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(54) **Material and waste transportation**

(57) The present invention relates to material and waste transportation, in particular including an improved routine for delivery of newsprint and the removal of waste paper. There is described a material delivery and waste collection system for a premises (14). The system comprises (i) providing at least two, wheeled, enclosed elongate material-carrying containers (11) each having a floor, walls, a roof and an access door (40,41) at the rear of the container. The premises have a delivery bay (13) for transfer of materials from the rear of a first container into the premises; and at least one waste collection bay (23). The waste collection bay includes a compactor unit (20) having an input (21) adapted to receive waste material and an output (24) for expulsion of the waste material. Mutually cooperating connecting means are provided on the compactor units and on the rear of the second container; the connecting means providing a substantially rigid connection between the output of the compactor unit and the container. Preferably, the wheeled container is in the form of a trailer of an articulated lorry.

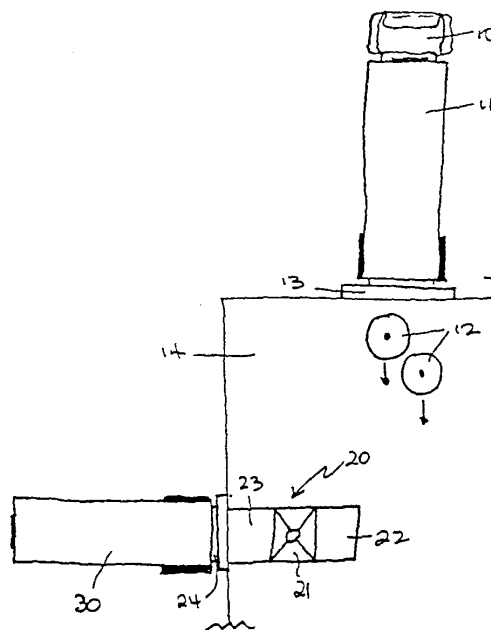


Figure 1.

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Description

[0001] The present invention relates to material and waste transportation, in particular including an improved routine for delivery of newsprint and the removal of waste paper.

[0002] Transportation of goods by road is normally conducted using large articulated lorries having a trailer hauled by a tractor unit. Typically, having delivered its load, the lorry returns to its home depot empty. This is a waste of driver and vehicle time, being a period of zero productivity, and is also a waste of fuel, thus raising environmental concerns. The government is keen to encourage hauliers to use full trailers on the return leg of each journey. However, whilst being an admirable aim, it is, in practice, difficult to achieve, for several reasons. Products made by the concern to whom the delivery was made may not require transportation of its own goods in the direction of the lorry's home depot. Furthermore, trailers may be designed specifically for transporting a certain type of product and are not readily adaptable to carrying other goods.

[0003] In the newsprint industry, reels of newsprint are typically delivered to a printing works on a trailer with fabric side curtains carried upon a steel frame, typically known as a "Tautliner". Printing works produce a great deal of waste paper. Typically, on a continuous basis as it is produced, a compactor unit compresses waste paper into a 20 foot long bin. Typically, two bins are transported for disposal or recycling upon a single trailer. The trailer will be different from that used to deliver the newsprint. Each bin in turn must be mounted upon and demounted from the trailer using a hook lift vehicle before the contents can be disposed of. The system is generally similar to that in our copending application GB 2 307 895A. This procedure is unduly time consuming involving many movements of bins. This additionally produces a considerable amount of noise.

[0004] It is with these problems in mind, particularly with reference to the newsprint industry, that the present invention has been devised.

[0005] According to the present invention, there is provided, in a first aspect, a material delivery and waste collection system for a premises; the system comprising (i) providing at least two, wheeled, enclosed elongate material-carrying containers each having a floor, walls, a roof and an access door mounted within a frame at the rear of the container; (ii) providing the premises with a delivery bay for transfer of materials from the rear of a first container into the premises; and (iii) providing the premises with at least one waste collection bay; wherein the waste collection bay includes a compactor unit having an input adapted to receive waste material and an output for expulsion of the waste material; the system comprising mutually cooperating connecting means provided on the compactor units and on the rear of the second container; the connecting means providing a substantially rigid connection between the output of the

compactor unit and the container.

[0006] Preferably, the wheeled container is in the form of a trailer of an articulated lorry.

[0007] In another aspect, the present invention provides a trailer for an articulated lorry adapted for use in the system described above. The trailer comprises an enclosed elongate material-carrying container having a floor, walls, a roof and an access door mounted within a frame at the rear of the trailer; wherein the interior surfaces of the walls and roof are substantially flat and uninterrupted and the floor includes a plurality of longitudinally extending guide tracks; wherein further, the rear of the trailer comprises cooperative means for connecting the trailer to the output of a compactor unit. The trailer further comprises means for discharging waste material from the interior of the container.

[0008] Typically, the container is mounted at the rear of the trailer upon a chassis for pivotal movement with respect thereto. Alternatively, the container may include a tipping ram to thereby discharge the contents.

[0009] Preferably, the access door is a vertically slidable door. The frame of the door may be in the form of an external outwardly opening door. Alternatively, there may be a further external rear door provided to the trailer.

[0010] The above and other aspects of the present invention will now be described in further detail by way of example only with reference to the accompanying drawings, in which:

Figure 1 is a plan view representing, schematically, the operation of an embodiment of the method of the present invention;

Figure 2 is a rear view of a first embodiment of a trailer in accordance with the present invention;

Figure 3 is a side view of the trailer of Figure 2;

Figure 4 is a side view of a second embodiment of a trailer in accordance with the present invention;

Figure 5 is a cross-section through the floor of the trailer of Figures 2 and 3; and

Figure 6 is a part plan view showing an arrangement of newsprint rolls in the trailer of Figures 2, 3 and 5.

[0011] With reference to Figure 1, the process of the present invention will now be explained. A lorry comprising a tractor unit 10 and a first trailer 11 carrying newsprint reels 12 reverses up to a loading bay 13, of a printing works 14 whereupon the reels are removed in a conventional manner to be used, again in a conventional manner. Newspaper waste is removed from the printing process and delivered to a conventional compressor

unit 20 typically comprising a hopper 21 for receipt of the waste and an axial ram unit 22 to force the waste along discharge pathway 23 terminating in an discharge chute 24. Discharge chute 24 is received in an aperture 40 (Figure 2) in a door 41 in the rear of a second trailer 30 of identical design to first trailer 11. Second trailer 30 is secured such that movement between the trailer 30 and discharge chute 24 is largely prevented and remains in place whilst the compacting process is ongoing. Aperture 40 is covered when not coupled to the discharge chute 24 by means of a vertically sliding cover 42. Door 41 typically hinges from the upper edge.

[0012] The process operates as follows. A fully laden lorry arrives and discharges its load. It then proceeds to the waste exit area of the works 14 where it deposits the now empty trailer and retrieves the filled trailer which it then returns to its home depot or elsewhere for disposal.

[0013] In a typical arrangement, however, the printing works 14 will have several compressor units 20 with associated discharge pathways.

[0014] At the remote site where the waste paper is to be discharged, for example at a landfill site or recycling plant, the trailer can be tipped to discharge the waste under gravity or may include an ejector or ram piston or walking floor (not shown) which ejects the waste out.

[0015] Many features of the trailer 11,30 are largely conventional and do not need to be described in further detail. Indeed, this is a particular advantage of the present system and trailer. An example of a trailer is shown in Figures 2 and 3. The trailer includes a material carrying container 50 pivotally mounted at a rear hinge point upon a chassis 52. Pivotal movement is actuated by means of a pneumatic piston 53. The trailer is supported upon three pairs of road wheels 54 and, when not coupled to a tractor unit, a front wheeled support leg 55. A further wheeled support leg 56 is provided at the rear of the trailer for additional support.

[0016] The container 50 is typically formed from 5mm aluminium alloy plate and includes reinforcing members 60 spaced at approximately 400mm centres. The embodiment shown in Figure 4 is identical save that, for aesthetic reasons, the container is clad externally with an appropriate sheet material 61. The use of aluminium means that the container is equally suitable for the transportation of grain/cereals. Indeed the inventive system will find use in the delivery of products to, for example, supermarkets. Supermarkets produce a large quantity of paper and cardboard waste which is presently compacted into small containers in the same manner as in the waste newsprint industry. In this regard, it will be apparent that the trailer could also be refrigerated.

[0017] Typically, the container 50 is around 13m long, 2.55m wide and 2.5m tall. Such dimensions allow the trailer to carry seventeen 1250mm reels 65 of newsprint, a section of which is shown in Figure 6. The base of the trailer is illustrated in cross-section in Figure 5. The base includes four longitudinal channels 70 arranged in pairs. The channels assist in loading and removal of the reels

65 of newsprint. Cargo carried upon skates can slide within the channels. So that the channels 70 do not become clogged with waste paper, elongate inserts 71 can be used to fill the channels. Alternatively, the channels can simply be brushed and cleaned out after use.

[0018] The present invention reduces the number of on site operations required, avoids the need for raising and lowering heavy containers loaded with waste materials and allows removal of waste to be effected in a straightforward, quick, efficient and cost-effective manner. The present invention also significantly reduces road movements, in ideal cases by 50%. Additionally, in the preferred embodiment, the safety of road delivery is enhanced by the metal construction of the trailer.

Claims

1. A material delivery and waste collection system for a premises (14); the system comprising (i) providing at least two, wheeled, enclosed elongate material-carrying containers (11) each having a floor, walls, a roof and access means (40) mounted within a frame (41) at the rear of the container (11); (ii) providing the premises (14) with a delivery bay (13) for transfer of materials from the rear of a first said container into the premises; and (iii) providing the premises with at least one waste collection bay (23); wherein the waste collection bay includes a compactor unit (20) having an input (21) adapted to receive waste material and an output (24) for expulsion of the waste material; the system comprising mutually cooperating connecting means provided on the compactor units and on the rear of the second container; the connecting means providing a substantially rigid connection between the output of the compactor unit and the container.
2. A system as claimed in Claim 1 wherein the wheeled container is in the form of a trailer (11) of an articulated lorry.
3. A trailer (11) for an articulated lorry adapted for use in the system of Claim 2 wherein the trailer (11) comprises an enclosed elongate material-carrying container having a floor, walls, a roof and an access door mounted within a frame at the rear of the trailer; wherein the interior surfaces of the walls and roof are substantially flat and uninterrupted and the floor includes a plurality of longitudinally extending guide tracks; wherein the rear of the trailer comprises co-operative means for connecting the trailer to the output of a compactor unit; and wherein the trailer further comprises means for discharging waste material from the interior of the container.

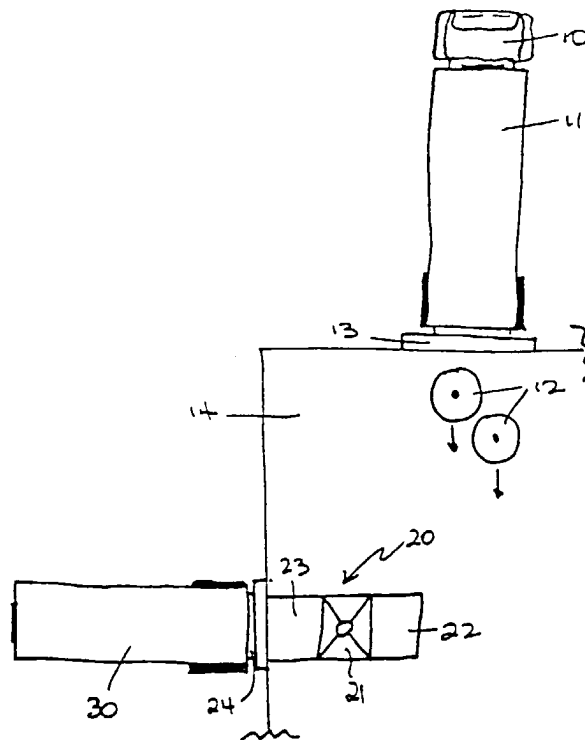


FIGURE 1.

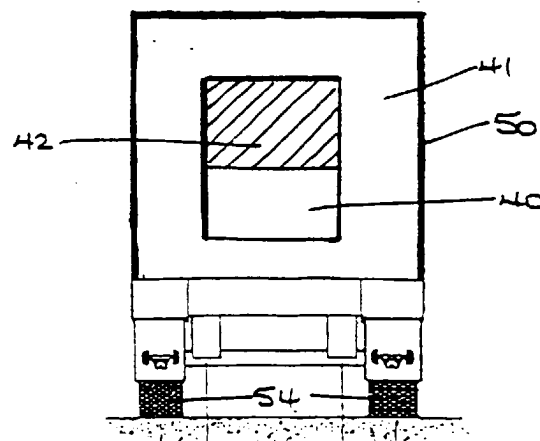
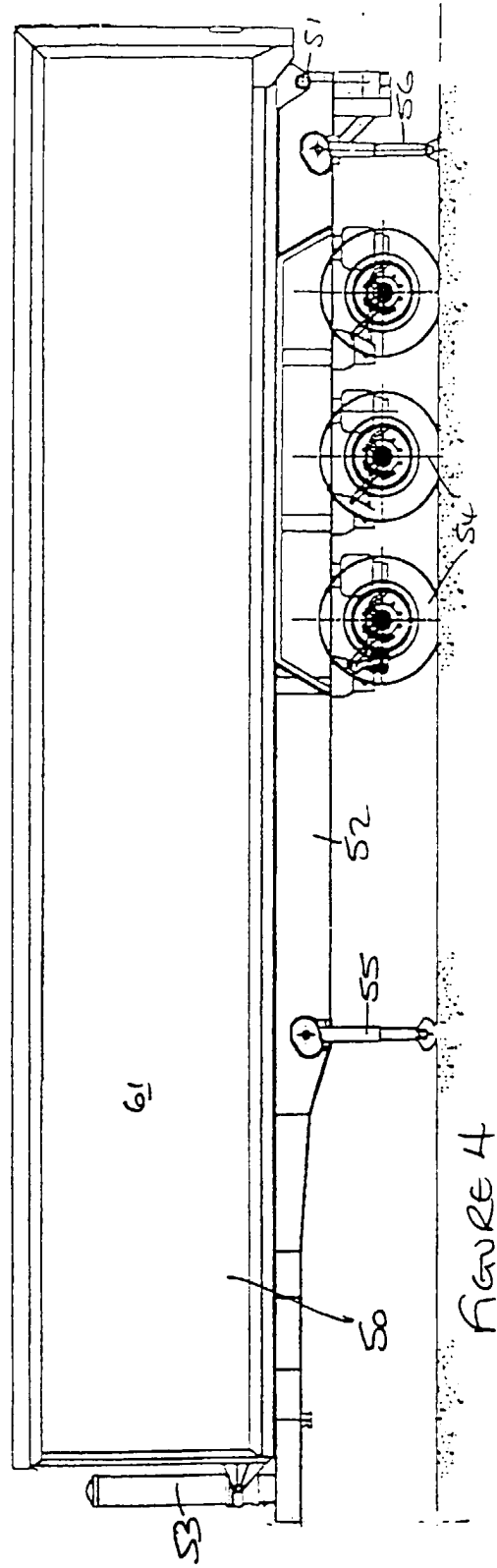
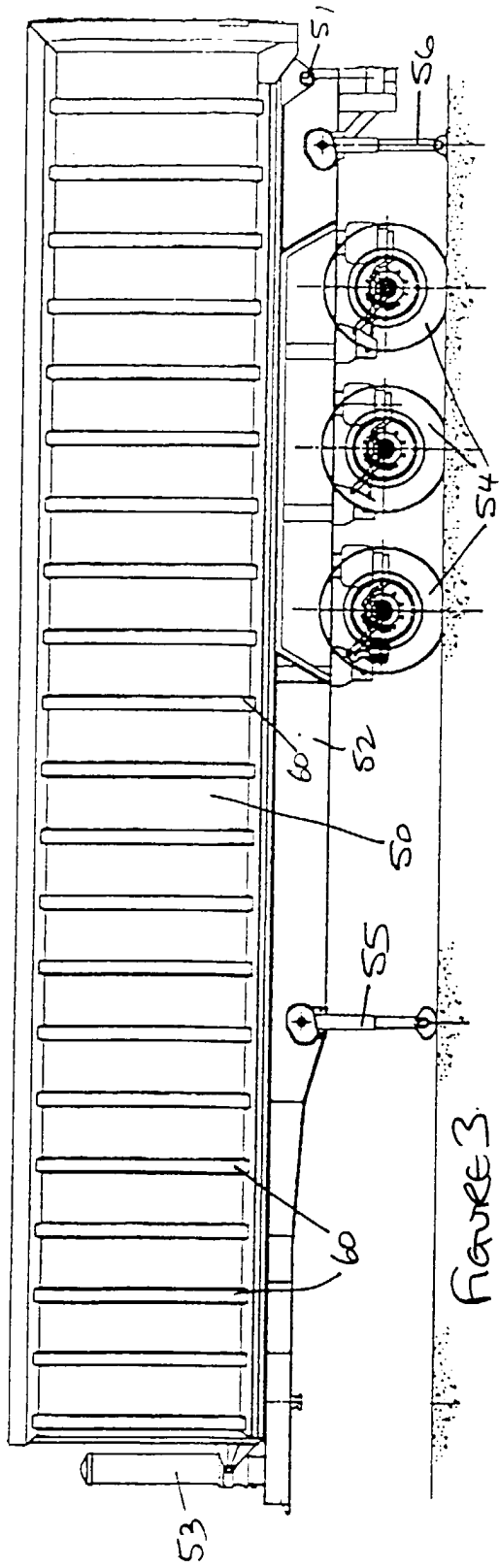


FIGURE 2



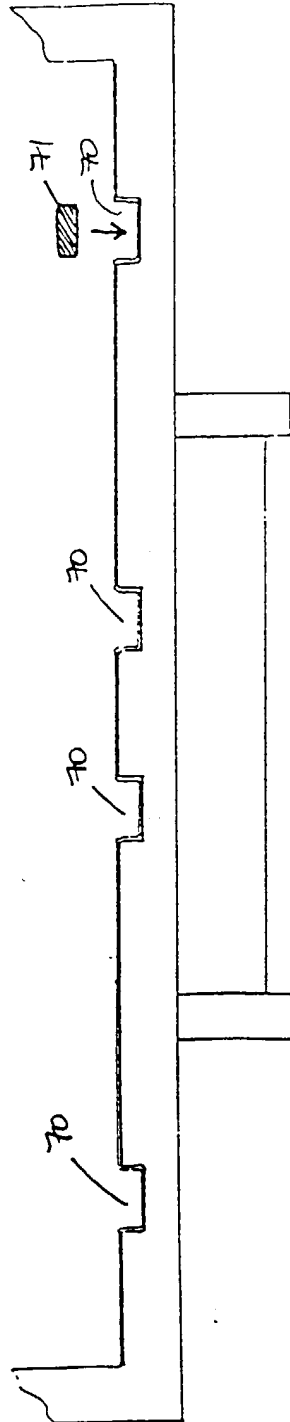


Figure 5

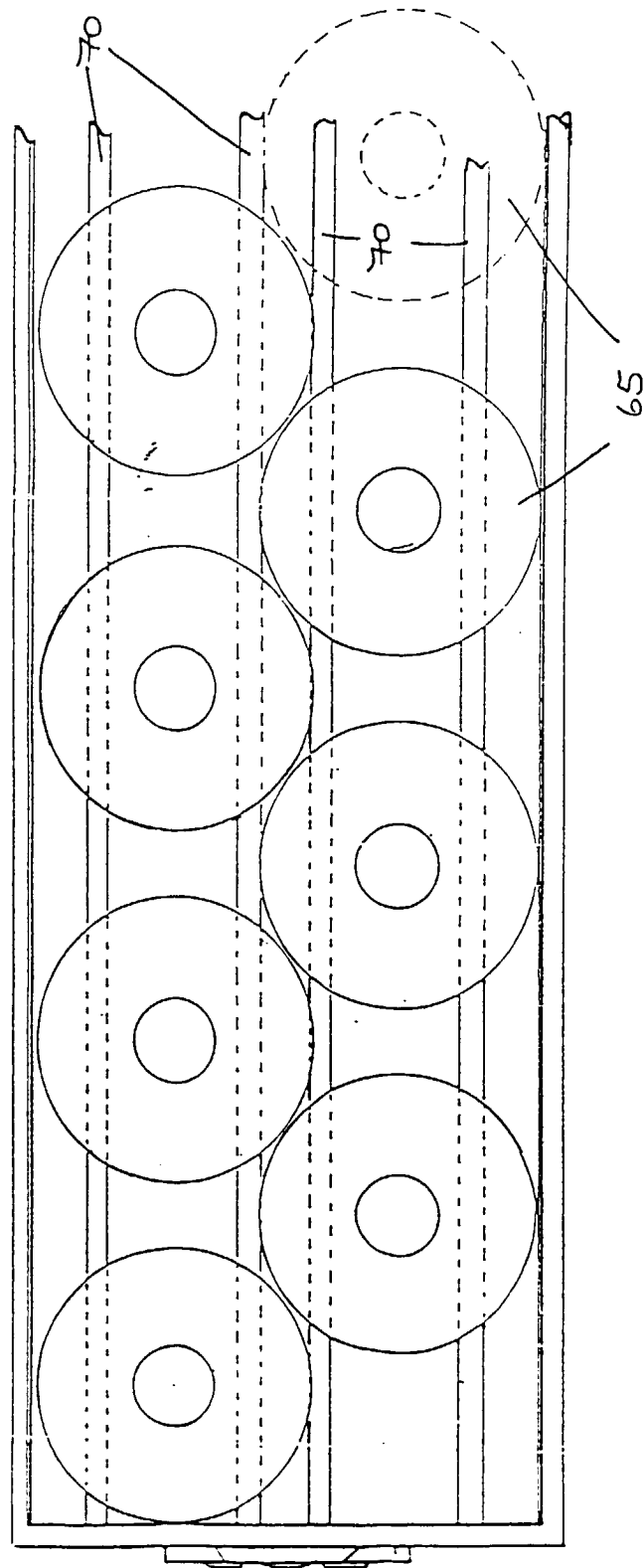


FIGURE 6



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 00 30 4917

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)
X	FR 2 572 371 A (VIB SRL VERNICIATURE IND BRESC) 2 May 1986 (1986-05-02) * page 6, line 15 - line 29; figures 1-13 *	1,2	B65F9/00
X	CH 500 885 A (J. OCHSNER &CIE. AG) 31 December 1970 (1970-12-31) * column 1, line 21 - column 2, line 12; figures 1-3 *	3	
A	GB 2 009 035 A (LINDEMANN MASCHFAB GMBH) 13 June 1979 (1979-06-13)		
A	DE 28 20 276 A (MABEG GMBH & CO OHG) 22 November 1979 (1979-11-22)		
A	WO 96 13451 A (ALTAMONT INC ;HULLS JOHN R (US)) 9 May 1996 (1996-05-09)		
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B65F
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		18 September 2000	Müller, C
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 (P4/C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 30 4917

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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18-09-2000

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
FR 2572371	A	02-05-1986	NONE		
CH 500885	A	31-12-1970	NONE		
GB 2009035	A	13-06-1979	DE 2753720	A	07-06-1979
			AU 524340	B	09-09-1982
			AU 4116478	A	08-05-1980
			BE 872463	A	30-03-1979
			BR 7807754	A	31-07-1979
			ES 474772	A	16-10-1979
			FR 2410617	A	29-06-1979
			JP 1255557	C	12-03-1985
			JP 54077970	A	21-06-1979
			JP 59032376	B	08-08-1984
			NL 7811100	A, B,	06-06-1979
			SE 422448	B	08-03-1982
			SE 7812359	A	03-06-1979
			US 4279557	A	21-07-1981
			US 4256434	A	17-03-1981
DE 2820276	A	22-11-1979	NONE		
WO 9613451	A	09-05-1996	US 5527147	A	18-06-1996
			US 5765986	A	16-06-1998
			AU 4362896	A	23-05-1996
			CA 2203989	A	09-05-1996
			GB 2309019	A, B	16-07-1997