Claims

1. A developing cartridge comprising:

a casing;

a developing roller having an axis L1, the developing roller being rotatably supported in the casing to permit rotation about the axis L1; and

a coupling member having an axis L2, the coupling member having (i) a first end portion operatively connected with the developing roller, (ii) a second end portion, and (iii) a connecting portion connecting the first end portion and the second end portion,

wherein the coupling member is movable between a first position in which the axis L2 of the coupling member is substantially parallel to and offset from the axis L1 of the developer roller, and a second position in which the axis L2 of the coupling member is inclined with respect to the axis L2 when the coupling member is in the first position, and

wherein when the coupling member is in the second position, the axis L2 of the coupling member is inclined from about 20 degrees to about 60 degrees with respect to the position of the axis L2 when the coupling member is in the first position.

2. A developing cartridge according to Claim 1, wherein said first end portion capable of transmitting a rotational force to the developing roller.

3. A developing cartridge according to Claim 1, wherein, when the coupling member is in the second position, a portion of the axis L2 at the second end portion side of the coupling member is nearer to the axis L1 than a portion of the axis L2 at the first end portion side of the coupling member.

4. A developing cartridge according to Claim 3, wherein the coupling member is movable to a third position in which the axis L2 is inclined with respect to the position of the axis L2 when the coupling member is in the first position and in a direction opposite to the direction the coupling member is inclined when in the second position.

5. A developing cartridge according to Claim 4, wherein, when

the coupling member is in the third position, a portion of the axis L2 at the first end portion side of the coupling member is nearer to the axis L1 than a portion of the axis L2 at the second end portion side of the coupling member.

6. A developing cartridge according to Claim 5, wherein the casing comprises a guide portion capable of guiding the coupling member toward the second position.

7. A developing cartridge according to Claim 6, further comprising a contact portion capable of contacting the coupling member to position the coupling member at the second position.

8. A developing cartridge according to Claim 7, wherein the casing comprises a bearing member, and said developing roller comprises a shaft which is rotatably supported by said bearing member.

9. A developing cartridge according to Claim 7, wherein the casing provides the contact portion.

10. A developing cartridge according to Claim 5, wherein when the coupling member is in the third position, the axis L2 of the coupling member is inclined from about 20 degrees to about 60 degrees with respect to the position of the axis L2 when the coupling member is in the first position.

11. A developing cartridge according Claim 5, wherein the second end portion comprises a surface that is substantially perpendicular to the axis L2, and two projections extending from the surface at diametrically opposed positions.

12. A developing cartridge according to Claim 11, wherein the surface includes an opening to a recess, with the recess including a surface facing away from the developer roller.

13. A developing cartridge according to Claim 1, wherein the projection includes a surface at least a portion of which overhangs a portion of the second end portion.

14. A developing cartridge according to Claim 5, further comprising:

a first gear connected to the developing roller; and

a second gear connected to the coupling member and in meshing engagement with the first gear.

15. A developing cartridge according to Claim 14, wherein the second gear is connected to the coupling member such that coupling member can partially rotate about the axis L2 without transmitting a force to the second gear.

16. A developing cartridge according to Claim 15, wherein the second gear has a hollow portion, and at least part of the first end portion of the coupling member is in the hollow portion of the second gear.

17. A developing cartridge according to Claim 16, the first end portion of the coupling member is supported by the hollow portion.

18. A developing cartridge according to Claim 17, wherein the first end portion of the coupling member comprises substantially a spherical shape.

19. A developing cartridge according to Claim 18, wherein the connecting portion includes substantially a shaft along the axis L2.

20. A developing cartridge according to Claim 5, further comprising an urging member that biases the coupling member to the second position.

21. A developing cartridge according to Claim 20, wherein the urging member is a torsion spring that contacts the connecting portion of the coupling member.

22. A developing cartridge according to Claim 5, wherein the coupling member can be inclined in substantially any direction relative to the first position.

23. A developing cartridge according to Claim 5, wherein the coupling member is made from a resin material.

24. A developing cartridge according to Claim 5, wherein the resin material is polyacetal.

25. A developing cartridge according to Claim 5, wherein the coupling member is made from a metallic material.

What is claimed is:

1. An image forming apparatus cartridge comprising:

a casing;

a developer roller having an axis L1, the developer roller being rotatably supported in the casing to permit rotation about the axis L1;

a first gear connected to the developer roller;

a second gear in meshing engagement with the first gear; and

a coupling member having an axis L2, the coupling member having (i) a first end portion connected to the second gear and operatively connected with the developer roller so as to be capable of transmitting a rotational force to the developer roller via the first and second gears, (ii) a second end portion having a recess formed therein and including at least two projections provided at diametrically opposed positions, and (iii) a connecting portion connecting the first end portion and the second end portion,

wherein the coupling member is movable between a first position in which the axis L2 of the coupling member is substantially parallel to and offset from the axis L1 of the developer roller, and a second position in which the axis L2 of the coupling member is inclined with respect to the axis L1 of the developer roller, and

wherein a maximum angle of inclination of the axis L2 of the coupling member with respect to the axis L1 of the developer roller is about 20 degrees to about 60 degrees.

2. An image forming apparatus cartridge according to claim 1, wherein the casing comprises a bearing member rotatably supporting the developer roller.

3. An image forming apparatus cartridge according to claim 1, wherein the maximum angle of inclination of axis L2 of the coupling member is limited by contact between the coupling member and the casing.

4. An image forming apparatus cartridge according to claim 1, wherein the second end portion comprises a surface that is substantially perpendicular to the axis L2, and the at

least two projections extend from the surface substantially in the same direction as the axis L2 away from the connecting portion.

5. An image forming apparatus cartridge according to claim 4, wherein the surface includes an opening to the recess, and the recess includes a surface facing away from the first end portion.

6. An image forming apparatus cartridge according to claim 5, wherein the surface of the recess is slanted with respect to the axis L2.

7. An image forming apparatus cartridge according to claim 1, wherein the second gear is connected to the coupling member such that the coupling member can partially rotate about the axis L2 without transmitting a force to the second gear.

8. An image forming apparatus cartridge according to claim 1, wherein the second gear has a hollow portion, and at least part of the first end portion of the coupling member is in the hollow portion of the second gear.

9. An image forming apparatus cartridge according to claim 8, wherein the first end portion of the coupling member comprises a substantially spherical shape.

10. An image forming apparatus cartridge according to claim 1, wherein the coupling member can be inclined in substantially any direction relative to the first position.

11. An image forming apparatus cartridge according to claim 1, wherein at least the second end portion of the coupling member is outside of the casing.

12. An image forming apparatus cartridge comprising:

a casing;

a developer roller having an axis L1, the developer roller being rotatably supported in the casing to permit rotation about the axis L1; and

a coupling member having an axis L2, the coupling member having (i) a first end portion operatively connected with the developer roller, (ii) a second end portion, and (iii) a connecting portion connecting the first end portion and the second end portion,

wherein the coupling member is movable between a first position in which the axis L2 of the coupling member is substantially parallel to and offset from the axis L1 of the developer roller, and a second position in which the axis L2 of the coupling member is fully inclined with respect to the axis L2 when the coupling member is in the first position and in which a portion of the axis L2 at the second end portion side of the coupling member is nearer to the axis L1 than a portion of the axis L2 at the first end portion side of the coupling member, and

wherein when the coupling member is in the second position, the axis L2 of the coupling member is inclined from about 20 degrees to about 60 degrees with respect to the axis L1.

13. An image forming apparatus cartridge according to claim 12, wherein the coupling member is movable to a third position in which the axis L2 is fully inclined with respect to the axis L2 when the coupling member is in the first position and in a direction opposite to the direction in which the coupling member is inclined when in the second position.

14. An image forming apparatus cartridge according to claim 13, wherein when the coupling member is in the third position, the portion of the axis L2 at the first end portion side of the coupling member is nearer to the axis L1 than the portion of the axis L2 at the second end portion side of the coupling member.

15. An image forming apparatus cartridge according to claim 12, wherein the casing comprises a guide portion capable of guiding the coupling member toward the second position.

16. An image forming apparatus cartridge according to claim 15, further comprising a contact portion capable of contacting the coupling member to position the coupling member at the second position.

17. An image forming apparatus cartridge according to claim 16, wherein the casing provides the contact portion.

18. An image forming apparatus cartridge according to claim 14, wherein when the coupling member is in the third position, the axis L2 of the coupling member is inclined from about 20 degrees to about 60 degrees with respect to the axis L1.

19. An image forming apparatus cartridge according claim 12, wherein the second end portion comprises a surface that is substantially perpendicular to the axis L2, and two projections extending from the surface at diametrically opposed positions.

20. An image forming apparatus cartridge according to claim 19, wherein the surface includes an opening to a recess, with the recess including a surface facing away from the first end portion.

21. An image forming apparatus cartridge according to claim 19, wherein each projection includes a surface at least a portion of which overhangs a portion of the second end portion.

22. An image forming apparatus cartridge according to claim 12, further comprising:

a first gear connected to the developer roller; and

a second gear connected to the coupling member and in meshing engagement with the first gear.

23. An image forming apparatus cartridge according to claim 22, wherein the second gear is connected to the coupling member such that the coupling member can partially rotate about the axis L2 without transmitting a force to the second gear.

24. An image forming apparatus cartridge according to claim 23, wherein the second gear has a hollow portion, and at least part of the first end portion of the coupling member is in the hollow portion of the second gear.

25. An image forming apparatus cartridge according to claim 24, wherein at least the part of the first end portion of the coupling member is supported by the hollow portion.

26. An image forming apparatus cartridge according to claim 25, wherein the first end portion of the coupling member comprises a substantially spherical shape.

27. An image forming apparatus cartridge according to claim 26, wherein the connecting portion includes a shaft substantially along the axis L2.

28. An image forming apparatus cartridge according to claim 12, further comprising an urging member that biases the coupling member to the second position.

29. An image forming apparatus cartridge according to claim 28, wherein the urging member is a torsion spring that contacts the connecting portion of the coupling member.

30. An image forming apparatus cartridge according to claim 12, wherein the coupling member can be inclined in substantially any direction relative to the first position.

31. An image forming apparatus cartridge according to claim 12, wherein the coupling member is made from a resin material.

32. An image forming apparatus cartridge according to claim 31, wherein the resin material is polyacetal.

33. An image forming apparatus cartridge according to claim 12, wherein the coupling member is made from a metallic material.

34. An image forming apparatus cartridge according to claim 12, wherein at least the second end portion of the coupling member is outside of the casing.

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