

Title (en)  
Filament cooler

Title (de)  
Filamentkühler

Title (fr)  
Refroidisseur de filaments

Publication  
**EP 2392698 A1 20111207 (EN)**

Application  
**EP 11166876 A 20110520**

Priority  
JP 2010128680 A 20100604

Abstract (en)  
Inside a quench box 22 are formed a cooling tube housing chamber 41, an upper connection path 42, and a lower connection path 43. The cooling tube housing chamber 41 houses therein a plurality of cooling tubes 21 to oppose spinnerets 13 of a spinning beam 2, and these cooling tubes 21 are arranged to form two rows in the crosswise direction in a staggered manner. The cooling tube housing chamber 41 has, at the lower end portions of wall surfaces 41a and 41b, a first connection port 45 and a second connection port 46. The first connection port 45 is connected to an upper connection path 42 which is connected to a duct 60 and extends in the crosswise direction. The second connection port 46 is connected to a lower connection path 43 which is provided below the upper connection path 42, is connected to the duct 60, and extends along the lower part of the cooling tube housing chamber 41.

IPC 8 full level  
**D01D 5/092** (2006.01)

CPC (source: EP)  
**D01D 5/092** (2013.01)

Citation (applicant)  
JP 3868404 B2 20070117

Citation (search report)  
• [AD] EP 1505180 A1 20050209 - TMT MACHINERY INC [JP]  
• [A] WO 0171070 A1 20010927 - TORAY ENG CO LTD [JP], et al  
• [A] DE 202008015315 U1 20090212 - OERLIKON TEXTILE GMBH & CO KG [DE]  
• [A] DE 202008015313 U1 20090430 - OERLIKON TEXTILE GMBH & CO KG [DE]  
• [A] US 2002114857 A1 20020822 - FUJII TAKASHI [JP], et al  
• [A] US 4712988 A 19871215 - BROADDUS CLARKE R [US], et al

Cited by  
CN105040125A; EP3121312A1; JP2016079534A

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)  
BA ME

DOCDB simple family (publication)  
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DOCDB simple family (application)  
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