

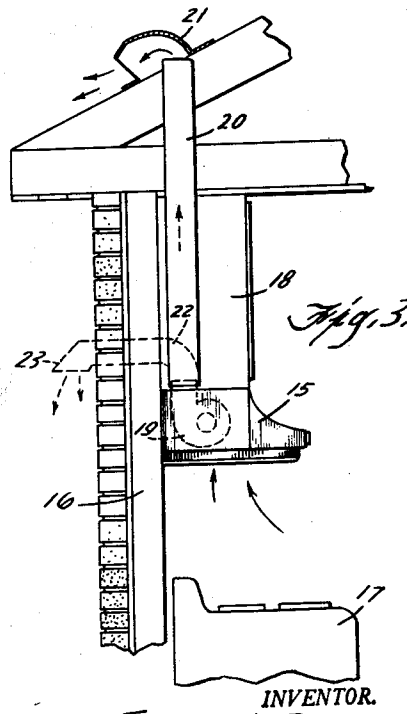
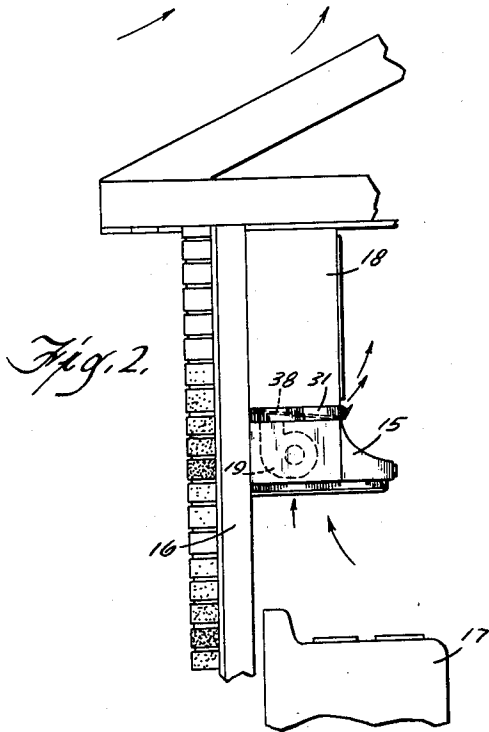
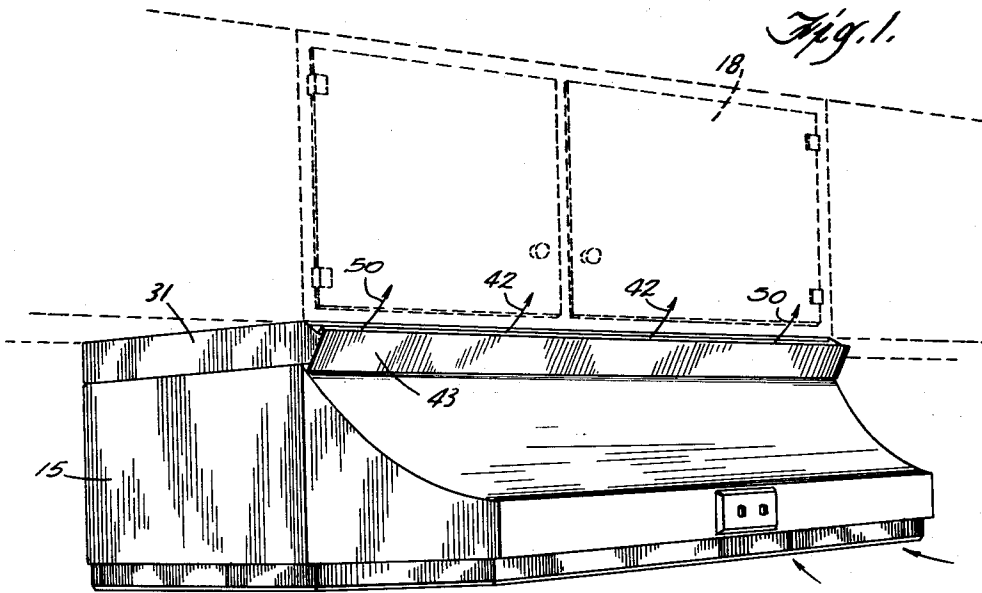
Jan. 29, 1963

F. H. BANDLOW
KITCHEN RANGE HOODS

3,075,335

Filed Dec. 14, 1959

2 Sheets-Sheet 1



INVENTOR.
FRED H. BANDLOW

BY

Wheeler, Wheeler & Wheeler
ATTORNEYS.

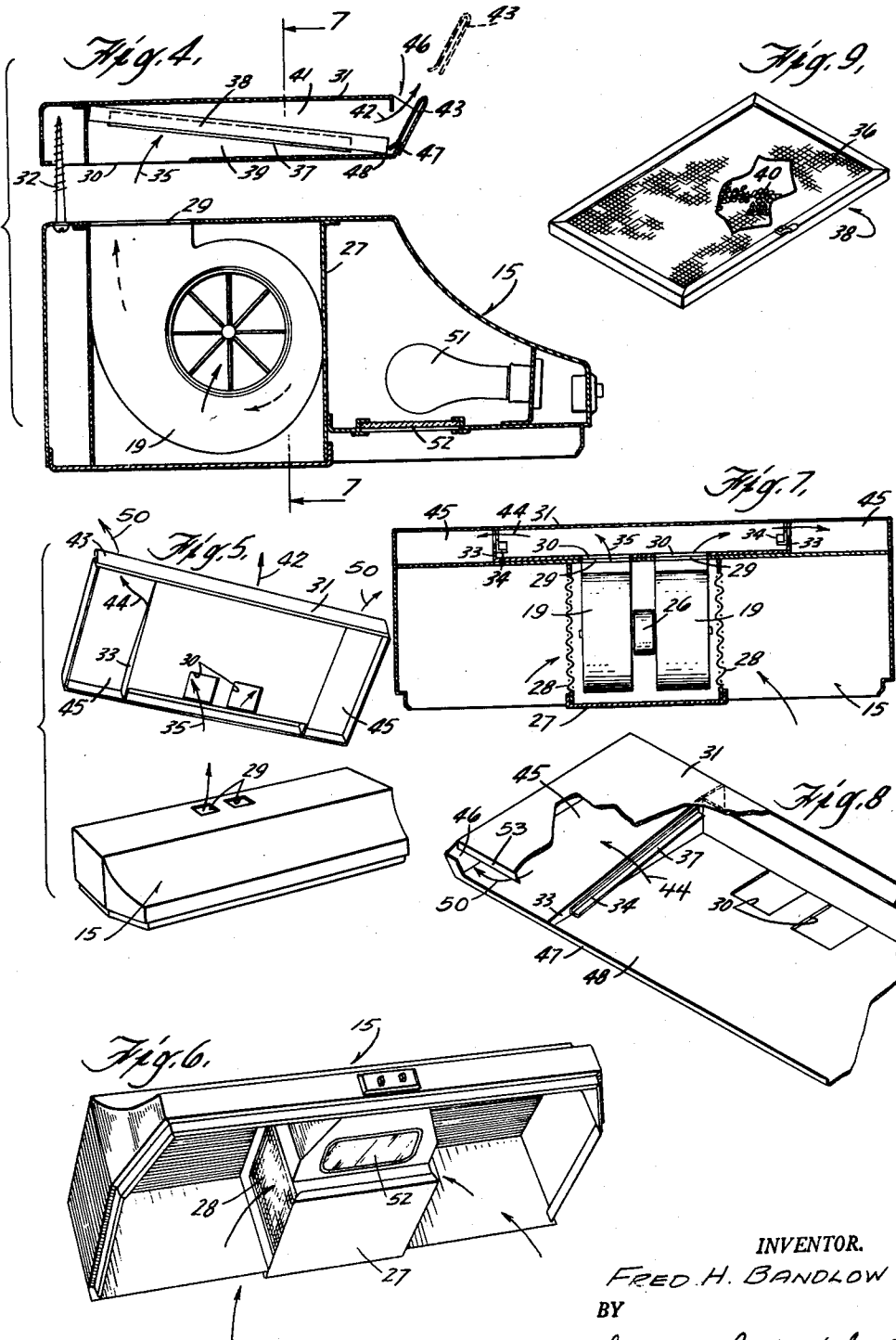
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KITCHEN RANGE HOODS

Fred H. Bandlew, Theresa, Wis., assignor to Broan Mfg. Co., Inc., Hartford, Wis., a corporation of Wisconsin
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 9 Claims. (Cl. 55-385)

This invention relates to improvements in kitchen range hoods and more particularly to a removable filter housing therefor and which adapts the range hood to be used selectively with or without connection to an atmospheric vent.

The exhaust fans or blowers used in range hoods conventionally discharge into ducts which vent to the atmosphere impure air and gases withdrawn from the vicinity of the range. Inasmuch as duct work is expensive and may require considerable alteration in the construction of the building, a certain demand has existed for range hoods which internally purify the impure air and return the purified air to the kitchen, thus eliminating any need for duct work.

The device of the present invention is adapted to function initially as a duct-free hood. The air purifying filter is disposed in a converter housing which can easily be separated from the range hood so that the range hood can ultimately be used to couple directly to duct work which vents to the atmosphere. Accordingly, if a home owner wishes to install a range hood without going to the initial expense of also installing duct work, he may utilize the device of the present invention and in the initial stage have the advantages of a duct-free range hood which purifies air and returns it to the kitchen without need for duct work. However, if the home owner ultimately decides to convert to a duct system, it is a simple matter simply to remove the converter housing in which the filter is disposed and connect the blower of the same range hood directly to duct work. Accordingly, a new range hood need not be purchased inasmuch as the original range hood is readily adapted to be converted for use with either a duct or a duct-free system.

The converter housing of the present invention is devised to be very thin in its vertical dimension so that it will fit between the top of a conventional range hood and the undersurface of the cabinet beneath which range hoods are conventionally mounted without materially adding to the height of the total assembly. Accordingly, when the converter housing is ultimately removed, the physical appearance of and space occupied by the range hood will not be radically changed.

In the preferred embodiment of the invention the blower of the range hood discharges into a plenum chamber within the housing and beneath an inclined filter tray. Impure air which is passed through the filter and is purified therein is returned to the kitchen through the open front of the housing past an upwardly and forwardly inclined baffle which directs the flow of purified air away from anyone standing in front of the range. The baffle is removable for access through the open front of the housing to the filter.

Other objects, advantages and features of the invention will appear from the following disclosure in which:

FIG. 1 is a perspective view of a range hood and converter housing embodying the present invention shown installed beneath overhead wall cabinets shown in broken lines.

FIG. 2 is a fragmentary vertical cross section taken through a building in which a duct-free range hood embodying the present invention is installed.

FIG. 3 is a cross section similar to that shown in FIG. 2, but showing the unit converted for connection to duct-work which exhausts impure air to the atmosphere.

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FIG. 4 is an enlarged transverse cross section taken through a range hood embodying the present invention, the converter housing being shown in spaced apart relation to the range hood proper.

FIG. 5 is a perspective view in spaced apart relation of the range hood and converter housing of the present invention.

FIG. 6 is a bottom perspective view of the range hood proper.

FIG. 7 is a cross section of the assembled hood and converter housing, this view being taken approximately along the line 7-7 of FIG. 4.

FIG. 8 is a broken away perspective of the converter housing exposing details of construction thereof.

FIG. 9 is a perspective view of the activated charcoal filter.

As best shown in FIG. 3, a kitchen range hood 15 is conventionally mounted on the wall 16 of a building and over a cooking range 17 or the like in the kitchen of the building. It is usual to mount the range hood 15 to the undersurface of an overhead wall cabinet 18. The range hood 15 is provided with an exhaust fan or blower 19, which, in the conventional installation shown in FIG. 3, is coupled to an exhaust duct 20 which may discharge to the atmosphere through various means, for example a roof jack 21. As is shown in the dotted lines in this view, an optional path for the discharge of impure air to the atmosphere may be through the duct 22 which connects to a wall cap 23 through the wall 16 of the building.

It is also conventional to completely eliminate duct-work in favor of a type of range hood which includes air purifying filters through which the air is re-circulated within the kitchen and never discharged to the atmosphere. Such a range hood is shown in U.S. Patent 2,794,514.

The cost of the ductwork and structural changes to the building are frequently cited as objections to the installation of a conventional duct system, as shown in FIG. 3. Under these circumstances, a home owner may favor installation of a duct-free hood of the type shown in the U.S. patent aforesaid. However, if the home owner later on decides to go to the expense of installing ductwork, the conventional duct-free range hood is not readily adapted to connect thereto. Accordingly conversion of the range hood from duct-free to duct operation may entail the further expense of replacing the duct-free range hood with one that is adapted to connect to ductwork.

According to the present invention, however, a home owner can save the initial cost of ductwork, install a relatively inexpensive duct-free range hood and later on convert to a duct system without having to change range hoods, it being necessary only to remove the converter housing which contains the filter and connect the blower directly to the duct. Accordingly, the filter previously needed for duct-free operation is completely removed and does not intervene in the direct connection of the blower to the duct. Such a procedure would also apply in moving the range hood from one location in which connection to a duct is impractical to one where such connection is practical.

According to the present invention the range hood per se is not changed in any way. A typical range hood is shown at 15. It is provided within the hood cavity with a blower unit which may include two axially aligned centrifugal blowers 19, powered from an intermediate motor 26. The blower-motor assembly is disposed within a housing 27 through which impure air is drawn through grease filters 28 and is expelled through the discharge ports 29. As aforesaid, discharge ports 29 ordi-

narly connect directly to the ductwork 20, 22, as shown in FIG. 3. However, according to the present invention these outlet ports 29 are also adapted to communicate directly with the inlet ports 30 of a filter converter or housing 31 which intervenes between the cabinet 18 and the range hood 15.

The filter housing 31 desirably consists of an elongated sheet metal box which corresponds in plan to the plan of the range hood so that when placed over the range hood, it gives the physical appearance of being part thereof. In order not to detract from conventional range hood proportions, or materially add to space requirements, housing 31 is made as thin as possible in its vertical dimension. In actual practice, the housing 31 is about 1½ inches high.

Both the converter housing 31 and the range hood 15 are mounted beneath the cabinet 18 in substantially the same manner as the range hood per se was previously mounted. The only change is that the screws 32 by which the range hood is suspended from the cabinet are made 1½ inches longer so that they extend through the housing 31 into threaded engagement with the cabinet 18. Four such screws are provided, one for each corner of the range hood and housing combination. Thus the housing 31 is clamped between the cabinet 18 and range hood 15.

The housing 31 is subdivided longitudinally thereof by partition walls 33. Walls 33 extend substantially the full height of the housing near the rear thereof and slope forwardly and downwardly therefrom to a relatively lower height near the front of the housing. Along the inclined top edges of partition walls 33, filter unit support angle brackets 34 are provided. The horizontal flanges 37 of the brackets 34 provide a support for the filter tray 38 which may consist of activated charcoal pellets 40 confined between screens 36.

Accordingly, the space between partition walls 33 and beneath the downwardly inclined filter tray 38 comprises a plenum chamber 39 into which impure air impelled by the blower 19 is forced in the direction of arrows 35. The impure air passes through the filter 38 and the impurities therein, such as smoke and odors, are absorbed in the activated charcoal pellets 40 within the filter tray 38. Grease will be removed from the air as it flows through filters 28 and before it reaches the fan. Filter 38 will absorb smoke and odors. Some of the purified air issuing from the filter 38 then flows forwardly through the chamber 41 above the filter 38 and along the path shown by arrow 42 in FIGS. 4 and 5 through the discharge port 46 in the otherwise open front wall of the housing 31 and is deflected upwardly by the baffle 43 for return into the kitchen and away from anyone standing in front of the range.

Some of the purified air also flows laterally over the space between the top wall of the housing 31 and the top edge of the lateral partitions 33, as shown by arrows 44 in FIGS. 5, 7 and 8, and into the spaces 45 shown in FIG. 7 and thence to the kitchen on the path of arrows 50 in FIGS. 5 and 8 through the portions of the open front discharge port 46 of the housing which is longitudinally beyond the partition walls 33, thence to be deflected upwardly by the baffle 43. By distributing the outward flow of purified air along the entire front wall of the housing, its velocity is considerably reduced, thus to eliminate drafts.

The baffle 43 desirably comprises a channel strip which is simply slipped over an upwardly and forwardly extending lip 47 formed along the front edge of the bottom wall 48 of the housing 31. Accordingly, the baffle 43 can easily be removed from the housing 31, as is suggested in dotted lines in FIG. 4, thus to give access into the housing through its port 46 for manipulation of the filter 38 for removal and renewal thereof.

As is conventional, the hood 15 is also provided with a lamp 51 over lens 52.

The top wall of housing 31 is desirably provided with a down-turned lip 53 to help channel the air against baffle 43 for upward deflection therefrom.

I claim:

1. The combination with a kitchen range hood adapted to be mounted above a range to exhaust impure air from the vicinity of the range, said hood having a blower with an outlet port otherwise adapted to communicate with a vent pipe for discharging such impure air to the external atmosphere, of a converter housing containing an air purifying filter, an inlet port thereto and a pure air discharge port communicating with the kitchens, means removably mounting said housing on top of said hood with the inlet port of said housing communicating with the outlet port of the blower for movement of all air impelled by the blower through the filter and through the discharge port of the housing back into the kitchen.

2. The combination of claim 1 in further combination with a cabinet above the range, said cabinet having an undersurface to which said hood is attached with said housing therebetween, said housing having a front wall in which said pure air discharge port is disposed.

3. The combination of claim 1 in which said pure air discharging port extends substantially along the entire length of the housing, said filter being shorter than the housing, and means for directing flow of purified air leaving the filter longitudinally of the housing for discharge therefrom substantially along the entire length of said discharging port.

4. The device of claim 1 in which said inlet port of said housing is disposed near the rear wall thereof, said discharge port of said housing extends substantially along the entire length of the front thereof, said filter comprises a relatively thin tray of shorter length than the length of said housing, means for removably mounting said tray in said housing centrally of the ends thereof with the rearward margin of said tray elevated above said inlet port and with said tray in downwardly and forwardly inclined disposition therefrom, and means for directing all of the flow from said inlet port through said filter and for affording communication between the space over said filter and the portions of said housing spaced laterally from said filter, whereby discharge of purified air is effected throughout the length of said discharge port.

5. The device of claim 4 in which the means removably mounting said tray in the housing comprise housing partitions which are closed below the tray to define said plenum chamber but open above the tray to permit flow of air longitudinally of the housing after it has passed through the filter.

6. A converter housing adapted to be removably positioned on top of a kitchen range hood having a blower with outlet ports along the rear of the top thereof, said housing having a bottom with inlet ports near the rear thereof and adapted to align with the outlet ports of the blower, a relatively thin filter tray within the housing and means supporting said tray in a position in which the rear of the tray is elevated over said ports and the tray is downwardly and forwardly inclined toward the front of the tray to at least partially define in the space therebeneath a plenum chamber into which pressurized air from the blower is discharged, said housing having along its front portion a discharge port for returning air from the range hood into the kitchen.

7. The device of claim 6 in which said discharge port extends substantially the length of said housing, said filter tray is shorter than said discharge port, the means for supporting the tray comprising partitions which extend from front to rear in the housing and which are closed below the tray to define said plenum chamber but

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are open above the tray to permit flow of air longitudinally of the housing after it has passed through the filter.

8. The device of claim 6 in further combination with an upwardly and forwardly inclined baffle in front of the discharge port to direct outflow of air upwardly and away from the range. 8

9. The device of claim 8 in combination with means removably connecting said baffle to said housing to facilitate removal of the filter tray through the discharge port.

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