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W. A. PLEDGER
KITCHEN STOVE VENTILATOR

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2 Sheets-Sheet 1

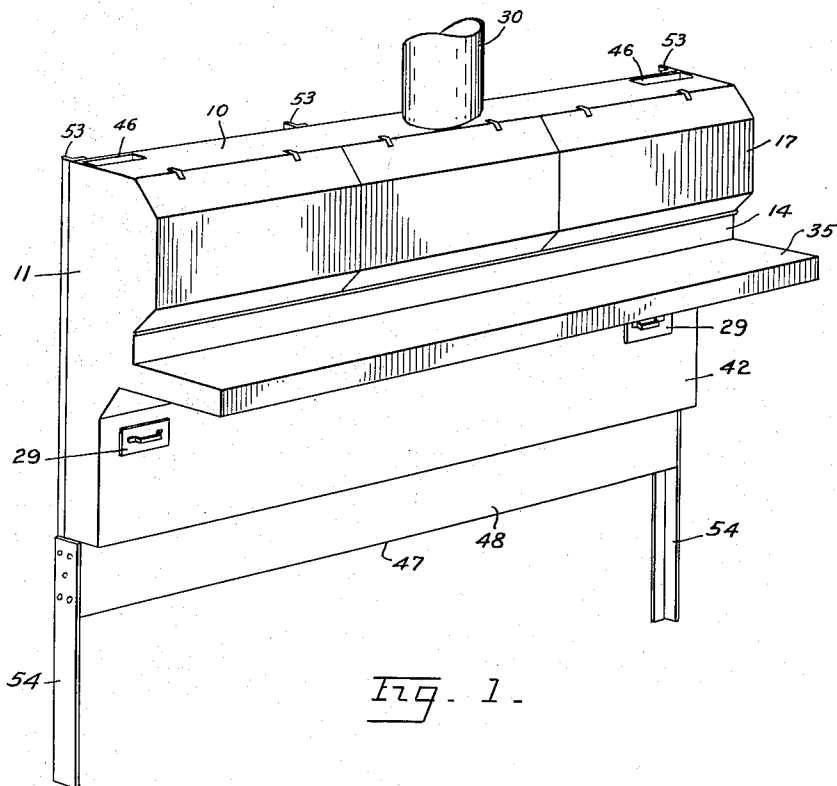


Fig. 1.

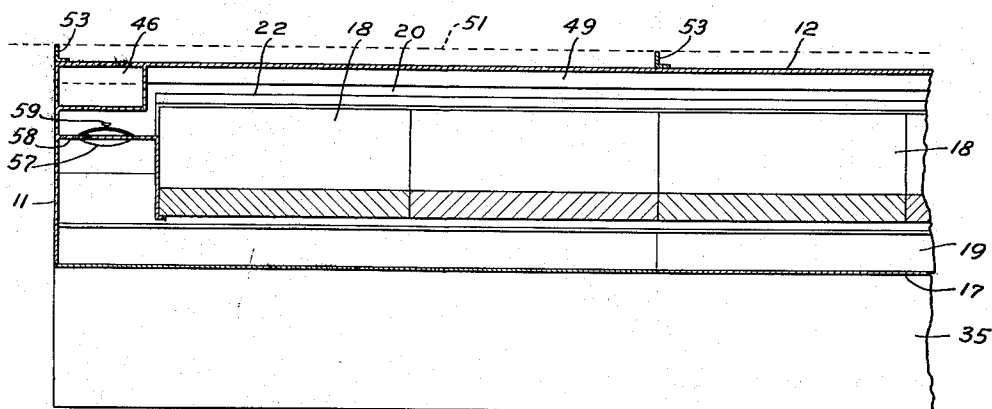


Fig. 2.

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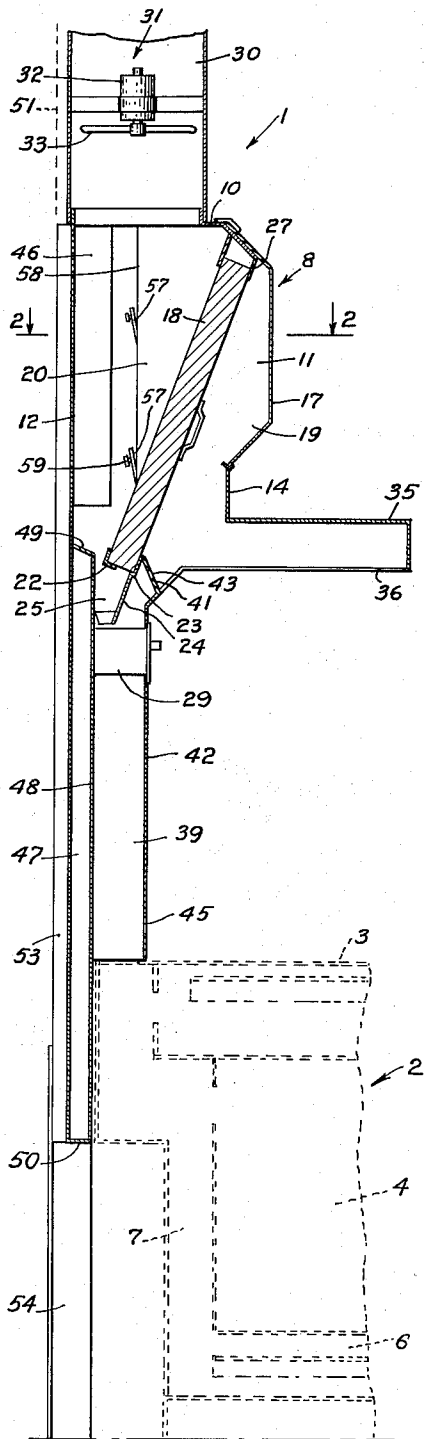
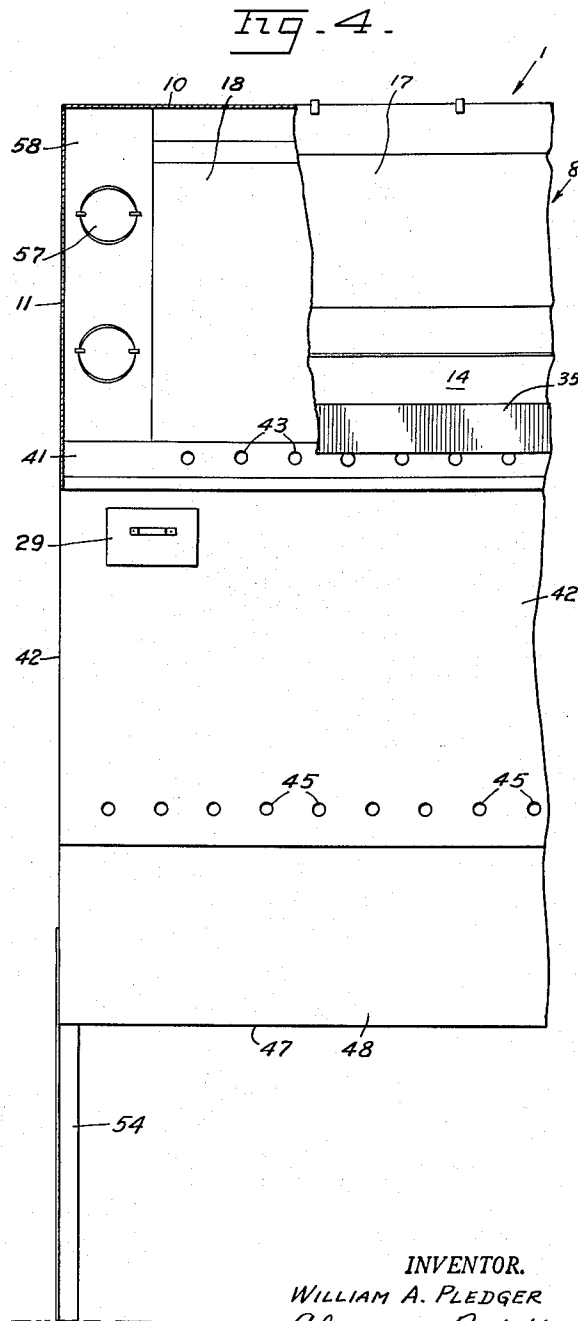


Fig. 3.



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KITCHEN STOVE VENTILATOR

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6 Claims. (Cl. 126—301)

This invention relates to a kitchen stove ventilator.

The object of this invention is to provide a kitchen stove ventilator eliminating kitchen odors, hot air and product of combustion generated by the stove.

Another object of this invention is to provide means condensing grease, oil and evaporations from the air drawn through said ventilator and to discharge into the atmosphere odorless clean air.

Another object of this invention is to provide a ventilating device of the type described having down draft ducts for drawing the air above the ventilator into the latter.

Another object of this invention is to provide means in said ventilator located in a close vicinity to the cooking surface of a stove for drawing hot air and evaporations into the ventilator.

Another object of this invention is to provide means for collecting evaporations and oil condensed from the air passing through said ventilator.

Other objects and advantages will appear as the application proceeds and the novel features of the device will be particularly pointed out in the claims hereto annexed.

In this specification and the annexed drawing, the invention is illustrated in the form considered to be the best but it is understood, that the invention is not limited to such form; and it is also to be understood that in and by the claims following the description, it is desired to cover the invention in whatsoever form it may be embodied.

My invention is illustrated in the accompanying drawings in which:

Fig. 1 is a perspective view of the ventilating device.

Fig. 2 is a horizontal cross section through the same taken along the line 2—2 of Fig. 3.

Fig. 3 is a vertical central cross section of the device, and

Fig. 4 is a partial front view of the device, some parts being shown in section.

In general the kitchen stove ventilator comprising the subject matter of this invention consists of a box-like structure extending the length of a stove. The ventilator is supported back of the stove so that it separates the stove from the wall against which it is usually placed. The ventilator also extends upwardly above the stove and forwardly to form a spout through which the hot air, fumes and gases generated by the cooking surface of the stove are admitted into the ventilator.

The ventilator is equipped with a plurality of filters located directly in the path of said hot air and gases. The filters condense oil, grease and evaporations from the air passing through the same and pass clean odorless air into a smoke stack connected with said ventilator. Means for creating forced draft is arranged in said smoke stack which draws hot air, gases and products of combustion from said stove through said filters and smoke stack and into the atmosphere. A concealed flue is provided in the front part of said ventilator extending from the stove toward said filters for the purpose of passing products of

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combustion from the oven combustion chamber. The front wall of said flue has a plurality of small openings located slightly above the cooking surface. Suction created by said forced draft draws a portion of the fumes and hot air generated by said cooking surface into said concealed flue and also products of combustion from said oven combustion chamber. The filters condensing evaporations, oil and grease from the air passing therethrough are located over a trough extending the length of the ventilator into which trough condensed grease, oil and evaporations gravitate and then flow along said trough into a container located at each end of the same.

The ventilator has also down draft ducts for drawing in air from above the ventilator and lowering the temperature of the kitchen by exhausting hot air through the ventilator. The ventilator is also equipped with automatic safety valves, which open when the force draft unit is inoperative to permit escaping gas and hot air to pass into the flue. Said valves automatically close when the forced draft unit is in operation.

In detail the kitchen stove ventilator is generally indicated in the drawings at 1 and is shown in combination with a gas cooking stove 2 having a cooking surface 3, an oven 4 with an oven burner chamber 6, and a stove flue 7 through which fumes and products of combustion from the chamber 6 are discharged upwardly.

The ventilator 1 is preferably made out of sheet metal and comprises a filter chamber 8 located above the gas stove 2, and formed by a top 10 and upper portions of the sides 11 and the back 12 of the ventilator. The front wall 14 is provided with an opening extending all the length of the chamber 8 which opening is closed by removable panels 17.

The chamber 8 contains a plurality of filters 18 which are arranged side by side at an angle to the top 10 and which divide said chamber into a front compartment 19 and a rear compartment 20. The filters 18 may be of any construction and are intended to condense oil, grease and evaporations from the air passing therethrough.

The filters 18 rest on an angle iron 22 and a shoulder 23 of a wall 24 of a grease trough 25, and their upper ends are retained in a bracket 27 integral with the top 10. The filters 18 may be conveniently inspected when the panels 17 are removed. Oil, grease and evaporations condensed by said filters from the air passing therethrough gradually flow into the trough 25. The latter is slightly inclined from the middle toward the sides 11 and at each end and below the same there is a removable container 29 in which said oil, grease and evaporations are collected.

The top 10 of the chamber 8 is provided with a smoke stack 30 which is located in the middle thereof and which communicates with the rear compartment 20. A forced draft unit 31 is provided on said smoke stack, which unit consists of a motor 32 and a fan 33 which force air out of said rear compartment.

The lower front portion of the filter chamber 8 is provided with a hood 35 which extends forwardly therefrom over the kitchen stove and forms a shelf for kitchen utensils. The bottom of the hood 35 is open as shown at 36 through which opening the filters 18 are taken out of the ventilator. The opening 36 provides a direct passage for hot air and evaporations produced by the cooking surface 3 into the front compartment 19. Below said hood 35 and in the front of said ventilator is arranged a concealed flue 39 which extends all the length of said ventilator. This flue is open on the bottom and has its upper end restricted by a cross partition 41 extending from the front wall 42 to the grease trough wall 24, said partition having a number of openings 43 therein. The flue 39 is intended to provide a passage for excessive heat and products of combustion of the oven burner chamber 6 and

for this purpose it is directly connected with the stove flue. The front wall 42 of said concealed flue has a plurality of openings 45 located in close proximity to the cooking surface 3, through which a portion of the hot air and fumes generated by the latter is vented into said flue.

The ventilator also has means for drawing hot air above the ventilator into the latter, said means comprising two down draft ducts 46 each located at one end of said ventilator and extending from the top 10 downwardly a certain distance and terminating in said rear compartment 20 above the lower ends of the filters 18.

The draft created by the unit 31 is sufficient to draw some air from above said ventilator into the latter, thus lowering the temperature of the air in the kitchen.

The ventilator 1 also is provided with an insulation chamber 47 which is formed by the back wall 12 and the sides 11 of the ventilator, the front wall 48, the top 49 and the bottom 50 of the compartment 47. The latter compartment extends substantially from the lower ends of the filters 18 downwardly below the cooking surface 3 and serves as an insulation between said stove and the wall 51 which the ventilator abuts. In order to eliminate any possibility of overheating the wall 51, the back wall 12 is provided with vertical channels 53 which act as spacers between the wall 51 and the body of the ventilator.

The ventilator is preferably supported on a plurality of legs 54 attached to the lower ends of the sides 11 and at other convenient places.

In order to discharge excessive heat and gases from the stove while the forced draft unit 31 is inoperative, a plurality of automatic by-pass valves 57 is provided at each end of the ventilator. Said valves are arranged in the vertical wall 58 which connect the upper bracket 27 with the wall 24 of the grease trough 25 and separate the compartments 19 and 20 at each end of said ventilator. Said valves 57 may be of any suitable design and are shown to have a counterbalance 59 which keeps the valve open when the forced draft unit is inoperative. Suction created by the forced draft closes the valves 57 and forces the air, gases and evaporations to pass from said cooking surface 3 and from the oven burner chamber 6 into said front compartment 19, then through said filters 18 into the smoke stack 30 and into the atmosphere. By forcing the air to pass through said filters, grease, oil and evaporations are condensed therefrom and clean air is discharged through the stack into the atmosphere.

The suction created by the forced draft unit 31 is sufficient to draw some air from the space above said ventilator, thus reducing the temperature of the air in the kitchen.

I claim:

1. A ventilator for installation above a kitchen stove and its discharge vent comprising a box-like structure, the upper part of said structure forming a filter chamber, an air filter in said chamber for condensing grease, oil and evaporations from the air passing therethrough, said filter dividing said chamber into front and rear compartments; a concealed flue in the ventilator forming a continuous passage from the lower part thereof to the front compartment for passing products of combustion directly from said vent to the front compartment; a down draft duct extending from the top of said ventilator and terminating in the rear compartment; and means mounted on the ventilator and including a forced draft unit and a stack communicating with said rear compartment for creating forced draft in said device for drawing products of combustion through said concealed flue and hot air rising from said stove into said front compartment through said filter and into said rear compartment, and for drawing hot air from above said ventilator through said down draft duct into said rear compartment and for expelling the air and products of combustion from said rear compartment.

2. A ventilator for installation above a kitchen stove and its discharge vent comprising a box-like structure forming a filter chamber in the upper part thereof, a forwardly extending hood to catch hot air rising from the stove and adjoining said chamber and communicating therewith, a concealed flue in the ventilator forming a continuous passage from said filter chamber to the lower part of the ventilator to receive combustion products from said discharge vent; an insulation chamber in the ventilator and enclosed on all sides to provide a dead air cell and disposed immediately behind the concealed flue and extending below the same; a down draft duct extending from the top of said ventilator downwardly and terminating within said filter chamber on the discharge side thereof; a filter in said filter chamber for condensing grease, oil and evaporations from the air passing therethrough, a forced draft unit including a stack mounted on the ventilator above the filter chamber and communicating therewith for drawing into the ventilator and through said filter hot air, evaporations and products of combustion and for expelling the filtered air and gases from said ventilator.

3. A ventilator for installation above a kitchen stove comprising a box-like structure forming a filter chamber in the upper part thereof; a plurality of filters arranged side by side and dividing said chamber into a front compartment and a rear compartment; said structure forming a hood extending forwardly from the lower portion of the front compartment, said hood being open on the bottom side thereof; said structure forming a concealed flue in the front part thereof below said hood, said flue being open at the bottom and having its top communicating with said front compartment; a partition arranged across the upper part of said flue, said partition having means therein for permitting restricted flow of air therethrough; a downdraft duct extending from the top of the ventilator downwardly and terminating in the rear compartment for drawing air from above said ventilator into said compartment; a forced draft unit mounted on the ventilator above the rear compartment and including a stack communicating therewith for drawing through said hood and said flue hot air and evaporations into said front compartment and thence through said filters into the rear compartment and through the forced draft unit to the atmosphere; and a normally open automatic valve between said front and rear compartments, said valve being closed when the forced draft unit is in operation.

4. The combination of a cooking stove having a cooking surface, an oven combustion chamber and a flue leading therefrom to the top of said stove, with a ventilator comprising means forming a filter chamber; a plurality of air filters arranged in said chamber for condensing oil, grease and evaporations from the air passing therethrough, said filters dividing said chamber into a front compartment and a rear compartment; means forming a downdraft duct extending from the top of said ventilator downwardly and terminating within said rear compartment; a hood extending above and over the cooking stove, said hood being open on the bottom and communicating with the front compartment; means including a front wall forming a concealed flue extending from the cooking surface upwardly and communicating with the front compartment for passing products of combustion from the oven combustion chamber, said front wall having a plurality of openings in close proximity to the cooking surface for passing hot air and evaporations emanating from the cooking surface into said concealed flue; a cross-partition in the upper portion of said flue, said cross partition having a plurality of openings therein for permitting restricted flow of air therethrough; and means including a suction fan and a stack mounted on the ventilator and communicating with said rear compartment for drawing hot air and products of combustion from the cooking surface and the oven combustion cham-

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ber into said front compartment through said filters and into said rear compartment, and for drawing hot air above said ventilator through said downdraft flue into said rear compartment, and for drawing the air and products of combustion out of said rear compartment.

5. The combination of a cooking stove having a cooking surface, an oven combustion chamber and a flue leading therefrom to the top of said stove, with a ventilator comprising means forming a filter chamber; a plurality of air filters arranged in said chamber for condensing oil, grease and evaporations from the air passing there-through, said filters dividing said chamber into a front compartment and a rear compartment; means forming a downdraft duct extending from the top of said ventilator downwardly and terminating within said rear compartment; a hood extending above and over the cooking stove, said hood being open on the bottom and communicating with the front compartment; means including a front wall forming a concealed flue extending from the cooking surface upwardly and communicating with the front compartment for passing products of combustion from the oven combustion chamber, said front wall having a plurality of openings in close proximity to the cooking surface for passing hot air and evaporations emanating from the cooking surface into said concealed flue; a cross-partition in the upper portion of said flue, said cross partition having a plurality of openings therein for permitting restricted flow of air therethrough; and means including a suction fan and a stack mounted on the ventilator and communicating with said rear compartment for drawing hot air and products of combustion from the cooking surface and the oven combustion chamber into said front compartment through said filters and into said rear compartment, and for drawing hot air above said ventilator through said downdraft duct into said rear compartment, and for drawing the air and products of combustion out of said rear compartment; and means for forming an insulation chamber back of said concealed flue.

6. The combination of a cooking stove having a cooking surface, an oven combustion chamber and a flue leading therefrom to the top of said stove, with a ventilator

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comprising means forming a filter chamber; a plurality of air filters arranged in said chamber for condensing oil, grease and evaporations from the air passing there-through, said filters dividing said chamber into a front compartment and a rear compartment; means forming a downdraft duct extending from the top of said ventilator downwardly and terminating within said rear compartment; a hood extending above and over the cooking stove, said hood being open on the bottom and communicating with the front compartment; means including a front wall forming a concealed flue extending from the cooking surface upwardly and communicating with the front compartment for passing products of combustion chamber, said front wall having a plurality of openings in close proximity to the cooking surface for passing hot air and evaporations emanating from the cooking surface into said concealed flue; a cross partition in the upper portion of said flue, said cross partition having a plurality of openings therein for permitting restricted flow of air therethrough; blower means including a stack mounted on the ventilator and in communication with said rear compartment for drawing hot air and products of combustion from the cooking surface and the oven combustion chamber into said front compartment through said filters and into said rear compartment, and for drawing hot air from above said ventilator through said downdraft duct into said rear compartment, and for drawing the air and products of combustion from said rear compartment; means for forming an insulation chamber back of said concealed flue; and means for collecting oil, grease and evaporations condensed by said filters.

References Cited in the file of this patent

UNITED STATES PATENTS

2,081,640	Petersen	May 25, 1937
2,376,571	Brumbaugh	May 22, 1945
2,532,420	Pledger	Dec. 5, 1950
2,535,863	Pledger	Dec. 26, 1950
2,577,150	Pledger	Dec. 4, 1951
2,586,023	Gillette	Feb. 19, 1952