

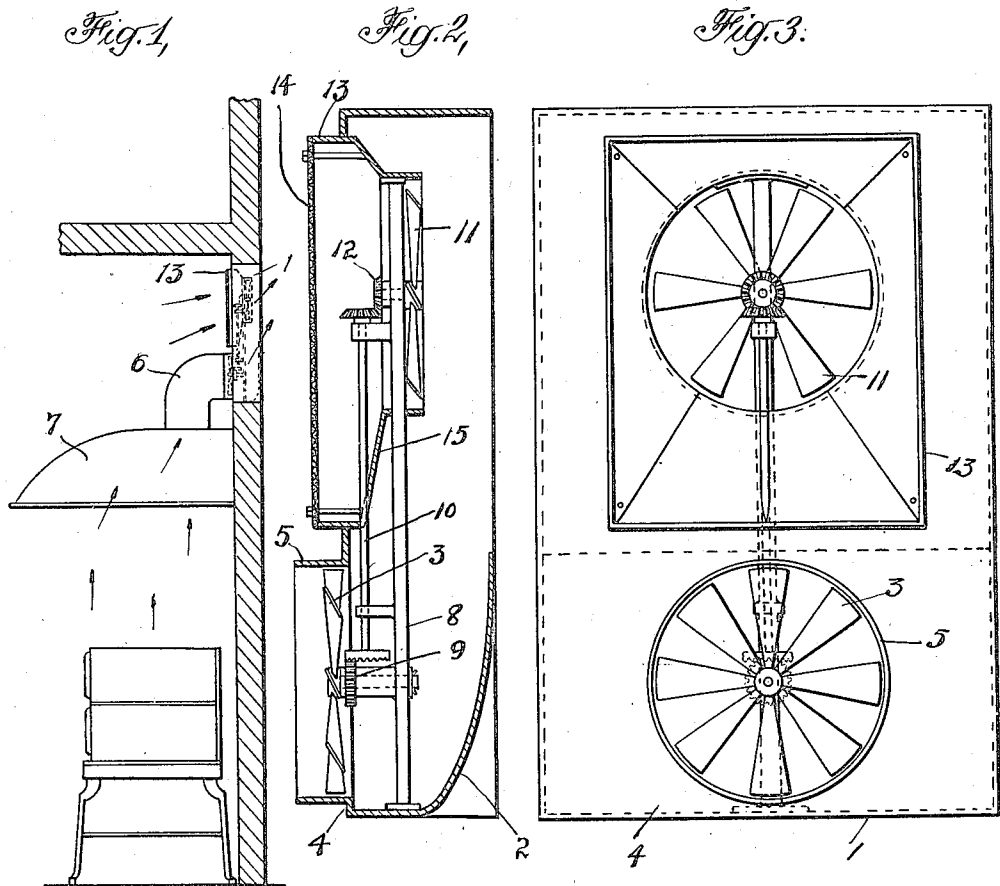
Dec. 18, 1923.

1,477,590

W. R. POWELL

KITCHEN VENTILATOR

Original Filed May 23, 1916



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UNITED STATES PATENT OFFICE.

WALTER R. POWELL, OF NEW YORK, N. Y.

KITCHEN VENTILATOR.

Application filed May 23, 1916, Serial No. 99,292. Renewed March 29, 1923.

To all whom it may concern:

Be it known that I, WALTER R. POWELL, a citizen of the United States, and a resident of New York, in the county and State of New York, have invented new and useful Improvements in Kitchen Ventilators, of which the following is a specification.

This invention relates to kitchen ventilators and has for its object to provide a ventilator for positively exhausting the heated air and fumes from the room without the expenditure of power necessary to drive a ventilating fan of ordinary construction.

To this end the invention provides an exhaust fan set in the flue wall with its intake opening near the ceiling of the room where the heated air and fumes collect, the fan having a driving connection with an air motor also arranged in the flue wall immediately over the stove or range in position to be driven by the hot air rising therefrom. The motor fan is preferably arranged in a conduit leading from the hood of the range where there will be a strong gas current for driving the air motor.

My invention also includes certain structural features of the fan and fan motor whereby a readily installed, simple and economical structure is provided.

In the accompanying drawings I have illustrated an improved form of my ventilator, and in the said drawings,

Figure 1 is a diagrammatic view showing the installation of the ventilator in the flue wall;

Fig. 2 is a vertical sectional view of the ventilator detached; and

Fig. 3 is a front elevation with the cover of the air intake removed.

Referring to the drawings, 1 indicates the frame of the ventilator which consists preferably of a sheet metal box of rectangular shape, and of a depth equal to the average thickness of a flue wall. The box is open on its rear side except for a deflecting sheet 2 lying back of the motor fan 3 which is provided to deflect the current of gas through the fan motor upwardly into the ascending gas current in the flue without producing cross currents. The front wall 4 of the casing is provided with a circular opening for the motor fan 3, the opening being surrounded by a flange 5 upon which the pipe 6 (see Fig. 1) of the hood 7 of the range is fitted in the customary manner.

The fan 3 is rotatably supported on a stud and carried by a vertical frame bar 8 rising from the bottom wall of the casing 1, the fan being provided with a spur gear 9 through which the power generated by the fan motor is delivered by means of a vertical shaft 10 to the exhaust fan 11 at the top of the casing.

The fan 11 is also supported for rotation in the frame bar 8 and the axle of the fan is provided with a bevel gear 12 driven from the shaft 10 by a corresponding gear. The fan 11 is preferably fitted in an auxiliary casing 13 set in the main casing and comprising a circular exhaust opening closely surrounding the fan 11 and an enlarged intake opening covered by a screen or grill 14 with inclined walls 15 connecting the two parts of the casing. The auxiliary casing 13 extends to near the top wall of the main casing so that the intake opening will be close to the ceiling.

In operation the fan motor 3 will be driven by the hot air and gases arising directly from the range and passing through the conduit 6 and thence through the fan against the deflector 2, whence they will be deflected by the draft of the flue. The motor fan drives the exhaust fan 11 which may be of the same capacity as the lower fan, but is preferably of less capacity either through a smaller number of blades, as shown, or of smaller pitch so as to be driven at a fair rate of speed by the normal draft through the conduit 6.

The passage of air up through the box 1 into the flue across the delivery side of the fan 11 has an injector effect, reducing the pressure on the delivery side of the fan so that the natural draft through the fan 11 tends to drive it in the same direction as it is driven by the motor fan. The chief purpose of the motor fan is to increase the capacity of the exhaust fan 11. In other words, the greater natural draft through the motor fan is made use of to increase the effectiveness of the exhaust fan which withdraws the fumes of the room itself whence they would otherwise spread into the adjoining rooms.

I claim:

1. In a kitchen ventilator, the combination of a heater and a flue therefor, said flue having an opening in its wall in a position to receive gases heated by said heater, said flue having a second opening adjacent the

space to be ventilated, fans supported at said openings, and power transmitting connections between said fans whereby the fan at the first mentioned opening operates as
 5 a motor to drive the other fan and increase the volume of gas passing through said second opening.

2. In a kitchen ventilator the combination with a range having a hood and a flue there-
 10 for, said flue having two openings in its vertical wall, fans supported adjacent said

openings, a conduit from said hood to said lower fan, power transmitting connections between said fans whereby the fan nearer said hood operates as a motor to drive the
 15 other fan and increase the volume of gas through the other flue opening.

Signed at New York, in the county of New York and State of New York, this 20th day of May, 1916.

WALTER R. POWELL.