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(72) Inventor: **Gleeson, Niall**
Co. Dublin (IE)

(74) Representative: **Thomson, Craig Richard**
Murgitroyd & Company
Scotland House
165-169 Scotland Street
Glasgow G5 8PL (GB)

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(71) Applicant: **Gleeson, Niall**
Co. Dublin (IE)

(54) **Dryer cover**

(57) The present invention relates to a dryer cover 100 comprising a canopy 102 and a conduit 104 wherein the conduit 104 defines a hole in the canopy 102 through which air can flow from one side of the canopy 102 to the

other. The present invention further relates to an assembly of a dryer cover 100 and dryer 122 wherein the assembly comprises the above-mentioned dryer cover 100 orientated such that the conduit 104 extends from the canopy 102 in a direction away from the dryer.

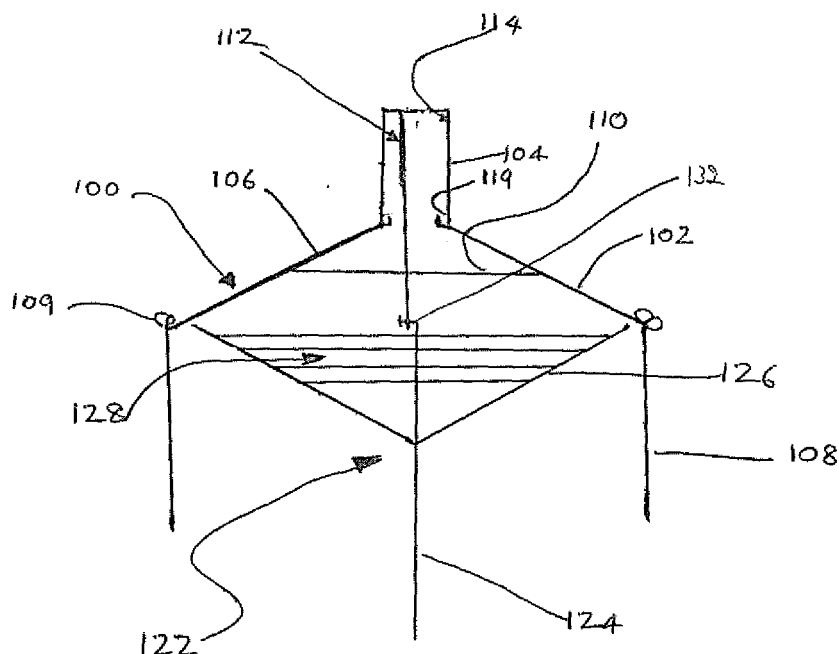


Figure 1

Description

[0001] The invention relates to a dryer cover. More particularly, but not exclusively, it relates to a dryer cover for improving airflow around items to be dried.

[0002] Dryers, such as rotary dryers, are commonplace. They are used for the drying of items such as clothes and linens. A problem associated with dryers is that items require removal from them should precipitation fall, if the items are to be dried efficiently.

[0003] A rotary dryer cover, the Rotamate®, is known that locates over the projecting arms of the rotary dryer such that items, for example garments or linens, drying on the dryer are shielded from precipitation falling from directly above. However, the Rotamate® provides little or no protection from precipitation that has a significant horizontal component to its velocity. Furthermore, airflow around the Rotamate® type dryer cover is not encouraged. This is because the canopy of the dryer cover restricts airflow through the items to be dried. Restricted airflow leads to increased drying time for items and possibly to incomplete drying of items.

[0004] Additionally, a design similar to the Roatmate® requires manufacture from heavy materials, or to be weighted down, as strong winds generate a high degree of uplift underneath the cover as it is unitary.

[0005] According to a first aspect of the present invention there is provided a dryer cover comprising a canopy and a conduit wherein the conduit defines a hole in the canopy through which air can flow from one side of the canopy to the other.

[0006] A dryer is any device in which, or on which, material can be arranged in a manner that allows the material to dry, preferably air-dry. Preferably the dryer is any device on which material can be arranged in a manner that allows the material to dry. Preferably the manner in which the material is arranged is such that it hangs from the device. Preferably the dryer is a device with a hanging means, for example the hanging means may be one or more, poles, lines, or cords on which the material to be dried may be hung. Preferably the hanging means is supported between two or more arm members, for example four arm members may be provided and one or more poles, lines, or cords may extend between each of the four arm members. Preferably the arm members will extend radially from a central axis so that the poles, lines, or cords will form a closed loop as they extend between the arm members. Dryers usually comprise a base, which supports the arms via a centrally provided leg. The base which forms the lower-most part of the dryer when the dryer is in use and contacts the ground (the term ground includes any suitable platform). The skilled person would be aware of many types of dryers, particularly those for drying clothes (and which come in a variety of configurations including collapsible structures). Preferably the dryer is a rotary dryer, as is known in the art.

[0007] The dryer cover may be arrangeable over the arms of a dryer, so as to cover at least part of the dryer.

Preferably, the dryer cover may be arrangeable over the arms of the dryer so as to cover all of the arms and/or hanging means, and optionally all of the dryer.

[0008] A canopy is any cover that may protect material hanging from the dryer from becoming wet due to falling rain. A canopy is, therefore, preferably any roof-like cover member. Preferably the canopy is substantially impermeable to water, for example rain water. Preferably the canopy is suitably sized to cover over at least part of a dryer. Most preferably the canopy is suitably sized to cover over all of the dryer. Not wishing to be restricted further, but in the interest of clarity, the canopy has a largest diameter of over 1 meter (preferably the largest diameter is between 1-3 meters) when the canopy is substantially circular.

[0009] A conduit is a member having a passage defined therein through which a fluid can flow. Fluid means any substance that is capable of flowing and includes for example air and/or saturated air. The conduit may be an elongate member. The conduit may be tubular with two open ends. Accordingly, the conduit comprises a wall which forms a tube and which defines a lumen open at both ends.

[0010] The canopy may be connected to the conduit proximate to an opening of the conduit. Thus, the hole in the canopy is formed by the opening of the conduit. Alternatively, the conduit passes through the opening in the canopy, the walls of the conduit defining the canopy hole.

[0011] The cross section of the conduit may have any shape, aspect or design that will enable fluid to flow from one side of the canopy to the other, for example the cross section of the conduit may be square, circular, or triangular.

[0012] The conduit may extend away from the canopy.

[0013] Such an arrangement will enable air, having absorbed water from the material arranged in/on the dryer, to flow out from under the canopy, through the conduit. The arrangement will also facilitate the flow of air via the "Venturi Effect". The passage of air across the upper opening of the conduit (i.e. that provided furthest from the canopy) will induce a Venturi effect and draw air from the underside of the canopy through the conduit. This Venturi effect assists the passage of air through the cover. Furthermore, in sunny weather the air underneath the canopy will warm and consequently will be less dense than that outside. This will induce a natural updraught through the conduit and improve drying of items, even in light winds. A skilled person would understand that by extending away from the canopy it is meant that the conduit extends upwardly from the canopy.

[0014] The canopy may be tapered from a first hole (which is defined by the conduit) to an open end which is located opposite the conduit. This open end defines a second hole in the canopy. The canopy may therefore comprise a second hole and the conduit extends away from both holes. Upwardly from the canopy means a direction away from both holes which are defined in the

canopy. Preferably away from the canopy means in a direction away from the base of the dryer on which the dryer cover is used.

[0015] The conduit, and so hole defined by the conduit, may be located substantially in the centre of the canopy.

[0016] Due to the tapered canopy air flowing from under the canopy will be channelled toward the centre of the canopy. Therefore, locating the conduit central to the canopy will improve the flow of air from one side of the canopy to the other.

[0017] The conduit may be arranged to locate over a rotational axis of the rotary dryer.

[0018] The conduit may comprise a precipitation collection mechanism extending internally of the conduit contiguous the canopy. The precipitation collection mechanism may be a receptacle (such as a cup or a bucket), suspended within or below the conduit and capable of capturing water flowing through the conduit. The precipitation collection mechanism preferably does not occlude the conduit.

[0019] The conduit may be further comprise brace members that prevent the walls of the conduit from occluding the lumen of the conduit. For example, one or more brace members may be ribs formed around the conduit, or may be cross struts formed across the lumen. The brace members may be made of wire. The brace members may be integral to the conduit.

[0020] The dryer cover may further comprise a support structure that maintains the conduit in an arrangement in which the conduit extends away from the canopy. This feature of the present invention ensures that the conduit stands proud of the canopy, thereby providing an upward exit for air under the canopy.

[0021] The support structure may be selectively collapsible.

[0022] The use of a selectively collapsible support structure allows the dryer cover to be easily stored when not in use.

[0023] There are many ways in which this arrangement can be achieved, for example, by suspending the conduit from the support structure, or by integrating the support structure into the conduit such that the conduit is self-supporting.

[0024] When the conduit is suspended from the support structure, the support structure may comprise a strut extending along the central axis of the lumen of the conduit. Preferably the strut extends through some or all of the length of the lumen of the conduit. One or more arm members may extend radially from the strut which are engageable with the conduit. Thus the dryer cover may be suspended from the strut via the arms.

[0025] The strut may be co-axial, and possibly joined to, the leg of the dryer.

[0026] Alternatively, or additionally the support structure may comprise a remote anchoring means and a connection means connecting the remote anchoring means to the conduit, the conduit being suspended from the anchoring means via the connecting means. For example

the connecting means may be rope, cord, or the like. The remote anchoring means may be any fixed surface capable of suspending the conduit therefrom via the connection means, e.g a tree or building.

[0027] The conduit may have a height to width ratio of at least 1:1, preferably 2.5:1, or more.

[0028] Such a height to width ratio provides an aspect ratio to precipitation that prevents the direct ingress of precipitation directly on to items being dried.

[0029] The support structure may preferably engage with the conduit, proximate to, or at, the opening of the conduit that is furthest removed from the canopy.

[0030] The support structure may additionally engage with the canopy, so as to aid the positioning of the dryer cover such that it is suspended over the arms of the dryer and the conduit extends upwardly from the canopy.

[0031] The support structure may be fabricated from a plastics material, a fibreglass material, or a combination of both.

[0032] Alternatively, or additionally, the conduit may be self-supporting. For example, by integrating the support structure into the conduit (e.g. constructing the conduit from a rigid material like stiff plastic, or by incorporating rigid struts along the length of the conduit).

[0033] The dryer cover may further comprise one or more supporting arms that support the canopy.

[0034] The one or more support arms may comprise arms that extend in a radial direction from a point proximate to the centre of the dryer cover. These may connect with the centrally positioned strut. The one or more supporting arms may include one or more peripheral support arms. The one or more peripheral support arms, which may be located beneath the canopy and preferably proximate the peripheral edge of the canopy, support the canopy, proximate to the canopy's periphery, between the arms of the dryer. Further peripheral support arms may be provided as hooped supports at various positions between both openings of the canopy. The peripheral support arm may be circular. The radial and peripheral support arms may be connected, as in the spoke and rim of a wheel.

[0035] At least some of the one or more support arms may comprise fibre glass.

[0036] At least some of the one or more support arms may be collapsible. This will permit the support arms to be easily stored.

[0037] The dryer cover may be suitable for use with a rotary dryer.

[0038] The canopy of the dryer cover may be arranged into a conical shape. Conical shape means cone shaped. Preferably conical shape includes pyramid, bell shape and/or frusto-conical. Frusto-conical shape means a shape identical or similar to a cone or pyramid whose tip has been truncated by a plane parallel to its base. Such a shape will encourage rain water to drain from the canopy. An upwardly inclining canopy will allow precipitation to roll off, away from the items being dried.

[0039] The canopy of the dryer cover may be arranged

into a conical shape above the arms of a dryer. Together, the canopy and conduit form an inverted funnel shape when the dryer cover is in use.

[0040] The canopy may be fabricated from light weight material. The canopy may be fabricated from water impermeable material. The canopy may be fabricated from a plastics material.

[0041] The use of a lightweight materials reduces uplift and makes the cover lighter overall.

[0042] The canopy may further comprise a side wall dependent from a point proximate to a periphery of the canopy. For example, the side wall may be a skirt that suspends from an outer edge of the canopy. The dryer cover may comprise an adjusting mechanism arranged to adjust the length of side wall. The adjusting mechanism may comprise any of the following: a tie, a zip, a clip, a drawstring and toggle arrangement.

[0043] The provision of a side wall on the canopy reduces the ingress of precipitation having a substantial horizontal component of velocity. This in turn allows items to remain on the rotary dryer even when precipitation occurs.

[0044] The cover may be at least partially transparent.

[0045] The provision of an at least partially transparent cover increases the heating effect underneath the cover thereby increasing the updraught through the conduit.

[0046] The cover may comprise at least one reinforcing spar running from the conduit to the periphery of the canopy. The at least one reinforcing spar may be selectively collapsible.

[0047] Such a reinforcing spar gives added rigidity to the cover. The use of a selectively collapsible reinforcing spar allows the cover to be folded for easy storage when not in use.

[0048] The at least one reinforcing spar may be fabricated from a plastics material, a fibreglass material, or a combination of both. The cover may be fabricated from a plastics material. The at least one reinforcing spar may be hoop or square in shape and may be spaced outwardly from the conduit.

[0049] The cover may comprise a fixing mechanism arranged to fix the cover to the rotary dryer. The fixing mechanism may comprise a clamp arranged to fix to a leg or arm of the rotary drier. The fixing mechanism may comprise a plurality of fixing devices arranged to fix to respective ends of at least some of arms of the rotary dryer. The fixing devices may comprise any of the following: cups, clasps, clamps.

[0050] Such a fixing mechanism allows for the easy mounting of the dryer cover to the dryer.

[0051] A assembly dryer cover and dryer, the dryer cover comprising, a canopy, and

a conduit wherein the conduit defines a hole in the canopy through which air can flow from one side of the canopy to the other, the dryer cover being orientated such that the conduit extends from the canopy in a direction away from the dryer.

[0052] Preferably the dryer is a rotary dryer. Most preferably the dryer cover is the dryer cover of the first aspect of the present invention.

[0053] A kit of parts which when assembled forms a dryer cover according to the first aspect of the present invention. The kit of parts may comprise separate canopy and conduit, ready for connecting together. Preferably, however, the kit of parts comprises the canopy and conduit in a one-piece construction read for use. The separate canopy and conduit, or one-piece construction, may however, be folded for ease of packaging or storage and so require unfolding in order to obtain, for example, an opened conduit through which fluid will flow.

[0054] A kit of parts which when assembled forms a dryer cover and dry assembly as described above.

[0055] According to a second aspect of the present invention there is provided a method of preventing soiling of laundry comprising the steps of:

- i) placing the laundry on a rotary dryer; and
- ii) covering the rotary dryer with a rotary dryer cover according to the first aspect of the present invention. According to a third aspect of the present invention there is provided a method of improving the rate of drying of laundry comprising the steps of:
- iii) placing the laundry on a rotary dryer; and
- iv) covering the rotary dryer with a rotary dryer cover according to the first aspect of the present invention.

[0056] The invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a sectional perspective view of an embodiment rotary dryer cover according to the first aspect of the present invention with a side wall in a first configuration, in use ; and

Figure 2 is a top plan view of the dryer cover of Figure 1.

[0057] Referring now to Figures 1 and 2, a rotary dryer cover 100 comprises a canopy 102 and an open cylindrical conduit 104. Typically, the canopy 102 is approximately 3m in diameter. The usual dimensions of the conduit 104 are approximately 0.2 to 0.5m height and 0.2 to 0.4m width. Typically, the cover 100 is made of a plastics material. Usually, the cover 100 comprises at least one transparent panel, and may be made completely of transparent material.

[0058] The canopy 102 comprises a frusto-conical body portion 106 and a wall 108 that depends from the periphery of the body portion 106. Ties 109 are located about the periphery of the canopy 102 to allow the wall 108 to be tied back to a desired length. Typically, the wall 108 depends approximately 1.2 to 1.5m from the periphery of the canopy 102, in its fully extended configuration. Usually, the wall 108 will be space approximately 0.2 to

0.5m from ground level, in its fully extended configuration. It will be appreciated that although described with reference to ties 109 any suitable adjustment mechanism, for example a zip, a clip, a drawstring and toggle arrangement, may be used to vary the height of the length of the wall.

[0059] The canopy 102 has a hooped reinforcing strut 110 located between the centre of the canopy 102 and the canopy's periphery. It will be appreciated that more than one hoped reinforcing strut may be employed. It will be further appreciated that, although not shown, radially extending support arms, for example, linear reinforcing struts may be used alternatively, or additionally, to the hoped reinforcing strut 110.

[0060] The conduit 104 is located at the centre of the canopy 102, and allows the passage of air from one side of the canopy 102 to the other. A strut 112 extends to a free end 114 of the conduit 104, remote from the canopy 102, the strut 112 is connected to the free end 114 of the conduit by means of two spars 115a,b extending between the periphery of the conduit 104 and the strut 112. The strut 112 extends through the conduit 104 and into the space defined by the canopy 102.

[0061] The conduit 104 comprises internal, circumferentially extending annular channel 119 having raised nodules 120 spaced about it. The channel 119 extends about the end of the conduit 104 contiguous the canopy 102. It will be appreciated that although described with reference to a channel 119 a lip may be employed as an alternative.

[0062] In use, a rotary dryer 122 comprises a central axle 124, arms 126 and a number of lines 128 extending between the arms 126. The arms 126 are free to rotate about the central axle 124 with laundry to be dried mounted upon the lines 128.

[0063] It is well known that such a rotary dryer 122 is typically collapsible. The rotary dryer cover 100 is intended primarily for use with the rotary dryer 122 in an erect configuration, although it may be used with the rotary dryer 102 in its collapsed configuration.

[0064] The strut 112 is clamped to the central axle 124 of the rotary dryer 122, for example by means of an anchoring mechanism 132, for example a nut and bolt. The cover 100 extends to just beyond the tips of the arms 126. Typically, in good weather the wall 108 is rolled up and held in position about the periphery of the canopy 102 by the ties 109. The wall 108 may be partially rolled up to allow the length of the wall 108 depending from the canopy 102 to be varied.

[0065] In normal operation during precipitation, the wall 108 will be extended to its full length in order to prevent precipitation landing upon drying laundry.

[0066] Air passes around laundry drying on the lines 128 and up the conduit 104. This sets up air currents which allow the drying of laundry even during precipitation.

[0067] The channel 119 catches precipitation that enters the conduit 104 and when the space between the

nodules 120 is full the precipitation falls to ground adjacent the axle 124 of the rotary dryer 122, away from the drying laundry.

[0068] The use of transparent material in the canopy 102 increases the heating effect underneath the canopy 102 and increases an induced updraught through the conduit 104.

[0069] It will be appreciated that although described with reference to a circular cover the present invention may be utilised with any appropriate shape of cover, for example a square cover with a pyramidal canopy.

[0070] Various modifications and improvements may be made to the above without departing from the scope of the present invention.

Claims

1. A dryer cover 100 comprising a canopy 102 and a conduit 104 wherein the conduit 104 defines a hole in the canopy 102 through which air can flow from one side of the canopy 102 to the other.
2. The dryer cover according to claim 1, wherein the conduit extends away from the canopy.
3. The dryer cover according to any preceding claim, wherein the conduit extends upwardly from the canopy.
4. The dryer cover according to any preceding claim, wherein the conduit is located at the centre of the canopy.
5. The dryer cover according to any preceding claim, further comprising a support structure that maintains the conduit in an arrangement in which the conduit extends away from the canopy.
6. The dryer cover according to claim 5, wherein the conduit is suspended from the support structure.
7. The dryer cover according to claim 6, wherein the support structure comprises a strut extending along the central axes of the conduit and having one or more arm members extending radially from the strut, wherein the arm members connect with the conduit thereby suspending the conduit from the strut via the arm members.
8. The dryer cover according to any of claims 5 to 7, wherein the support structure is integral to the conduit thereby rendering the conduit self-supporting.
9. The dryer cover according to any preceding claim, wherein the dryer cover further comprises one or more supporting arms that support the canopy.

10. A dryer cover according to any preceding claim,
wherein the canopy comprises a side wall dependent
from a point proximate to a periphery of the canopy.
11. A dryer cover according to any preceding claim, 5
wherein the cover is at least partially transparent.
12. The dryer cover according to any preceding claim,
wherein the canopy is arranged into a conical shape. 10
13. An assembly of a dryer cover and dryer, the dryer
cover comprising, a canopy, and a conduit wherein
the conduit defines a hole in the canopy through
which air can flow from one side of the canopy to the
other, the dryer cover being orientated such that the 15
conduit extends from the canopy in a direction away
from the dryer.
14. A kit of parts which when assembled forms a dryer
cover according to any one of claims 1-12. 20
15. A kit of parts which when assembled forms an as-
sembly according to claim 13.

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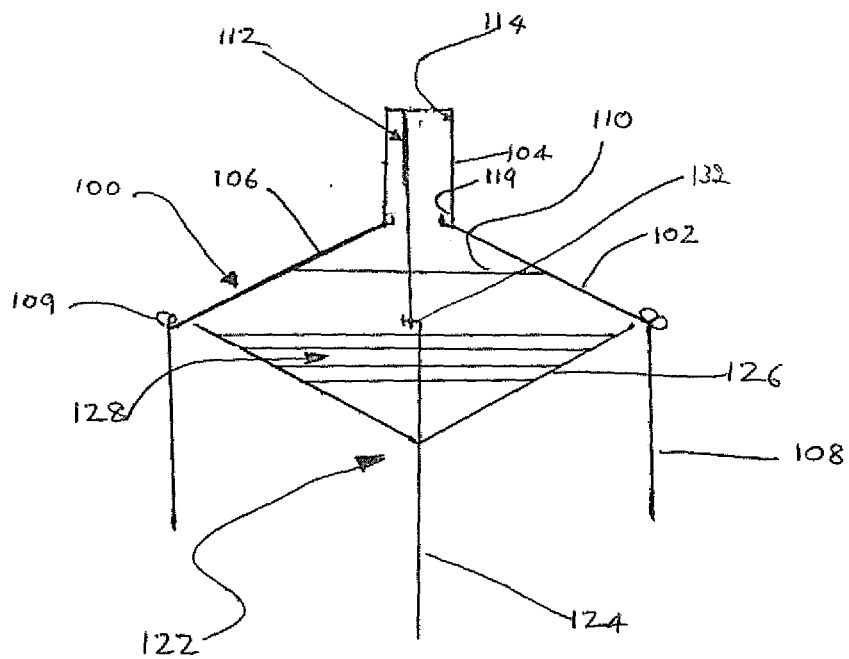


Figure 1

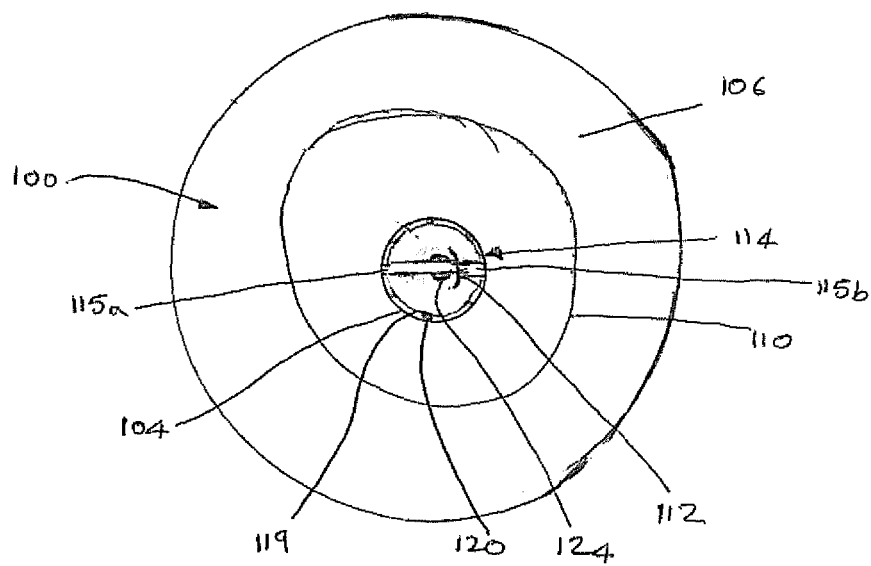


Figure 2



EUROPEAN SEARCH REPORT

Application Number
EP 08 16 7342

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	BE 564 373 A (A. M. POULET) 17 March 1967 (1967-03-17) * pages 4-5; figures 3,5 *	1-4, 12-14	INV. D06F58/14
X	FR 1 473 011 A (M. MICHEL BOË) 17 March 1967 (1967-03-17) * page 2, lines 3-46; figure 4 *	1-4, 12-14	
			TECHNICAL FIELDS SEARCHED (IPC)
			D06F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 4 March 2009	Examiner Stroppa, Giovanni
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			

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EPO FORM 1503 03.82 (P04C01)

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

EP 08 16 7342

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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04-03-2009

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
BE 564373	A	NONE	
FR 1473011	A	26-05-1967	NONE