

1,130,899.

Patented Mar. 9, 1915.
2 SHEETS—SHEET 1.

Fig. 1.

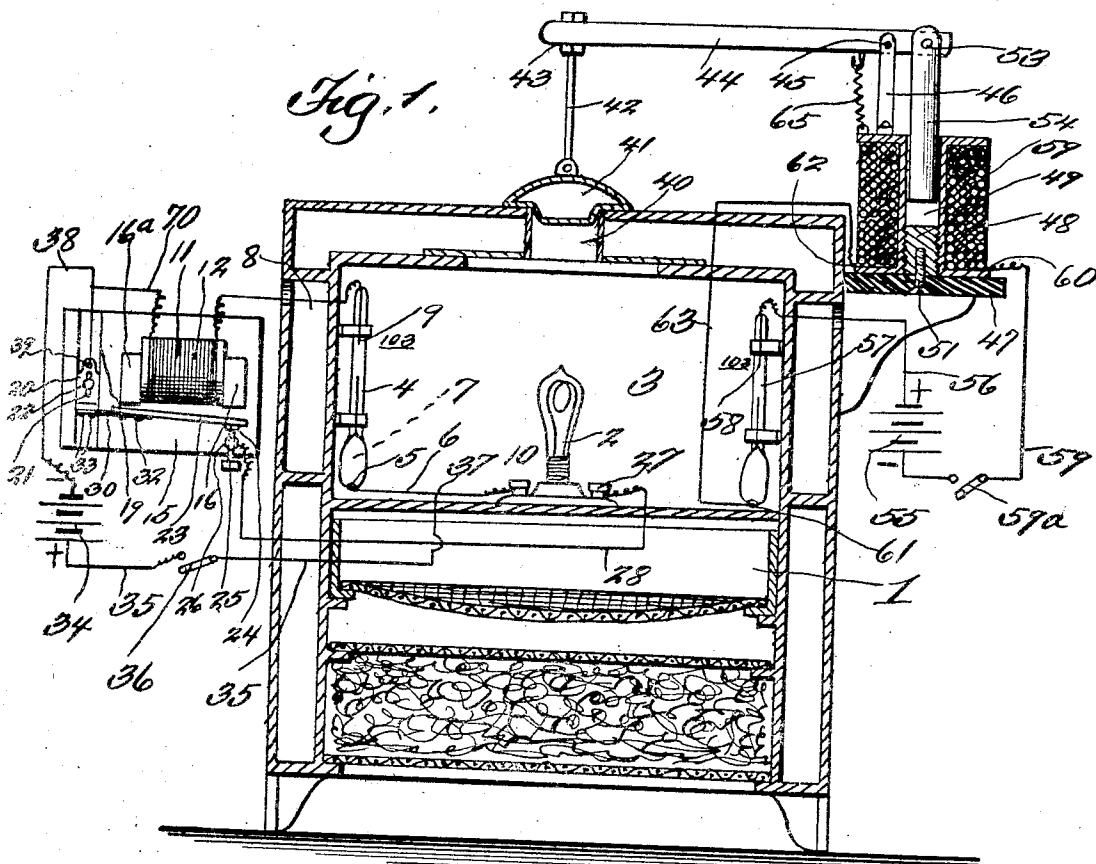
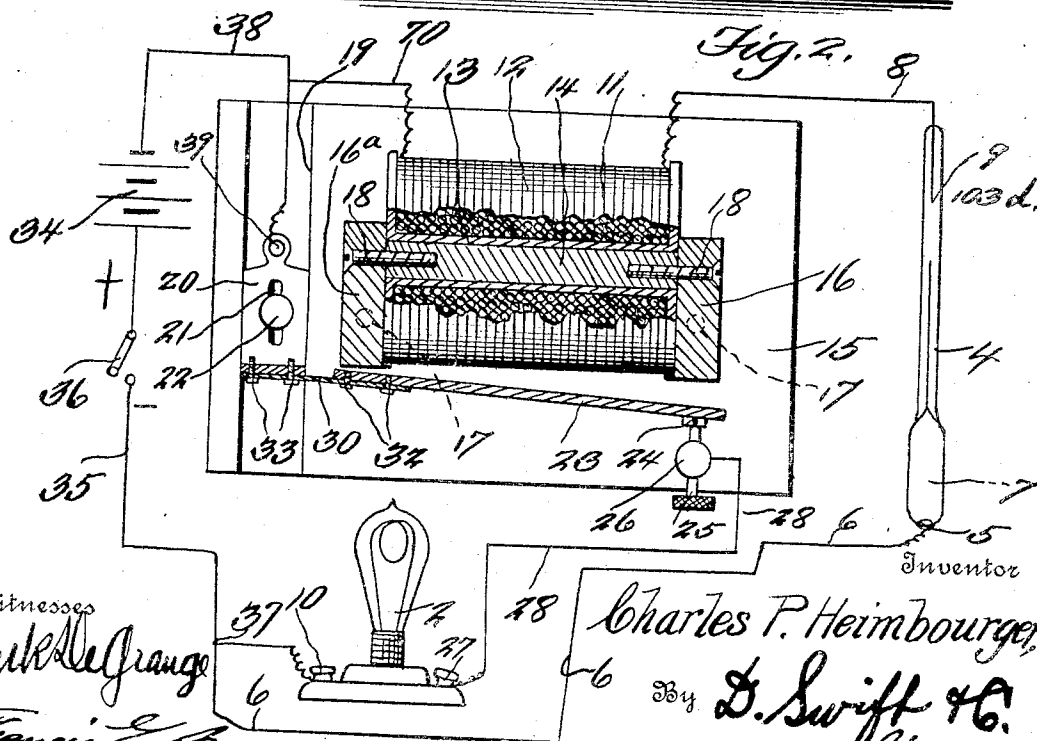


Fig. 2.



Witnesses
Mark DeGrange
Francis P. Brownell.

Inventor
Charles P. Heimbourger
By D. Swift & Co.
Attorneys

C. P. HEIMBOURGER.
HEAT REGULATOR FOR INCUBATORS.
APPLICATION FILED JUNE 21, 1913.

1,130,899.

Patented Mar. 9, 1915.

2 SHEETS-SHEET 2.

Fig. 3.

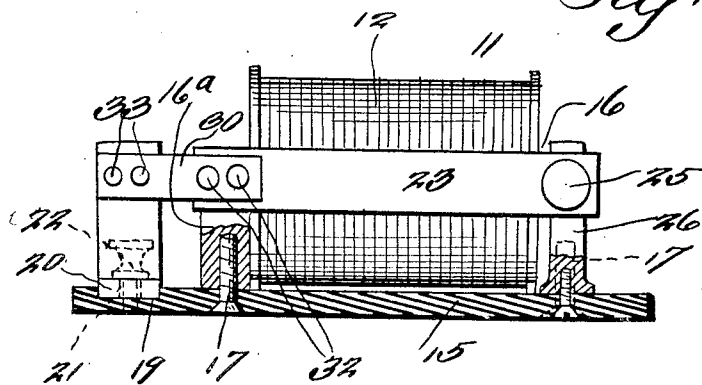
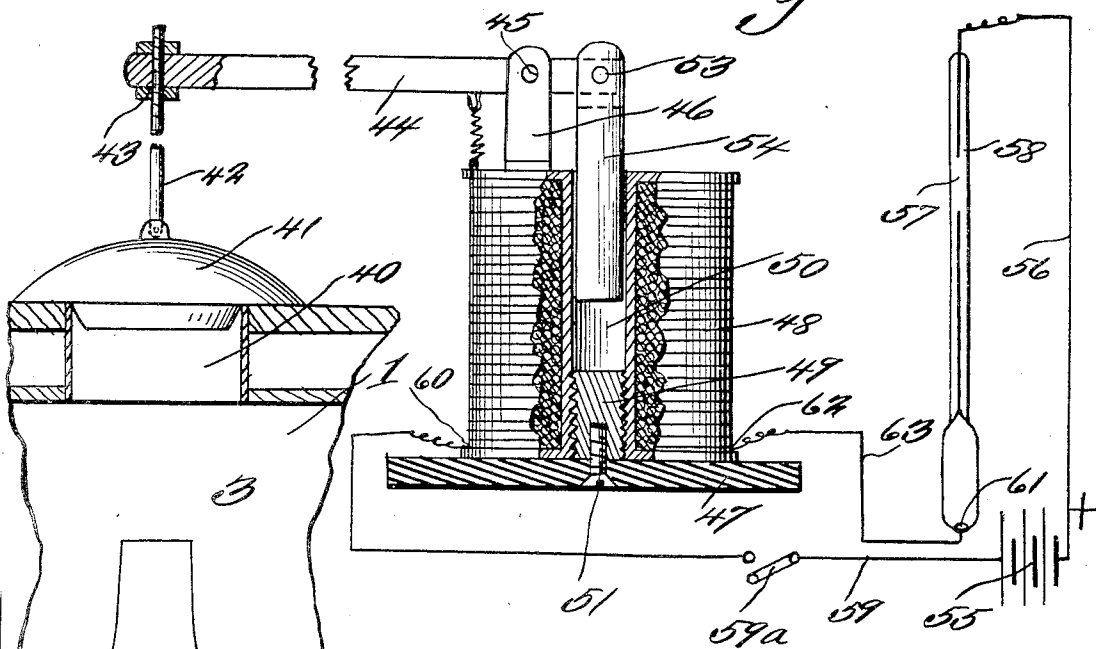


Fig. 4.



Witnesses

Mark H. Grange.

Francis T. Grange.

Inventor

Charles P. Heimburger,

By D. Swift & Co.,

Attorneys

UNITED STATES PATENT OFFICE.

CHARLES P. HEIMBOURGER, OF BEARDSTOWN, ILLINOIS.

HEAT-REGULATOR FOR INCUBATORS.

1,130,899.

Specification of Letters Patent.

Patented Mar. 9, 1915.

Application filed June 21, 1913. Serial No. 775,127.

To all whom it may concern:

Be it known that I, CHARLES P. HEIMBOURGER, a citizen of the United States, residing at Beardstown, in the county of Cass and State of Illinois, have invented a new and useful Heat-Regulator for Incubators; 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.

This invention relates to the art of heat regulators for incubators, and particularly to an intermittently operated circuit closer, for intermittently actuating an electric lamp, or bulb or rheostat, whereby the heat emanating from the lamp, bulb or rheostat may keep the interior of the incubator at a uniform temperature.

One of the features of the invention is the provision of a magnet suitably mounted upon a base (which is provided with a transverse guide groove) with which magnet a vibrating armature coöperates, which vibrating armature is provided with a flexible connection to an adjustable block or member mounted in said guide groove, and when the circuit is closed by operating the usual switch, a lamp, the vibrating armature and the adjustable block (which is mounted upon the insulating base) are in circuit, and when the heat rises above substantially 103 degrees, which is the necessary temperature, the mercury in a thermometer will form a contact with a lead connected to the magnet, thereby energizing the magnet which will attract the free end of the vibrating armature, opening the circuit at the free end of the vibrating armature, thereby extinguishing the light of the electric lamp or bulb. Then as the temperature decreases, the mercury of the thermometer will descend and break the contact with said lead to the magnet, thereby restoring the lamp circuit.

In the drawings the lamp is disposed immediately below an opening, which is covered by a bell-shaped closure, which is raised and lowered by electrically operated means, which together with the bell closure constitutes auxiliary means for regulating the heat or temperature in the incubator. If desired, as shown in the drawings, the

bell closure may be adapted to open and close an opening, directly under which a coal oil lamp may be arranged.

In practical fields the minor details of construction may necessitate alterations, to which the patentee is entitled, provided the alterations fall within the scope of what is claimed.

The invention comprises further features and combinations of parts, as hereinafter set forth, shown in the drawings and claimed.

In the drawings: Figure 1 is a view showing the improved main and auxiliary heat regulators as applied to an incubator. Fig. 2 is a plan view of the main regulator showing its circuits, showing parts of the circuit closing apparatus in section. Fig. 3 is a side view of the circuit closing apparatus. Fig. 4 is a view showing the auxiliary regulator as applied to a coal oil lamp heated incubator.

Referring more particularly to the drawings, 1 designates an incubator, which may be of any suitable shape and construction, and arranged on the interior thereof in the heat chamber is an electric lamp or bulb 2 (in lieu of which a rheostat, not shown, may be substituted). Also arranged on the interior of the incubator in the heat chamber 3 is a thermometer 4, the lower end of which is provided with a contact 5 to which a lead 6 is connected. This contact forms an electric connection with the mercury 7 of the thermometer. The lead 8 extends through the upper end of the tube of the thermometer and provides a contact 9, with which the mercury intermittently contacts as the same rises and falls, incident to the fluctuation of the heat or temperature in the incubator. The lead 6 connects to a binding post 10 of the electric lamp or bulb, while the lead or wire 8 connects to one end of the windings 11 of the magnet 12. The magnet 12 is electrically connected to the lead 38 by the wire 70. These windings are wound upon a wood spool, in the bore 13 of which a soft iron core 14 is arranged. A suitable base 15 constructed of insulating material is provided, to which the soft iron blocks or brackets 16 and 16^a are secured by the screws 17, and penetrating the blocks or brackets 16 and 16^a are screws 18, which also

extend into the core 14, thereby not only holding the core in position, but also holding the spool in position. The base 15 is provided with a guide groove 19, in which
 5 a copper member or block 20 is arranged. This member or block 20 is provided with a slot 21, through which a thumb screw 22 extends and is threaded into the base. It will be seen that owing to the slot 21, the
 10 block or member 20 may be adjusted, while the thumb screw 22 holds the block in adjusted positions. By making the block adjustable, the vibrating armature 23 may be easily adjusted in its proper relative position to the poles of the magnet, so that the
 15 armature will properly contact with the pole pieces of the magnet. Adapted to be attracted by the soft iron members or brackets 16 and 16^a (which constitute the
 20 poles of the magnet) is a vibrating armature 23, the free end of which is provided with a contact 24, and when the free end of said vibrating armature 23 is down, the contact 24 contacts with the end of the thumb
 25 screw 25, which is threaded into a stud 26 mounted upon the base. Connecting the studs 26 and the binding post 27 of the electric lamp or bulb 2 is a lead or wire 28. The vibrating armature 23 has its ends 29
 30 provided with a spring 30 secured at 32 to the armature 23, which spring in turn is connected to the member or block 20 by the screws 33. This spring 30 forms a flexible connection between the block or member 20
 35 and the vibrating armature 23. A suitable battery 34 is provided, the positive lead or wire 35 which, including the switch 36, is connected at 37 to the lead or wire 6, while the negative wire 38 of the battery is con-
 40 nected to a binding post 39 of the block or member 20.

When the switch 36 is closed, current passes along the lead 35 to the electric lamp or bulb to the stud 26 by way of the lead 28
 45 through the vibrating armature, the same being in contact with the screw 25, to the member or block 20, and back to the battery over the lead or wire 38. As the heat from the electric lamp or bulb rises over 103 de-
 50 grees the mercury will make contact with the contact 9 of the lead or the wire 8, current passing through the coils of the magnet thereby energizing the same, which in turn will cause the soft iron brackets or poles 16
 55 and 16^a to attract the vibrating armature 23, the free end of which will break contact with the screw 25, thereby opening the electric lamp or bulb circuit, extinguishing the light from which the heat emanates, and as
 60 the heat decreases, the mercury also cooling off and lowering, the circuit is broken at the contact 9, which will cause the magnet to become deenergized, thereby permitting the electric lamp or bulb circuit to become re-
 65 established. The making and breaking of

these circuits occur intermittently, as the temperature rises and falls in the heat chamber of the incubator.

In Fig. 1 it will be seen that the electric lamp or bulb is located immediately below an opening 40 of the incubator, which is normally kept closed by the bell closure, which is pivotally suspended from a rod 42 adjustably connected at 43 to the oscillatory beam 44, which is pivoted at 45 to a bracket 46. A base of insulating material 47 is provided, upon which a magnet 48 similar to the magnet 12 is mounted. A core 49 is threaded into the bore 50 of the magnet, while a screw 51 is threaded through the base 47 and into the core 49. The oscillatory beam 44 is pivotally connected at 53 to the plunger 54, which extends into the bore 50 of the magnet. A suitable battery 55 is provided, the positive lead 56 of which extends through the upper end of a second thermometer 57 and forms a contact 58, while the negative lead or wire 59 of the battery connects at 60 to the windings of the magnet. A contact 61, with which the mercury of the thermometer coöperates electrically is connected to the windings of the magnet at 62, by means of a wire or lead 63. The bell closure 41 is normally held closed owing to the spring 65, which connects the magnet and the oscillatory bar or beam 44. This improved bell closure actuated by the improved electrical means, constitutes auxiliary means for keeping the temperature in the incubator uniform. It will be seen that as the heat rises the mercury of the thermometer 57 will form a contact at 58, current passing from the battery 55 energizing the magnet, will cause the plunger 54 to be sucked down within the bore 50 thereby oscillating the bar 44, which will raise the bell closure. This construction of bell closure and the means for operating the same will more quickly allow the escape of the heat in the incubator, which will cause the mercury of the thermometer 4 to more quickly cool off and descend, than if the heat was just allowed to gradually decrease in temperature.

As shown in Fig. 4 the bell closure may be used in connection with a coal oil lamp heated incubator.

The invention having been set forth, what is claimed as new and useful is:—

In combination, a support, an electromagnet on said support and having a vibrating armature adjustably mounted on the support and including an electric circuit, means for holding the armature in adjusted positions, a device and battery in said circuit, said magnet being deenergized when said circuit is closed to operate said device, a second circuit coöperating with said magnet, a circuit closer having a stationary and movable contact, the movable contact adapted to

be actuated by said device to connect with
the stationary contact, thereby closing the
second circuit, which will energize said mag-
net, said magnet when energized attracting
5 the vibrating armature thereby opening the
first circuit to stop the operation of said de-
vice.

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

CHARLES P. HEIMBOURGER.

Witnesses:

R. F. EPLER,
CLAUDE MILLER.