

CANOPY ASSEMBLY

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a canopy assembly, and more particularly to a canopy assembly that can be automatically expanded or retracted.

2. Description of Related Art

A screen house or greenhouse is applied to grow plants. However, the conventional screen house or greenhouse is easily damaged by typhoons, and to repair the damaged screen house or green house is costly. In addition, a canopy is disposed on a roof of a greenhouse to provide a rain-sheltering control effect to the greenhouse, but the canopy is disposed on the greenhouse manually, which is laborious.

Particularly, the canopy is a plastic sheet and serves as rain shelter to prevent rain from damaging the plants. However, if the plastic canopy cannot be retracted conveniently, heat will be stored between the canopy and the plants and the temperature will be built-up. Consequently, the heat will cause damage to the plants.

To overcome the shortcomings, the present invention tends to provide a canopy assembly to mitigate or obviate the aforementioned problems.

SUMMARY OF THE INVENTION

The main objective of the invention is to provide a canopy assembly that can be expanded or retracted automatically.

The canopy assembly has at least one canopy device, at least one guiding

cable, at least one connection device, and a driving device. The at least one canopy device is expandable along an expansion direction. Each one of the at least one canopy device has a canopy element and multiple canopy clamping members. The canopy clamping members are mounted on the canopy element, are parallel with each other, are perpendicular to the expansion direction, and include a first canopy clamping member in front of the other canopy clamping members along the expansion direction. The at least one guiding cable is disposed above the at least one canopy device and extends along the expansion direction. The at least one connection device is connected respectively with the at least one canopy device and is mounted moveably on the at least one guiding cable, and each one of the at least one connection device has at least one connection assembly. Each one of the at least one connection assembly is connected with the first canopy clamping member of a corresponding one of the at least one canopy device and has a lower base, a connection cable, and an upper base. The lower base is connected securely with the first canopy clamping member of a corresponding one of the at least one canopy device and has a roller mounted rotatably in the lower base and mounted rotatably on one of the at least one guiding cable. The connection cable has a top end and a bottom end connected with the lower base. The upper base is connected with the top end of the connection cable. The driving device is connected with the at least one connection device to drive the at least one canopy device to expand along the expansion direction and has at least one transmission assembly. The at least one transmission assembly is respectively connected securely with the at least one connection device, and each one of the at least one transmission assembly has a

driving wheel, a driven wheel, and a transmission element. The driving wheel is connected with and driven by a driving member. The transmission element is formed as a loop, is mounted around the driving wheel and the driven wheel, and is connected securely with the upper base. Each canopy clamping member has at least one lower base element mounted on a top of the canopy clamping member. Each one of the lower base element of each canopy clamping member has a roller mounted in the lower base element and mounted rotatably on one of the at least one guiding cable. The lower base of each one of the at least one connection assembly of each one of the at least one connection device is connected pivotally with one of the at least one lower base element on the first canopy clamping member of a corresponding one of the at least one canopy device.

Other objects, advantages and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of a canopy assembly in accordance with the present invention;

Fig. 2 is a top view of the canopy assembly in Fig. 1;

Fig. 3 is a side view of the canopy assembly in Fig. 1;

Fig. 4 is an enlarged side view of the canopy assembly in Fig. 1;

Fig. 5 is an enlarged perspective view of a first embodiment of a connection assembly of the canopy assembly in Fig. 1;

Fig. 6 is an end view of the connection assembly of the canopy assembly in Fig. 5;

Fig. 7 is an exploded perspective view of the connection assembly of the canopy assembly in Fig. 5;

Fig. 8 is a side view of a second embodiment of a connection device of the canopy assembly in Fig. 1;

5 Fig. 9 is an enlarged cross sectional top view of the connection device of the canopy assembly in Fig. 8;

Fig. 10 is an operational side view of the canopy assembly in Fig. 1 showing the canopy assembly being expanded;

Fig. 11 is an end view of another embodiment of a canopy assembly in accordance with the present invention; and

Fig. 12 is a side view of the canopy assembly in Fig. 11.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

With reference to Figs. 1 to 4, a canopy assembly in accordance with the present invention comprises at least one canopy device 10, at least one guiding cable 20, at least one connection device 30, and a driving device 40.

The at least one canopy device 10 is expandable along an expansion direction. Preferably multiple canopy devices 10 are implemented, and the canopy devices 10 are arranged in a row and are expandable along the same expansion direction. Each canopy device 10 comprises a canopy element 12 and multiple canopy clamping members 14. The canopy element 12 may be a net screen, a plastic sheet or a fabric sheet. The canopy clamping members 14 are mounted on the canopy element 12, are parallel with each other, are perpendicular to the expansion direction, and include a first canopy clamping member 14 in front of the other canopy clamping members 14 along the

expansion direction.

With reference to Figs. 5 and 7, each canopy clamping member 14 comprises an elongated upper clamping member 15 and an elongated lower clamping member 16. The elongated upper clamping member 15 comprises an elongated top panel 152, two side panels 154 and an elongated engaging channel 158. The elongated top panel 152 has a bottom surface. The side panels 154 respectively extend downwardly from two sides of the bottom surface of the top panel 152, and each side panel 154 has a free end provided with an engaging segment 156. Preferably, the engaging segments 156 on the free ends of the side panels 154 are hooks or protrusions. The elongated engaging channel 158 is defined between the bottom surface of the top panel 152 and the two side panels 154. The elongated lower clamping member 16 is detachably connected with the upper clamping member 15 to clamp a corresponding canopy element 12 in cooperation with the upper clamping member 15. The lower clamping member 16 comprises an elongated body 162 and two engaging segments 164. The elongated body 162 is inserted into the engaging channel 158 in the upper clamping member 15 and has two sides. The engaging segments 164 are formed respectively on the two sides of the elongated body 162 and are engaged with the engaging segments 156 on the free ends of the side panels 154 of the upper clamping member 15. The engaging segments 164 on the lower clamping member 16 may be grooves.

With reference to Figs. 1 to 3, the at least one guiding cable 20 is disposed above the canopy devices 10 and extends along the expansion direction. Preferably, multiple guiding cables 20 may be implemented, and the amount of

the guiding cables 20 is dependent on the width of each canopy element 12 and is not limited in this invention.

Furthermore, with reference to Figs. 1, 3 to 5, and 10, each canopy clamping member 14 has at least one lower base element 36 mounted on a top of the canopy clamping member 14. Multiple lower base elements 36 may be implemented, and the amount of the lower base elements 36 on each canopy clamping member 14 is same as that of the guiding cables 20. Each lower base element 36 has a roller 39 mounted rotatably in the lower base element 36 and is mounted on one of the guiding cables 20. With such an arrangement, the canopy clamping members 14 can be supported on the guiding cables 20 and the movement of the canopy clamping member 14 and the expansion of the canopy elements 14 are smooth.

Each lower base element 36 comprises a lower base panel 362, two upper side tabs 364, and two lower side tabs 366. The lower base panel 362 is rectangular in shape and has two pairs of opposite sides. The upper side tabs 364 are respectively formed on and protrude upwardly from one of the pairs of the opposite sides of the lower base panel 362. The lower side tabs 366 are respectively formed on and protrude downwardly from the other one of the pairs of the opposite sides of the lower base panel 362 and are connected with a corresponding one of the canopy clamping members 14. The roller 39 is mounted between the upper side tabs 364 of the lower base element 36.

The at least one connection device 30 is connected respectively with the at least one canopy device 10 and is mounted moveably on the at least one guiding cable 20. Preferably, multiple connection devices 30 may be

implemented, and the amount of the connection devices 30 is same as that of the guiding cables 20 and is dependent on the widths of the canopy elements 12.

Each connection device 30 comprises at least one connection assembly 32.

Preferably, multiple connection assemblies 32 may be implemented, and the

5 amount of the connection assemblies 32 is same as that of the canopy devices 10.

With reference to Figs. 5 to 7, each connection assembly 32 comprises a lower base 35, an upper base 33, a connection cable 37, and a

transmission-connecting base 38. The lower base 35 is connected securely with one of the lower base elements 36 on the first canopy clamping member 12 of a

10 corresponding one of the canopy devices 10.

Preferably, the lower base 35 comprises an upper base panel 352 and two side tabs 356. The side tabs 356 are respectively formed on and protrude downwardly from two sides of a top of the upper base panel 352 and are pivotally connected with the upper side tabs 364 of a corresponding lower base

15 element 36 respectively.

The upper base 33 is connected with the driving device 40. Preferably, the upper base 33 comprises a bottom panel 332 and two side tabs 336. The side tabs 336 are respectively formed on and protrude upwardly from two sides of a top of the bottom panel 332.

20 The connection cable 37 has a top end connected with the upper base 33 and a bottom end connected with the lower base 35. Preferably, an upper ball head 372 and a lower ball head 374 are formed respectively at two ends of the connection cable 37. A holding hole 334 is defined through the bottom panel 332 of the upper base 32. Two pivotal holes 337 are respectively defined through the

side tabs 336 of the upper base 33, and each pivotal hole 337 has a diameter larger than that of the holding hole 334. A connection groove 338 is defined through the bottom panel 332 and one of the side tabs 336 and has two ends communicating respectively with the holding hole 334 and the pivotal hole 337 in the side tab 336 in which the connection groove 338 is defined. A holding hole 354 is defined through the upper base panel 352 of the lower base 35. Two pivotal holes 357 are respectively defined through the side tabs 356 of the lower base 35, and each pivotal hole 357 has a diameter larger than that of the holding hole 354 in the upper base panel 352. A connection groove 358 is defined through the upper base panel 352 and one of the side tabs 356 and has two ends communicating respectively with the holding hole 354 and the pivotal hole 357 in the side tab 356 in which the connection groove 358 is defined. The diameter of the connection cable 37 is smaller than widths of the connection grooves 338, 358 in the upper base 33 and the lower base 35. The upper ball head 372 has a diameter being smaller than the diameter of the pivotal holes 337 in the side tabs 336 of the upper base 33 and being larger than the diameter of the holding hole 334 of the upper base 33. The lower ball head 374 has a diameter being smaller than the diameter of the pivotal holes 357 in the side tabs 356 of the lower base 35 and being larger than the diameter of the holding hole 354 of the lower base 35.

Accordingly, to connect the top end of the connection cable 37 with the upper base 33, the upper ball head 372 is inserted through the pivotal hole 337 in the side tab 336 with the top segment of the connection cable 37 extending through the connection groove 338 in the upper base 33. Because the upper ball

head 372 has a diameter larger than that of the holding hole 334 in the upper base 33, the upper ball head 372 can be engaged with the holding hole 334 in the upper base 33 and the top end of the connection cable 37 is connected with the upper base 33.

5 To connect the bottom end of the connection cable 37 with the lower base 35, the lower ball head 374 is inserted through the pivotal hole 357 in the side tab 356 with the bottom segment of the connection cable 37 extending through the connection groove 358 in the lower base 35. Because the lower ball head 374 has a diameter larger than that of the holding hole 354 in the lower base 10 35, the lower ball head 374 can be engaged with the holding hole 354 in the lower base 35 and the bottom end of the connection cable 37 is connected with the lower base 35.

With reference to Figs. 1, 3, and 4, the driving device 40 is connected with the at least one connection device 30 to drive the canopy devices 10 to 15 expand along the expansion direction simultaneously. The driving device 40 comprises at least one transmission assembly 42 respectively connected securely with the at least one connection device 30. Preferably, multiple transmission assemblies 42 are implemented, and the amount of the transmission assemblies 42 is the same as that of the connection devices 30 and the guiding cables 20. 20 Each transmission assembly 42 comprises a driving wheel 44, a driven wheel 46 and a transmission element 48. The driving wheels 44 of the transmission assemblies 42 can be all connected with and driven by a driving member. The driving member may be a motor with a gear box. Preferably, the driving wheels 44 of the transmission assemblies 42 are connected with each other by a driving

axle. In addition, the driven wheels 46 of the transmission assemblies 42 are connected with each other by a driven axle. The transmission element 48 is formed as a loop, is mounted around the driving wheel 44 and the driven wheel 46, and is connected securely with the upper bases 33 of the connection
5 assemblies 32 of a corresponding one of the connection devices 30. Preferably, the transmission element 48 comprises a chain segment 482 and a cable segment 484. Two ends of the cable segment 484 are connected with two ends of the chain segment 482 to form the transmission element 48 as a loop. The driving wheels 44 of the transmission assemblies 42 are sprocket wheels respectively engaged
10 with the chain segments 482 of the transmission assemblies 48.

In addition, with further reference to Figs. 5 and 6, each connection assembly 32 further comprises a transmission-connecting base 31 pivotally connected with the upper base 33 of the connection assembly 32, mounted between the side tabs 336 of the upper base 33, and connected securely with the
15 transmission element 48.

With reference to Figs. 5 and 6, each transmission-connecting base 31 corresponding to the cable segment 484 of the transmission element 48 is composed of two half base elements connected with each other and clamping the cable segment 484 of the transmission element 48.

20 With reference to Figs. 8 and 9, each transmission-connecting base 31A corresponding to the chain segment 482 of the transmission element 48 has multiple chain-connecting tabs 312 formed on and protruding from a top of the transmission-connecting base 31A and engaged with the chain segment 472 of the transmission element 48.

With reference to Figs. 1 and 3, when the canopy assembly is in a retracted position, the canopy elements 12 of the canopy devices 10 are in a folded condition and the canopy clamping members 14 of each canopy device 10 are close to each other in a compact position. With further reference to Fig. 10, to expand the canopy assembly, the driving element is switched on and the driving wheels 44 are driven to rotate. Consequently, the transmission elements 48 are driven to rotate by the driving wheels 44. With the rotation of the transmission elements 48, the connection assemblies 32 and the first canopy clamping members 14 connected with the connection assemblies 32 are moved with the transmission elements 48. Accordingly, the canopy clamping members 14 of each canopy device 10 can be moved one by one with the tension of the canopy element 12. Therefore, the canopy elements 12 of the canopy devices 10 can be expanded along the expansion direction simultaneously and automatically.

To retract the canopy assembly, the driving element drives the driving wheels 44 to rotate in reverse, and the transmission elements 48 are rotated in reverse. Accordingly, the first canopy clamping members 14 can be driven to move backward, and the other canopy clamping members 14 can be pushed to move backward one by one. Consequently, the canopy elements 12 can be folded simultaneously and automatically.

With the connection between the ball heads 372, 374 of the connection cable 37 with the upper and lower bases 33, 35, a universal adjustment effect can be provided between the upper and lower bases 33, 35 and the connection cable 37. When the canopy assembly is mounted on an unsmooth location, the canopy clamping members 14 can also be driven to move smoothly by the transmission

of the connection devices 30.

With such a canopy assembly, the canopy assembly in accordance with the present invention can be mounted on a roof of a green house or a screen house or is mounted above a growing field directly. When the canopy assembly
5 is expanded, the canopy can serve as a rain shield or sunlight shade to provide a shade control or insect prevention effect. The canopy assembly in accordance with the present invention is convenient in use.

In practice, multiple layers of canopy assemblies in accordance with the present invention can be arranged on a field or a green house. In a first layer of
10 canopy assembly, the canopy assembly can be applied to prevent birds or pest from entering to the field or the green house. In the second layer of canopy assembly, the canopy assembly can be served as a rain shelter, the canopy assembly can be expanded in a raining day and is folded in a sunny day. In the third layer of canopy assembly, the canopy assembly can served as a light canopy
15 to adjust the illuminance for the plants.

When the canopy assembly serves as a rain shelter, the canopy assembly can be folded or retracted automatically and conveniently, the temperature in the field or the greenhouse can be effectively modulated. When the canopy assembly is in a folded condition, the temperature of the field or in
20 the green house is almost same as that of the outer environment. Accordingly, trouble of temperature build-up can be prevented. The plants in the field or the greenhouse is allow to incorporate nature air and a plenty of sun to induce early blossoming and fruit bearing and to result increase of productivity and quality.

With reference to Figs. 11 and 12, in another embodiment, each canopy

clamping member 14A is curved, and each connection device 30A has three connection assemblies 32A, 32B. The three connection assemblies include a middle connection assembly 32A and two side connection assemblies 32B. The middle connection assembly 32A is located at a position higher than that of the side connection assemblies 32B and is connected with a middle of a corresponding first canopy clamping member 14A. The two side connection assemblies 32B are connected respectively with two ends of the corresponding first canopy clamping member 14A. The transmission device 40A comprises three transmission assemblies 42A, 42B including a middle transmission assembly 42A and two side transmission assemblies 42B. The middle transmission assembly 42A is connected with the middle connection assemblies 32A, and the side transmission assemblies 42B are connected with the side connection assemblies 32B. Each one of the connection assembly 32A, 32B and the transmission assembly 42A, 42B in the embodiment has a structure same as that in the embodiment shown in Figs. 1, 3, and 4, and the detail description of each connection assembly 32A, 32B and transmission assembly 42A, 42B is omitted. In addition, the transmission device 40A further comprises a simultaneous transmission assembly 43 mounted between the middle transmission assembly 42A and the side transmission assemblies 42B to drive the transmission assemblies 42A, 42B to move simultaneously. The simultaneous transmission assembly 43 comprises a simultaneously driving wheel 432, a simultaneously driven wheel 434, and a simultaneous transmission element 436. The simultaneously driving wheel 432 is connected co-axially with the driving wheels 44B of the side transmission assemblies 42B. The

simultaneously driven wheel 434 is connected co-axially with the driving wheel 44A of the middle transmission assembly 42A. The simultaneous element 436 is mounted around and connected with the simultaneously driving wheel 432 and the simultaneously driven wheel 434. The driving member is connected with the driving wheels 44B of the side transmission assemblies 42B and the simultaneously driving wheel 432.

Accordingly, when the driving member is switched on, the driving wheels 44B of the side transmission assemblies 42B and the simultaneously driving wheel 432 are driven to rotate. The driving wheel 44A of the middle transmission assembly 42A will also be simultaneously driven to rotate by the transmission of the simultaneously driving wheel 432, the simultaneous transmission element 436, and the simultaneously driven wheel 434.

Consequently, the curved canopy clamping members 14A can be moved smoothly to expand the canopy elements 12 in a curved form. In addition, the simultaneously driving wheel 432 and the simultaneously driven wheel 434 are preferably sprocket wheels, and the simultaneous transmission element 436 is a chain.

WHAT IS CLAIMED IS:

1. A canopy assembly comprising:
 - at least one canopy device being expandable along an expansion
 - 5 direction, and each one of the at least one canopy device comprising
 - a canopy element; and
 - multiple canopy clamping members mounted on the canopy element,
 - being parallel with each other and perpendicular to the expansion direction, and
 - including a first canopy clamping member in front of the other canopy clamping
 - 10 members along the expansion direction;
 - at least one guiding cable disposed above the at least one canopy device
 - and extending along the expansion direction;
 - at least one connection device connected respectively with the at least
 - one canopy device and mounted moveably on the at least one guiding cable, and
 - 15 each one of the at least one connection device comprising
 - at least one connection assembly, and each one of the at least one
 - connection assembly connected with the first canopy clamping member of a
 - corresponding one of the at least one canopy device and comprising
 - a lower base connected securely with the first canopy
 - 20 clamping member of a corresponding one of the at least one canopy device; and
 - a connection cable having a top end and a bottom end
 - connected with the lower base; and
 - an upper base connected with the top end of the connection
 - cable; and

a driving device connected with the at least one connection device to drive the at least one canopy device to expand along the expansion direction and comprising

at least one transmission assembly respectively connected securely with
5 the at least one connection device, and each one of the at least one transmission assembly comprising

a driving wheel connected with and driven by a driving member;

a driven wheel; and

a transmission element formed as a loop, mounted around the driving
10 wheel and the driven wheel, and connected securely with the upper base, wherein

each canopy clamping member has at least one lower base element mounted on a top of the canopy clamping member;

each one of the lower base element of each canopy clamping member
15 has a roller mounted in the lower base element and mounted rotatably on one of the at least one guiding cable; and

the lower base of each one of the at least one connection assembly of each one of the at least one connection device is connected pivotally with one of the at least one lower base element on the first canopy clamping member of a
20 corresponding one of the at least one canopy device.

2. The canopy assembly as claimed in claim 1, wherein each canopy clamping member comprises

an elongated upper clamping member comprising

an elongated top panel having a bottom surface;

5 two side panels respectively extending downwardly from two sides of the bottom surface of the top panel, and each side panel having a free end provided with an engaging segment; and

an elongated engaging channel defined between the bottom surface of the top panel and the two side panels;

10 an elongated lower clamping member detachably connected with the upper clamping member to clamp a corresponding canopy element in cooperation with the upper clamping member and comprising

an elongated body inserted into the engaging channel in the upper clamping member and having two sides; and

15 two engaging segments formed respectively on the two sides of the elongated body and engaged with the engaging segments on the free ends of the side panels of the upper clamping member.

3. The canopy assembly as claimed in claim 1 or 2, wherein

20 the upper base of each one of the at least one connection assembly of each one of the at least one connection device comprises

a bottom panel having a top; and

two side tabs respectively formed on and protruding upwardly from two sides of the top of the bottom panel;

the lower base of each one of the at least one connection assembly of each one of the at least one connection device comprises

an upper base panel having a top and a bottom; and

two side tabs respectively formed on and protruding downwardly from

5 two sides of the top of the upper base panel; and

each one of the at least one lower base element of each canopy clamping member of each one of the at least one canopy device comprises

a lower base panel being rectangular in shape and having two pairs of opposite sides;

10 two upper side tabs respectively formed on and protruding upwardly from one of the pairs of the opposite sides of the lower base panel and pivotally connected with the side tabs of the lower base respectively; and

two lower side tabs respectively formed on and protruding downwardly from the other one of the pairs of the opposite sides of the lower base panel and

15 connected with a corresponding one of the canopy clamping members; and

the roller in each one of the at least one lower base element of each canopy clamping member of each one of the at least one canopy device is mounted rotatably in the lower base element and between the upper side tabs of the lower base element; and

20 the connection cable of each one of the at least one connection assembly of each one of the connection device is connected between the bottom panel of the upper base of the connection assembly and the upper base panel of the lower base of the connection assembly.

4. The canopy assembly as claimed in claim 3, wherein

the upper base of each one of the at least one connection assembly of each one of the at least one connection device further comprises

a holding hole defined through the bottom panel of the upper base and

5 having a diameter;

two pivotal holes respectively defined through the side tabs of the upper base and each having a diameter larger than the diameter of the holding hole; and

a connection groove defined through the bottom panel and one of the side tabs of the upper base and having a width and two ends communicating

10 respectively with the holding hole and the pivotal hole in the side tab in which the connection groove is defined;

the lower base of each one of the at least one connection assembly of each one of the at least one connection device further comprises

a holding hole defined through the upper base panel of the lower base

15 and having a diameter;

two pivotal holes respectively defined through the side tabs of the lower base and each having a diameter larger than the diameter of the holding hole in the upper base panel; and

a connection groove defined through the upper base panel and one of the

20 side tabs of the lower base and having a width and two ends communicating respectively with the holding hole and the pivotal hole in the side tab in which the connection groove is defined;

the connection cable of each one of the at least one connection assembly of each one of the at least one connection device has

a diameter smaller than the widths of the connection grooves in the upper base and the lower base of the connection assembly;

an upper ball head formed on the top end of the connection cable and having a diameter being smaller than the diameter of the pivotal holes in the side tabs of the upper base of the connection assembly and being larger than the diameter of the holding hole of the upper base of the connection assembly; and

a lower ball head formed on the bottom end of the connection cable and having a diameter being smaller than the diameter of the pivotal holes in the side tabs of the lower base of the connection assembly and being larger than the diameter of the holding hole of the lower base of the connection assembly.

5. The canopy assembly as claimed in claim 4, wherein

each one of the at least one connection assembly of each one of the at least one connection device further comprises

a transmission-connecting base pivotally connected with the upper base of the connection assembly, mounted between the side tabs of the upper base of the connection assembly, and connected securely with the transmission element of a corresponding one of the at least one transmission assembly.

6. The canopy assembly as claimed in claim 5, wherein the transmission element of each one of the at least one transmission assembly comprises

a chain segment; and

a cable segment connected with the chain segment to form the transmission element as a loop;

the driving wheel of each one of the at least one transmission assembly is a sprocket wheel engaged with the chain segment of the transmission assembly.

7. The canopy assembly as claimed in claim 6, wherein

5 the transmission-connecting base of one of the at least one connection assembly of each one of the at least one connection device is composed of two half base elements connected with each other and clamping the cable segment of the transmission element of a corresponding transmission assembly.

10 8. The canopy assembly as claimed in claim 6, wherein

the transmission-connecting base of one of the at least one connection assembly of each one of the at least one connection device has multiple chain-connecting tabs formed on and protruding from a top of the transmission-connecting base and engaged with the chain segment of the
15 transmission element of a corresponding transmission assembly.

9. The canopy assembly as claimed in claim 1 or 2, wherein

each canopy clamping member is curved;

each one of the at least one connection device has three connection

20 assemblies including

a middle connection assembly connected with a middle of a corresponding first canopy clamping member; and

two side connection assemblies connected respectively with two ends of the corresponding first canopy clamping member;

the transmission device comprises three transmission assemblies including

a middle transmission assembly connected with the middle connection assembly of the at least one connection device; and

5 two side transmission assemblies connected with the side connection assemblies of the at least one connection device; and

the transmission device further comprises a simultaneous transmission assembly mounted between the middle transmission assembly and the side transmission assemblies to drive the transmission assemblies to move

10 simultaneously and comprising

a simultaneously driving wheel connected co-axially with the driving wheels of the side transmission assemblies;

a simultaneously driven wheel connected co-axially with the driving wheel of the middle transmission assembly; and

15 a simultaneous element mounted around and connected with the simultaneously driving wheel and the simultaneously driven wheel.

10. The canopy assembly as claimed in claim 9, wherein

the simultaneously driving wheel and the simultaneously driven wheel

20 are sprocket wheels; and

the simultaneous transmission element is a chain.

ABSTRACT OF THE DISCLOSURE

CANOPY ASSEMBLY

A canopy assembly has at least one canopy device, at least one guiding
5 cable, at least one connection device, and a driving device. The at least one
canopy device is expandable along an expansion direction. Each one of the at
least one canopy device has a canopy element and multiple canopy clamping
members including a first canopy clamping member. The at least one guiding
cable is disposed above the at least one canopy device and extends along the
10 expansion direction. The at least one connection device is connected
respectively with the at least one canopy device and is mounted moveably on the
at least one guiding cable. The driving device is connected with the at least one
connection device to drive the at least one canopy device to expand along the
expansion direction.

15 Fig. 1