

12

**EUROPEAN PATENT APPLICATION**

21 Application number: 85306576.1

51 Int. Cl.<sup>4</sup>: **B 65 B 11/10**  
**B 65 C 3/02**

22 Date of filing: 16.09.85

30 Priority: 14.09.84 GB 8423336

43 Date of publication of application:  
02.04.86 Bulletin 86/14

84 Designated Contracting States:  
AT BE CH DE FR GB IT LI LU NL SE

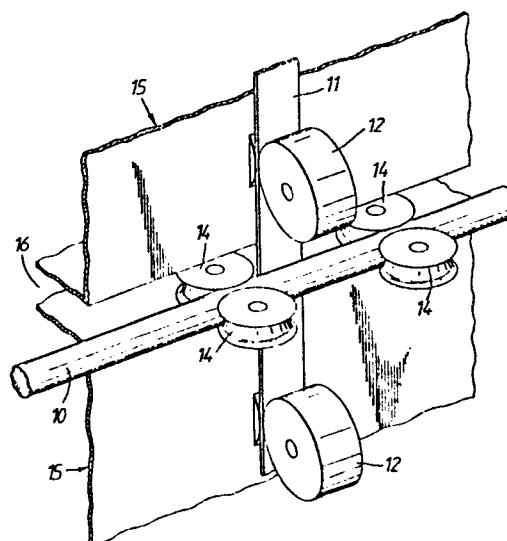
71 Applicant: **PLESSEY OVERSEAS LIMITED**  
**Vicarage Lane**  
**Ilford Essex IG1 4AQ(GB)**

72 Inventor: **Davenport, Steven John**  
**Minster House Priorsfield Road**  
**Godalming Surrey(GB)**

74 Representative: **Nicholson, Ronald**  
**Intellectual Property Department The Plessey Company**  
**plc 2-60 Vicarage Lane**  
**Ilford Essex IG1 4AQ(GB)**

54 **Apparatus for enwrapping articles.**

57 An apparatus for enwrapping articles 10 comprising a supporting head 15 adapted to carry a length of material 11, locating means 14 for locating the article adjacent to the supporting head, the locating means and the supporting head being relatively movable to a position in which the material is wrapped partially around the article, the supporting head being provided with relatively movable urging members 18 for urging the material the remaining distance around the article, there being provided securing means for securing the material in the form of a sleeve around the article.



*FIG. 1.*

-1-

APPARATUS FOR ENWRAPPING ARTICLES

This invention relates to apparatus for enwrapping articles and more particularly but not exclusively to apparatus for applying a sleeve of material to an  
5 elongate object.

With an electrical wiring harness consisting of a large number of wires, identification of the wires can be difficult and thus it is useful if the wires carry a suitable form of coding. The coding may consist of, for  
10 example, a marked or coloured sleeve wrapped around the wire.

It is an object of the present invention therefore to provide apparatus which is able to apply such a sleeve around a wire.

15 According to the present invention apparatus for enwrapping articles comprises a supporting head adapted to carry a length of material, locating means for locating the article adjacent to the supporting head, the locating means and the supporting head being  
20 relatively movable to a position in which the material is wrapped partially around the article, the supporting head being provided with relatively movable urging members for urging the material the remaining distance around the article, there being provided securing means  
25 for securing the material in the form of a sleeve

-2-

around the article.

The article is preferably elongate and may, for example, be a length of wire.

5 The length of material is preferably a plastics strip.

10 Preferably the supporting head and the locating means are relatively movable to a position in which the supporting head straddles the wire and the plastics strip is wrapped around the wire through substantially 180°.

The movable urging members may include welding electrodes whereby after the plastics strip is urged the remaining distance around the wire, the strip is welded to form a sleeve.

15 The apparatus preferably includes a cutting member for separating the formed sleeve from the plastics strip.

20 Thus the cutting member may be included in the supporting head and may operate either simultaneously with the welding electrodes or subsequent to the welding operation.

25 In a preferred embodiment of the invention the wire is adapted to be partially enwrapped with plastics strip after relative movement between the supporting head and the locating means into a first position and after movement

-3-

back to the original position, the supporting head being provided with a continuous feed of plastics strip and the wire being movable axially relative to the supporting head, the supporting head being provided with  
5 additional movable urging members and electrodes and an additional cutting member whereby a sleeve is formed on the wire after each relative movement between the supporting head and the locating means.

Embodiments of the invention will now be described  
10 by way of example only with reference to the accompanying drawings in which,

Figure 1 is a pictorial view of part of apparatus for automatically applying identification sleeves to wires and cables constructed in accordance with the  
15 invention,

Figures 2 to 6 are cross-sectional views of the part shown in Figure 1 and illustrate the sequence of operation of the apparatus and,

Figures 7 to 12 illustrate the sequence of  
20 operation of another embodiment of the apparatus.

In Figure 1 is shown part of a supporting head 15 of an apparatus for automatically applying identification sleeves to a wire 10. Four fixed rotatable pulleys 14 guide the wire 10 which moves  
25 in increments to the position in which an identification

-4-

sleeve is required. The head 15 includes a supply of plastics tape 11 which is also moved in increments by rollers 12. The head 15 is transversely movable relative to the wire 10, the head 15 being provided with a slot 16 so that the head can straddle the wire 10 and the pulleys 14.

Figure 2 is a cross-sectional view of the head 15 and the wire 10 with the wire 10 in the same position as shown in Figure 1, and Figure 2 shows the head 15 and the wire 10 after the head has moved to straddle the wire. The head 15 also includes two movable tape welding tools 18 and a tape cutting tool 20 (not shown in Figure 1).

In operation the wire is moved between the pulleys 14 until the appropriate position on the wire for an identifying sleeve is adjacent to the plastic strip 11. The head 15 moves across the wire to the position shown in Figure 3, and the plastics tape 11 is dragged partway around the wire to wrap it by about 180°. Complete encirclement of the wire by the tape 11 is completed by movement of the welding tools 18 towards each other until their ends abut with a double layer of tape between them (Figure 4). The tape is then welded and simultaneously the cutting tool 20 moves down to cut the tape (Figure 5).

-5-

The tools 18 and 20 now retract, the head 15 returns to its original position, (Figure 6) the tape 11 is incremented down by the rollers 12 ready for the next cycle of operation.

5        Figures 7 to 12 illustrate the sequence of operation of another embodiment of the invention, again in cross-sectional view across part of a supporting head 25.

10        The head is similar to the head 15 shown in Figures 1 to 6 but it is provided with two slots 26 and 27, two sets of spaced welding tools 28 and two cutting tools 30. The wire 10 is guided by the pulleys 14 as before, and the plastics tape 11 is moved by the rollers 12.

15        In operation, the head 25 moves across the wire 10 so that the wire is moved from the slot 27 to the slot 26 (Figure 7) and the plastics tape 11 is dragged around the wire to wrap it by about 180°. Encirclement of the wire by the tape is completed as the set of spaced welding tools 28 moves into abutment with the tape (Figure 8). The tape is welded and cut by the cutting tool 30 between the spaced welds (Figure 9). By welding on both sides of the cutting tool 30 the sleeve is completed and the continuity of the tape 11 is retained (Figure 10). The welding and cutting tools now retract, 25        the wire 10 is fed along by the pulleys 14 and the

-6-

tape 11 increments down (Figure 11).

5       The head 25 now returns to the position shown in Figure 7 in which the wire 10 is in the slot 27 and again the tape 11 is dragged around the wire and the other set of welding tools 28 moves into abutment with the tape to complete the encirclement of the wire 10 by the tape 11 (Figure 12). The sequence thus repeats, with a sleeve being wrapped around the wire every time the head 25 moves across the wire.

10       It is anticipated that a number of tape applying stations would be arranged side-by-side, for example ten, each applying a different coding tape such as different colours or a combination of different colours and printed codes. The codes could be pre-printed on  
15       the tapes or printed at the head immediately before application of the sleeve.

      The operation of the stations would preferably be controlled by computer.

20       Various types of welding of the tape could be used such as by heating or by radio frequency.

      The system may also be applied to many other articles which require some form of identification, such as hydraulic pipes and other elongate or rod-like articles.

25

CLAIMS

1. An apparatus for enwrapping articles comprising a supporting head adapted to carry a length of material, locating means for locating the article adjacent to the supporting head, the locating means and the supporting  
5 head being relatively movable to a position in which the material is wrapped partially around the article, the supporting head being provided with relatively movable urging members for urging the material the remaining distance around the article, there being provided securing  
10 means for securing the material in the form of a sleeve around the article.
2. An apparatus as claimed in claim 1, in which the article is of elongate form, such as a length of wire.
3. An apparatus as claimed in claim 1 or 2, in which the  
15 length of material is a plastics strip.
4. An apparatus as claimed in claims 2 and 3, in which the supporting head and the locating means are relatively movable to a position in which the supporting head straddles the wire and the plastics strip is wrapped  
20 around the wire through substantially 180°.



5. An apparatus as claimed in claims 2 and 3 or 4, in which the movable urging members include welding electrodes whereby after the plastics strip is urged the remaining distance around the wire, the strip is welded to  
5 form a sleeve.

6. An apparatus as claimed in claim 5, in which a cutting member is provided for separating the formed sleeve from the plastics strip.

7. An apparatus as claimed in claim 6, in which the  
10 cutting member is included in the supporting head and operates either simultaneously with the welding electrodes or subsequent to the welding operation.

8. An apparatus as claimed in claim 6 or 7, in which the length of wire is partially enwrapped with plastics strip  
15 after relative movement between the supporting head and the locating means into a first position and after movement back to the original position, the supporting head being provided with a continuous feed of plastics strip and the wire being movable axially relative to the  
20 supporting head, the supporting head being provided with additional movable urging members and electrodes and an additional cutting member whereby a sleeve is formed on the wire after each relative movement between the supporting head and the locating means.

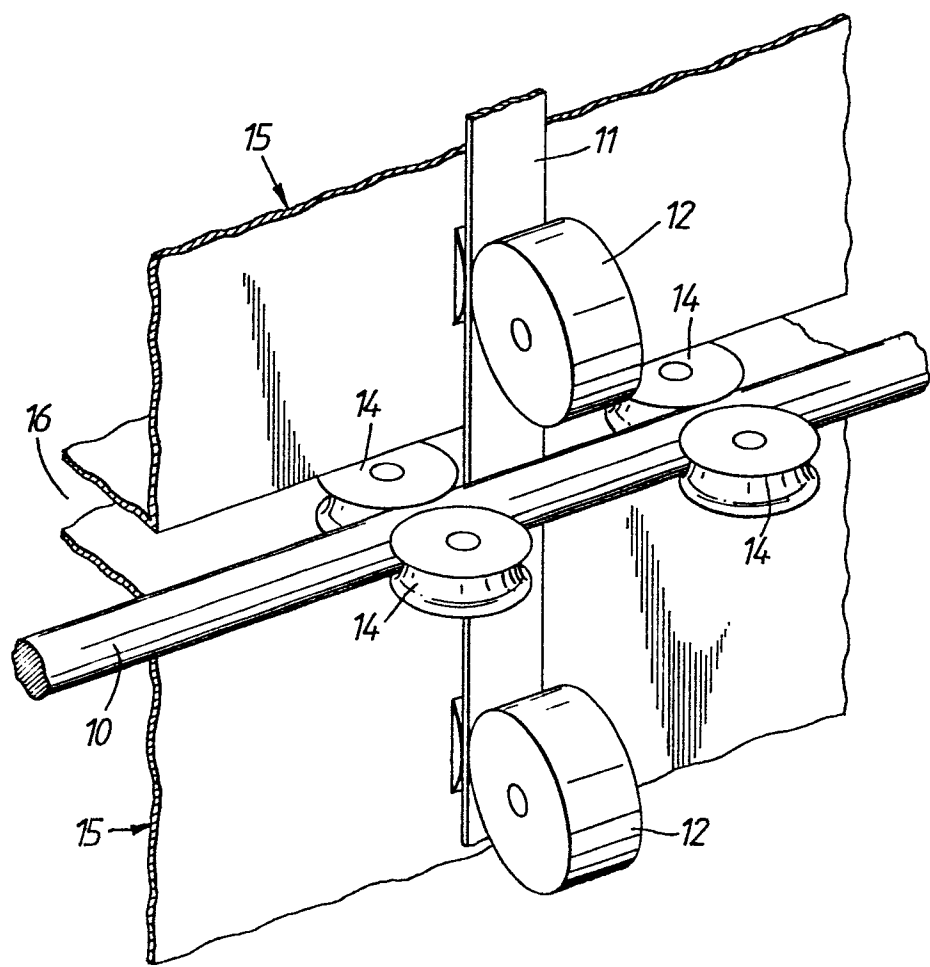
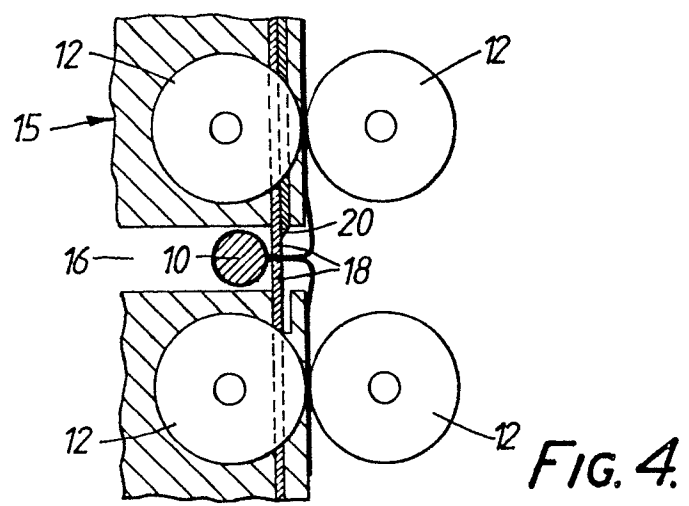
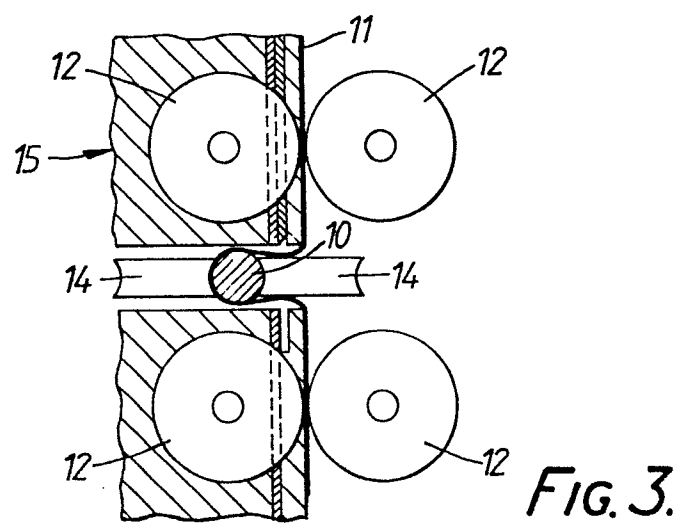
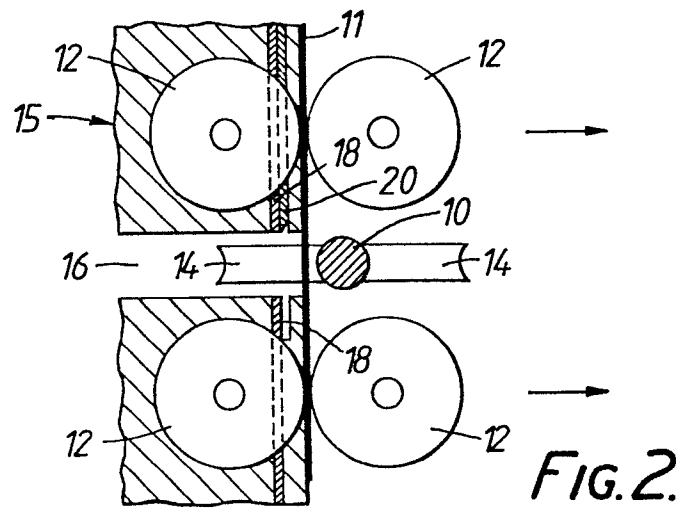


FIG. 1.

2/5



3/5

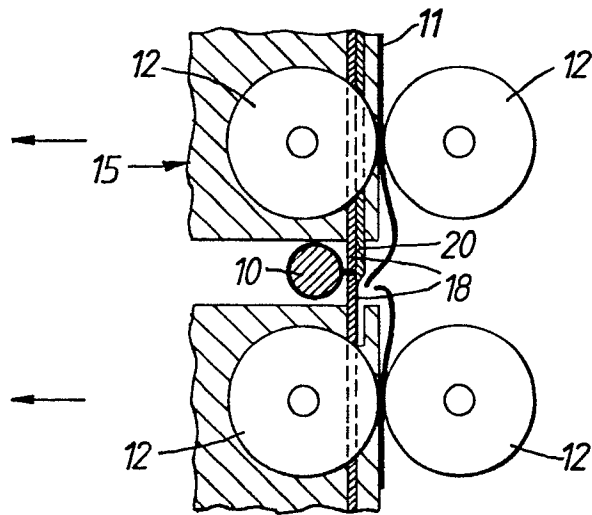


FIG. 5.

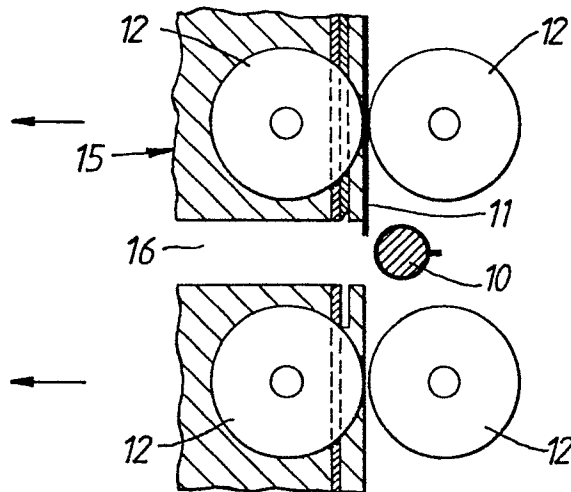
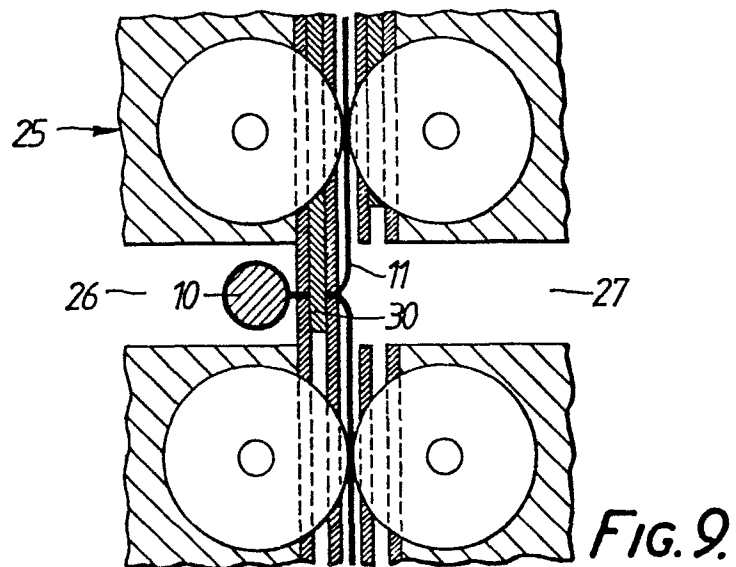
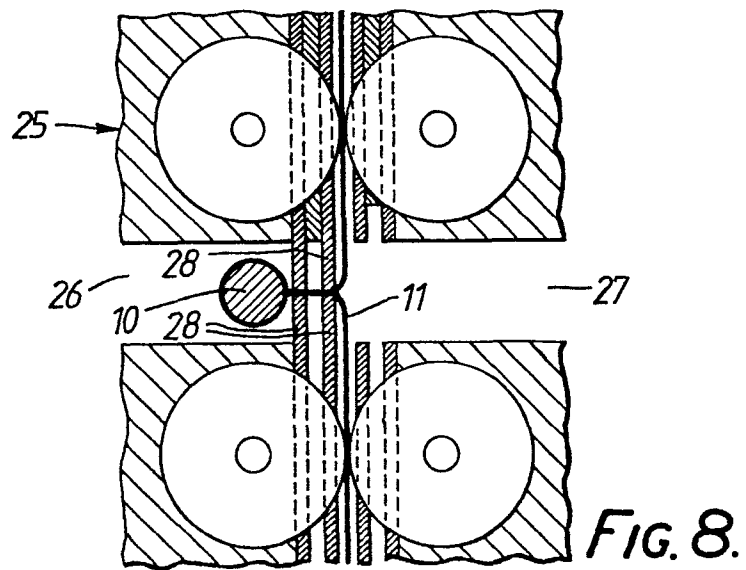
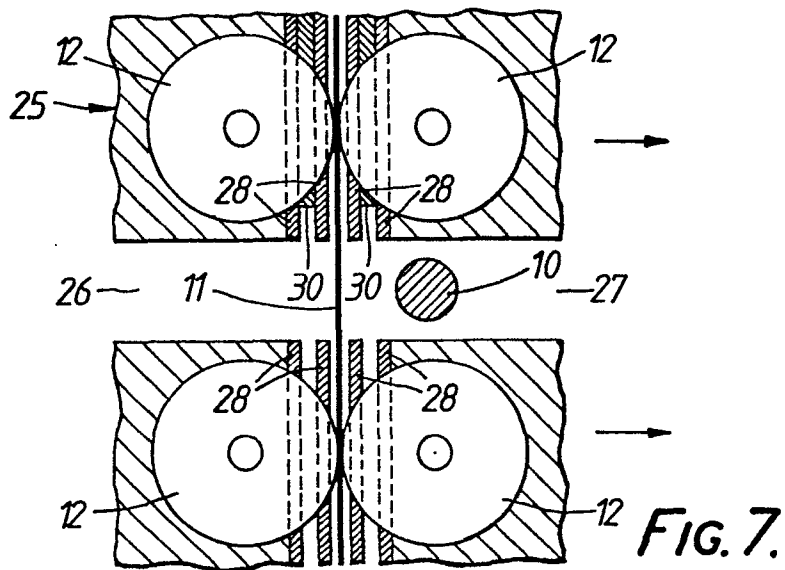


FIG. 6.

4/5



5/5

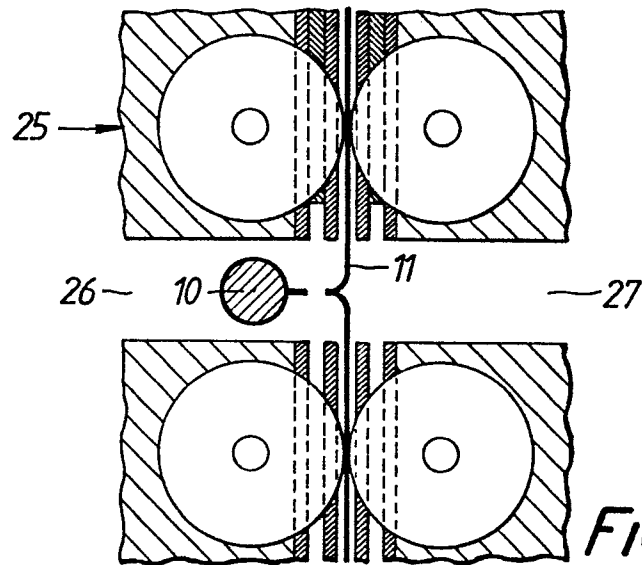


FIG. 10.

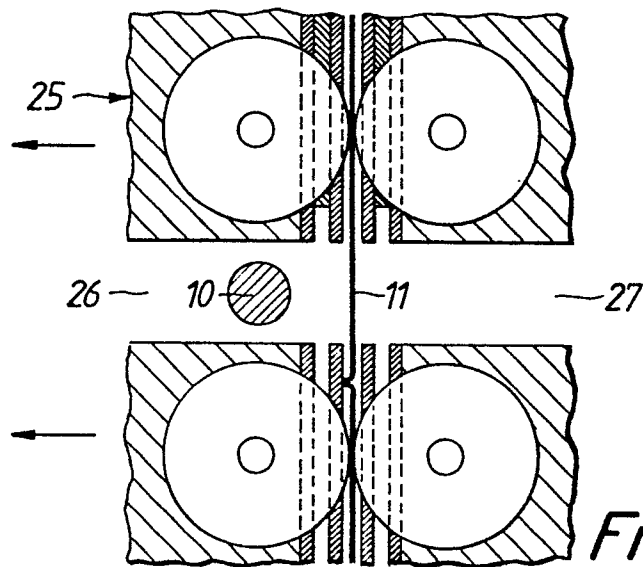


FIG. 11.

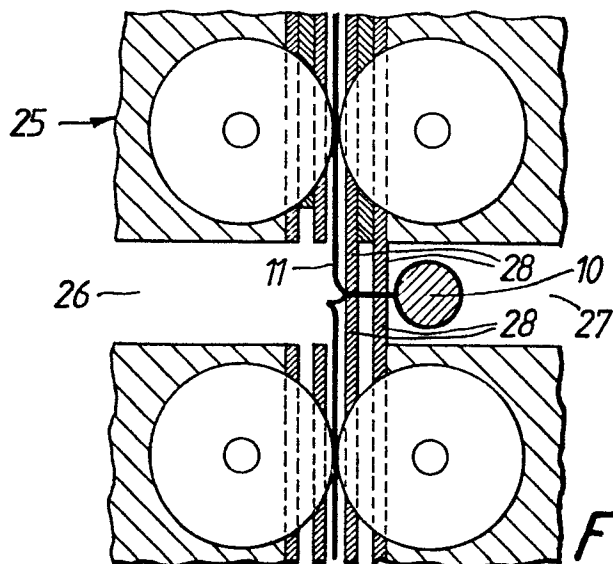


FIG. 12.



European Patent  
Office

# EUROPEAN SEARCH REPORT

**0176302**  
Application number

EP 85 30 6576

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. 4)
X	GB-A-2 092 984 (ELSNER) * Page 2, lines 37-104; figures *  -----	1-7	B 65 D 11/10 B 65 C 3/02
			TECHNICAL FIELDS SEARCHED (Int. Cl. 4)
			B 65 B B 65 C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 16-12-1985	Examiner JAGUSIAK A.H.G.
CATEGORY OF CITED DOCUMENTS			
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  & : member of the same patent family, corresponding document	