July 15, 1952 M. V. SCHUBERT ET AL 2,603,738

BROODER HEAT LAMP FIXTURE

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fig. 1.

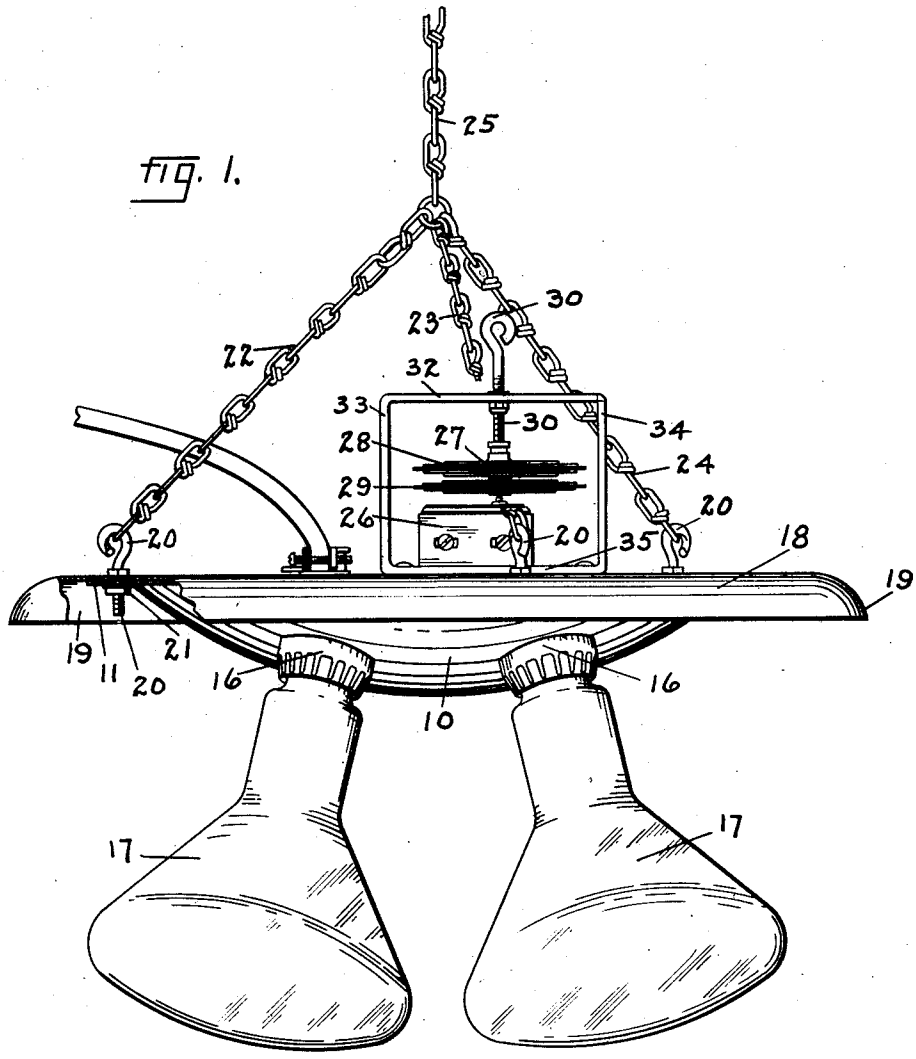
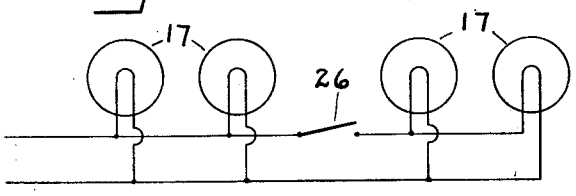


fig. 2.



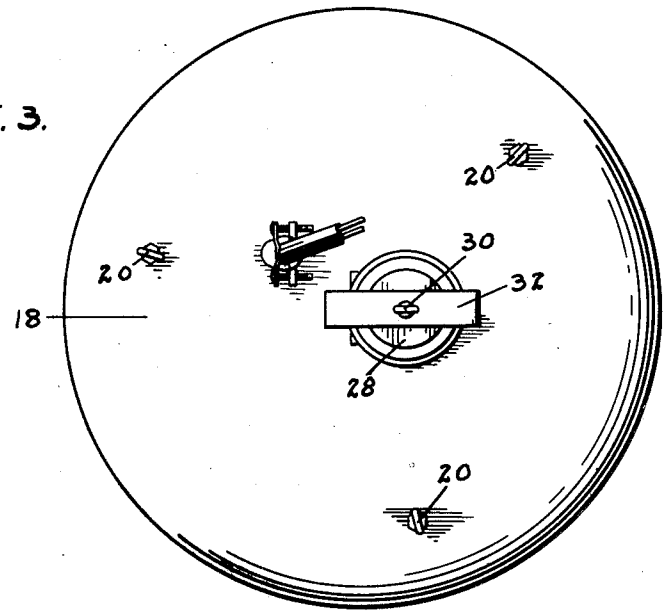
INVENTORS,
MILTON V. SCHUBERT,
BILLY E. LANGOHR,
LORIN J. BRADSKEY,
BY Herbert A. Minturn,
ATTORNEY.

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Fig. 3.



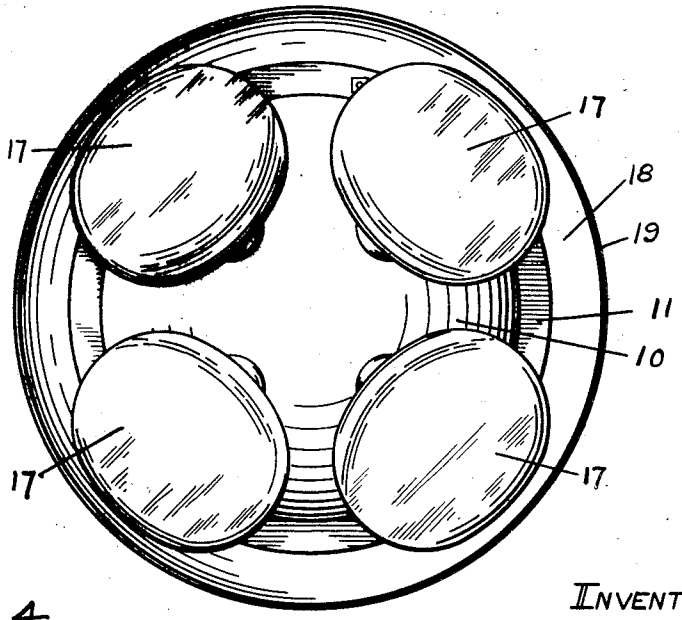


Fig. 4.

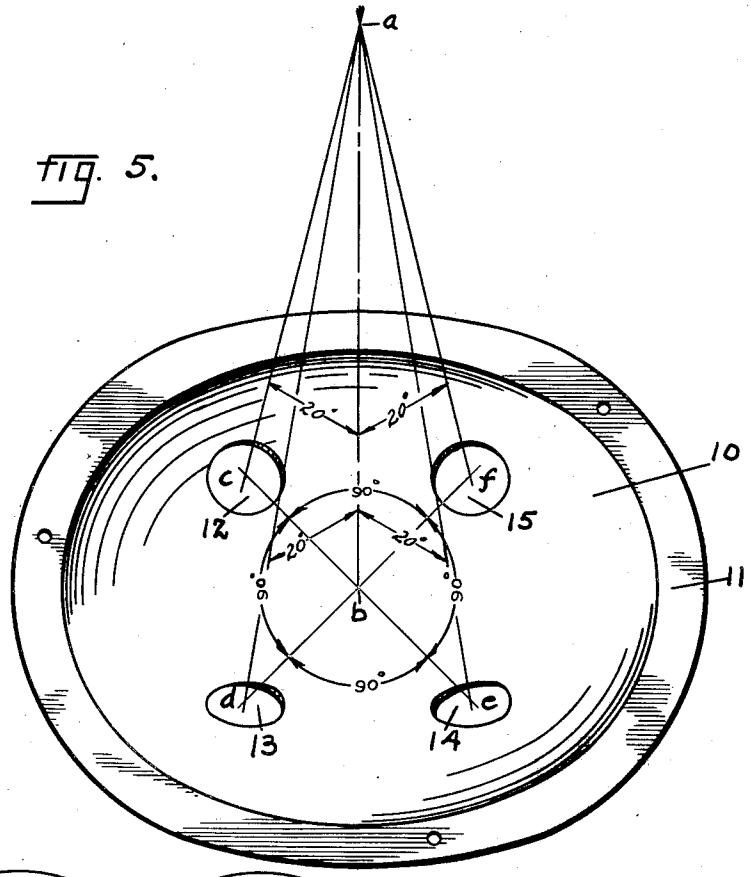
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LORIN J. BRADSKEY,
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ATTORNEY.

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Fig. 5.



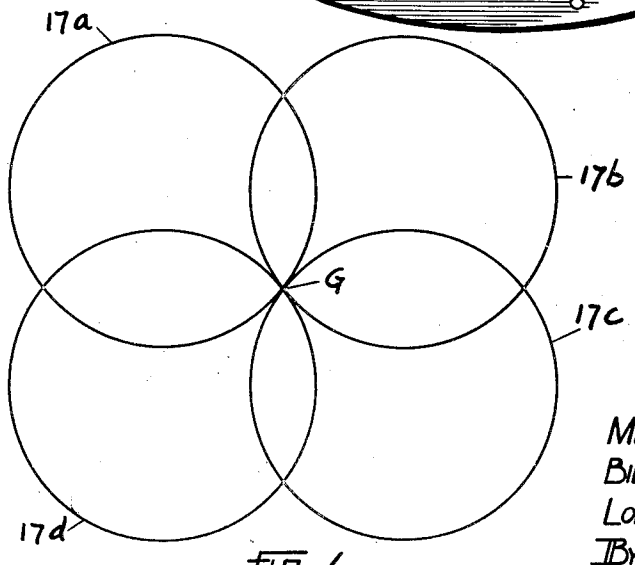


Fig. 6

INVENTORS,
MILTON V. SCHUBERT,
BILLY E. LANGOHR,
LORIN J. BRADSKEY,
BY Herbert A. Mintura,
ATTORNEY.

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BROODER HEAT LAMP FIXTURE

Milton V. Schubert, Jr., and Billy E. Langohr, Columbia City, and Lorin J. Badskey, North Manchester, Ind., assignors to L M L Engineering & Manufacturing Corporation, Columbia City, Ind., a corporation of Indiana

Application August 29, 1951, Serial No. 244,234

5 Claims. (Cl. 219—34)

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This invention relates to a fixture for holding infrared lamps for use particularly in chicken brooding. Infrared lamps have been used for some time for the purpose of supplying heat for baby chicks, and also for supplying heat in brooding young pigs. It is necessary that there be a rather definite heat pattern on the floor under the lamps, and that a certain spacing be maintained in order to control the degree of heat as well as the extent of area of the pattern of the heat radiation on the floor.

Heretofore the lamps have been hung generally singly in sockets suspended individually from the lamp cords, or they have been mounted in sockets attached individually to boxes and the like without any particular regard to the heat pattern and the degree of heat to be radiated over that pattern.

It is a primary object of this invention to supply a fixture wherein the lamps will be carried in a predetermined angular position one lamp in reference to another, and also wherein the heat radiated will be automatically controlled such as through a thermostat.

A further important object of the invention is to provide a fixture wherein the lamps will be protected from dripping condensation as sometimes forms in the buildings where the building is not heated outside of the lamps under a reflector. Again a still further important object of the invention is to provide a reflector behind the lamps themselves, although the lamps carry built in reflectors so that any stray heat is reflected back down onto the over-all floor pattern.

Durability and simplicity of design also constitutes advantages of the invention, in addition to many other advantages which will become apparent to those versed in the art in the following description of one particular form of the fixture, in which

Fig. 1 is a view in side elevation and partial section of a structure embodying the invention;

Fig. 2 is a wiring diagram;

Fig. 3 is a view in top plan;

Fig. 4 is a view in bottom plan;

Fig. 5 is a view in perspective of the reflector member wherein the angular relations of the socket mounting openings are indicated; and

Fig. 6 is a diagrammatic representation of the heat pattern radiated by the lamps of the fixture.

A dish-shaped mounting plate 10 is provided to have its inner and outer surfaces spherically formed, and to have a surrounding outturned annular flange 11. One particular satisfactory size of this base member 10 is that which is

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formed to have a diameter of approximately $10\frac{23}{32}$ of an inch diameter inside of the flange 11 with a spherical radius of $8\frac{7}{16}$ inches inside. These dimensions are given by way of an example to define somewhat the proportions of the member 10.

Four circular holes 12, 13, 14, and 15 are cut through the member 10 on a common circumferential line about the vertical center line through the member 10. This center line is represented, Fig. 5, by the line *ab*. These holes 13–15 are spaced ninety degrees apart, and they are located to have their centers on the line *ae*, *ac*, *ad*, and *af*, each of these lines being angularly disposed from the line *ab* by an amount of twenty degrees. Then through each of these holes 13–15 inclusive, there is fixed a socket 16, Fig. 1. A heat lamp 17 is carried in each one of the sockets 16, making the total of four lamps actually disposed on the twenty degree lines.

The base plate 10 is covered over by a cover 18 which has a major flat area with an arcuate, down-turned flanged edge portion 19. The flange 11 of the plate 10 bears against the under side of the cover 18, and has hook bolts 20 passed down through the cover 18 and the flange 11 to have nuts 21 engage thereon in order to pull the flange 11 up snugly against the under side of the cover 18, Fig. 1. The overall diameter of the cover 18 out to the outermost portion of the downturned edge 19 is made to be such that it overhangs the outermost edge portions of the lamps 17 therebelow so that any moisture collecting on the cover 18 will drip well outside of the lamps 17.

The cover 18 may be suspended above the floor by any suitable means, herein shown as by a series of three lengths of chain 22, 23, and 24 joining a single length 25 from which the assembly may be suspended.

Mounted on top of the cover 18 is a control switch 26, normally closed, and opened by the expansion of a thermostatic element 27, herein shown as being comprised of a pair of the usual wafers 28 and 29. These wafers 28, 29 are secured to the lower end of an adjusting screw 30 so that they may be raised and lowered in reference to the switch 26 in order to operate or open the switch 26 at the desired upper limit of temperature. It is to be noted that these wafers 28, 29 will reflect room temperature rather than temperature under the cover 18. That is desirable because the lamps 17 will normally be operated constantly until the sun shines on the building in which the fixture is used, or until there is generally an outdoor in-

crease in temperature whereupon some current may be saved by cutting off some of the lamps 17.

As indicated in the diagram, Fig. 2, two of the lamps 17 are constantly energized whereas the other two lamps are controlled by the switch 26. This arrangement of course may be varied to have one or three lamps controlled by the switch 26 as may be desired.

By fixing the angular positions of the lamps 17 as above described, a variable desired heat pattern is provided on the floor as is indicated in Fig. 6. Each of the circles 17a, 17b, 17c, and 17d, represent the area of the extent of heat impact on the floor from each of the respective lamps 17. It is to be noted that all four circles meet and are tangent at the point G. so that there is considerable overlapping of these circles particularly centrally of the overall pattern.

Contrary to most installations, this gives the intense heat at the center of the pattern with a decreasing amount of heat, that is effective heat, as the area is traversed from the center to the extreme outside. This is most desirable because baby chicks most particularly will follow from one intense zone of heat to a lesser zone as they may desire less heat. To the contrary if there be a lesser zone of heat in the center of the pattern as is usually the case, the baby chicks may try to assemble in that lesser area rather than go through the intenser heat of the pattern to the lesser heat around the outside into the cooler unheated area of the floor. This pattern will be achieved by the proper use of the right length of the central chain 25. The maximum height of the lamps 17 from the floor will of course be governed by the amount of heat required by the baby chicks, this amount being quickly determined by the behavior of the chicks themselves.

Normally the standard 250 watt infrared lamps will be used. Also these lamps will have the built in reflectors so that the great majority of the heat will be radiated thereby. However, there are always some stray beams of heat radiated backwardly through uncovered or uncoated portions of the glass lamps, and such stray beams are reflected back downwardly by the spherical undersurface of the base member 10. This member 10 is preferably made out of bright or semi-bright metal so as to provide for this heat reflection. Also there is purposely made a spacing between this central portion of the base member 10 and the cover 18 to provide room for the wiring as indicated in Fig. 2 as between the sockets and the switch 26. This wiring will remain cool between the two members by reason of the reflective type of surface employed. Further, in reference to the thermostatic control, the screw 30 which is the adjustable member is screw-threadedly carried and the cross member 32 mounted across the upright members 33 and 34 that extend from a base cross piece 35 in turn secured to the top side of the cover 18.

Therefore while we have shown the invention in the form now best known to us, and while we have described it in minute detail in the one particular form, it is obvious that structural variations may be employed without departing from the spirit of the invention, and we therefore do not desire to be limited to that precise form beyond the limitations which may be imposed by the following claims.

We claim:

1. A brooder lamp fixture comprising an inverted dome constituting a hollow spherical segment and having a plurality of apertures regularly arranged on a common, small circle thereabout; the axes of said apertures being radii of curvature of said dome, said radii, each being at an angle of substantially twenty degrees to the central radius of curvature of the dome; a lamp socket carried by the dome to be presented at each aperture aligned with said axis thereof; a cover plate secured to the dome to extend thereover and therebeyond; and a drip lip downturned around the outer edge portion of the plate; said cover plate extending beyond any lamp carried by said sockets; and means for suspending the fixture.

2. A brooder lamp fixture comprising an inverted dome constituting a hollow spherical segment and having a plurality of apertures regularly arranged on a common, small circle thereabout; the axes of said apertures being radii of curvature of said dome, said radii, each being at an angle of substantially twenty degrees to the central radius of curvature of the dome; a lamp socket carried by the dome to be presented at each aperture aligned with said axis thereof; a cover plate secured to the dome to extend thereover and therebeyond; and a drip lip downturned around the outer edge portion of the plate; said cover plate extending beyond any lamp carried by said sockets; and means for suspending the fixture; a flange extending outwardly from the dome in the plane of the circle defining the top side of the dome; said extending means comprising flexible members; hooks on the fixture to which said members are engaged; said hooks having shanks extending through said cover and said flange; and means on the shanks interengaging said flange and said cover plate in contact one with the other.

3. A brooder lamp fixture comprising an inverted dome constituting a hollow spherical segment and having a plurality of apertures regularly arranged on a common, small circle thereabout; the axes of said apertures being radii of curvature of said dome, said radii, each being at an angle of substantially twenty degrees to the central radius of curvature of the dome; a lamp socket carried by the dome to be presented at each aperture aligned with said axis thereof; a cover plate secured to the dome to extend thereover and therebeyond; and a drip lip downturned around the outer edge portion of the plate; said cover plate extending beyond any lamp carried by said sockets; and means for suspending the fixture; thermostat means carried on the top, outer side of said plate; and a circuit including in one portion a part of said sockets for direct supply of electrical energy, and in another portion including said thermostat means interrupting in accordance with temperature changes, said other circuit portion.

4. A brooder lamp fixture comprising an inverted dome constituting a hollow spherical segment and having a plurality of apertures regularly arranged on a common, small circle thereabout; the axes of said apertures being radii of curvature of said dome, said radii, each being at an angle of substantially twenty degrees to the central radius of curvature of the dome; a lamp socket carried by the dome to be presented at each aperture aligned with said axis thereof; a cover plate secured to the dome to extend thereover and therebeyond; and a drip lip downturned around the outer edge portion of the plate; said cover plate extending beyond any lamp carried by said sockets; and means for suspending the fixture; said cover plate and said dome forming an

insulating air space therebetween, and the undersides of said dome and said lower plate being heat reflective.

5. A brooder heat lamp fixture comprising an inverted dome essentially a spherical segment shell, and having a plurality of openings therethrough arranged in regularly spaced apart relation around a small circle of the segment to have the axes of the openings, each a radius of curvature of the dome; a flange around the major circle of the dome; a cover plate secured against said flange to form an insulating air chamber therebetween; an electric lamp socket in each of said openings each aligned on said radius axis thereof; and means for suspending the fixture; a thermostat member mounted on the top side of said fixture; and an electric circuit divided into two parts, one part including less than all of said sockets, and the other part including the rest of said sockets and said thermostat means whereby a part only of the sockets will be controlled by said thermostat means.

MILTON V. SCHUBERT, JR.
BILLY E. LANGOHR.
LORIN J. BADSKEY.

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