

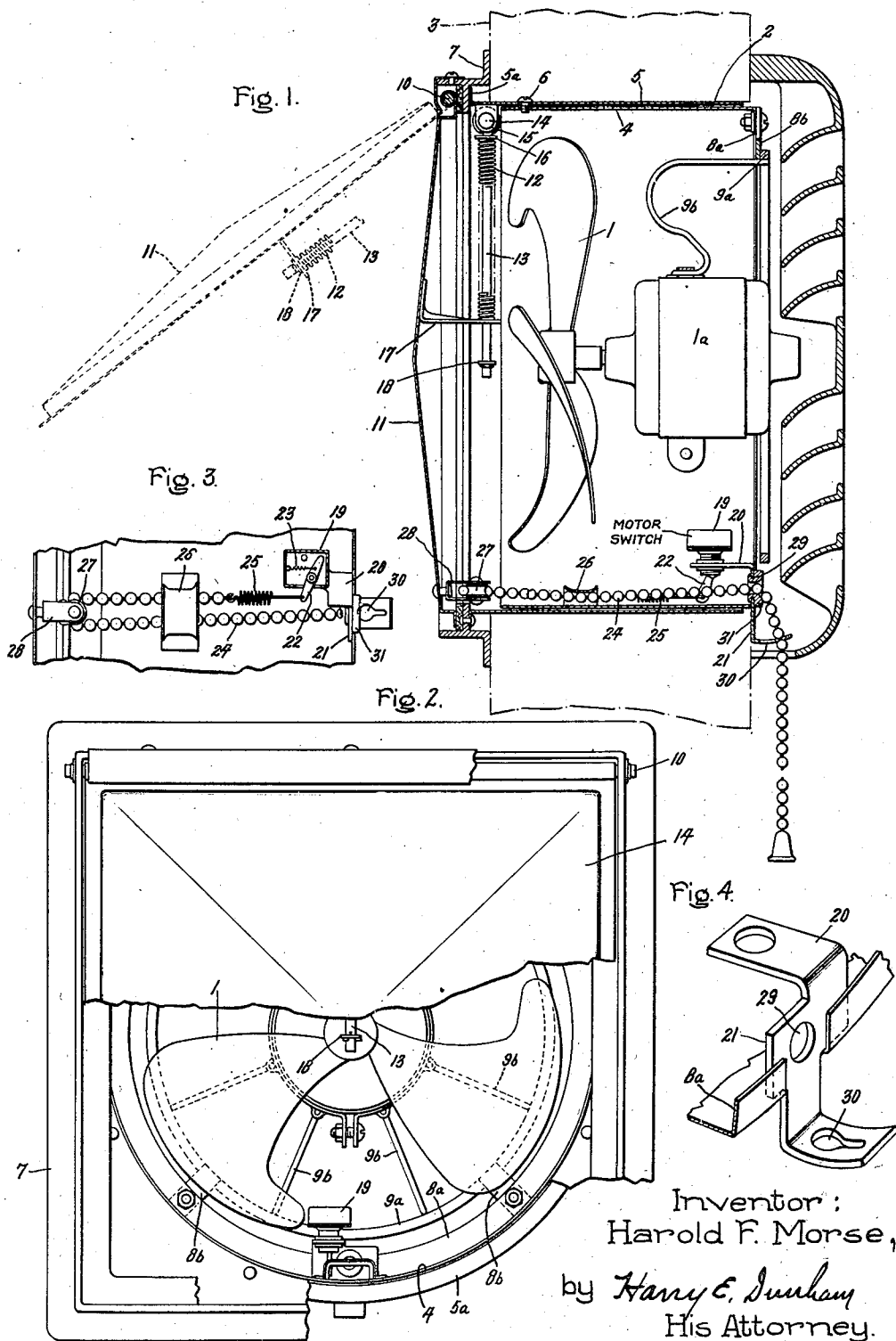
Dec. 17, 1940.

H. F. MORSE

2,225,349

VENTILATING FAN CONTROL

Filed Feb. 1, 1939



Inventor:
Harold F. Morse,
by *Harry C. Dunham*
His Attorney.

UNITED STATES PATENT OFFICE

2,225,349

VENTILATING FAN CONTROL

Harold F. Morse, Southport, Conn., assignor to
General Electric Company, a corporation of New
York

Application February 1, 1939, Serial No. 254,074

2 Claims. (Cl. 98-116)

The present invention relates to a control for room ventilating fans.

The object of my invention is to provide an improved control for ventilating fans, and for a consideration of what I believe novel and my invention attention is directed to the following description and the claims appended thereto.

In the accompanying drawing, Fig. 1 is a sectional side elevation of a ventilating fan embodying my invention; Fig. 2 is a front view of the fan partly broken away; Fig. 3 is a fragmentary view of the control, and Fig. 4 is a perspective view of the switch supporting bracket.

Referring to the drawing, there is shown an electric motor driven fan 1 mounted in a circular opening or duct 2 in the outside wall 3 of a room. The motor of the fan is shown at 1a. The lining of the opening comprises inner and outer telescoping cylindrical sleeves 4 and 5 fixed together by screws 6. Since the sections are telescoping, the position of the sleeves may be adjusted in accordance with the wall thickness. The outer end of the outer section 5 is provided with an outwardly extending flange 5a fixed to a square frame 7 which rests against the outside of the wall. The inner end section 4 is provided with an inwardly extending flange 8a to which are fixed supporting arms 8b fixed to a ring 9a. The ring 9a has flexible arms 9b fixed thereto which resiliently support the fan. Before mounting the fan, the sections 4 and 5 are secured together with the fan and frame mounted thereon, and the assembly is then inserted from the outside of the wall 3 to a position in which the frame 7 rests against the wall surface.

At the upper end of the frame 7 is mounted a shaft 10 on which a door or shutter 11 is hinged. The shutter is biased to the open position shown in dotted lines in Fig. 1 by a coil spring 12 arranged around a rod 13 pivoted at 14 in ears 15 on the telescoping section 5. The upper end of the coil spring bears against a washer 16 on the rod, and the lower end of the spring bears against a bracket 17 through which the rod is slidable. Since the pivot point 14 of the rod 13 is at the rear of the pivot 10 of the shutter, the spring always urges the shutter toward the open position. The movement of the shutter is limited by a washer 18 fixed on the rod 13.

The fan is controlled by a switch 19 mounted on an arm 20 of a bracket 21 fixed to the flange 8a. The switch is connected to the motor by suitable electrical conductors, not shown. As shown more clearly in Fig. 3, the switch (here shown diagrammatically) has an operating mem-

ber 22 which is biased by a spring 23 to the circuit closing position. In other words, when the operating member 22 is released, the switch is closed by the biasing spring to start the operation of the fan.

The operation of the fan and the opening and closing of the shutter are controlled by a flexible pull member 24, such as a bead chain, connected at one end to the switch operating member 22 by means of a strain limiting tension spring 25 and extending therefrom through a guide 26 fixed to the inner telescoping section 4, over a pulley 27 carried in a bracket 28 on the inner side of the shutter 11, and extending back through the guide 26 and through an opening 29 and a keyhole slot 30 in the bracket 21. In effect the bead chain is looped over the pulley, one arm of the loop being connected to the switch operating member and the other arm of the loop being extended to a position accessible to the operator. By pulling on the chain the operator shortens the loop and swings the shutter to the closed position. As shown in Fig. 1, the opening 29 may be provided with a bushing 31.

To close the shutter and stop the operation of the fan, the bead chain is moved into the enlarged portion of the keyhole slot 30 and is pulled downward until the shutter reaches the closed position. The bead chain is then moved into the narrow portion of the keyhole slot, which grips the bead chain between two of the beads and holds it in this position. Movement of the bead chain to this position closes the shutter and pulls the switch operating member 22 to the circuit opening position, stopping the fan.

To start the operation of the fan, the bead chain is moved into the enlarged portion of the keyhole slot 30 and released. This releases the tension in the chain and permits movement of the switch operating member 22 to the closed position under its biasing spring 23, starting the operation of the fan. Since the shutter is on an outside wall of the building it may be held in the closed position by ice frozen around its edges which would prevent its movement to the open position under the action of the biasing spring 12. The starting of the fan will, however, blow warm air from the room against the shutter, melting the ice. As soon as the ice is melted the shutter moves to the open position under the action of the biasing spring 12.

From the above description it is apparent that the control of the switch and shutter is dependent upon the tension in rather than the position of

the bead chain and that the switch and shutter are capable of independent operation.

The control has the further advantage that it may be used with varying wall thicknesses without adjustment.

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

1. In a room ventilating fan, a duct, a shutter therefor biased to the open position, a part connected to and movable with the shutter, a fan for forcing air through the duct against the shutter, a fan-controlling switch having an operating member biased to the closed position independent of the shutter position, a flexible pull member looped over and slidable on said part, one side of the loop being connected to said switch operating member whereby tension therein urges the operating member to the open position in opposition to its biasing force and the other side of the loop being accessible to an operator whereby upon tensioning thereof said part is moved against

the force of the shutter biasing means to a position corresponding to the closed position of the shutter.

2. A room ventilator comprising, a duct for conducting air through a wall, a shutter for closing the duct, means for biasing the shutter to an open position, a fan for blowing air through the duct against the shutter, a fan controlling switch, means biasing the switch to the position starting the fan, a flexible pull member for controlling the shutter and switch, and operative connections between the pull member and the shutter and switch whereby upon tensioning of the pull member the switch is operated to shut off the fan and the shutter is closed and upon release of the tension in the pull member the switch is operated to start the fan and the shutter is permitted to move to the open position under its biasing means.

HAROLD F. MORSE.