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(54) **Fireplace**

(57) Fireplace comprising a firebox (1) for burning a solid fuel, a combustion space (2) above the firebox, with a smoke flue leading from the combustion space into a chimney flue, and a charging hole (4) provided with a door (3) for the insertion of fuel into the firebox. Moreover, the fireplace is provided with an upper hole (5) located above the firebox (1) and opening into the combustion space (2), and an upper door (6) for closing the upper hole, and in the combustion space a supporting element (7) on which food to be cooked can be placed in the combustion space via the upper hole.

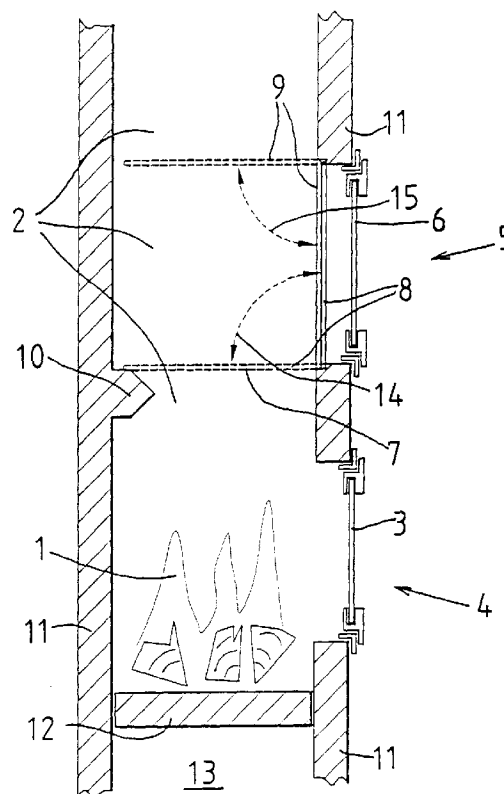


Fig 1

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Description

The present invention relates to a fireplace as defined in the preamble of claim 1.

A fireplace has two main functions: heating, and creating an atmosphere in the room where it is placed. Often there is also a need to use a fireplace for cooking purposes, but a conventional fireplace is hardly suited for anything but frying sausages. On the other hand, the bake oven has been developed exclusively for cooking, so it is not applicable as a means of creating an atmosphere, both because of its structure and its placement, being generally placed in the kitchen. There are also combinations of fireplace and bake oven, with a separate bake oven placed over a fireplace. However, the need to use a fireplace for cooking purposes is often of a minor order, so a massive combination of fireplace and bake oven may be too bulky and expensive in relation to the resources available.

The object of the invention is to eliminate the drawbacks mentioned above. A specific object of the invention is to present a new type of fireplace structure designed to implement a fireplace that creates an atmosphere and gives heat while at the same time providing varied cooking possibilities despite its small and cheap structure.

As for the features characteristic of the invention, reference is made to the claims.

The fireplace of the invention comprises a firebox for solid fuel, provided with a charging hole with a door for the insertion of fuel, and a combustion space above the firebox, from where smoke flues known in themselves may lead via different routes into a chimney flue. According to the invention, the fireplace has an upper hole above the firebox and the charging hole, said upper hole opening into the combustion space, and an upper door for closing the upper hole, and in addition a supporting element in the combustion space, so that food to be cooked can be inserted into the combustion space via the upper hole and placed on the supporting element to bake. It is to be noted that the supporting element may be a stationary, fixed structure in the combustion space or a turnable structure or it may be a separate body which can be placed into the combustion space and taken out as needed.

In the fireplace of the invention, the upper hole may be placed above the charging hole, i.e. it may open in the same direction as the charging hole. It is also possible to arrange the upper hole so that it opens to either side of the firebox or behind it.

The fireplace is preferably provided with an inner door placed on the interior side of the upper door and opening towards the combustion space, which inner door, when in a position closing the upper hole, forms a substantially smooth interior surface of the combustion space, thus ensuring that the combustion space has the same combustion characteristics as a fireplace without an upper hole.

The inner door may open into the combustion space in any direction, but preferably it opens downwards to a substantially horizontal position, so that it forms a suitable supporting element, a supporting surface on which the food to be cooked can be placed.

The downward-opening inner door is preferably of solid construction, e.g. a relatively massive plate, which substantially completely prevents any gas flow through the combustion space when in the horizontal position. The combustion space structure can be provided with suitable ancons, set-offs or equivalent supports serving to hold and support the inner door or other supporting element.

Although the inner door, when lowered to its horizontal position, serves in the fireplace of the invention as a supporting element for food to be cooked, the fireplace can also be provided with separate supporting elements in addition to or instead of the inner door. In this case, the combustion space, e.g. its side walls, can be provided with various surface shapes and structures, grooves or set-offs, suspension hooks or supports, on which it is possible to place or suspend suitable supporting plates, grilles or equivalent.

In an embodiment of the invention, the fireplace has on the interior side of the upper door a plate-like top shutter which opens upwards into the combustion space and, when turned up and locked in its upper position, acts as a ceiling for the cooking space. The top shutter protects the food being cooked against impurities that might be released from the smoke flues above it.

The fireplace of the invention has significant advantages as compared with prior-art fireplaces. The fireplace is structurally very simple and is therefore less expensive than a combination of a fireplace and a bake oven. It is relatively light in construction but it can still be used effectively for both heating and cooking, like conventional massive fireplaces with a bake oven. The use and function of the fireplace have many advantageous features:

- The combustion and flow characteristics of the fireplace are as good as those of conventional fireplaces designed for heating;
- a separate additional door keeps the interior surface of the upper door clean and protects against impurities when the door is being opened;
- the inner door and top shutter surfaces facing towards the upper door remain clean during heating use of the fireplace, so when they are opened into the combustion space, they form clean bottom and top surfaces for the cooking space;
- the lowerable inner door constitutes a warm cooking surface and provides a good bottom heat, accelerating the cooking of food placed on it;
- during heating use of the fireplace, the inner door and the top shutter constitute a safety door, in case the upper door should accidentally be opened during heating; and

- the use of separate bake sheets, boxes and smoking boxes provides a variety of cooking possibilities.

In the following, the invention is described in detail by referring to the attached drawings, in which

Fig. 1 presents a diagrammatic sectional view of a fireplace according to the invention,

Fig. 2 presents a front view of another embodiment of the fireplace of the invention,

Fig. 3 presents a diagrammatic longitudinal cross-section of the fireplace in Fig. 2,

Fig. 4 presents section IV-IV through the fireplace in Fig. 3, and

Fig. 5 and 6 present a bake sheet and a smoking box for use in the fireplace shown in Fig. 2-4.

The fireplace may be made of soapstone or any other suitable fireplace material. The fireplace shown in Fig. 1 comprises, as known in itself in the art, a space enclosed by a massive heat storing envelope 11, with a grate 12 placed in said space, an ash box 13 under the grate and a firebox 1 above the grate. The firebox opens upwards into a combustion space 2, which, in a manner known in itself, continues as smoke flues of different shapes into a chimney flue. In the area of the firebox 1, the envelope 11 has a charging hole 4, which can be closed with a door 3.

Above the charging hole 4, the envelope 11 has an upper hole 5, which can be closed from the outside with an upper door 6, corresponding to door 3. On the interior side of the upper door 6 there is an inner door 8, placed substantially flush with the interior surface of the envelope 11 and covering the upper hole 5. The inner door 8 is mounted on the lower edge of the upper hole 5 by means of a joint or hinge or the like so that the inner door can be turned as indicated by arrow 14 from a vertical position, where it closes the upper hole 5, into a horizontal position, onto a support 10 provided on the back wall of the envelope 11. In this position, the inner door 8 constitutes a supporting element 7 for cooking purposes and at the same time a tight barrier to the combustion space 2, preventing upward gas flow.

The inner door 8 can be provided with a suitable hook, handle or e.g. a hole to allow the door to be gripped e.g. with a poker or equivalent so that it can be lowered into the horizontal position and lifted up again. In its upright position, the inner door need not necessarily be specifically locked to keep it in place, because it can be so arranged that it turns somewhat obliquely outwards in its high position, in which case it will remain in that position by itself.

The embodiment in Fig. 1 additionally comprises another cover closing the upper hole 5, i.e. a top shutter 9. The top shutter consists of a solid plate hinged on the upper edge of the upper hole 5, so that it can be lifted and turned into a horizontal position at the level of the upper edge of the upper hole 5 as indicated by arrow

15, thus closing the combustion space 2.

The top shutter 9 can be provided with different latches or locking levers or supports known in themselves, designed to keep the top shutter in its high position. The guard can be lifted up into its high position using any object of sufficient length that allows it to be pushed up far enough. In its low position, the top shutter needs no locking, hanging freely on its hinges.

The fireplace of the invention presented in Fig. 1 is used as follows. When the fireplace is being heated by burning e.g. wood in the firebox 1 above the grate 12, the upper hole 5, besides being closed with the upper door 6, is covered by the inner door 8 and the top shutter 9, which are held in their vertical position. In this situation, the inner door 8 and the top shutter 9 form in the combustion space a substantially even and smooth part of the interior surface of the fireplace envelope 11, which means that the gases flow in the same way as in the combustion space of a conventional fireplace, just as if the fireplace had no upper door at all.

Once the heat storing structures of the fireplace have become sufficiently warm and the fire on the grate has been extinguished, the inner door 8 can be lowered to its horizontal position onto the support 10 and the top shutter 9 can be turned up to its horizontal position to the level of the upper edge of the upper hole 5. As a result, an oven separated from the combustion space and having clean bottom and ceiling surfaces is formed in the combustion space 2 opposite to the upper hole 5, the surfaces around this oven being all equally hot. It is now possible to place various pans, pots, casseroles with any foodstuffs on the inner door 8 to cook, in the same way as when conventional bake ovens are used.

After the food has been cooked and removed from the oven, the inner door 8 and the top shutter 9 can be turned back into the vertical position and thus a fire can be started again in the fireplace if necessary.

It is also possible to use a grille as an inner door 8 or as a separate supporting element 7 placed in the combustion space, in which case the top shutter 9 is not necessarily used. In this way, the grille can be used to fry and grill various products from which drippings fall down into the firebox and onto the grate. The drippings will be burned off the next time a fire is made in the fireplace, so even this kind of grilling cooking is a simple and clean job with the fireplace of the invention, especially if the plate-like top shutter 9 is not used and the chimney valve is kept open to let the frying fumes evaporate via the chimney flue.

In the embodiment in Fig. 2-4, the fireplace comprises a firebox 1. Above the firebox is a combustion space 2, which opens upwards from the firebox. The combustion space is laterally delimited by side walls 16 and 17, a back wall 18 and a front wall 19. The opposite side walls 16 and 17 of the combustion space 2 are provided with grooves or set-offs acting as supports 20, which can carry a suitable supporting element 7 in the combustion space.

The front wall 19 of the combustion space 2 is provided with an upper hole 5, through which a supporting element 7 can be inserted onto the supports 20 in the combustion space. The upper hole 5 is covered by a thermally insulated upper door 6, which can be opened and closed.

The supports 20 are set-offs worked in the side walls 16 and 17, so they are the same material as the side walls of the combustion space 2 and form solid parts of the walls. Moreover, the fireplace has two side flues 21 and 22, arranged symmetrically along the sides of the firebox 1 and the combustion space 2 to pass the combustion gases from the upper part of the combustion space downwards and further into the discharge flue (not shown in the figure). The side walls 16 and 17 separate the side flues 21 and 22 from the combustion space 2 and the firebox 1.

The opposite side walls 16 and 17 of the combustion space 2 are parallel to each other and the supports 20 on the opposite side walls are arranged in horizontal alignment with each other, so they allow a suitable supporting element 7 to be placed in a substantially horizontal position in the combustion space. The side walls are provided with several supports one above the other at a distance from each other, permitting several supporting elements to be placed one over the other in the combustion space at the same time.

Fig. 5 presents a supporting element 7, a planar bake sheet 23, on which the food to be cooked can be placed. As the combustion space 2 is rectangular in cross-section, the bake sheet 23 is also of a rectangular shape. Fig. 3 and 4 show one bake sheet 23 placed on supports 20. Two parallel side edges form support flanges 24, which rest on the supports 20 on the side walls of the combustion space when the bake sheet is inserted into the combustion space.

The cooking of food on a bake sheet 23 is generally done after the fireplace has been heated, by making use of the heat stored in the walls of the fireplace, i.e. when there is no fire in the firebox. For this reason, the thickness of the combustion space walls 16 and 17 is so chosen that the walls have a sufficient heat capacity to bake the food in the combustion space with the heat stored in the walls. In the area of the combustion space 2, the side walls 16 and 17 are thicker than in a corresponding conventional soapstone fireplace in which the combustion space is not used for cooking.

Fig. 6 shows another embodiment of the supporting element 7, a smoking box 25 of a rectangular cross-section. The food to be smoked and the smoke producing material are placed in the hollow interior of the smoking box. Two parallel sides of the smoking box are also provided with support flanges 24, which hold the box on the supports 20 as depicted with broken lines in Fig. 3 and 4. Fig. 4 shows that the depth of the box 25 is so adapted to the depth of the combustion space 2 that a passage 27 for combustion gases is left between the back wall 26 of the box and the back wall 18 of the combustion

space. This makes it possible to do smoke curing while wood is being burnt in the firebox.

The invention has been described above by presenting an example by the aid of the attached drawings, but different embodiments of the invention are possible within the framework of the inventive idea defined by the claims.

10 Claims

1. Fireplace comprising a firebox (1) for the burning of a solid fuel, a combustion space (2) above the firebox, with a smoke flue leading from the combustion space into a chimney flue, and a charging hole (4) provided with a door (3) for the insertion of fuel into the firebox, **characterized** in that the fireplace is provided with an upper hole (5) located above the firebox (1) and opening into the combustion space (2), and an upper door (6) for closing the upper hole, and in the combustion space a supporting element (7) on which food to be cooked can be placed in the combustion space via the upper hole.
2. Fireplace as defined in claim 1, **characterized** in that the upper hole (5) is above the charging hole (4).
3. Fireplace as defined in claim 1, **characterized** in that the upper hole is located on a different side of the fireplace than the charging hole (4).
4. Fireplace as defined in claim 1, **characterized** in that it comprises an inner door (8) placed on the interior side of the upper door (6) and opening towards the combustion space (2).
5. Fireplace as defined in claim 4, **characterized** in that the inner door (8) opens downwards into a horizontal position, forming a supporting element (7).
6. Fireplace as defined in claim 4 or 5, **characterized** in that the inner door (8) is a solid plate which in its horizontal position substantially prevents gas flow through the combustion space.
7. Fireplace as defined in claim 1, **characterized** in that the supporting element is a grille which in a horizontal position acts as a grilling support.
8. Fireplace as defined in any one of claims 1 - 7, **characterized** in that the combustion space (2) is provided with one or more supports (10,20) which can bear a supporting element (7).
9. Fireplace as defined in any one of claims 1 - 8, **characterized** in that the fireplace has on the interior side of the upper door (6) a plate-like top shutter (9)

which opens upwards into the combustion space (2) and substantially closes the combustion space above the upper door (6).

10. Fireplace as defined in claim 8, **characterized** in that the support (10) consists of a groove, set-off or equivalent provided in the wall. 5
11. Fireplace as defined in any one of claims 1 - 4, **characterized** in that the supporting element is a substantially planar bake sheet (23), on which the food to be cooked can be placed. 10
12. Fireplace as defined in any one of claims 1 - 4, **characterized** in that the supporting element is a box (25) with a hollow interior, in which the food to be cooked can be placed. 15
13. Fireplace as defined in claim 12, **characterized** in that the box is a smoking box, in which the food to be cured and the smoke producing material can be placed. 20

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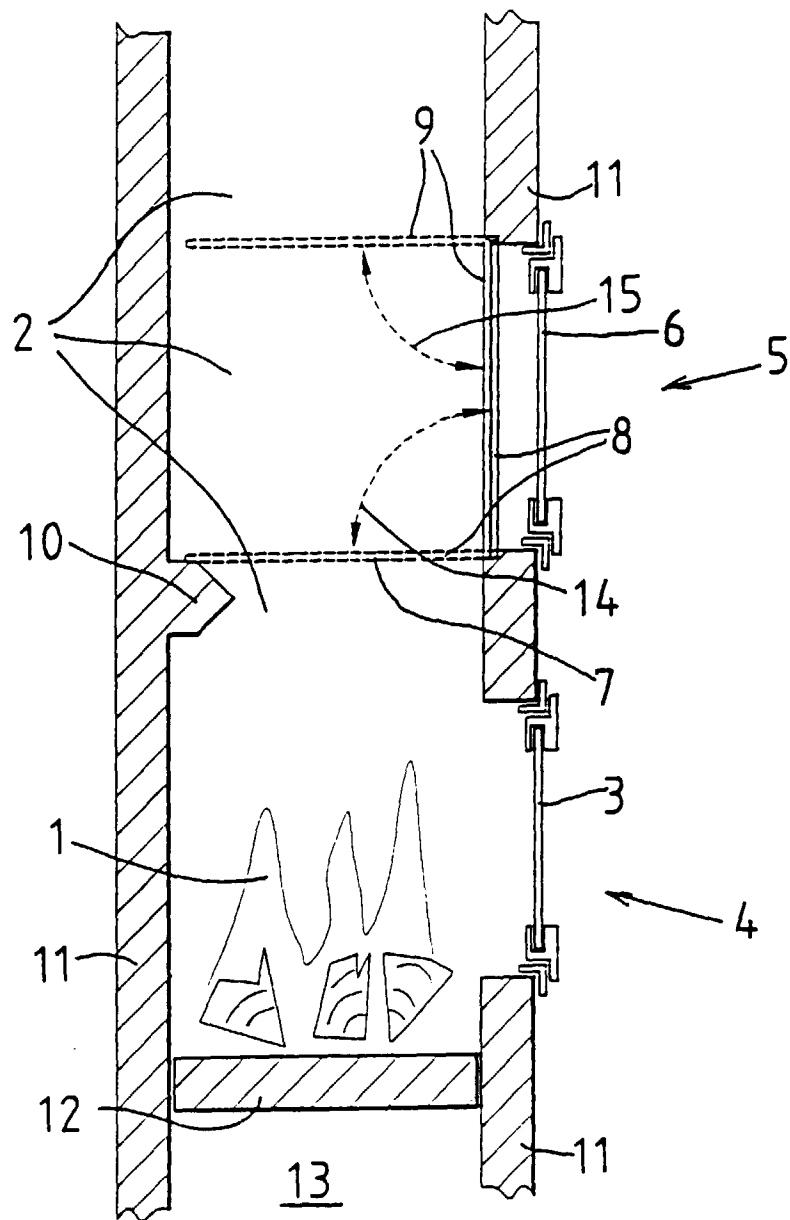


Fig 1

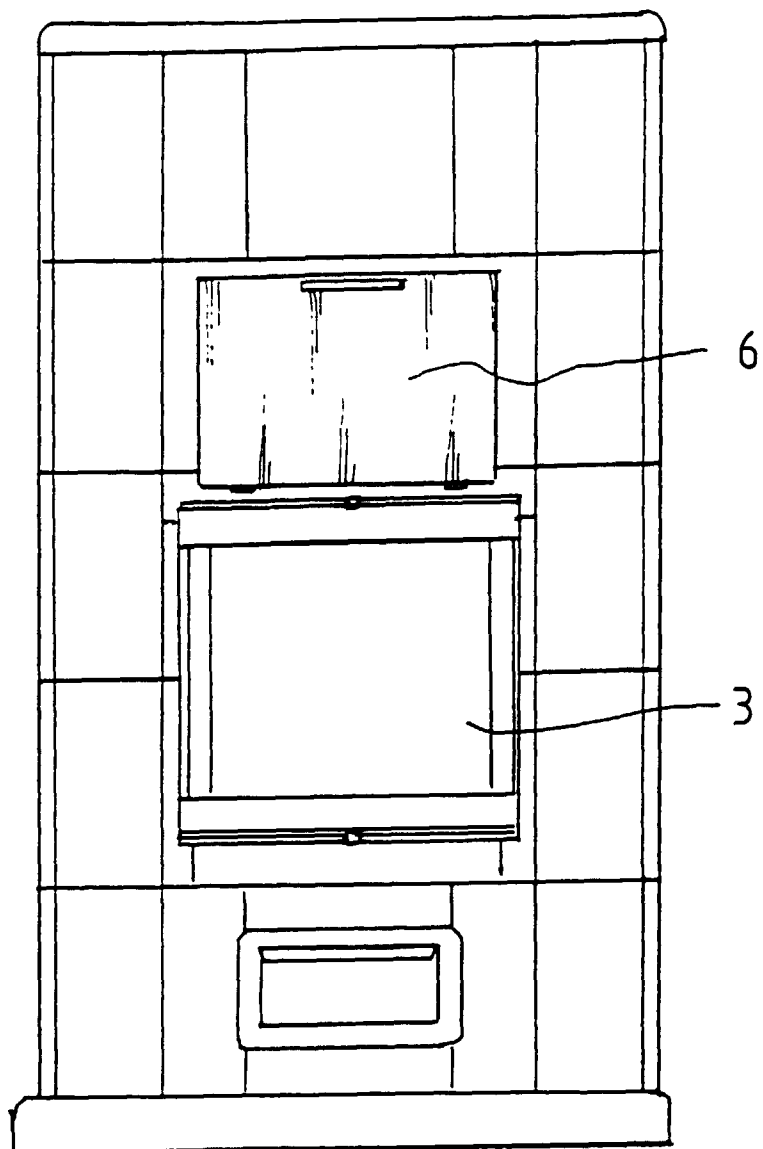


Fig 2

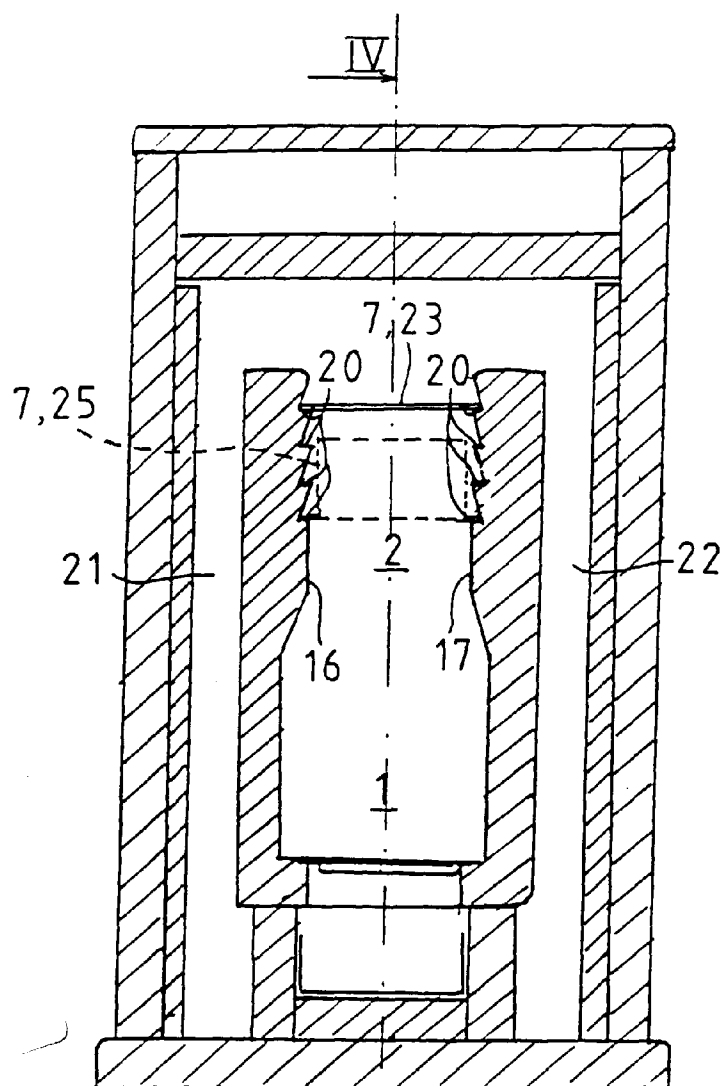


Fig 3

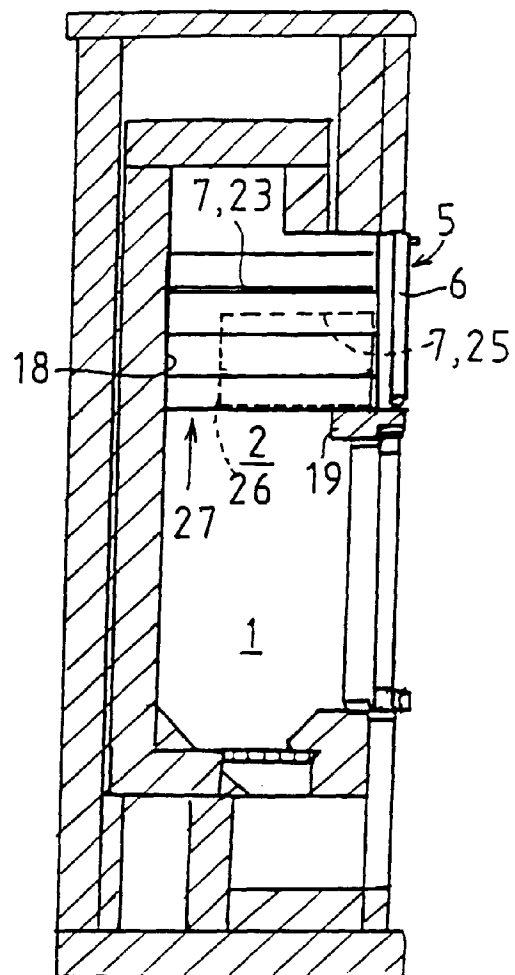


Fig 4

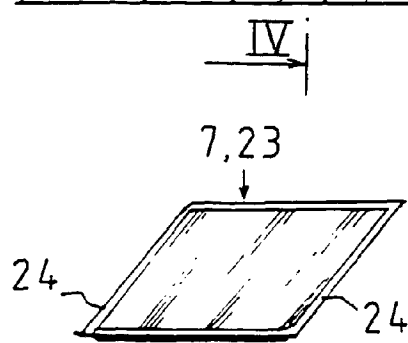


Fig 5

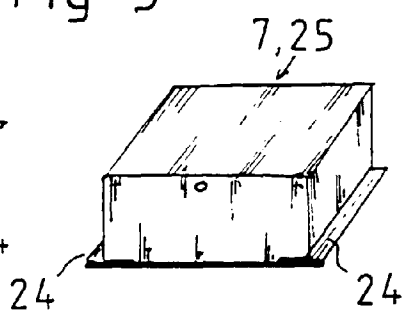


Fig 6



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EUROPEAN SEARCH REPORT

Application Number
EP 97 66 0003

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.6)
Y	US 5 351 672 A (BARDEN III ALBERT A) 4 October 1994 * abstract; figures *	1-6	F24B1/182
Y	DE 34 25 422 A (LEPPERT SIEGFRIED) 13 February 1986 * claims 1-5; figures 1-4 *	1-6	
A	US 1 470 542 A (POLING) -----		
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			F24B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 21 March 1997	Examiner Vanheusden, J
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