June 2, 1931. P. S. MARTIN 1,808,364

BROODER

Original Filed Jan. 21, 1927

Fig. 1.

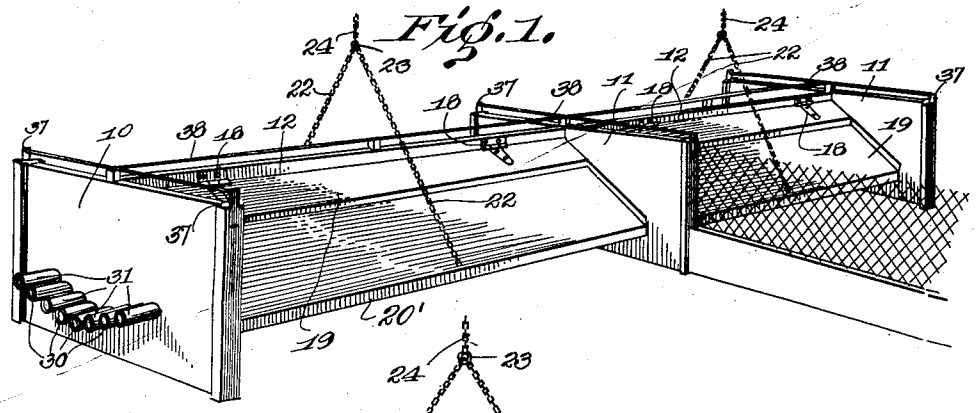
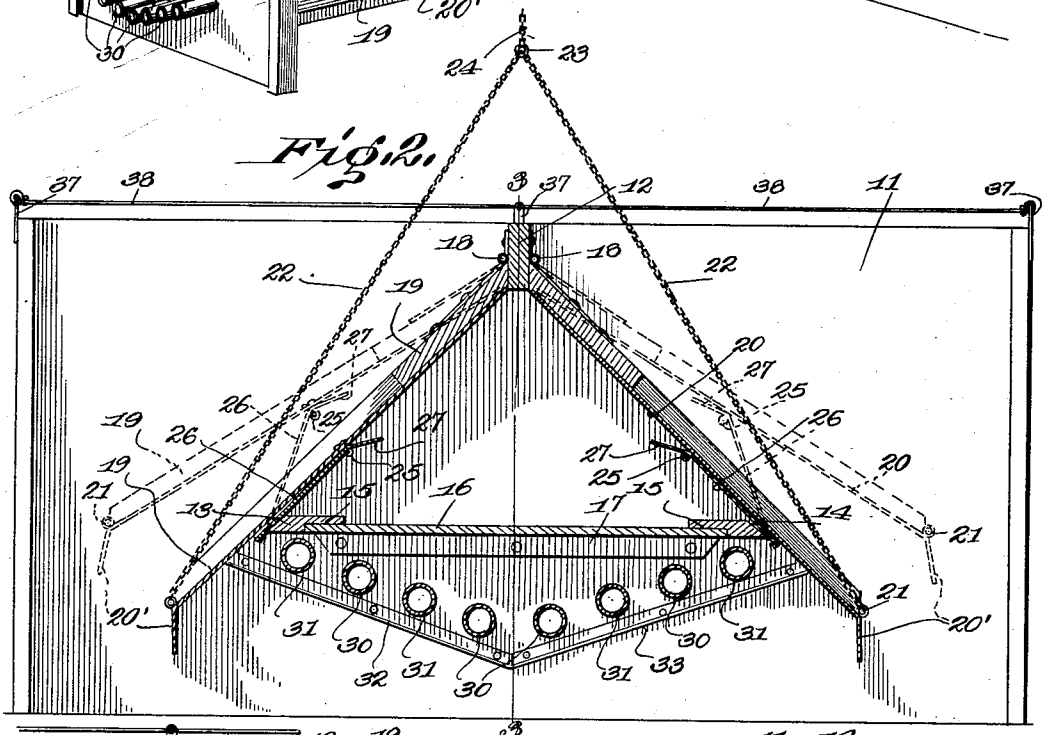


Fig. 2.



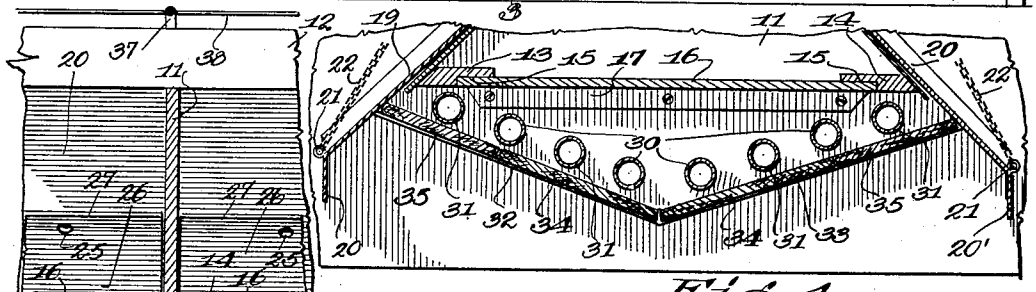


Fig. 4.

Fig. 3.

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BROODER

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The present invention relates to brooders, and aims to provide a novel and improved device of this character having double side hovers for efficiently increasing the brooding capacity of the brooder.

Another object of the invention is the provision of a double side hover having a heating element thereunder being arranged to slant upwardly and outwardly to each side from the center thereof for providing various temperatures under both sides of the hover, thus giving a larger capacity and rendering it possible for each chick to select the desired amount of heat.

A further object of the invention is to provide a brooder having on opposite sides thereof adjustable hovers for permitting gradual reducing of hover temperature and increasing of the capacity of the brooding chamber as the chicks grow, said adjustable hovers being arranged so that both are raised and lowered simultaneously in order to provide like temperatures at both sides of the brooding chamber.

A still further object of the invention is the provision of adjustable hovers hingedly carried at their upper ends and arranged to normally lie in inclined positions in contact with a heat radiator positioned above the heating element, said hovers being provided with means for preserving a dead air space above the heat radiator when raising the hovers for brooding of chicks of larger size, which prevents undue chilling of the hovers and aids in maintaining correct hover temperatures in the brooding chamber.

The invention has for another object the provision of heat pipes positioned beneath a hover, said pipes being arranged in pairs, each consisting of a flow pipe and a return pipe which form heat zones in the brooding chamber. The pipes are arranged to present a substantially V-shaped formation with the pipes on opposite sides of the vertical center of the brooder arranged successively on different horizontal planes.

I have also for an object to provide a brooder as above indicated, which is extremely simple in construction, yet substantial, which can be manufactured at a relatively low cost, and which will be thoroughly efficient and practical for the purpose intended.

With the foregoing and other objects in view, which will be apparent as the description proceeds, the invention resides in the construction and arrangement of parts, as hereinafter described and claimed, it being understood that changes can be made within the scope of what is claimed, without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a perspective view, showing a pair of my improved brooders arranged in colony formation,

Figure 2 is a vertical cross section through a brooder, showing in dotted lines the hovers slightly raised,

Figure 3 is a fragmentary vertical section on line 3—3 of Figure 2, showing portions of two brooders constructed together when forming a colony brooder, and

Figure 4 is a fragmentary section of a portion illustrated in Figure 2, showing heat reducing slides positioned beneath the heating element.

In carrying out the invention, the numeral 10 designates end plates of a brooder, while the numeral 11 indicates a partition plate arranged between two brooders when forming a colony brooder, such as illustrated in Figure 1 of the official drawings. Extending between the end plates 10 or partition plates 11 or between an end plate and a partition plate is a beam 12, said beam being arranged centrally of the plates at the upper edge thereof and extending in a horizontal manner as set forth in the drawings. Beneath the beam 12 and to each side thereof are heat radiator supporting beams 13 and 14, said beams 13 and 14 being grooved, as at 15, for receiving the opposite marginal edges of a heat radiator plate 16 constructed of insulating material and having its undersurface treated and coated to form a heat reflecting surface. The heat radiator is also supported at its ends by means of cleats 17 secured to the plates 10 or 11.

Hinged to each side of the beam 12, as at 18, are adjustable hovers 19 and 20 which normal-

ly extend downwardly and outwardly and are held in such position by the beams 13 and 14. The lower ends, or ends opposite to that hinged to the beam 12, are downturned, as at 20', so as to restrict the passageways under the adjustable hovers. Adjacent the point where the downturned portions 20' of the adjustable hovers are formed are provided eyes 21 to which are connected chains 22, or other suitable flexible elements, which have their opposite ends extended upwardly and connected together in a ring 23 to which a single chain or flexible element 24 is connected. It can be seen that upon upward movement of the chain 24 the adjustable hovers 19 and 20 will be raised, as indicated in dotted lines in Figure 2, which increases the size of the brooding chamber and also increases the size of the passageways under the opposite sides of the hovers for escape of heated air, thus decreasing the brooding temperature under said hoovers. By arranging the chains 22 and 24 in the manner above described, it can be seen that both of the adjustable hovers are raised and lowered simultaneously, thus retaining the same temperature under each hover.

On the undersurface of each inclined adjustable hover is hingedly connected, as at 25, a flap or valve 26 constructed of sheet metal or like material. The flaps or valves are hinged to the adjustable hovers by passing cotter pins or like elements through said flaps or valves and through said adjustable hovers and then clinching the ends of said cotter pins in a loose manner so as to permit swinging movement of the flaps or valves with relation to the hovers. The flaps or valves are hinged to the hovers at a point spaced above the beams 13 and 14 so that when the hovers are raised to positions such as that indicated in dotted lines in Figure 2, said flaps or valves will swing to continually engage the edges of the beams 13 and 14, thus preserving a dead air space between the adjustable hovers and the heat radiator, as said flaps or valves extend from one end plate to another.

In order to support said flaps or valves 26 in proper positions when the adjustable hovers have been swung to their extreme upward positions, I have provided angled portions 27 adjacent the edges of said flaps or valves remote from that engaging the beams to engage the adjustable hovers and thus limit swinging movement of the portions 26 of the flaps or valves away from the adjustable hovers. It will be noted that when the adjustable hovers are swung in their uppermost positions, the angled portions 27 engage said hovers and the portions 26 of said flaps or valves disengage the beams 13 and 14. However, the angled portions 27 of said flaps or valves are arranged so as not to interfere with engagement of the portions 26 of said flaps or valves during use of the brooder, and it is only when said brooder is not in use that said portions 26 of said flaps or valves disengage said beams.

During the brooding of newly hatched chicks, the adjustable hovers remain in their lowermost position, and during the growing of the chicks, the adjustable hovers are slightly raised from time to time so as to decrease the brooding temperature and increase the space beneath the hovers. It can be seen that when the hovers are in position for brooding, the flaps or valves 26 remain in contact with the beams 13 and 14 for retaining the dead air space above the heat reflector. By preserving the dead air space above the heat radiator, undue chilling of the hover is prevented, and it aids in maintaining correct heating zones in the brooding chamber when adjusting the hovers, as will be set forth as the description proceeds.

Arranged under the heat radiator is a series of hot water pipes, said pipes being arranged in pairs and each pair consisting of a flow pipe 30 and a return pipe 31, said flow pipes being connected to said return pipes by means of elbows, or the like. When a series of brooders are arranged in alignment as shown in Figure 1 of the drawings, for forming a colony brooder, the hot water pipes 30 and 31 extend through all of the brooders and said flow pipes are connected by the elbows to the return pipes at the end brooder of the colony. By referring to Figure 2, it can be seen that the pipes are arranged to present a substantially V-shaped formation and that the pipes on opposite sides of the center are arranged so that successive pipes are on different horizontal planes. By arranging the pipes in this manner, various brooding temperatures are provided at each side. Also, by arranging a flow pipe and a return pipe adjacent thereto, different heat zones are provided, so that chicks may select the heat zone they desire. As the undersurface of the heat radiator plate 16 has a reflecting surface thereon for increasing its efficiency as a reflector, rays of radiated heat from the heating pipes will be reflected back to the floor of the brooding chamber.

The fact that both of the adjustable hovers may be raised, makes cleaning of the brooding chamber an easy matter. The pipes at the center of the heating element, which are the lowermost pipes, are spaced a sufficient distance from the floor of the brooder so that the entire brooding chamber if so desired may be cleaned from one side. This clearance also permits the chicks to have free access to all parts of the brooding chamber.

Secured to the end plates 10 or partition plates 11 are angle irons 32 and 33, said angle irons being arranged parallel and beneath the heating pipes 30 and 31, the angle iron 32 being arranged beneath one upwardly and

outwardly extending angled portion of the heating pipes, while the angle iron 33 is parallel and beneath the other upwardly and outwardly extending angled portion of the pipes. The angle irons 32 and 33 are adapted to receive and support slides 34 and 35, as clearly illustrated in Figure 4 of the official drawings. It will be noted that the slides 34 are of a greater width than the slides 35, so that by positioning either of the sets of slides 34 or 35 under certain of the heating pipes, various brooding temperatures can be had. When the slides 34 are in position on the angle irons 32 and 33, and the slides 35 are not used, each of said slides 34 extends entirely under two heating pipes and partially under a third, while using the slides 35, they each extend but entirely under one heating pipe and partially under another. Thus it can be seen that by using either set of slides, different brooding temperatures are had. When a brooder is not in use, heat may be saved by positioning all of the slides under the heating pipes, thus enclosing said heating pipes in a compartment, said compartment being practically insulated due to the fact that the slides 34 and 35 are of insulating material and the heat radiator is also of insulating material. It is also to be noted that the slides provide means for enclosing the heating pipes for keeping the same in a clean condition during seasons that the brooder is not being used.

At each end of each plate 10 and partition plate 11 and at the ends of the beams 12 are provided slightly upstanding posts 37 between which are suspended wires 38 for preventing the roosting of chicks or chickens upon the upper edges of said members. The hovers are arranged at rather steep inclines when in their various brooding positions so that it is difficult for a fowl to perch thereon. Thus it can be seen that my improved brooder may be kept in a clean and sanitary condition.

Having thus described my invention, what I claim as new is:

1. A brooder comprising a pair of adjustable hover tops hingedly carried at their upper edges and arranged to form an inverted V-shaped hover, said hover tops being arranged for movement which increases the size of the brooding chamber as the area for escape of heated air is increased, and a heating element arranged under said hover tops.

2. A brooder comprising a pair of adjustable hover tops hingedly carried adjacent one another and adapted to normally lie in inverted V-shaped formation, a heating element arranged under said hover tops, and a stationary heat radiator positioned above said heating element and extending to said adjustable hover tops when the same are in their lower position.

3. A brooder comprising a pair of hover tops arranged on different sides for movement to increase the area of escape of heated air, a heating element arranged under said hover tops, and a stationary heat radiator positioned above said heating element adapted to be engaged by said hover tops when the same are adjusted so that the area of escape of heated air is decreased.

4. A brooder comprising a pair of hover tops hingedly supported at a point adjacent one another and adapted to normally extend downwardly and away from each other, a heating element arranged under said hover tops, and a stationary heat radiator arranged above said heating element the opposite side edges of which are adapted to be normally engaged by said hover tops for forming a dead air space above said heat radiator.

5. A brooder comprising a pair of hover tops hingedly supported at a point adjacent one another and adapted to normally extend downwardly and away from each other, a heating element arranged under said hover tops, a heat radiator arranged above said heating element the opposite side edges of which are adapted to be normally engaged by said hover tops for forming a dead air space above said heat radiator, and means for preserving said dead air space upon raising of said hover tops.

6. A brooder comprising a pair of hover tops arranged for movement, a heating element under said hover tops, a member arranged above said heating element, and means on said movable hover tops for preserving a dead air space above said member upon raising of said hover tops.

7. A brooder comprising a movable hover top, a heating element under said top, a member arranged under said hover top and above said heating element adapted to coact with said movable hover top for forming a dead air space thereabove, and movable means retaining engagement with said hover top and said member for preserving a dead air space upon movement of said movable hover top.

8. A brooder comprising a pair of adjustable hover tops, a heating element under said hover tops, a heat radiator positioned above said heating element and arranged under said hover tops and adapted to coact with said hover tops for forming a dead air space thereabove, and members carried by said adjustable hover tops for continually engaging with said heat radiator so as to preserve a dead air space upon raising of said adjustable hover tops.

9. A brooder comprising a pair of adjustable hover tops arranged on opposite sides and adapted to extend downwardly and away from each other, a heating element under said hover tops, a heat radiator positioned above said heating element and adapted to normally coact with said adjustable hover tops for

forming a dead air space thereabove, and flap valves pivotally carried by said adjustable hover tops so as to form continual engagement with said heat radiator for preserving said dead air space upon raising of said hover tops.

10. A brooder comprising a pair of adjustable hover tops arranged on opposite sides, a heating element arranged under said hover tops, a heat radiator positioned above said heating element adapted to normally cooperate with said hover tops for forming a dead air space thereabove, flap valves pivotally carried by said adjustable hover tops so as to engage said heat radiator upon slight upward movement of said adjustable hover tops, and means on said flap valves for limiting the movement of the flap valves with relation to the adjustable hover tops.

11. A brooder comprising an adjustable hover top, a heating element under said hover top, a heat radiator above said heating element and adapted to cooperate with said adjustable hover top for forming a dead air space above said heat radiator, and a member hingedly carried by said adjustable hover top for forming continual engagement with said heat radiator for preserving said dead air space upon raising of said hover top.

12. A brooder comprising a hover for permitting access under opposite sides thereof, heating pipes extending under said hover, said heat pipes arranged in pairs and comprising heat flow pipes and heat return pipes, said heating pipes at opposite sides being spaced a greater distance from the floor of the brooder than the center pipes and each flow pipe and return pipe being arranged adjacent each other for providing different heat zones under said hover.

13. A brooder comprising a hover for permitting access under opposite sides thereof, heating pipes extending under said hover, said heat pipes arranged in pairs and comprising heat flow pipes and heat return pipes, each flow pipe and return pipe being arranged adjacent each other for providing heat zones under said hover, the outermost of said flow and return pipes being spaced a greater distance from the floor of the brooder than the center flow and return pipes thus providing heat zones of various temperatures at opposite sides of the hover.

14. A brooder comprising a pair of adjustable hover tops hingedly carried at their upper ends adjacent each other and extending downwardly and away from each other, a heating element arranged under said hover tops, and members attached to the free ends of said hover tops and together for causing said hover tops to be raised and lowered simultaneously.

15. A brooder comprising a pair of hover tops hingedly carried at their upper ends adjacent each other and extending downwardly and away from each other, a heating element positioned under said hover tops, flexible elements attached to the free ends of said hover tops when extending upwardly and attached together at a point above the point where said hover tops are hinged, and another flexible element attached to said first mentioned flexible element for causing raising and lowering movement of said adjustable hovers simultaneously.

16. A brooder comprising a movable hover top, a heating element under said top, a member arranged under said hover top and above said heating element adapted to coact with said movable hover top for forming a dead air space thereabove, and means carried by said hover top for preserving a dead air space upon movement of said hover top.

17. A brooder having a hover top mounted for movement to increase or decrease the area for the escape of heated air, heating means located beneath the hover top, a baffle between the hover top and the heating means, a member cooperating with the hover top and baffle to form a closed air chamber when the hover top is against the baffle, and means engaging both the baffle and the hover top to form a side or wall of the closed air chamber when the hover top is moved away from the baffle to increase the area between the floor or other support and the edge of the hover top.

18. The device of claim 17 in which the last means is a hinged plate.

PERRY S. MARTIN.