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(54) **Outdoor fire fighting module**

(57) An outdoor fire fighting apparatus (100) comprises a module (101) defined by a structure (102) with load-bearing covering frame for fire fighting components (1,2,3,4,5,6,6a,7,8,9,10,11,12,13), the structure (102) adapted to be positioned and fastened at the level of the ground (G); the aforesaid components (1,2,3,4,5,6,6a,

7,8,9,10,11,12,13) are positioned inside said structure (102) of the module (101) and comprise at least pump pressure booster means (6,6a) to draw water or other suitable liquid from an outdoor tank or cistern (C) and spray it onto buildings in the event of a fire; the structure (102) is also provided with at least one of its walls (P4) laterally openable.

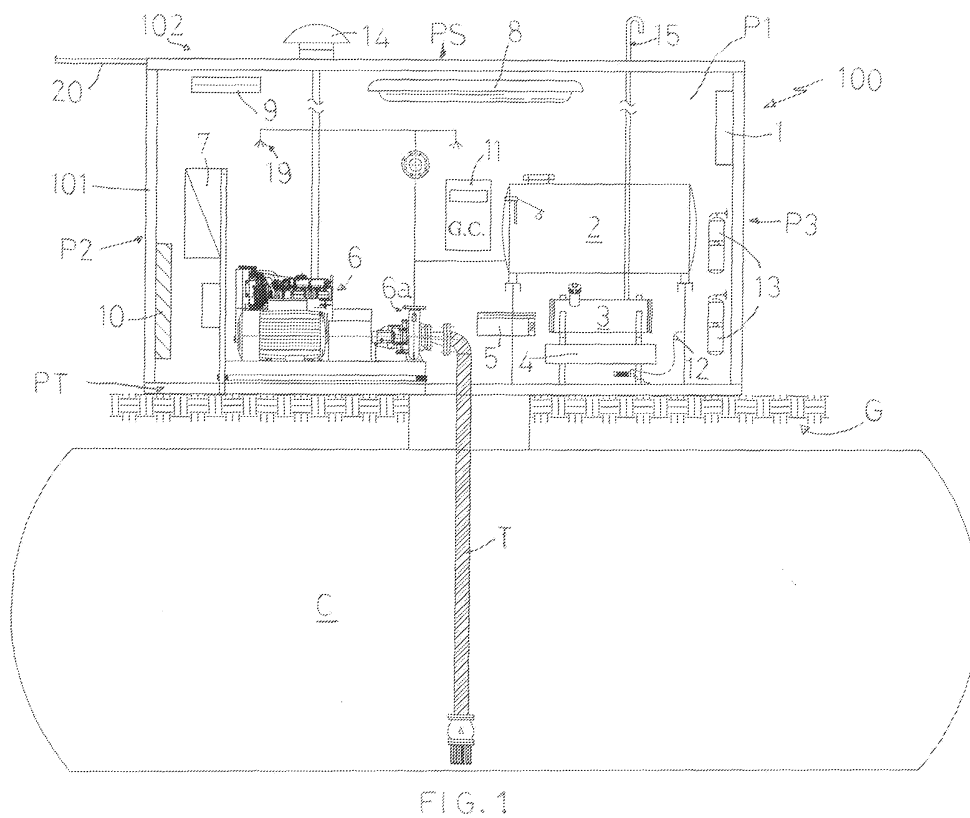


FIG. 1

Description

[0001] The present invention relates to an outdoor fire fighting module or apparatus.

[0002] In particular, the invention in question can advantageously be applied to produce fire fighting procedures or systems for buildings in general, such as commercial, manufacturing, residential structures and the like, to which the description below will refer explicitly without loss of generality, in full compliance with the current European regulations on the subject of safety and guaranteed efficacy.

[0003] Currently, the structural configuration of the most common and widely used systems for producing fire fighting systems by means of water supply are provided in general with cistern containers of specific capacity, positioned buried in areas in proximity to buildings and suitable to define relative tanks containing water to be drawn and sprayed onto these buildings in the event of a fire by means of respective pumping units arranged in relative rooms provided adjacent to each cistern under the ground.

[0004] A fire fighting apparatus structure of this kind currently has serious and noteworthy problems and drawbacks.

[0005] The most serious and obvious problem is due to the buried position, up to a few meters below ground level, of said cistern tanks so that there is a very high risk of flooding of the entire buried structure, due to accidental leakages from the tanks or through manholes for access from the outside, or caused by infiltrations in the ground, which can seriously compromise the efficacy and operation of the pumping unit and consequently the efficiency of the fire fighting system. A further disadvantage is caused by the formation of condensate due to inadequate ventilation.

[0006] There are also considerable problems related to difficult access to perform periodic maintenance operations on the aforesaid pumping units.

[0007] The danger of flooding or, in any case, of serious damage by corrosion of the entire structure or of parts thereof remains high even when a structure of this kind is provided with specific drainage devices which can be operated automatically by and through specific detectors, in turn at risk of flooding although housed in specific compartments separate from the compartments housing the pumping units.

[0008] Due to the considerable dimensions of cistern tanks, currently known apparatus structures are also very bulky and complex to transport to the installation site, for example with special transport vehicles, and naturally require very large excavation areas in proximity to the building sites, and crane lifting structures of considerable dimensions and capacities to allow the cistern tanks to be positioned in the site.

[0009] Finally, it must be mentioned that an apparatus structure as described above seriously fails to comply with current regulations, according to the latest recent

amendments, for example in relation to minimum heights, to the strictly established air spaces and to the dimensions of the access areas for personnel in charge of maintenance, in particular for the operation and efficacy of the aforesaid pumping units.

[0010] The object of the present invention is to overcome the serious drawbacks of prior art described above.

[0011] In particular, an object of the present invention is to produce a fire fighting apparatus which has a modular structure, is easily transported and installed on the ground outside buildings in general.

[0012] Another object of the present invention is to produce a fire fighting apparatus that is not subject to flooding or similar phenomena of infiltration that compromise its efficacy.

[0013] A further object of the present invention is to produce a fire fighting apparatus capable of operating efficiently, with the possibility of extremely rapid maintenance operations and easily performed in total safety.

[0014] Yet another object of the present invention is to produce a fire fighting apparatus capable of fully complying with the current regulations on safety and guaranteed efficacy.

[0015] According to the present invention, there is provided an outdoor fire fighting apparatus, **characterized in that** it comprises a module or room with delimited space and formed by a mobile structure with a load-bearing covering frame for fire fighting components, said structure being adapted to be positioned and fastened at ground level; said components positioned inside said structure of said module comprising at least pump pressure booster means to draw water or other suitable liquid from an outdoor tank or cistern and spray it onto buildings in the event of a fire; said structure being provided with substantially fully openable lateral surfaces. The technical features of the invention, according to the aforesaid objects, are clearly seen from the content of the claims below, and the advantages thereof will be more apparent from the detailed description below made with reference to the accompanying figures which schematically show a preferred but non-limiting embodiment of the apparatus in question, wherein:

- Fig. 1 is a front view, partly sectional and with some parts remove for clarity, of the fire fighting apparatus in question; and
- Fig. 2 represents, in a front view, a detail of the construction of the apparatus of Fig. 1.

[0016] With reference to the accompanying figures, the reference numeral 100 indicates as a whole an apparatus for performing fire fighting procedures or systems for buildings in general, such as, preferably but without limitation, commercial, manufacturing, residential structures and the like.

[0017] The apparatus 100 comprises a preassembled module 101 defining a substantially closed room or delimited space formed by a parallelepiped load bearing

structure or covering frame 102 or box positioned and fastened to, and at the level of, the ground G in proximity to a building (not shown), and comprising therein operational fire fighting components, better specified hereunder, and controlled by known electric drive and control means indicated with 7; in the event of a fire, the module 101 is adapted to retain its stability for a period of time equivalent to 60 minutes (R60).

[0018] According to what is illustrated in detail in Fig. 1, inside the module 101 is a pressure booster unit 6, fastened to the floor PT of the module 101, and comprising pump means 6a adapted to draw water or other suitable liquid from a tank or cistern C below through a draw pipe T and to spray it (in a known manner, not shown) onto the external buildings in the event of a fire.

[0019] The pressure booster unit 6 is of the motorized thrust unit type, preferably, but without limitation, mechanical (preferably diesel motor), and also substantially comprises:

- a fuel reservoir 4 connected to the tank 3,
- means 14 for venting to the outside,

and, where required,

- a fuel loading pump 12 adapted to draw the fuel used by the means 6a from a tank 3 provided with ducts 15 for venting to the outside,
- a priming or loading tank 2, with the function of guaranteeing filling of the pumps and of the relative suction pipes also in the event of leakages caused by malfunction of base valves (known and not shown).

[0020] According to an alternative variant, not shown, the pump means 6a comprise a thrust unit with three-phase electric motor.

[0021] The pressure booster unit 6 is also connected through ducts to appropriate spray or sprinkler means 19 adapted to spray water or other suitable liquid inside this module 101 in the event of a fire.

[0022] Also provided mounted inside the module 101, specifically on the rear frontal wall P1 of the structure 102 according to the diagram of Fig. 1, is a uninterruptible power supply 11 adapted to allow activation and operation for 6 hours also in the event of an accidental power cut, of a specific electric fan 1 mounted preferably on a lateral wall P2 of the load bearing structure 102, while an inlet grille 10 draws air from outside.

[0023] Also provided inside the module 101 are a heat blower 5 adapted to maintain the temperature inside the module 101 within a technically correct range and which complies with the provisions of the specific regulations, a service light source 8, appropriately fixed to the ceiling wall PS of the structure 102, an emergency light source 9, and extinguisher means 13 preferably fixed to a lateral wall P3 of the structure 102.

[0024] The structure 102 is of the substantially openable type: according to what is illustrated in the preferred

but non-limiting embodiment of Fig. 2, at least the front frontal wall P4 of the structure 102 of the module 101 is in fact provided with frontal opening means 17 of the module 101, which comprise doors 17 (four in Fig. 2) appropriately hinged in points of the structure 102 and adapted to be easily and rapidly opened. The doors 17 are also provided with safety padlock closing means (not shown in Fig. 2).

[0025] In particular, the opening doors 17 not only allow easy, wide and rapid access to the inside of the module 101 and to all the components positioned therein in the event of maintenance, but above all allow air to flow into the module 101, ensuring full compliance with the recently amended current European safety regulations.

[0026] More specifically, the regulations to which explicit and direct reference is made are those indicated with *UNI 11292 and EN 12845*.

[0027] According to the principles established by the aforesaid regulation *UNI 11292*, this expressly requires ample and easy access to rooms containing components for fire fighting systems, also to allow optimum ventilation: therefore, the possibility of being able to open substantially the whole module 101 through the doors 17, allowing ample and widely ventilated access, makes the present invention an ideal solution in accordance with these principle regulations. An appropriate horizontal covering 20 is also present, produced as an extension of the outer roof PS of the module 101 to allow safe action on the control panels 7 also in the event of rain.

[0028] Again to comply with the aforesaid regulation *UNI 11292* of 2008, in particular with reference to the minimum dimensions established by this regulation, the module 101 defining a delimited space as mentioned above is therefore produced with a minimum internal height of 2.4 meters, and with ample and free accessibility, from all four openable sides of the module 101, to the pressure booster unit 6 positioned inside the module 101 of no less than 0.80 meters; while the length of the module 101 is preferably supplied with modules of dimensions equivalent to 2, 3 or 4 meters and multiples thereof. Moreover, as established by this regulation, the aforesaid electric fan 1 is powered automatically for 6 hours even in the absence of power by the uninterruptible power supply 11.

[0029] It must be mentioned that the module 101 defining said room is easily transported, as it does not require special vehicles to be transported to the site, also due to its relatively limited weight, as it is produced in appropriate light material, and is rapid to install and set-up, through connection to the water system and to the electricity mains.

[0030] In substance, the apparatus 100 must be considered a system with a light and mobile structure, easily transported and positioned, but for operation and use in a permanent site and incorporated in a stable fire fighting system; together with the aforesaid cistern C and relative connection pipes and the like, it therefore defines a fire fighting system of fixed type.

[0031] Moreover, the module 101 is not subject to flooding, as it is fixed at the level of the ground and not buried as instead prior art solutions are, and finally it allows simple and rapid maintenance operations on each component provided inside, such as supplying the fuel required for operation of the pressure booster unit 6.

[0032] It must also be pointed out how the apparatus described above is automatically activated in the event of a fire, and therefore does not require the permanent presence of operators to start it. In fact, in the event of a fire, the heat released by the flames causes activation of the aforesaid spray or sprinkler means (through the breakage of specific glass bulbs of these sprinkler means) or, alternatively of nozzles or hoses (known and not shown), resulting in a sharp drop in pressure in the pipes of the hydraulic system which starts up the aforesaid pump means.

[0033] The invention thus conceived can be subject to numerous modifications and variants all falling within the scope of the inventive concept; moreover, all details can be substituted by technically equivalent elements.

Claims

1. An outdoor fire fighting apparatus (100), **characterized in that** it comprises a module (101) or room with delimited space and formed by a mobile structure (102) with load-bearing covering frame for fire fighting components (1,2,3,4,5,6,6a,7,8,9,10,11,12,13), said structure (102) being adapted to be positioned and fastened at the level of the ground (G); said components (1,2,3,4,5,6,6a,7,8,9,10,11,12,13) positioned inside said structure (102) of said module (101) comprising at least pump pressure booster means (6,6a) to draw water or other suitable liquid from an outdoor tank or cistern (C) and spray it onto buildings in the event of a fire; said structure (102) being provided with substantially fully openable lateral surfaces.
2. The fire fighting apparatus according to claim 1, **characterized in that** said pressure booster means (6a) are of the thrust unit type with mechanical motor and comprise means (14, 15) for venting fumes to the outside and, when required, fuel loading means (12) adapted to draw fuel from tank means (3,4)
3. The fire fighting apparatus according to claim 1 or 2, **characterized in that** said pressure booster means (6, 6a) are of the thrust unit type (6a) with electric motor.
4. The fire fighting apparatus according to any one of claims 1 to 3, **characterized in that** said fire fighting components (1,2,3,4,5,6,6a,7,8,9,10,11,12,13) also comprise spray or sprinkler means (19) connected to said pressure booster means (6, 6a) to spray water

inside said structure (102) in the event of a fire; said pressure booster means (6, 6a) being activated automatically following a drop in pressure occurring in the ducts (T) for connection with said cistern (C).

5. The fire fighting apparatus according to any one of claims 1 to 4, **characterized in that** said fire fighting components (1,2,3,4,5,6,6a,7,8,9,10,11,12,13) also comprise means (7) for electric drive and control of said pressure booster means (6, 6a); uninterruptible power means (11) adapted to permanently guarantee activation and operation of said pressure booster means (6, 6a); fan means (1) and grille means (10) adapted to allow entry of air from outside; service and emergency lighting means (8,9); extinguisher means (13); and covering means (20) to allow safe access to said drive means (7) also in the event of rain.
6. The fire fighting apparatus according to any one of claims 1 to 5, **characterized in that** said module (101) has a minimum internal height of 2.4 meters, and has free accessibility on the four sides of said pressure booster means (6, 6a) with dimension of no less than 0.80 meters, in accordance with the current regulations UNI 11292 and EN 12845; in the event of a fire, said module (101) retaining its stability for a period of time equivalent to 60 minutes.

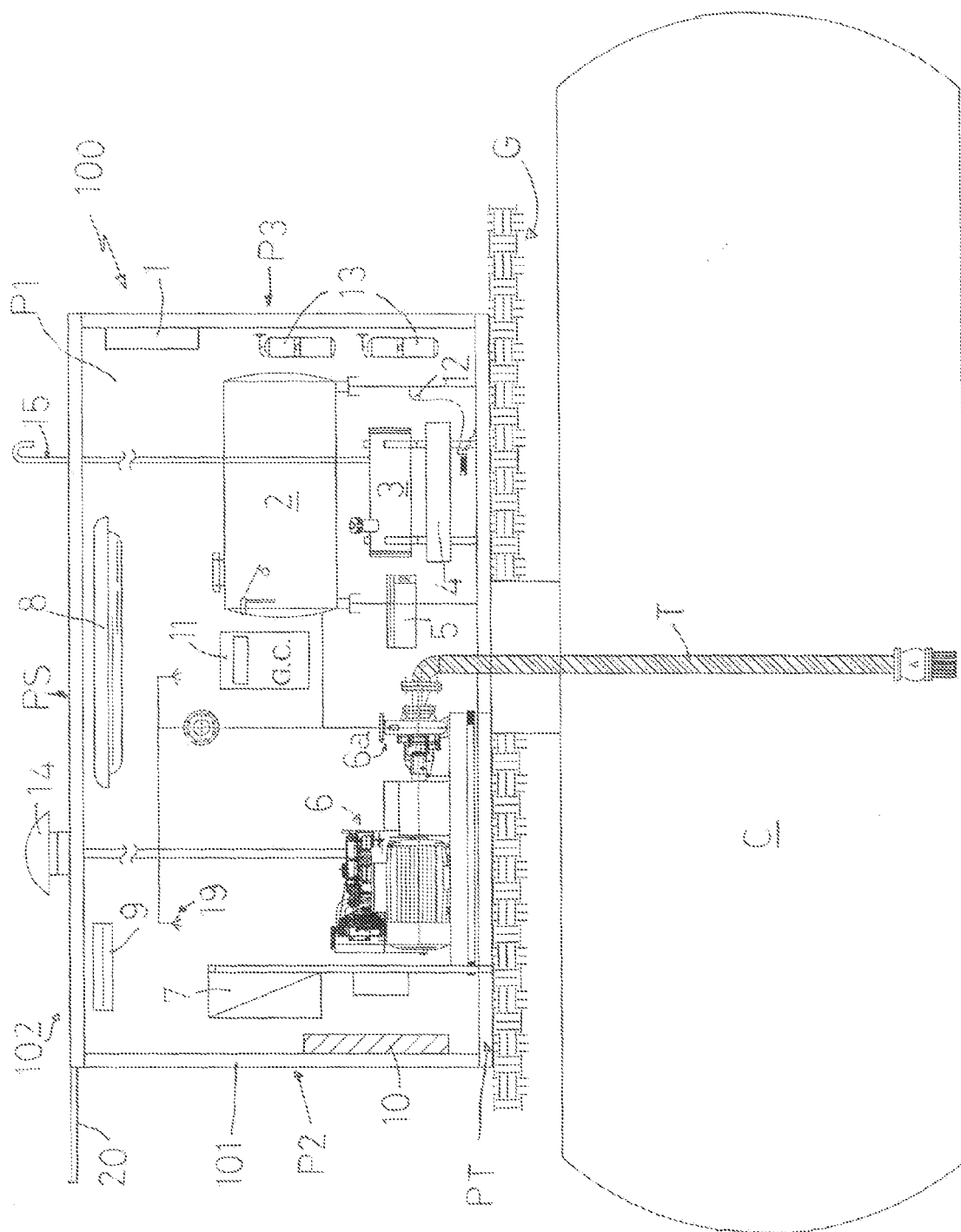
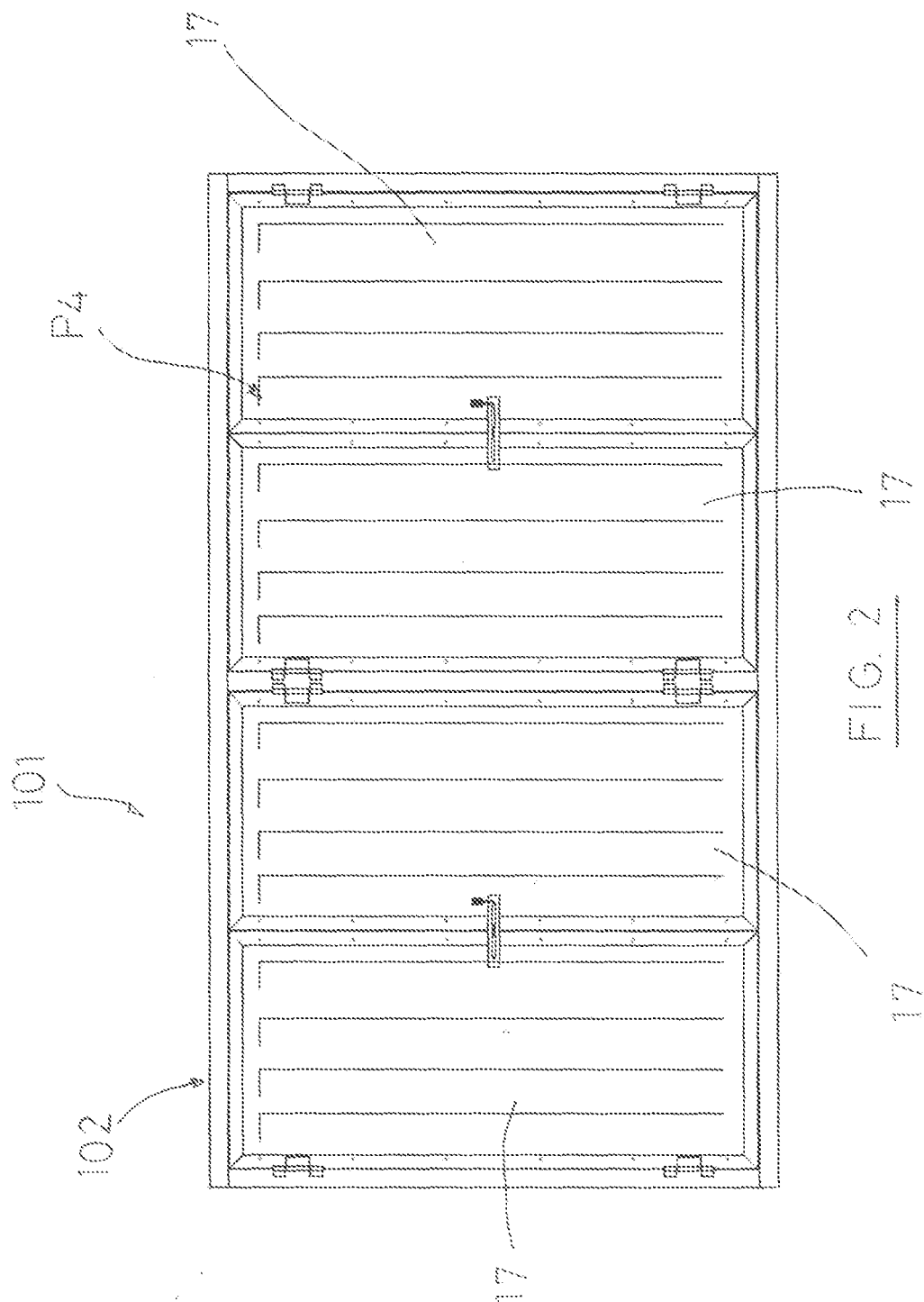


FIG. 1





EUROPEAN SEARCH REPORT

Application Number
EP 09 17 6577

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	DE 201 11 753 U1 (WEISS PETER J) 31 October 2001 (2001-10-31) * abstract; figures 1-3 * * page 1, line 1 - line 6 * * page 2, line 2 - line 8 * * page 3, line 24 - page 4, line 12 * * page 5, line 6 - page 6, line 27 *	1,3,5-6	INV. A62C3/02
X	DE 101 24 518 A1 (LUEERS GREGOR) 28 November 2002 (2002-11-28) * abstract; figure 1 * * column 1, paragraph 5 * * column 2, paragraph 18 *	1-2	
X	FR 2 859 637 A (ANDRE PATRICE) 18 March 2005 (2005-03-18) * abstract; figure 1 * * page 2, line 3 - line 19 * * page 3, line 15 - line 27 * * page 4, line 27 - line 29 *	1,3,5-6	
A	DE 103 37 469 A1 (REMBOLD JUERGEN) 10 March 2005 (2005-03-10) * abstract; figure 1 *	1	TECHNICAL FIELDS SEARCHED (IPC) A62C E03B
A	US 4 992 669 A (PARMLEY DANIEL W) 12 February 1991 (1991-02-12) * abstract; figure 3 *	1	
A	WO 2008/109023 A (ZACHERL LOUIS G) 12 September 2008 (2008-09-12) * abstract; figures 1,2 *	1	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 29 January 2010	Examiner Tempels, Marco
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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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 09 17 6577

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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29-01-2010

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
DE 20111753	U1	31-10-2001	AT	410811 B	25-08-2003
DE 10124518	A1	28-11-2002	NONE		
FR 2859637	A	18-03-2005	NONE		
DE 10337469	A1	10-03-2005	NONE		
US 4992669	A	12-02-1991	NONE		
WO 2008109023	A	12-09-2008	US	2008217443 A1	11-09-2008