

9602343-7
Extra

THIS SHEET HAS BEEN
REPLACED

(12) UK Patent Application (19) GB (11) 2 273 175 (13) A

(43) Date of A Publication 08.06.1994

(21) Application No 9225356.6

(22) Date of Filing 04.12.1992

(71) Applicant(s)
Advanced Systems Automation Pte Ltd
(Incorporated in Singapore)
No.6,Kallang Way 4, Singapore 1334, Singapore

(72) Inventor(s)
Tiang Siong Lian

(74) Agent and/or Address for Service
Page White & Farrer
54 Doughty Street, LONDON, WC1N 2LS,
United Kingdom

(51) INT CL⁵
B29C 45/64 45/76

(52) UK CL (Edition M)
G3N NGCA5 N274 N404
B5A AT14A AT14C A1R314C3 A1R439X A2K2 A3D1F
A3D1X A3D5
F2Q Q6B
U1S S1658

(56) Documents Cited
EP 0285672 A1 EP 0280087 A1 US 4828475 A
US 4820464 A

(58) Field of Search
UK CL (Edition L) B5A AT14C AT14D , G3N NGCA4
NGCA4A NGCA4B NGCA5 NGCA5A NGCA5B NGDB
INT CL⁵ B29C 45/02 45/14 45/64 45/66 45/76 45/80

(54) Direct drive electro-mechanical press for encapsulating semiconductor devices

(57) A direct drive electro-mechanical press for encapsulating semiconductor devices comprises a clamping axis 122 for closing the mould, and a transfer axis 124 for injecting molten resin. The clamping axis comprises a planetary roller screw 132 coupled to a tie bar platen assembly on which a top mold 144 is mounted. A two-speed gearbox 128 provides a high speed mode and a high torque mode along the clamping axis. The transfer axis is slidably located above the clamping axis; the transfer axis comprises another planetary roller screw 150 coupled to a bottom platen on which a bottom mold 158 is mounted. The transfer axis transfers the moulding resin from the pot to the cavities formed when molds are clamped together. The planetary roller screw drive arrangement (fig. 5) allows the application of closure forces proportional to the drive delivered by the servo motors.

A closed-loop control is provided to the clamping and transfer drives. The closed-loop control provides direct feedback on the clamping tonnage on the tie bars and transfer pressure in the mold blocks.

The mold is first closed under light pressure (soft close) and the proximity of the mold blocks checked. If closure has been prevented by a foreign body the run is terminated. Otherwise the servo motors apply the predetermined damping tonnage.

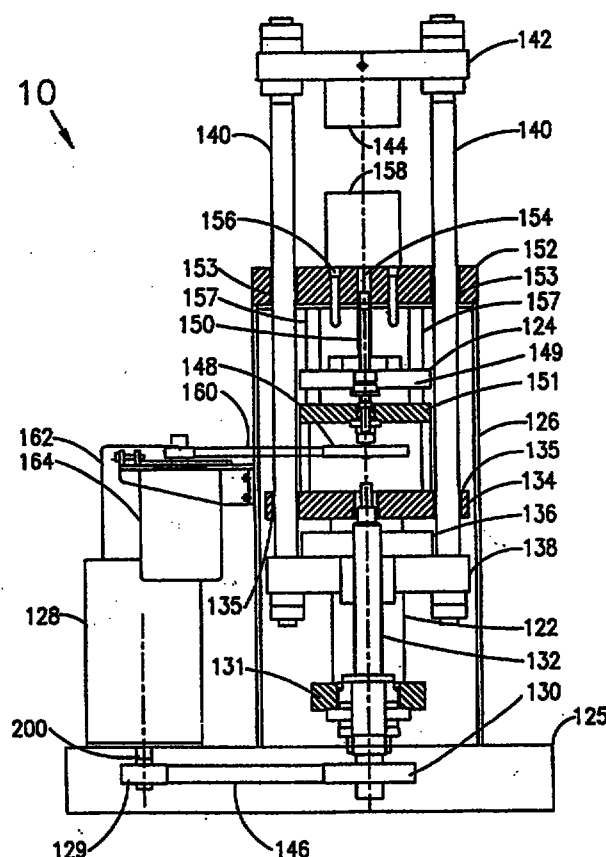


FIG. 3

This Sheet Has Been Replaced



GB 2 273 175 A