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METHOD FOR FORMING AN ARTICLE
EXTENSION BY MELTING OF A MANDREL IN A
CERAMIC MOLD

Abstract of the Disclosure

5 A method for forming integral extensions on the end of
directionally oriented, superalloy articles, such as airfoil blading members or other
components used in gas turbine or other turbine engines. An extension is
formed directly on an article by melting a portion or end of the article having an
attached integral mandrel within a ceramic mold, followed by cooling of the end
under controlled conditions sufficient to cause an integral extension to solidify on
10 the article. A ceramic mold is attached on the end of the article over the integral
mandrel with a mold cavity that generally defines the shape of the extension to
be formed. The mold may be formed *in situ* on the mandrel, or preformed and
attached to the subject article over the mandrel. Extensions formed by the
method of this invention have a microstructure that is continuous and compatible
15 with that of the article. Such microstructures may include epitaxial growth of the
extension from the microstructure of the article. The method establishes a
temperature gradient within the article during solidification that may be further
controlled by auxiliary heating and/or cooling of the article and/or extension during
the practice of the method.

FIGURE 1

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