WHAT IS CLAIMED IS:

1. A radiation imaging system comprising:

a housing containing a plurality of radiation imaging devices each including a radiation detecting panel having a two-dimensional matrix of pixels and arranged to convert applied radiation to an image signal;

a plurality of retainers configured to position and retain the plurality of radiation imaging devices so that parts of the respective radiation imaging devices spatially overlap as viewed from an irradiation side; and

a unit configured to acquire a radiographic image on the basis of image signals from the respective radiation imaging devices,

wherein the plurality of retainers are configured to retain the plurality of radiation imaging devices in areas other than effective pixel areas of the respective radiation imaging devices.

2. The radiation imaging system according to Claim 1, wherein the plurality of retainers are disposed only in areas other than irradiated sides of the effective pixel areas of the respective radiation imaging devices.

3. The radiation imaging system according to Claim 2,

wherein the plurality of radiation imaging devices include a first radiation imaging device and a second radiation imaging device;

of the plurality of retainers, a retainer retaining the second radiation imaging device disposed opposite an irradiated side of the first radiation imaging device is disposed only in an area other than the irradiated side of the effective pixel area of the second radiation imaging device; and

of the plurality of retainers, a retainer retaining the first radiation imaging device is disposed only in an area other than the irradiated side of the effective pixel area of the first radiation imaging device and an area other than the irradiated side of the effective pixel area of the second radiation imaging device.

4. The radiation imaging system according to Claim 3, wherein the retainer retaining the second radiation imaging device is disposed opposite the irradiated side of the effective pixel area of the first radiation imaging device.

5. The radiation imaging system according to Claim 4, wherein the plurality of radiation imaging devices include a third radiation imaging device disposed closer to the irradiation side than the second radiation imaging device

is; and

the plurality of retainers are configured to position and retain the plurality of radiation imaging devices such that the third radiation imaging device is disposed lower than the first radiation imaging device and the second radiation imaging device, and that the first radiation imaging device is disposed higher than the second radiation imaging device.

6. The radiation imaging system according to Claim 5, wherein the first radiation imaging device is retained by a first retainer and a second retainer of the plurality of retainers;

the first retainer retains a side portion of the first radiation imaging device in a lateral direction for positioning of the first radiation imaging device in the lateral direction; and

the second retainer retains a lower corner of the first radiation imaging device.

7. The radiation imaging system according to Claim 6, wherein the second radiation imaging device is retained by a third retainer, a fourth retainer, and a fifth retainer of the plurality of retainers;

the third retainer is disposed only opposite the

irradiated side of the effective pixel area of the first radiation imaging device and above the effective pixel area of the second radiation imaging device;

the fourth retainer is disposed only opposite the irradiated side of the effective pixel area of the third radiation imaging device and below the effective pixel area of the second radiation imaging device; and

the fifth retainer is disposed only outside the effective pixel area of the second radiation imaging device in the lateral direction.

8. The radiation imaging system according to Claim 7, wherein the third radiation imaging device is retained by a sixth retainer and a seventh retainer of the plurality of retainers;

the sixth retainer is disposed only outside the effective pixel area of the third radiation imaging device in the lateral direction; and

the seventh retainer is disposed only below the effective pixel area of the third radiation imaging device.

9. The radiation imaging system according to Claim 5, wherein the first radiation imaging device and the third radiation imaging device are mounted from the irradiation side, which is the front of the plurality of retainers, into

the housing, and the second radiation imaging device is mounted from a side of the plurality of retainers into the housing.

10. The radiation imaging system according to Claim 3, wherein an overlapping order of the plurality of radiation imaging devices from the irradiated side can be changed.

11. The radiation imaging system according to Claim 10, wherein the plurality of retainers are each configured so as to be rotatable in a plane parallel to radiation incidence planes of the plurality of radiation imaging devices.

12. The radiation imaging system according to Claim 1, wherein the housing comprises a grid for eliminating scattered radiation, and the grid has a seam formed by arranging a plurality of smaller grids together in a longitudinal direction, and the seam is positioned to spatially overlap an overlapping portion of two of the plurality of radiation imaging devices.

13. The radiation imaging system according to Claim 1, wherein the housing has an index to make a position of an overlapping portion of two of the plurality of radiation imaging devices externally visible.

14. The radiation imaging system according to Claim 1, wherein the housing has an index to make an effective photographing area externally visible, the effective photographing area corresponding to the effective pixel area of each of the plurality of radiation imaging devices as viewed from a predetermined radiation source.

15. The radiation imaging system according to Claim 1, wherein the housing has a display unit for displaying a state of each of the plurality of radiation imaging devices.

16. The radiation imaging system according to Claim 1, wherein, of the plurality of radiation imaging devices, a first radiation imaging device disposed in front of a second radiation imaging device, as viewed from the irradiation side, includes a radiation shielding member on a back side of the radiation detecting panel; and

the radiation shielding member is disposed so as not to spatially overlap the effective pixel area of the second radiation imaging device.

17. The radiation imaging system according to Claim 16, wherein, of the plurality of radiation imaging devices, a third radiation imaging device disposed lower than the first

radiation imaging device and the second radiation imaging device and in front of the second radiation imaging device, as viewed from the irradiation side, includes a radiation shielding member on a back side of the radiation detecting panel; and

the radiation shielding member is disposed so as not to spatially overlap the effective pixel area of the second radiation imaging device.

18. The radiation imaging system according to Claim 16, wherein the radiation shielding member is disposed in the same area as an effective pixel area of the radiation detecting panel in the first radiation imaging device, or in an area inside the effective pixel area of the radiation detecting panel.

19. A radiation imaging system comprising:

a plurality of retainers configured to position and retain a plurality of radiation imaging devices, each including a radiation detecting panel having a two-dimensional matrix of pixels and configured to convert applied radiation to an image signal, such that parts of the respective radiation imaging devices spatially overlap as viewed from an irradiation side; and

a unit configured to acquire a radiographic image on

the basis of image signals from the respective radiation imaging devices,

wherein at least a part of each of the plurality of retainers is configured to retain a corresponding one of the radiation imaging devices in an area other than effective pixel areas of the respective radiation imaging devices, as viewed from the irradiation side.

20. A radiation imaging device used in a radiation imaging system including a plurality of retainers configured to position and retain a plurality of radiation imaging devices, each including a radiation detecting panel having a two-dimensional matrix of pixels and configured to convert applied radiation to an image signal, such that parts of the respective radiation imaging devices spatially overlap as viewed from an irradiation side, the radiation imaging system including a unit configured to acquire a radiographic image on the basis of image signals from the respective radiation imaging devices,

the radiation imaging device comprising a unit configured to be retained by a corresponding retainer in an area other than an effective pixel area of the radiation imaging device as viewed from the irradiation side.

CLAIMS

1. A radiation imaging system comprising:

a housing containing a plurality of radiation imaging devices each including a radiation detecting panel having a two-dimensional matrix of pixels and arranged to convert applied radiation to an image signal;

a plurality of retainers configured to position and retain the plurality of radiation imaging devices so that parts of effective pixel areas of the respective radiation imaging devices spatially overlap as viewed from an irradiation side; and

a unit configured to acquire a radiographic image on the basis of image signals from the respective radiation imaging devices,

wherein the plurality of radiation imaging devices include a first radiation imaging device and a second radiation imaging device disposed on a back side of the first radiation imaging device as viewed from the irradiation side,

wherein the plurality of retainers are disposed within the housing and configured to retain the plurality of radiation imaging devices independently, and

wherein the plurality of retainers include a retainer, retaining the first radiation imaging device, disposed in an area other than effective pixel areas of the first radiation imaging device and the second radiation imaging device as viewed from the irradiation side.

2. The radiation imaging system according to Claim 1,

wherein the plurality of retainers are disposed in areas other than the effective pixel areas of the respective radiation imaging devices as viewed from the irradiation side.

3. The radiation imaging system according to Claim 1 or 2,

wherein a retainer retaining the second radiation imaging device is disposed in an area other than the effective pixel area of the second radiation imaging device as viewed from the irradiation side; and

the retainer retaining the first radiation imaging device is disposed in an area other than the effective pixel areas of the first radiation imaging device and the second radiation imaging device as viewed from the irradiation side.

4. The radiation imaging system according to Claim 3,

wherein the retainer retaining the second radiation imaging device is disposed spatially

overlapping the effective pixel area of the first radiation imaging device as viewed from the irradiation side.

5. The radiation imaging system according to any one of Claims 1 to 4,

wherein the plurality of retainers are configured to position and retain the plurality of radiation imaging devices such that the first radiation imaging device is disposed higher than the second radiation imaging device.

6. The radiation imaging system according to Claim 5,

wherein the first radiation imaging device is retained by a first retainer and a second retainer of the plurality of retainers;

the first retainer retains a side portion of the first radiation imaging device in a lateral direction for positioning of the first radiation imaging device in the lateral direction;

and the second retainer retains a lower corner of the first radiation imaging device.

7. The radiation imaging system according to Claim 5 or 6,

wherein the second radiation imaging device is retained by a third retainer, a fourth retainer, and a fifth retainer of the plurality of retainers;

the third retainer is disposed spatially overlapping the effective pixel area of the first radiation imaging device as viewed from the irradiation side and above the effective pixel area of the second radiation imaging device;

the fourth retainer is disposed spatially overlapping the effective pixel area of the third radiation imaging device as viewed from the irradiation side and below the effective pixel area of the second radiation imaging device; and

the fifth retainer is disposed outside the effective pixel area of the second radiation imaging device in the lateral direction.

8. The radiation imaging system according to any one of Claims 5 to 7,

wherein the plurality of radiation imaging devices include a third radiation imaging device disposed closer to an irradiation source than the second radiation imaging device, the third radiation imaging device is retained by a sixth retainer and a seventh retainer of the plurality of retainers;

the sixth retainer is disposed outside the effective pixel area of the third radiation imaging device in the lateral direction; and

the seventh retainer is disposed below the effective pixel area of the third radiation imaging device.

9. The radiation imaging system according to any one of Claims 1 to 8, wherein an overlapping order of the plurality of radiation imaging devices from the irradiated side can be changed.

10. The radiation imaging system according to Claim 9,

wherein the plurality of retainers are each configured so as to be rotatable in a plane parallel to radiation irradiated planes of the plurality of radiation imaging devices.

11. The radiation imaging system according to any one of Claims 1 to 10,

wherein the housing comprises a grid for eliminating scattered radiation, and

the grid has a seam formed by arranging a plurality of smaller grids together in a longitudinal direction, and the seam is positioned to spatially overlap an overlapping portion of two of the plurality of radiation imaging devices.

12. The radiation imaging system according to any one of Claims 1 to 11,

wherein the housing has an index to make a position of an overlapping portion of two of the plurality of radiation imaging devices externally visible.

13. The radiation imaging system according to any one of Claims 1 to 12,

wherein the housing has an index to make an effective photographing area externally visible, the effective photographing area corresponding to the effective pixel area of each of the plurality of radiation imaging devices as viewed from a predetermined radiation source.

14. The radiation imaging system according to any one of Claims 1 to 13, wherein the housing has a display unit for displaying a state of each of the plurality of radiation imaging devices.

15. The radiation imaging system according to any one of Claims 1 to 14,

wherein the first radiation imaging device includes a radiation shielding member on a back side of the radiation detecting panel; and

the radiation shielding member is disposed so as not to spatially overlap the effective pixel area of the second radiation imaging device.

16. The radiation imaging system according to Claim 15,

wherein, of the plurality of radiation imaging devices, a third radiation imaging device disposed lower than the first radiation imaging device and the second radiation imaging device and in front of the second radiation imaging device, as viewed from the irradiation side, includes a radiation shielding member on a back side of the radiation detecting panel; and

the radiation shielding member of the third radiation imaging device is disposed so as not to spatially overlap the effective pixel area of the second radiation imaging device.

17. The radiation imaging system according to Claim 16,

wherein the radiation shielding member is disposed in the same area as an effective pixel area of the radiation detecting panel in the first radiation imaging device, or in an area inside the effective pixel area of the radiation detecting panel.

18. The radiation imaging system according to any one of Claims 1 to 17,

wherein the first radiation imaging device and the second radiation imaging device are disposed in a vertical direction, and

wherein the retainer retaining the first radiation imaging device is disposed outside the effective pixel areas of the first radiation imaging device and the second radiation imaging device in a lateral direction.