

CLAIMS

[Claim 1] (Amended) An electronic-component mounting apparatus for mounting chips to a substrate, the apparatus comprising:

a sectionalized mounting stage divided into a heating section and a non-heating section, the heating section being for heating a substrate fixed to a front surface of the heating section, the non-heating section not heating the substrate suctioned to a front surface of the non-heating section;

a full heating mounting stage for heating the substrate as a whole that is fixed to a front surface of the full heating mounting stage; and

a paste application block configured to apply a non-conductive paste at positions on the substrate at which the electronic components are to be mounted, wherein

after the non-conductive paste has been applied at the positions on the substrate at which the electronic components are to be mounted, only a portion of the substrate that is fixed to the heating section of the sectionalized mounting stage is heated, the electronic components are mounted to the positions in the heated portion, the substrate as a whole is heated on the full heating mounting stage, and the electronic components are mounted to the positions in a remaining portion.

[Claim 2] The electronic-component mounting apparatus according to claim 1, wherein the sectionalized mounting stage includes

a planar base body having a planar stepped portion; and a heat insulating layer laid over the stepped portion such that a front surface of the heat insulating layer is in plane with a front surface of the base body, the substrate being fixed to the front surface of the base body and the front surface of the heat insulating layer,

the heating section is the front surface of the base body, and

the non-heating section is the front surface of the heat insulating layer.

[Claim 3] (Amended) An electronic-component mounting apparatus for mounting chips to a substrate, the apparatus comprising:

a first sectionalized mounting stage divided into a heating section and a non-heating section, the heating section being for heating a substrate fixed to a front surface of the heating section, the non-heating section not heating the substrate suctioned to a front surface of the non-heating section;

a second sectionalized mounting stage divided into a heating section and a non-heating section invertedly arranged with respect to the first sectionalized mounting stage; and

a paste application block configured to apply a non-conductive paste at positions on the substrate at which the electronic components are to be mounted, wherein

after the non-conductive paste has been applied at the positions on the substrate at which the electronic components are to be mounted, only a portion of the substrate that is fixed to the heating section of the first sectionalized mounting stage is heated, the electronic components are mounted to the positions in the heated portion, only a portion of the substrate that is fixed to the heating section of the second sectionalized mounting stage is heated, and the electronic components are mounted to the positions in the heated portion.

[Claim 4] (Amended) The electronic-component mounting apparatus according to claim 3, wherein

the first sectionalized mounting stage and the second sectionalized mounting stage each include:

a planar base body having a planar stepped portion; and a heat insulating layer laid over the stepped portion such that a front surface of the heat insulating layer is in plane with a front surface of the base body, the substrate being fixed to the front surface of the base body and the front surface of the heat insulating layer.

the heating section is the front surface of the base body, and

the non-heating section is the front surface of the heat insulating layer.

[Claim 5] (Deleted)

[Claim 6] (Deleted)

[Claim 7] (Deleted)

[Claim 8] An electronic-component mounting method comprising the step of:

mounting a plurality of electronic components to a substrate, the step including:

a step of preparing an electronic-component mounting apparatus having:

a first sectionalized mounting stage divided into a heating section and a non-heating section, the heating section being for heating a substrate fixed to a front surface of the heating section, the non-heating section not heating the substrate suctioned to a front surface of the non-heating section; and

a second sectionalized mounting stage divided into a heating section and a non-heating section invertedly arranged with respect to the first sectionalized mounting stage;

a paste application step of applying a non-conductive paste at positions on the substrate at which the electronic components are to be mounted using the electronic-component mounting apparatus;

a first fixing step of fixing the substrate to the first sectionalized mounting stage;

a first heating step of heating only a portion of the substrate that is fixed to the heating section of the first sectionalized mounting stage;

a first mounting step of mounting the electronic components to the positions in the portion of the substrate that has been heated;

a second fixing step of fixing the substrate to the second sectionalized mounting stage;

a second heating step of heating only a portion of the substrate that is fixed to the heating section of the second sectionalized mounting stage; and

a second mounting step of mounting the electronic components to the positions in the portion of the substrate that has been heated.

[Claim 9] An electronic-component mounting method comprising the step of:

mounting a plurality of electronic components to a substrate, the step including:

a step of preparing an electronic-component mounting apparatus having:

a sectionalized mounting stage divided into a heating section and a non-heating section, the heating section being for heating a substrate fixed to a front surface of the heating section, the non-heating section not heating the substrate suctioned to a front surface of the non-heating section; and

a full heating mounting stage for heating the substrate as a whole that is fixed to a front surface of the full heating mounting stage;

a paste application step of applying a non-conductive paste at positions on the substrate at which the electronic components are to be mounted using the electronic-component mounting apparatus;

a first fixing step of fixing the substrate to the sectionalized mounting stage;

a first heating step of heating only a portion of the substrate that is fixed to the heating section of the sectionalized mounting stage;

a first mounting step of mounting the electronic components to the positions in the portion of the substrate that has been heated;

a third fixing step of fixing the substrate to the full heating mounting stage;

a third heating step of heating the substrate as a whole; and

a third mounting step of mounting the electronic components to the positions at which the electronic components have not been mounted in the first mounting step.

[Claim 10] An electronic-component mounting method comprising the step of:

mounting a plurality of electronic components to a substrate, the step including:

a step of preparing an electronic-component mounting apparatus having:

a sectionalized mounting stage divided into a heating section and a non-heating section, the heating section being for heating a substrate fixed to a front surface of the heating section, the non-heating section not heating the substrate suctioned to a front surface of the non-heating section;

a paste application step of applying a non-conductive paste at positions on the substrate at which the electronic components are to be mounted using the electronic-component mounting apparatus;

a first fixing step of fixing the substrate to the sectionalized mounting stage;

a first heating step of heating only a portion of the substrate that is fixed to the heating section of the sectionalized mounting stage;

a first mounting step of mounting the electronic components to the positions in the portion of the substrate that has been heated;

a fourth fixing step of rotating the substrate by 180 degrees within a horizontal plane, and of fixing a region to which the electronic components have not been mounted in the first mounting step to the heating section of the sectionalized mounting stage;

a fourth heating step of heating only the portion of the substrate that is fixed to the heating section of the sectionalized mounting stage; and

a fourth mounting step of mounting the electronic components to the positions in the portion of the substrate that has been heated.

CLAIMS

1. An electronic-component mounting apparatus for mounting chips to a substrate, the apparatus comprising:
 - a sectionalized mounting stage divided into a heating section and a non-heating section, the heating section being for heating a substrate fixed to a front surface of the heating section, the non-heating section not heating the substrate suctioned to a front surface of the non-heating section;
 - a full heating mounting stage for heating the substrate as a whole that is fixed to a front surface of the full heating mounting stage; and
 - a paste application block configured to apply a non-conductive paste at positions on the substrate at which the electronic components are to be mounted, wherein
 - after the non-conductive paste has been applied at the positions on the substrate at which the electronic components are to be mounted, only a portion of the substrate that is fixed to the heating section of the sectionalized mounting stage is heated, the electronic components are mounted to the positions in the heated portion, the substrate as a whole is heated on the full heating mounting stage, and the electronic components are mounted to the positions in a remaining portion.
2. The electronic-component mounting apparatus according to claim 1, wherein the sectionalized mounting stage includes:
 - a planar base body having a planar stepped portion; and a heat insulating layer laid over the stepped portion such that a front surface of the heat insulating layer is in plane with a front surface of the base body, the substrate being fixed to the front surface of the base body and the front surface of the heat insulating layer,
 - the heating section is the front surface of the base body, and
 - the non-heating section is the front surface of the heat insulating layer.
3. An electronic-component mounting apparatus for mounting chips to a substrate, the apparatus comprising:
 - a first sectionalized mounting stage divided into a heating section and a non-heating section, the heating section being for heating a substrate fixed to a front surface of the heating section, the non-heating section not heating the substrate suctioned to a front surface of the non-heating section;

a second sectionalized mounting stage divided into a heating section and a non-heating section invertedly arranged with respect to the first sectionalized mounting stage; and

a paste application block configured to apply a non-conductive paste at positions on the substrate at which the electronic components are to be mounted, wherein

after the non-conductive paste has been applied at the positions on the substrate at which the electronic components are to be mounted, only a portion of the substrate that is fixed to the heating section of the first sectionalized mounting stage is heated, the electronic components are mounted to the positions in the heated portion, only a portion of the substrate that is fixed to the heating section of the second sectionalized mounting stage is heated, and the electronic components are mounted to the positions in the heated portion.

4. The electronic-component mounting apparatus according to claim 3, wherein the first sectionalized mounting stage and the second sectionalized mounting stage each include:

a planar base body having a planar stepped portion; and a heat insulating layer laid over the stepped portion such that a front surface of the heat insulating layer is in plane with a front surface of the base body, the substrate being fixed to the front surface of the base body and the front surface of the heat insulating layer,

the heating section is the front surface of the base body, and

the non-heating section is the front surface of the heat insulating layer.

5. An electronic-component mounting method comprising the step of:

mounting a plurality of electronic components to a substrate, the step including:

a step of preparing an electronic-component mounting apparatus having:

a first sectionalized mounting stage divided into a heating section and a non-heating section, the heating section being for heating a substrate fixed to a front surface of the heating section, the non-heating section not heating the substrate suctioned to a front surface of the non-heating section; and

a second sectionalized mounting stage divided into a heating section and a non-heating section invertedly arranged with respect to the first sectionalized mounting stage;

a paste application step of applying a non-conductive paste at positions on the substrate at which the electronic components are to be mounted using the electronic-component mounting apparatus;

- a first fixing step of fixing the substrate to the first sectionalized mounting stage; a first heating step of heating only a portion of the substrate that is fixed to the heating section of the first sectionalized mounting stage;
- a first mounting step of mounting the electronic components to the positions in the portion of the substrate that has been heated;
- a second fixing step of fixing the substrate to the second sectionalized mounting stage;
- a second heating step of heating only a portion of the substrate that is fixed to the heating section of the second sectionalized mounting stage; and
- a second mounting step of mounting the electronic components to the positions in the portion of the substrate that has been heated.

6. An electronic-component mounting method comprising the step of:

- mounting a plurality of electronic components to a substrate, the step including:
 - a step of preparing an electronic-component mounting apparatus having:
 - a sectionalized mounting stage divided into a heating section and a non-heating section, the heating section being for heating a substrate fixed to a front surface of the heating section, the non-heating section not heating the substrate suctioned to a front surface of the non-heating section; and
 - a full heating mounting stage for heating the substrate as a whole that is fixed to a front surface of the full heating mounting stage;
 - a paste application step of applying a non-conductive paste at positions on the substrate at which the electronic components are to be mounted using the electronic-component mounting apparatus;
 - a first fixing step of fixing the substrate to the sectionalized mounting stage; a first heating step of heating only a portion of the substrate that is fixed to the heating section of the sectionalized mounting stage;
 - a first mounting step of mounting the electronic components to the positions in the portion of the substrate that has been heated;
 - a third fixing step of fixing the substrate to the full heating mounting stage;
 - a third heating step of heating the substrate as a whole; and
 - a third mounting step of mounting the electronic components to the positions at which the electronic components have not been mounted in the first mounting step.

7. An electronic-component mounting method comprising the step of:

- mounting a plurality of electronic components to a substrate, the step including:
 - a step of preparing an electronic-component mounting apparatus having:

a sectionalized mounting stage divided into a heating section and a non-heating section, the heating section being for heating a substrate fixed to a front surface of the heating section, the non-heating section not heating the substrate suctioned to a front surface of the non-heating section;

a paste application step of applying a non-conductive paste at positions on the substrate at which the electronic components are to be mounted using the electronic-component mounting apparatus;

a first fixing step of fixing the substrate to the sectionalized mounting stage; a first heating step of heating only a portion of the substrate that is fixed to the heating section of the sectionalized mounting stage;

a first mounting step of mounting the electronic components to the positions in the portion of the substrate that has been heated;

a fourth fixing step of rotating the substrate by 180 degrees within a horizontal plane, and of fixing a region to which the electronic components have not been mounted in the first mounting step to the heating section of the sectionalized mounting stage;

a fourth heating step of heating only the portion of the substrate that is fixed to the heating section of the sectionalized mounting stage; and

a fourth mounting step of mounting the electronic components to the positions in the portion of the substrate that has been heated.