rotated such that a conveying direction (the first horizontal direction) of the first conveying mechanism 2 is parallel to the length direction of the container, and a width direction of the container is parallel to the second horizontal direction; the switching mechanism 4 lifts the second conveying mechanism 3 and lowers the first conveying mechanism 2, such that the second conveying mechanism 3 receives the container unloaded from the trailer 400. When a part of a width of the container is loaded onto the conveying device 100, the second conveying mechanism 3 conveys the container in the second horizontal direction, such that the entire container gradually moves onto the conveying device 100 in the width direction. Then, the first support frame 1 rotates by 90 degrees, and the container rotates by 90 degrees as well, the length direction of the container is still parallel to the first horizontal direction, the switching mechanism 4 lifts the first conveying mechanism 2 and lowers the second conveying mechanism 3, such that the first conveying mechanism 2 carries the container. After that, the first conveying mechanism 2 conveys the container in the first horizontal direction, such that the container moves onto the conveying mechanism 201 of the inspection channel 200 in the length direction of the container.

[0075] As shown in FIG. 1, during an operation of moving the container on the conveying mechanism 201 of the inspection channel 200 to the trailer 400, the first support frame 1 is rotated such that the conveying direction (the first horizontal direction) of the first conveying mechanism 2 is parallel to the length direction of the container; the switching mechanism 4 lifts the first conveying mechanism 2 and lowers the second conveying mechanism 3, such that the first conveying mechanism 2 receives the container conveyed from the conveying mechanism 201 of the inspection channel 200. When the container is partially loaded onto the conveying device 100, the first conveying mechanism 3 conveys the container in the first horizontal direction, such that the entire container gradually moves onto the conveying device 100 in the length direction. Then, the first support frame 1 rotates by 90 degrees, the container rotates by 90 degrees as well, and the length direction of the container is still parallel to the first horizontal direction. The switching mechanism 4 lifts the second conveying mechanism 3 and lowers the first conveying mechanism 2, such that the second conveying mechanism 3

412 of the second cam 42 to the semicircular support portion of the first part 411 of the second cam 42 supports the second support frame 31. At this time, heights of highest support points of the first cam 41 and the second cam 42 are the same, such that both the first conveying mechanism 2 and the second conveying mechanism 3 may carry the goods within the horizontal support surface. However, both the first conveying mechanism 2 and the third conveying mechanism 3 are in a state where the goods may not be conveyed.

[0095] As shown in FIG. 17, when the first driving shaft 434 rotates to 90°, the semicircular support portion of the first part 411 of the first cam 41 supports the first support frame 21, and the height of the first support frame 21 remains unchanged. The first conveying mechanism 2 carries the goods within the horizontal support surface. At the same time, the height of the highest support point of the second portion 412 of the second cam 42 descends to the lowest, and the third support frame 31 descends with the rotation of the second cam 42, such that the second conveying mechanism 3 no longer carries the goods. In this case, the first conveying mechanism 2 conveys the goods to move in the first horizontal direction.

[0096] As shown in FIG. 18, when the first driving shaft 434 rotates to 180°, the semicircular support portion of the first part 411 of the first cam 41 still supports the first support frame 21, and the height of the first support frame 21 remains unchanged. The first conveying mechanism 2 carries the goods within the horizontal support surface. At the same time, the height of the highest support point of the second portion 412 of the second cam 42 rises to the highest, and the third support frame 31 rises to the highest with the rotation of the second cam 42. At this time, the heights of the highest support points of the first cam 41 and the second cam 42 are the same, such that both the first conveying mechanism 2 and the second conveying mechanism 3 may carry the goods within the horizontal support surface. However, both the first conveying mechanism 2 and the third conveying mechanism 3 are in the state where the goods may not be conveyed.

[0097] As shown in FIG. 19, when the first driving shaft 434 rotates to 270°, the semicircular support portion of the first part 411 of the second cam 42 still supports the third

opposite to each other on the two first longitudinal frames 211. Two ends of each of the plurality of rollers 222 are rotatably installed on a pair of fourth support seats 221 through a bearing to drive the goods 401 to move in the first horizontal direction F1. It may be understood that the roller 222 may also be replaced with a solid pin roller.

[0101] In an exemplary embodiment, as shown in FIG. 10 and FIG. 11, the second conveying mechanism 3 includes: a fifth support seat 231 installed on the first longitudinal support frame 211 of the second support frame 21; a third motor 232 installed on the fifth support seat 231; and a second transmission mechanism 233, wherein the third motor 232 drives the roller 222 to rotate through the second transmission mechanism 233. In an alternative embodiment, the third motor 232 may drive two rollers 222 to rotate through a gear engagement. A reduction mechanism 235 may be coupled to an output shaft of the third motor 232.

[0102] In an exemplary embodiment, as shown in FIG. 10 and FIG. 11, the second transmission mechanism 233 includes: a second conveyor belt 233 and a plurality of third conveyor belts 234. The third motor 232 drives a driving roller 2221 in the plurality of rollers to rotate through the second conveyor belt 233. The driving roller 2221 sequentially drives each driven roller 2222 in the plurality of rollers to rotate through the plurality of third conveyor belts 234. In this way, driven by the third motor 232, each roller 222 may rotate to push the goods carried on the roller 222 to move in the first horizontal direction F1.

[0103] In an exemplary embodiment, as shown in FIG. 2-4 and FIG. 6, the conveying device 100 further includes a plurality of first auxiliary rollers 81 installed on the first base of the first support frame 1 outside the first transverse frame 212, and each first auxiliary roller 81 is arranged parallel to the roller 222. In this way, when the goods passes through the auxiliary roller 81 driven by the roller 222 of the first conveying mechanism 2, the auxiliary roller 81 may rotatably support the goods, such that the goods may be stably conveyed to or removed from the first conveying mechanism.

[0104] In an exemplary embodiment, the first auxiliary roller 81 rotates under a drive of the goods during the conveying of the goods by the first conveying mechanism 2, such that the goods may keep smoothly moving.

[0105] In an embodiment, a first braking mechanism may be provided on a rotation shaft of at least part of the rollers. When the first conveying mechanism 2 stops conveying the goods, the first braking mechanism is controlled to lock the rotation shaft of said at least part of the rollers, such that said at least part of the rollers may not rotate, thereby preventing a further movement of the goods. In another embodiment, a first blocking mechanism that may protrude over or contract to be lower than the horizontal support surface is provided on the first support frame 1. When the first conveying mechanism 2 stops conveying the goods, the first blocking mechanism is controlled to protrude over the horizontal support surface, so as to prevent the further movement of the goods in the first horizontal direction. When the first conveying mechanism 2 conveys the goods, the first blocking mechanism is controlled to contract to be lower than the horizontal support surface, so as not to hinder the goods from moving in the first horizontal direction.

[0106] In an exemplary embodiment, as shown in FIG. 12 to FIG. 15, the third support frame 31 includes: two second longitudinal frames 311 arranged opposite to each other; and a plurality of second transverse frames 312, two ends of each second transverse frame 312 are installed between the second longitudinal frames 311 and located between two adjacent rollers 222. The second rolling mechanism 32 includes a plurality of rows of sixth support seats 321 and a plurality of rows of rolling wheels 322. Each row of sixth support seats 321 are installed on a second transverse frame 312. The plurality of rows of rolling wheels 322 are rotatably installed on the plurality of rows of sixth support seats 321, respectively, and a rotation shaft of each roller extends perpendicular to the second horizontal direction F2 to drive the goods to move in the second horizontal direction. By using the configuration, the roller 222 and the rolling wheel 322 are nested with each other or alternately arranged, and directions of conveying the goods are perpendicular to each other.

[0107] Those of ordinary skill in the art may understand that, sizes of the first support frame, the first conveying mechanism and the second conveying mechanism may be changed according to different weights and sizes of the conveyed goods, such as a sea container or an air container, and the number of rollers and rolling wheels may be

increased or reduced accordingly. In an embodiment, the rollers and the rolling wheels are uniformly arranged.

[0108] In an exemplary embodiment, as shown in FIG. 12 to FIG. 15, the third driving mechanism includes: a seventh support seat 331 installed on the second transverse frame 312 of the third support frame 31; a fourth motor 332 installed on the seventh support seat 331; and a third transmission mechanism 333, wherein the fourth motor 332 drives each rolling wheel 322 to rotate through the third transmission mechanism 333. A reduction mechanism 334 may be coupled to an output shaft of the fourth motor 332.

[0109] In an exemplary embodiment, the third transmission mechanism 333 includes: a plurality of eighth support seats 3331, a second driving shaft 3332, a fourth conveyor belt 3333, a fifth conveyor belt 3334, and a plurality of sixth conveyor belts 3335. The eighth support seats 3331 are installed at a lower portion of the second transverse frame 312; the second driving shaft 3332 is rotatably installed on the eighth support seat 3331 through a bearing and extends in a direction perpendicular to the second horizontal direction F2; the fourth motor 332 drives the second driving shaft 3332 to rotate through the fourth conveyor belt 3333; the second driving shaft 3332 drives a first rolling wheel 3221 in each row of rolling wheels to rotate through the fifth conveyor belt 3334; the first rolling wheel 3221 sequentially drives each second rolling wheel 3222 in each row of rolling wheels to rotate through the plurality of sixth conveyor belts 3335.

[0110] In an embodiment, a combination of the first conveyor belt, the second conveyor belt, the third conveyor belt, the fourth conveyor belt, the fifth conveyor belt, and the sixth conveyor belt with belt pulleys may be replaced with a combination of a sprocket and a chain.

[0111] In an exemplary embodiment, as shown in FIG. 12 to FIG. 15, the second rolling mechanism 32 further includes: a plurality of rows of auxiliary rolling wheels 323, and each row of auxiliary rolling wheels 323 are rotatably installed on the sixth support seat 321 between two rows of rolling wheels 322. The auxiliary rolling wheel 323 is provided as an inert wheel with no driving function. The auxiliary rolling wheel

323 rotates under a drive of the goods while the goods moves on the second conveying mechanism 3, so as to keep the goods smoothly moving.

[0112] In an exemplary embodiment, as shown in FIG. 2 to FIG. 4 and FIG. 6, the conveying device 100 further includes: a plurality of second auxiliary rollers 82 arranged on the first support frame 1 outside the first longitudinal frame 211, and each second auxiliary roller 82 is arranged parallel to an axis of the rolling wheel 322. In this way, when the goods are driven by the rolling wheel 322 of the second conveying mechanism 3 and pass through the auxiliary roller 82, the auxiliary roller 82 may rotatably support the goods, such that the goods may be smoothly conveyed to or removed from the second conveying mechanism.

[0113] In an exemplary embodiment, the second auxiliary roller 82 rotates under the drive of the goods during the conveying of the goods by the second conveying mechanism 3, so as to keep the goods smoothly moving.

[0114] In an embodiment, a second blocking mechanism that may protrude over or contract to be lower than the horizontal support surface is provided on the first support frame 1. When the second conveying mechanism 3 stops conveying the goods, the second blocking mechanism is controlled to protrude over the horizontal support surface, so as to prevent a further movement of the goods in the second horizontal direction; when the second conveying mechanism 3 conveys the goods, the second blocking mechanism is controlled to contract to be lower than the horizontal support surface, so as not to hinder the goods from moving in the second horizontal direction.

[0115] In an exemplary embodiment, as shown in FIG. 2 to FIG. 6 and FIG. 12 to FIG. 14, the conveying device 100 further includes: a guide mechanism 9 suitable for guiding the second support frame 21 and the third support frame 31 to move in the vertical direction, so as to prevent the second support frame 21 and the third support frame 31 from moving horizontally relative to the first support frame 1. In an exemplary embodiment, the guide mechanism 9 includes: a plurality of guide columns 91 installed on the first base of the first support frame 1 in the vertical direction; a plurality of first guide blocks 92 installed on the second support frame 21; and a plurality of second guide blocks 93 installed on the third support frame 31. Each first guide block 92 is

provided with a guide hole 921 matched with the guide column 91, and each second guide block 93 is provided with a guide hole 931 matched with the guide column 91. Both first guide block 92 and second guide block 93 move up and down along the guide column 91 in the vertical direction.

[0116] In an exemplary embodiment, one first guide block 92 and one second guide block 93 share one guide column 91, there is a gap between the first guide block 92 and the second guide block 93 in the vertical direction, and the gap is not less than a maximum height of a movement of the first conveying mechanism 2 or the second conveying mechanism 3 in the vertical direction. In this way, a movement of the first conveying mechanism 2 in the vertical direction or a movement of the second conveying mechanism 3 in the vertical direction do not interfere with each other. In an alternative embodiment, each first guide block 92 and each second guide block 93 match with different guide columns.

[0117] In an exemplary embodiment, there is further provided with a sensor suitable for detecting whether the conveying device is provided with the goods, whether the goods are being loaded onto the conveying device, and whether the goods are being unloaded from the conveying device. The sensor may include any one of a weight sensor, an optical sensor, and a proximity switch.

[0118] For the conveying device and the inspection system according to embodiments of the present disclosure, the conveying device has functions of rotating and bidirectional (forward and backward) conveying goods such as the sea container and the air container, and may achieve a positioning and a smooth continuous conveying of the goods. The conveying device may be combined with a radiation inspection system including a CT machine so as to achieve a smooth conveying and a calibrated positioning of the goods in different postures. The conveying device has characteristics of high accuracy, smooth operation, compact structure, automatic connection and conveying, etc., and is suitable for an aviation box CT detection system. The conveying device may achieve a seamless docking with an existing conveying apparatus in an