June 4, 1957 D. S. RISLEY 2,794,514

SMOKE HOOD WITH FILTER UNIT FOR COOKING STOVE

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FIG. 1

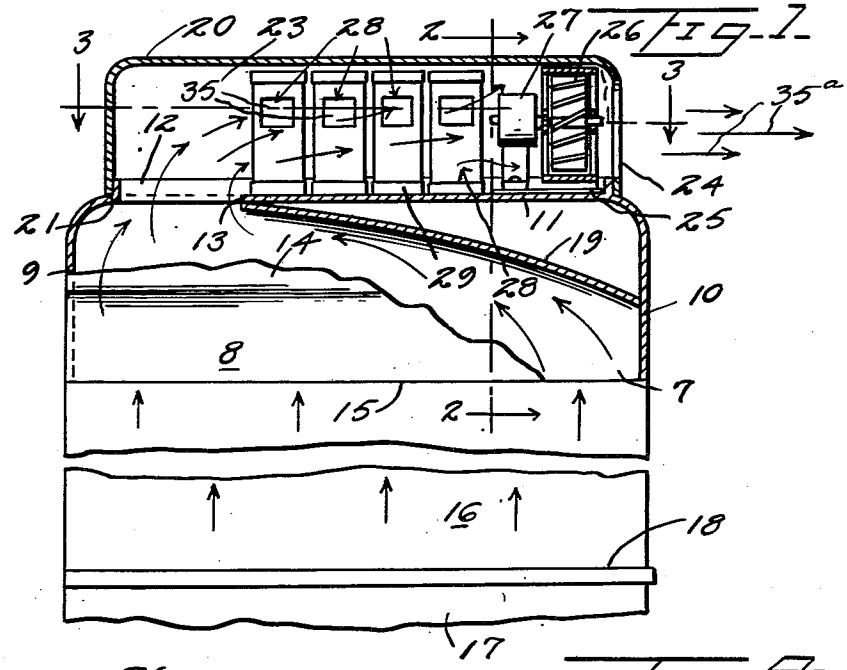


FIG. 2

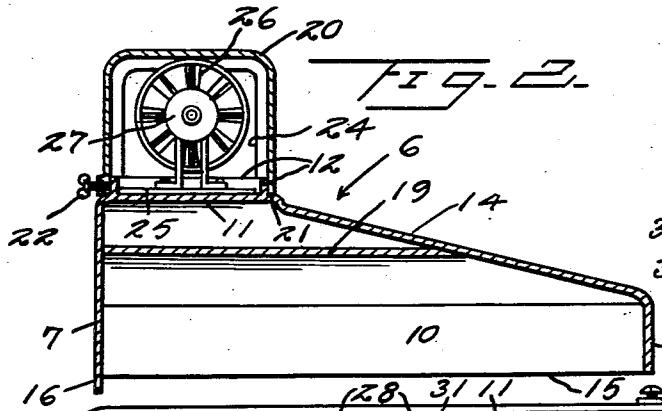


FIG. 4

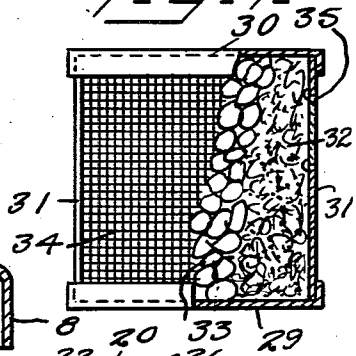
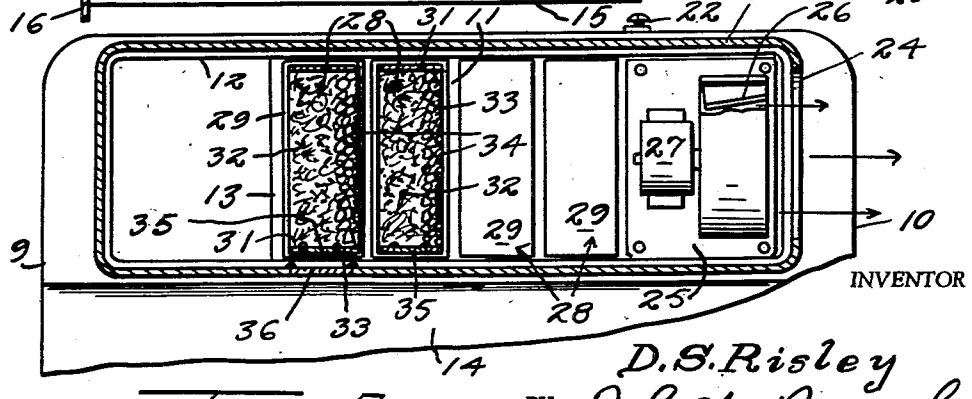


FIG. 3



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SMOKE HOOD WITH FILTER UNIT FOR COOKING STOVE

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7 Claims. (Cl. 183—37)

This invention relates to a novel cooking stove smoke hood having filtering means for filtering the smoke and fumes rising from a cookstove for removing grease and cooking odors therefrom.

More particularly, it is an aim of the present invention to provide a smoke hood which may be employed with a cooking stove and which does not require attachment of the hood to a smokestack since the smoke and fumes may be filtered in passing through the hood to a sufficient extent so that the smoke and fumes may thereafter be discharged directly from the hood.

A further object of the invention is to provide a smoke hood of extremely simple construction having a novel filter unit including readily replaceable individual filter elements.

A further object of the invention is to provide a smoke hood of extremely simple construction which may be very economically manufactured and sold and which accordingly may be inexpensively employed with a cooking stove, in that the need of a smokestack may be eliminated through the use of the hood.

Various other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawing, illustrating a presently preferred embodiment thereof, and wherein:

Figure 1 is a front elevational view, partly in vertical section, showing the smoke hood in an applied position;

Figure 2 is a transverse vertical sectional view of the smoke hood, taken substantially along a plane as indicated by the line 2—2 of Figure 1;

Figure 3 is a horizontal sectional view through the upper portion of the smoke hood and on an enlarged scale, taken substantially along a plane as indicated by the line 3—3 of Figure 1, and

Figure 4 is an enlarged view partly in elevation and partly broken away and looking toward a front side of one of the filter elements.

Referring more specifically to the drawing, the smoke hood in its entirety is designated generally 6 and includes a rear wall 7, a front wall 8, and end walls 9 and 10. The upper edge of the rear wall 7 is turned inwardly to form a rear top wall portion 11 which extends in a direction generally between the side walls 9 and 10. The rear top wall portion 11 has an upstanding surrounding flange 12 and is provided at one end thereof with a relatively large opening 13, as seen in Figures 1 and 3, which is located adjacent the side wall 9 and within the confines of one end portion of the surrounding flange 12. The hood 6 also includes a forward top portion 14 which extends between the side walls 9 and 10 and which projects forwardly from a forward edge of the rear top wall portion 11. The forward top wall portion 14 is inclined downwardly and forwardly from the rear top wall portion 11 and merges at its forward end with the upper edge of the front wall 8, as seen in Figures 1 and 2.

The bottom edges of the front wall 8 and side walls 9 and 10 are disposed in the same plane to form the open bottom 15 of the hood 6. The rear wall 7 is provided

with a depending extension 16 which extends downwardly from the open bottom 15 of the hood and which is adapted to be secured to any suitable support, for supporting the hood 6. For example, as illustrated in Figure 1, the lower portion of the depending extension 16 can be secured to the rear wall of a conventional cooking stove 17 for supporting the open bottom 15 of the hood 6 directly above and spaced from the top 18 of the cooking stove 17.

The hood 6 also includes an internally disposed baffle member 19 which extends between the rear wall 7 and front wall 8 and which is inclined upwardly from the side wall 10 to a point where said baffle member 19 joins and terminates at the top portion 11, adjacent the opening 13. Thus, a forward portion of the inclined top wall part 14 functions with the baffle member 19 for deflecting smoke and fumes, entering the hood 6 through its open bottom 15, upwardly and toward the opening 13.

The hood 6 also includes an elongated cover member 20 the open bottom 21 of which fits snugly around the flange 12 and rests upon a part of the top wall portion 11, which is disposed around said flange 12, as seen in Figures 1 and 2. At least one clamping screw 22, or other suitable fastening means, is threaded inwardly through a part of the bottom portion of the cover member 20 and is adapted to be tightened into clamping engagement with a part of the flange 12 for detachably securing said cover member in an applied position, as seen in Figure 2.

The cover member 20 combines with the rear top wall portion 11 which is surrounded by the flange 12 to form an elongated passage 23, constituting a part of the hood 6 and which is disposed above the main body portion thereof. Said passage 23 has an inlet at one end thereof defined by the opening 13. The end wall of the cover 20 which is located remote from the inlet 13 is provided with an outlet opening 24.

A base plate 25 is mounted on the top wall portion 11, remote from the opening 13, and may be secured to said portion 11 in any suitable manner. A blower 26 is disposed above the base plate 25 and is supported and driven by a motor 27 which is fastened to and rises from the base plate. The blower 26 is disposed adjacent to and faces toward the outlet opening 24.

A plurality of individual filter units 28 are supported on the top wall portion 11 between the inlet opening 13 and the base plate 25 and within the cover 20 so as to substantially fill the portion of the passage 23 in which said filters 28 are disposed. For the purpose of clarity, the actual thickness of the parts such as the flange 12 and the cover 20 are exaggerated in the drawing, so that the filters 28 actually fit more snugly in the passage 23 than as illustrated in the drawing.

Each filter 28 includes a flanged base 29 forming a shallow pan or receptacle and a similarly shaped downwardly opening top portion or cap 30 of the same size. Each filter element 28, as best illustrated in Figures 3 and 4, additionally includes rigid and solid side walls or panels 31 and ends of which are snugly received in the ends of the pan 29 and cap 30 and which support the cap 30 above and spaced from the pan 29. Thus, the parts 29, 30 and 31 form the frame of the filter unit which has an open front and back. The front portion of the filter unit 28 is filled with a mass of filtering material 32, preferably formed of glass fibers, behind which is disposed a mass of filtering material 33 of a lesser thickness and which preferably comprises activated charcoal. A piece of mesh wire fabric 34 covers the open rear face or side of the frame of the filter 28 to retain the filtering medium 33 therein.

Assuming that the parts of the smoke hood 6 are assembled as illustrated in the drawing and that the blower

26 is operated for creating a suction in the passage 23 and inlet opening 13, smoke and fumes rising from the stove top 18 will enter the hood 6 through the open bottom 15 thereof and will be deflected toward the opening 13 by the baffle 19 and a part of the top wall portion 14. Smoke and fumes and cooking odors carried thereby will be drawn by the suction of the blower 26 upwardly through the inlet opening 13 into the passage 23 and in passing longitudinally through said passage 23, toward the blower 26, will pass through each of the plurality of filters 28, by means of which grease and other impurities will be filtered out of and separated from the smoke and fumes. The separated grease and similar products will drain downwardly through the filter materials 32 and 33 of the individual filters 28 to be collected in the pans 29 thereof, after which the thus purified smoke and fumes will be exhausted by the blower 26 through the outlet 24. A plurality of filters 28 will so effectively filter the smoke, fumes and air passing therethrough that in most instances a smokestack will not be required and the smoke, fumes and air may be exhausted directly from the opening 24, as illustrated by the arrows 35*a* in Figure 1.

It will be readily apparent that the majority of the impurities will be separated from the smoke, fumes and air by the left-hand-most filter 28 which is located nearest the inlet opening 13 and through which the smoke, fumes and air first pass, so that most of the grease and impurities will be trapped by said first filter leaving the remaining filters relatively clean and to an increasing extent from said first filter to the last filter, which is located adjacent the blower 26. When the first or left-hand-most filter 28 has become soiled to an extent to render it inefficient, the fastening means 22 can be loosened and the cover 20 removed to permit removal of the first or left-hand filter 28 which can then be disposed of. The remaining three filters are moved to the left as seen in Figure 1 toward the inlet opening 13 after which a new filter is placed in the space left between the right-hand-most filter and the motor 27. The cover 20 is then replaced and secured in an applied position by the fastening means 22. As seen in Figures 1, 3 and 4, a part of the frame of each filter 28 may be provided with an inspection window 35 which is disposed in registration with an inspection window 36 of the cover 20, when said filter 28 is in a left-hand-most position, so that the user by visual inspection can determine when replacement of this filter is necessary.

Various modifications and changes are contemplated and may obviously be resorted to, without departing from the spirit or scope of the invention as hereinafter defined by the appended claims.

I claim as my invention:

1. A cooking stove smoke hood comprising a hood adapted to be supported above and spaced from the top of a cooking stove and including a rear wall, a front wall, side walls and a top wall and having an open bottom, an elongated cover having an open bottom, means detachably mounting the open bottom of said cover on a portion of the top wall, said cover combining with said top

wall portion to define an elongated flue passage, said top wall portion having an opening opening into one of said cover and flue passage and constituting the inlet of said passage, said cover having an end wall disposed remote from said inlet and provided with an outlet opening, a blower supported by a part of said top wall portion and disposed within said cover adjacent the outlet thereof and remote from said inlet for creating a suction in said flue passage and inlet, and filter means detachably supported on a part of said top wall portion between said inlet and blower, whereby the smoke and fumes emanating from said stove top will be caused to enter the hood through the open bottom thereof and will be drawn by suction from the blower through the inlet into the flue passage and through said filter means for separating grease and foreign matter therefrom before the smoke and fumes are expelled by said blower through said outlet.

2. A cooking stove hood as in claim 1, said means detachably mounting the cover comprising a flange rising from said top wall portion and snugly fitting in the open bottom of said cover.

3. A cooking stove hood as in claim 2, and means detachably securing said cover to the flange.

4. A cooking stove hood as in claim 3, said filter means comprising a plurality of filter units disposed crosswise of the flue passage and through each of which the smoke and fumes pass between the inlet and outlet of the flue passage, said cover being removable for replacing and relocating the individual filter units.

5. A cooking stove hood as in claim 1, said filter means comprising a plurality of individual filter units each disposed crosswise of the flue passage, each of said filter units including a frame comprising a base, a cap and side walls supporting said cap above and spaced from the base, said filter unit frame having open front and rear sides disposed crosswise of the flue passage, a relatively thick mass of filtering material filling the front portion of said frame, and a thinner mass of a different filtering material filling the rear portion of the frame and through which the smoke and fumes pass after passing through the first mentioned thicker mass of filtering material.

6. A cooking stove hood as in claim 5, said base portion of the frame comprising a shallow pan for collecting grease and other foreign matter collected by and draining from said filter materials.

7. A cooking stove hood as in claim 1, said cover being provided with an inspection window, and said filter means having an inspection window disposed in registration with the window of the cover for visually indicating the condition of the filter means while disposed within the cover.

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