



Europäisches Patentamt  
European Patent Office  
Office européen des brevets



(11) Publication number : **0 447 251 A3**

(12)

## EUROPEAN PATENT APPLICATION

(21) Application number : **91302205.9**

(51) Int. Cl.<sup>5</sup> : **B21D 39/03, B21C 37/15**

(22) Date of filing : **14.03.91**

(30) Priority : **14.03.90 GB 9005703**

(43) Date of publication of application :  
**18.09.91 Bulletin 91/38**

(84) Designated Contracting States :  
**AT BE CH DE DK ES FR GB GR IT LI LU NL SE**

(88) Date of deferred publication of search report :  
**04.12.91 Bulletin 91/49**

(71) Applicant : **HADLEY INDUSTRIES PLC**  
**Downing Street, Smethwick**  
**Warley, West Midlands B66 2PA (GB)**

(72) Inventor : **Humpage Roy**  
**9 Cloister Drive, off Manor Way**  
**Halesowen West Midlands B62 8 RA (GB)**

(74) Representative : **Lewis, Samuel Hewitt**  
**FORRESTER & BOEHMERT**  
**Widenmayerstrasse 4/I**  
**W-8000 München 22 (DE)**

(54) **Tube and method of forming same.**

(57) A polygonal tube is produced from metal strip by forming rows of recesses (15) and projections (16) along opposite edges of the strip and then bending the strip until each projection is received in a corresponding recess to form the tube.

The projections are then squeezed between opposed surfaces (26,28) one inside and other outside the tube. The surface inside the tube forms a groove (27) in the tube wall at the inside of the tube, spreads each projection to take up any clearance between edges of the projections and boundaries of the corresponding recesses. The surface outside the tube allows the tube to remain flat.

EP 0 447 251 A3

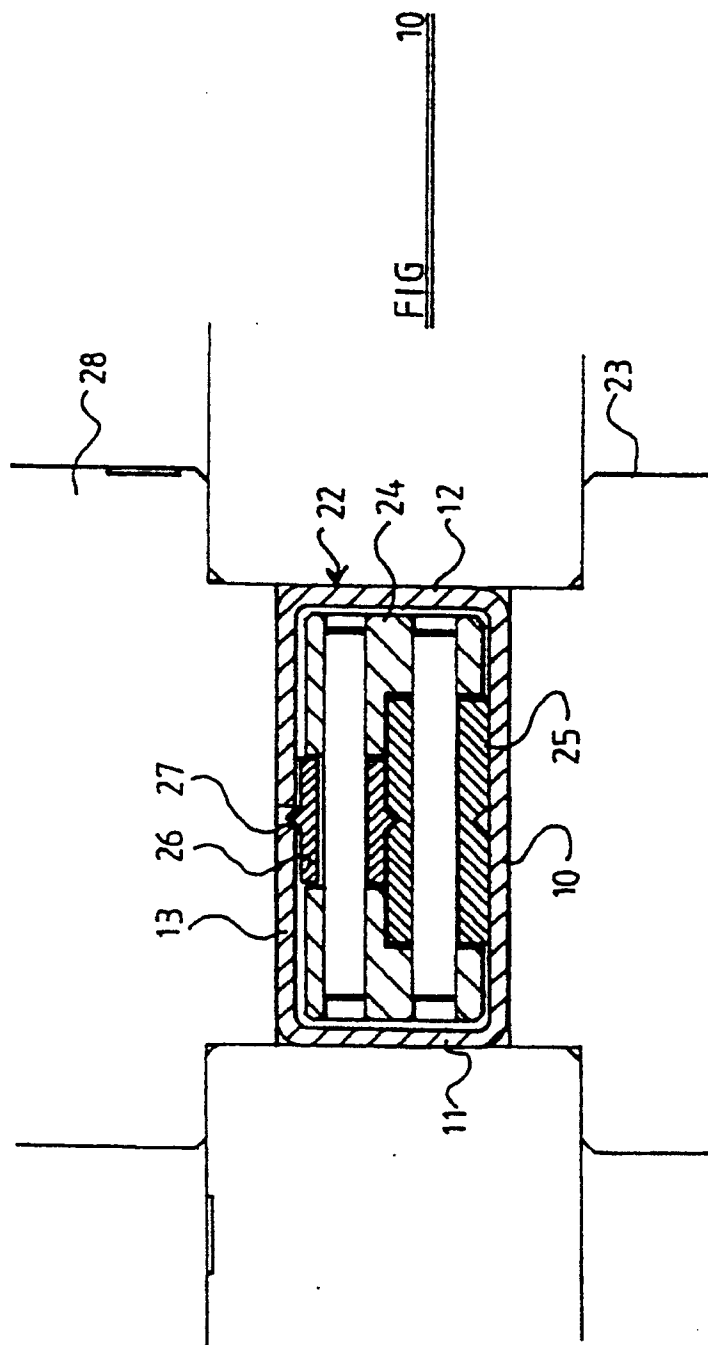


FIG 10



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number

EP 91 30 2205

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	US-A-4 383 354 (P. E. SAURENMAN ET AL.) * column 3, line 61 - column 4, line 37; claim 1; figures 1-6 *	1-3,5-9	B21D39/03 B21C37/15
Y	---	4,10	
Y	FR-A-2 533 472 (J. DALLET) * page 4, line 5 - page 5, line 2; claim 1; figures 1,2 *	4	
Y	---		
Y	PATENT ABSTRACTS OF JAPAN vol. 7, no. 207 (M-242)(1352) September 13, 1983 & JP-A-58 103 917 (NAKAJIMA K. K. ) June 21, 1983 * the whole document *	10	
X,D	---		
X,D	GB-A-1 403 823 (W. M. CARROLL) * page 2, line 39 - page 2, line 111; figures 1-4 *	1,2,5,6	
A	---		
A	US-A-3 273 601 (W. J. DE GAIN) * claim 1; figures 2,6 *	1,7	TECHNICAL FIELDS SEARCHED (Int. Cl.5 )  B21C B21D B23P
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 03 OCTOBER 1991	Examiner SOEHNLEN T.J.E.
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone  Y : particularly relevant if combined with another document of the same category  A : technological background  O : non-written disclosure  P : intermediate document</p> <p>T : theory or principle underlying the invention  E : earlier patent document, but published on, or after the filing date  D : document cited in the application  I : document cited for other reasons  &amp; : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03/92 (P0401)