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SUSPENSIBLE BROODER HEATER WITH TUMBLING FEATURE

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Fig. 1

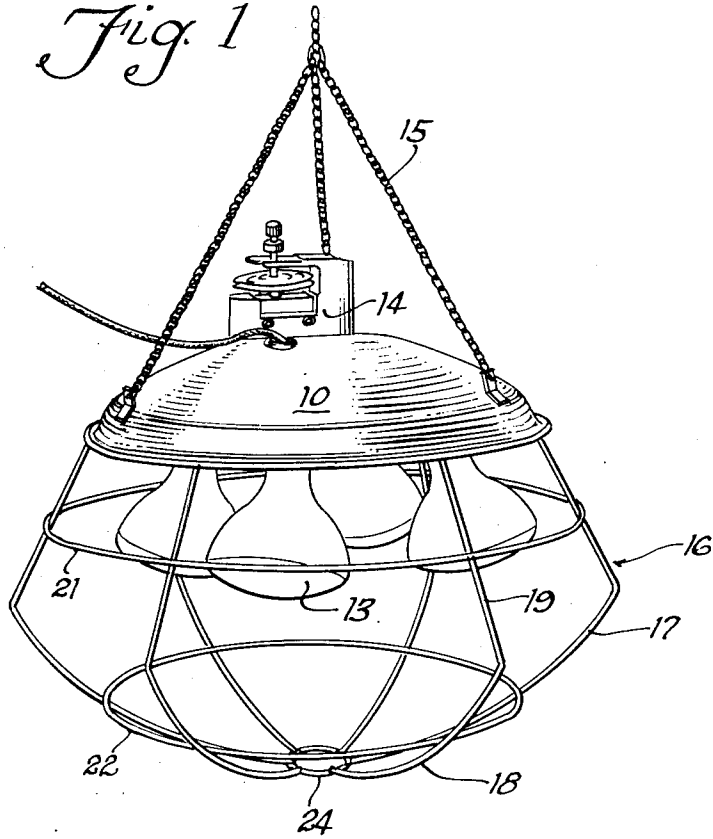


Fig. 2

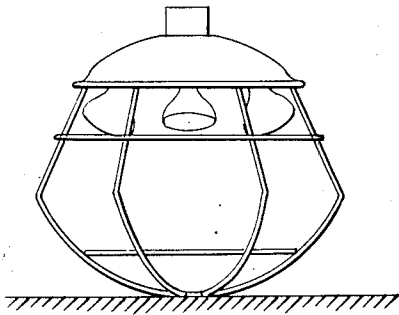
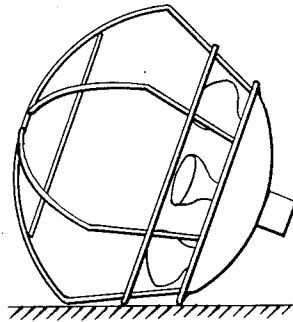


Fig. 3



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SUSPENDIBLE BROODER HEATER WITH TUMBLING FEATURE

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1 Claim. (Cl. 219—45)

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This invention relates to a heater for use in a chicken brooder. In particular it has reference to a heater arranged to be suspended from an overhead support and to direct its heat substantially downwardly.

One form of heater commonly used in brooders comprises a reflector and one or more infra-red electric lamps carried below the reflector, this latter being held to a ceiling rafter or other support by chains or wire. However there is the ever-present danger of failure of an insecure suspension which is the result of rust or some other factor and which allows the heater to drop to the floor. Because of the presence of feathers, wood chips or other highly combustible material, as well as the wooden floor itself, a serious fire hazard is presented. Suspended brooder heaters employing infra-red lamps have been known to drop to the floor accidentally, and to have started fires merely by resting upon or near such combustible material.

Fire insurance companies have refused to write policies covering structures in which brooder heaters of the character aforesaid have been used, or else to specify a rate which has been prohibitive, unless provision is made to eliminate the fire hazard created by the lamps coming into hazardous adjacency with the combustible material.

Accordingly a principal object of our invention is to provide a brooder heater for the purpose stated which includes means for automatically positioning the heater in a non-hazardous orientation in the event the same drops from its support to the floor or upon any substantially horizontal surface.

Another object is to provide safety means in accordance with the foregoing object which is light in weight, sturdy to an extent that dropping of the brooder will not injure the same to defeat the safety feature, which interferes with full radiation of heat from the lamps to an immaterial degree, and which need not be removed when lamps are to be installed or the reflector cleaned.

Further objects will become apparent from the following description and the accompanying drawing, in which latter:

Fig. 1 shows a perspective view of a brooder heater incorporating the features of our invention;

Fig. 2 shows a side elevational view of the same resting upon a horizontal or substantially horizontal surface but restrained manually against tumbling; and

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Fig. 3 shows the heater after it has tumbled to a safe position.

Generally regarded the invention comprises the incorporation with a heating arrangement of well-known form of a guard or cage for surrounding the lamps and to space them from an adjacent solid object by a specified amount. The guard includes a lower portion of substantially hemispherical configuration, and an upper portion of substantially frusto-conical form, the equatorial plane of the hemispherical part being congruent with the base of the frusto-conical part, and the axis of the latter being aligned with the radial axis of the hemisphere. Such axis may also be the principal axis of the reflector, lamps and other appurtenant parts, e. g. a thermostatic control for temperature.

Inevitably some detail of construction of the assembly other than the guard is always such that the device is in unstable equilibrium when placed on its hemispherical end on some substantially horizontal surface and therefore, if the device accidentally drops upon such surface the inherent instability will cause the device to roll over on its side, i. e. resting upon the lateral surface represented by the conical elements, and will there rest safely until attended to.

Turning to Fig. 1 there is shown by way of example a reflector 10 representing also what may be termed the body of the device and upon which a plurality of sockets (not shown) is carried. Secured within the sockets are the several electric lamps 13 which are generally of the infra-red type, and are so positioned as to function when spaced a selected distance from the floor, in heating a predetermined circular area. The temperature of the space which the device is intended to serve controls the action of a thermostatic switch 14 mounted at a convenient location upon the reflector, and which is effective to turn the lamps on and off as required to maintain the preselected temperature. For supporting the device on an overhead support (not shown), a plurality of chains 15 is provided.

The invention improvement resides in combining with the heater a cage or guard 16 mounted upon the periphery of the reflector 10 by any suitable means. Such guard includes a plurality of peripherally distributed rod- or wire-like elements 17 each including a curved lower portion 18 and a straight upper portion 19. Preferably spot-welded hoops 21 and 22 are employed to augment the rigidity of the guard 16. Thus, assuming a curvature of the lower portion which is substantially quadrantal the group of elements,

at least insofar as concerns these lower portions may be regarded as comprising a hemispherical configuration for the cage, while the straight upper portion tapered, as they preferably are, inwardly may be jointly regarded as comprising a frusto-conical configuration. However the exact form which the cage may take is not of too much consequence just as long as it comprises a convex lower portion upon which the device may roll over to a reclining position in toppling from the substantially erect position it will inevitably first occupy upon dropping (Fig. 2).

Thus the heat of the lamps is directed away from combustible matter lying upon or constituting the floor (Fig. 3). In the foregoing connection it will be understood that inherent instability of the device is necessary for such tumbling positively to occur. However even a slight degree of unbalance will cause tumbling notwithstanding lack of inherent instability since dropping of device will, due to the resiliency of the cage results in perceptible bounce and corresponding unbalance.

Nor is the tumbled position of the device representative of hazard by being itself a state of unstable equilibrium, since, having once fallen to a reclining position the center of gravity is below the axis of rotation represented by a diameter of the hemisphere inasmuch as the device may be righted only by being lifted against substantially the entire weight thereof to an erect position. Stated otherwise, it is impossible, following dropping of the device, to cause such disturbance of the inherent instability as to result in an oscillatory or rocking motion of such character as may lead to resumption of an erect, and hence dangerous, position.

It will be understood that, if desired, the cage may be of reticulate construction. However too large a proportion of metal to open space will tend to defeat the function of the device by blocking the rays from the lamps. Accordingly we prefer a minimum of rods for effecting the tumbling function.

While we have, in order to facilitate fabrication of the bottom junction of the several elements shown a ring 24, its diameter in relation to the lateral position of the center of gravity is such that tumbling of the device in the intended manner is not obstructed.

While we have shown a particular embodiment of our invention, it will be understood, of course,

that we do not wish to be limited thereto since many modifications may be made, and we therefore contemplate by the appended claim to cover any such modifications as fall within the true spirit and scope of our invention.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

A heater for a chicken brooder comprising a reflector arranged with its active surface directed downwardly, a plurality of electric heat lamps mounted on said reflector to direct heat downwardly; means for suspending said reflector from a fixed support, a thermostat mounted on said reflector for controlling the circuit for said lamps, and a wire guard for said lamps attached to said reflector and having a substantially hemispherical bottom portion and substantially straight portions connecting said substantially hemispherical portions to said reflector, and said heater as a unit having a center of gravity laterally displaced from its geometrical vertical axis, whereby when the heater is lowered to the floor it is caused to roll over on its side and remain in that position.

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Infra-Red in Industry, by William J. Miskella, copyright 1947. See page 51, Model B.