

side and is wound by the winding roller 63b. Further, the cover film 110 wrapped around the lower guide roller 42 of the film guide 40 at one side extends to another side to be wrapped around the lower side of the lower guide roller 42 of the film guide 40 arranged at another side, and is then wrapped around the upper side of the upper guide roller 43 of the film guide 40 arranged at another side and extends toward the delivery roller 63a.

[0052] In this way, the cover film 110 hung between the delivery roller 63a at another side and the winding roller 63b at one side is wrapped around the lower guide roller 42 and the upper guide roller 43 of the two film guides 40 arranged at two sides of the bonding stage 20, respectively. The height of the cover film 110 from the bonding stage 20 is defined by lower guide rollers 42 at two sides.

[0053] Returning to Figure 3, the moving mechanism 70 is configured by the rail 71 provided on the upper surface of the base stand 21 at one side of the bonding stage 20; and a Y-direction actuator 72, provided above the base stand 21, that drives the base 61 of the film delivering mechanism 60, guided by the rail 71, in the Y direction. Since the Y-direction actuator 72 moves the base 61, to which the winding roller 63b of the film delivering mechanism 60 and the lifting mechanism 50 are connected, in the Y direction (direction of arrow 92 in Figure 2), the winding roller 63b of the film delivering mechanism 60, the lifting mechanism 50, and the film guide 40 connected to the lifting mechanism 50 are integrally moved in the Y direction.

[0054] The supporting structure 65 of the winding roller 63b, the lifting mechanism 50, the film guide 40, and the moving mechanism 70 that are arranged at one side of the bonding stage 20 have been described above. The supporting structure 65 of the delivery roller 63a, the lifting mechanism 50, the film guide 40, and the moving mechanism 70 that are arranged at another side of the bonding stage 20 have the same structure as those at one side except for having a symmetrical shape with respect to the bonding stage 20, therefore the description thereof will be

omitted.

[0055] The control unit 80 is connected to a main body 11 of the mounting head 17, the heater 14, a fan 19, the Z-direction actuator 58 of the lifting mechanism 50, the drive motor (not shown) of the film delivering mechanism 60, the Y-direction actuator 72 of the moving mechanism 70, and the bonding stage 20, and controls the movement of the mounting head 17, the movement of the slider 54 of the lifting mechanism 50 in the Z direction, the rotation of the feed-rollers 63, and the movement of the base 61 in the Y direction, and controls the temperature of the pressing tool 16 by the heater 14 and the fan 19. The control unit 80 includes, for example, a CPU that performs various operations and a memory that stores various data and programs. The detection results of various sensors are input to the control unit 80, and the control unit 80 performs driving control and temperature control of each portion according to the detection results.

[0056] Next, the operation of the mounting apparatus 10 of the embodiment will be described with reference to Figure 3 to Figure 6. The mounting apparatus 10 mounts the semiconductor chip 100 on the substrate 104 by the technique of flip chip bonder. Specifically, as shown in Figure 1, the mounting apparatus 10 electrically connects the semiconductor chip 100 to the substrate 104 by joining the protrusions, made of conductive material and referred to as bumps 102 formed on the bottom surface of the semiconductor chip 100, to electrodes 105 formed on the surface of the substrate 104.

[0057] As shown in Figure 2 and Figure 3, on the substrate 104, a plurality of electrodes 105 electrically connected to the bumps 102 of the semiconductor chip 100 are formed and mounting section 106 where the semiconductors 100 are mounted are defined. Each of the mounting sections 106 is pre-coated with the adhesive material 108, which is an insulating thermosetting resin.

[0058] The control unit 80 of the mounting apparatus 10 makes the semiconductor chip 100 suctioned and held on the pressing tool 16 at the tip of the mounting head 17, lowers the mounting

	104	Substrate
	105	Electrode
	106	Mounting section
	108	Adhesive material
5	110	Cover film
	340	Another-side film guide
	350	Another-side lifting mechanism
	351	Another-side guide rail