

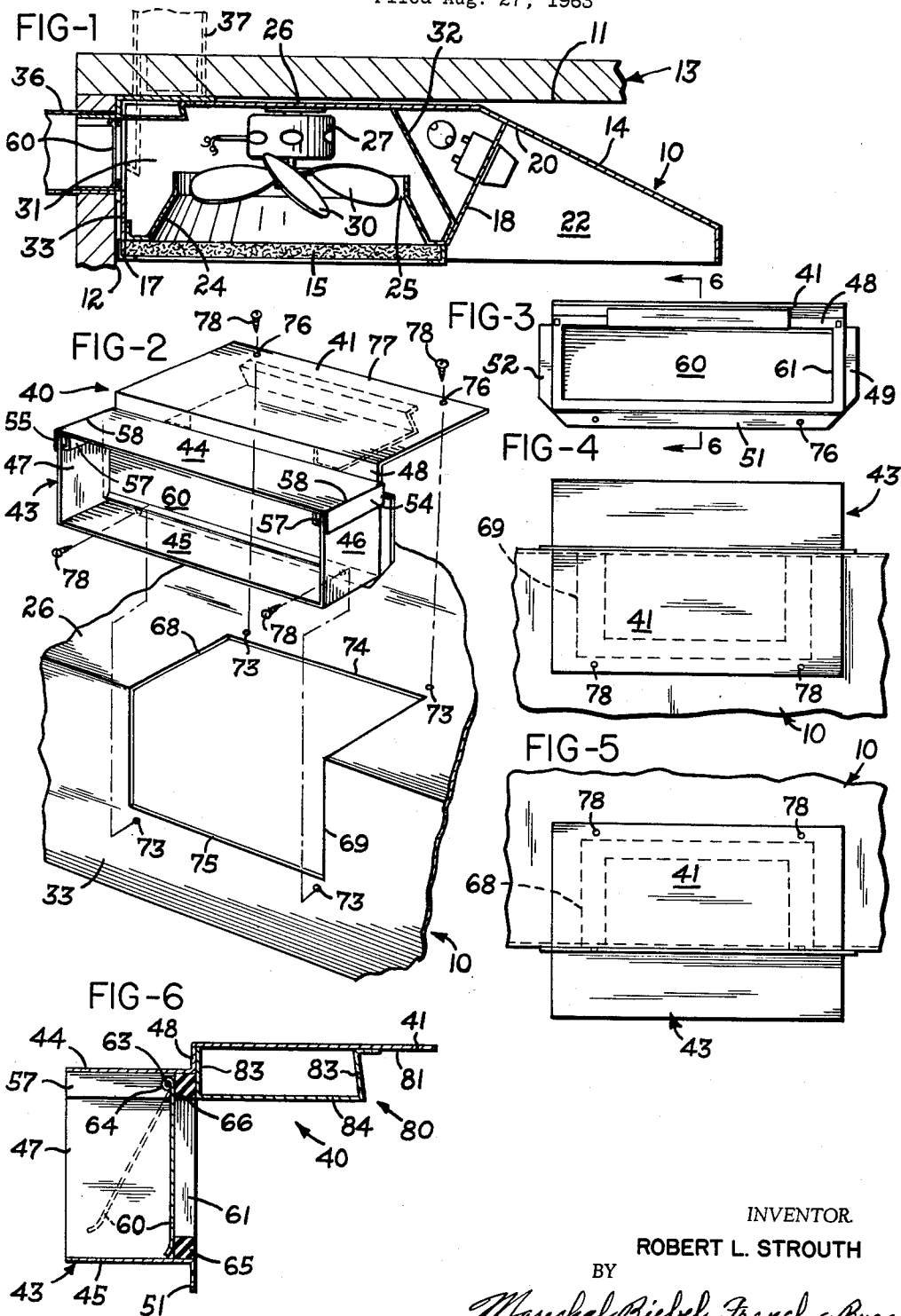
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RANGE HOOD

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RANGE HOOD

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This invention relates to a domestic range hood or the like, and particularly to a damper attachment therefor.

An important object of this invention is to provide an improved damper construction for a domestic range hood wherein a shutter door is opened by the outward flow of exhaust gases and closed by gravity, and particularly to provide a damper construction of the aforesaid type which can accommodate a horizontal or vertical outlet duct so that it can be easily mounted on an inside or outside structural wall.

Another object of this invention is to provide an exhaust damper attachment for a range hood which simplifies the range hood structure, and which in itself is simple in design for maximum dependability and minimum manufacturing cost, and further to provide such a damper attachment with a light weight damper door which is noiseless in operation and air tight when in the closed position.

Other objects and advantages of the invention will be apparent from the following description, the accompanying drawings and the appended claims.

In the drawings:

FIG. 1 is a view in vertical section of a range hood in accordance with the invention;

FIG. 2 is an exploded perspective view of the damper attachment and a portion of the range hood;

FIG. 3 is a rear view of the damper attachment looking from right to left in FIG. 6;

FIG. 4 is a rear view of the range hood with the damper attachment shown mounted in a vertical position;

FIG. 5 is a top view of the range hood with the damper attachment mounted in a horizontal position; and

FIG. 6 is a sectional view taken essentially along the line 6—6 of FIG. 3.

Referring to the drawings wherein a preferred embodiment of the invention is illustrated, FIG. 1 shows an exhaust hood 10 which is mounted above a kitchen stove or the like, and abuts the horizontal and vertical walls 11 and 12 of the associated building or cabinet structure 13. The hood 10 includes a forward deflector panel 14 which directs the flow of exhaust gases from the stove through the grease filter 15 mounted between the rear edge 17 of the hood 10 and the panel 18 which extends downwardly from the rearward portion 20 of the deflector panel 14. The grease filter 15 may extend transversely across the width of the hood 10 to abut the vertical side panels 22.

A venturi structure 24 is disposed immediately above the filter 15 and includes an aperture 25 therein having supported thereabove on the top panel 26 a fan motor 27 for driving the fan blades 30 positioned in the aperture 25. The blades 30 withdraw exhaust gases from the hood 10 and forces them into the motor chamber 31 which is essentially defined between the side walls 22, and the baffle 32 and the rear and top panels 33 and 26. The mounting grommets 35 are utilized to secure the top and rear panels 26 and 33, and hence the entire range hood, to the horizontal and vertical walls 11 and 12 of the structure 13.

An important feature of the invention lies in the capability of the range hood 10 to be adapted for exhausting gases through a horizontal duct 36 directly through the vertical wall 12, or through the horizontal

wall or ceiling 11 into a vertical duct 37. This dual capability is necessary since if the vertical wall 12 is an outside wall, it is generally desirable to vent directly through this wall to the building exterior, whereas when the vertical wall is an inside wall, the gases must be exhausted upwardly through the horizontal wall or ceiling 11 toward the roof of the structure. Thus the damper attachment 40 (FIGS. 2 and 6) provides the capability of venting in either direction without making any modification in the range hood structure during installation.

As shown in FIG. 2, the damper attachment 40 includes a rectangular cover plate 41 having a similarly shaped duct 43 secured at right angles thereto. The duct 43 includes the four walls 44, 45, 46 and 47 each having a mounting flange 48, 49, 51, or 52 extending therefrom for use in mounting the damper attachment. The top wall 44 and flange 48 of the duct 43 may be formed integrally with the cover panel 41, and the downwardly extending side flanges 54 and 55 on the top wall 44 are suitably connected to the vertical side walls 46 and 47 of the duct 43. As shown in FIGS. 2 and 6, the upper portions of the side walls 46 and 47 are bent inwardly at right angles, and then upwardly at right angles, to provide shutter door support channels 57 in the upper corners 58 of the duct 43.

A shutter door 60 of light weight steel metal is mounted near the right or innermost opening 61 (FIG. 6) of the duct 43 by an axle 63 which extends through the rolled upper edge 64 of the door 60, and the opposite ends of the axle 63 project into the channels 57 for pivotal support thereby. Around the entire periphery of the opening 61 is secured a strip 65 of resilient sealing material such as polyurethane foam material or its equivalent which serves as a soundproof air tight seat for the door 60, and a strip 66 of this material may also be secured to the top wall 44 for eliminating the possibility of contact between the door 60 and wall 44 thus obviating objectionable noises generated by operation of the door 60. The polyurethane material is utilized in the preferred embodiment of the invention since it is soft, resistant to deterioration, and retains its shape almost indefinitely, although other substantially equivalent materials could be used without departing from the scope of the invention.

Referring again to FIG. 2, the top and rear panels 26 and 33 of the range hood 10 have interconnecting rectangular apertures 68 and 69 cut therein adjacent the junction of the panels 26 and 33 to form an outlet opening from the motor chamber 31 of the range hood 10. The apertures 68 and 69 are identical in size and have screw holes 73 equally spaced along the edges 74 and 75 thereof. Screw holes 76 are similarly provided along the rear edge 77 of the top panel 41, and in the bottom flange 51 of the duct 43 so that they correspond to the spacing of the screw holes 73 in the range hood. Thus the screws 78 can be used to secure the flange 51 to either of the panels 26 or 33, with the edge 77 of the cover plate being secured to the opposite panel.

The cover panel 41 is similar in configuration to and slightly larger than the apertures 68 or 69, and likewise the configuration and area of the peripheral flanges 48, 49, 51 and 52 of the duct are similar to and slightly larger than the area of either aperture 68 or 69 so that when the damper attachment 40 is secured to the range hood 10, the outlet opening is completely covered, and outward flow therefrom must be through the duct 43.

Thus damper attachment 40 may be interchangeably disposed with the plate 41 covering either of the apertures 68 or 69, and the duct 43 positioned above the opposite aperture, so that the duct 43 extends either horizontally or vertically from the range hood. Consequently, as

shown in FIGS. 1, 4 and 5, the duct 43 can extend horizontally through the wall 12 to the exhaust duct 36, or it may extend vertically through the ceiling or wall 11 to the duct 13 (broken lines in FIG. 1). This alternative positioning of the duct 43 is achieved without cutting, forming, or other metal working operation during installation as is required by devices presently on the market. It is merely necessary to secure the damper attachment to the hood 10 in the appropriate position by using the four screws 78.

Regardless of whether the damper attachment 40 is disposed with the duct 43 horizontal or vertical, the lightweight door 60 cooperates with the strip 65 in the same manner to control the flow to and from the hood 10. The force of gravity urges the door to the closed position, whereas operation of the blades 30 will force air outwardly of the hood 10 causing the lightweight door to be quickly moved to a fully open position for unrestricted flow from the hood 10. When the fan motor 27 is shut down, the shutter door 60 is automatically and noiselessly moved to the closed position wherein it cooperates with the strip 65 to seal against inward flow of air to the hood 10.

For the purpose of reducing turbulence at the entrance to the duct 43, a baffle assembly 80 is secured on the reverse side 81 of the cover 41 as shown in FIG. 6 and includes the support panel 83 and the main deflector surface 84 which is horizontally aligned with the strip 66, as shown in FIG. 6, along the upper edge of the opening 61. The baffle assembly 80 extends across the major portion of the opening 61 and substantially eliminates air turbulence which would normally be created by the sharp corner between the cover plate 41 and the flange 48, and permits smooth flow through the opening 61.

While the form of apparatus herein described constitutes a preferred embodiment of the invention, it is to be understood that the invention is not limited to this precise form of apparatus, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. A kitchen range hood comprising adjoining rear and top panels for mounting against the vertical and horizontal walls respectively of a building structure, means defining first and second rectangular openings in said rear and top panels respectively being substantially identical in configuration and size, said first and second

openings both being disposed adjacent the junction of said rear and top panels to form a single aperture in the hood, a damper attachment for mounting on said rear and top panels in alignment with said openings including a flat covering plate having a configuration similar to and a size larger than either of said openings, a rectangular frame secured to one edge of said plate at right angles thereto and having an outlet aperture therein, said frame having an outer periphery similar in configuration to and larger in size than said openings, a duct secured to said frame and extending perpendicularly therefrom parallel to said covering plate in communication with said aperture, a resilient foam damper strip secured to said duct around the periphery of said outlet aperture, a lightweight damper pivotally mounted in said duct on the downstream side of said strip for movement between an open position wherein said damper is spaced from said strip and a closed position wherein the periphery of said door engages said strip to seal against air flow into the hood, a flat elongated baffle on said damper attachment extending from said damper strip and parallel to said covering plate and terminating in a support panel between said plate and said baffle, said baffle and said plate being spaced apart a distance equal to the distance between said covering plate and the innermost surface of said strip along the edge of said outlet aperture nearest said junction for eliminating turbulence at the entrance to said outlet aperture and insuring smooth flow outwardly of said hood, and means for securing said damper attachment to said top and rear panels with said plate covering said first opening and said frame surrounding said second opening or for alternatively securing said attachment to said panels with said plate covering said second opening and said frame surrounding said first opening thus providing the capability of easily adapting the hood to exhaust through the vertical or horizontal wall of the building structure.

2. A kitchen range hood as defined in claim 1 wherein said flat baffle is secured rigidly to said covering plate for positioning in the one of said openings opposite the said opening covered by said frame.

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