

METHOD FOR FORMING AN ARTICLE
EXTENSION BY CASTING USING 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 casting a compatible material into a ceramic mold
that is attached on an end of the article, followed by cooling of the end under
10 controlled conditions sufficient to cause an integral extension to solidify on the
article. A ceramic mold is utilized over 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 the mandrel, or preformed and attached to the subject
article over the mandrel. Extensions formed by the method of the invention have
15 a microstructure that is continuous and compatible 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 10