply structure having a mounting direction leading edge defining a plane of the ink cartridge;

a plurality of electrically conductive terminals located proximate to the first surface of the cartridge body, the terminals on a terminal bearing structure
15 contacting with and receiving elastic force from the contact forming members, the terminals arranged substantially in a terminal plane which is neither parallel nor perpendicular to the plane defined by the mounting direction leading edge; and

a first restriction portion engaged with the engagement portion of the lever so as to restrict movement of the ink cartridge in a direction opposite the mounting direction, the engagement portion of the first restriction portion located adjacent the terminal bearing structure.

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10. The combination according to claim 9, wherein the terminal plane is at an angle of between about 25 and about 40 degrees to the plane defined by the mounting direction leading edge.

10 11. The combination according to claim 9 or 10, wherein when the first surface of the cartridge body is viewed with the ink supply structure facing down, the engagement portion of the first restriction portion is located to the left of a right edge of a rightmost terminal of the plurality of terminals and to the right of a left edge of a leftmost terminal of the plurality of terminals.

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12. The combination according to any one of claims 9 to 11, further comprising a second restriction portion on the second surface of the ink cartridge, the second restriction portion engaged with a respective portion of the ink jet printing apparatus,

wherein the distance between the engagement portion of the second restriction portion and the plane defined by the mounting direction leading edge is more than the distance between the engagement portion of the first restriction portion and the plane defined by the mounting direction leading edge, when the distances are measured in an orthogonal
5 direction to the plane defined by the mounting direction leading edge.

13. The combination according to any one of claims 9 to 12, wherein the lever has two ends and a pivot point intermediate the two ends and wherein when viewing the ink cartridge from the side with the engagement portion of the first restriction portion to the
10 right and the ink supply structure facing down, the distance between the engagement portion of the first restriction portion and the plane defined by the mounting direction leading edge is less than the distance between the pivot point of the lever and the plane defined by the mounting direction leading edge, when the distances are measured in an
orthogonal direction to the plane defined by the mounting direction leading edge.

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14. The combination according to any one of claims 9 to 13, wherein the lever has two ends and a pivot point intermediate the two ends and wherein when viewing the ink cartridge from the side with the engagement portion of the first restriction portion to the

right and the ink supply structure facing down, the engagement portion of the first restriction portion is to the left of the pivot point of the lever.

15. The combination according to any one of claims 9 to 14, wherein when the first
5 surface of the cartridge body is viewed with the ink supply structure facing down, at least a portion of the engagement portion of the first restriction portion is located substantially at the widthwise center of the ink cartridge.

16. The combination according to any one of claims 9 to 15, wherein the plane
10 defined by the mounting direction leading edge is substantially flush with the fourth surface.