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(54) **Machine for applying handles to bags**

(57) A machine for forming handles (H) and applying them to bags includes a device for transporting the handles (H), from a forming station to an application station, provided with nippers (N) which follow a ring path with at least one return side, and it further includes a device

for removing the handles (H') not released at the application station, provided with continuously operating nipping means arranged close to said return side so that the unreleased handles (H') when passing through their range of action are removed from the nippers (N) and discharged to a collection area (E).

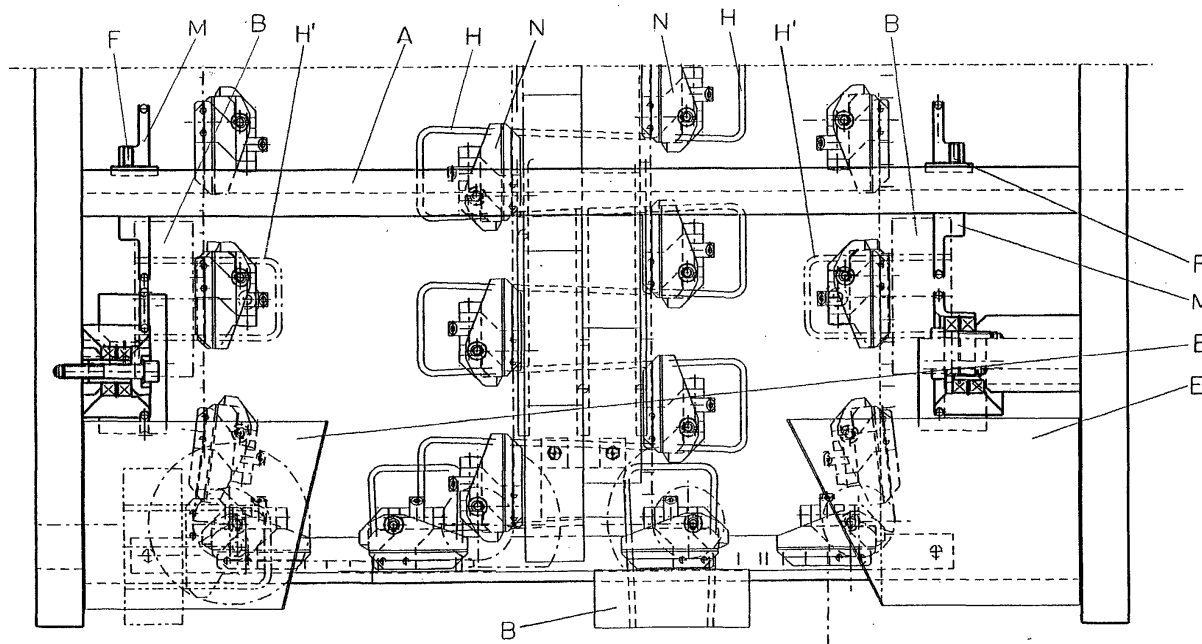


Fig. 1

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Description

[0001] The present invention relates to machines for forming and applying handles to paper and plastic bags, and in particular to a machine provided with a device for the removal of the handles not properly applied to the bag.

[0002] It is known that there exist machines for producing bag handles and subsequently applying them to a bag, or to be more precise to a web material which will be successively worked to obtain a bag.

[0003] An example of such a machine is disclosed in the EP patent n.05703 86 in the name of the same applicant, to which reference is made for a detailed description of the structure and operation thereof. However it is clear that the novel aspect of the present invention is applicable also to other similar machines which may have various differences in structure and/or operation.

[0004] A drawback of the known machine stems from the stopping of the production line when a handle is not properly released by the device which carries it from the forming station to the application station.

[0005] Said device includes nippers mounted on a chain extending along a substantially rectangular ring path, with a feed side, an application side and two return sides. If the handle is not released, its permanence on the transport device is detected by a photocell which sends a line stop signal. The stop is necessary to prevent jammings which the presence of the handle along the return sides could cause by interfering with other members of the machine and/or with the other handles which are being fed.

[0006] However the machine downtime is clearly a cost in terms of production decrease, which can even be significant if the operator does not promptly intervene to manually remove the unreleased handle and to restart the machine.

[0007] Moreover, the reliability of this system is not absolute, in that the photocell may fail and not stop the machine when the need arises. Or, on the contrary, the photocell may be blinded for other reasons (dirt which has accumulated, flying debris, etc.) and cause an unjustified machine stop.

[0008] Therefore the object of the present invention is to provide a machine which overcomes the above-mentioned drawbacks. This object is achieved by means of a machine provided with a device which automatically removes the handles not properly released. Other advantageous features of the present machine are disclosed in the dependent claims.

[0009] The main advantage of the present machine is exactly given by the presence of an automatic device for removing the unreleased handles which allows to prevent jammings yet avoiding annoying and costly stops of the production line.

[0010] A second advantage of this machine stems from the fact that the automatic device is constantly running, in that its activation does not depend on a signal

received by the photocell, whereby the system has a high reliability and is not subject to "false alarms". Moreover, by dispensing with the photocell the machine is simpler and cheaper.

[0011] Still another advantage of such machine, in its preferred embodiment, is given by the simplicity of the handle removal device which is quite reliable, cheap and does not require a particular maintenance.

[0012] Further advantages and characteristics of the machine according to the present invention will be clear to those skilled in the art from the following detailed description of an embodiment thereof, with reference to the annexed drawings wherein:

Fig.1 is a diagrammatic top plan view showing the portion of the machine where the handle removal device is arranged, as well as the horizontal position thereof with respect to the handle transport device; Fig.2 is a side view similar to the preceding one showing the vertical position of the handle removal device with respect to the handle transport device; and

Fig.3 is a partially sectional front view showing some details of said removal device.

[0013] Referring to fig.1, there is seen that a machine according to the present invention conventionally includes a device for transporting handles H which substantially consists of nippers N mounted at staggered positions on the inner side of two chains forming two rings arranged side by side in a horizontal plane. Handles H are fed at the center along the feed side, then they turn through 90° on the application side where, upon release by the nipper N, the handle is applied to the bag. More specifically it is the base B of handle H, made up of two paper rectangles glued together to secure the ends of the loop of the real handle, which is applied to the web from which the bag will be obtained.

[0014] However it may occur that the handle is not properly applied to the bag and/or that nipper N does not release it, whereby when nipper N returns to the handle forming station along the outer return side it is still carrying an unreleased handle H' which must be removed.

[0015] As mentioned above, the novel aspect of the present machine is given by the presence of an automatic device for removing handles H' which prevents the machine stop and does not require the manual intervention of an operator.

[0016] In the preferred embodiment illustrated in the above-mentioned figures, said device essentially consists of a pair of vertical belts parallel with the first return side of the device. Each belt is guided by four pulleys at a speed higher than the speed of nipper N, and it is arranged at a suitable vertical and horizontal position for nipping handles H'. The following description relates to the left half of the device, the right half being substantially symmetrical same as it is for the transport device.

[0017] In particular, a driving pulley M is secured by a screw F onto a drive shaft A and drives a belt T which is wound on other three pulleys. As shown in fig.2, these pulleys include a top return pulley R, an underlying central nipping pulley R' of greater size with respect to pulley R and slightly forward in the direction of motion of handles H', and an underlying bottom return pulley R'' of the same size as pulley R and in turn slightly forward with respect to pulley R'.

[0018] As indicated by the position of nipper N in fig. 2, the vertical arrangement of the pulleys is such that the handle transport plane corresponds with the level at which belt T leaves the bottom return pulley R'' and winds around the central nipping pulley R' which rotates in the opposite direction with respect to the other three. It should be noted that nipper N is depicted in this figure during its motion along the feed side, but along the return side it passes by the pulleys while moving leftward and therefore with the rear opening on the right.

[0019] Each pulley is mounted on a journal P by means of a screw V and rotates on a pair of bearings C held in position by a Seeger ring S, and in the case of the top pulley a washer W is also provided. The only difference for the pulleys on the right side of the machine is that they are mounted on spacers D longer than the journals P of the left side.

[0020] From the top plan view of fig.1 there is clearly seen that the horizontal position of the pulleys is such that the plane of rotation of belt T is close to the return side of the handle transport device, just after the 90° turn from the application side. The simple and effective operation of the present device resulting therefrom is readily understood.

[0021] The loop of handle H' moves on the inside of the return side, but its base B interferes with the pulleys and precisely it gets to be nipped between belt T and the nipping pulley R'. In this way handle H' is removed from nipper N and moves along half of pulley R' being retained by belt T until the latter moves away from pulley R' to wind around the top return pulley R. Upon being released by pulley R', handle H' "lands" on an adjacent collection area E (fig.1) which is preferably devised as a container to collect all the unapplied handles at a place where they are not a problem for the machine operation.

[0022] It should be noted that on the driving pulley M and on the return pulleys R, R'' belt T moves in a suitable groove, whereas said groove is absent on the nipping pulley R' to facilitate the nipping and releasing of handle H' between belt T and the lateral plane surface of said pulley.

[0023] It is clear that the above-described and illustrated embodiment of the machine according to the invention is just an example susceptible of various modifications. In particular, the nipping means of the automatic handle removal device may be different from the above-illustrated belt/pulley assembly (e.g. gears, rotating and oscillating disks, etc.) as long as they are arranged in such a way that the unreleased handles H'

interfere therewith, i.e. they pass through their range of action, along the return path to the forming station.

[0024] Furthermore it is obvious that the relative arrangement of the various members may be somewhat changed according to specific manufacturing needs. For example, there is no substantial difference in reversing the direction of motion of belt T and having the handle transport plane correspond with the point of passage of belt T from the top pulley R to the central pulley R', whereby the removal takes place downward rather than upward.

[0025] Similarly, the path of the transport device may even be not exactly horizontal and it may include more or less sides, for example by providing the application station along a same feed/forming side or a single return side which directly takes back to the forming station.

Claims

1. A machine for forming handles (H) and applying them to bags, including a device for transporting the handles (H), from a forming station to an application station, provided with nippers (N) which follow a ring path with at least one return side, **characterized in that** it further includes a device for removing the handles (H') not released at the application station, provided with continuously operating nipping means arranged close to said return side so that said unreleased handles (H') pass through their range of action, said nipping means being suitable to remove the unreleased handles (H') from said nippers (N) and to discharge them to a collection area (E).
2. A machine according to claim 1, **characterized in that** the nipping means consist of a belt (T) winding around a nipping pulley (R') and driven by an oppositely rotating driving pulley (M) through two return pulleys (R, R''), the transport plane of the unreleased handles (H') being substantially orthogonal with respect to the rotation plane of said belt (T) and substantially tangent to said nipping pulley (R') at the point of passage of said belt (T) from one of said return pulleys (R, R'') to the nipping pulley (R').
3. A machine according to claim 2, **characterized in that** the two return pulleys (R, R'') have the same size and the nipping pulley (R') is larger.
4. A machine according to claim 2 or 3, **characterized in that** the driving pulley (M) and the return pulleys (R, R'') have a groove for the passage of the belt (T), whereas the nipping pulley (R') has a plane lateral surface.
5. A machine according to one or more of the preceding claims, **characterized in that** a first return pul-

ley (R) is at a top position, the nipping pulley (R') is at an underlying central position slightly forward with respect to said first return pulley (R) in the direction of motion of the unreleased handles (H'), and the second return pulley (R'') is at an underlying bottom position which is in turn slightly forward with respect to said nipping pulley (R').

6. A machine according to claim 5, **characterized in that** the transport plane of the unreleased handles (H') is tangent to the nipping pulley (R') at the point of passage of the belt (T) from the bottom return pulley (R'') to said nipping pulley (R').

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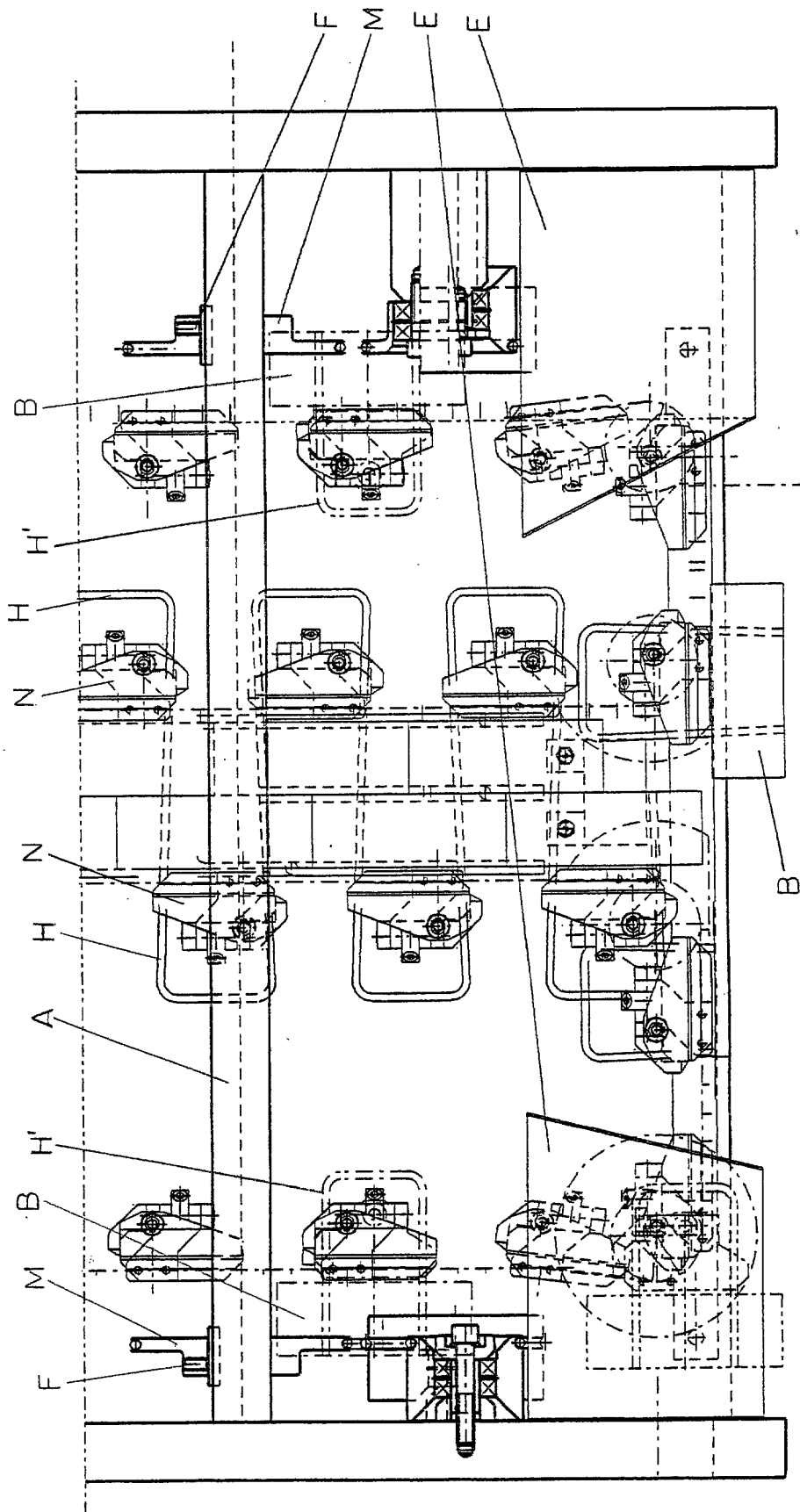


Fig. 1

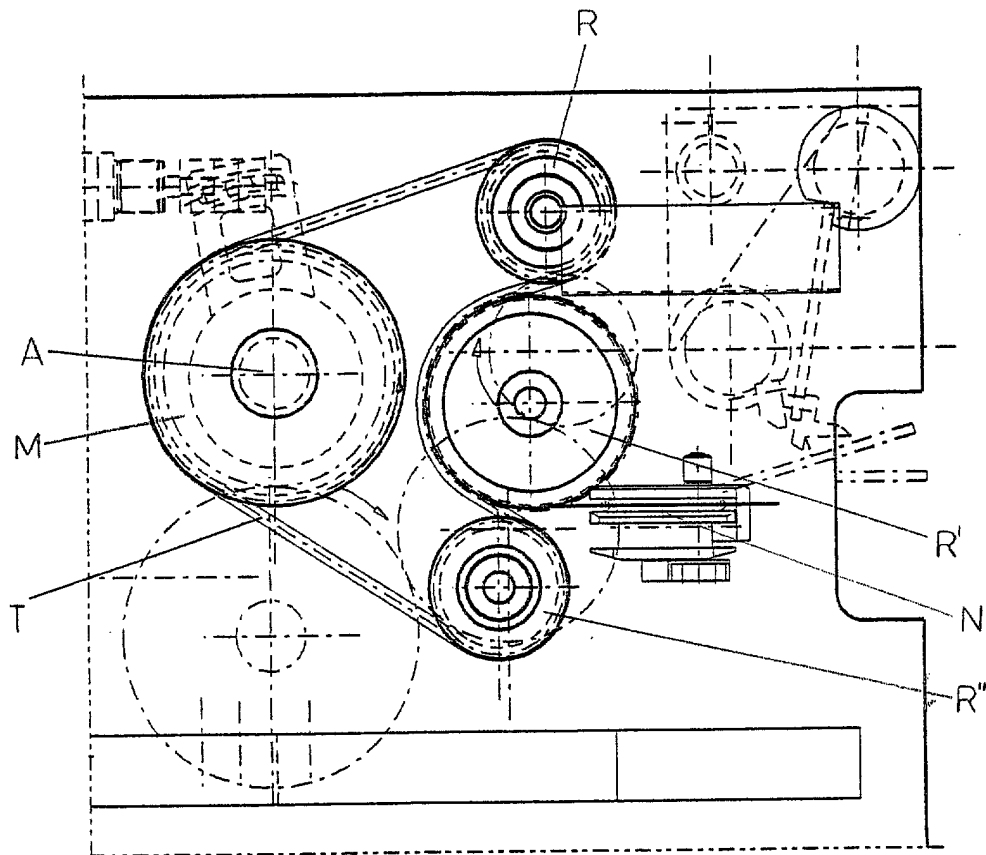


Fig. 2

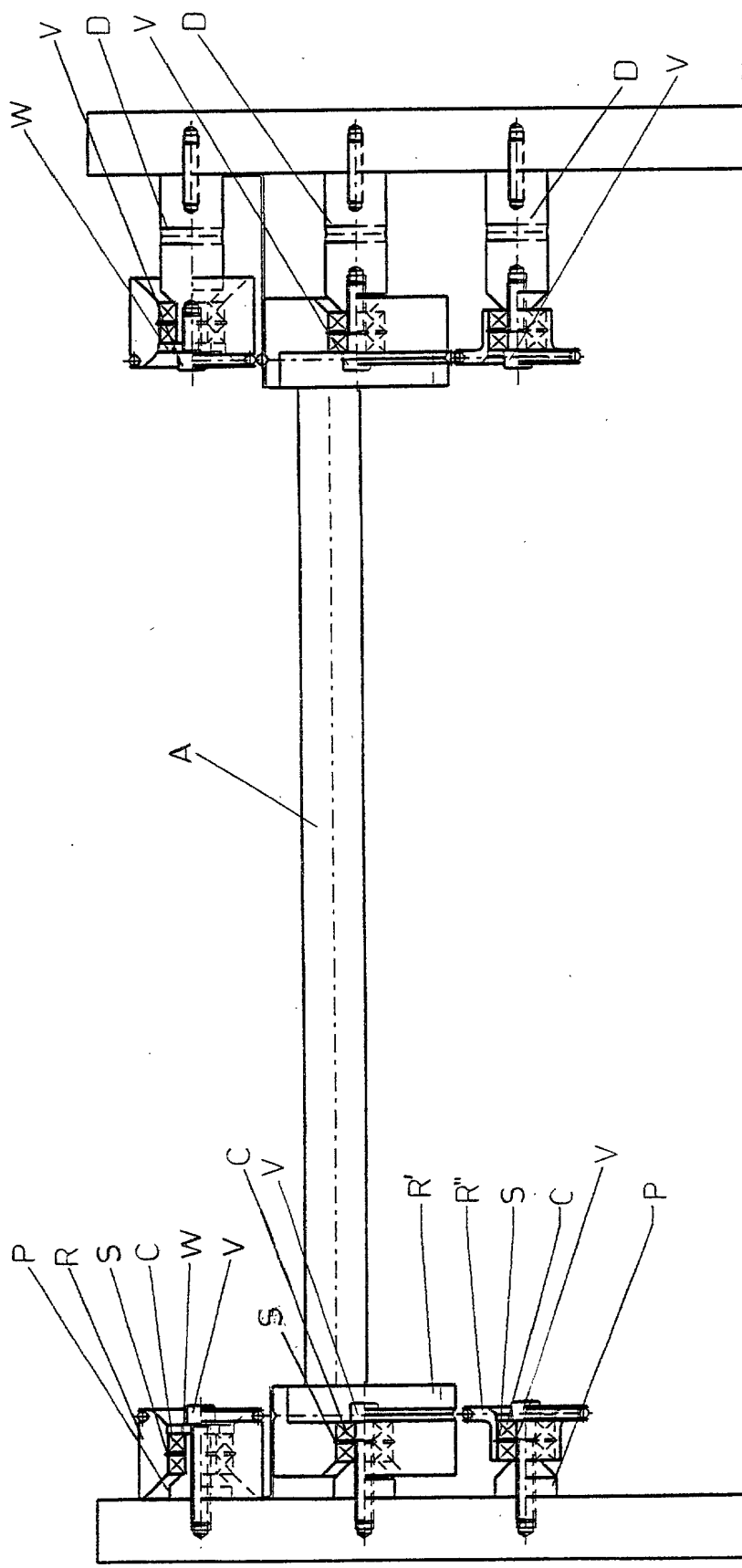


Fig. 3



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EUROPEAN SEARCH REPORT

Application Number
EP 02 42 5116

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.7)
A	US 5 970 682 A (FÖCKE HEINZ ET AL) 26 October 1999 (1999-10-26) * column 4, line 22 - line 31 * ----	1	B31B19/86 B31B1/74
D,A	EP 0 570 386 A (CURIONI SUN SRL) 24 November 1993 (1993-11-24) -----		
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B31B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 26 June 2002	Examiner Pipping, L
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 02 42 5116

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26-06-2002

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5970682 A	26-10-1999	DE 19607215 A1	28-08-1997
		BR 9701074 A	15-12-1998
		CN 1161298 A , B	08-10-1997
		DE 59700178 D1	08-07-1999
		EP 0791539 A1	27-08-1997
		JP 9314699 A	09-12-1997
EP 0570386 A	24-11-1993	IT 1246501 B	19-11-1994
		DK 570386 T3	01-04-1996
		EP 0570386 A1	24-11-1993
		GR 3019309 T3	30-06-1996
		WO 9310968 A1	10-06-1993
		JP 3078320 B2	21-08-2000
		US 5350350 A	27-09-1994
		BR 9107275 A	19-04-1994
		DE 69117983 D1	18-04-1996
		DE 69117983 T2	19-09-1996
		JP 6504242 T	19-05-1994
		KR 205551 B1	01-07-1999

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