

Title (en)  
INJECTION NOZZLE ADJUSTMENT DEVICE

Title (de)  
SPRITZDÜSEN-VERSTELLEINRICHTUNG

Title (fr)  
DISPOSITIF DE RÉGLAGE DE BUSE D'INJECTION

Publication  
**EP 2598270 B1 20150902 (DE)**

Application  
**EP 11732425 A 20110708**

Priority  
• EP 10171200 A 20100729  
• EP 2011061573 W 20110708  
• EP 11732425 A 20110708

Abstract (en)  
[origin: EP2412459A1] The spray nozzle-adjusting device comprises a displacement device comprising a drive body and an actuating piston (5) for shifting the actuating piston relative to the fixed drive body, and a spray nozzle holder (4) for holding the spray nozzle (2). The spray nozzle is formed on the strand for spraying of coolant, and the spray nozzle holder is connected to the actuating piston. A telescopic tube is provided for conducting the coolant from the drive body to the spray nozzle holder so that the spray nozzle is torsionally connected to the drive body. The spray nozzle-adjusting device comprises a displacement device comprising a drive body and an actuating piston (5) for shifting the actuating piston relative to the fixed drive body, and a spray nozzle holder (4) for holding the spray nozzle (2). The spray nozzle is formed on the strand for spraying of coolant, and the spray nozzle holder is connected to the actuating piston. A telescopic tube is provided for conducting the coolant from the drive body to the spray nozzle holder so that the spray nozzle is torsionally connected to the drive body. A longitudinal axis (8) of the actuating piston and the telescopic tubes are parallelly aligned. A first telescopic tube is provided for conducting water, and a second telescopic tube is provided for conducting air. Bellows are connected to the drive body and the spray nozzle holder, where penetration is prevented by dirt. An air supply of the second telescopic tube is assigned to the bellows, which are held under a pressure increasing against an atmosphere. The displacement device comprises a hydraulic, pneumatic or electric linear drive. The hydraulic or pneumatic linear drive is constructed as a pressure medium cylinder (11). The drive body and a fixed part of the telescopic tubes comprise a common housing. The pressure medium cylinders are assigned to a hydraulic or pneumatic flow divider so that a position of spray nozzles is synchronously controlled. The spray nozzle holder and the displacement device are assigned to the spray nozzle, which is independently positionable. A distance measuring device and a control device are assigned to the spray nozzle, which is regularly positionable. An independent claim is included for a strand guide segment for guiding, supporting and cooling of a strand in a strand guide of a continuous casting machine.

IPC 8 full level  
**B22D 11/124** (2006.01)

CPC (source: EP KR)  
**B22D 11/0642** (2013.01 - KR); **B22D 11/124** (2013.01 - KR); **B22D 11/1246** (2013.01 - EP); **B22D 11/16** (2013.01 - KR);  
**B22D 46/00** (2013.01 - KR)

Citation (opposition)  
Opponent : SMS group GmbH  
• EP 2010347 B1 20100407 - SIEMENS VAI METALS TECH GMBH [AT]  
• DE 3410973 A1 19851003 - FESTO KG [DE]  
• DE 102009010251 A1 20100408 - SMS SIEMAG AG [DE]  
• DE 102005028754 B4 20130529 - ZAHNRADFABRIK FRIEDRICHSHAFEN [DE]  
• DE 102008037756 A1 20100218 - SMS SIEMAG AG [DE]  
• DE 2507971 A1 19750904 - CONCAST AG  
• FESTO: "Normzylinder DNC, ISO 15552", FESTO KATALOG, March 2010 (2010-03-01), pages 1 - 2,7, XP055297427  
• JAHNS HYDRAULIK: "Linearhub-Mengenverteiler MLH", KATALOG, July 2004 (2004-07-01), pages 1 - 7, XP055297428  
• PROF. DR. K. SCHWERDTFEGGER: "Metallurgie des Stranggießens. Gießen und Erstarren von Stahl", STAHL EISEN, Düsseldorf, pages: IV,284, XP055297431

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)  
**EP 2412459 A1 20120201**; CN 103108712 A 20130515; CN 103108712 B 20150617; EP 2598270 A2 20130605; EP 2598270 B1 20150902;  
KR 101842950 B1 20180328; KR 20130041970 A 20130425; RU 2013108768 A 20140910; WO 2012013474 A2 20120202;  
WO 2012013474 A3 20120920

DOCDB simple family (application)  
**EP 10171200 A 20100729**; CN 201180037195 A 20110708; EP 11732425 A 20110708; EP 2011061573 W 20110708;  
KR 20137004673 A 20110708; RU 2013108768 A 20110708