



(11)

EP 1 703 209 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
20.09.2006 Bulletin 2006/38

(51) Int Cl.:
F24B 13/00 ^(2006.01) **F23J 1/02** ^(2006.01)
F24B 1/191 ^(2006.01)

(21) Application number: **06005124.0**

(22) Date of filing: **14.03.2006**

(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 LV MC NL PL PT RO SE SI
SK TR**
Designated Extension States:
AL BA HR MK YU

(71) Applicant: **HWAM Holding A/S**
8362 Horning (DK)

(72) Inventor: **Pedersen, Vagn Hvam**
8660 Skanderborg (DK)

(74) Representative: **Gregersen, Niels Henrik et al**
Patrade A/S
Fredens Torv 3A
8000 Aarhus C (DK)

(30) Priority: **14.03.2005 DK 200500368**

(54) System and method for ash removal

(57) There is disclosed an ash removal system (2), particularly for a woodburning stove (26), including a receptacle (4) for collecting ashes, the receptacle (4) including a bottom (18), at least one sidewall (6) and an upwardly facing opening, wherein the sidewall (6) of the receptacle (4) furthermore includes a suction branch (8) adapted for connecting to a vacuum cleaner and that the receptacle (4) includes means adapted for imparting movement to the ashes.

Furthermore, there is described a method for removal of ashes from an ash removal system as described above, and including the following method steps: uncovering the receptacle (4), connecting vacuum cleaner to the suction branch (8), and imparting movement to the ashes.

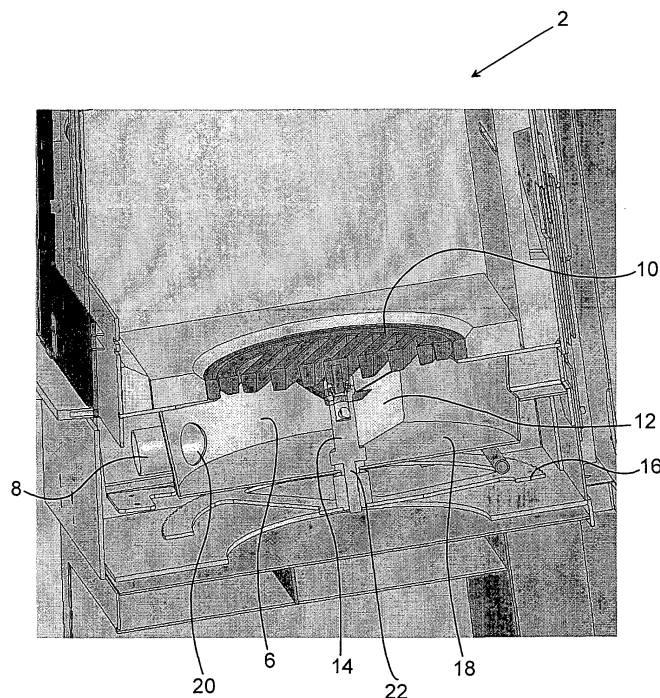


Fig. 2

Description

Field of the Invention

[0001] The present invention concerns an ash removal system, particularly for a woodburning stove, including a receptacle for collecting ashes, the receptacle including a bottom, at least one sidewall and an upwardly facing opening.
[0002] The invention furthermore comprises a method for removal of ashes from an ash removal system, particularly a woodburning stove.

Background of the Invention

[0003] There are numerous ways in which one may remove ashes from woodburning stoves, which are most often located in a living room. Usually, the ashes are removed by taking the ash pan out of the stove and carry it to a dust bin, or possibly carry it out of the room and outside the house at which the woodburning stove is located. It is well-known that these traditional methods for removing ashes from a woodburning stove leaves some ashes around the stove and possibly in a part of the living room as such. This smudging with ashes is very undesirable as it often implies that the person removing the ashes from the stove is subsequently to clean the area around the stove and maybe also some parts of the living room also.

[0004] This subsequent cleaning of the woodburning stove and the area around the stove necessitated by the wasting of ashes is often very cumbersome, since ashes is a material which is not easy to clean up.

Object of the Invention

[0005] It is the purpose of the present invention to indicate an ash removal system where wasting of ashes by removal of ashes, particularly from a woodburning stove, is avoided.

Description of the Invention

[0006] According to the present invention, this is achieved by an ash removal system as specified in the preamble, which is peculiar in that the sidewall of the receptacle furthermore includes a suction branch adapted for connecting to a vacuum cleaner and that the receptacle includes means adapted for imparting movement to the ashes.

[0007] The method according to the invention is peculiar by the following method steps: uncovering the receptacle, connecting vacuum cleaner to the suction branch, and imparting movement to the ashes.

[0008] By connecting a vacuum cleaner to the suction branch, e.g. by fastening the mouthpiece of the vacuum hose to the suction branch, it is possible to suck out the ashes from the receptacle. However, in order to get all the ashes out of the receptacle, it is necessary to impart movement to the ashes, so that it may be sucked out of the receptacle through the suction branch. If the ashes are not brought to move inside the receptacle, it will not be possible to suck out all the ashes from the receptacle, as the vacuum cleaner will then only suck a little area around the suction branch free from ashes.

[0009] The receptacle for collecting the ashes will usually be disposed in the lower half of a woodburning stove, and will be covered by e.g. a gate to be opened before it is possible to connect a vacuum cleaner to the suction branch.

[0010] In a preferred embodiment, the receptacle may be designed as a cylindric container with a substantially circular bottom, and where the cylindric wall constitutes the sidewall of the receptacle.

[0011] By providing the receptacle with a cylindric shape, an efficient emptying of the receptacle is achieved when the ashes are imparted movement by means rotating about the cylinder shaft.

[0012] Advantageously, the means for imparting movement may include a rotor with a shaft and a number of radial scrapers designed so that by rotating the shaft, the ashes are moved towards the suction branch.

[0013] Hereby is provided a simple way in which the ashes may be imparted movement. The radial scrapers may be secured to the rotor shaft in such a way that the scrapers by rotating the shaft is bringing the ashes into such a movement that they are moved towards the suction branch. Hereby, it becomes possible to remove all the ashes situated in the receptacle, just by sucking them out by means of a vacuum cleaner while simultaneously rotating the shaft of the rotor.

[0014] In a particular embodiment, the shaft may be arranged for rotation by activation of an actuator, which advantageously may be motorised.

[0015] By rotating the shaft by motor power, e.g. by means of motor power from an electric motor, it is achieved to impart movement to the ashes in a simple way, where the person removing ashes from the receptacle may suffice with concentrating on the vacuum cleaner and who is not to operate any other tool for bringing the ashes to move inside the receptacle.

[0016] In another embodiment, the actuator may be manually operated. By using a manually powered actuator for

rotating the shaft and thereby actuating the radial scrapers in order to bring the ashes to move, there is achieved the advantage that it is not required to connect the stove to a power supply, such as the public network or a battery.

[0017] Advantageously, the manually actuated actuator may include a control disc interacting with the radial scrapers in such a way that by manually rotating the control disc, a movement of the radial scrapers is achieved.

[0018] Hereby is achieved a simple way in which a user of the ash removal system may simultaneously operate a vacuum cleaner for sucking out ashes from receptacle while simultaneously imparting a rotational movement to the control disc with one hand so that the radial scrapers are causing the ashes to move. The control disc may possibly be equipped with a number of irregularities ensuring easy and ergonomically correct grip about the control disc.

[0019] In a preferred embodiment, an ash removal system according to the invention may include a stove grate provided over the upwards facing opening of the receptacle.

[0020] By using a grate above the upwards opening of the receptacle it is achieved that combustible material, such as remains of e.g. wood, briquettes or other fuel, do not fall down into the receptacle.

Description of the drawing.

[0021] The invention is described in more detail with reference to the drawing, where:

Fig. 1 shows a partial perspective view of an embodiment of a woodburning stove of an ash removal system according to the invention;

Fig. 2 shows a partial perspective view, partly in section, of the ash removal system, cf. Fig. 1, according to the invention;

Fig. 3 shows a perspective view of the ash removal system according to the invention, as seen from above; and

Fig. 4 shows a perspective view of a lower part of the ash removal system according to the invention, as seen through an open ash gate.

Detailed Description of the Invention

[0022] On fig. 1 is seen a perspective view of an ash removal system 2 according to the invention. The ash removal system 2 includes a receptacle 4 shaped as a cylinder with a sidewall 6 upon which is fastened a suction branch 8 for connecting a mouthpiece from a vacuum cleaner hose (not shown). Above the receptacle 4 is provided a grate 10 for preventing combustible material, such as wood residue, briquettes or other fuel, from falling down into the interior of the receptacle 4. Inside the receptacle 4 there are provided a number of radial scrapers 12 which are connected to a shaft 14, which in turn is connected to the centre of a control disc 16.

[0023] Fig. 2 shows a cross-section of an ash removal system 2 according to the invention. It appears on the Figure that the sidewall 6 is connected at the bottom to a circular bottom 18. The suction branch 8 is connected to the interior of the receptacle 4 via a hole 20 in the sidewall 6. On the Figure appears one of several radial scrapers 12 which are connected to the shaft 14, which via a tightly fitting bearing 22 at the bottom 18 of receptacle 4 is joined to the control disc 16, so that ashes (not shown) inside the interior of the receptacle can be imparted movement by turning/rotating the control disc 16, causing the radial scrapers 13 to move, whereby the ashes collected in the receptacle 4 is imparted movement so that it may be advanced towards the suction hole 20 and thereby, by means of a vacuum cleaner, be sucked out of the receptacle 4 via the suction branch 8.

[0024] In Fig. 3 is seen an ash removal system 2 according to the invention, as seen from above. In the upwards facing opening of the receptacle 4, a number of cross members 24 are disposed for supporting the rotor shaft 14. A grate 10 may be disposed over the upwards facing opening of the receptacle, so that this upper opening down to the interior of the receptacle is covered by the grate 10. Hereby is achieved that fuel, such as wood, briquettes or other relevant combustible material, does not fall down into the interior of the receptacle 4. The grate 10 will preferably be made in such a way that the mesh width in the grate 10 only allows ashes and smaller or finer parts of slag and fuel residue to fall down into the interior of the receptacle 4.

[0025] On Fig. 4 appears the lower part of a woodburning stove 26 with an ash removal system 2 according to the invention, including the receptacle 4 with the sidewall 6, to which is fastened a suction branch 8 for fastening the mouthpiece from a vacuum hose (not shown), so that ashes may be sucked through the hole 20 in the sidewall 6 from the interior of the receptacle 4 and over into the vacuum cleaner. By turning the control disc 16, the radial scrapers 12 (not shown) are actuated, whereby ashes in the interior of the receptacle 4 are moved, so that it becomes possible to suck out substantially all the ashes that may have been collected in the receptacle 34 through the hole in the sidewall 6. The control disc 16 may be provided with a studded or knobbed edge so that engagement with fingers of the user of the ash removal system 2 is more readily ensured.

Claims

1. Ash removal system (2), particularly for a woodburning stove (26), including a receptacle (4) for collecting ashes, the receptacle (4) including a bottom (18), at least one sidewall (6) and an upwardly facing opening, **characterised in that** the sidewall (6) of the receptacle (4) furthermore includes a suction branch (8) adapted for connecting to a vacuum cleaner and that the receptacle (4) includes means adapted for imparting movement to the ashes.
2. Ash removal system (2) according to claim 1, **characterised in that** the receptacle (4) is designed as a cylindric container (4) with a substantially circular bottom (18), and that the cylindric wall constitutes the sidewall (6) of the receptacle.
3. Ash removal system (2) according to claim 1, **characterised in that** the means for imparting movement include a rotor with a shaft (14) and a number of radial scrapers (12) designed so that by rotating the shaft (14), the ashes are moved towards the suction branch (8).
4. Ash removal system (2) according to claim 3, **characterised in that** the shaft (14) is arranged for rotating by activating an actuator.
5. Ash removal system (2) according to claim 4, **characterised in that** the actuator is motorised.
6. Ash removal system (2) according to claim 4, **characterised in that** the actuator is manually actuated.
7. Ash removal system (2) according to claim 6, **characterised in that** the manually actuated actuator includes a control disc (16) interacting with the radial scrapers (12) in such a way that by manually rotating the control disc (16), a movement of the radial scrapers is achieved.
8. Ash removal system (2) according to any preceding claim, **characterised in that** a grate (10) is disposed over the upwardly facing opening of the receptacle (3).
9. Method for removal of ashes from an ash removal system (2), particularly a woodburning stove (26), and according to claim 1, **characterised by** the following method steps:
 - uncovering the receptacle (4),
 - connecting vacuum cleaner to the suction branch (8), and
 - imparting movement to the ashes.

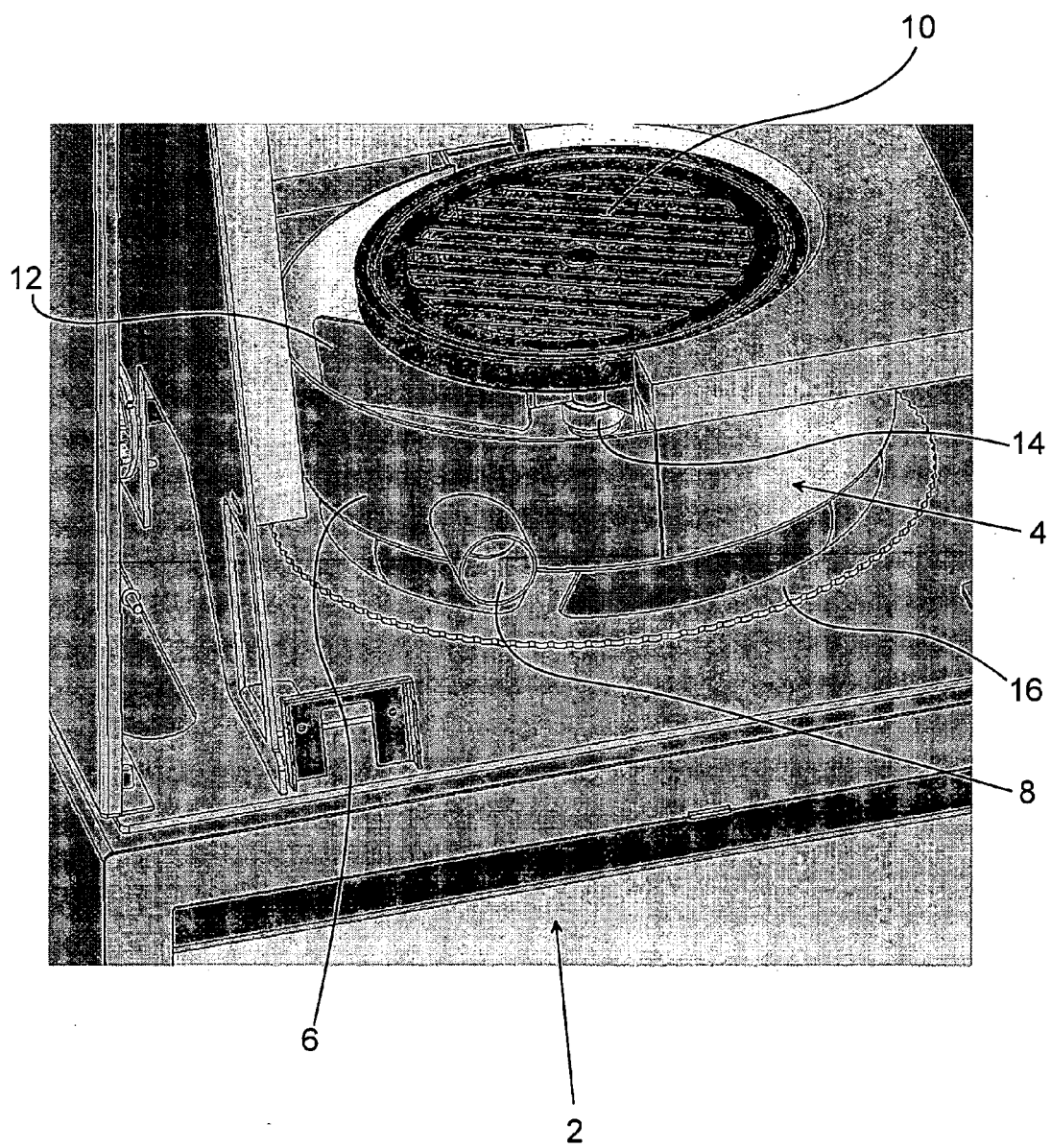


Fig. 1

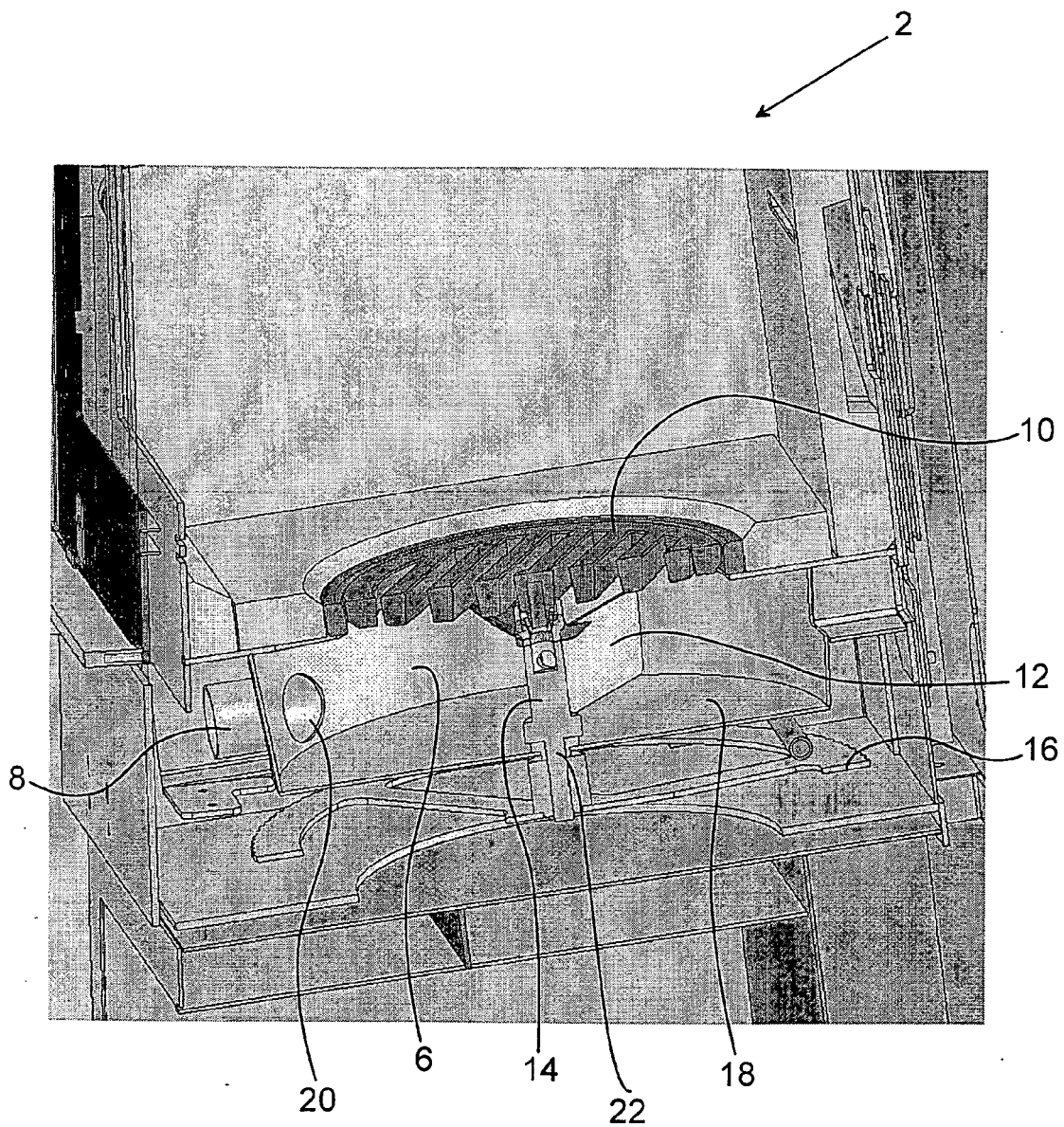


Fig. 2

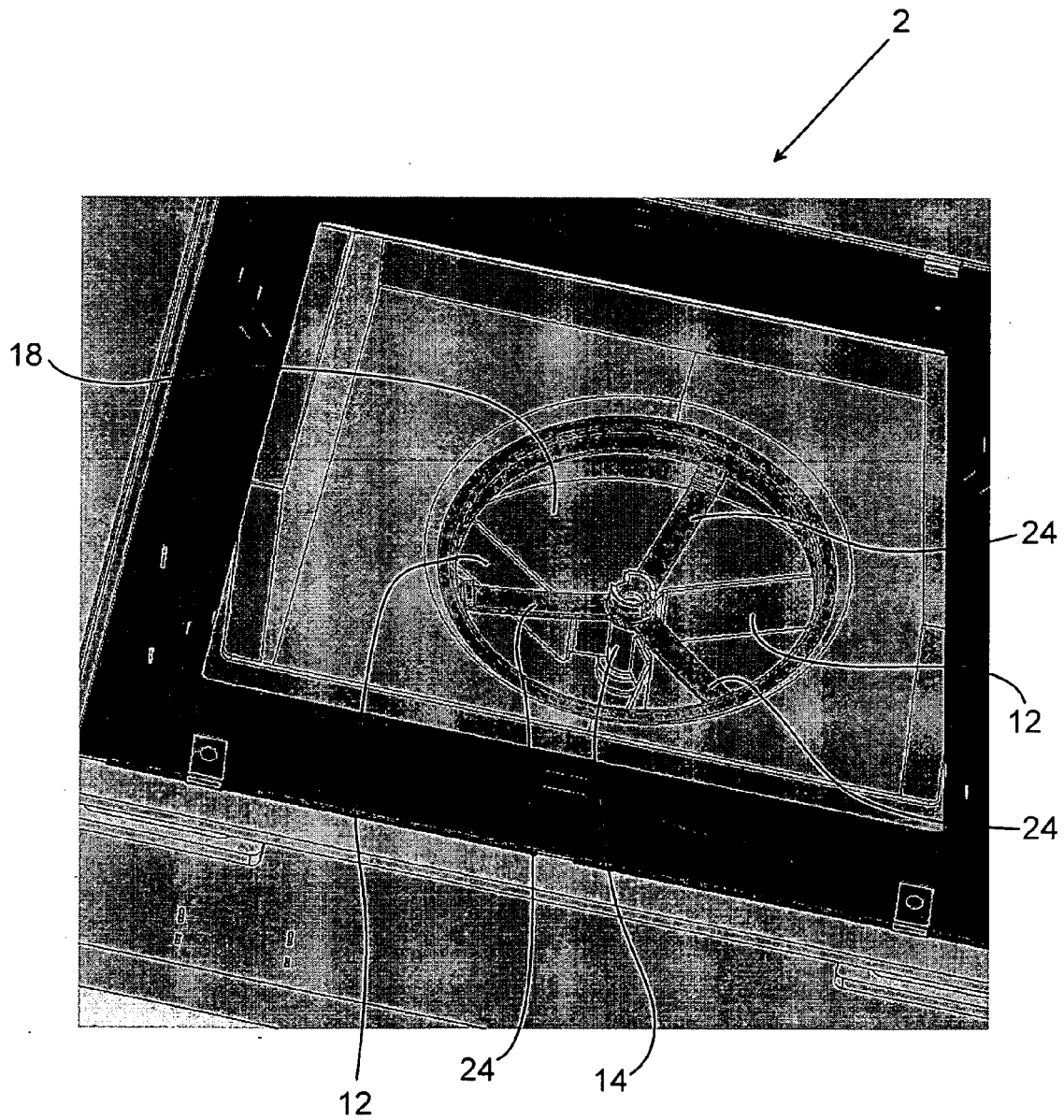


Fig. 3

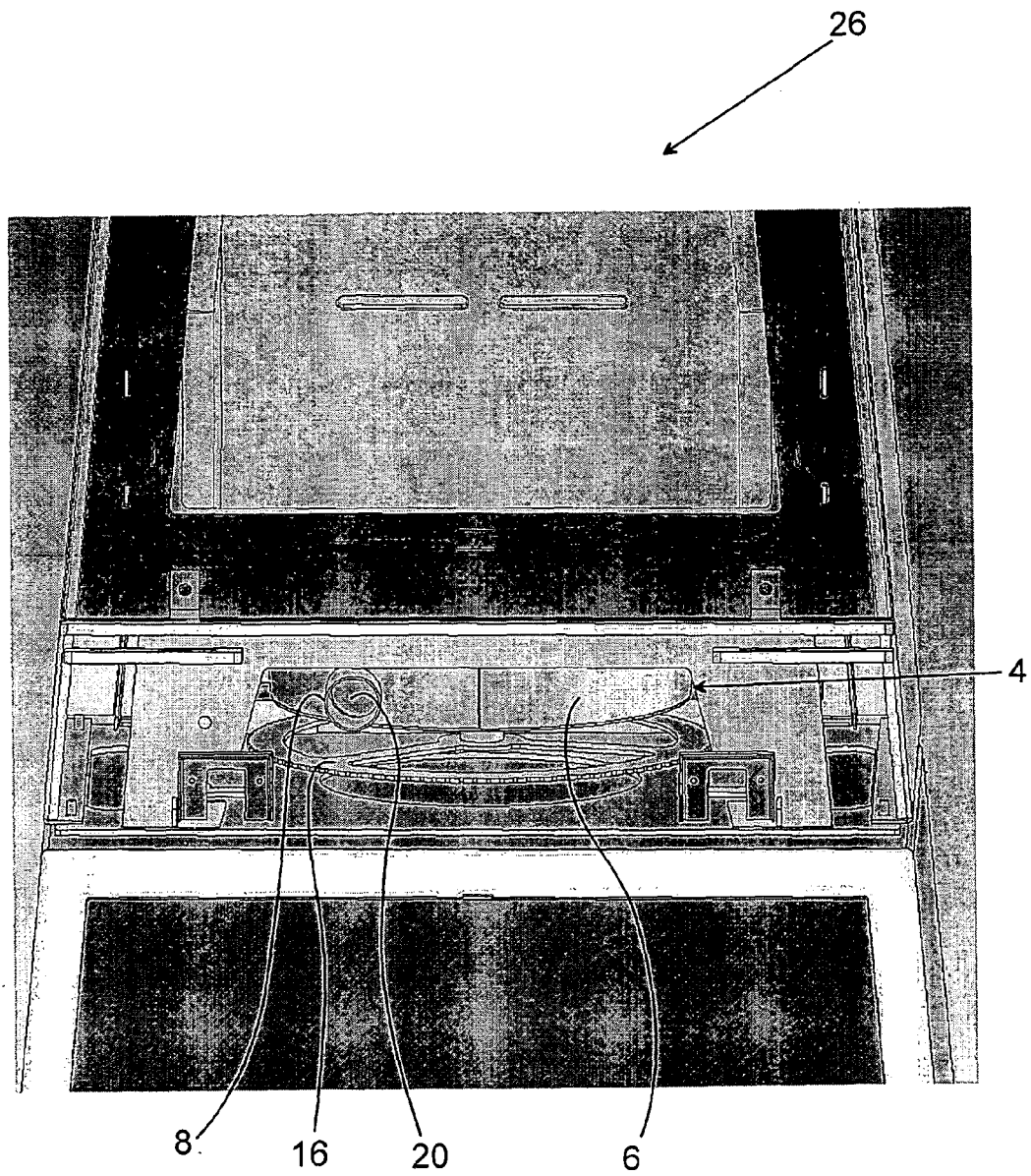


Fig. 4