

Title (en)
TETRAAXIAL WOVEN FABRICS AND TETRAAXIAL WEAVING MACHINE THEREOF

Publication
EP 0263392 A3 19910306 (EN)

Application
EP 87114141 A 19870928

Priority
JP 23516886 A 19861001

Abstract (en)
[origin: EP0263392A2] The present invention provides a tetraaxial woven fabric in a novel texture exhibiting isotropic nature superior to that of the triaxial woven fabric and is composed of warp ends, weft ends, and intersecting upper and lower bias yarns running obliquely to the former two under such circumstances as increasing demand for triaxial woven fabrics having isotropic nature in strength and elongation requisite to improvement in strength and reduction of weight of FRP and supply of materials suited to the manufacture of aircrafts and autocars. Further, for the purpose of weaving and tetraaxial fabric as above, the present invention provides a bias yarn feeding device and bias yarn traversing device in a structure that has never been devised before, thereby enabling high speed weaving and production at low cost of a fabric exhibiting high isotropic characteristics in spite of reduced thickness thereof.

IPC 1-7
D03D 13/00; **D03D 41/00**

IPC 8 full level
D03D 13/00 (2006.01); **D03D 41/00** (2006.01)

CPC (source: EP)
D03D 13/002 (2013.01); **D03D 41/00** (2013.01)

Citation (search report)
• [X] GB 2117418 A 19831012 - HINAYA KK
• [A] DE 1535442 C3 19731213
• [AD] US 3999578 A 19761228 - KULCZYCKI KAROL
• [AD] US 4015637 A 19770405 - HALTON MURRAY, et al
• [A] US 4066104 A 19780103 - HALTON MURRAY, et al
• [A] US 4031922 A 19770628 - TROST WAYNE C, et al

Cited by
DE102010007048A1; KR100946396B1; CN104040055A; US5775381A; CN113584682A; DE102010034969B3; CN103109007A; EP0643161A1; CN104919100A; US5947160A; CN116145303A; EP0957191A3; EP0536735A1; US5351722A; FR2702222A1; EP3141642A1; CN108699736A; DE102018201254A1; US6123115A; US6159239A; US6164339A; US5472020A; GB2278854A; US5540260A; GB2278854B; US10583802B2; US9763012B2; WO03085182A1; WO2010004284A1; WO2009001282A1; WO2014112931A1; WO2016020316A1; WO9606213A1; WO2004059054A1; US10597802B2; US11885463B2; WO2012022641A2; US8770235B2; WO2011095262A1; US7237575B2; US6192944B1; WO9420658A1; WO2017042015A1; WO9416131A1; WO03012184A3; WO0009059A3

Designated contracting state (EPC)
AT BE CH DE ES FR GB GR IT LI LU NL SE

DOCDB simple family (publication)
EP 0263392 A2 19880413; **EP 0263392 A3 19910306**; **EP 0263392 B1 19940105**; AT E99744 T1 19940115; DE 263392 T1 19880901; DE 3788697 D1 19940217; DE 3788697 T2 19940428; JP S6392751 A 19880423

DOCDB simple family (application)
EP 87114141 A 19870928; AT 87114141 T 19870928; DE 3788697 T 19870928; DE 87114141 T 19870928; JP 23516886 A 19861001