(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 566 593 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
24.08.2005 Bulletin 2005/34

(51) Int Cl.[7]: **F24B 1/192**, F24B 1/18

(21) Application number: **05075422.5**

(22) Date of filing: **21.02.2005**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR LV MK YU

(30) Priority: **20.02.2004 NL 1025545**

(71) Applicant: **Faber International B.V.**
8448 CC Heerenveen (NL)

(72) Inventors:
- **Schaafsma, Bartholomeus**
9215 VX Veenhoop (NL)
- **Koster, Sikke**
9103 NG Dokkum (NL)

(74) Representative: **Grootscholten, Johannes A.M.**
Arnold & Siedsma
Sweelinckplein 1
2517 GK Den Haag (NL)

(54) Fireplace without fixed frame for a front member

(57) The present invention relates to a fireplace. This fireplace comprises a hearth formed in a housing, for instance with a gas burner. A front member of transparent material is placed in front of the hearth and at least one coupling is arranged between the front member and the housing. The fireplace according to the invention has the distinctive feature of at least one resilient element which holds the front member with resilient play against the housing.

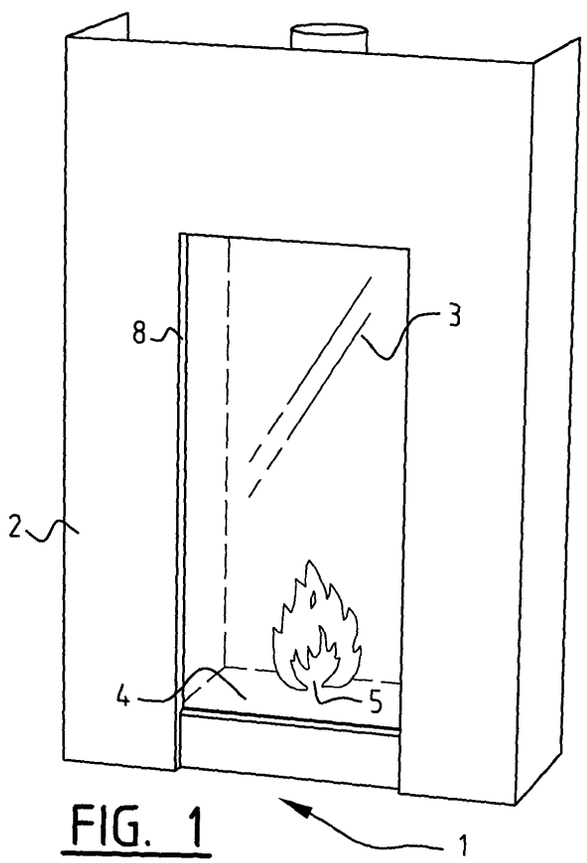

FIG. 1

EP 1 566 593 A1

Description

[0001] The present invention relates to a fireplace, comprising: a hearth formed in a housing, for instance with a gas burner; a front member of transparent material in front of the hearth; and at least one coupling between the front member and the housing.

[0002] Such fireplaces are generally known. The front member of transparent material can herein be yield manufactured for instance from hardened, heat-resistant glass or a similar material. In respect of requirements for the hearth, in particular if it comprises a gas burner, it is usual in many known fireplaces to provide a substantially closed system, i.e. the housing and the front member must effectively seal the hearth from the environment. In these known fireplaces the housing comprises a fixed frame for fixed mounting of the front member, wherein the fixed frame thus forms the coupling. This creates a number of problems.

[0003] Cleaning of the front member, in particular the side thereof directed toward the hearth, is made more difficult by the fact that usual couplings generally fix the front member to the housing. When a limited uncontrolled combustion of a built-up accumulation of gas takes place, in the case of an incomplete combustion and when a gas burner is disposed in the hearth, the front member can further become damaged by the pressure released here in the hearth. If such a front member is manufactured from glass, and combustion of residual gas generates so much pressure on the glass front member that it shatters, a person in the room in which the fireplace is disposed can be injured.

[0004] The present invention has for its object to obviate the above stated drawbacks of the known art, for which purpose a fireplace according to the invention is distinguished from known fireplaces by at least one resilient element which holds the front member with resilient play against the housing. According to the present invention the front member can be easily separated to enable cleaning thereof. The resilient play furthermore ensures that, in the case of combustion of residual gas in the hearth, the front member can move away from the hearth over a limited distance, i.e. that of the play, to enable safe release of the overpressure in the hearth.

[0005] According to the present invention there are diverse preferred embodiments of fireplaces, which are defined in the dependent claims. According to claim 2 therefore, the resilient element can comprise at least one leg which forms part of the couplings and on the edge of the front member acts on the front member in the direction of the housing. Such a leg can for instance be manufactured from spring steel, also referred to as POM. By positioning the coupling on the edge of the front member it can, in simple manner, be concealed from view or at least be not very conspicuous. If couplings are moreover arranged on opposite sides of the front member, the front member can be displaced in simple manner under a coupling on one side to be released from the coupling on the opposite side, whereafter the front member can be integrally removed in simple manner, for instance to enable cleaning thereof.

[0006] The coupling can further be arranged on a suspension which is arranged at a distance from the housing and which is movable between a position with the coupling in active state and a position with the coupling in inactive state. Release of the front member is thus further facilitated, for instance to enable cleaning thereof. The resilient element can herein act on the suspension to hold the front member against the housing. The suspension is thus arranged between the resilient element and the coupling, and a plurality of couplings can be arranged on such a suspension so as to act simultaneously on the front member and thereby improve the hold against the housing. In an advantageous, robust and elegant embodiment, the coupling can also comprise a rotatable rod on which the coupling is (or the couplings are) arranged and wherein the resilient element exerts a force on the rod to hold the coupling in or at least set it into active state. A pre-adjustment of a suspension in the form of a rod is thus realized, so that in an embodiment with a plurality of couplings all couplings are brought simultaneously into an active position in order to hold the front member against the housing.

[0007] In an embodiment with a resilient leg and a suspension, releasable blocking means can further be arranged for selectively securing the suspension in order to prevent unintentional removal of the front member and to simultaneously maintain the play. The resilience is here in the coupling itself, which is arranged on the suspension, which is per se blocked or can at least be blocked. By releasing the blocking the suspension can be used to release the front member, for instance for cleaning thereof. In a blocked situation the coupling holds the front member against the housing.

[0008] A surround can further be arranged round the housing, which surround has an inward oriented edge corresponding with the housing or at least the hearth thereof. Such a surround can be used for a neat finish and a pleasant appearance of the fireplace. At least the coupling, the leg of the coupling and/or the suspension of the coupling can herein be positioned behind the surround, out of sight and to the side of the edge. Preferably the housing, but also any measure relating to the arranging of the front member against the housing, is thus concealed from view, whereby a person in the space where the fireplace is disposed sees only the hearth through the transparent front member. The front member preferably has larger dimensions than an opening defined by the edge of the surround.

[0009] In a fireplace according to the present invention the front member can further comprise a plate of heat-resistant and preferably hardened glass, and a sealing element can be arranged between the housing and the front member. This sealing element then contributes toward sealing of the hearth from the environment, and therefore toward the safety of the fireplace,

in particular when a gas hearth or gas burner is disposed in the hearth.

[0010] The present invention will be further elucidated hereinbelow in the description of an exemplary embodiment thereof, which is written on the basis of and with reference to the accompanying drawings, in which the same or similar parts and components are designated with the same reference numerals, and in which:

fig. 1 shows a view of a fireplace according to the present invention with a surround;
fig. 2 shows a view corresponding with fig. 1, but without surround;
fig. 3 shows a detail of arrow III in fig. 2; and
fig. 4 shows a detail of arrow IV in fig. 2.

[0011] Figures 1 and 2 show a fireplace 1, wherein a surround 2 is arranged round fireplace 1 in fig. 1. Fireplace 1 is as it were recessed into surround 2.

[0012] Fireplace 1 comprises a hearth 4, where for instance a gas burner 5 can be placed, which hearth 4 is sealed with a plate of glass 3 which forms a front member for the hearth and is manufactured from transparent material.

[0013] In fig. 2, in which surround 2 has been omitted, it can be clearly seen that fireplace 1 comprises a housing 6, on which the plate of glass 3 is arranged by means of couplings 7. It will be apparent that, in a position of use with fireplace 1 in the surround 2, couplings 7 as well as the front edges of housing 6 are hidden from view by inner edge 8, which defines an opening in surround 2.

[0014] Couplings 7 hold the plate of glass 3 in resilient manner against housing 6. As also shown in cross-sectional view in fig. 3, brackets 9 are arranged for this purpose on either side of housing 6, in which brackets rods 10 forming suspensions are rotatably arranged. Rods 10 each form a suspension for five pressure plates 11 which press the plate of glass 3 against housing 6. Pressure plates 11 are for instance manufactured from spring steel, which is known as POM. With the rods 10 in the rotation position thereof in holes 12 in bracket 9 as shown in fig. 3, the pressure plates 11 press the plate of glass 3 against housing 6, as already stated above. However, due to the resilience thereof, pressure plates 11 have play, which is designated schematically in fig. 3 with the distance "X". This is realized to allow the plate of glass 3 to yield over the distance X in the case of unintended combustion of residual gas which may have accumulated in hearth 4, and thus reduce the overpressure in the hearth without damaging the plate of glass 3. The situation of the pressure plate 11 shown with broken lines in fig. 3 shows clearly how this play over distance X is realized in the case of an unintended and undesired combustion of such residual gas. Here the pressure plates 11 thus form legs as a component of the coupling between housing 6 and the plate of glass 3, which act on the edge of the plate of glass 3. A sealing strip 13 is further arranged between housing 6 and plate of glass 3 for a good sealing during normal operation of fireplace 1, in particular with a gas hearth 5 in the hearth 4 thereof.

[0015] Fig. 3 once again shows the inner edge 8 of surround 2, and it will be apparent that the diverse components and elements to which the present invention relates are concealed from view.

[0016] For cleaning purposes the plate of glass 3 can be displaced in the direction of arrow A until the plate of glass 3 is released, on the opposite side of housing 6, from the couplings or pressure plates 11 at that position, and after a rotation through a small angle the plate of glass 3 can also be released in the direction opposite to arrow A from pressure plates 11 on the side opposite that shown in fig. 3. The rear side 14 of the plate of glass 3 can then also be cleaned.

[0017] Additionally or alternatively, use can also be made here of the rotatability of rods 10, which form a suspension for pressure plates 11, which in turn form the couplings to which the present invention relates. Rods 10 are suspended rotatably in holes 12 in brackets 9, as also shown in fig. 4. Rods 10 protrude through associated holes 12 in brackets 9 and are held rotatably herein by means of split pins 15.

[0018] On the underside of rods 10 is arranged a stop plate 16, which can be attached with a bolt 17 to mounting plates 18 on housing 6. The plate of glass 3 can herein rest on support plates. After releasing bolt 17, a stop plate 16 can be swung aside in the direction of arrow B in fig. 4, whereby the rod 10, which forms a suspension for the couplings which are here designed as pressure plates 11, is also swung away. The plate of glass 3 can then be freely removed to be cleaned and/or replaced. It is noted that a spring 20 is further also arranged between stop plate 16 and housing 6. This spring can be an alternative design for resilient plates 11 of the resilient element to which the present invention relates, wherein pressure plates 11 can be given a more rigid form and wherein the fastening of stop plates 16 to mounting plates 18 using bolts 17 can be dispensed with. The required play over distance X in fig. 3 is then realized by means of spring 20 instead of or in addition to the resilience of pressure plates 11. Bolts 17, which per se form blocking means that are releasable, for selectively fixing the suspension in the form of rods 10 can thus, as already noted, be omitted in such an embodiment.

[0019] As shown clearly in fig. 3, the plate of glass has larger dimensions that the opening in surround 2, which opening is bounded by inner edge 8, and the parts and components to which the present invention relates are therefore hidden from view and act on the outer edge of the plate of glass 3. This plate of glass is preferably heat-resistant and preferably also hardened. The sealing element can be a strip of compressible sealing material, such as rubber or the like, but must preferably also be heat-resistant.

[0020] Many alternative and additional embodiments

will occur to the skilled person after examination of the foregoing. The resilience need not necessarily be due to a spring 20 or pressure plates 11 of resilient material such as spring steel. The connection between pressure plates 11 and rod 10 from which they are suspended can also display a degree of resilience for the purpose of achieving the required effect. L-shaped members can further be arranged directly on the housing, which members extend round the front edge of housing 6 in order to there engage on the plate of glass 3 and hold it against the housing. Such L-shaped plates can be movable forward and backward relative to housing 6, for instance using a slotted hole into which protrudes a pin mounted fixedly on housing 6. The desired effect is again achieved if a spring is here arranged between such L-shaped elements and the housing. In fig. 4 a cover plate can be arranged on the underside of fireplace 1, for which purpose supports 21 are already shown in fig. 4. The present invention is not therefore limited to the specific embodiment as shown in the figures, but only by the definitions in the appended claims, and in particular the single independent claim, within the scope of which all diverse additional and alternative embodiments are possible.

Claims

1. Fireplace (1), comprising: a hearth (4) formed in a housing (6), for instance with a gas burner (5); a front member (3) of transparent material in front of the hearth; and at least one coupling (7) between the front member and the housing,
characterized by at least one resilient element (11; 20) which holds the front member with resilient play against the housing.

2. Fireplace as claimed in claim 1, wherein the resilient element comprises at least one leg (11) which is part of the coupling (7) and on the edge of the front member (3) acts on the front member in the direction of the housing (6).

3. Fireplace as claimed in claim 1 or 2, wherein the coupling (7) is arranged on a suspension (9, 10, 12) which is arranged at a distance from the housing (6) and which is movable (B) between a position with the coupling in active state and a position with the coupling in inactive state.

4. Fireplace as claimed in claim 3, wherein the resilient element (20) acts on the suspension (9, 10, 12) to hold the front member (3) against the housing (6).

5. Fireplace as claimed in claim 3 or 4, wherein the suspension comprises a rotatable rod (10) on which the coupling is arranged, and the resilient element (20) exerts a force on the rod to hold the coupling in, or at least set it into, active state.

6. Fireplace as claimed in claim 2 and at least one of the claims 3 and 4, further comprising releasable blocking means (17) for selectively securing the suspension (9, 10, 12) in order to prevent unintentional removal of the front member and to simultaneously maintain the play.

7. Fireplace as claimed in at least one of the foregoing claims, wherein a surround (2) is arranged round the housing (6), which surround has an inward oriented edge (8) corresponding with the housing or at least the hearth thereof.

8. Fireplace as claimed in claim 7, wherein at least the coupling, the leg of the coupling and/or the suspension of the coupling is/are positioned behind the surround, out of sight and to the side of the edge.

9. Fireplace as claimed in claim 7 or 8, wherein the front member (3) has larger dimensions than an opening defined by the edge (8) of the surround (2).

10. Fireplace as claimed in at least one of the foregoing claims, wherein the front member (3) comprises a plate of heat-resistant and preferably hardened glass.

11. Fireplace as claimed in at least one of the foregoing claims, wherein a sealing element (13) is arranged between the housing and the front member.

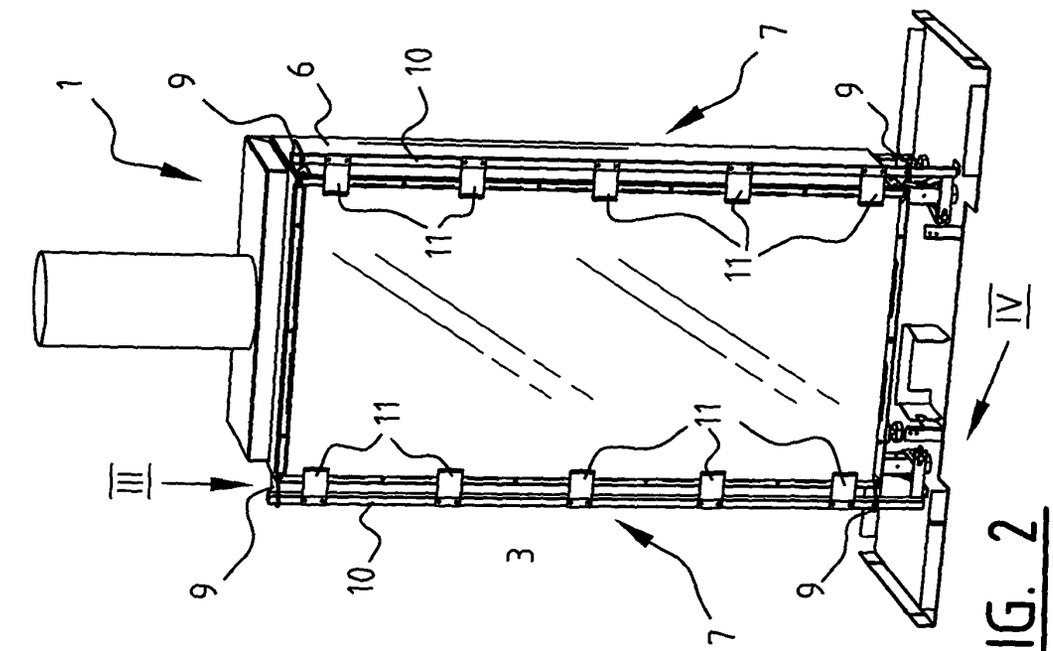

FIG. 2

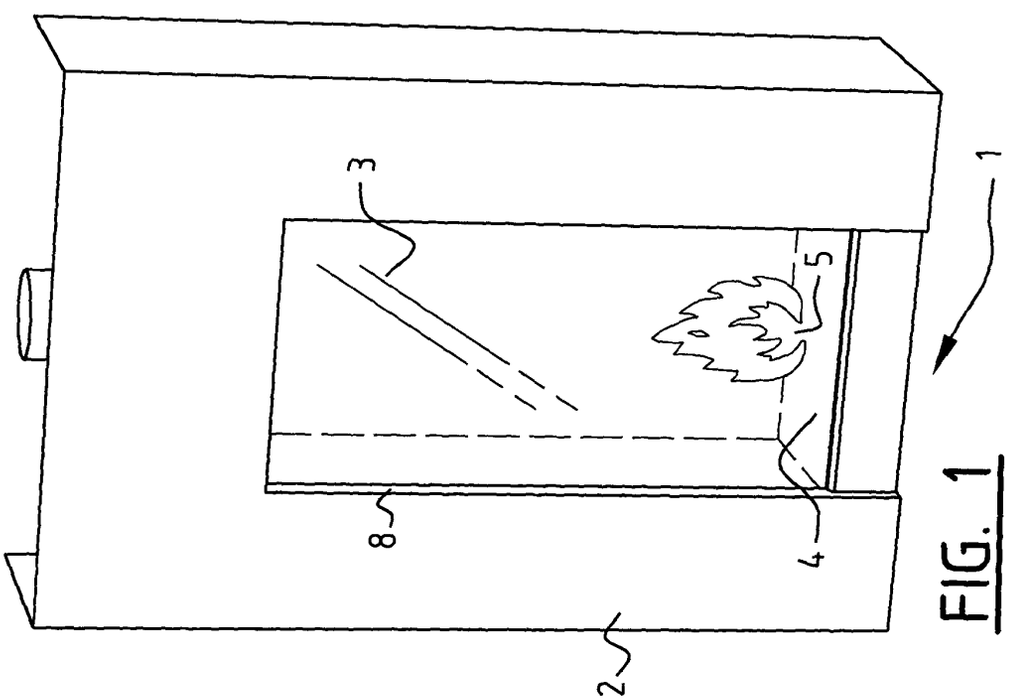

FIG. 1

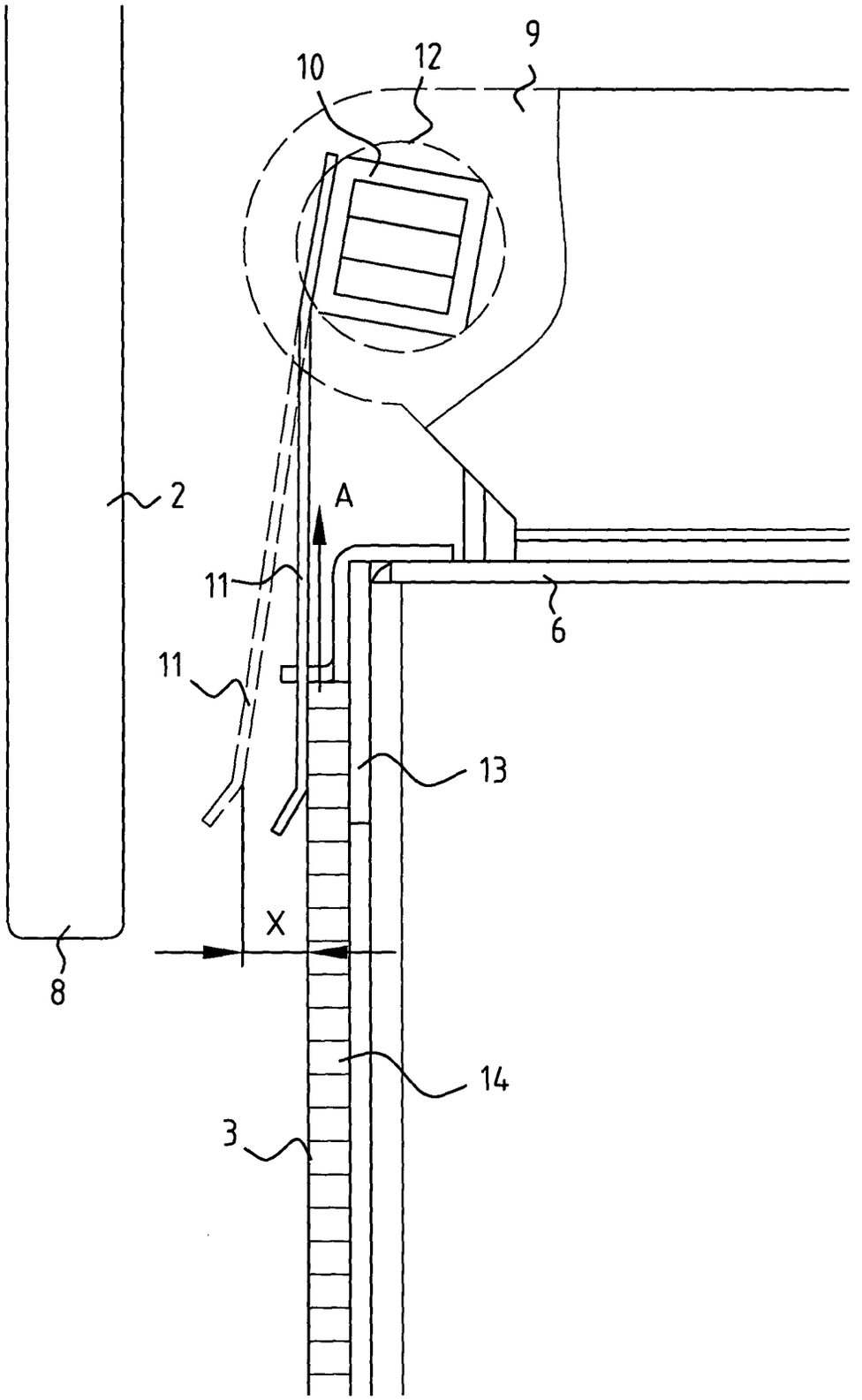

FIG. 3

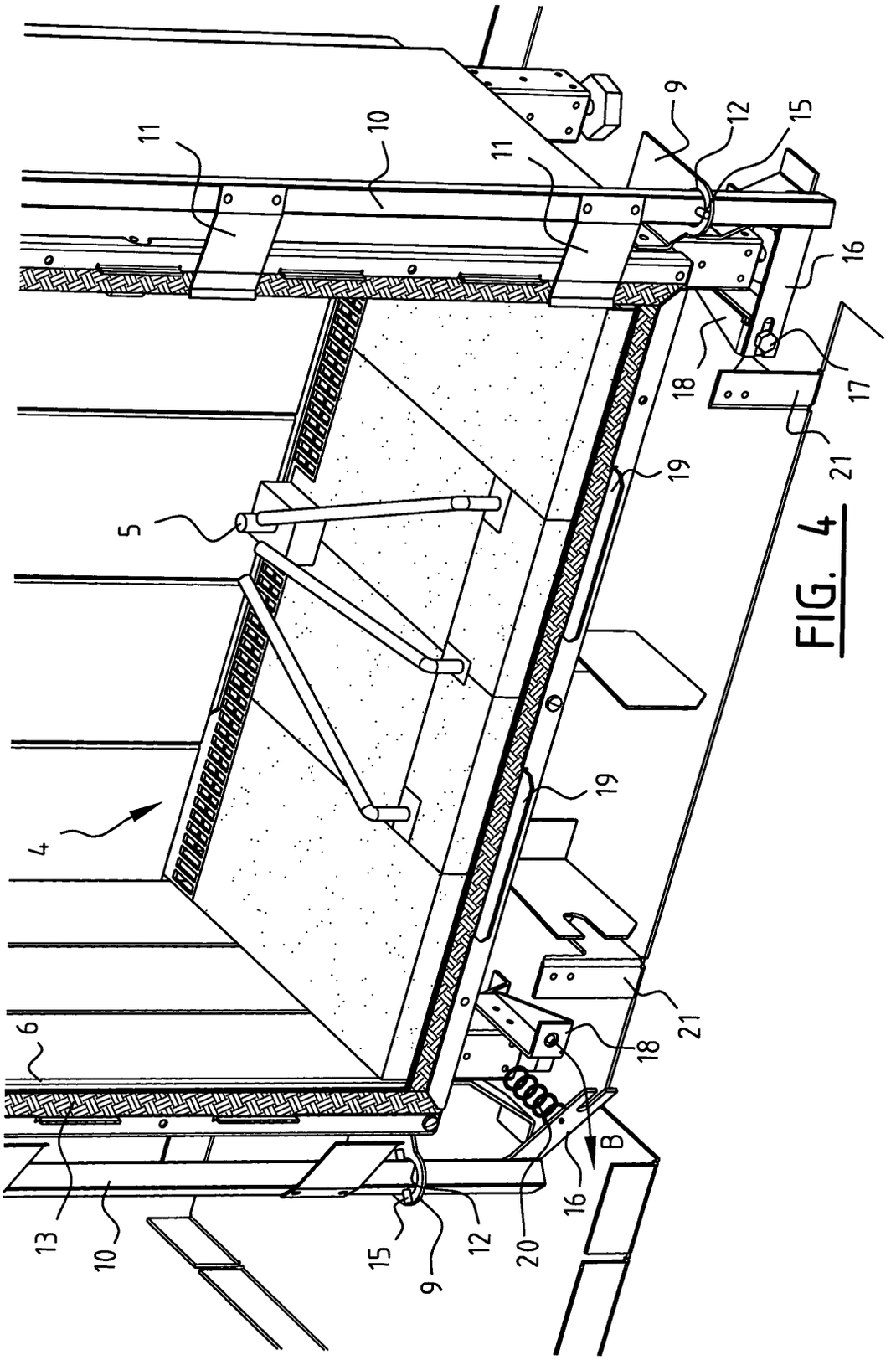

FIG. 4

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 07 5422

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	US 2 398 240 A (GERALD MERRYWEATHER ET AL) 9 April 1946 (1946-04-09) * the whole document *	1,2,9,10	F24B1/192 F24B1/18
X	US 3 789 825 A (REINER L) 5 February 1974 (1974-02-05) * claims; figures *	1,2,9,11	
A	US 5 613 487 A (HAWKINSON ERIC) 25 March 1997 (1997-03-25) * abstract *	1	
A	US 3 888 232 A (LE BRUN CLARENCE A) 10 June 1975 (1975-06-10) * abstract *		

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

F24B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	30 June 2005	Vanheusden, J

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 ON EUROPEAN PATENT APPLICATION NO. EP 05 07 5422

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

30-06-2005

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2398240 A	09-04-1946	NONE	
US 3789825 A	05-02-1974	NONE	
US 5613487 A	25-03-1997	CA 2195264 A1	17-07-1997
US 3888232 A	10-06-1975	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82