splicing device according to the first aspect can limit the diffusion of the solder to the protection layer by reducing the heating time.

[0010] In the wire splicing device according to the first aspect, since heating the connection portion of the wires is started or stopped by bringing the heating body into contact with the pressing plate or separating it therefrom, the heating body can always be held at a temperature at which the solder melts. Therefore, in a case where a subsequent connection operation is consecutively performed, the heating body does not need to be re-heated, and the time it takes to increase the temperature of the heating body to a temperature at which the solder is melted can be reduced.

[0011] Furthermore, a plate-like pressing plate has a large surface area, has high heat dissipation properties, and thus can quickly reduce the temperature of the connection portion, and thereby reduce the time needed to solidify the solder. That is, the production efficiency can be improved.

[0012] In addition, in the first aspect, the holding base may be made of an insulating material.

[0013] In this case, since the holding base is made of the insulating material, an increase in the temperature of the holding base is suppressed even when a bonding portion of the wires is heated, and thus the solidification of the solder is not impeded during cooling, and thereby the production efficiency is increased.

[0014] In addition, the wire splicing device in the first aspect may further include a cooling member which cools the pressing plate.

[0015] In the case where the cooling member which cools the pressing plate is included, in a state where the heating body is separated from the pressing plate after the solder is melted, the pressing plate can be rapidly cooled. Therefore, the time needed to solidify the solder of the connection portion is reduced, and thereby the production efficiency is increased.

[0016] In addition, in the first aspect, the first driver may be a first air cylinder which raises and lowers the pressing plate (moves the pressing plate up and down), and the second driver may be a second air cylinder which raises and lowers the heating body (moves the heating body up and down).

[0017] Since the air cylinders are used as the first driver and the second driver, the wires can be pressed together at a predetermined pressure, and thus the breaking of the wires can be limited.

[0018] According to a second aspect of the present invention, there is provided a wire splicing method including: disposing an end portion of a tape-like first wire and an end portion of a tape-like second wire in a holding base in an overlapping manner via solder (wire disposing process), pressing a heating body to the first wire and the second wire via a pressing plate, and pressing together and heating the first wire and the second wire so as to melt the solder (pressing together and heating process); and keeping the first wire and the second wire pressed together using the pressing plate, separating the heating body from the pressing plate, and cooling the pressing plate to solidify the solder, and thereby connect the first wire and the second wire together (cooling process).

[0019] According to a third aspect of the present invention, there is provided a wire splicing method including: disposing a tape-like first wire and a tape-like second wire in a holding base so that an end portion of the first wire and an end portion of the second wire oppose each other; disposing solder to straddle the first wire and the second wire; disposing a connection wire on the solder (wire disposing process); pressing a heating body to the first wire, the second wire, and the connection wire via a pressing plate, and pressing together and heating the first wire, the second wire, and the connection wire so as to melt the solder (pressing together and heating process); and keeping the first wire, the second wire, and the connection wire pressed together using the pressing plate, separating the heating body from the pressing plate, and cooling the pressing plate to solidify the solder, and thereby connect the first wire and the second wire together (cooling process).

[0020] According to the wire splicing method according to the second or third aspect, since the wire splicing device is used, connection of wires that exhibit stable performance is enabled with high production efficiency.

[0021] In addition, in the second or the third aspect, the first wire and the second wire may be superconducting wires.

[0022] In addition, in the third aspect, the first wire, the second wire, and the connection wire may be superconducting wires.

[0023] In this case, heat is not excessively applied to the superconducting wires, and the first wire and the second wire can be connected together by being heated for a short amount of time. Therefore, deterioration in the properties of the superconducting wires during the connection can be limited.

[0024] In a fourth aspect of the present invention, there is provided a method for manufacturing a splice structure including: disposing an end portion of a tape-like first wire and an end portion of a tape-like second wire in a holding base in an overlapping manner via solder; pressing a heating body to the first wire and the second wire via a pressing plate, and pressing together and heating the first wire and the second wire so as to melt the solder; and keeping the first wire and the second wire pressed together by the pressing plate, separating the heating body from the pressing plate, and cooling the pressing plate to solidify the solder, and thereby connect the first wire and the second wire together.

[0025] In a fifth aspect of the present invention, there is provided a method for manufacturing a splice structure including: disposing a tape-like first wire and a tape-like second wire in a holding base so that an end portion of the first wire and an end portion of the second wire to oppose each other; disposing solder to straddle the first wire and the second wire; disposing a connection wire on the solder; pressing a heating body to the first wire, the second wire, and the connection wire via a pressing plate, and pressing together and heating the first wire, the second wire, and the connection wire so as to melt the solder; and keeping the first wire, the second wire, and the connection wire pressed together by the pressing plate, separating the heating body from the pressing plate, and cooling the pressing plate to solidify the solder, and thereby connecting the first wire and the second wire together.

[0026] In addition, in the fourth or the fifth aspect, the first wire and the second wire may be superconducting wires.

[0027] In addition, in the fifth aspect, the first wire, the second wire, and the connection wire may be superconducting wires.

[0028] In this case, heat is not excessively applied to the superconducting wires, and the first wire and the second