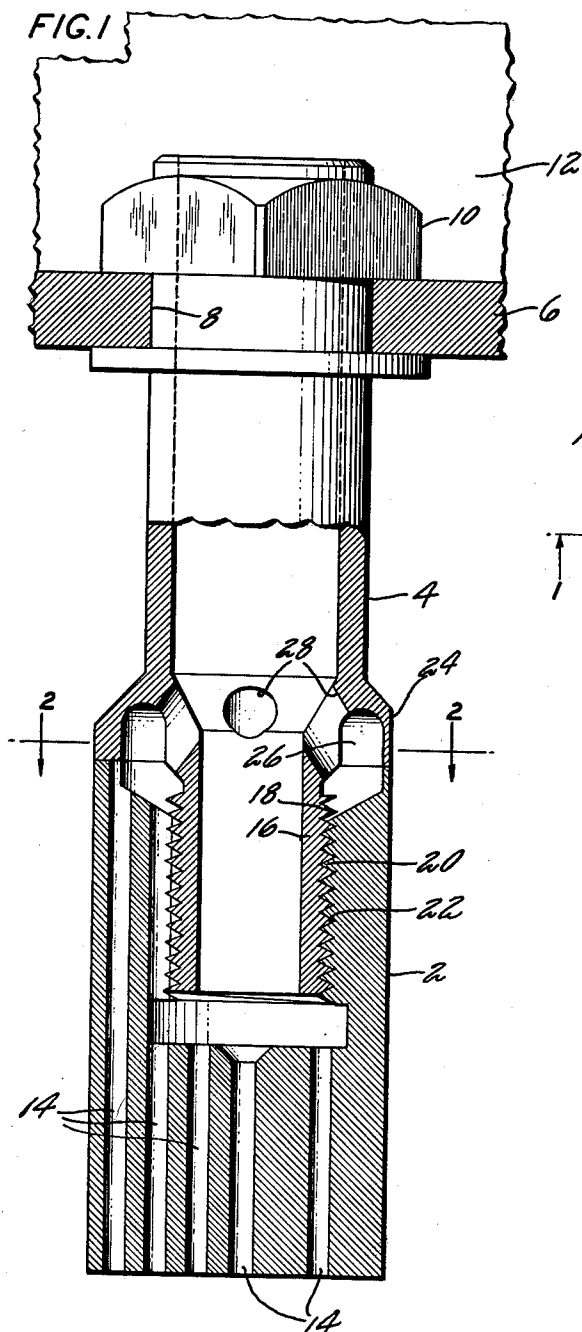
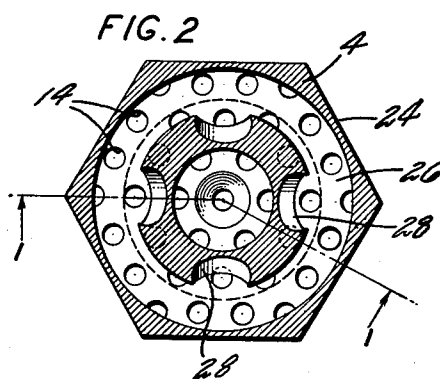


Feb. 9, 1965

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REACTOR CORE ROD SUPPORT

3,169,098

Filed June 12, 1961



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3,169,098

REACTOR CORE ROD SUPPORT

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Filed June 12, 1961, Ser. No. 116,542

1 Claim. (Cl. 176—87)

This invention relates to an attachment for a nuclear reactor core rod and particularly to a support through which a coolant is circulated to the core rod.

One feature of the invention is a simple attachment by which to permit close packing of the several core rods. Another feature is an arrangement to assure a supply of cooling fluid to all of the cooling passages in the rod without substantial leakage of coolant. Another feature is a coolant supply tube which also constitutes a core rod support and which may be of no greater transverse dimension than the core rod.

Other features and advantages will be apparent from the specification and claim, and from the accompanying drawing which illustrates an embodiment of the invention.

FIG. 1 is a fragmentary elevation view of the core rod support with the core rod attached thereto.

FIG. 2 is a sectional view substantially along the line 2—2 of FIG. 1.

The core rod 2 is carried by a support tube 4 which in turn is attached to a support plate 6 as, for example, by projecting through an opening 8 therein. A supporting nut 10 holds the tube 4 in position. Cooling fluids is supplied to the chamber 12 on the upper side of the plate 6 and this cooling fluid flows through the tube 4 and through the core rod.

In accordance with the invention, the core rod 2 has a plurality of passages 14 extending axially therethrough for the purpose of flowing a coolant through the rod. These passages are closely spaced throughout the entire cross-sectional area of the rod, being generally arranged in parallel rows extending transversely of the rod and preferably parallel to opposite flat sides of the normally hexagonal rod. The function of the particular support tube is to assure that cooling fluid from the tube is delivered to all of these passages. The support tube is hollow and terminates at its lower end in an externally threaded end 16 with the threads 18 thereon engaging with cooperating internal threads 20 in an axially formed recess 22 in the core rod. The recess 22 is large enough to communicate with many of the cooling passages near the center of the rod.

The support tube 4 has an integral axially extending flange 24 which surrounds the tube adjacent to the threaded end 16 and is spaced therefrom to form an annular chamber 26 located between the flange and the tube adjacent

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to the threaded end 16. Angularly positioned passages 28 through the tube provide communication between the hollow tube and the annulus 26. The end of the axial flange 24 is adapted to engage with the core rod 2 adjacent the periphery thereof so that the annular passage is in communication with the remainder of the cooling passages not in communication with recess 22. With this arrangement it is apparent that cooling fluid flowing downwardly through the hollow support tube 4 will be delivered to all of the cooling passages in the core rod.

Although the support tube 4 is preferably circular, the outer periphery of the axial flange 24 is preferably flat-sided as, for example, hexagonal as shown in FIG. 2 in order that the tube may be held against turning while the core rod is being attached thereto. The latter is also hexagonal as above stated and matches the external shape of the annular flange.

It is to be understood that the invention is not limited to the specific embodiment herein illustrated and described, but may be used in other ways without departure from its spirit as defined by the following claim.

I claim:

An attachment by which cooling fluid is supplied to a reactor core rod, the latter having a plurality of rows of axially extending cooling passages therein and having an internally threaded, axially extending recess at the attachment end, said attachment including a hollow supporting tube terminating in two co-axial inner and outer sleeve elements integral with the hollow tube and in radially spaced relation to each other to define an annular chamber therebetween, said tube having transverse passages connecting the annular chamber to the hollow interior of the tube, the inner sleeve extending beyond the outer sleeve and being externally threaded to engage in the internally threaded recess in the end of the core rod, the outer sleeve engaging the end of the core rod at its periphery, the annular chamber being in communication with the outer of the axially extending passages and the interior of the inner sleeve being in communication with the remainder of the axially extending passages.

References Cited by the Examiner

UNITED STATES PATENTS

2,148,414	2/39	Wolfert	137—561.1
2,291,637	8/42	Kohlman	257—309
2,343,542	3/44	Faunce	257
2,928,779	3/60	Weills	176—65

FOREIGN PATENTS

1,205,890 2/60 France.

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