

Title (en)  
**IMPROVED AIR WEFT INSERTION NOZZLE CONTROL SYSTEM**

Publication  
**EP 0067994 B1 19850911 (EN)**

Application  
**EP 81901583 A 19810107**

Priority  
**US 8100017 W 19810107**

Abstract (en)  
[origin: WO8202411A1] The actuation of a nozzle utilized for propelling the yarn in an air weft insertion weaving system is controlled by means of a single rotary servo valve (31) having an arrangement of ports (95, 103, 105, 107) adapted to be brought during valve rotation into registration alternately with an air pressure source and with the atmosphere for alternately pressurizing and venting a pilot chamber (170) for opening and closing the nozzle. Preferably, the rotary valve (31) includes a rotary spool (75) enclosed with a sleeve of air permeable material to provide an air bearing for the spool. The actuation of the nozzle is determined by the movement of a diaphragm valve (180) toward and away from the opening of a nozzle supply chamber (156) under the control of the pilot chamber pressure, and the diaphragm is deformed into two annularly separated generally U-shaped convolutions (212, 214) opening toward the interior of the air supply chamber of the nozzle so that the movement of the diaphragm during opening and closing follows a "rolling" or progressively flexing action as the convoluting side walls telescope outwardly and inwardly relative to one another. Preferably, two substantially similar convoluted diaphragms (180, 210) are disposed in axially spaced oppositely directed relation, one exposed to the nozzle supply pressure and the other to the pilot chamber pressure. Advantageously, the interior space between such diaphragm is vented (224) to the atmosphere to maintain a pressure-free condition therein and clearances are provided to prevent entrapment of air resisting deflection of either diaphragm.

IPC 1-7  
**D03D 47/30**

IPC 8 full level  
**D03D 47/30** (2006.01)

CPC (source: EP)  
**D03D 47/3013** (2013.01); **D03D 47/306** (2013.01)

Designated contracting state (EPC)  
**DE**

DOCDB simple family (publication)  
**WO 8202411 A1 19820722**; BE 890668 A 19820408; BR 8108951 A 19821214; CA 1155730 A 19831025; DE 3172175 D1 19851017; EP 0067994 A1 19830105; EP 0067994 A4 19830406; EP 0067994 B1 19850911; GB 2105377 A 19830323; GB 2105377 B 19850717; IT 1139693 B 19860924; IT 8124990 A0 19811112

DOCDB simple family (application)  
**US 8100017 W 19810107**; BE 206193 A 19811008; BR 8108951 A 19810107; CA 379710 A 19810615; DE 3172175 T 19810107; EP 81901583 A 19810107; GB 8224676 A 19810107; IT 2499081 A 19811112