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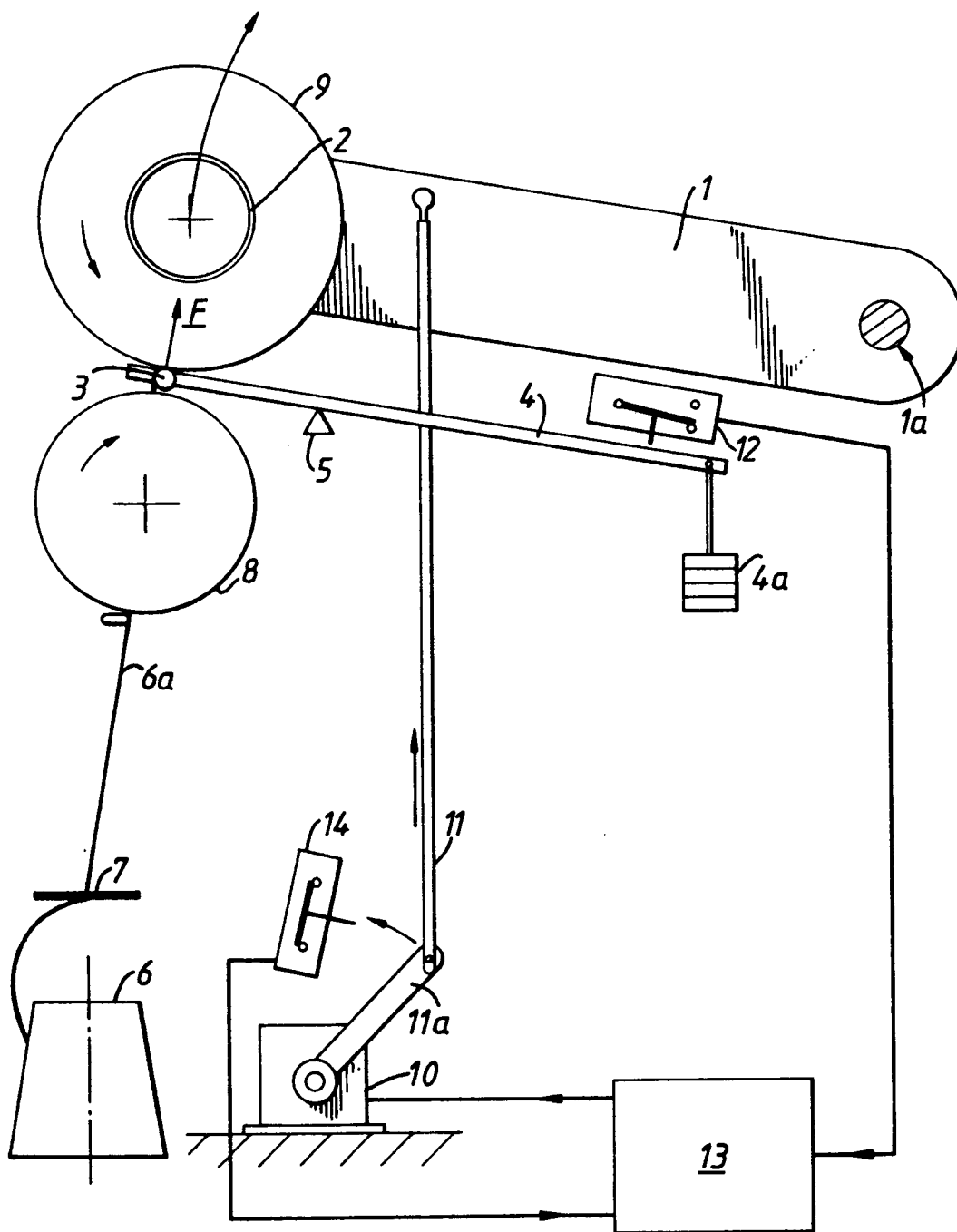
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**Improvements in and relating to winding apparatus.**

A rotatably driven mandrel (2) is mounted on a pivot arm (1). A smoothing roller (3) is provided on a further pivot arm (4), and is biased into contact with the package to apply a force to the package periphery, and hence control the packing density of the wound thread. During winding, as the diameter and weight of the package (9) grows, the increase in diameter deflects the roller (3) downwardly. A sensor (12) detects this and, via a mechanical linkage (11), causes the motor (10) to raise the pivot arm (1) by an amount that maintains the position of the roller (3) substantially constant and maintains the force supplied by the roller (3) to the package periphery substantially constant. This allows the packing density to be kept substantially constant, independently of variations in the weight of the package (9).



*Fig.1.*



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# EUROPEAN SEARCH REPORT

Application Number

EP 90 31 3282

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-3 163 914 (WILLIAM HARRY KIMPTON) * column 1, line 40 - column 2, line 31; figure 1 *	1-8	B65H54/52
P, X	EP-A-0 351 672 (MASCHINENFABRIK SCHWEITER) * column 3, line 37 - column 4, line 48; figure 1 *	1-8, 11, 12	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B65H
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 03 DECEMBER 1991	Examiner LONCKE J.W.
<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>			

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