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UCHIBE (43) **Pub. Date: Nov. 24, 2022**(54) **COOLING APPARATUS AND
SEMICONDUCTOR APPARATUS WITH
COOLING APPARATUS**(52) **U.S. Cl.**
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Kawasaki-shi (JP)(57) **ABSTRACT**(72) Inventor: **Ginji UCHIBE**, Hino-city (JP)(73) Assignee: **FUJI ELECTRIC CO., LTD.**,
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A cooling apparatus includes: a first member including a first surface in contact with a cooling target, a second surface opposite to the first surface, and radiating fins protruding from the second surface; and a second member including a third surface facing the second surface, a refrigerant flows between the first member and the second member, the second member includes a first protrusion protruding from the third surface toward a space, the space existing between the radiating fins in a flow direction of the refrigerant, the first protrusion includes a first slope inclined to the third surface, the first slope includes a first end and a second end, the first end is closer to the second surface than the second end, the second end is closer to the third surface than the first end, the first end is positioned downstream in the flow direction from the second end.

