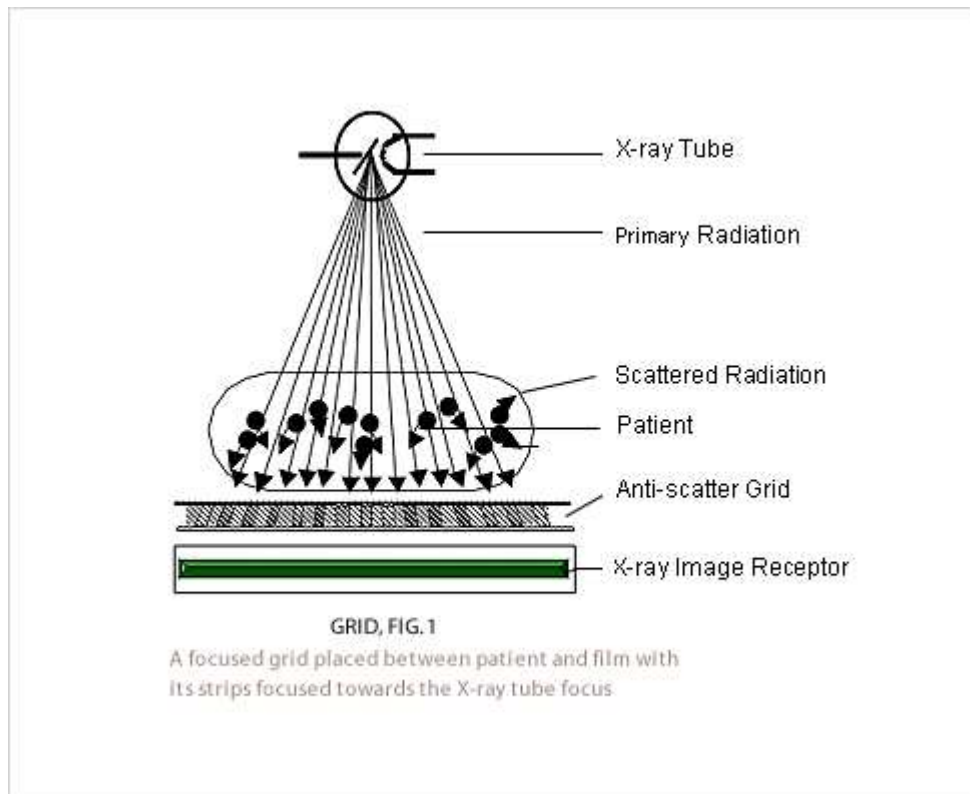


ANTISCATTER GRID

A device that, when positioned between the patient and the receptor (Cassette or Flat panel), reduces the amount of scattered radiation that can reach the film cassette (Fig. 1). The grid was invented by Gustave Bucky in 1913 and is still the most effective device for reduction of scattered radiation. It is made of a thin cover plate, in which very thin strips of high-attenuating material, commonly lead, is placed in a linear, parallel pattern. The spaces between the strips are filled with low-attenuating material.



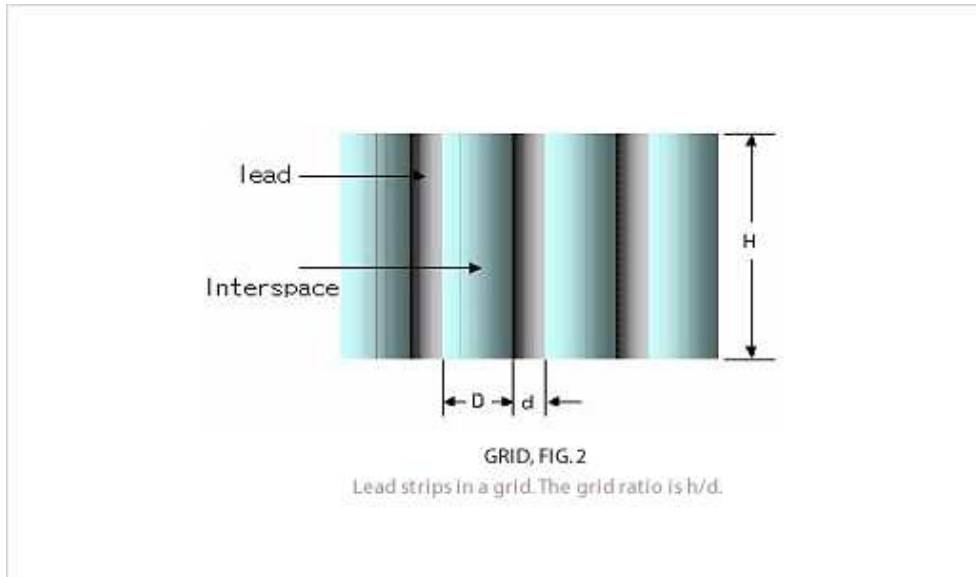
In modern grids its covers are usually made of Aluminium but nowadays carbon fibre is also common used. The lead strips are always higher than the distance between them. The grid Ratio ($R \dots/1$) is defined as the ratio of the height of the lead strips to the distance between them, and is, accordingly, always greater than the Interpace (Fig. 2). The higher the grid ratio, the more efficient reduction of scattered radiation can be accomplished. Common grid ratios range from 5 to 15. Generally, higher grid ratios are used for higher kVps and lower ratios for lower kVps.

The number of strips per cm ($\dots L/Cm$) in grids has long been between 30 and 40, but technological advances in the manufacture of grids have made it possible to produce grids with 60-70 lines per cm. In such grids, the strips are not visible to the naked eye, which means that they do not have to be moved during exposure (see below).

The grid can be Parallel or Focused. In a parallel grid, the strips are placed parallel to each other which means that the grid is "focused" at infinite distance ($FD = \infty$).

Such a grid can only be used together with small fields or at very large focal distances and is therefore rarely used.

In a focused grid, the strips are angled and focused at a specific distance which means that the grid can only be used at a specific focal distance ($FD = \dots\text{Cm}$).



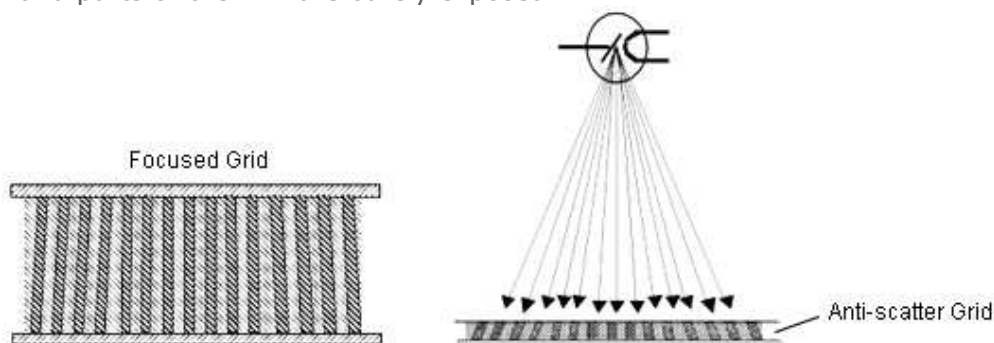
The grid can either be used as a stationary grid or a moving grid. Moving a grid during exposure will blur out the shadows of the lead strips in the image.

The moving grid was invented by Hollis Potter in 1920 and the device has since then been called a Potter-Bucky grid.

FOCUSED GRID

A grid in which the absorbing strips (which are often made of lead) are slightly angled towards the focal spot (Fig.1).

The grid can therefore be used only at a specified focal distance (actually inside a narrow distance interval around this specific distance). Otherwise the grid will absorb the primary radiation and parts of the film are barely exposed.

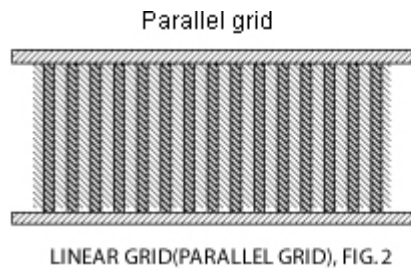


FOCUSED GRID, FIG. 1

The strips of the grid are aligned with the beam of X-rays emanating from the focal spot.

PARALLEL GRID

A grid where the lead strips are parallel to each other in their longitudinal axis. Most linear grids are focused, i.e. their strips are slightly tilted, converging at a line in space (the convergent line). A non-focused linear grid have strips that are parallel also when viewed in cross-section; this is called a parallel grid. Many X-ray tables are equipped with linear, focused grids, and the strips in these grids are parallel with the long axis of the table allowing the X-ray tube to be tilted in this direction.



SOFTWARE

Nowadays most of the daily used X-ray receptors are already from a digital layout. The analog film Cassettes are still there but we face off course a digital era. Because this digitalisation the use of a Grid is till common but the integration in the software system needs some attention. To combine a Grid with a digital CR-Cassette or Flat Panel Detector the software of the system is also in the process of getting good quality images. For the optimal result the settings of the software is important to get the rights specifications of the Grid (Focal Distance, Lines/Cm, Ratio).

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