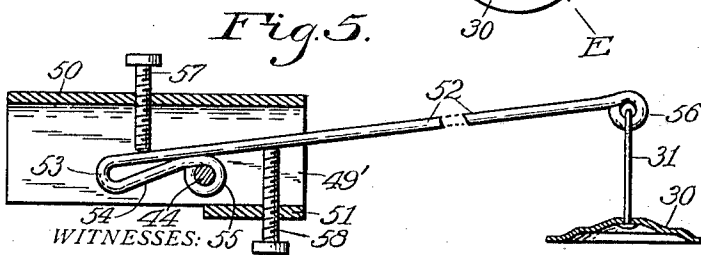
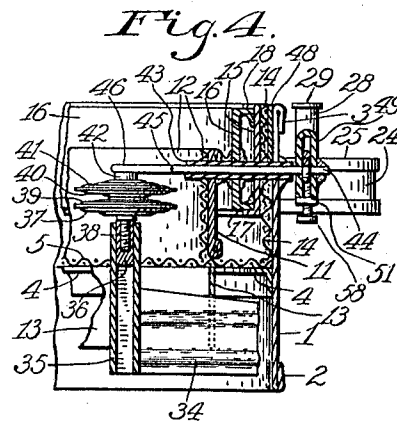
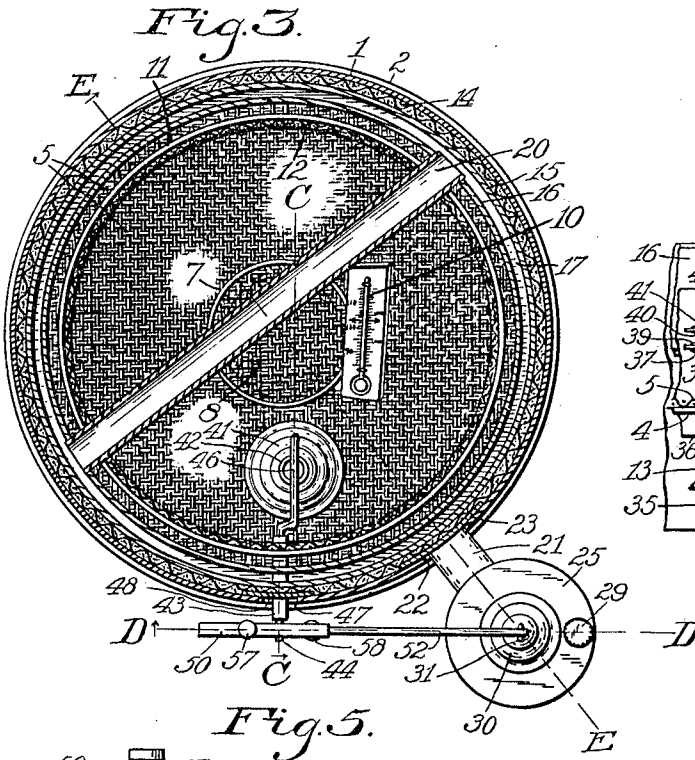
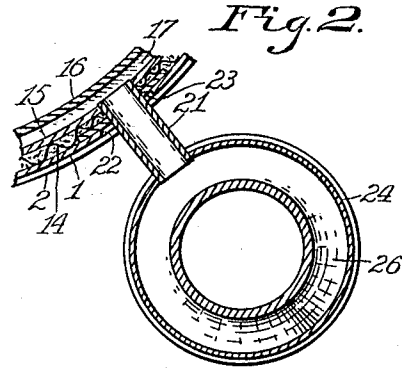
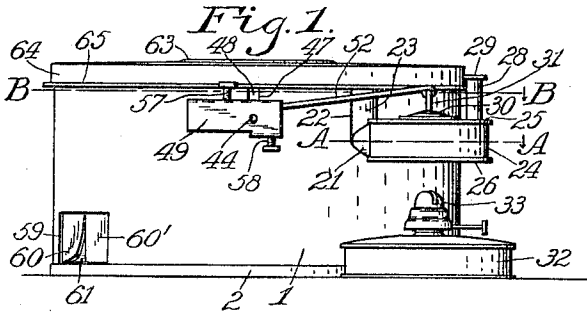


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INCUBATOR AND BROODER.
APPLICATION FILED JULY 17, 1911.

1,048,313.

Patented Dec. 24, 1912.

2 SHEETS-SHEET 1.



J. H. Gardner.
E. W. Poyner.

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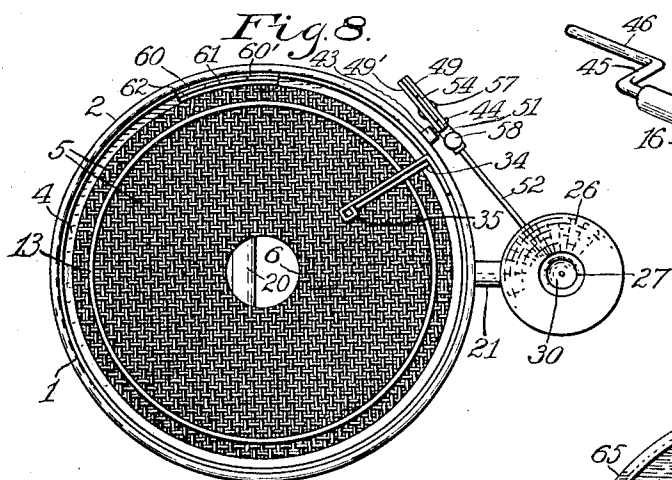
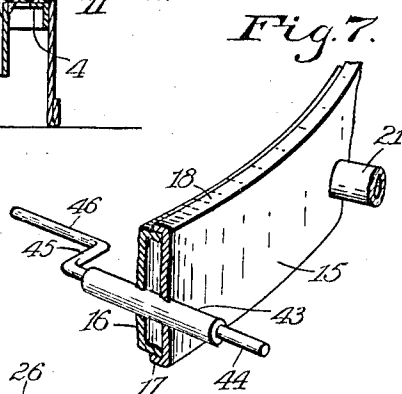
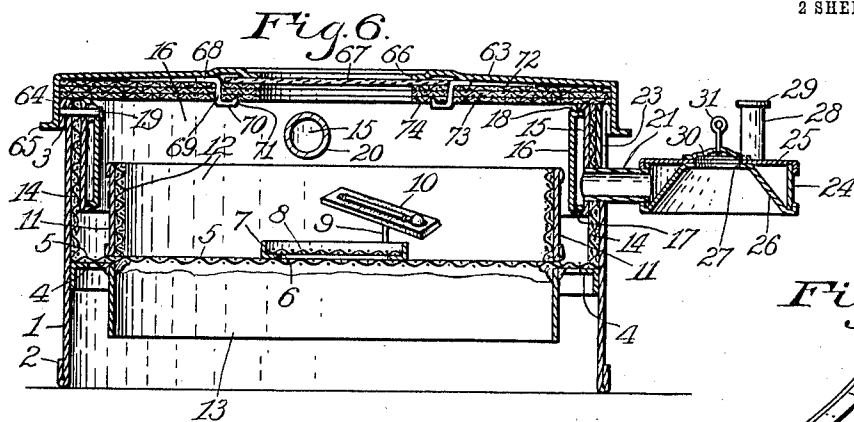
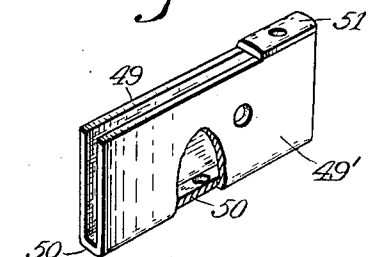


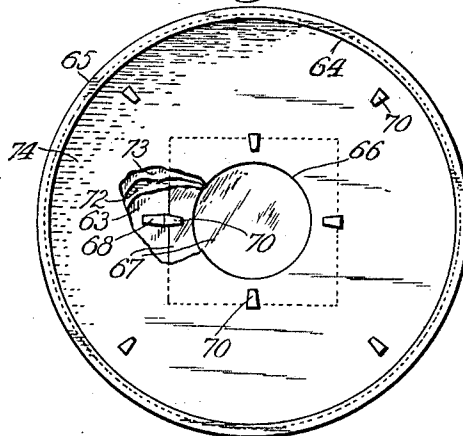
Fig. 9.



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Fig. 10.



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UNITED STATES PATENT OFFICE.

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INCUBATOR AND BROODER.

1,048,313.

Specification of Letters Patent.

Patented Dec. 24, 1912.

Application filed July 17, 1911. Serial No. 638,994.

To all whom it may concern:

Be it known that I, LUTHER J. ISENHOUR, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Incubator and Brooder, of which the following is a specification, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon.

This invention relates to an article that is adapted to be used, either as an incubator, or as a brooder, and qualified for performing the functions of both an incubator and brooder at one and the same time, the invention having reference particularly to portable apparatus of the above mentioned character so constructed as to be adapted to be compactly shipped from the factory and to be readily handled by the user.

The object of the invention is to improve the construction of incubators and brooders with the purpose of attaining the highest efficiency in operation, and to provide a durable and economical incubator and brooder that will be adapted to be conveniently used, either in-doors, or out in the open, as may be most desired in view of the atmospheric conditions.

With the above mentioned and minor objects in view, the invention consists in the novel details of construction in incubators and brooders, and certain parts and combinations and arrangements of parts as hereinafter particularly described and pointed out in the accompanying claims.

Referring to the drawings, Figure 1 is a front elevation of the improved incubator and brooder; Fig. 2, a fragmentary horizontal section on the line A A in Fig. 1; Fig. 3, a horizontal section on the line B B in Fig. 1; Fig. 4, a fragmentary section on the line C C in Fig. 3; Fig. 5 a fragmentary section on the line D D in Fig. 3; Fig. 6, a vertical central section on the line E E in Fig. 3; Fig. 7, a fragmentary sectional perspective of an improved radiator; Fig. 8, an inverted plan minus the lamp; Fig. 9, a perspective view of a part of the heat regulator inverted; and Fig. 10, an inverted plan view of the cover portion of the incubator and brooder.

Similar reference characters in the different figures of the drawings indicate like elements or features of construction herein referred to.

As preferably constructed, the main portion of the housing or inclosure comprises a cylindrical metallic wall or shell 1 having a reinforcing band 2 on the lower end thereof which is formed by turning over the metal, the housing having no floor or bottom in its lower end, the upper end of the wall having a similar reinforcing band 3 thereon. The wall has an annular ledge 4 secured to the inner side thereof at a suitable distance above the lower end of the wall, and an apertured or open work elevated floor 5 preferably composed of wire netting is secured upon the ledge, and has a central aperture 6 therein, an annular guide ring 7 being secured upon the floor and extending about the opening for keeping in place a trap door 8 preferably composed of wire netting which extends across the central opening in the floor. A socket 9 is secured upon the floor adjacent the guide ring and supports a thermometer 10 which is slightly inclined both longitudinally and transversely and is suitably supported so as to be adjusted rotatably in the socket in order to be brought into the best light coming through the cover. An annular inner wall 11 composed of sheet metal is secured upon the floor 5 concentrically with the wall 1, and it has an inner lining 12 preferably composed of tar board or building paper, or similar material that is a non-conductor of heat. An annular shield 13 is secured to the under side of the floor 5 below the wall 11 for assisting to induce the air to ascend between the walls 1 and 11 in relatively cool weather, but in some cases may be omitted when the appliance is used in relatively warm climates. A lining 14 of non-conducting material, such as tar board or building paper, is placed upon the floor 5 against the inner side of the wall 1 and extends to the upper end of the wall.

An improved heat radiator is provided in the form of an annular water chamber and it comprises an outer wall 15, an inner wall 16, a narrow bottom 17 and a narrow top 18, the side walls being spaced a relatively short distance apart, and the outer wall is placed against the inner side of the lining 14 so as to prevent outward radiation of the heat. The radiator is connected with the wall 1 by means of a supporting pin 19 and is otherwise supported as will further appear. A radiating tube 20 is connected with diametrically opposite portions of the inner

wall 16 of the radiator so that it extends above the floor 5, for assisting to distribute the heat in the interior of the housing. A tube or duct 21 is connected to the outer wall 15 of the radiator and assists in supporting the radiator, the tube being inserted in a slot 22 cut into the shell 1 and closed by a plate 23. A suitable water heater is connected to the tube 21 and preferably comprises a cylindrical shell 24 provided with a top 25 and a conically shaped bottom 26, the middle portion of the bottom being secured to the top, both top and bottom having a central opening 27 therein. A filling tube 28 is connected to the top 25 and provided with a cap 29. A valve 30 provided with an operating stem 31 is adapted to close the opening 27 and may be raised more or less to permit the escape of heat through the opening, the heat being derived from a suitable lamp comprising a reservoir 32 and a burner 33 arranged below the bottom 26 of the water heater.

A metallic bracket 34 is secured to the inner lower portion of the wall 1 where the latter is not materially affected by changes of temperature, and it has a pillar 35 formed integrally thereon and extending upward through the floor 5, the upper portion of the pillar having a plug 36 secured therein. A suitable thermostatic device is provided for automatically regulating the heat in the housing and it preferably comprises a corrugated disk 37 provided with a supporting stem 38 which is screwed into the plug 36, a disk 39 secured to the disk 37, and two similar disks 40 and 41 are secured together, the disk 40 being secured to the disk 30 and the uppermost disk 41 having a central bearing projection 42 thereon. A tubular journal bearing 43 extends through and is secured to the walls 15 and 16 of the radiator, the journal bearing extending through the water space of the radiator and also through the walls 1 and 11 and their linings and it supports a rock shaft 44 which extends therethrough, and has a crank arm 45 on its inner end provided with a crank handle or pin 46 that extends onto the projection 42. The wall 1 has a slot 47 therein to receive the ground bearing 43 and is closed by a plate 48. An arm head is provided whereby to regulate the valve 30, and it preferably comprises two side plates 49 and 49' secured to the outer end of the shaft 44 and an integral top 50, and preferably also a bottom portion 51 at one end thereof. An arm 52 is arranged between the side plates 49 and 49' and extends above the shaft 44 and the bottom portion 51 toward the opposite end portions of the side plates, and it has a crook 53 thereon from which extends a return portion 54 provided with a collar 55 which rotatably embraces the shaft 44 beneath the

main portion of the arm 52, said arm extending to the operating stem 31 and having an eye 56 thereon connected to a similar eye with which the stem is provided. An adjusting screw 57 is inserted in the top 50 of the arm head and is in contact with the arm 52 for adjusting the arm relative to the arm head, another adjusting screw 58 preferably being inserted in the bottom portion 51 and extending into contact with the opposite side of the arm 52 for assisting to hold the arm firmly in adjusted position, and it will be understood that in some cases either one of the adjusting screws may be omitted. The arm head extends rearward from the valve 30 beyond the shaft 44 so as to partially counterbalance the valve and its operating arm 52.

A portion of the wall 1 has a doorway 59 therein immediately above the reinforcing band 2 and is closed by means of two adjacent curtains 60 and 60' and a central curtain 61 adapted to close the joint between the other two curtains, the curtains preferably being composed of oil cloth or suitable fabric so that the little chicks may push them aside and pass through the doorway, the upper portions of the curtains or flexible doors being secured to the wall by a plate 62.

The cover of the housing comprises a disk 63 having a cylindrical rim 64 thereon adapted to pass over the reinforcing band 3 of the wall 1, the edge of the rim having an outwardly extending stiffening flange 65 thereon adapted to be used as a hand-hold for lifting the cover. The cover has a central aperture 66 therein which is closed by a squared glass plate 67 placed against the inner side of the cover and secured by means of metallic clips having each a base portion 68 that is soldered or otherwise secured to the cover, a stem 69 and a finger 70 provided with a point 71, there being a suitable number of clips employed which secure a suitable number of annular linings 72, 73, 74, placed together and against the inner side of the cover for preventing radiation of heat, tar board or the like being suitable for use in their formation. The lining of the lid rests upon the upper end of the wall 1 and its lining 14 so as to form a practically tight joint.

In practical use the cover is removed from the wall of the housing and the eggs are placed upon the floor 5, and the heating lamp being in operation heats the water which is contained in the radiator and the heater above the lamp, the cover being replaced to retain the heat upon the eggs. The attendant may look through the glass plate 67 and observe the thermometer so as to ascertain the temperature near the eggs, and if desired the valve 30 may be manually adjusted by means of the screws 57

and 58 so as to open the valve more or less or to close it so as to regulate the passage of heat through the opening 27 or to prevent the escape of heat therethrough. Having obtained the desired temperature required for incubating purposes the temperature usually is automatically regulated by means of the thermostatic device actuating the rock shaft 44 and the arm 52, but in some cases readjustment of the arm relative to the arm head may be required, which can be done without disturbing the temperature in the incubator. The lower portion of the housing below the floor 5 conveniently serves as a brooder and protects the little chicks from the elements in a warm atmosphere, and the doorway permits them to pass out and return at pleasure while the curtains exclude cold air, when they are housed within.

The temperature controlling means and related structures illustrated and described as being advantageously connected with the main structure of the incubator and brooder, but not herein claimed, form the subject-matter of the claims in my co-pending application for Letters Patent, filed April 22, 1912, Serial Number 692,400.

Having thus described the invention, what is claimed as new, is—

1. An incubator and brooder including an outer wall, an apertured floor secured in elevated position to the inner side of the wall, an inner wall secured upon the floor, a hollow radiator at the inner side of the outer wall and having a tube connected thereto that extends through the wall, a heater connected to the tube, a shield secured to the under side of the floor under the inner wall, and a cover on the outer wall.

2. An incubator and brooder including an outer wall having a slot in the upper portion thereof, a floor having openings therein and secured in elevated position to the inner side of the wall, an inner wall secured upon the floor, a hollow radiator extending between the two walls and above the plane of the top of the inner wall and having a tube connected thereto that extends through the slot, a heater connected to the tube, and a cover on the outer wall.

3. An incubator and brooder including an annular outer wall and a ledge on the inner side of the wall, an apertured floor secured upon the ledge, an inner wall secured upon the floor and extending upward to a less height than the outer wall, an annular hollow radiator supported between the outer wall and the inner wall at a distance from the inner wall and having a tube connected thereto that extends through the outer wall, a heater connected to the tube, and a cover on the outer wall.

4. An incubator and brooder including an

annular outer wall, an apertured floor secured to the inner side of the wall, a lining secured against the inner side of the wall and extending from the floor to the upper end of the wall, an inner wall secured upon the floor, an annular shield secured against the under side of the floor under the inner wall, an annular hollow radiator supported against the lining and having a tube thereon extending through the lining and the outer wall, a heater connected to the tube, and a cover on the outer wall.

5. An incubator and brooder including an outer wall, an apertured floor secured to the inner side of the wall, a relatively low inner wall secured upon the floor, a hollow radiator secured at the inner side of the outer wall and having a radiating tube connected with opposite portions thereof, the tube extending above the floor and the inner wall, a tubular duct connected to the radiator and extending through the outer wall, a heater connected to the duct, and a cover on the outer wall.

6. An incubator and brooder including an outer wall, a hollow radiator at the inner side of the wall, a cover on the wall, a tubular duct connected to the radiator, an annular heater connected to the duct, a reticulate floor secured to the inner side of the wall, a tubular journal bearing extending through and secured to the radiator and extending through the wall above the floor, a rock shaft mounted in the journal bearing and having a crank arm on the inner end thereof, a controlling arm connected to the outer end of the rock-shaft, a valve carried by the controlling arm above the opening of the annular heater, a support secured to the wall and extending through the floor, and a thermostatic device mounted on the support above the floor in connection with the crank arm.

7. An incubator and brooder including an outer wall, an open-work floor secured to the inner side of the wall and having a central aperture therein, a guide ring secured upon the floor and extending about the aperture, a trap door removably seated on the floor within the guide ring, an inner wall secured upon the floor, a hollow radiator supported above the floor at the inner side of the outer wall, a heater connected with the radiator, and a cover on the outer wall.

8. An incubator and brooder including an outer wall, an apertured floor secured to the inner side of the wall, a fibrous lining at the inner side of the wall extending from the floor to the upper end of the wall, a hollow radiator at the inner side of the lining above the floor and having a tube connected thereto that extends through the wall and the lining, the radiator having also a supporting pin secured thereto that extends through opposite portions of the wall and the lining, a

cover seated removably upon the top of said outer wall and its lining, said cover having a rim thereon extending about said wall and provided with an outward extending flange, a heater connected to said tube, and a wall secured upon said floor at a distance inward from said radiator and having a fibrous lining on the inner side thereof.

9. In an incubator and brooder, the combination of an outer wall having a doorway, a floor secured to the wall above the lower end thereof and having a central aperture therein, a bracket secured to the inner side of the wall below the floor and having a pillar thereon that extends through the floor, a thermostatic device mounted upon the pillar above the floor, a hollow radiator supported above the floor at the inner side of the wall and having a tube connected thereto that extends through the wall, a heater connected to the tube, a wall secured upon the floor and extending about the thermostatic device, and a cover on the outer wall and having a fibrous lining secured thereto.

10. In an incubator and brooder, the combination of an outer wall, an apertured floor secured to the inner side of the wall in a plane above the lower end thereof, a relatively low continuous inner wall secured upon the floor at a distance from the outer wall, a hollow radiator supported between the outer wall and the inner wall against the outer wall and having a duct connected thereto that extends through the outer wall, a radiating tube connected to two opposite portions of the radiator and extending over the floor and the inner wall, a heater connected to duct, an imperforate continuous shield supported under the floor and constituting a continuation of the inner wall extending downward relatively near to the plane of the lower end of the outer wall, and a cover on the outer wall.

11. An incubator and brooder including an inclosing wall, a floor supported by the wall, a hollow radiator supported above the floor adjacent the wall, a duct connected to the radiator and extending through the wall, a heater connected to the duct, a regulating valve for the heater, a bracket secured to the wall below the floor and having a pillar thereon extending upward through the floor, a thermostatic device supported on the pillar, a journal-bearing secured to the radiator and extending therethrough and through the inclosing wall, a rock-shaft mounted in the journal-bearing and having a crank arm on the inner end thereof in contact with the thermostatic device, and a device adjustably connected with the outer end of the rock-shaft and connected also with the regulating valve.

12. An incubator and brooder including an inclosing wall having a bracket on the inner side thereof, an apertured floor supported by the wall above the bracket, a pillar supported by the bracket and extending through the floor, a thermostatic device mounted upon the pillar above the floor, a supported journal-bearing extending through the wall, a radiator supported above the floor, a heater arranged externally to the wall and connected with the radiator, a regulating valve for the heater, a rock-shaft mounted in the journal-bearing and having a crank arm on the inner end thereof in contact with the thermostatic device, and an arm mounted on the outer end of rock-shaft and connected with the regulating valve.

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

LUTHER J. ISENHOUR.

Witnesses:

EDWIN STEERS,
E. T. SILVIUS.