May 29, 1951 D. F. BELT 2,554,694

ODOR ELIMINATING APPARATUS

Filed June 6, 1945 2 Sheets-Sheet 1

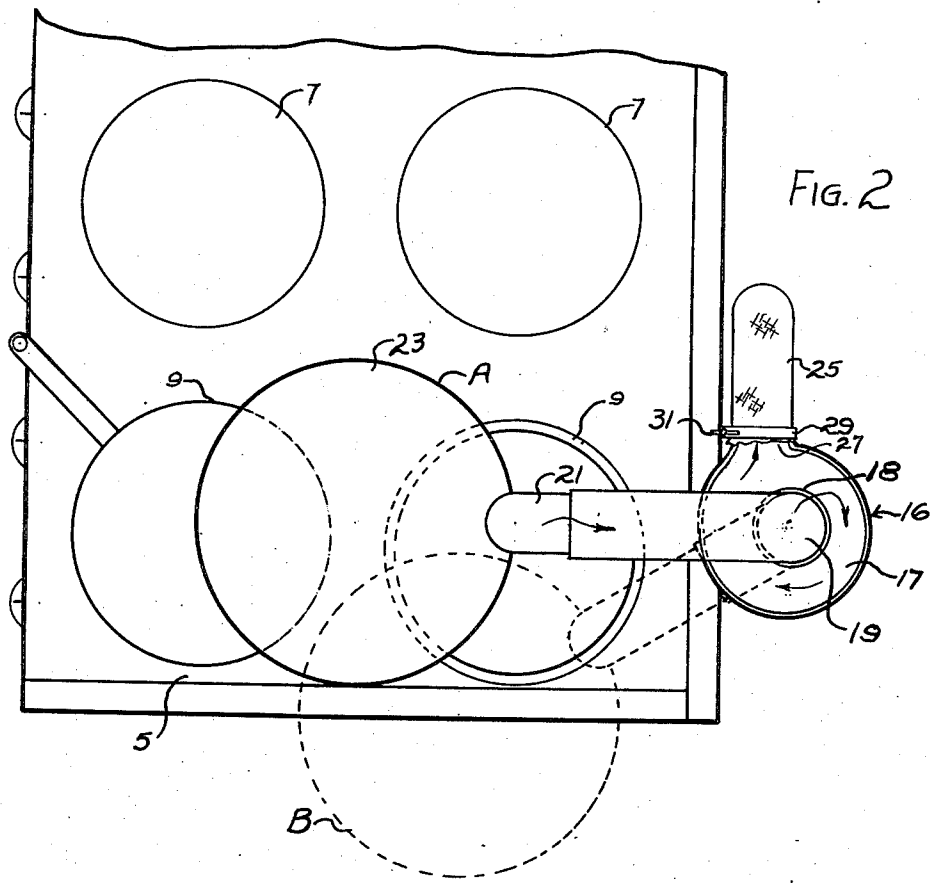

FIG. 2

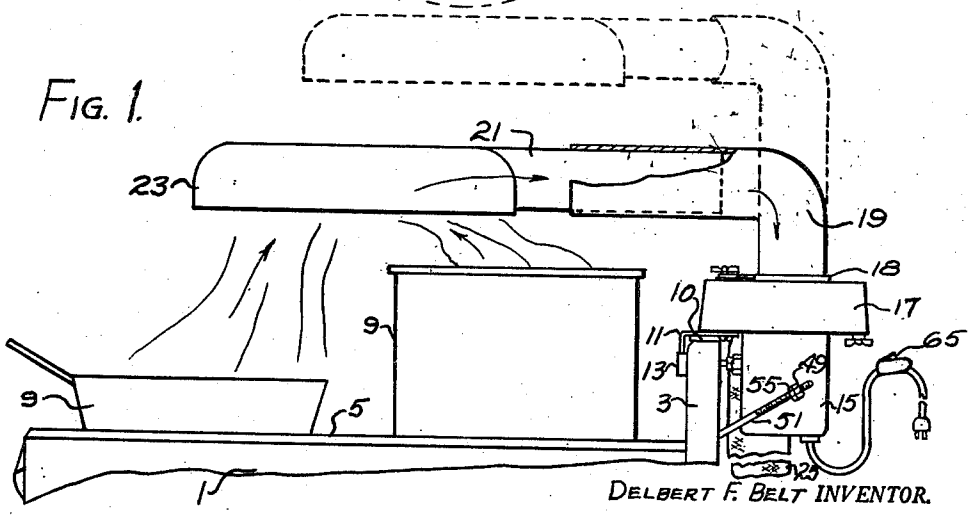

FIG. 1.

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ODOR ELIMINATING APPARATUS

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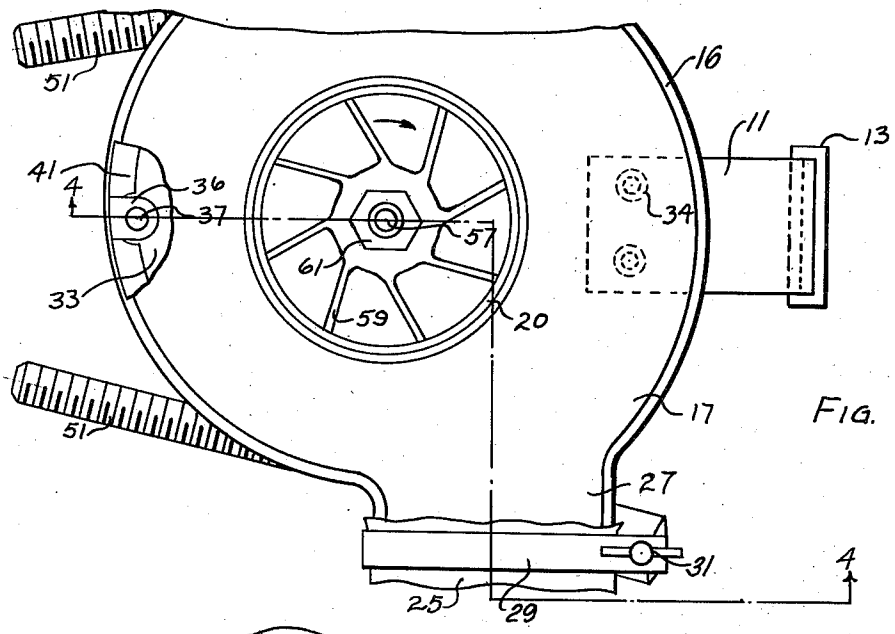

FIG. 3

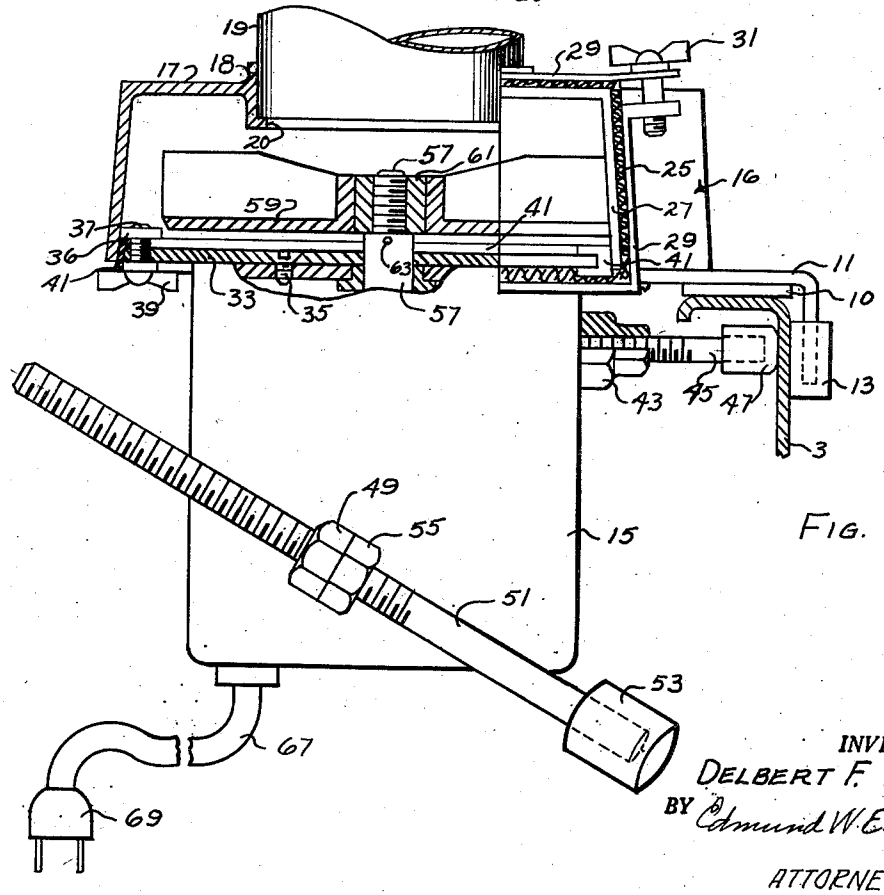

FIG. 4

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ODOR ELIMINATING APPARATUS

Delbert F. Belt, Huntington, Ind.

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5 Claims. (Cl. 98—115)

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This invention relates to an apparatus for eliminating odors. More specifically, it relates to means for collecting and treating air and vapors bearing odiferous substances, to remove the latter.

It is a matter of common knowledge that the odors resulting from the cooking of certain foods such as cabbage, cauliflower, onion, fish, bacon and others, while not necessarily offensive, permeate all of the rooms of the home and are retained by furniture, upholstery, bedding, etc., so that they persist for a long time and are not desirable.

Further, the frying of meats, etc., often produces greasy vapors which cause deposits of grease to form on the ceiling or walls of a room. This requires washing or refinishing of such surfaces more frequently than would otherwise be necessary.

Attempts have been made to cure these conditions. In some cases, ventilating fans are installed in the kitchen which pull air from the room and exhaust it to the outdoors. Such fans are relatively powerful, costly and difficult to install. Moreover, in forcing air from the room, cold air is drawn in from the outdoors; and there is a considerable heat loss.

It is also a fact that, since the fan is usually located at a considerable distance from the source of the vapors, it is not particularly effective in removing them.

Other devices utilize hoods or canopies adjacent the source of the vapors and exhaust through stacks or pipes to the outdoors. The hoods are usually unwieldly and built-in arrangements which, with the connecting ducting, are expensive.

Applicant has produced an apparatus which is in the form of an accessory or a detachable unit and which may be attached to any stove of usual manufacture. It collects the vapors by means of a very light and easily-removable hood, removes the odiferous substance from the air and vapors, and returns clean air to the room.

It is therefore an object of the invention to produce a self-contained odor-eliminating apparatus.

Another object of the invention is to produce an apparatus which is readily attachable to, and detachable from, the usual cooking stove.

Yet another object of the invention is to provide an apparatus of the type described in which the removal of the odiferous matter is effected by filtering.

Still another object of the invention is to pro-

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vide an apparatus of the type described which is readily demountable for cleaning.

A further object of the invention is to provide an electric motor on which is supported a fan and fan housing, together with suitable means for attaching same to a stove.

It is still another object of the invention to provide a duct which rotates in the fan housing so that the hood attached thereto may be positioned substantially over the cooking vessel being used and may be swung out of position in the event the food being cooked requires attention.

Yet another object of the invention is to provide a duct arrangement which will permit axial contraction and expansion whereby the hood may be positioned adjacent the front or rear heating units as required.

Still another object of the invention is to provide a bag type filter for removing odiferous matter from the air.

Another object of the invention is to provide means for collecting the gas and vapors from a cooking vessel and forcing them through a filter medium to eliminate the odors from them, returning the gas and vapors thus filtered into the room.

These and other objects will become apparent from a study of this specification and the drawings which are attached hereto and made a part hereof and in which:

Figure 1 is an elevation showing the apparatus mounted on a stove of the usual type with the hood in position over cooking vessels.

Figure 2 is a plan view of the apparatus of Figure 1.

Figure 3 is a top view of the fan, scroll and bag attachment.

Figure 4 is a sectional view taken substantially along the line 4—4 of Figure 3, showing the fan, scroll and motor, together with the mounting means.

Referring now to Figures 1 and 2, numeral 1 indicates a stove which is of the usual gas or electric type, having a back wall 3 and a cooking surface 5 in which are mounted the heaters 7. Cooking vessels 9 are shown on the heaters in Figure 1.

Mounted on the wall 3 by means of a bracket 11 which is preferably fitted with a rubber sheath or pad 13 and a pad 10, is a motor 15, having a fan or blower housing 16 mounted on one end. The scroll section 17 of the housing is provided with an air intake boss 18 in which is pivotally mounted an L-shaped intake duct 19. The boss

is formed with an inwardly directed flange 20 at its lower end, upon which the L rests.

A tube 21 is telescopically received in the duct 19 and is connected to and supports a downwardly opening hood 23.

A filter element 25, which is here shown as a cloth bag, is attached to the outlet pipe 27 of the fan housing by means of a split band clamp 29 which is drawn closed by a thumb screw 31.

Referring now to Figures 3 and 4, it will be noted that the base plate 33 of the fan housing is fixed to the motor endplate by means of suitable screws 35 and that the scroll 17 has an inwardly projecting lug 36 which is perforated at 37 and threaded to receive thumb screw 39 which passes through a suitable hole in the bottom plate. A U-shaped gasket 41, of rubber or other resilient material, is slipped over the edge of the base plate; and projection 36 and the scroll, which is tapered upwardly, rest upon the gasket. This reduces noises which might be otherwise caused by the vibration of the motor and fan, and also seals the fan housing.

The bracket 11 is fixed to the base plate 33 by means of rivets or other fastening means 34.

A boss 43 is formed or fixed on the motor 15 and is internally threaded to receive the locking stud 45 which is provided with a tip 47 of rubber or other resilient material. The stud is screwed out toward the wall 3 until the tip 47 engages it firmly.

On both sides of the motor are mounted internally threaded projections 49. As shown, the projection may be a nut having one side welded on the motor. A stud 51 having a tip 53 of resilient material is threaded into the projection and is locked in adjusted position, in which the tip engages the rear side of the wall 3 by means of a lock nut 55.

Mounted on the shaft 57 of the motor is the fan or impeller 59. The fan is preferably provided with an internally threaded insert 61 which screws onto the threads on the shaft. An opening 63 is preferably formed in the shaft so that the shaft may be held by inserting a wire or other element while the fan is being placed on or removed from the shaft. An electric conductor 67, preferably fitted with a switch 65 and the usual plug connection 69, is connected to supply current to the motor.

Operation

The motor and fan unit is mounted on the stove by hooking the bracket 11 on the back wall 3 of the stove and screwing the studs 45 and 51 out until the tips thereof engage the back sides of the wall 3. The filter bag can be attached before or after the unit is mounted on the stove and can be removed to clean, leaving the motor and plate 33 temporarily attached to the stove.

Thereafter, the L 19 is fitted into the boss 18. Either the short or the long leg of the L may be placed in the boss, depending upon whether tall or low vessels are being used for cooking.

The tube 21 is then fitted into the horizontal leg of the L with the opening in hood 23 facing downwardly, and is adjusted as nearly as possible so as to lie directly above the vessel being used. If more than one is being used, then the hood is disposed between them so as to draw the vapors from both as shown in position A (Figure 2).

The fan is then started by closing switch 65, and vapors issuing from the vessels 9, together with surrounding air, are drawn through hood 23, duct 21, L 19 and boss 18 into the fan housing and are discharged by the fan through the outlet 27 into the filter 25. The gases and vapors are filtered, and most of the odiferous matter is removed from them. Thus purified, they are discharged back into the room.

Applicant has found that a filter which is made of moleskin cloth, commonly used in industrial filtration of liquids, yields very good results.

Applicant has found by repeated test that the odors released during the cooking of foods are substantially entirely eliminated by passing them through his apparatus. There is scarcely any odor noticeable adjacent the vessels or adjacent the filter during operation, even with foods which would ordinarily perfume all the rooms adjacent the kitchen. Further, there is no noticeable "fog" in the kitchen when greases are released in cooking, as while frying bacon or other meats.

The apparatus may be taken apart for cleaning in an obvious manner, and the filter may be washed or dry cleaned when it becomes soiled.

If it is necessary to inspect the food being cooked, it is necessary merely to swing the hood out of the way as to the position shown in dotted line position B (Figure 2). When no cooking is being carried on, the hood and pipe 21 may be withdrawn from the L and may be put away if desired.

Obviously any suitable style of fan or blower may be used in place of that shown in the drawings.

It is obvious that various changes may be made in the form, structure and arrangement of parts without departing from the spirit of the invention. Accordingly, applicant does not desire to be limited to the specific embodiment disclosed herein primarily for purposes of illustration; but instead, he desires protection falling fairly within the scope of the appended claims.

What I claim to be new and desire to protect by Letters Patent of the United States is:

1. In an odor eliminating apparatus, the combination of a motor, a blower housing comprising a base plate mounted on said motor, a bracket on said base plate and an adjustable clamping member on said motor adapted to cooperate with said bracket to clampingly engage the opposite sides of a vertical wall.

2. In an odor eliminating apparatus, the combination of a motor, a blower housing comprising a base plate mounted on said motor, a bracket on said base plate, an adjustable clamping member on said motor adapted to cooperate with said bracket to clampingly engage the opposite sides of a vertical wall, and additional adjustable thrust members mounted on opposite sides of the motor and adapted to engage said wall.

3. In an odor eliminating apparatus, the combination of a motor, a fan housing comprising a scroll having one side open and having an axial inlet and a laterally directed discharge opening, a substantially flat base plate having a contour conforming to that of the open side of said scroll, resilient seal of U-shaped cross section mounted on the edge of said plate, said scroll being tapered upwardly, and means for drawing said scroll toward said plate to compress said seal radially against the edge of the plate.

4. In a cooking odor eliminating apparatus for use with a stove, the combination of a blower comprising a housing, means for attaching the housing to a stove, a discharge duct for said housing, an odor removing filter bag having a laterally projecting neck adapted to receive said

duct, and means for clamping said neck in sealing relation on said duct.

5. In a cooking odor eliminating apparatus, the combination of a blower, means for mounting it on a stove, said blower having an inlet and an outlet, a moleskin bag filter connected to said outlet, and a hood adjustably connected with said inlet.

DELBERT F. BELT.

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