

tungsten components were lightly ground and then cleaned in hydrogen. The components were then assembled into proper position and sealed in an evacuated tantalum container. The assembly was then successfully gas-pressure bonded at 1650° C. and 10,000 psi for 3 hrs. After completion of bonding, the tantalum container was removed by mechanical stripping and selective leaching. Visual and ultrasonic inspections of the bond indicated that satisfactory bonding had been achieved. The component was then successfully employed for its intended high-temperature application.

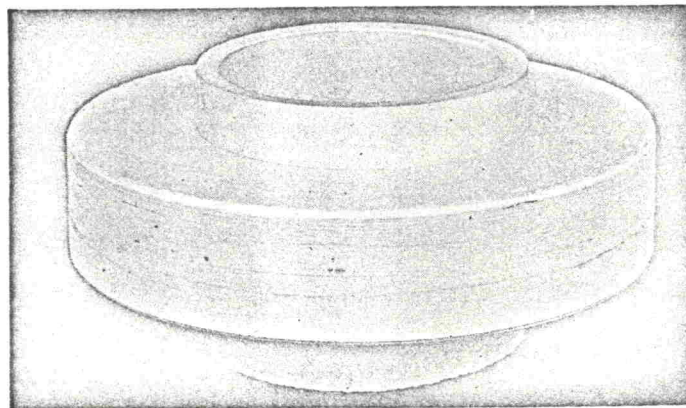


Fig. 19. High-temperature furnace component,  $\times 1/2$ .

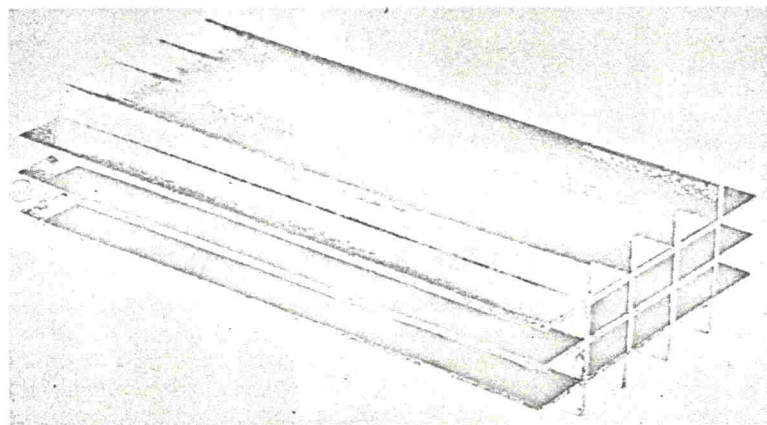


Fig. 20. High-temperature heat exchanger made from tungsten.

### Tungsten Heat Exchanger

Certain applications in modern technology require heat exchangers to operate at very high temperature. One such application utilizing hydrogen gas as the heating fluid, required the fabrication of the structural heat exchanger shown in Fig. 20.

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- <sup>2</sup> Houck, DMIC
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- <sup>5</sup> Carmi, tory M
- <sup>6</sup> Hodge, Mater
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- <sup>8</sup> Boyer,