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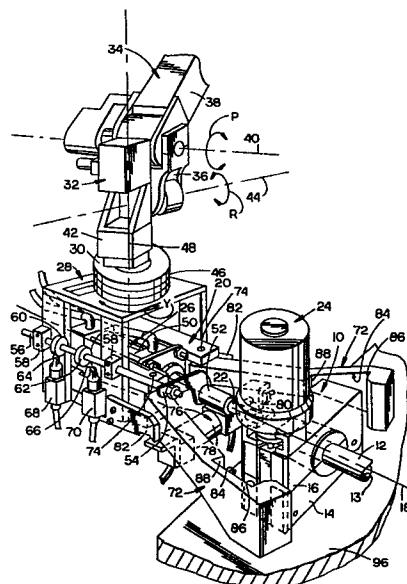
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⑯ Method and apparatus for connecting a tube to a flange.

⑯ A method and apparatus for connecting a tube (12) to a flange (10) is disclosed including placing the tube between first and second portions (14, 16) of a holding apparatus (10), closing the portions and gripping the tube securely between the portions by operation of a first powered actuator (24), positioning a force-transmitting apparatus (20) including a punch (22) into axial alignment with the tube and the flange, and forcing the punch axially into the tube and expanding the tube radially outwardly into interlocking engagement with the flange by operation of a second powered actuator (26) of the force-transmitting apparatus. The portions (14, 16) are preferably pivotally closed to securely grip the tube, and the force-transmitting apparatus (20) is preferably an integrated part of a computer controlled industrial robot (32).



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DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	US - A - 2 871 734 (FUCHS) * The whole document * --	1-10	B 21 D 39/06 39/04
X	FR - A - 1 524 420 (WERNER) * Pages 8-10; figures * --	1,2,9	
X	US - A - 1 716 429 (DAVIES) * The whole document * --	1-5,9	
X	US - A - 3 503 244 (JOSLIN) * The whole document * --	9,10	B 21 D
A	US - A - 3 119 435 (GREENMAN)	1	
A	US - A - 3 504 515 (REARDON)	1	
A	US - A - 3 699 625 (SPENCER)	1	
A	US - A - 3 967 840 (CATERPILLAR)	1	
A	US - A - 2 622 652 (CONROY)	1	
A	US - A - 3 660 884 (IMPERIAL-EASTMAN)	1	
A	GB - A - 546 306 (ROE & COMP.)	1	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 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 L: document cited for other reasons
A	GB - A - 2 019 760 (GEORGE FISCHER CASTING)	1	
A	FR - A - 2 304 016 (CATERPILLAR)	1	
D	& US - A - 3 982 778 -----	1	
	The present search report has been drawn up for all claims		
Place of search The Hague		Date of completion of the search 10-03-1982	Examiner PEETERS L.