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(54) MULTI-SHOT CASTING

(57) An alloy part is cast in a mold (280) having a part-forming cavity (292, 294, 296). The method comprises pouring a first alloy into the mold. The pouring causes: a surface (550) of the first alloy in the part-forming cavity to raise relative to the part-forming cavity; a branch flow of the poured first alloy to pass upwardly through a first portion (304) of a passageway; and the branch flow to pass downwardly through a second portion (310), of the passageway; solidifying some of the first alloy in the passageway to block the passageway while at least some of the first alloy in the part-forming cavity remains molten. A second alloy is poured into the mold atop the first alloy and solidified.

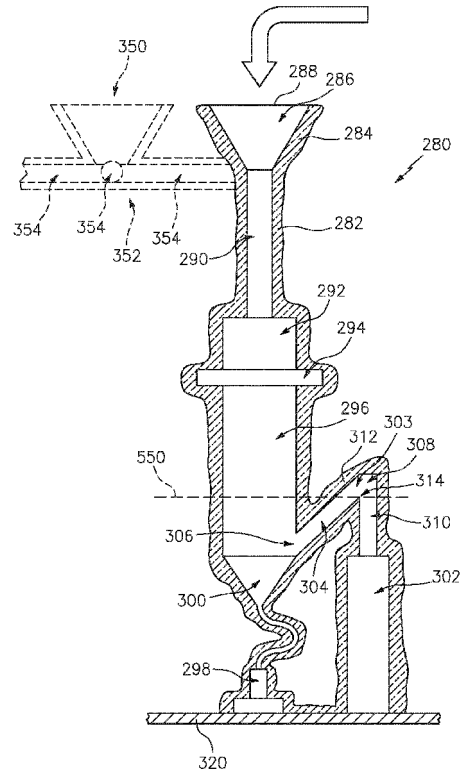


FIG. 5

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EUROPEAN SEARCH REPORT

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	US 5 335 711 A (PAINE BRIAN [GB]) 9 August 1994 (1994-08-09) * figures 1,2 * * column 3, line 19 - column 8, line 18 * -----	10	
			TECHNICAL FIELDS SEARCHED (IPC)
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 3 July 2019	Examiner Zimmermann, Frank
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

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Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

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No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

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LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

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see sheet B

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All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

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As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

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Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

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None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

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The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

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**LACK OF UNITY OF INVENTION
SHEET B**Application Number
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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

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1. claims: 1-6

Casting mold with one cavity, a pour cone, a telescoping downsprue and a plurality of runners in the lower part of the downsprue

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2. claims: 7, 8

Method of casting in a mold that has a plurality of cavities, a first pouring cone and a second pouring cone which are concentric and where first and second regions of the cavities are filled by either pouring through a first through in the first pouring cone or a second through in the second pouring cone

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3. claims: 9-11

Casting apparatus having first and second molten metal sources and a furnace for holding any arbitrary mold to receive the first and second molten metal

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ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

03-07-2019

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82