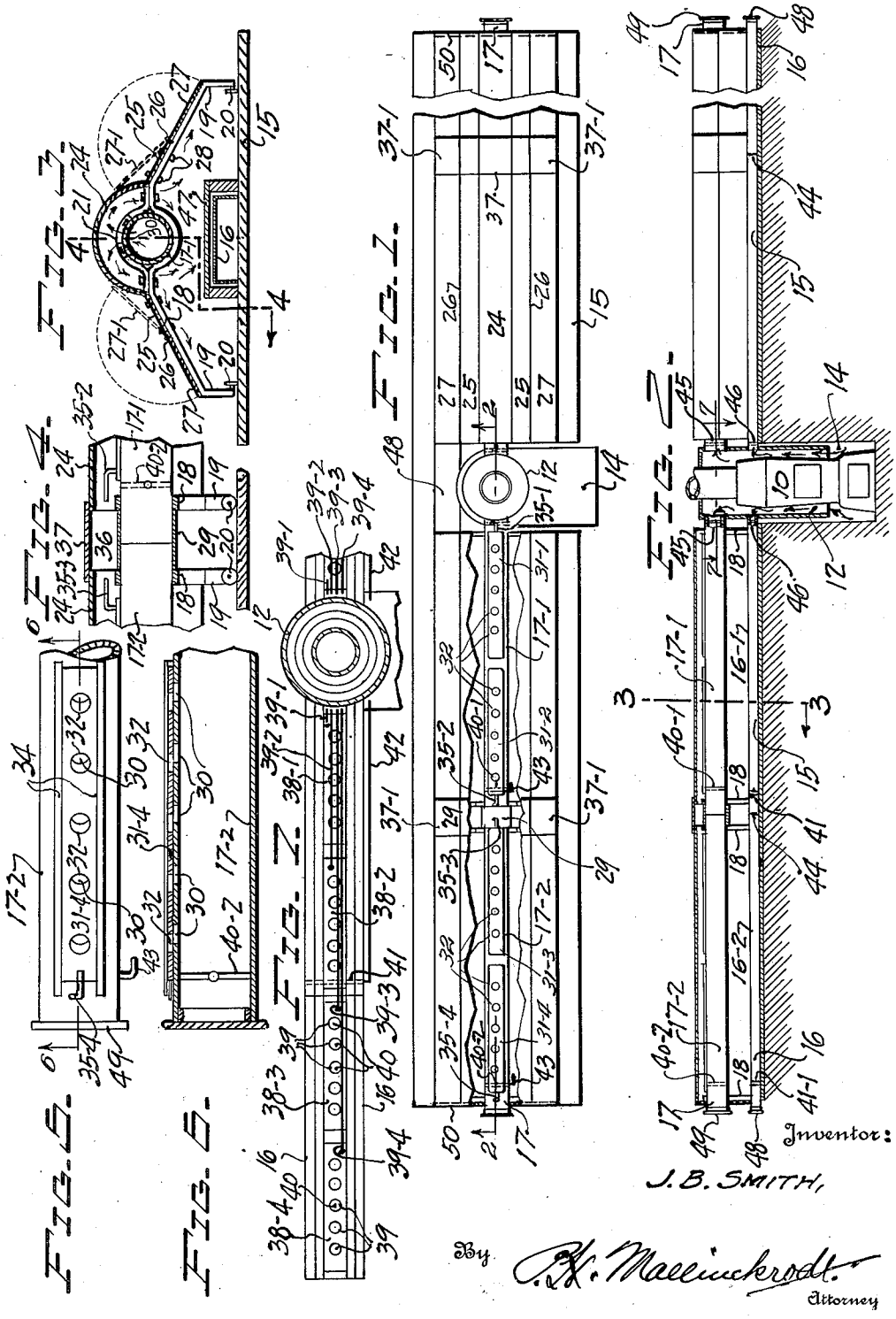
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BROODER

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BROODER

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4 Claims. (Cl. 119—32)

This invention relates to an improvement in brooders, and its principal objects are:

First.—To distribute suitably warmed fresh air uniformly and constantly throughout the brooding space.

Second.—To be sectionalized, so that the brooder may be expanded from a small capacity to a large capacity, yet always be complete in itself.

Third.—To have the heat closely regulable so as neither to underheat nor overheat the various parts of the brooding space.

Fourth.—To require a minimum of attendance.

Fifth.—To be easily cleaned.

Sixth.—To be economical in fuel requirements.

In the accompanying drawing,

Fig. 1 represents a plan, parts broken away, of one embodiment of my improved brooder;

Fig. 2, a longitudinal vertical center section taken on line 2—2, Fig. 1, showing upper and lower heat conductors in elevation, the part 47 being omitted and the pipes 17—2 with dampers 31—4, and so on, being shown in elevation;

Fig. 3, a vertical transverse section taken on line 3—3 in Fig. 2, and including an optional longitudinal housing for the lower heat conductor, drawn to an enlarged scale;

Fig. 4, a fragmentary section taken on line 4—4 in Fig. 3;

Fig. 5, a fragmentary plan of an upper conductor section, drawn to a scale still further enlarged;

Fig. 6, an axial vertical section taken through the heat conductor along the line 6—6, Fig. 5; and

Fig. 7, a plan, largely in diagram showing the arrangement of dampers in the lower conductor, but omitting everything above the lower conductor.

Referring to the drawing, the numeral 10 indicates a heater of any suitable kind, which is surrounded by a drum or jacket 12. This heater may be set in a pit 14 centrally located with respect to the floor 15 of a brooder house (not shown).

Extending from the drum 12, are lower heat conductors 16, 16, which may rest on the floor 15, while above these, and spaced apart therefrom, are upper heat conductors 17, 17. The conductors 17 may each consist of sections, in the present instance, two, designated as 17—1 and 17—2, respectively. Each of these sections may be carried on two bent members 18, and be fastened thereto by removable caps 21. Each bent member may have legs 19, on the lower ends of which may be casters or wheels 20.

Over each upper conductor section, and spaced apart therefrom, is a hood section 24, having wings 25 sloping away from the lower extremities of the hood proper, and these wings have hinged thereto at 26, longitudinally extending wing door sections 27. Each hood may be supported upon two of the bent members carrying an upper conductor section, and be fastened thereto by means of bolts 28 or other suitable fastenings. Door sections 27 may be lifted and swung into the position 27—1 to afford access to the inside of the brooder.

The openings which extend along the length of the hood on opposite sides thereof between the lower edges of the door sections of the wings, provide a means of automatically keeping the air under the hood uniformly warm and fresh since these openings cause a substantially uniform discharge, in opposite directions, of the used air from under the hood, thus making certain that no bodies of dead or overheated air can ever exist under the hood so long as these openings remain uncovered. The rate at which the warm, fresh air passes through the brooder and at which the used foul air is discharged through the said openings, is controlled by the adjustable dampers 31—1, 31—2 and so on.

The lower edges of the wing doors, and therefore in a broad aspect the lower edges of the wings, are disposed to at least partially define two openings mutually opposed to each other, through which air is discharged from the brooder, in a manner calculated to maintain a balance in freshness and in temperature of the air within the brooder. The energy necessary to maintain the discharge of the air streams through the two mutually opposed openings, is due to the slight excess in pressure of the heated air coming in through the aforesaid conductor over and above atmospheric pressure.

Conductor section 17—1 is removably connected to drum 12, and conductor section 17—2, is in turn, removably connected to conductor section 17—1. The joints between sections 17—1 and 17—2, are formed by the clamping sleeves 29, so as to allow the separation of the sections, when desired, for cleaning or other purposes.

It is to be understood, that while the present drawing shows only two brooder sections on each side of the heater, a right and a left, as many of these sections may be added as may be practicable in the growth and expansion of a poultry raising plant. It should be clear, however, that each section is composed of a heat conductor, a hood with its wing portions, and the two supporting bent members.

Each of the conductor sections 17—1 and 17—2, is provided in its top wall portion with heat outlet openings 30 suitably spaced apart from one another for an equable distribution of heated air longitudinally along the conductor. To regulate the passage of air through these outlets, I provide dampers 31—1, 31—2, 31—3, 31—4, slidably disposed in guides 34. These dampers have openings 32 therein which are spaced apart to correspond to the openings 30, so that as the dampers are pushed in one direction or the other, the effective outlet area through the openings 30 and 32 may be regulated from zero to maximum.

Any suitable means may be provided to operate the dampers, but a convenient way is by means of the respective handles 35—1, 35—2, 35—3 and 35—4, attached thereto. Handle 35—1 may be grasped from the pit 14; handles 35—2 and 35—3 through the space 36 provided between conductor section 17—1 and 17—2; and handle 35—4, from the end of the last brooder section.

It will be noted in Fig. 4, that conductors 17—1 and 17—2 project beyond the ends of respective hoods 24, so that when the conductors are in conjunction, the hoods still will be apart from one another. Space 36 is closed by a cover 37 which can be lifted off to provide the necessary access to handles 35—2 and 35—3. The cover 37 may have door portions 37—1 hinged to the main cover portion along the line 26.

Lower conductors 16, along their top walls, may be provided with dampers 38—1, 38—2, 38—3 and 38—4, these dampers being each provided with openings 39, by means of which, together with corresponding openings 40 in the lower conductor walls, the outflow of air may be regulated in substantially the same manner as previously explained herein in connection with dampers 31—1 to 31—4. The dampers 38—1 to 38—4 may be operated by means of rods 39—1 to 39—4, respectively, these rods being accessible to the operator from the pit 14.

In order that the distribution of heat may be regulated according to the individual needs, I provide the upper conductor sections 17—1 and 17—2, with the respective swivel dampers 40—1 and 40—2, and the lower heat conductor with a swivel damper 41, the latter being operable from the pit, by means of a rod 42. Other lower conductor dampers, such as 41—1, for additional sections, may be provided. The various lower conductor sections may be joined to one another at points 44. The upper conductor swivel dampers 40—1 and 40—2 may be operated by short handles 43 extending just outside the conductors. Other swivel dampers 45 may be provided in the upper heat conductors just adjacent the heater jacket 12, so that the brooder sections on either side of the heater may be entirely shut off from the heat supply when the brooder sections on the opposite side of the heater, only, are in use. For a similar purpose, dampers 46 are provided in the lower heat conductors just adjacent the heater drum 12. The last sections of the lower heat conductors may be provided with caps 48, and the last upper section with caps 49, while the corresponding hoods may have end walls 50.

In order to prevent contact of chicks with the lower heat conductors, a cover 47, spaced somewhat apart therefrom, as indicated in Fig. 3, may be provided.

The flexibility of my improved brooder may be realized when it is seen that, by means of dampers 45 and 46, heated air from the drum 12 may be diverted from either of the respective right and left groups of upper heat conductors, and/or either of the right or left groups of the lower heat conductors. At the same time, by means of the dampers 40—1 to 40—4, the distribution to the different successive sections of the upper heat conductors may be definitely controlled, while a similar control may be effected in the lower heat conductors by means of respective dampers 41.

By properly manipulating the various dampers 40—1, 41, 45 and 46 in conjunction with the dampers 38—1 to 38—4 and 31—1 to 31—4, a most complete and effective control of heated fresh air can be effected throughout every part of the brooder, and the requirements for different temperatures simultaneously, in different portions of the heater, can clearly be met.

In considering the method of maintaining a warm, fresh air atmosphere within a brooder space, it may be observed that this consists in providing a continuous supply of warm, fresh air at a considerable height above the brooding floor and continuously crowding this air down onto the floor, then assuring uniformity of freshness and temperature of the air at the floor, by balancing the air pressure just above the floor. This balance is accomplished by discharging air from the brooding space continuously along the length thereof, and at a low level above the floor, in two mutually opposed unobstructed streams, along the length of the brooding space.

While a specific embodiment of this invention is herein shown and described, it is to be clearly understood that various changes could be made therein without departing from the spirit and scope thereof as described in the following claims.

Having fully described my invention, what I claim is:

1. A brooder, including in combination, a heater positioned in proximity to a brooder floor, a conductor extending from said heater substantially in contact with said floor, said conductor having openings spaced apart longitudinally along the top wall thereof, another conductor extending from said heater, and spaced apart upwardly from the first-mentioned conductor, the second-mentioned conductor having openings spaced apart longitudinally from each other along the top wall thereof, a hood over and spaced apart from the second-mentioned conductor, wings extending from the hood downwardly to points in proximity to said brooder floor, and dampers for regulating the outlet of heated air through the openings in the top walls of said conductors.

2. A brooder, including in combination, a heater for air suitably positioned with respect to a brooder floor, a conductor for air consisting of a plurality of sections extending from the heater substantially parallel to the brooder floor, the conductor section adjacent the heater being removable therefrom, and the consecutive conductor sections being removable from one another, a supporting bent member resting on the brooder floor at each end of each conductor section, a hood over each conductor section and spaced apart from an adjacent hood so as to provide access to the respective conductor sections and a removable cover over each space between consecutive conductor sections.

3. A brooder, including in combination, a heater for air, a brooder floor in proximity thereto, conductors for air radiating from said heater

and spaced apart from said floor, other conductors for air radiating from said heater below and substantially parallelling the first conductors, the first conductors consisting of sections removably connected to one another, supporting bent members at each end of each section, hoods over and spaced apart from said conductor sections, said hoods being spaced apart from one another longitudinally to afford access to said conductor sections, said bent members straddling the second conductors, and removable covers over the spaces between consecutive hoods.

4. A brooder, including in combination, a heater for air, a brooder floor in proximity thereto, a conductor for air extending from said heater and spaced apart from said floor, another conductor for air extending from said heater below the first conductor, the first conductor consisting of sections removably connected to one another, supporting bent members at each end of each conductor section, said bent members straddling the second conductor, dampers in the top walls of both the first and second conductors, internal dampers at the far ends of the consecutive conductor sections, and internal dampers in the second conductor positioned to correspond to the internal dampers of the first conductor.

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