

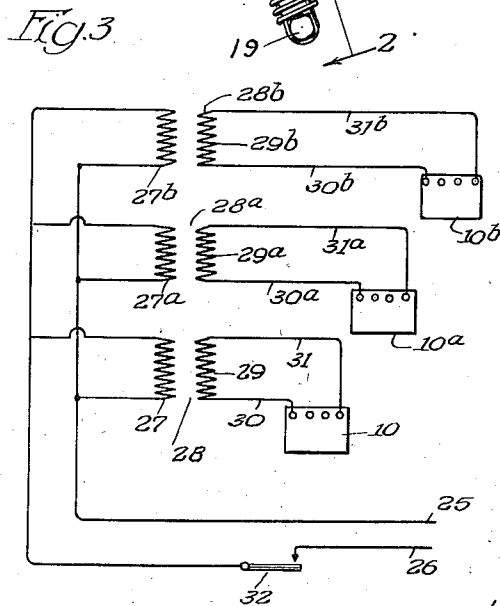
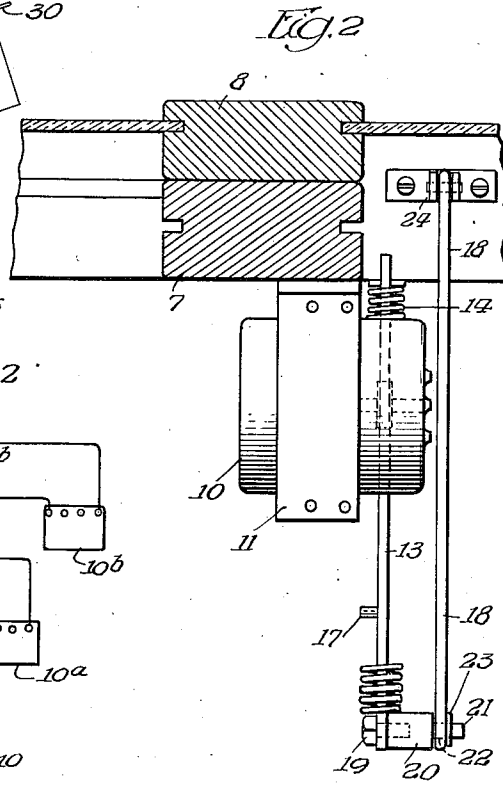
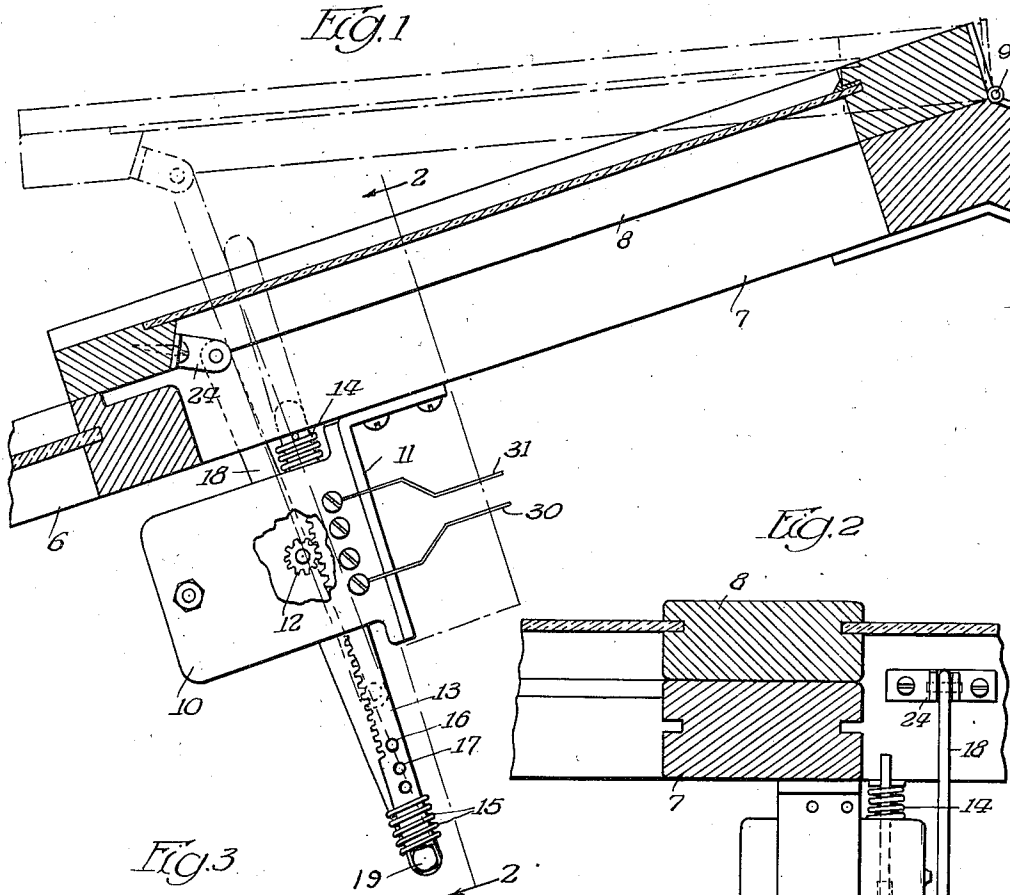
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GREENHOUSE VENTILATION

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GREENHOUSE VENTILATION

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1 Claim. (Cl. 236—49)

This invention relates to means or apparatus for automatically ventilating greenhouses, or the like, and includes the complete system as well as certain combinations or elements used therein and is particularly intended as an improvement in Orlyt greenhouses such as shown in my application for Letters Patent for Greenhouse construction, filed October 23, 1939, Serial No. 300,746. Such Orlyt greenhouses have heretofore frequently been provided with manually operated ventilators. As these ventilators require opening and closing more or less frequently, and often many times a day, it necessitates constant supervision and frequent attention in order to properly ventilate the greenhouse.

The objects of the present invention are to provide an improved Orlyt greenhouse with means for automatic ventilation in accordance with the temperature requirements; to provide a system for opening and closing ventilating windows of a greenhouse which will be actuated in accordance with changes in the temperature in the greenhouse; to provide thermostatically controlled means for actuating greenhouse ventilator windows; to provide means whereby one or more windows may be actuated; and to provide such other advantages of operation and improvements in construction as will be described more fully hereinafter.

In the accompanying drawing illustrating this invention:

Fig. 1 is a transverse sectional view of the peak portion of a greenhouse roof showing the window actuating means;

Fig. 2 is a sectional view taken substantially on the line of 2—2 of Fig. 1; and

Fig. 3 is a diagrammatical view showing the wiring system for a plurality of motors.

In the particular embodiment of the invention as shown in this drawing, 6 represents a greenhouse roof having a window frame or opening 7, the roof being preferably pitched in the usual manner. A window sash 8 is hinged to the frame or roof as indicated at 9 so that it will cover the opening and may be raised and lowered for ventilation. A motor 10 is mounted on the frame by means of a bracket 11 and actuates the means for opening and closing the window. For this purpose the motor drives a pinion 12 which engages with a rack 13 slidably mounted in bearings in the motor frame. Buffer springs 14 and 15 are mounted on the upper and lower ends of the rack respectively and are adapted to engage with the top and bottom of the motor frame when the rack has reached the limits of its movement

and prevent any jar or blow against the motor frame. The rack is provided with one or more holes 16 for receiving a pin 17 to limit the upward movement of the rack whereby the window may be opened less than its full opening movement as, for instance, in cold weather.

The lower end of the rack 13 is connected to a bar or rod 18 by means of a bolt or screw 19 and connector or spacer 20. The connector has a reduced portion 21 which engages with a hole 22 in the end of the bar 18, and is provided with a locking pin 23 whereby the bar will have pivotal engagement with the rack. The upper end of the bar 18 is pivotally connected with a bracket 24 secured to the inner face of the lower rail of the sash 8 as shown in Figs. 1 and 2.

The motor 10 is preferably of the type through which current may be permitted to flow to hold the load even after the motor has been stopped. Such motors usually operate on currents of lower voltage than supplied in the power lines, and the voltage is cut down by means of any suitable transformer. An operating circuit for a plurality of motors 10, 10a, 10b, is shown in Fig. 3. The power or service lines 25 and 26 from any suitable source of supply are connected with the primary windings 27, 27a, 27b of the transformers 28, 28a, 28b. The secondary windings 29, 29a, 29b are connected through wires 30, 30a, 30b, and wires 31, 31a, and 31b with the respective motors as shown. A thermostat 32 serves to control the power circuit and is positioned at any suitable point in the greenhouse to secure the best results.

The operation of my automatic ventilating system will be readily understood from this drawing. When the sun shines and the greenhouse stores up heat, or becomes heated for any reason above a desired predetermined degree, the thermostat will close the circuit and current will be supplied to the transformers and consequently to the motor or motors. The motor 12 will run until the rack 13 reaches the end of its movement and will open the window 8 as indicated by dotted lines in Fig. 1. Current will continue to flow through the motor as long as the thermostat is closed and will therefore hold the window or windows in raised position. When the greenhouse cools to a predetermined temperature, the thermostat will open so that current is no longer supplied to the motor or motors. The weight of the window will then cause it to close and during the closing movement, the rack will reverse the movement of the motor and the parts will return to normal position. The holes 16 and pins 17

serve as a means to limit the upward movement of the rack and consequently provide adjustment of the opening which is particularly desirable in cold weather. Such automatic control of the ventilation not only serves to avoid a large amount of supervision and effort on the part of an attendant, but also insures more uniform conditions in the greenhouse which, of course, is particularly desirable for most of the plants or flowers which are grown under such conditions.

While I have shown and described a commercial form of my invention, it is apparent that the system may be modified to a considerable degree for different installations, and therefore I do not wish to be limited to the particular apparatus shown and described except as specified in the following claim in which I claim:

The combination with a greenhouse, of a ven-

tilating window positioned within the roof and adapted to be opened and closed, a motor secured to the roof adjacent to the window, a rack slidably mounted in the motor frame, a pinion driven by the motor engaging with the rack, buffer springs mounted at either end of the rack, adjustable means for limiting the throw of the rack, a link connecting the rack to the window frame, a source of electric supply, thermostatic means for controlling the supply, a transformer interposed between the supply circuit and the motor for reducing the voltage supplied to the motor, the arrangement being such that when the thermostat is closed, the motor will be driven to open the window and will hold the same open, and when the current is discontinued, the window will return to closed position.

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