WHAT IS CLAIMED IS:

1. A printing apparatus comprising:

a conveyance unit configured to convey a print medium in a first direction;

a print head including a plurality of heat generation elements that are arranged in a second direction crossing the first direction and heat the print medium in which a plurality of color development layers that develop colors to obtain colored portions by being heated are formed at different positions in a thickness direction; and

a control unit configured to control the heat generation elements on a basis of heating pulses so as to selectively cause the plurality of color development layers to develop the respective colors, the control unit controlling heating positions on the print medium to be heated by the plurality of heat generation elements such that, in at least one of the color development layers in the print medium, in a case where lines each including a plurality of colored portions and arranged at a predetermined resolution in the first direction are arranged in the second direction, positions of the plurality of pixels are shifted between the lines in the first direction by a distance smaller than an interval corresponding to the resolution,

wherein the plurality of color development layers include a first color development layer that develops a first color and a second color development layer that develops a second color different from the first color, and

the control unit controls the heating positions on the print medium such that

in the first color development layer, in a case where a first colored portion and colored portions adjacent to both sides of the first colored portion in the second direction are formed by the heat generation elements, the first colored portion and a colored portion adjacent to and closest to the first colored portion are arranged side by side in the third direction, and

in the second color development layer, in a case where a second colored portion corresponding to a pixel of the first colored portion and colored portions adjacent to both sides of the second colored portion in the second direction are formed by the heat generation elements, the second colored portion and a colored portion adjacent to and closest to the second colored portion are arranged side by side in the fourth direction different from the third direction.

2. The printing apparatus according to claim 1, wherein the plurality of heat generation elements include heat generation elements arranged in the second direction, and

the control unit controls the plurality of heat generation elements such that the heating positions on the print medium to be heated by the heat generation elements arranged in the second direction are shifted from each other in the first direction.

3. The printing apparatus according to claim 2, wherein the control unit divides the heat generation elements arranged in the second direction into a plurality of groups including a first group and a second group, and controls the plurality of heat generation elements such that the heating positions on the print medium to be heated by the heat generation elements in the first group and the heating positions on the print medium to be heated by the heat generation elements in the second group are shifted from each other in the first direction.

4. The printing apparatus according to claim 3, wherein the control unit shifts a periodic interval at which the heat generation elements in the first group are caused to generate heat and a periodic interval at which the heat generation elements in the second group are caused to generate heat, from each other.

5. The printing apparatus according to claim 3 or 4, wherein

the plurality of color development layers include a first color development layer that develops a first color and a second color development layer that develops a second color different from the first color, and

the control unit controls the plurality of heat generation elements such that an order of color development of the first color development layer and the second color development layer by the heat generation elements in the first group and an order of color development of the first color development layer and the second color development layer by the heat generation elements in the second group are different from each other.

6. The printing apparatus according to any one of claims 3 to 5, wherein the heat generation elements in the first group are heat generation elements arranged at odd numbered positions in the second direction, and the heat generation elements in the second group are heat generation elements arranged at even numbered positions in the second direction.

7. The printing apparatus according to any one of claims 1 to 6, wherein

the plurality of color development layers include a first color development layer that develops a first color and a second color development layer that develops a second color different from the first color, and

the control unit controls the plurality of heat generation elements on a basis of heating pulses obtained by superimposing at least partly a heating pulse for color development of the first color development layer and a heating pulse for color development of the second color development layer.

8. The printing apparatus according to any one of claims 1 to 7, wherein

the print head includes heat generation elements in a first group and heat generation elements in a second group that are arranged in the second direction such that

positions of elements in the first group and positions of elements in the second group are shifted from each other in the first direction.

9. A printing method comprising:

a step of conveying the print medium in which a plurality of color development layers that develop colors by being heated are formed at different positions in a thickness direction, in a first direction; and

a step of controlling a plurality of heat generation elements that are arranged in a second direction crossing the first direction to heat the print medium, on a basis of heat generation pulses so as to selectively cause the plurality of color development layers to develop the respective colors, wherein

in the controlling step, heating positions on the print medium to be heated by the plurality of heat generation elements are controlled such that, in at least one of the color development layers in the print medium, in a case where lines each including a plurality of pixels which are formed by the plurality of colored portions and arranged at a predetermined resolution in the first direction are arranged in the second direction, positions of the plurality of pixels are shifted between the lines in the first direction by a distance smaller than an interval corresponding to the resolution,

wherein the plurality of color development layers include a first color development layer that develops a first color and a second color development layer that develops a second color different from the first color, and

in the controlling step, the heating positions on the print medium are controlled such that

in the first color development layer, in a case where a first colored portion and colored portions adjacent to both sides of the first colored portion in the second direction are formed by the heat generation elements, the first colored portion and a colored portion

adjacent to and closest to the first colored portion are arranged side by side in a third direction, and

in the second color development layer, in a case where a second colored portion corresponding to a pixel of the first colored portion and colored portions adjacent to both sides of the second colored portion in the second direction are formed by the heat generation elements, the second colored portion and a colored portion adjacent to and closest to the second colored portion are arranged side by side in a forth direction different from the third direction.

10. A non-transitory computer readable storage medium storing a program for causing a computer to perform a printing method, the printing method comprising:

a step of conveying the print medium in which a plurality of color development layers that develop colors by being heated are formed at different positions in a thickness direction, in a first direction; and

a step of controlling a plurality of heat generation elements that are arranged in a second direction crossing the first direction to heat the print medium, on a basis of heat generation pulses so as to selectively cause the plurality of color development layers to develop the respective colors, wherein

in the controlling step, heating positions on the print medium to be heated by the plurality of heat generation elements are controlled such that, in at least one of the color development layers in the print medium, in a case where lines each including a plurality of pixels which are formed by the plurality of colored portions and arranged at a predetermined resolution in the first direction are arranged in the second direction, positions of the plurality of pixels are shifted between the lines in the first direction by a distance smaller than an interval corresponding to the resolution

wherein the plurality of color development layers include a first color development layer that develops a first color and a second color development layer that develops a second color different from the first color, and

in the controlling step, the heating positions on the print medium are controlled such that

in the first color development layer, in a case where a first colored portion and colored portions adjacent to both sides of the first colored portion in the second direction are formed by the heat generation elements, the first colored portion and a colored portion adjacent to and closest to the first colored portion are arranged side by side in a third direction, and

in the second color development layer, in a case where a second colored portion corresponding to a pixel of the first colored portion and colored portions adjacent to both sides of the second colored portion in the second direction are formed by the heat generation elements, the second colored portion and a colored portion adjacent to and closest to the second colored portion are arranged side by side in a forth direction different from the third direction.

11. The printing apparatus according to claim 1 to 8, wherein

the control unit controls the heating positions on the print medium such that

in the first color development layer, in a case where a first colored portion and colored portions adjacent to both sides of the first colored portion in the second direction are formed by the heat generation elements, the first colored portion and the colored portions adjacent to both side of the first colored portion are arranged side by side in a third direction, and

in the second color development layer, in a case where a second colored portion corresponding to a pixel of the first colored portion and colored portions adjacent to both sides of the second colored portion in the second direction are formed by the heat

generation elements, the second colored portion and the colored portions adjacent to both side of the second colored portion are arranged side by side in a forth direction different from the third direction.

12. The printing apparatus according to any one of claims 1 to 8 and 11, wherein

the control unit controls the heating positions on the print medium such that

in the first color development layer developed overall by the heat generation elements, colored portion groups each of which is formed by colored portions arranging in the third direction arrange in the second direction with first number of pixels interval, and

in the second color development layer developed overall by the heat generation elements, colored portion groups each of which is formed by colored portions arranging in the fourth direction arrange in the second direction with second number of pixels interval.

13. The printing apparatus according to claim 12, wherein the first number is larger than the second number.

14. The printing apparatus according to any one of claims 1 to 8 and 11 to 13, wherein a size of a colored portion formed in the first color development layer and a size of a colored portion formed in the second color development layer are different.

15. The printing apparatus according to any one of claims 1 to 8 and 11 to 13, wherein

the plurality of color development layers include a third color development layer that develops a third color different from the first color and the second color, and

the control unit controls the heating positions on the print medium such that

in the third color development layer, in a case where a third colored portion corresponding to a pixel of the first colored portion and colored portions adjacent to both sides of the third colored portion in the second direction are formed by the heat generation elements, the third colored portion and a colored portion adjacent to and closest to the third colored portion are arranged side by side in a fifth direction different from the third direction and the fourth direction.

16. The printing apparatus according to claim 15, wherein a size of a colored portion formed in the first color development layer, a size of a colored portion formed in the second color development layer and a size of a colored portion formed in the third color development layer are different.

17. The printing apparatus according to any one of claims 1 to 8 and 11 to 14, wherein

in a case where, a first colored portion and colored portions adjacent to both sides of the first colored portion in the second direction are formed by the heat generation elements in the first color development layer and a second colored portion corresponding to a pixel of the first colored portion and colored portions adjacent to both sides of the second colored portion in the second direction are formed by the heat generation elements in the second color development layer, a slope of line formed by the first colored portion and a colored portion adjacent to and closest to the first colored portion and a slope of line formed by the second colored portion and a colored portion adjacent to and closest to the second colored portion are opposite.