What is claimed is:

1. An inspection device which, when assembled, comprises:

a bracket;

a transmission imaging apparatus supported by the bracket and configured to construct a transmission image of an inspected object; and

a diffraction detection apparatus supported by the bracket,

wherein the transmission imaging apparatus defines an inspection channel, and is configured for the inspected object to be moved on the inspection channel to be scanned by the transmission imaging apparatus; and

wherein the diffraction detection apparatus comprises a diffraction radiation detector configured to move on the bracket along a lateral direction of the inspection channel, to a specific position to receive a radiation diffracted by at least a part of the inspected object for detecting a characteristic of the inspected object.

2. The inspection device according to claim 1,

wherein the inspection device further comprises a track extending along a straight line, and the track is provided on the bracket and configured to span the inspection channel along a lateral direction of an extension direction of the inspection channel; and

wherein the diffraction radiation detector is supported by the track and configured to move along the track to receive and detect the diffracted radiation at the specific position.

3. The inspection device according to claim 2,

wherein the diffraction detection apparatus and the transmission imaging apparatus comprise a common radiation source configured to irradiate a radiation towards the inspected object; or

wherein each of the diffraction detection apparatus and the transmission imaging apparatus comprises a radiation source configured to irradiate a radiation towards the inspected object.

4. The inspection device according to claim 3, configured for a suspicious item comprised in the inspected object and a position of the suspicious item in the inspected object

to be determined based on the transmission image, and for the diffraction radiation detector to be moved to the specific position based on the position of the suspicious item so as to receive the radiation diffracted by the suspicious item for determining a characteristic of the suspicious item.

5. The inspection device according to claim 4, wherein the specific position is substantially located on an extension line of a virtual line connecting the radiation source and the suspicious item.

6. The inspection device according to claim 2, wherein the track comprises a linear guide rail, the diffraction radiation detector comprises a detector translation bracket, and the diffraction radiation detector is configured to move on the linear guide rail through the detector translation bracket.

7. The inspection device according to claim 6, further comprising:

an encoding motor and a lead screw, the encoding motor is configured to rotate the lead screw, so that the lead screw drives the detector translation bracket to move along the linear guide rail.

8. The inspection device according to claim 7, wherein the diffraction radiation detector further comprises: a pivot shaft installed on the detector translation bracket, and a detector seat installed on the pivot shaft and supported by the pivot shaft, and the detector seat is configured to rotate relative to the detector translation bracket through a rotation of the pivot shaft, so as to adjust a pose of the diffraction radiation detector.

9. The inspection device according to claim 8, wherein the diffraction radiation detector comprises an adjusting motor installed on the detector translation bracket, the pivot shaft comprises an adjusting element, and the adjusting motor is engaged with the adjusting element to drive the pivot shaft to rotate a predetermined angle through the adjusting element.

10. The inspection device according to claim 9, wherein the adjusting motor is equipped with a driving gear, and the adjusting element is configured to mesh with the driving gear.

11. The inspection device according to claim 8, wherein the detector seat is rotated through the pivot shaft, so that a diffraction radiation receiving surface of the diffraction radiation detector faces the diffracted radiation.

12. The inspection device according to claim 2, wherein the transmission imaging apparatus comprises a transmission radiation detector configured to receive a radiation transmitted through the inspected object for constructing the transmission image of the inspected object, the transmission radiation detector comprises a plurality of detection units arranged in two rows, the detection units in each row are spaced apart from each other, and the detection units in the two rows form a continuous receiving surface relative to a projection direction of the radiation.

13. The inspection device according to claim 12, wherein adjacent detection units in the two rows overlap relative to the projection direction of the radiation.

14. The inspection device according to claim 12, wherein the transmission radiation detector is arranged along a straight line.

15. An inspection method using the inspection device of any one of claims 1 to 14, comprising:

irradiating the inspected object using the radiation source;

detecting a transmission radiation transmitted through the inspected object through the transmission radiation detector to construct the transmission image of the inspected object;

identifying a suspicious item image portion corresponding to a suspicious item in the transmission image;

determining a position of the suspicious item in the inspected object based on a position of the suspicious item image portion in the transmission image; and

moving the diffraction detection apparatus to the specific position based on the position of the suspicious item in the inspected object, so as to detect a diffraction radiation from the suspicious item for determining a characteristic of the suspicious item.

16. The inspection method according to claim 15, wherein the moving the diffraction detection apparatus to the specific position, so as to detect a diffraction radiation

from the suspicious item for determining a characteristic of the suspicious item comprises:

moving the diffraction radiation detector on a track so that the diffraction radiation detector is substantially located on an extension line of a virtual line connecting the radiation source and the suspicious item.

17. An inspection system, comprising:

a CT inspection portion comprising a CT machine and configured to inspect whether a suspicious item is comprised in an inspected object; and

a re-inspection portion comprising the inspection device of any one of claims 1 to 14 and configured to identify a composition of the suspicious item.

18. The inspection system according to claim 17, wherein after inspected by the CT inspection portion, the inspected object with no suspicious item is released, and the inspected object comprising the suspicious item is transferred to the re-inspection portion.