UNITED STATES PATENT OFFICE

2,669,392

POULTRY HOUSE HEATING SYSTEM


Application April 6, 1950, Serial No. 154,372

1 Claim. (Cl. 237—48)

1. This invention relates to a forced warm air heating system to be used in poultry houses, particularly those for the raising of the chickens from small chicks to maturity.

The object of the invention is to provide a method of heating chicken houses so that the temperature is controlled in the area in which the chickens live, that is from the floor to eighteen inches above the floor.

A further object of the present invention is to provide warm air at the desired level which will also be fresh clean air.

A still further object of the invention is the provision of automatic means for maintaining the supply of fresh warm air without the supervision of an attendant.

It is a still further object of this invention to provide means for raising or lowering the warm air delivery tube to vary the height of the volume of controlled warm air.

It is a further object of the present invention to provide automatic means for venting the air to the outside through a forced regulator.

With the foregoing and other objects in view, the invention resides in the novel arrangement and combination of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein described may be made within the scope of what is claimed without departing from the spirit of the invention.

The invention is shown in the accompanying drawings in which:

Figure 1 represents a diagrammatic view of the system.

Figure 2 represents a detail view of the damper of the automatic ventilator.

Figure 3 represents a detail view, partly in section, of the outlet pipe and distributing nozzle adjustable connection.

Refering particularly to the drawings a diagrammatic view in Figure 1 represents a furnace room 5 and a chicken housing room 6, separated by a partition 7. The furnace could be of any type but is here shown as an oil burner 2 heating a furnace 9 through which warm air is forced by means of a fan 10, the warmed air passing over a humidifier 11, all of which is ordinary construction. An electric vaporizer 12 for vaporizing glycol or any other germicide is connected by a pipe 13 with the air intake 14 of the furnace.

The air intake 14 is connected at 15 to the outside and at 16 to the interior of the chicken house, air being drawn from both places and passing over a filter 17 to be delivered to the fan 10. The warm air outlet 18 passes through the partition and across the top of the chicken house in the form of a main supply duct 19. This supply duct has outlet pipes 20 offshoots where desired and generally arranged about ten to twenty feet apart. These offshoot pipes 20 hang from the main duct 19 to an adjustable position from one to three feet from the floor and are provided with their outlet and with a cone-shaped distributing nozzle 21. Each of the offshoot pipes are also provided with a regulating valve 22.

Located in the wall and at substantially the top of the lowest level of the heating pipe outlet is a barometric vent 23. This vent opens automatically, due to the slight increase of air pressure within the house when the warm air is being forced through the pipes, to remove stale air, excess moisture and undesirable fumes. This vent remains closed except during the outpouring of warm air from the pipe outlets.

At any desired height a thermostat 24 and a humidistat 25 are located. These instruments are connected by electric conduits 24' and 25' to dampers 26 and 27 and control the opening and closing of these dampers automatically. To get the desired temperature and relative humidity either one of the dampers 26 and 27 may be opened or closed, or both may be opened or both closed by a set of controls of the type purchased on the open market. The thermostat, humidistat, and automatic dampers are shown diagrammatically as the detail construction is not part of this invention.

Refering particularly to Figure 2 the barometric vent 23 is shown as a weight balanced valve 28 carried in a pipe 29 and adapted to pivot on pivots 30 upon the event of a slight increase in pressure in the room or to a draft within the room. A weight 31 is threaded on the bolt 32 to balance the valve 28 so that the slightest increase in pressure or draft will open the vent to the outside air.

The humidistat 25 is set to operate between 45 to 60% to maintain a balanced relative humidity within the room. Should the humidity become too great which is often the case the humidistat operates to close the valve 27 and open the valve 28, the draft or increased pressure due to the operation of the fan 10 will open the vents 23 discharging the humidified air to the outside. Under normal conditions when the humidity is within the desired limits the valve 27 will remain open and operation of the fan 10 does not then create the pressure within the chicken house and
the vents 23 will, therefore, not be opened. This maintains a balanced condition of humidity within the chicken room.

Warm air plants are not in themselves new and the invention here is directed to the application to a chicken house where it is necessary to maintain a warm air level at the floor and a slight distance above. To accomplish this the specific outlet nozzle is provided and the height above the floor carefully regulated. By its use a temperature of 60° F. may be maintained at the desired level while the temperature at the ceiling will be below 72° F. It has been proven through experiment that temperature and fresh air are the critical factors in the raising of small chickens. With applicant's method the temperature may be controlled exactly and at the same time an ample supply of fresh air insured.

When the temperature drops below the desired degree, the thermostat will function to start the oil burner and fan. The fan sucks in the air through the pipes 15 and 16 or either selected one and after forcing the air through the furnace and the humidifier 11 it is delivered to the chicken house at the desired level through the outlet pipes 21. These outlets are of special design on which a separate application Serial Number 164,371, filed April 6, 1930, spread the air evenly and gently over the floor. The flow of air is delivered directly upon the chickens and builds up a slight increase of pressure within the chicken house. This slight increase of pressure operates the barometric vent and allows a certain proportion of the stale air, moisture and undesirable odors to escape into the outside atmosphere.

These barometric vents are located along each side of the wall, while the nozzle delivering the warm air is located along a longitudinal center line. Thus there is a gentle flow of air from the center of the room to the outside walls. This gentle flow provides the chickens with an abundance of warm fresh clean air, of the correct temperature and the right humidity, completely free of harmful germs, provided the attachment for introducing the glycol vapor is connected in the system. With a system such as above described the guesswork is eliminated in the raising of chickens. A farmer knows that his chickens are in an atmosphere of fresh air of the correct temperature at all times. In the summer time the same unit is used with the oil burner shut off to provide a supply of fresh air to the chickens, thus making it possible to raise small chicks during the summer months which heretofore has been impossible.

What is claimed is:

A heating system for poultry houses, comprising a hot air furnace, a blower for said furnace, means for continuously conducting air from said blower to a multiplicity of pipes arranged in a row and perpendicular to the floor of said poultry house, said pipes being suspended and having no connection with the floor, means for raising or lowering the discharge opening of said pipes relative to the floor to provide a strata of warm air between the floor and the outlets of said pipes, formed by the continual inflow of warm air from the pipes, means for introducing fresh air into the system, means for controlling the recirculation of air within the poultry house, and automatic pressure operated means located substantially level with the lowermost position of the pipe outlets for venting the air inside the poultry house to the outside.

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