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[54] **STORING DEVICE FOR FUEL ASSEMBLIES**

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[30] **Foreign Application Priority Data**

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[52] **U.S. Cl.** **250/507,** 250/518

[51] **Int. Cl.** **G21f 5/00**

[58] **Field of Search** 250/506, 507, 515, 518

[56] **References Cited**

UNITED STATES PATENTS

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Primary Examiner—Harold A. Dixon

[57] **ABSTRACT**

A storing device for fuel assemblies includes a supporting grid with a substantially square lattice and a plurality of tubes of substantially square cross-section each adapted to contain one fuel assembly. There are retaining devices for holding tubes in position with respect to the grid. The walls of the tubes are coated with absorbing material. Each of the retaining devices is arranged to hold a pair of mutually parallel walls of different tubes having a gap between them, with the walls crossing a side of the lattice. The gap contains a layer of absorbing material, and is sealed water-tightly at the top and bottom portions of the gap.

1 Claim, 2 Drawing Figures

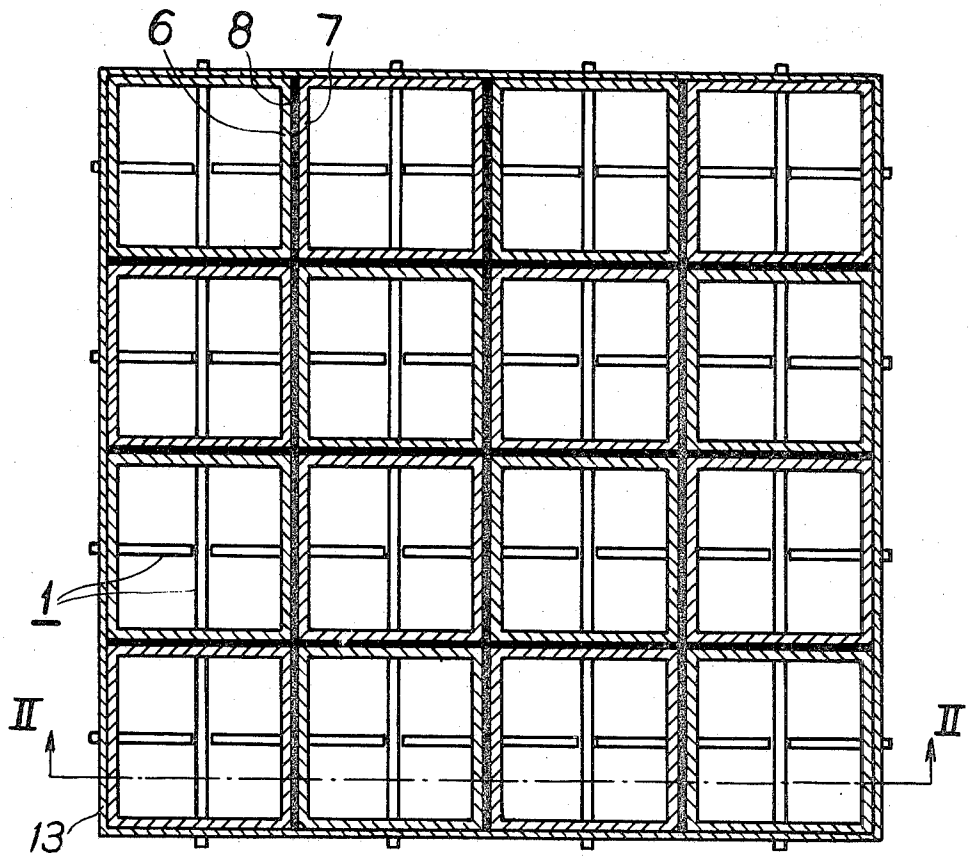


Fig. 1

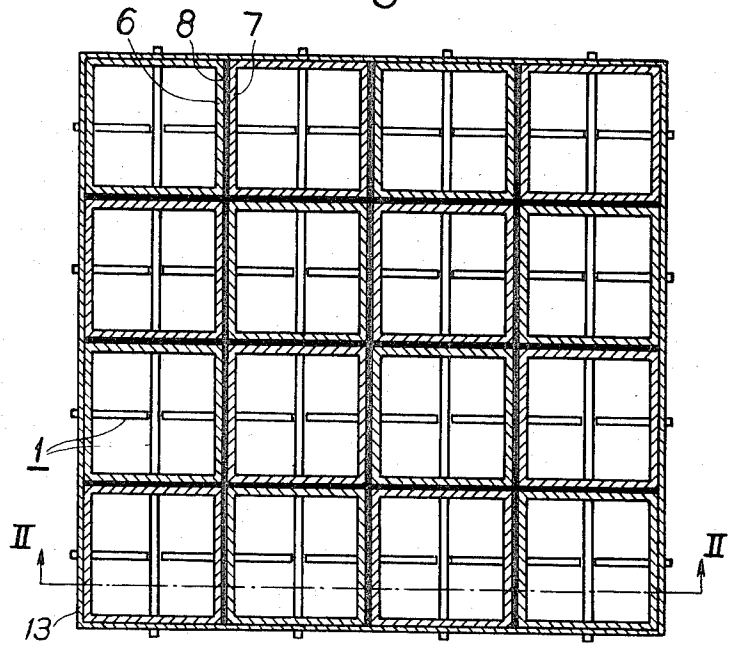
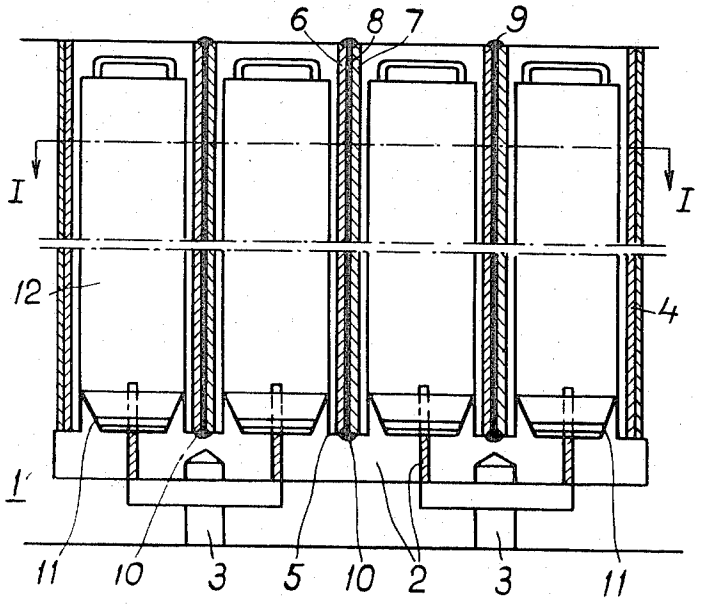


Fig. 2



STORING DEVICE FOR FUEL ASSEMBLIES

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present patent application relates to a storing device for fuel assemblies.

2. The Prior Art

Storing devices for fuel assemblies are usually constructed with assembly positions so thinly distributed that there is no risk of criticality. This, however, requires a relatively large distance between the assemblies and, as the required number of storing positions is great, about 1,000 to a medium-sized reactor station, the space which is needed for fuel storage will be considerable.

The assemblies can be placed close to each other if a sufficient amount of absorbing material of penetrating radiation is placed between the assemblies. Most of the absorbing materials must be encapsuled in order not to be dissolved or corroded by the water. The materials which can be used uncapsuled, for example hafnium, are very expensive.

SUMMARY OF THE INVENTION

In the device according to the invention, the storing tubes are assembled in such a way that a space which is necessary for absorbing materials is formed between the tubes when they are put together into a unit. The construction consists of square tubes which are provided with absorbing material all around them. Application of the absorbing layer can be performed by metal spraying, by electrolysis or in the form of thin sheet or foil. The gaps between adjacent tubes are sealed by welding at top and bottom. The sides of the construction which do not face other tubes are provided with cover plates welded to the upper and lower edges of the tubes. The units can be so small as 4 to 8 positions but can also comprise all 1,000 positions. Units which are very large, however, are impractical from the point of view of handling and prefabrication.

Furthermore, according to the invention, a grid is provided which is formed of upstanding wall portions crossing each other, with notches between the tube-receiving portions, in which the walls of adjacent tubes engage with a space between them which is filled with absorbing medium. The spaces are sealed at top and bottom by valves or the like.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be described with reference to the

accompanying drawing in which FIG. 1 shows a device according to the invention in horizontal section along the line I — I of FIG. 2, and FIG. 2 shows a vertical section of the same device along the line II—II of FIG. 1, FIG. 1 showing the storing device without fuel assemblies and FIG. 2 with fuel assemblies.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In the drawing, 1 designates a supporting grid which is constituted by a plurality of sheet elements 2 resting on their ends and crossing each other and welded together. The supporting grid 1 is supported by a plurality of supporting studs 3 which are arranged on the floor of the fuel basin. A number of storing tubes 4 are positioned on the supporting grid 1, which is provided with retaining means of such a nature that accurate positions are ensured for the tubes. The retaining means in a simple form consist of notches 5 in the sheet element 2. In each notch 5 the width is such that two parallel tubular walls 6 and 7, belonging to two different storing tubes with an intermediary gap 8 for absorbing material, can be inserted into the notch 5. The gaps 8 are sealed at the upper and lower edges by the welding seams 9 and 10, which, together with a cover plate surrounding the whole storing device, ensures a watertight enclosure of the absorbing material arranged between the storing tubes.

The sheet elements 2 are made with oblique control edges 11, which results in a centering of each fuel assembly 12 with respect to the corresponding storing tubes.

I claim:

1. Storing device for fuel assemblies of substantially square cross-section, comprising a supporting grid (1) with a substantially square lattice, a plurality of tubes (4), the tubes having substantially square cross-section and being adapted to contain one fuel assembly each, a plurality of retaining means (5) for holding said tubes in position with respect to said supporting grid, an absorbing material (8) coating the walls of said tubes, each of said retaining means (5) being adapted to hold a pair (6, 7) of mutually parallel walls belonging to different tubes and arranged with a gap (8) between them, said walls crossing a side of said lattice, said gap containing a layer of absorbing material, the gap between said walls being sealed water-tightly at the top and bottom portions of said gap.

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