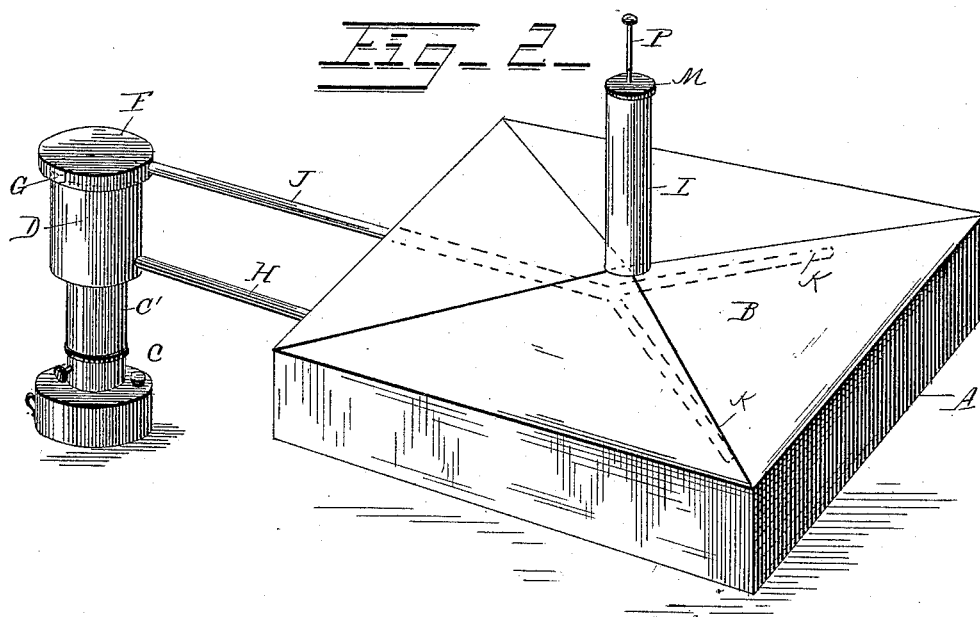
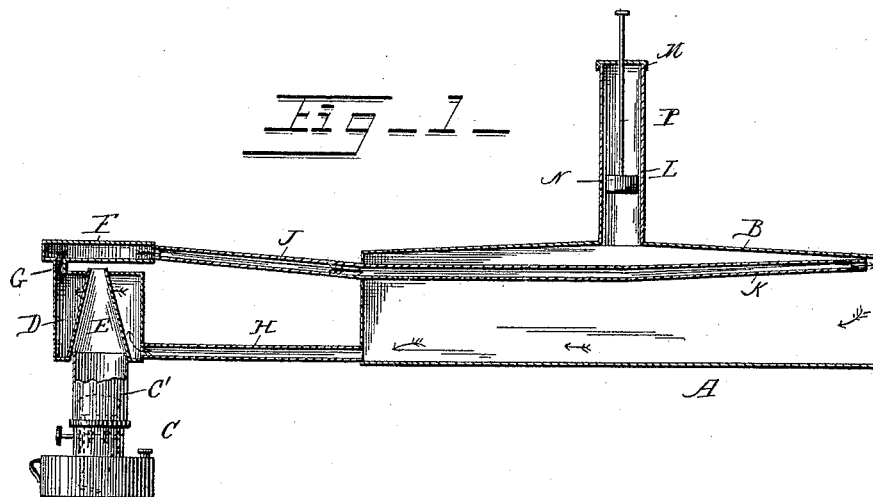


(No Model.)

N. POWELL.
CHICKEN BROODER.

No. 417,791.

Patented Dec. 24, 1889.



WITNESSES

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NELSON POWELL, OF STERLING, ILLINOIS.

CHICKEN-BROODER.

SPECIFICATION forming part of Letters Patent No. 417,791, dated December 24, 1889.

Application filed February 28, 1889. Serial No. 301,455. (No model.)

To all whom it may concern:

Be it known that I, NELSON POWELL, a citizen of the United States, residing at Sterling, in the county of Whiteside and State of Illinois, have invented certain new and useful Improvements in Chicken-Brooders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention has reference to brooders; and it consists in certain novel appliances and mechanism for indicating the temperature and height of the water therein. It is obvious that the heat provided should be of uniform temperature, and it is equally essential that such heat be equally distributed over the entire area of the upper surface of the brooder. If the heat be furnished at certain localities only, the chicks will huddle at such point and crowd and otherwise injure each other. The dung or other dirt deposited on or carried by the chicks to the surface of the brooder tends to form an incrustation on the latter, which prevents the passage of the heat through the deck thereof, and if not provided against will cause the deck of the brooder to be warm only in such places as are clean, or comparatively so. In order, therefore, to insure a uniform and universally-distributed heat, two things are necessary—one that the heat itself be of a uniform temperature, and the other that the deck of the brooder be kept as clean as possible. The first essential is attained in my invention by my system of furnishing and regulating the supply of heat, and the second requirement by making the deck of the brooder slightly sloping downward and outwardly from the center, in which form the movements of the chicks tend to force the dung and other fouling matter from the center of the brooder toward and over the edge thereof, thereby preventing any incrustation on the surface upon which the chicks rest, and permitting the heat to permeate equally every part of the surface of the deck and create no inducement for the chicks to huddle in groups thereon.

In the drawings, Figure 1 is a vertical sec-

tion of a brooder involving my invention. Fig. 2 is a perspective thereof.

A is the main body of the brooder, constructed of a rectangular or other suitable form, and as used by myself being about twenty-four inches long, eighteen inches wide, and five inches high at the edges, and about five and one-half inches high at the center.

B is the metallic deck of the brooder, which is slightly inclined downwardly from the center outward in four plane surfaces, for the purpose aforesaid.

C is an ordinary lamp susceptible of regulation as to the height of the flame and provided with the chimney C'.

D is a cylindrical water-heater provided centrally with the vertical opening E. The opening E is proportionately wide at its lower end and has converging sides, so that the upper end thereof is of comparatively small diameter. The chimney C' is projected slightly into the lower end of said opening E. Directly above the heater D is suitably suspended a secondary heater F, also of cylindrical form laterally and of a lateral diameter slightly greater than that of the heater D. The superposed heater F is placed sufficiently above the heater D to afford a proper interval between them for the passage of the heat from the lamp C, and such heat being discharged against the under surface of the heater F, at the center of the latter, distributes itself radially from that point over the entire bottom of the heater F, and thus is utilized in the greatest degree the excess of heat which passes up through the opening E. A short vertical conduit G connects and affords communication for the water between the heaters D and F. A tube H, communicating from the lower end of the adjacent side of the brooder A with the lower end of the nearer side of the heater D, permits the passage of the water from the brooder A into the heater D. As the water is heated in the latter, it rises through the conduit G into the superposed heater F, and from the latter passes into the upper portion of the brooder A through an inlet-tube J, communicating between the adjacent sides of said brooder and said heater F. The tube J is projected entirely through the brooder A, and at about the center of the latter is bifurcated into di-

vergent subordinate tubes K K, which latter are extended, respectively, into the farthest upper corners of the brooder A and have their respective discharges at said corners.

5 This conformation of the tube J and its subordinate bifurcations K K has the effect of carrying the heated water through the entire upper surface of the brooder A, and during such transit the heat of the water within said

10 tubes is gradually imparted to the exterior water surrounding said tubes, and the water within said tubes, when decreased in its temperature by such radiation in transit, is finally discharged at the extremities of the

15 tubes K K at a temperature very slightly greater than that of the exterior water. Thus the temperature of the water in the upper portion of the brooder A has no sudden or great increase at any one point, and the

20 uniform temperature of the entire deck of the brooder is sustained. As the water in the brooder gradually cools, it sinks to the bottom thereof, and, passing through the outlet H into the heaters D and F, is reheated.

25 The direction of the circulation is that shown by the arrows in Fig. 1.

From the center of the deck B there centrally rises a vertical tube L, provided with a cap M at its upper extremity and communicating at its lower end with the interior of the brooder. A float N is loosely seated in the tube L and adapted to be sustained by the water therein. To the upper surface of the float N there is centrally affixed a vertical

30 rod P, which projects from said float upwardly through the cap M and a slight distance above the latter.

The float N serves the double function of indicating the height of the water in the brooder A, and also the temperature thereof, as follows: The float N and cap M are removed and the water primarily furnished to the entire brooder A through the tube L. As the rod P is loosely seated in the cap M, the float

45 N can rise and fall without disturbing the position of said cap; and as the float N does not entirely fill the lateral area of the tube L water to compensate for the slight evaporation can be readily furnished to the brooder

50 by merely moving the cap M up the rod P, and access afforded to the upper end of the tube L, the water readily finding its way down past the sides of the float N. When the brooder is first put into operation, being sufficiently filled with water, so that the latter rises somewhat into the tube L, and the lamp C lighted, an ordinary thermometer can be

55 laid upon the deck B with its bulb in contact therewith, and when said thermometer indicates the desired temperature of the water under said deck an indicating-mark may be made upon the rod P at the upper surface of the cap M. This desired temperature I find to be about 90° Fahrenheit for the first week

60 and gradually less thereafter. As the temperature of the water in said brooder falls below said standard, there is a slight contrac-

tion, and said water and the float N will proportionately descend, and when the temperature of the water in said brooder shall rise above

70 said desired heat said float will proportionately rise. These changes vertically of the position of the float N will be evidenced by said indicating-mark on the rod P, and the amount of flame of the lamp C can be accordingly adjusted. After short experience and

75 observation of the amount of flame required to sustain any desired temperature the regulation aforesaid of the heat can be very readily accomplished.

Such slight vapor as may arise from the water within the brooder A into the tube L will pass up around the sides of the float N and be condensed by the cooler surface of the upper portions of the tube L and by the cap

80 M and will fall back past the float N into the brooder A, and thus very slight replenishing of the water within the brooder A will be required. The height of the float N (indicated by the extent of the projection of the rod P

85 through the cap M) will at all times evidence the height of the water within the brooder, and the height above the cap M of the designating-mark aforesaid upon the rod P, or the disappearance of said mark below said cap,

90 will evidence the temperature of the water within said brooder, so that if said mark, by the adjustment of the amount of flame of the lamp C, is kept about on the plane of the upper surface of the cap M a uniform tempera-

95 ture at any desired degree will be sustained.

In the apparatus which I use the heater D is four inches in diameter and four inches in height. The heater F is five inches in diameter and one inch in height. The tubes H

100 and J are one inch in diameter and the tubes K K one-half inch; but the brooder itself and its adjunctive parts can be made of any desired size, observing about the proportions stated.

The brooder A can, if desired, be provided with the usual protecting-curtains sustained in any suitable way outside of and independent of said brooder, so as not to interfere with the ejection of the fouling matter aforesaid.

One special advantage of my invention is the location of the lamp C a reasonable distance from and at one side of the brooder. When said lamp is placed under the brooder,

105 the heat is excessive directly above it and deficient at the other parts of the deck; also, the smoke rises among and is injurious to the chicks.

If desired, my apparatus can be used without the secondary heater F by connecting the outer end of the inlet-tube J directly with the upper end of the adjacent side of the heater D; but I prefer and think the best results will be attained and the greatest economy of fuel

120 accomplished in the construction shown.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. The combination of the heater D, the brooder A, provided with vertical tube L, communicating-tube H, heater F, suitably supported over heater D, tube G, affording
5 communication between said heaters, tube J, connecting brooder A and heater D, lamp C, the float N, rod P, and cap M, substantially as shown, and for the purpose described.
2. The combination of the lamp C, heater
10 D, provided with central conical opening E, the heater F, connecting-conduit G, the tube H, the tube J, provided with the bifurcations K K, and the brooder A, provided with vertical tube L, having the float N and indicating-rod P, substantially as shown, and for the 15 purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

NELSON POWELL.

Witnesses:

JOHN G. MANAHAN,
WINFIELD S. WARD.