June 2, 1959 A. P. FISCHER ET AL 2,888,871

RANGE VENTILATOR

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Fig. 1

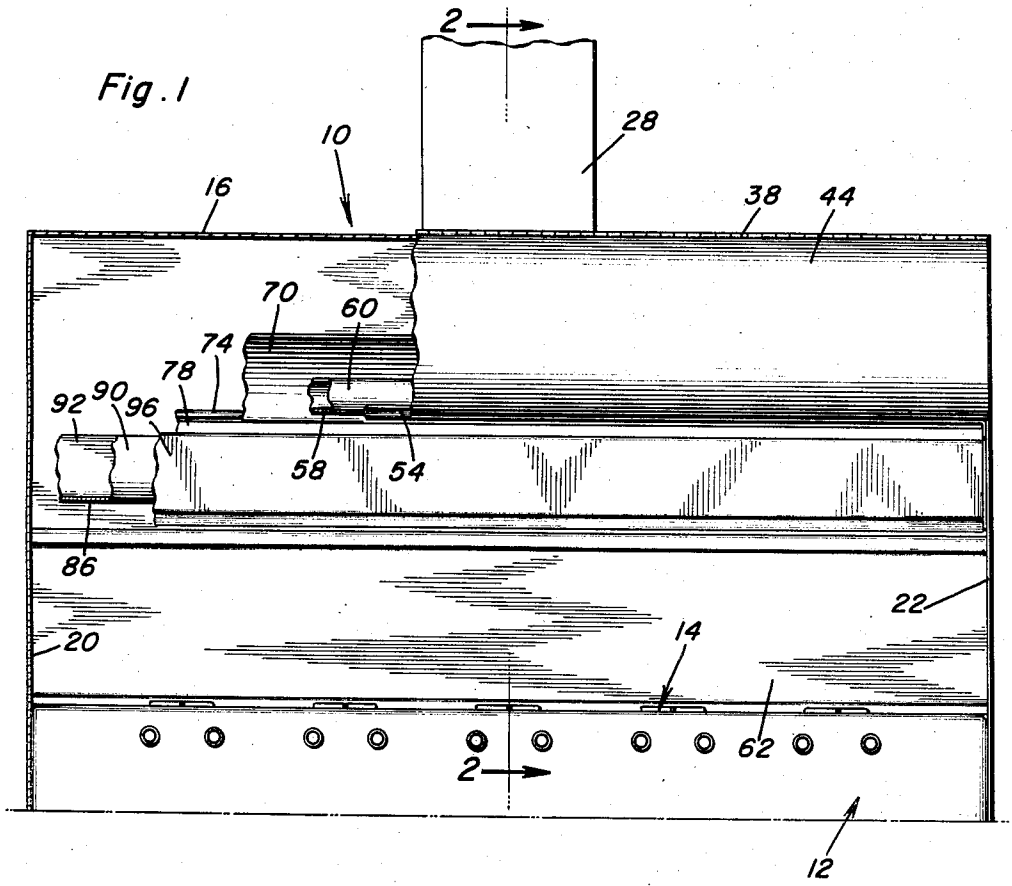
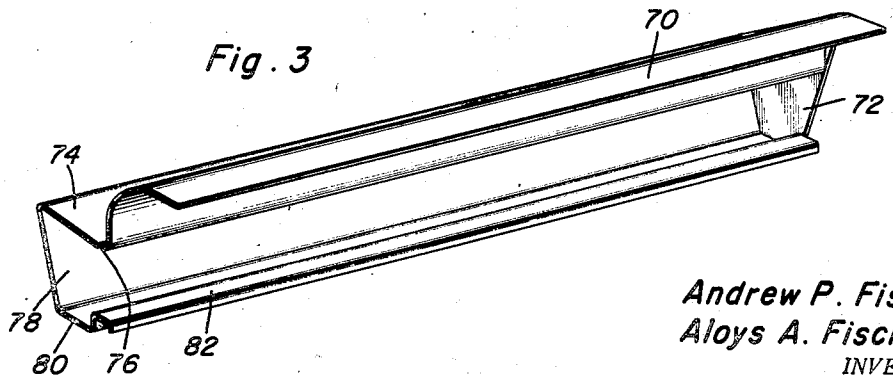


Fig. 3



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2 Sheets-Sheet 2

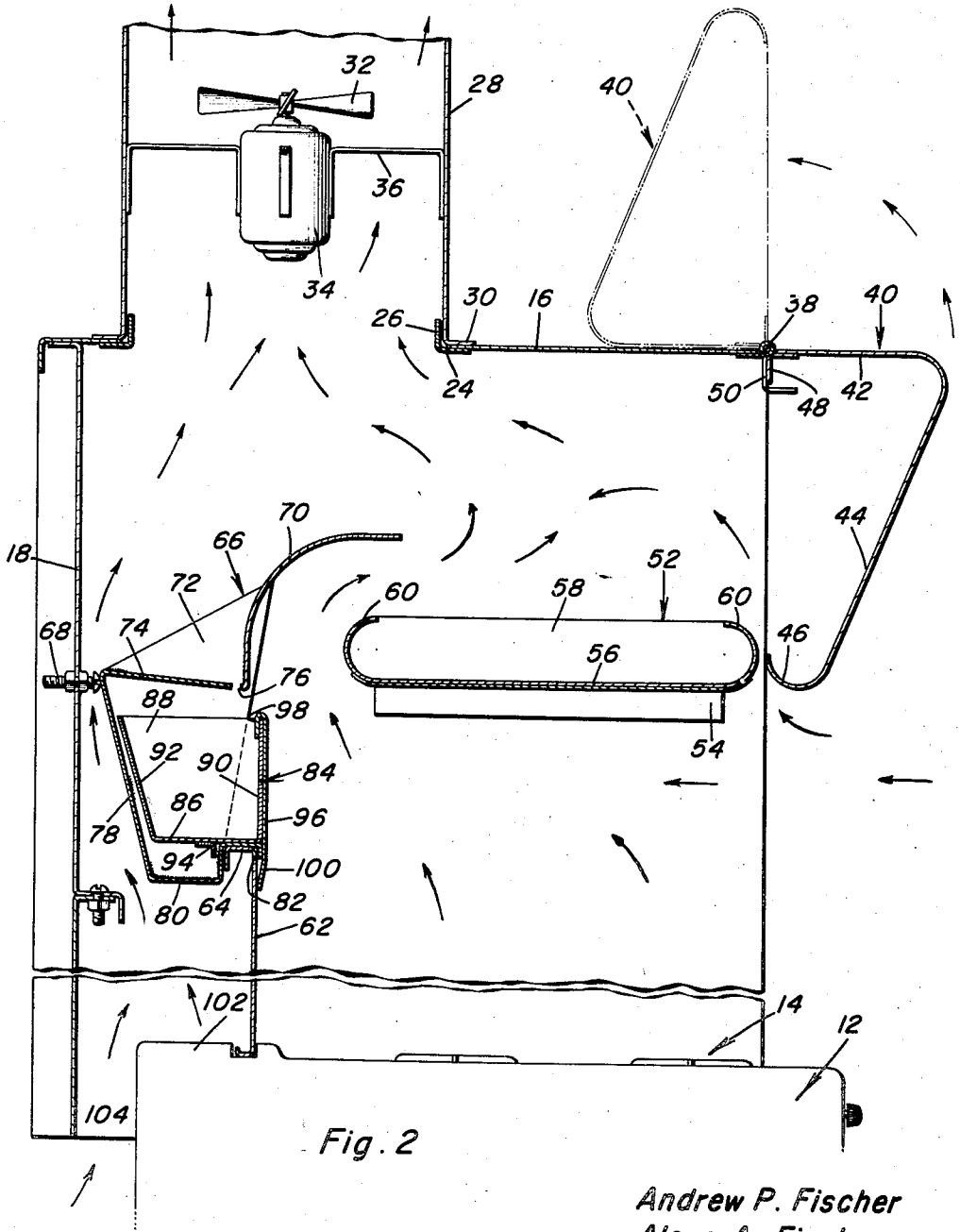


Fig. 2

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RANGE VENTILATOR

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6 Claims. (Cl. 98—115)

This invention generally relates to a ventilation device and more particularly a ventilator connected to a cooking range or the like for carrying off fumes, smoke and grease occasioned by cooking and, at the same time, to extract the maximum amount of grease and moisture from the air passing through it with a minimum number of restrictions to air flow and thus retain the utmost simplicity of construction and also reduce the required cleaning time to a minimum.

An object of the present invention is to provide a range ventilator for association with a cooking range and employed in combination with an exhaust fan in a suitable conduit for exhausting fumes and other products of cooking wherein the device is arranged for ease of cleaning, optimum separation of grease and moisture from the air passing through the device, and to provide a range ventilator which will effectively ventilate the range.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a front elevational view of the range ventilator of the present invention with portions thereof broken away;

Figure 2 is a vertical sectional view taken substantially upon a plane passing along section line 2—2 of Figure 1 illustrating the details of construction thereof; and

Figure 3 is a partial perspective view of one element of the range ventilator.

Referring now specifically to the drawings, the numeral 10 generally designates the range ventilator of the present invention for association with a range generally designated by the numeral 12 having a cooking surface generally designated by the numeral 14 which may be of any conventional type normally employed for purposes of cooking.

The range ventilator 10 includes a top wall 16, a rear wall 18 and end walls 20 and 22, all of which may be constructed of a suitable gauge sheet metal which may be of a corrosive resistant nature. The rear wall 18 and the end walls 20 and 22 are generally vertically disposed, with the top wall 16 being generally horizontally disposed. The top wall 16 is provided with an enlarged opening 24 defined by an upstanding peripheral flange 26 adjacent the rear wall 18 and substantially in the longitudinal center of the top wall 16, wherein an exhaust duct 28 having an outturned flange at the lower end thereof designated by the numeral 30 is telescoped over the upstanding flange 26 for communicating the interior of the ventilator 10 with the exhaust duct 28. An exhaust fan 32 powered by a suitable electric motor 34 is mounted in the exhaust duct 28 by suitable radial mounting brackets 36, thus drawing fumes which are laden with moisture and grease away from the cooking surface 14.

The forward end of the top wall 16 is provided with

a hinge 38 for connecting a front generally designated by the numeral 40, including a horizontal portion 42 and an inwardly and downwardly extending portion 44 terminating in a reversely curved portion 46. The horizontal portion 42 is provided with a relatively narrow, depending flange 48 rigid therewith, and the front edge of the top wall 16 is provided with a downwardly extending, right angular flange 50 for forming a stop when the flange 48 engages the same, as illustrated in Figure 2, thus limiting the downward hinged movement of the pivotal front 40 so that the portion 42 will be retained in a horizontal position and the reversely curved portion 46 will be retained in proper relation to other structural features set forth hereinafter. The dotted line position of the cover 40 illustrates the manner in which the cover 40 may be hinged upwardly and rearwardly to permit ease of cleaning of the interior of the adjacent area of the ventilator 10.

A condensate pan generally designated by the numeral 52 is mounted horizontally between the end walls 20 and 22 immediately inwardly of the curved portion 46 of the front 40. The condensate pan 52 is supported by brackets 54 and includes a bottom 56, end walls 58 and generally semi-cylindrical edges 60. The brackets 54 have inwardly projecting flanges which conform to the bottom of condensate pan 52 and on which the pan is removably seated. The outer semi-cylindrical edge 60 is disposed in parallel and spaced relation to the curved portion 46 of the cover 40, thus providing entrance for air or fumes as indicated by the arrows in Figure 2.

A splash back or splash panel 62 is disposed between the end walls 20 and 22 and engages at the lower edge thereof the range 12, thus providing a wall immediately rearwardly of the cooking surface 14. The upper end of the splash panel 62 is reversely bent as indicated by the numeral 64.

A deflector generally designated by the numeral 66 is removably mounted between the end walls 20 and 22 and rests upon the upper edge of the splash panel 62 adjacent the forward edge thereof and rests upon the head of an adjustable bolt 68 extending through the rear wall 18, with the head of the bolt 68 engaging the rear of the deflector 66 for retaining the deflector 66 in position and also varying the relationship between the rear wall 18 and the rear of the deflector 66.

The deflector 66 includes an arcuate portion 70 at the upper end thereof which is in spaced and generally concentric relation to the inner, semi-cylindrical edge 60 of the condensate pan 52. The upper edge of the arcuate member 70 is disposed inwardly of the pan 52 in spaced relation from the upper edge thereof. The arcuate member 70 is mounted between a pair of end plates 72 adjacent the upper and forward edge thereof. The end plates 72 are also interconnected by a generally horizontal panel 74 which extends from the rear of the end plates 72 in a generally sloping manner towards the lower end of the arcuate member 70, and the panel 74 terminates against the arcuate member 70 with drip holes 76 at their junction. The rear edges of the end plates 72 are interconnected by a rear plate 78 which extends downwardly and slightly towards the splash panel 62. The bottom edges of the plates 72 are interconnected by a bottom panel 80 that is provided with a U-shaped, free edge portion 82 resting on the return bent portion 64 of the upper edge of the splash panel 62, thereby supporting the deflector 66 between the end walls 20 and 22. It is noted that the head of the bolt 68 engages that portion of the deflector 66 at the junction of the top plate 74 and the rear plate 78, thus maintaining the deflector 66 in position.

A grease pan generally designated by the numeral 84 is provided with a bottom 86, end walls 88, a vertical

side wall 90 and an inclined side wall 92, the inclined side wall 92 being disposed adjacent the inner surface of the back plate 78 and the side wall 90 being disposed generally directly above the splash panel 62. The bottom 86 of the grease pan 84 is provided with a depending flange 94 which is disposed inwardly of the vertical portion of the U-shaped edge 82 of the bottom 80 of the deflector 66, thus maintaining the grease pan in position until such time as it is lifted vertically upwardly for disengaging the flange 94 from behind the U-shaped portion 82. A cover panel 96 is provided for the outer side wall 90 of the grease pan 84, and the cover panel 96 is provided with a U-shaped hook portion 98 at the upper edge thereof for engaging over the upper edge of the side wall 90, while the lower end of the cover plate 96 extends downwardly and inwardly as indicated by the numeral 100 for engagement with the front surface of the splash panel 62, thus concealing the joint between the bottom of the grease pan 84, the U-shaped member 82 and the splash panel 62. It is pointed out that the grease pan 84 has an open upper end disposed below drip hole 76 and in spaced relation therefrom for catching any grease which runs downwardly on the front or rear surface of the arcuate member 70 and also catching any grease which may run downwardly along panel 74. It is also pointed out that the bottom edge of the arcuate panel 70 is disposed inwardly of the side wall 90 of the grease pan 84, thus assuring that all grease or moisture draining downwardly on arcuate member 70 will be caught in the grease pan 84.

In accomplishing the objects of the present invention, air is drawn over the cooking surface 14, where it is heated and picks up heated grease and moisture given off by cooking. It is then drawn upwardly into the slot or area between the arcuate panel 70 and the inner end of the condensate pan 52 by means of the exhaust fan 32. At the same time, air at room temperature passes across the underside of condensate pan 52, thus cooling it and also passing into the area between the arcuate panel 70 and the inner edge 60 of the condensate pan 52. As these two streams of air meet, the temperature of the grease and moisture laden air is considerably reduced, causing condensation to take place, thereby giving up grease and moisture which collects on the face of arcuate member 70 and then drips into the grease pan or trough 84.

The air stream, which still retains considerable foreign matter, is directed forwardly by the arcuate plate 70, specifically by the upper portion thereof, and the air is discharged from the area between the free edges of the inner semicylindrical edge 60 of the pan 52 and the arcuate panel 70 which area is somewhat in the form of an orifice or slot. As the air leaves the area between the inner edge 60 of the pan 52 and the arcuate member 70 and enters the larger chamber above the condensate pan 52, it is expanded several times in volume which causes it to be further cooled. This, in turn, causes additional condensation to take place, with the products of condensation collecting in condensate pan 52.

In the meantime, additional air at room temperature is drawn through the area between the outer edge 60 of the condensate pan 52 and the curved edge 46 of the front 40. This additional air causes further cooling of the air in the chamber above the condensate pan 52, thereby condensing out the remaining grease and moisture into pan 52, thus leaving only cool, clean air to be exhausted through exhaust duct 28.

Combustion flue gases from the oven section of the range are expelled from the range 12 through flues 102 into the chamber forwardly of the rear wall 18 and rearwardly of the splash panel 62 where they mix with cool, fresh air entering through opening 104 between the rear of the range 12 and the rear wall 18. These gases then move upwardly through the slot formed by the rear wall 18 and the rear wall 78 of the deflector 66, this area or slot being adjustable by bolt 68 to regulate the flue draught. By keeping flue gases separate from the air passing over the cooking surface 14, they do not affect the cooling action of the slots or areas between forward edge 60 of pan 52 and the curved portion 46 and the rear edge 60 of the pan 52 and the arcuate panel 70. The space between the bottom 80 of the deflector 66 and the bottom 86 of the grease pan 84 forms a dead air space for insulating the grease trough 84 and its contents as well as the air above it from the heated flue gases passing upwardly through the area between the rear wall or plate 78 and the rear wall 18. The edges of the end walls 20 and 22 extend behind the rear wall 18 for providing an air space between the ventilator and any combustible material or wall near which it may be placed, thus eliminating fire hazards from an overheated flue.

The condensate pan 52 is easily removable by lifting the front cover 40, and the grease pan 84 is also easily removable, while the entire deflector 66 may be easily lifted out, thus presenting the entire interior of the unit for ease of accessibility for cleaning.

Suitable legs may be adjustably attached to the ventilator 10 for raising or lowering the ventilator to a suitable height in relation to the cooking surface 14.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A range ventilator comprising a housing adapted to be positioned above the top of a range and including a rear wall spaced rearwardly from the range, a top wall, and a pair of end walls, said end walls extending alongside of a range to a floor and being supported thereby, said top wall having an opening communicating with an exhaust duct, a vertical splash panel extending transversely between and secured to said end walls in the rear lower portion of said housing and having its lower edge adapted to seat on the top of the rear portion of the range, a deflector extending transversely between said end walls in the rear portion of the housing and supported on the upper edge of said splash panel, said deflector including an upwardly and forwardly curved panel member, said splash panel and said deflector being spaced forwardly from said rear wall whereby to coact with the spacing of the rear wall from the range in providing a rear air passage between the rear wall and the splash panel and deflector, a condensate pan extending transversely between said end walls, means for removably supporting said pan on the end walls in forwardly spaced relation from said deflector whereby to provide a main air passage between the deflector and the rear of said pan, and a front panel provided on said housing and extending transversely between the end walls thereof in forwardly spaced relation from said condensate pan, whereby to provide a front air passage between the front of the pan and said front panel.

2. The device as defined in claim 1 wherein the forward edge of said panel member of said deflector overlies said condensate pan, whereby to direct air flowing through said main air passage over the pan and toward said front air passage, and whereby cool fresh air flowing through the front air passage may condense moisture in the air flowing through the main air passage for collection of the condensed moisture in said pan.

3. The device as defined in claim 2 together with a grease trough extending transversely between said end walls below the lower edge of said panel member of said deflector, whereby to receive deposits of grease and mosture collecting on said panel member.

4. The device as defined in claim 3 wherein said deflector also includes a pair of end plates disposed adjacent the respective end walls of said housing, said panel member of said deflector and said grease trough extending between said end plates, together with a cover plate extending transversely between and secured to said end plates and including a rearwardly inclined upper wall overlying said grease trough and having its front edge adjacent the lower edge of said panel member, a back wall extending downwardly from the rear edge of said upper wall in spaced relation from said trough and from the rear wall of said housing whereby air flowing through said rear air passage may be insulated from said grease trough, and a lower wall extending forwardly from the lower edge of said back wall in downwardly spaced relation from the trough.

5. The device as defined in claim 4 together with means detachably mounting said condensate pan in said housing, and means hingedly attaching said front panel to the housing whereby access may be had to said pan.

6. The device as defined in claim 4 together with means for adjusting the spacing of said back wall of said deflector from the rear wall of said housing, whereby to vary the flow of air through said rear air passage.

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