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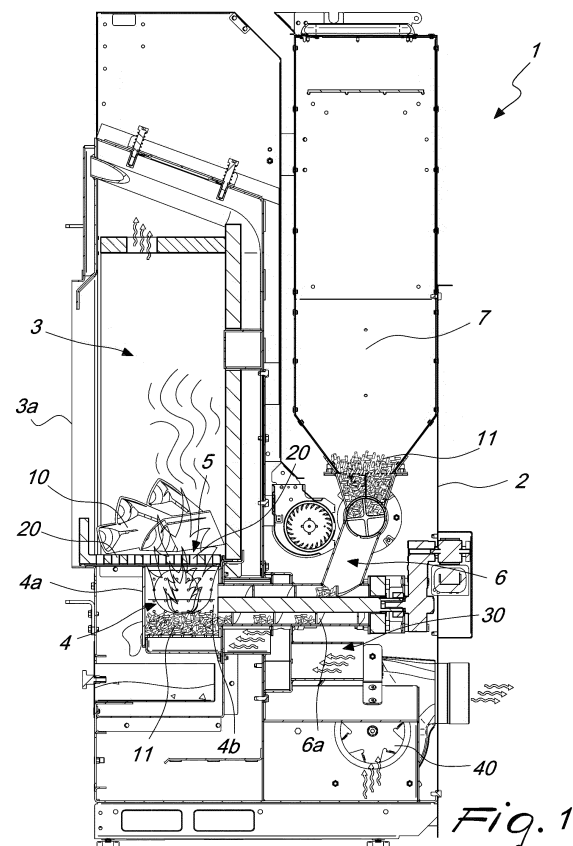
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### (54) HEAT GENERATOR FUELED BY SOLID FUELS

(57) A heat generator (1) fueled by solid fuels, comprising a support and containment structure (2) which defines a first combustion chamber (3) for a first solid fuel (10), the first combustion chamber (3) being associated with at least one access hatch (3a) for loading the first solid fuel (10), comprising, below the first combustion chamber (3), at least one second combustion chamber (4) for a second solid fuel (11) of a different type from the first solid fuel (10), between the first combustion chamber (3) and the at least one second combustion chamber (4) there being defined at least one separation wall (5) provided with at least one passage opening (20), the second combustion chamber (4) being defined, laterally, by a lateral containment surface (4a), at least one inlet (4b) being provided which is defined in the lateral containment surface (4a) and is connected to at least one conveyor (6) for the automatic feeding of the second solid fuel (11) to the at least one second combustion chamber (4), so as to allow the heat generator 1 to be used with different types of solid fuels (10, 11).



*Fig. 1*

## Description

**[0001]** The present invention relates to a heat generator fueled by solid fuels, in particular fueled or capable of being fueled by two different fuels, for example wood and pellets.

**[0002]** Heat generators are known on the market which can be fueled both by wood and by pellets.

**[0003]** In general, such generators have a combustion chamber which is accessible from outside by means of an access hatch that can be opened and closed by the user, into which the wood is placed manually.

**[0004]** Inside these types of stoves, a containment vessel for the pellets is also provided, which is connected, by conveyance means, to the combustion chamber, so as to allow the pellets to be fed to the combustion chamber.

**[0005]** In some cases, below, beside or above the combustion chamber, a temporary storage vessel for the pellets is provided, into which the pellets are fed from the main vessel, normally by gravity or by way of a screw feeder.

**[0006]** There are also means for automatic feeding of the pellets, which are typically constituted by a conveyor from the temporary storage vessel to the combustion chamber.

**[0007]** Such solutions, although theoretically valid, present a series of drawbacks, however.

**[0008]** Firstly, it should be noted that the ash produced during the operation of the generator can foul not only the bottom of the combustion chamber, but also the conveyor, or the bottom of the brazier, so compromising its operation.

**[0009]** Furthermore, the presence of one combustion chamber for wood and pellets means it is not possible to optimally manage sending and extracting air to and from the combustion chamber.

**[0010]** The aim of the present invention is to provide a heat generator fueled by solid fuels which is capable of improving the known art in one or more of the above-mentioned aspects.

**[0011]** Within this aim, an object of the invention is to provide a heat generator fueled by solid fuels that is capable of enabling optimization of the quality of combustion both of pellets and of wood.

**[0012]** Another object of the invention is to provide a heat generator fueled by solid fuels that is highly reliable, easy to implement and at low cost.

**[0013]** This aim and these and other objects which will become better apparent hereinafter are achieved by a heat generator fueled by solid fuels according to claim 1, optionally provided with one or more of the characteristics of the dependent claims.

**[0014]** Further characteristics and advantages of the invention will become better apparent from the detailed description that follows of a preferred, but not exclusive, embodiment of the heat generator fueled by solid fuels according to the invention, which is illustrated for the purposes of nonlimiting example in the accompanying

drawings wherein:

Figure 1 is a cross-sectional view of the heat generator according to the invention;

Figure 2 is an enlarged-scale view of the lower portion of the generator in the cross-section of Figure 1.

**[0015]** With reference to the figures, the heat generator fueled by solid fuels according to the invention, generally designated by the reference numeral 1, comprises a support and containment structure 2 which defines a first combustion chamber 3 for a first solid fuel 10.

**[0016]** The first combustion chamber 3 is associated with at least one access hatch 3a for loading the first solid fuel 10.

**[0017]** Below the first combustion chamber 3, at least one second combustion chamber 4 is provided for a second solid fuel 11 of a different type from the first solid fuel 10.

**[0018]** With reference to a first preferred embodiment, the first solid fuel 10 is constituted by wood, while the second solid fuel 11 comprises pellets.

**[0019]** Between the first combustion chamber 3 and the at least one second combustion chamber 4, at least one separation wall 5 is defined which has at least one passage opening 20.

**[0020]** The second combustion chamber 4 is defined, laterally, by a lateral containment surface 4a.

**[0021]** At least one inlet 4b is provided at the lateral containment surface 4a which is connected to at least one conveyor 6 for the automatic feeding of the second solid fuel 11 to the at least one second combustion chamber 4.

**[0022]** The at least one passage opening 20 is designed to allow the passage, from the second combustion chamber 4 toward the first combustion chamber 3, of heat and air during the combustion of the second solid fuel 11, and the ash from the first combustion chamber 3 toward the second combustion chamber 4 during the combustion of the first solid fuel 10.

**[0023]** Conveniently, the heat generator 1 comprises means for supplying air 30 to the second combustion chamber 4.

**[0024]** Means for extracting exhaust gases 40 from the first combustion chamber 3 are also provided.

**[0025]** In particular, the means for supplying air 30 and the means for extracting exhaust gases 40 comprise means for the forced circulation of an air flow between an air extraction conduit, which leads into the second combustion chamber 4, and a flue for extracting the fumes from the first combustion chamber 3.

**[0026]** The means for forced circulation are functionally associated with an actuation and control device, which is configured to drive the means for forced circulation.

**[0027]** The heat generator 1 comprises interface means configured for the selective selection of the type of solid fuel 10, 11 to use.

[0028] The interface means are functionally connected to a control and actuation unit, which defines the actuation and control device, which is adapted to act, not only on the means for supplying air 30 and on the means for extracting exhaust gases 40, but also on the conveyor 6.

[0029] Conveniently, the support and containment structure 2 defines a storage vessel 7 for the second solid fuel 11.

[0030] The conveyor 6 is adapted to feed, on command, the second solid fuel 11 from the storage vessel 7 toward the second combustion chamber 4.

[0031] Conveniently, the first solid fuel 10 is fed manually to the first combustion chamber 3 through the at least one access hatch 3a.

[0032] Advantageously the heat generator 1 comprises a stove.

[0033] Advantageously, the conveyor 6 comprises a screw feeder 6a.

[0034] The operation of the heat generator 1, according to the invention, is the following.

[0035] The operation of the stove is set up depending on the type of solid fuel that it is intended to use.

[0036] If the stove is to be fueled with pellets, then it will function like a traditional stove fueled with pellets, automatically feeding the second solid fuel 11 (the pellets) to the second combustion chamber 4.

[0037] By contrast, operating the wood-fueled stove will result in the suspension of the feed of pellets to the second combustion chamber 4, because the wood will be fed manually by the user into the combustion chamber 3.

[0038] Likewise, even if the user should decide to fuel the stove with wood, it is possible to ignite the stove using pellets, which however will be interrupted once the correct temperature for burning wood is reached.

[0039] In practice it has been found that the invention fully achieves the intended aim and objects by providing a heat generator fueled with solid fuels that is capable of operating, efficiently, with different types of solid fuels, such as for example wood or pellets.

[0040] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims. Moreover, all the details may be substituted by other, technically equivalent elements.

[0041] In practice the materials employed, provided they are compatible with the specific use, and the contingent dimensions and shapes, may be any according to requirements and to the state of the art.

[0042] The disclosures in Italian Patent Application No. 102023000024156 from which this application claims priority are incorporated herein by reference.

[0043] Where technical features mentioned in any claim are followed by reference signs, such reference signs have been inserted for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

## Claims

1. A heat generator (1) fueled by solid fuels, comprising a support and containment structure (2) which defines a first combustion chamber (3) for a first solid fuel (10), said first combustion chamber (3) being associated with at least one access hatch (3a) for loading said first solid fuel (10), **characterized in that** it comprises, below said first combustion chamber (3), at least one second combustion chamber (4) for a second solid fuel (11) of a different type from said first solid fuel (10), between said first combustion chamber (3) and said at least one second combustion chamber (4) there being defined at least one separation wall (5) provided with at least one passage opening (20), said second combustion chamber (4) being defined, laterally, by a lateral containment surface (4a), at least one inlet (4b) being provided which is defined in said lateral containment surface (4a) and is connected to at least one conveyor (6) for the automatic feeding of said second solid fuel (11) to said at least one second combustion chamber (4).
2. The heat generator (1) according to claim 1, **characterized in that** said first solid fuel (10) comprises wood and said second solid fuel (11) comprises pellets.
3. The heat generator (1) according to claim 1, **characterized in that** it comprises means for supplying air (30) to said at least one second combustion chamber (4).
4. The heat generator (1) according to one or more of the preceding claims, **characterized in that** it comprises means for extracting exhaust gases (40) from said first combustion chamber (3).
5. The heat generator (1) according to one or more of the preceding claims, **characterized in that** it comprises interface means configured for the selective selection of the type of solid fuel (10, 11) to be used, said interface means being functionally connected to a control and actuation unit adapted to act on said at least one conveyor (6), on said means for supplying air (30) and on said means for extracting exhaust gases (40).
6. The heat generator (1) according to one or more of the preceding claims, **characterized in that** said support and containment structure (2) forms a storage vessel (7) for said second solid fuel (11), said at least one conveyor (6) being adapted to feed, on command, said second solid fuel (11) from said storage vessel (7) toward said second combustion chamber (4).

7. The heat generator (1) according to one or more of the preceding claims, **characterized in that** said first solid fuel (10) is fed manually to said first combustion chamber (3) through said at least one access hatch (3a). 5
8. The heat generator (1) according to one or more of the preceding claims, **characterized in that** it comprises a stove. 10
9. The heat generator (1) according to one or more of the preceding claims, **characterized in that** said at least one conveyor (6) comprises a screw feeder (6a). 15
10. The heat generator (1) according to one or more of the preceding claims, **characterized in that** said at least one passage opening (20) is designed to allow the passage, from said second combustion chamber (4) toward said first combustion chamber (3), of heat 20 and air during the combustion of said second solid fuel (11), and the ash from said first combustion chamber (3) toward said second combustion chamber (4) during the combustion of said first solid fuel (10). 25

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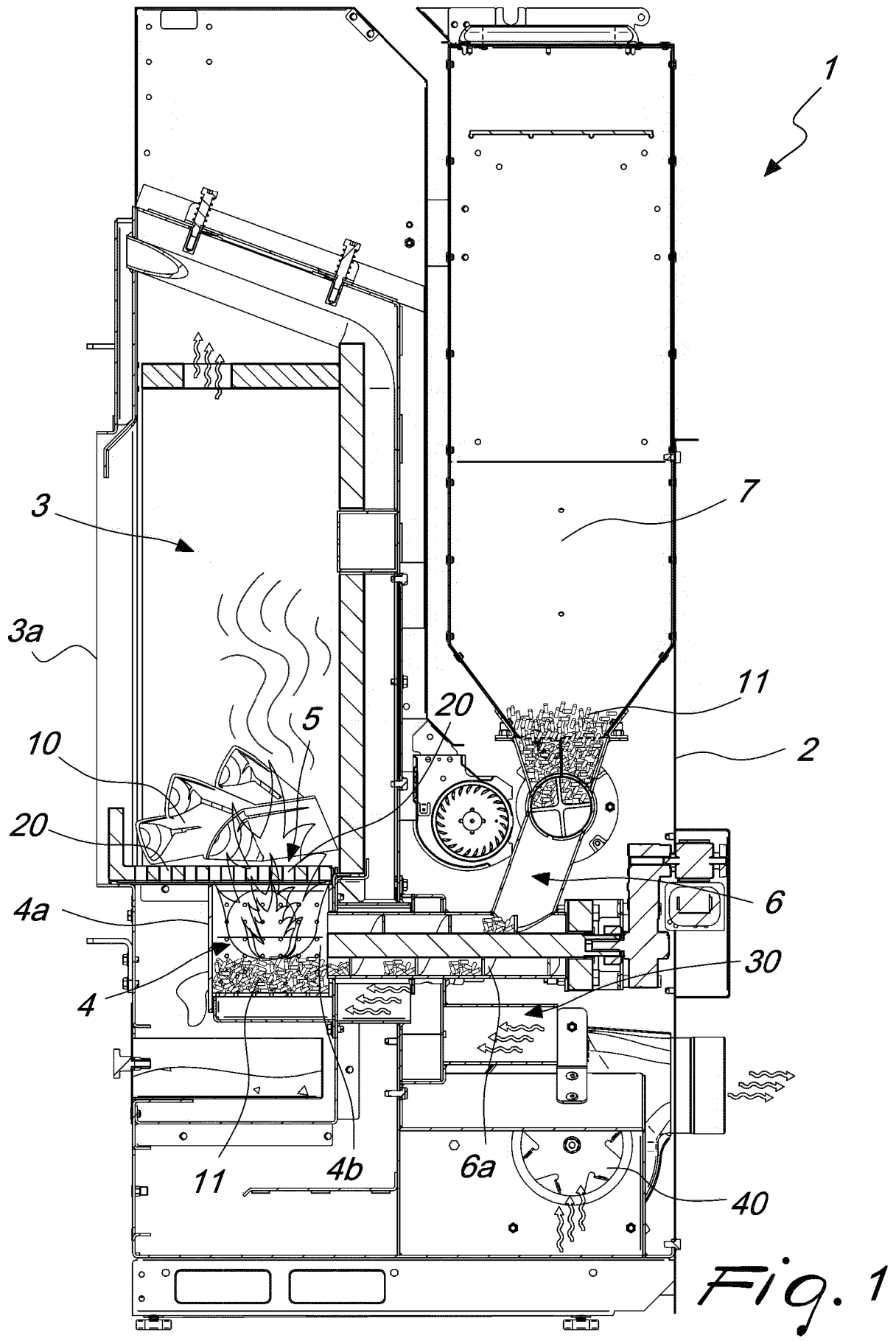
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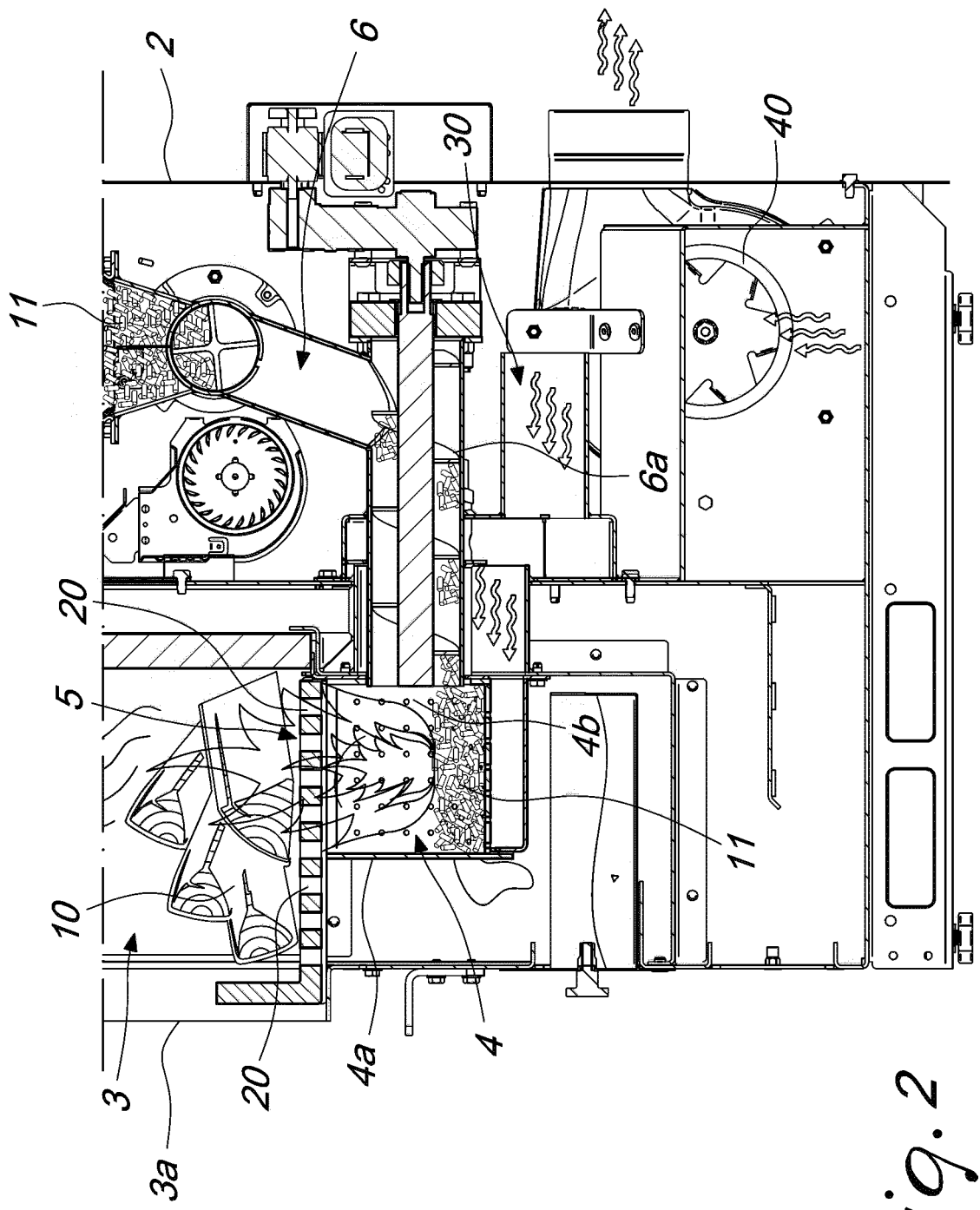


Fig. 2



## EUROPEAN SEARCH REPORT

Application Number

EP 24 20 8911

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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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Y	* machine translation *	9	F23B50/12
A	* paragraph [0040] - paragraph [0043] * * paragraph [0050] - paragraph [0052] * * figures 4-6, 8, 9 *	5, 6	F23B60/02
Y	EP 1 559 957 A1 (THERMOROSS I SPA [IT]) 3 August 2005 (2005-08-03) * abstract; figure 1 *	9	
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			TECHNICAL FIELDS SEARCHED (IPC)
			F23B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		4 March 2025	Gavriliu, Costin
CATEGORY OF CITED DOCUMENTS			
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# ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 24 20 8911

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**REFERENCES CITED IN THE DESCRIPTION**

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