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(54) **Ventilator hood for a cooker**

(57) A ventilator hood includes a body portion. An inlet portion is mounted on an underside of the body portion for introducing air/oil mixture created from a cooker to pass therethrough. A spraying portion is mounted in the underside of the body portion for injecting water to condense the air/oil mixture introduced from the inlet portion. A separating portion is located under the spraying portion for separating the air/oil mixture delivered from the spraying portion into oil and air. A storage portion is disposed under the separating portion for receiving the oil released therefrom and the water released from the spraying portion through the separating portion. An outlet portion is mounted on the underside of the body portion and communicates with the separating portion for introducing the air supplied therefrom. At least one motor is mounted on the body portion, and at least one fan is actuated by the associated motor for draining the air delivered through the outlet portion to outside.

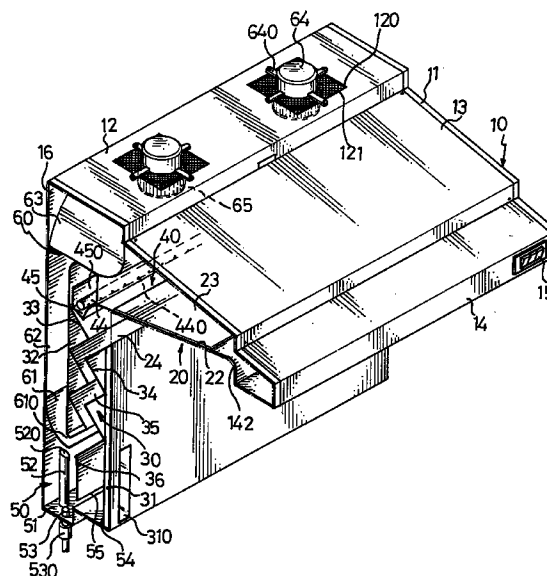


FIG. 1

Description

The present invention relates to a ventilator hood suitable for a cooker.

A conventional ventilator hood for a cooker comprises a fan located above the cooker, which is actuated by a motor for draining an air/oil mixture released from the cooker to outside via a draining conduit. By such an arrangement, the air mixed with oil and smoke is extracted and directly transmitted to surroundings, thereby easily causing pollution to in the environment. In addition, an operational area of the fan for drawing the air/oil mixture is to a small extent such that the draining effect for drawing the oil mixed with smoke is not efficient.

The present invention has arisen to mitigate and/or obviate the disadvantages of the conventional ventilator hood.

The primary objective of the present invention is to provide a ventilator hood with an efficient function for draining oil mixed with smoke released from a cooker to an exterior environment, without causing pollution thereto.

In accordance with one aspect of the present invention, there is provided a ventilator hood comprising a body portion including a first side, a second side, and an underside. An inlet portion is mounted on the underside of the body portion for introducing air/oil mixture created from a cooker to pass therethrough. A spraying portion is mounted in the underside of the body portion for injecting water to condense the air/oil mixture introduced from the inlet portion. A separating portion is located under the spraying portion for separating the air/oil mixture delivered from the spraying portion into oil and air. A storage portion is disposed under the separating portion for receiving the oil released therefrom and the water released from the spraying portion through the separating portion. An outlet portion is mounted on the underside of the body portion near the first side thereof and communicates with the separating portion for introducing the air supplied therefrom. At least one motor is mounted on the first side of the body portion, and at least one fan is actuated by the associated motor for draining the air delivered through the outlet portion to outside.

Further objectives and advantages of the present invention will become apparent from a careful reading of the detailed description provided hereinbelow, with appropriate reference to the accompanying drawings. In the drawings:

Fig. 1 is a perspective view, partly cut away, of a ventilator hood in accordance with the present invention;

Fig. 2 is a side view, partly cut away of, Fig. 1;

Fig. 3 is a front plan view, partly cut away, of Fig. 1; and

Fig. 4 is a side view, partly cut away, of a ventilator hood in accordance with another embodiment of the present invention.

Referring to the drawings and initially to Figs. 1 and 2, in accordance with the present invention a ventilator hood is provided for a cooker (not shown) located there-under and comprises a body portion 10 including a first side, a second side, a first end, a second end, and an underside. An inlet portion 20 is mounted on the underside of the body portion 10 for introducing an air/oil mixture created from the cooker to pass therethrough. A spraying portion 40 is mounted in the underside of the body portion 10 for injecting water to condense the air/oil mixture introduced from the inlet portion 20. A separating portion 30 is located under the spraying means 40 for separating the air/oil mixture delivered from the spraying portion 40 into oil and air. A storage portion 50 is disposed under the separating portion 30 for receiving the oil released therefrom and the water released from the spraying portion 40 via the separating portion 30. An outlet portion 60 is mounted on the underside of the body portion 10 near the first side thereof and in communication with the separating portion 30 for introducing the air supplied therefrom. Two motors 64 are mounted on the first side of the body portion 10, and two fans 65 each are respectively actuated by the associated motor 64 for extracting the air delivered through the outlet portion 60 to an exterior environment.

The body portion 10 comprises an engaging plate 16 vertically fitted to a wall (not shown), a top plate 12 is formed on the first side of the body portion 10 and horizontally extends outwardly from the engaging plate 16, a panel 14 is formed on the second side of the body portion 10, a mediate cover 13 is hingedly connected between the top plate 12 and the panel 14, and two side plates 11 substantially inverted L-shaped each respectively enclose the first and second ends of the body portion 10. The panel 14 includes an extension 142 formed on the underside of the body portion 10 and extending toward the engaging plate 16, and a recess 22 is defined in the extension 142.

The inlet portion 20 comprises a heating plate 23 mounted on the underside of the body portion 10 for heating the air/oil mixture introduced through the inlet portion 20. The heating plate 23 is preferably mounted on the extension 142 and is connected via a wire 152 to a control switch 15 which is mounted on the panel 14 for controlling the heating plate 23. A concave channel 45 is defined in a distal end portion of the extension 142, and an overflow plate 450 is vertically formed on the distal end portion of the extension 142.

The separating portion 30 comprises a plurality of first guiding plates 33 formed together each substantially V-shaped in section and a plurality of second guiding plates 34 formed together each substantially V-shaped in section. A tortuous conduit 35 is defined between the plurality of first guiding plates 33 and the

associated plurality of second guiding plates 34, and an inlet opening 24 is defined in the uppermost portion of the tortuous conduit 35 such that the air/oil mixture introduced from the inlet portion 20 together with the water injected from the spraying portion 40 is able to flow therethrough.

A first diaphragm 32 is vertically formed on the underside of the body portion 10 near the first side thereof and extends downwardly to abut against the plurality of first guiding plates 33. A draining duct 62 is vertically defined between the engaging plate 16 and the first diaphragm 32. An arcuate introducing plate 61 is formed on a lower portion of the engaging plate 16 and extends beneath a bottom portion of the first guiding plates 33, thereby defining a slit 610 therebetween which communicates with the draining duct 62. A second diaphragm 31 which is heat-isolating abuts against the plurality of second guiding plates 34.

A baffle 36 is vertically formed on a lowermost portion of the second guiding plates 34 and extends downwardly therefrom, thereby defining a first passage 54 located between the second diaphragm 31 and the baffle 36 for receiving the water flowing through the tortuous conduit 35, and a second passage 51 located between the engaging plate 16 and the baffle 36 for receiving the oil flowing through the tortuous conduit 35. A gap 55 is defined in an underside of the baffle 36 and communicates between the first and second passages 54 and 51.

In practice, water is in the first passage 51 at a level lower than that of the oil due to a difference in density therebetween, therefore, the water will flow and communicate between the first and second passages 54 and 51 freely via the gap 55, while the oil is retained in the second passage 51 and is prevented from entering into the first passage 54 by means of the baffle 36. An elongated oil draining tube 52 is vertically mounted in the second passage 51 and includes a truncated upper end 520 for introducing the overflow oil therethrough when the oil retained in the second passage 51 is at a level higher than that of the truncated upper end 520, and a lower end for draining the overflow oil to outside, and a valve 522 is mounted around the lower end of the oil draining tube 52. A short draining tube 53 is mounted in the second passage 51 for discharging the water or deposition of impurities to outside, and a valve 530 is mounted around the short draining tube 53 for controlling a flow amount through the short draining tube 53.

Again referring to Figs. 1 and 2 with reference to Fig. 3, the spraying portion 40 comprises an elongated pipe 44 horizontally mounted in the concave channel 45 with two distal ends thereof each fixedly attached to the corresponding side plate 11. A plurality of nozzles 440 laterally are defined through the elongated pipe 44 for pouring water therethrough. A connecting tube 41 is vertically mounted on one of the two side plates 11 near the second end of the body portion 10 and includes a lower end communicating with the first passage 54 of the storage portion 50 and an upper end communicat-

ing with one distal end of the elongated pipe 44, a pump 42 is mounted around the connecting tube 41 for actuating the water received in the first passage 54 to move upwardly into the pipe of the spraying portion 40.

Preferably, a source tube 441 is connected to the side plate 11 under the connecting tube 41 and communicates with the first passage 51 of the storage portion 50 for supplying water into the first passage 54 via the second passage 51 so as to retain a level of water in the first passage 54 to a proper position, and a valve 442 is mounted on the source tube 441 for controlling an amount of water flowing through the source tube 441. In addition, a transparent window 310 is mounted on a lower portion of the second diaphragm 31 for viewing and inspecting the level of water in the first passage 54.

In operation, the air/oil mixture from the cooker is introduced through the recess 22 into the inlet opening 24 and is heated by the heating plate 23 so as to be retained in a state of high temperature, thereby preventing oil from being condensed from the air/oil mixture. Water is injected into the concave channel 45 via the plurality of nozzles 440 of the pipe 44 and is blocked by means of the overflow plate 450. When the level of water is higher than that of the overflow plate 450, water will flow through a chute 452 defined between the distal end portion of the extension 142 and the top portion of the first guiding plate 33 and is subsequently in contact with the air/oil mixture with high temperature so as to condense and extract oil from the air/oil mixture such that oil is taken away by the water to flow downwardly through the tortuous conduit 35 into the second passage 51.

The air separated from the air/oil mixture is introduced into the draining duct 62 via the slit 610 and the arcuate introducing plate 61 by means of the fans 65 each actuated by the associated motor 64, subsequently passes through a chamber 63 defined in the underside of the top plate 12, and is finally drained to outside from two outlet ports 120 which are defined through the top plate 12. Preferably, two meshes 121 each are respectively fitted in a corresponding one of the two outlet ports 120 for filtering the air passing therethrough. Each of the two motors 64 is mounted on a bracket 640 which is securely mounted on the top plate 12 above the associated outlet port 120.

It is to be noted that, the fans 65 are respectively actuated by the motors 64 to draw the air received in the chamber 63, in the draining duct 62, and in the tortuous conduit 35 to surroundings, thereby forming a negative pressure status therein such that the air/oil mixture released from the cooker is easily drawn into the tortuous conduit 35 through the inlet opening 24 and the recess 22 of the inlet portion 20. Then the oil is removed from the air/oil mixture by means of the spraying portion 40 cooperating with the tortuous conduit 35 to be conveyed into and contained in the second passage 51 of the storage portion 50, and the released air is accelerated into the draining duct 62 via the slit 610 and is drawn to surroundings via the chamber 63.

Referring to Fig. 4, in accordance with another embodiment of the present invention, the top plate 12 together with the motors 64 and fans 65 are arranged in a tilted manner.

It should be clear to those skilled in the art that further embodiments of the present invention may be made without departing from the teachings of the present invention.

Claims

1. A ventilator hood for a cooker which is located thereunder and comprising:

a body portion (10) including a first side, a second side, and an underside;

an inlet portion (20) mounted on the underside of said body portion (10) for introducing air/oil mixture created from said cooker to pass there-through;

a spraying portion (40) mounted in the underside of said body portion (10) for injecting water to condense the air/oil mixture introduced from said inlet portion (20);

a separating portion (30) located under said spraying portion (40) for separating the air/oil mixture delivered from said spraying portion (40) into oil and air;

a storage portion (50) disposed under said separating portion (30) for receiving the oil released therefrom and the water released from said spraying portion (40) through said separating portion (30);

an outlet portion (60) mounted on the underside of said body portion (10) near the first side thereof and communicating with said separating portion (30) for introducing the air supplied therefrom; and

at least one motor (64) mounted on the first side of said body portion (10), at least one fan (65) actuated by associated said motor (64) for draining the air delivered through said outlet portion (60) to outside.

2. The ventilator hood in accordance with claim 1, wherein said inlet portion (20) comprises a heating plate (23) mounted on the underside of said body portion (10) for heating the air/oil mixture introduced through said inlet portion (20).

3. The ventilator hood in accordance with claim 1, wherein said separating portion (30) comprises a plurality of first guiding plates (33) formed together each substantially V-shaped in section and a plurality of second guiding plates (34) formed together each substantially V-shaped in section, a tortuous conduit (35) is defined between said plurality of first guiding plates (33) and associated said plurality of second guiding plates (34) such that the air/oil mixture introduced from said inlet portion (20) together with the water injected from said spraying portion (40) is able to flow therethrough.

4. The ventilator hood in accordance with claim 1, wherein said storage portion (50) comprises a first passage (54) for receiving the water released through said separating portion (30), a pump (42) is mounted for actuating the water received in said first passage (54) to move upwardly into said spraying portion (40), a second passage (51) is defined in said storage portion (50) for receiving the oil released from said separating portion (30), a baffle (36) vertically separating said first and second passages (54) and (51), and a gap (55) defined in an underside of said baffle (36) and communicating between said first and second passages (54) and (51).

5. The ventilator hood in accordance with claim 4, wherein said storage portion (50) further comprises an oil draining tube (52) vertically mounted in said second passage (51) and including a truncated upper end (520) for introducing the oil received in said second passage (51) and a lower end communicating with outside.

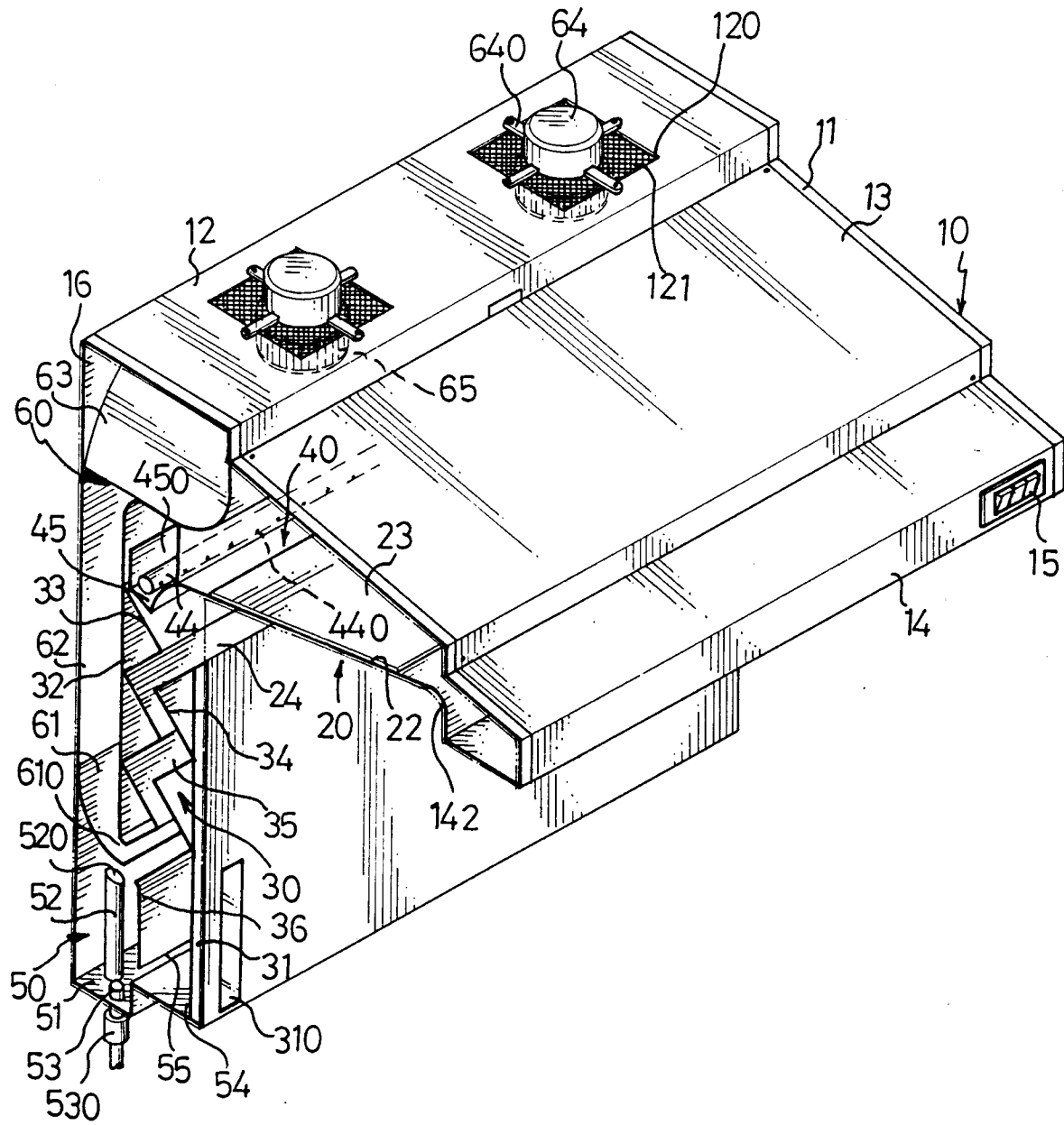


FIG. 1

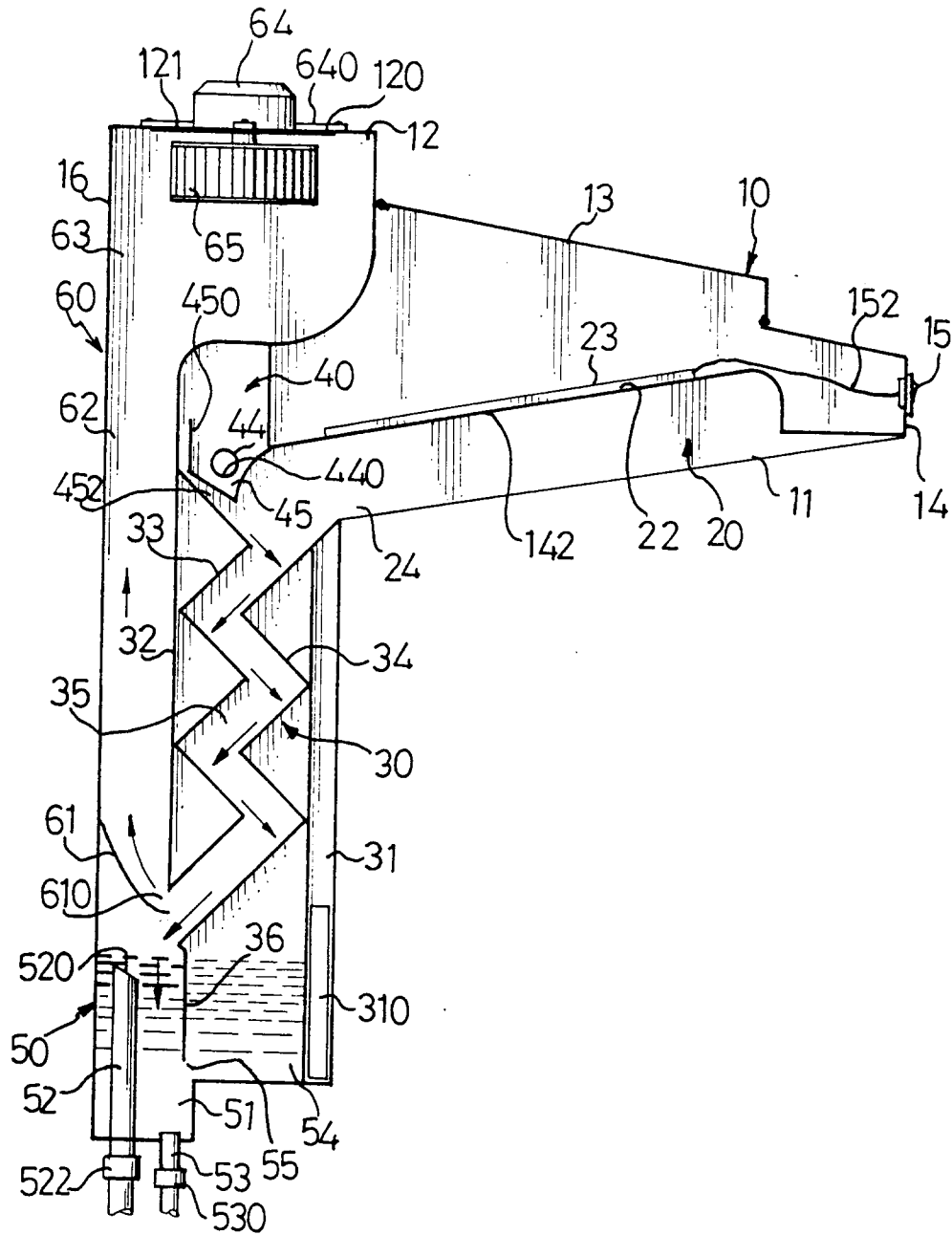


FIG. 2

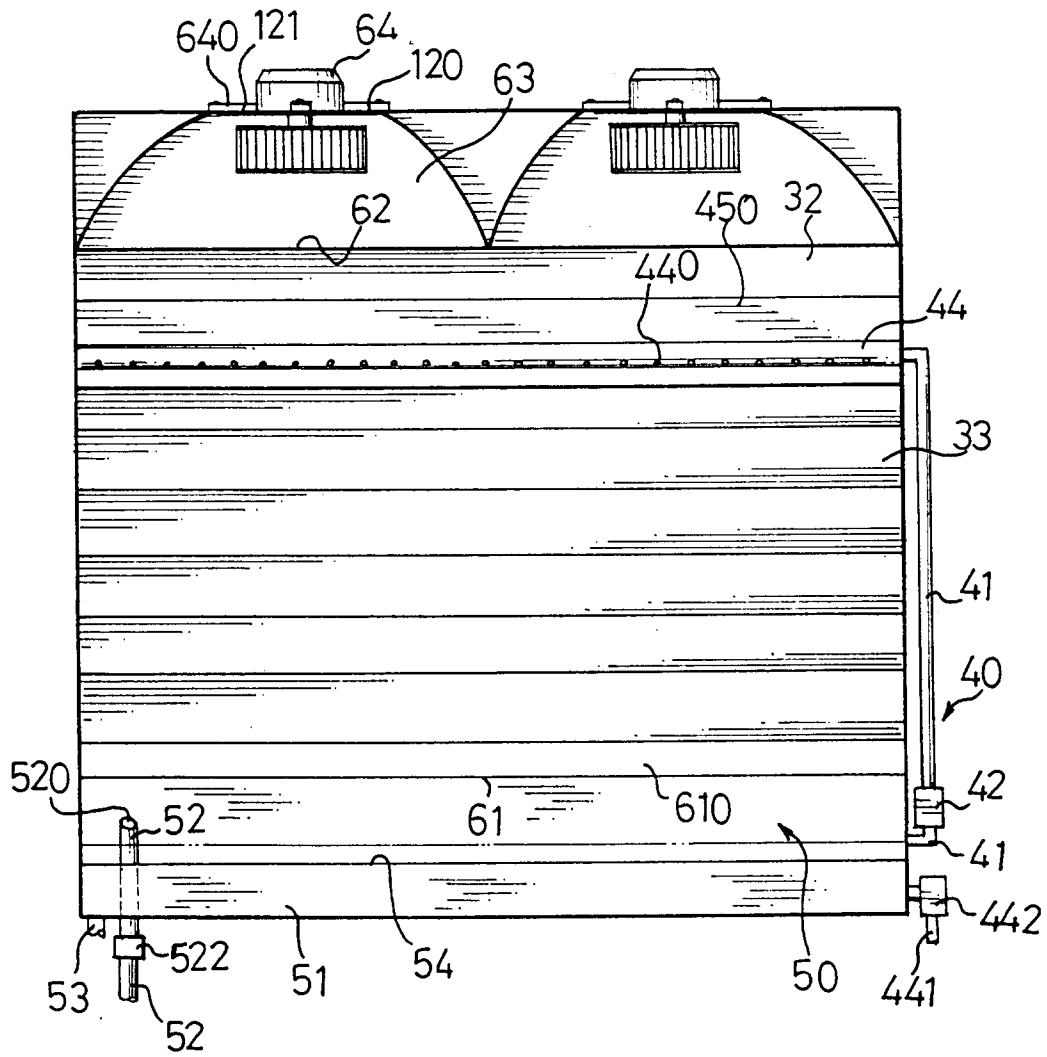


FIG. 3

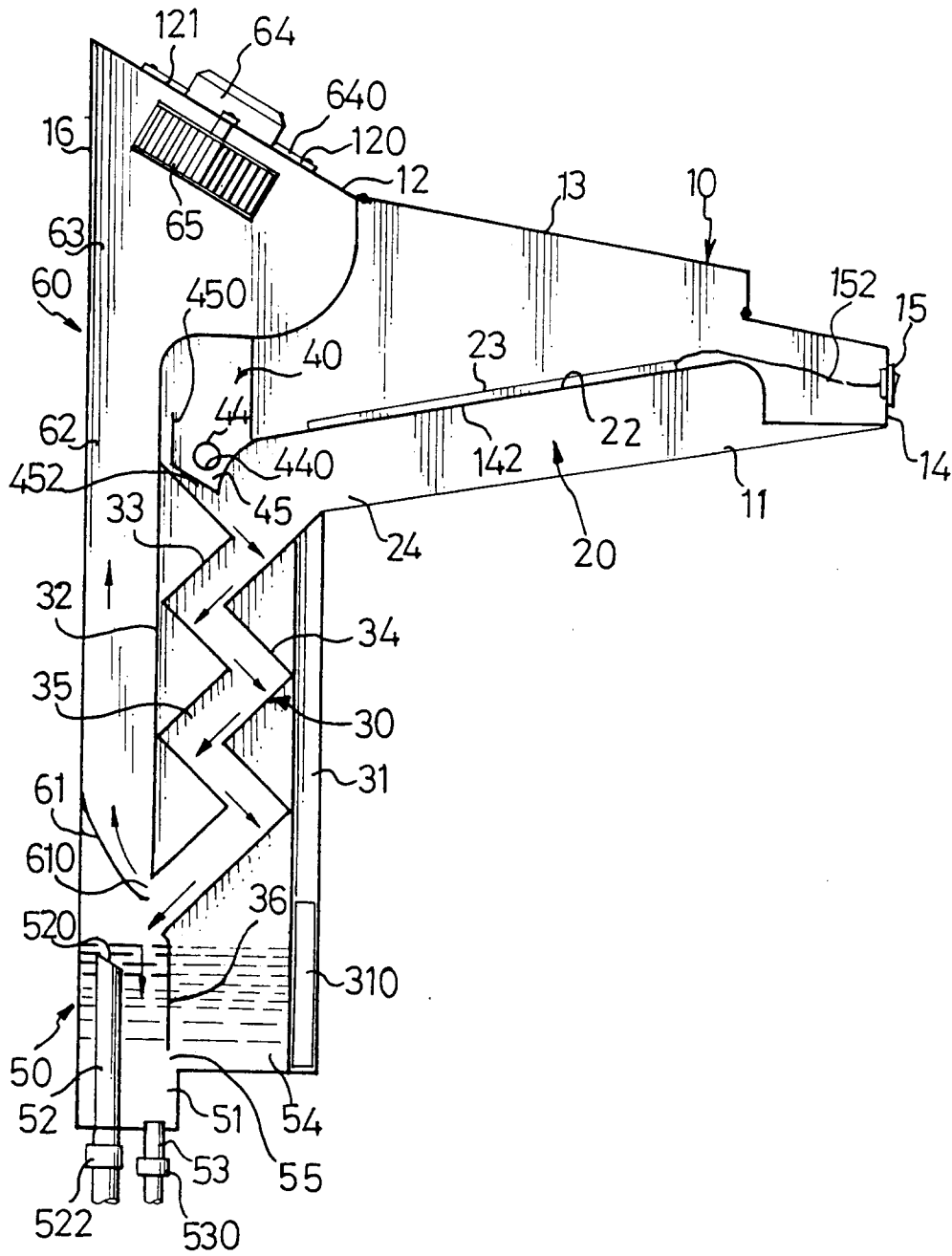


FIG. 4



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EUROPEAN SEARCH REPORT

Application Number
EP 95 10 3804

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)
X	GB-A-2 276 334 (CHERN-MONG) * page 2, line 26 - page 5, line 19; figures * ---	1,3-5	F24C15/20
X	FR-A-2 399 268 (GAILLAT) * claims 1-3; figures 1,2 * ---	1,3-5	
X	US-A-4 050 446 (GIUFFRE) * abstract; figure 4 * ---	1,3-5	
A	US-A-3 596 587 (KLINGER) * abstract * -----	2	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			F24C
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		27 July 1995	Pineau, A
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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