Claims

1. A collimating device, mounted to a frame and configured to collimate a radiation beam from a source, the collimating device comprising:

a beam guiding cylinder extended along a first direction such that the radiation beam enters the beam guiding cylinder from an inlet thereof in the first direction, passes along the beam guiding cylinder and is emitted out of an outlet of the beam guiding cylinder;

a first collimator mounted at an inlet end of the beam guiding cylinder;

a second collimator mounted at an outlet end of the beam guiding cylinder; and

a beam guiding cylinder adjusting device disposed adjacent to the inlet of the beam guiding cylinder to adjust a direction of the beam guiding cylinder such that the first collimator is aligned with the first direction;

wherein the outlet end of the beam guiding cylinder is fixed to the frame and the second collimator is aligned with an object to be irradiated by the radiation beam, and the beam guiding cylinder is configured to have flexibility to allow the beam guiding cylinder adjusting device to adjust a direction towards which the inlet end of the beam guiding cylinder is directed, in a direction transverse to the first direction.

2. The collimating device as claimed by claim 1, wherein the beam guiding cylinder adjusting device comprises a retractable adjusting rod configured to extend and retractably move in a transverse plane perpendicular to the first direction so as to adjust the direction towards which the inlet end of the beam guiding cylinder is directed.

3. The collimating device as claimed by claim 2, wherein the beam guiding cylinder adjusting device comprises four retractable adjusting rods configured to retractably move in four directions, i.e., upward, downward, leftward and rightward directions, in the transverse plane perpendicular to the first direction, so as to adjust the direction towards which the inlet end of the beam guiding cylinder is directed.

4. The collimating device as claimed by claim 2, wherein the beam guiding cylinder adjusting device further comprises a beam guiding cylinder adjusting screw configured to move the retractable adjusting rod in the direction transverse to the first direction by being screwed.

5. The collimating device as claimed by claim 1, wherein the beam guiding cylinder adjusting device further comprises a fixing plate configured to fix the inlet end of the beam guiding cylinder and extend in the plane transverse to the first direction.

6. The collimating device as claimed by claim 5, wherein the beam guiding cylinder adjusting device further comprises a flange plate coupled to the inlet end of the beam guiding cylinder, the flange plate including a portion extending along a plane where the fixing plate is located and a portion coupled to the inlet end of the beam guiding cylinder; and, a fastening screw that is mounted to the flange plate and contacts and presses the fixing plate by being screwed into a threaded hole in the flange plate so as to fix the direction towards which the inlet end of the beam guiding cylinder is directed.

7. The collimating device as claimed by claim 1, wherein the first collimator comprises a first collimation enhancing piece and the second collimator comprises a second collimation enhancing piece; and the first collimation enhancing piece and the second collimation enhancing piece extend along a central axis of the beam guiding cylinder and are sized such that most of scattering rays passing through the first collimator and/or the second collimator are blocked by the first collimation enhancing piece and the second collimation enhancing piece.

8. The collimating device as claimed by claim 7, wherein the first collimation enhancing piece and the second collimation enhancing piece are made of a material that can absorb rays, or, a side of the first collimation enhancing piece and the second collimation enhancing piece facing the central axis of the beam guiding cylinder is

coated with the material that can absorb the rays so as to absorb scattering rays passing through the first collimator and/or the second collimator.

9. The collimating device as claimed by claim 7, wherein the first collimation enhancing piece and the second collimation enhancing piece each comprise a first portion coupled to the first collimator and/or the second collimator and a second portion extending parallel to the central axis of the beam guiding cylinder.

10. The collimating device as claimed by claim 7, wherein the first collimation enhancing piece and the second collimation enhancing piece each comprise a first baffle plate and a second baffle plate, and the first baffle plates and the second baffle plates are positioned symmetrically with respect to the central axis of the beam guiding cylinder, respectively.

11. The collimating device as claimed by claim 7, wherein the first collimation enhancing piece and the second collimation enhancing piece each are constituted by a baffle plate that is located at a side of the central axis of the beam guiding cylinder.

12. A ray inspection device comprising:

a frame;

a ray source configured to generate a ray;

an inspection region where an object to be inspected is placed or is passed;

a detecting device configured to detect a ray signal that has penetrated the object to be inspected; and

the collimating device as claimed by claim 1,

wherein the ray source, the inspection region, the detecting device and the collimating device are mounted to the frame.

13. The ray inspection device as claimed by claim 12, wherein the detecting device comprises a detector collimator configured to allow the ray that has penetrated the object to be inspected to enter the detector; and, the detector collimator is aligned with the second collimator of the collimating device and is fixed to the frame.