



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 911 286 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
28.04.1999 Bulletin 1999/17

(51) Int. Cl.⁶: **B65H 1/00, B65H 54/80**

(21) Application number: **97830531.6**

(22) Date of filing: **22.10.1997**

(84) Designated Contracting States:
**AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC
NL PT SE**
Designated Extension States:
AL LT LV RO SI

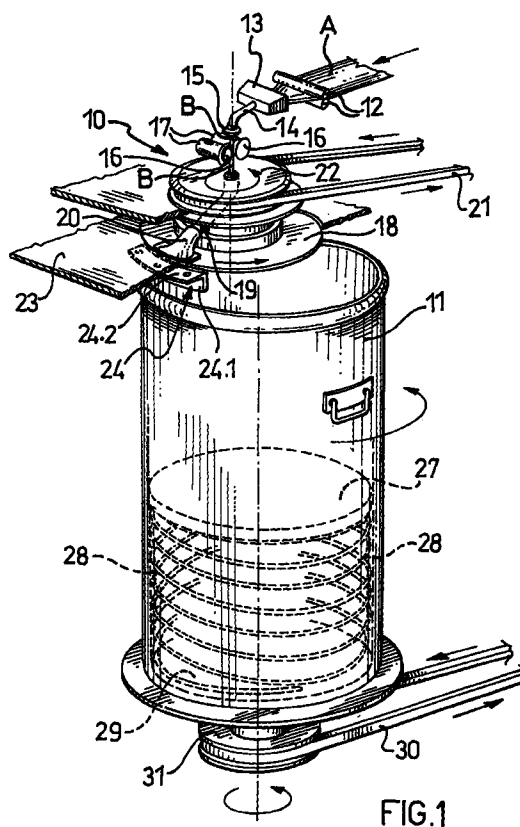
(72) Inventors:
• **Verzegnassi, Angelo**
33044 Manzano (Udine) (IT)
• **Benetti, Sergio**
37077 Ronchi dei Legionari (Gorizia) (IT)

(71) Applicant:
Vouk S.p.A. Officine Meccanotessili
34170 Gorizia (IT)

(74) Representative:
Siniscalco, Fabio et al
c/o JACOBACCI & PERANI S.p.A.
Via Visconti di Modrone, 7
20122 Milano (IT)

(54) A device for winding a sliver of fibres in a collection container for textile machines

(57) A device (10) for winding a sliver of fibres (B) in a collection container (11) for textile machines, which provides for the sliver (B) to be deposited progressively on a movable base (27) of the collection container, in which the base is lowered as the load of wound sliver increases, has a plate (18) on which a tube (19) is mounted for guiding and distributing the sliver (B), the tube opening in an eccentric position relative to the plate (18) in the vicinity of and above the mouth of the container (11); the container (11) and the plate (18) rotate at different speeds and are arranged in a manner such that the sliver (B) is deposited on the movable base (27) in a complex winding; to prevent weakening of the sliver (B) and unevenness in the winding, a side wall (24) is disposed along the path followed by the sliver at the outlet of the tube (19) in order to restrain the sliver (B).



EP 0 911 286 A1

Description

[0001] The subject of the present invention is a device for winding a sliver of fibres in a collection container for textile machines.

[0002] The use of a device which winds the sliver of drawn fibres in a cylindrical collection container at the output of a drawing frame is known.

[0003] This device comprises a circular plate on which a tube is mounted for guiding and distributing the sliver, the tube opening in an eccentric position relative to the plate in the vicinity of and above the mouth of the container. Both the plate with the tube and the container are rotated, the former at a faster speed than the latter, and the axis of the plate is eccentric relative to the container. The container comprises a movable base acted on by a spring which urges it towards the mouth of the container.

[0004] The sliver coming out of the tube is deposited on the movable base in a complex winding produced by the combination of the rotary movements of the plate and of the container. As the sliver gradually accumulates on the movable base, the base descends by gravity against the action of the spring so as to allow further sliver to be deposited. A suitable selection of the resilient force of the spring allows the sliver also to accumulate above the mouth of the container, which is essential for the supply of the sliver during subsequent operations in which yarn is produced.

[0005] Given the fast speed of operation of current drawing frames, both the plate and the container must correspondingly rotate at fast speeds in order to maintain the rhythm of the drawing frame. This involves a considerable centrifugal force acting on the sliver coming out of the tube. In particular, when the outlet of the tube is in the region of the rim of the mouth of the container, the centrifugal force tends to weaken the sliver causing loss of evenness of the winding. Naturally, these imperfections are to be avoided since they may also cause a reduction in the count of the yarn produced in subsequent processes.

[0006] The object of the present invention is to provide a solution to these problems.

[0007] This object is achieved by means of a device for winding a sliver of fibres in a collection container for textile machines, which provides for the sliver to be deposited progressively on a movable base of the collection container, the base being lowered as the load of wound sliver increases, the device comprising a plate on which a tube is mounted for guiding and distributing the sliver, the tube opening in an eccentric position relative to the plate in the vicinity of and above the mouth of the container, the container and the plate being rotated at different speeds, and the plate having an axis of rotation which is eccentric relative to the container, in order to deposit the sliver on the movable base in a complex winding, characterized in that the device comprises means disposed on the path followed by the sliver at the

outlet of the tube in order to restrain the sliver.

[0008] For a better understanding of the invention, a non-limiting embodiment thereof is described by way of example below and is illustrated in the appended drawings, in which:

Figure 1 is a perspective view of a winding device according to the invention with the collection container,

Figure 2 is a partially-sectioned elevational view showing the device of Figure 1, on an enlarged scale,

Figure 3 is a plan view of the device as shown in Figure 2,

Figure 4 is a perspective view showing the operation of the device,

Figure 5 shows a detail of the device with a variant.

[0009] The device shown, generally indicated 10, provides for a sliver of fibres coming from a drawing frame to be wound in a collection container, indicated 11.

[0010] In particular, Figure 1 shows a web of fibres, indicated A, advanced by a final pair of rollers 12 of the drawing frame. Upon discharge from the rollers 12, the web of fibres A enters a substantially frusto-pyramidal reducer element 13 and then a tubular connector 14 so as to become a sliver B with much smaller dimensions than the web A. At the output of the connector 14, the sliver B passes through a measurer 15 which supplies a measurement of the quantity of fibre passing through it and the sliver B then passes through two suitably-shaped heads 16 of two cylinders 17 which compact the sliver and advance it towards the winding device 10.

[0011] The winding device 10 comprises a circular plate 18 supported by a fixed structure of the device disposed above the mouth of the container 11. A tube 19 mounted on the plate 18 has an enlarged outlet opening 20 fixed to the plate 18 and disposed in an eccentric position relative to the plate. The outlet opening 20 opens in the vicinity of and above the mouth of the container 11. The plate 18 is rotated by a motor, not shown, by means of a transmission shown partially and composed of a belt 21 and two pulleys 22. The input end of the tube 19 is disposed on the axis of rotation of the plate 18 and of the driven pulley 22, in the vicinity of the cylinders 17. The plate 18 has a diameter larger than the radius of the container but smaller than its diameter; during the rotation of the plate, the tube 19 is also rotated therewith and its outlet opening 20 follows a circular path the projection of which is inside the circumference of the mouth of the container 11 and substantially touches it at one point. The plate 18 rotates in a hole in a fixed horizontal wall 23. A side wall 24 is fixed to the wall 23 and extends along an arc of a circle in the region

of the point of touching. As shown in detail in Figure 5, the side wall 24 is essentially an "L"-shaped profile which has a flange 24.1 constituting the actual side wall, whereas the other flange 24.2 has slots 25 in which screws 26 are fitted, fixing the profile to the wall 23. If the screws 26 are slackened, the slots 25 allow the side wall 24 to slide radially so that its radial position can be adjusted, the screws being tightened again when the position has been reached.

[0012] The container 11 comprises a movable base 27 acted on by a spring 28 which urges it towards the mouth of the container, reacting on a fixed base 29 of the container. The container 11 is also rotated by a respective motor, not shown, by means of a respective transmission, shown partially and composed of a belt 30 and two pulleys 31.

[0013] The speed of rotation of the plate 18 of the device 10 is greater than the speed of rotation of the container 11.

[0014] The device 10 operates as follows.

[0015] The sliver B coming from the cylinders 17 enters the tube 19, comes out of the opening 20, and is deposited on the movable base 27 which, at the start of the operations when the container 11 is empty, is disposed at the level of the rim of the mouth of the container. The combination of the rotary movements of the plate 18 and of the container 11 forms a complex winding of sliver, shown in Figures 2, 4 and indicated C. During this process, the sliver gradually accumulates above the mouth of the container 11 until it comes into contact with the rotating plate 18; at this point, the movable base descends, keeping the deposited sliver under slight pressure against the plate and the container fills with wound sliver. As explained in the introduction, the accumulation of sliver outside the container 11 is essential for the supply of the sliver during subsequent operations and is achieved by a suitable selection of the resilient force of the spring 28.

[0016] The presence of the side wall 24 enables the sliver coming out of the opening 20 to be restrained in the portion in which it is most exposed to the adverse effects of the centrifugal force, that is, in the region of the point at which the projection of the path of the opening 20 touches the circumference of the mouth of the container 11. By virtue of this restraint, the sliver is not weakened and the evenness of the winding is not lost, so that the problems mentioned in the introduction are solved.

[0017] The radial adjustment of the side wall 24 enables the side wall to be adapted precisely to the container and its restraining effect to be optimized.

[0018] The wall of the tube 19 and that of its outlet opening 20 may also have through-holes 32, shown by way of example in Figure 5, for venting the air contained in the tube and in its outlet opening and entrained by the sliver passing through it, further attenuating the adverse effects due to the rapid rotation of the plate 18.

[0019] Naturally, further variants of the embodiment

described and illustrated are possible.

[0020] The side wall may have a configuration other than that shown, for example, it may be constituted by a profile with a different cross-section or by another functionally-equivalent element.

[0021] Moreover, the side wall may be of a different length from that shown, for example, it may extend along most of or the whole of the perimeter of the rotating plate.

[0022] In general, restraining means equivalent to the side wall may be used.

[0023] The other components of the device may also differ from those shown and this also applies to the type of container.

[0024] The winding device according to the invention may be used in textile machines of any type in which its specific function is required, for example, a combing machine, etc.

Claims

1. A device (10) for winding a sliver of fibres (B) in a collection container (11) for textile machines, which provides for the sliver (B) to be deposited progressively on a movable base (27) of the collection container, the base being lowered as the load of wound sliver (C) increases, the device comprising a plate (18) on which a tube (19) is mounted for guiding and distributing the sliver (B), the tube (18) opening in an eccentric position relative to the plate (18) in the vicinity of and above the mouth of the container (11), the container (11) and the plate (18) being rotated at different speeds, and the plate (18) having an axis of rotation which is eccentric relative to the container (11), in order to deposit the sliver (B) on the movable base (27) in a complex winding (C), characterized in that the device comprises means (24) disposed on the path followed by the sliver at the outlet of the tube (19) in order to restrain the sliver (B).
2. A winding device according to Claim 1, in which, during the rotation of the plate, the outlet (20) of the tube (19) follows a circular path the projection of which is inside the circumference of the mouth of the container (11) and substantially touches it at one point, and in which the restraining means (24) extend along an arc of a circle in the region of the point of touching.
3. A winding device according to Claim 1 or Claim 2, in which means (25, 26) are provided for adjusting the radial position of the restraining means (24).
4. A winding device according to any one of the preceding claims, in which the restraining means are formed by a side wall (24) fixed to a fixed portion (23) of the device.

5. A winding device according to Claim 4, in which the side wall (24) is constituted by an arcuate profile with an "L"-shaped cross-section, one flange (24.1) of the profile performing the function of restraining the sliver (B) and the other flange (24.2) performing the function of connection to the fixed portion (23) of the device. 5
6. A winding device according to Claim 5, in which the other flange (24.2) of the profile has slots (25) through which respective screws (26) are screwed in order to clamp the profile to the fixed portion (23) of the device, the slots (25) permitting adjustment of the radial position of the profile relative to the plate (18). 10 15
7. A winding device according to any one of the preceding claims, in which the wall of the tube (19) has through-holes (32). 20
8. A winding device according to Claim 7, in which the tube (19) has an enlarged outlet opening (20) also having through-holes (32). 25

25

30

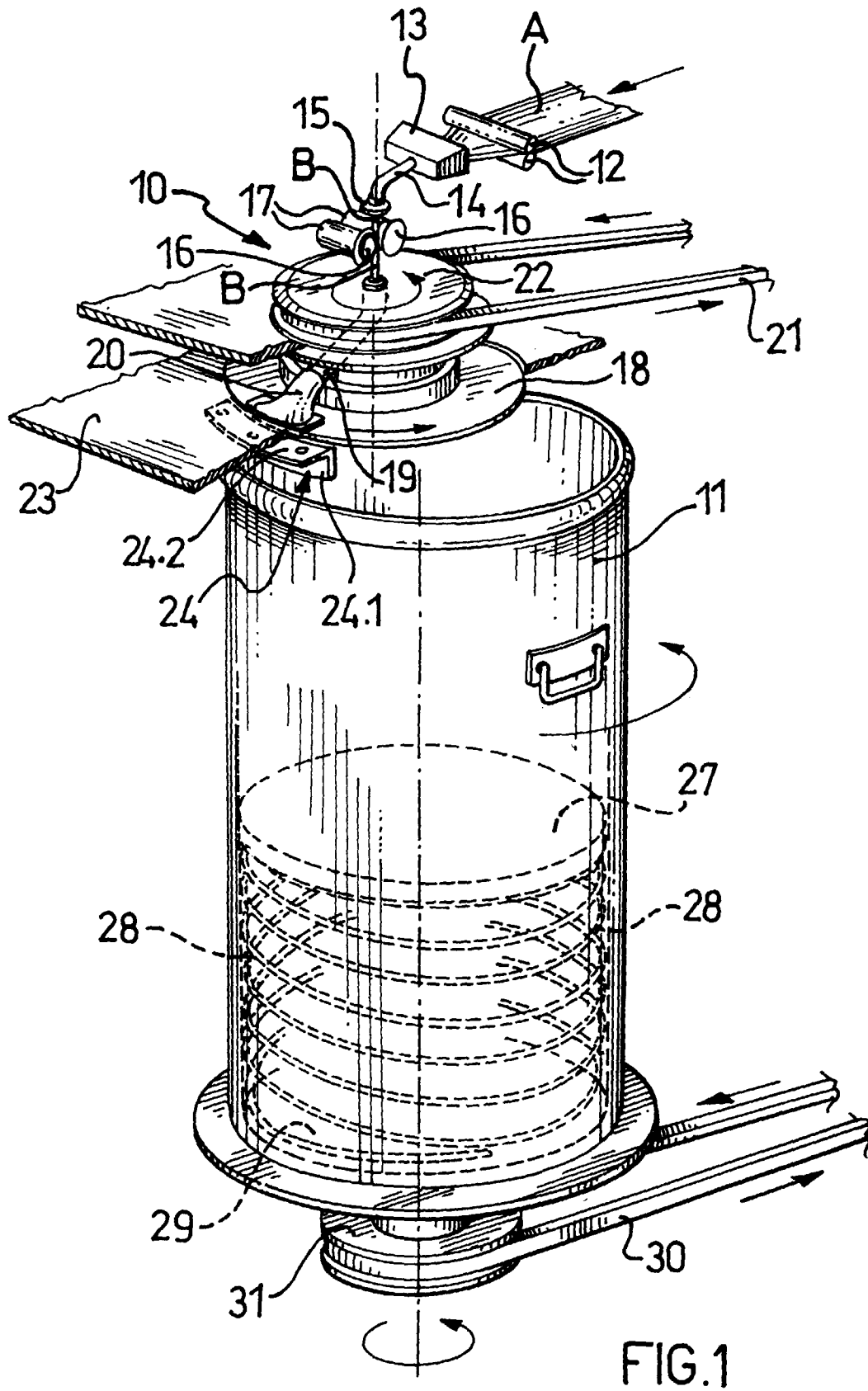
35

40

45

50

55



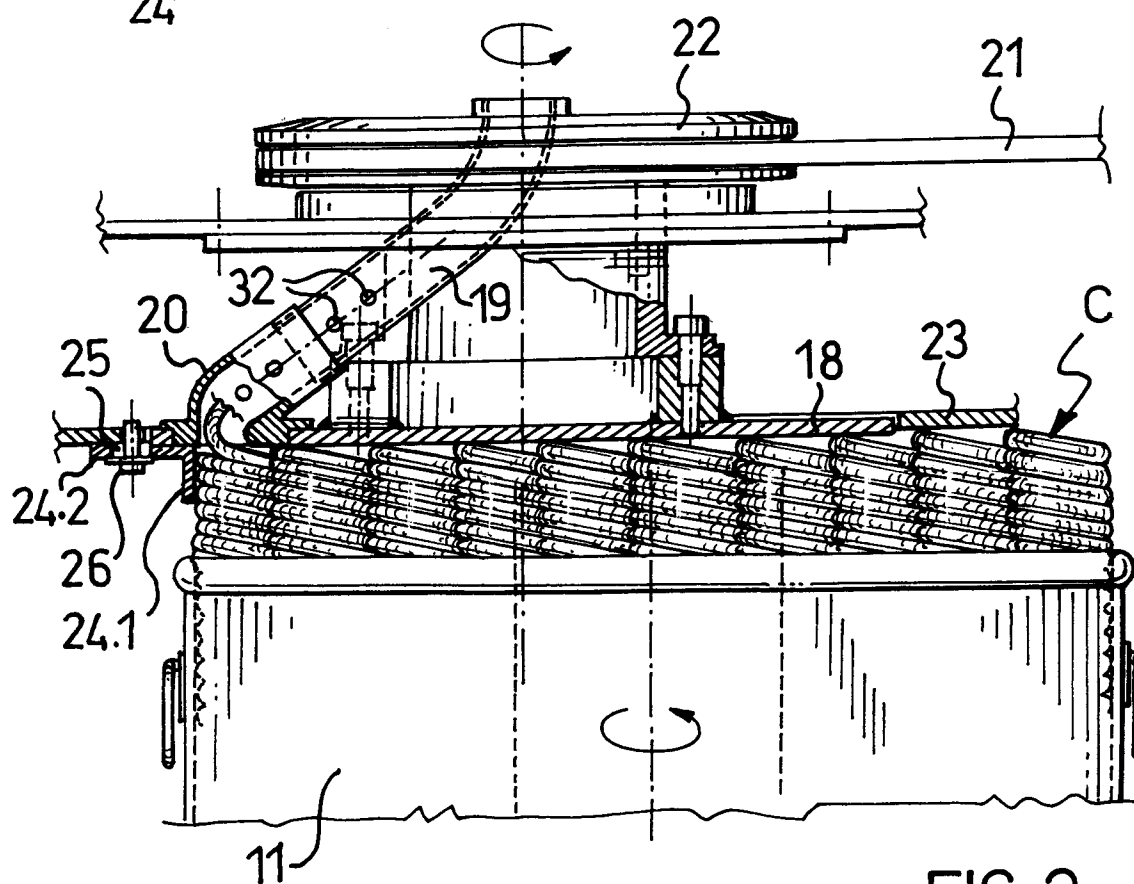
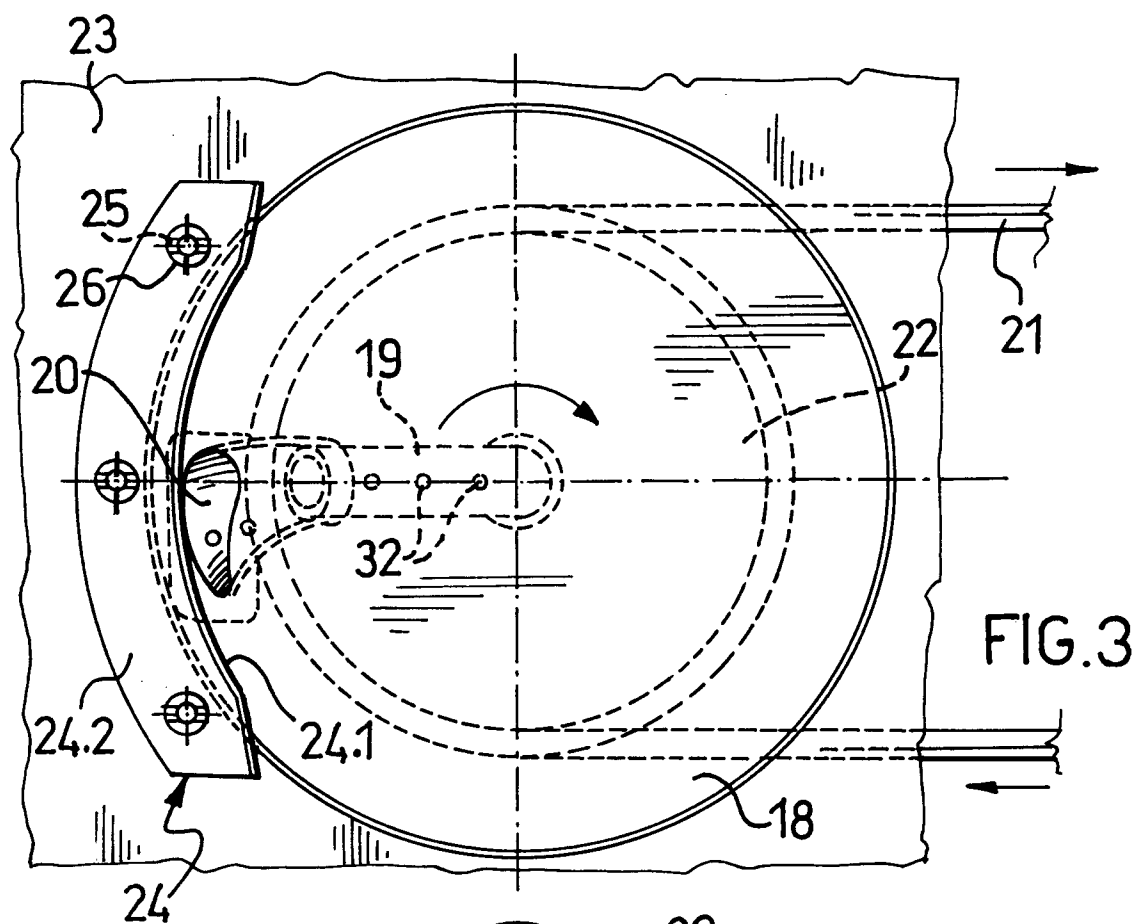
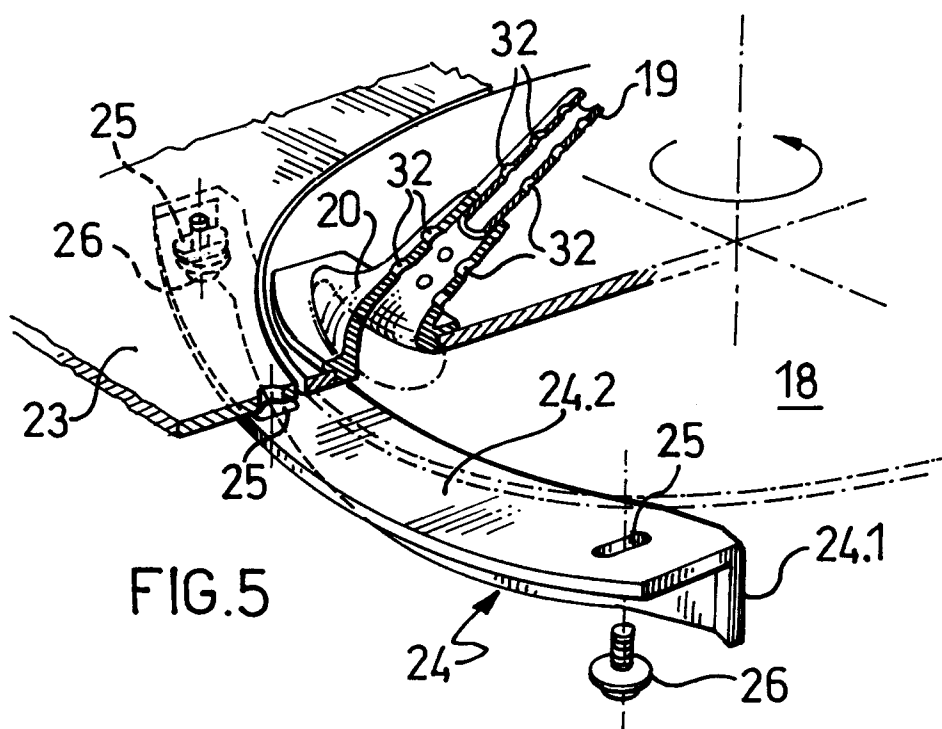
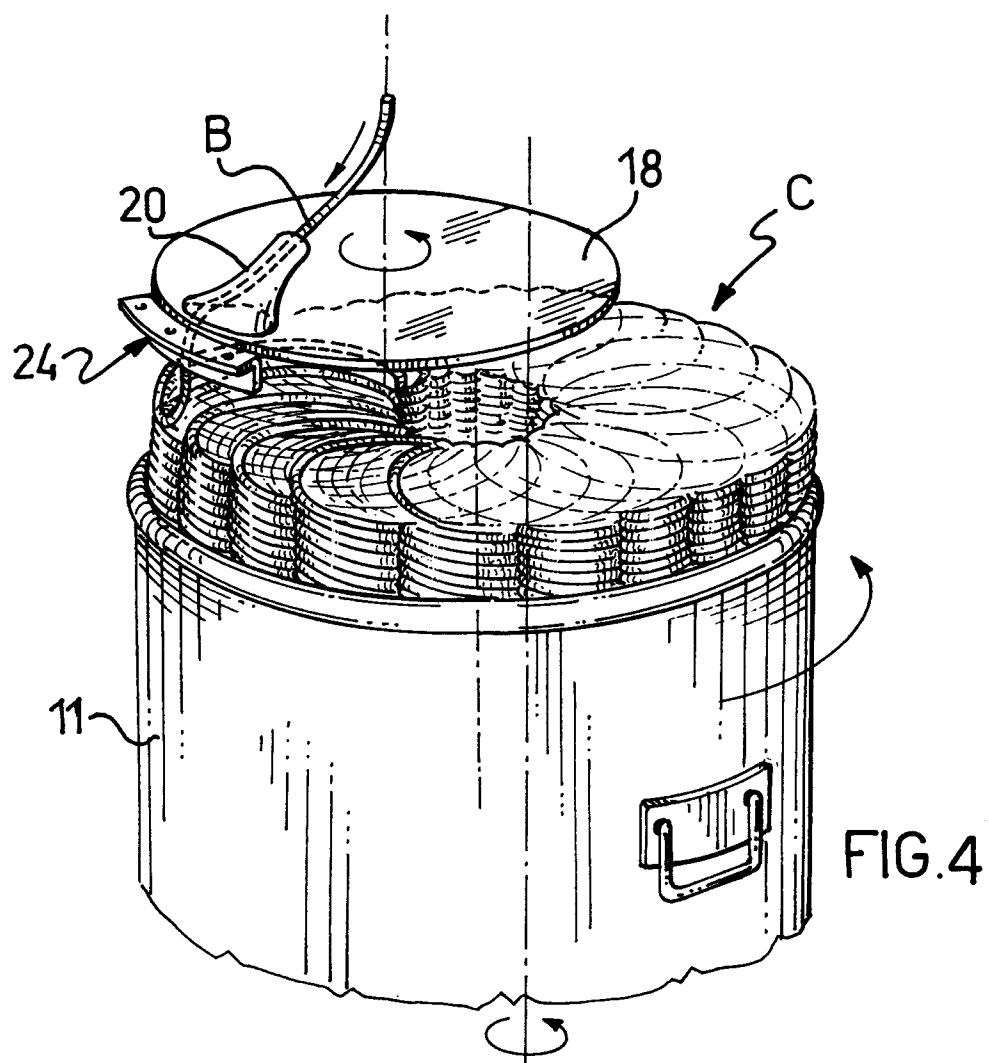


FIG. 2





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 97 83 0531

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.6)
X Y	US 3 295 170 A (J.R. WHITEHURST) * column 4, line 71 - column 5, line 10; figure 4 *	1,2,4,5 7,8	B65H1/00 B65H54/80
X A	US 3 382 543 A (J.T. ROBERTS) * column 10, line 38 - column 11, line 3 *	1,2,4,5 3	
X A	EP 0 392 276 A (MASCHINENFABRIK RIETER AG) * column 9, line 3 - line 28 * * column 10, line 7 - line 43; figures 5-8 *	1,2,4 3	
Y	DE 28 49 101 A (W. SCHLAFHORST & CO.) * the whole document *	7,8	
A	DE 27 21 422 A (W. SCHLAFHORST & CO.)		
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B65H
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 27 March 1998	Examiner D'Hulster, E
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			

EPO FORM 1503 03.82 (P04/C01)