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(54) **HOUSEHOLD APPLIANCE BEING A WASHING MACHINE AND/OR A DRYING MACHINE**

(57) A household appliance being a washing machine and/or a drying machine comprising a laundry compartment (2) located at a lower portion of the household

appliance. The laundry compartment (2) is foldable and has a variable volume.

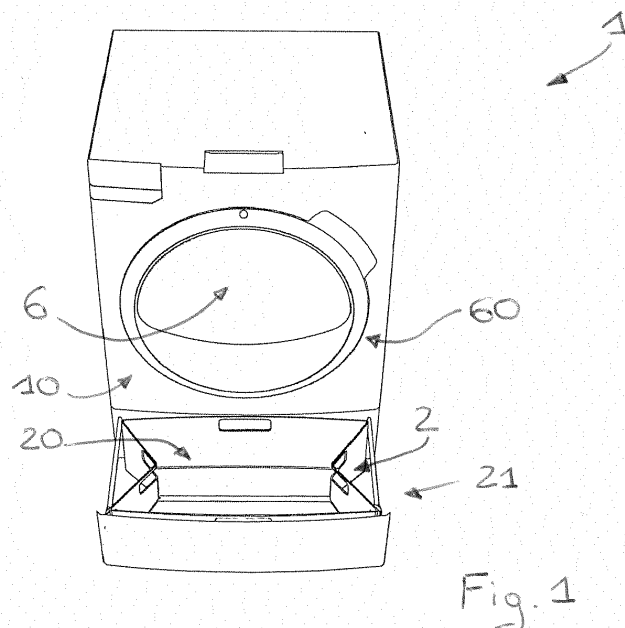


Fig. 1

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Description

[0001] The present invention relates to a household appliance for washing and/or drying laundry items, for example a washing machine, a dryer, or a washer-dryer.

[0002] Front-loading washing machines are known that comprise an extractable drawer in the lower base. The drawer is used as a laundry compartment. Typically this drawer is useful to the user during the removal operation of the laundry items from a washing compartment. In this way the user can extract, in succession, the laundry items from the washing compartment and position them temporarily in the underlying drawer positioned in an open configuration.

[0003] This prevents water from dripping onto the floor. Further, in a case where the washing machine has a full load, the user can extract the laundry items present in the washing compartment a little at a time and position them in the drawer which is exactly below the access porthole to the washing compartment. In this way the user can temporarily stack the laundry items which he or she removes from the washing compartment then to transport them en bloc to a clothes horse.

[0004] A drawback of this constructional solution is connected to the fact that this type of washing machine is on average taller than those not having the laundry compartment. In fact the extractable drawer, when in the closed configuration, is inserted in a housing which occupies the whole base (which alternatively might be dedicated to containing mechanical functioning members).

[0005] In this context, the technical task underlying the present invention is to provide a household appliance which obviates the drawbacks in the prior art as described above.

[0006] In particular, an aim of the present invention is to provide a household appliance being a washing machine and/or a drying machine provided with a laundry compartment which optimises its volumes.

[0007] The technical task set and the objects specified are substantially attained by a household appliance, comprising the technical characteristics as set out in one or more of the accompanying claims.

[0008] Further characteristics and advantages of the present invention will become more apparent from the indicative and thus non-limiting description of a preferred, but not exclusive, embodiment of a household appliance of type illustrated in the accompanying drawings, in which:

- figure 1 shows a perspective view of a household appliance according to the present invention;
- figures 2 and 3 show two details of the embodiment of figure 1.

[0009] In the accompanying drawings, reference numeral 1 indicates a household appliance being a washing machine and/or a drying machine. The preferred embodiment relates to a front-loading household appliance 1

being a washing machine and/or a drying machine

[0010] The household appliance 1 comprises a laundry compartment 2. The laundry compartment 2 is located at a lower portion of the household appliance 1.

[0011] As shown in the figures, the laundry compartment 2 has a variable volume, in particular it is foldable.

[0012] In the preferred solution the laundry compartment 2 comprises a tub 20. The tub 20 is foldable, in particular in a bellows-fashion.

[0013] In an alternative solution (not preferred), in the place of the bellows tub there might be, for example, a net for supporting the laundry items.

[0014] The laundry compartment 2 is preferably made of a flexible and foldable material. The compartment 2 is advantageously also waterproof. In particular the lower bottom of the laundry tub 20 is without perforations. The contents of the present description with reference to the laundry compartment 2 can also relate to the tub 20.

[0015] The laundry compartment 2 is part of a drawer 21 of the household appliance 1.

[0016] The drawer 21 advantageously comprises:

- a front panel 211;
- guide and support means 212 of said panel 211 during an opening stroke of the drawer 21;

[0017] The drawer 21 is a frontal drawer.

[0018] The guide and support means 212 are advantageously arranged laterally. They comprise two lateral bars 213 which insert in suitable seatings fashioned internally of a casing 214 which encloses the functioning actuators of the household appliance 1 (basket, motor, hydraulic conduits, etc.).

[0019] In particular the bars 213 insert in the bottom wall 220 illustrated for example in figure 3 (and defined in the following). The bars 213 might be telescopic.

[0020] The laundry compartment 2 is located between the panel 211 and the casing 214.

[0021] In a closed configuration of the drawer 21 the laundry compartment 2 has a minimum volume. It is not visible to an external user.

[0022] The opening of the drawer 21 causes an increase in volume of the laundry compartment 2. In particular, on opening the drawer 21 there is an opening of the foldable compartment 2 (more precisely of the bellows tub). The volume of the laundry compartment 2 is a function of the degree of opening of the drawer 21.

[0023] Further, with the drawer 21 open the guide and support means 212 (in particular the bars 213) are more extracted from said casing 214.

[0024] The household appliance 1 advantageously comprises an end stroke stop for the extraction of the drawer 21.

[0025] The household appliance 1 comprises opening/closing means of the drawer 21 of the push-push type. This facilitates the opening and closing thereof with a user's foot.

[0026] The push-push type mechanism enables open-

ing the drawer 21 by means of a pressure thereon.

[0027] Likewise the push-push type mechanism enables closing the drawer 21 by pushing the drawer into a closed position.

[0028] The opening of the drawer 21 advantageously occurs horizontally. The drawer 21 is raised with respect to a rest plane of the household appliance (and therefore does not drag on the floor during the opening). The drawer 21 is located below a hatch door 60 for access to a washing and/or drying compartment 6 of the household appliance 1.

[0029] The household appliance 1 comprises a housing 4 for receiving at least a part of the drawer 21. In the closed configuration the panel 211 is located in the housing 4. In the closed configuration of the drawer 21, the panel 211 is flush with the front 10 of the household appliance.

[0030] The housing 4 comprises a bottom wall 220 from which the panel 211 distances during the opening stroke (extraction) of the drawer 21. The bottom wall 220 is advantageously hidden from a user's view when the drawer 21 is in the closed configuration. The minimum distance between the bottom wall 220 and the front panel 221 is less than 15 centimetres, preferably less than 10 centimetres (the minimum distance will be advantageously verified in a closed configuration of the drawer 21). Considering that normally the dryer and the washing machine have a depth comprised between 45 and 60 centimetres, it can be understood how the housing 21 occupies a minimum part of the lower part of the household appliance 1 (leaving the remaining part available for the positioning of the functioning actuators of the household appliance). There is consequently a better redistribution of the internal space of the casing 214 and consequently the dimensions of the machine can be optimised. The laundry compartment 2 comprises a first wall 221 which fronts the panel 211; the first wall 221 is advantageously removably constrained to the panel 211 or to an element solidly constrained thereto.

[0031] The laundry compartment 2 comprises a second wall 222 which fronts the bottom wall 220; the second wall 222 is removably constrained to said front panel 211 or to an element solidly constrained thereto.

[0032] The first wall 221 is advantageously flanked to the panel 211. The second wall 222 is advantageously flanked to the bottom wall 220.

[0033] The tub 2 advantageously comprises a gripping handle 22, 23. This facilitates the raising of the tub 2. The tub 2 preferably comprises at least two handles 22, 23; at least two handles are advantageously arranged on two opposite walls of the tub 2; two handles 22, 23 are advantageously located on lateral walls (which are preferably the bellows walls). There can advantageously also be present two handles on the first and the second wall 221, 222.

[0034] In the preferred solution the laundry compartment 2 is removable from remaining parts of the household appliance. In particular it is removable from the draw-

er 21. In this way it defines a transport basin of the laundry items.

[0035] The household appliance 1 comprises connecting means of said laundry compartment 2 to remaining parts of the household appliance. In particular they are at least partly of a magnetic type. The magnetic connecting means connect the laundry compartment 2 (in the preferred solution the bellows tub) with a bottom wall 220. In this regard there is present at least a pair of elements 90 that interact magnetically, one of the said elements being located on the bottom wall 220 and the other being located on the laundry compartment 2.

[0036] The connecting means further comprise two through openings 9 integrated in the laundry compartment 2 in which said bars 213 are inserted; said bars 213 being engaged to said through openings 9.

[0037] In an alternative solution to what is illustrated, the household appliance might comprise a hatch door rotatable about a vertical axis. There might advantageously be present a hinge on a flank of the door. The door, in the closed configuration thereof, abuts a surface of the housing casing 214 of the actuators responsible for the functioning of the household appliance. In this case the laundry compartment 2 might be interposed between and constrained to the hatch door and to the surface.

[0038] The present invention provides important advantages.

[0039] Primarily it enables realising a household appliance for drying and/or washing with a laundry tub having modest dimensions (especially in height).

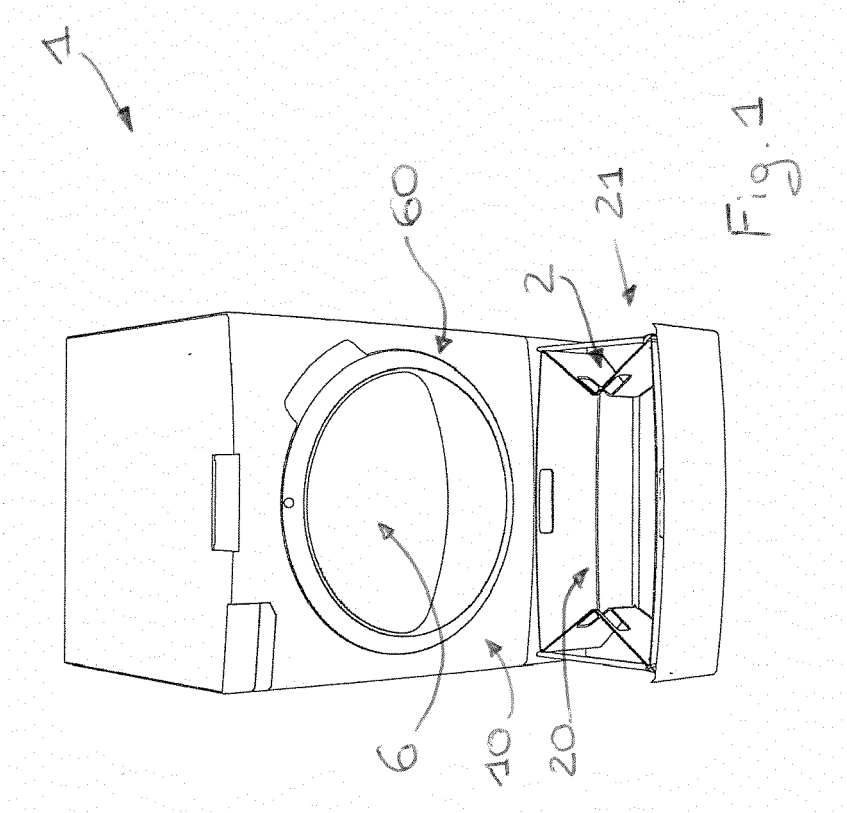
[0040] A second important advantage is the possibility of extracting the laundry tub with the laundry items just-washed, and transporting it up to a clothes horse (without dripping).

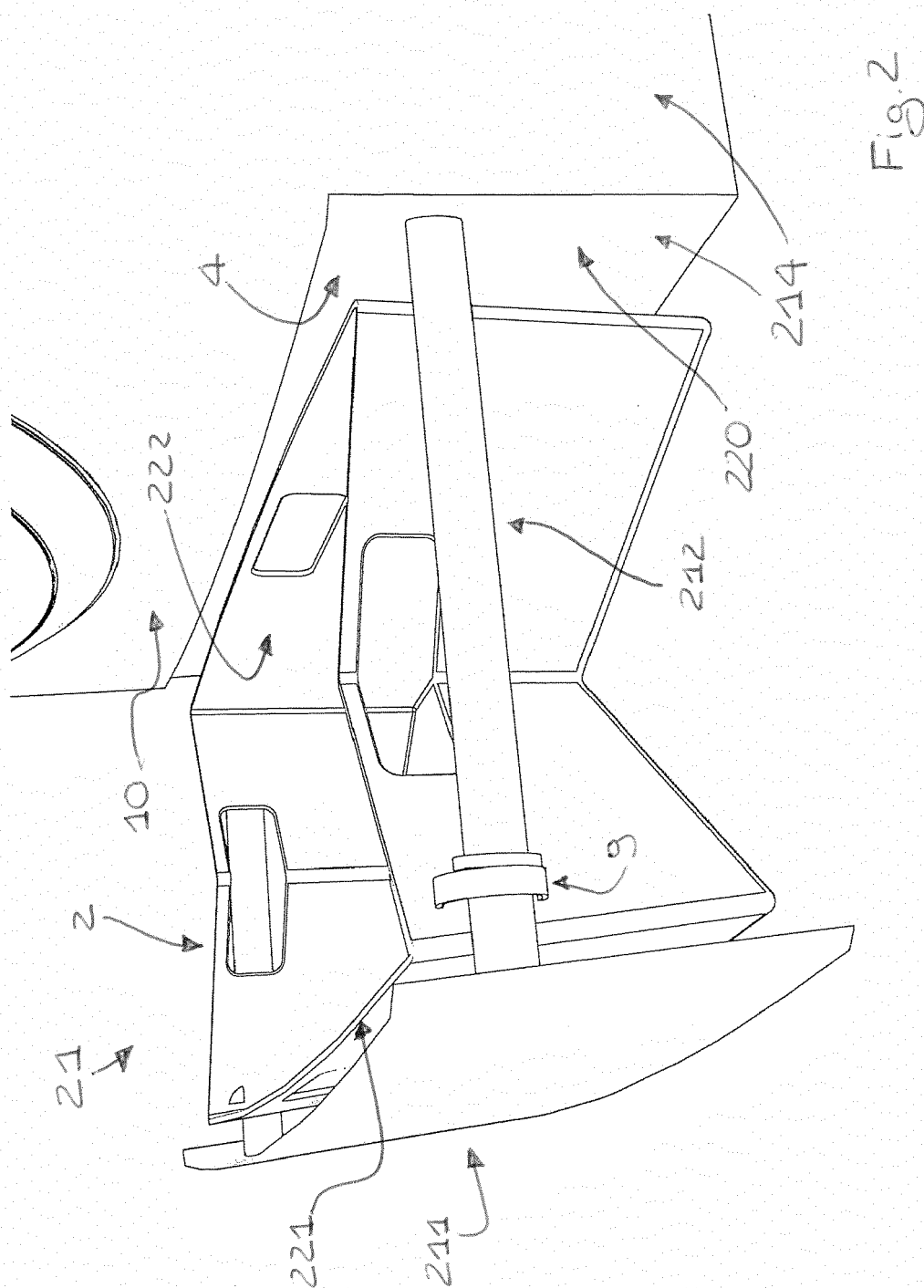
[0041] The invention as conceived is susceptible to numerous modifications and variants, all falling within the scope of the inventive concept characterized thereby. Further, all the details can be replaced with other technically-equivalent elements. In practice, all the materials used, as well as the dimensions, can be any according to requirements.

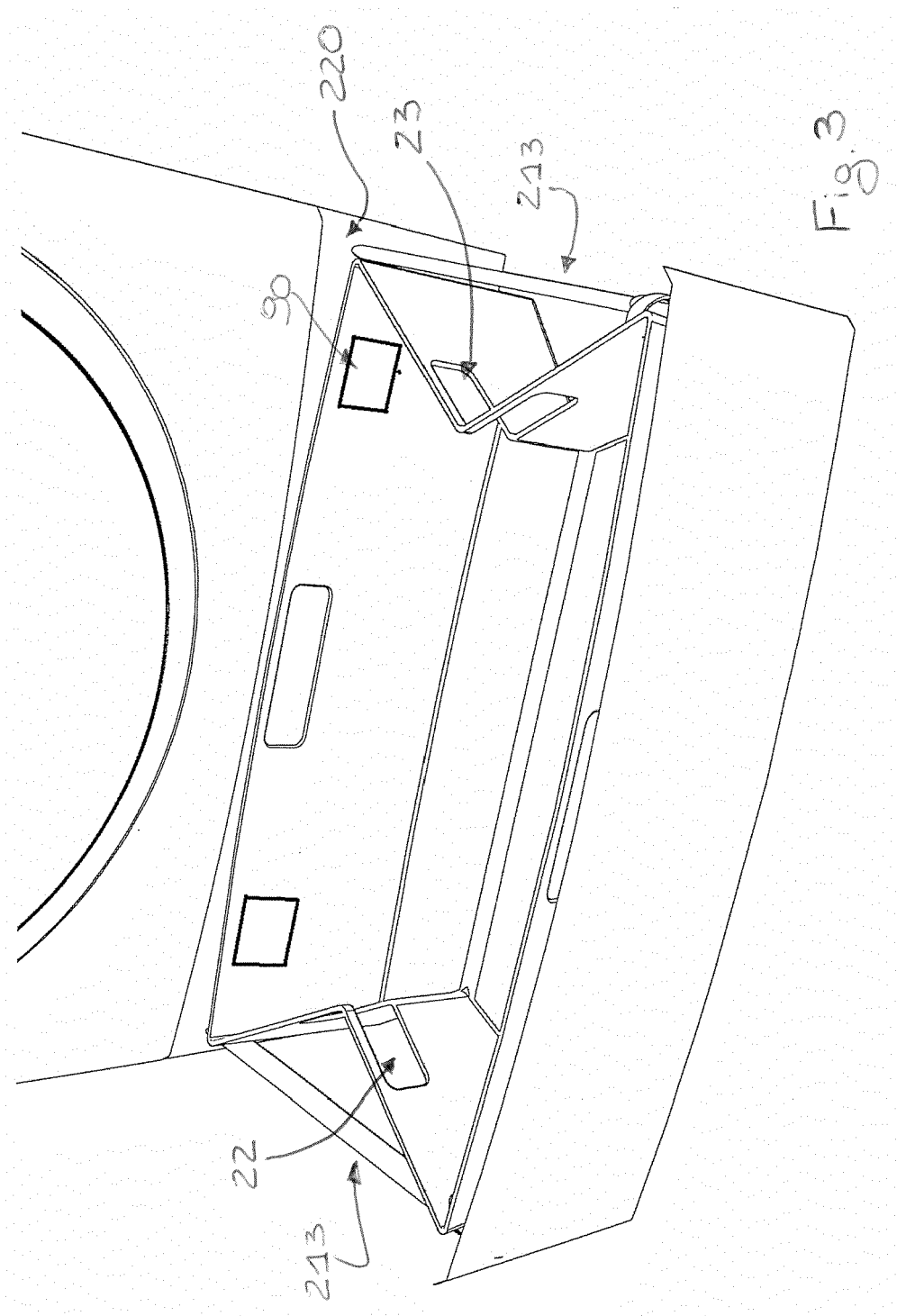
Claims

1. A household electrical appliance being a washing machine and/or a drying machine comprising a laundry compartment (2) located at a lower portion of the household electrical appliance, **characterised in that** said laundry compartment (2) is foldable and has a variable volume.
2. The household electrical appliance according to claim 1, **characterised in that** said laundry compartment (2) comprises a tub (20) that is foldable in a bellows-fashion.

3. The household electrical appliance according to claim 1 or 2, **characterised in that** said laundry compartment (2) is a part of a drawer (21) of the household electrical appliance (1). 5
4. The household electrical appliance according to claim 3, **characterised in that** in a closed configuration of the drawer (21) the laundry compartment (2) has a minimum volume and is not visible by an external user, an opening of the drawer (21) determining an increase of the volume of the laundry compartment (2). 10
5. The household electrical appliance according to claim 3, 4, **characterised in that** it comprises opening/closing means of the drawer (21) of a push-push type for facilitating opening and closing of the drawer (21) with a user's foot. 15
6. The household electrical appliance according to any one of claims from 3 to 5, **characterised in that** the drawer (21) comprises: 20
- a front panel (211);
 - guide and support means (212) of said panel during an opening stroke of the drawer (21); 25
- said household electrical appliance (1) comprising a housing (4) of at least a part of the drawer (21); said housing (4) comprising a bottom wall (220) from which the panel (211) distances during the opening stroke of the drawer (21); 30
- said laundry compartment (2) comprising:
- i) a first wall (221) which heads to said panel (211) and is removably constrained to the panel (211) or to an element solidly constrained thereto; 35
 - ii) a second wall (222) which heads to said bottom wall (220) and is removably constrained to said bottom wall (220) or to an element solid thereto. 40
7. The household electrical appliance according to claim 6, **characterised in that** the guide and support means (212) comprise two lateral bars (213) which insert in special seatings afforded inside a casing (214) which encloses functioning actuators of the household electrical appliance (1). 45
8. The household electrical appliance according to claim 6 or 7, **characterised in that** a minimum distance between the bottom wall (220) and the front panel (221) is less than 15 centimetres. 50
9. The household electrical appliance according to any one of claims from 3 to 8, **characterised in that** said laundry compartment (2) is removable from the 55
- drawer (21), defining a laundry carrier basin.
10. The household electrical appliance according to any one of the preceding claims, **characterised in that** it comprises magnetic connecting means of said laundry compartment (2) for connection to remaining parts of the household electrical appliance.









EUROPEAN SEARCH REPORT

Application Number
EP 15 20 0361

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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A	* the whole document *	3-10	D06F95/00 D06F39/12
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A	* paragraphs [0017] - [0021]; figures *	2-10	
X	EP 1 911 871 A2 (LANZA DAVIDE [IT]) 16 April 2008 (2008-04-16)	1-4,9	
A	* the whole document *	5-8,10	
			TECHNICAL FIELDS SEARCHED (IPC)
			D06F
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		31 March 2016	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			

EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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5 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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31-03-2016

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