

Title (en)  
IMPROVED HULL OF A TUGBOAT AND TUGBOAT COMPRISING SAID IMPROVED HULL

Title (de)  
VERBESSERTER RUMPF EINES SCHLEPPERS UND SCHLEPPER MIT SOLCH EINEM RUMPF

Title (fr)  
COQUE PERFECTIONNÉE D'UN REMORQUEUR ET REMORQUEUR COMPORTANT LADITE COQUE PERFECTIONNÉE

Publication  
**EP 2864188 B1 20151223 (EN)**

Application  
**EP 13745729 A 20130607**

Priority  
• IT RM20120287 A 20120620  
• IT 2013000163 W 20130607

Abstract (en)  
[origin: WO2013190583A1] The present invention relates to an improved hull (1) of a tugboat (R) for towing/assisting a vessel and having a water plane (G), a base line (B), a main section (SM), as well as a longitudinal axis (L) dividing said hull (1) in a first and in a second lateral part. Said hull (1) has a bottom (1A), a bow, a stern, and an underbody (2) provided with a first keel (11) and a second keel (12), wherein said first keel (11) is parallel to and facing said second keel (12), first thruster means (3) and second thruster means (4). Particularly, each keel (11, 12) is arranged on a respective side of said underbody (2), in a substantially central position, and is connected to said underbody (2) respectively in correspondence of the bow and the stern of said hull. Said two keels (11, 12) extend in depth in a substantially perpendicular manner so as to have a draft equal to or greater than that of said first and second thruster means (3, 4). Furthermore, said first and second thruster means are positioned respectively at the bow and stern of the hull (1) and substantially aligned along said longitudinal axis (L). Said two keels (11, 12), integral with said hull (1), form a tunnel (14) with at least a portion of said bottom (1A). Said hull has a first airfoil (W1) which extends from said first thruster means (3) to said main section, and a second airfoil (W2) which extends from said second thruster means (4) to said main section, said two airfoils (W1, W2) being substantially symmetrical with respect to said main section. Each airfoil comprises a respective first portion, external to said tunnel (14), which extends from the respective thruster means to the keels, and a second portion, internal to said tunnel (14), which extends from the keels to the main section, wherein said first and second thruster means are arranged in said first portion, external to said tunnel (14), of a respective airfoil (W1, W2), so that, when a water flow is generated by said thruster means, said water flow is channeled within said tunnel (14), following a respective airfoil (W1, W2), and only a minimal amount of water of said water flow reaches respectively said second or first thruster means. The present invention also relates to a tugboat which comprises said improved hull.

IPC 8 full level  
**B63B 1/04** (2006.01); **B63B 35/66** (2006.01); **B63H 21/30** (2006.01); **B63H 23/20** (2006.01)

CPC (source: EP US)  
**B63B 1/042** (2013.01 - EP US); **B63B 3/38** (2013.01 - US); **B63B 29/00** (2013.01 - US); **B63B 35/66** (2013.01 - EP US); **B63B 35/68** (2013.01 - US); **B63B 35/70** (2013.01 - US); **B63H 5/08** (2013.01 - US); **B63H 5/125** (2013.01 - US); **B63H 5/15** (2013.01 - EP US); **B63H 5/16** (2013.01 - EP US); **B63H 21/30** (2013.01 - EP US); **B63H 23/20** (2013.01 - US); **B63H 25/42** (2013.01 - US); **B63B 21/16** (2013.01 - EP US); **B63H 2005/1254** (2013.01 - EP US); **B63H 2025/425** (2013.01 - US)

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

DOCDB simple family (publication)  
**WO 2013190583 A1 20131227**; AU 2013278822 A1 20141218; BR 112014030201 A2 20170627; CA 2874963 A1 20131227; CN 103381877 A 20131106; CN 103381877 B 20161228; DK 2864188 T3 20160321; EP 2864188 A1 20150429; EP 2864188 B1 20151223; ES 2565312 T3 20160401; HK 1209392 A1 20160401; IT RM20120287 A1 20131221; IT RM20130328 A1 20131221; SG 11201408058X A 20150129; US 2015191224 A1 20150709

DOCDB simple family (application)  
**IT 2013000163 W 20130607**; AU 2013278822 A 20130607; BR 112014030201 A 20130607; CA 2874963 A 20130607; CN 201310226341 A 20130607; DK 13745729 T 20130607; EP 13745729 A 20130607; ES 13745729 T 20130607; HK 15109946 A 20151012; IT RM20120287 A 20120620; IT RM20130328 A 20130607; SG 11201408058X A 20130607; US 201314405133 A 20130607