

METHOD FOR FORMING AN ARTICLE
EXTENSION BY MELTING OF AN ALLOY
PREFORM 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 compatible alloy preform within a
ceramic mold, followed by cooling of the end under controlled conditions
sufficient to cause an integral extension to solidify on the article. A ceramic mold
10 is attached on the end of the article with a mold cavity that generally defines the
shape of the extension to be formed. The mold may be formed *in situ* on a
removable mandrel, or preformed and attached to the subject article. Extensions
formed by the method of this invention have a microstructure that is continuous
and compatible with that of the article. Such microstructures may include
15 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 3A

