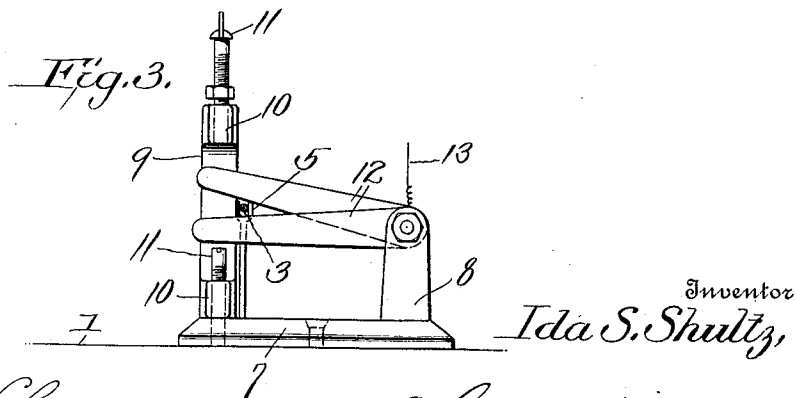
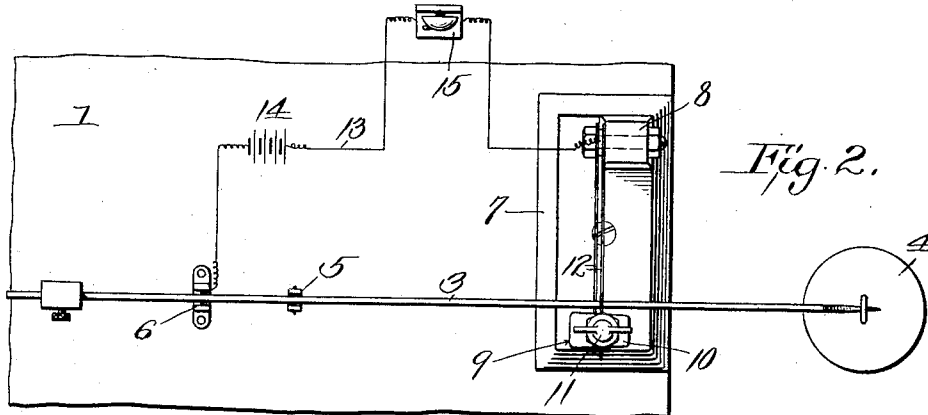
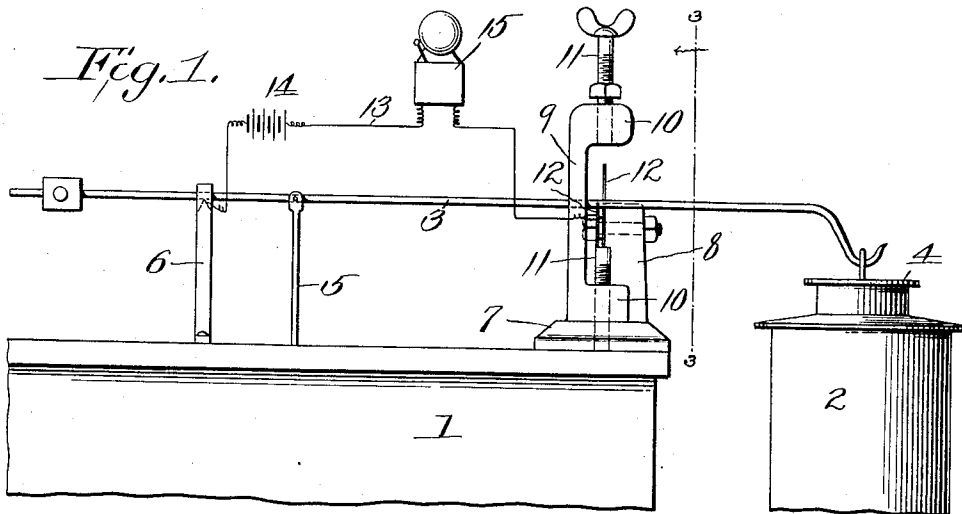


I. S. SHULTZ.
THERMOSTATIC ALARM.
APPLICATION FILED JAN. 18, 1911.

1,055,815.

Patented Mar. 11, 1913.



Witnesses

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THERMOSTATIC ALARM.

1,055,815.

Specification of Letters Patent.

Patented Mar. 11, 1913.

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To all whom it may concern:

Be it known that I, IDA S. SHULTZ, a citizen of the United States, residing at Easton, in the county of Northampton and State of Pennsylvania, have invented a new and useful Improvement in Thermostatic Alarms, of which the following is a specification.

This invention relates to an alarm especially adapted for use in connection with incubators, and the object of the invention is to give an alarm upon the rise or fall of temperature in the egg chamber beyond certain predetermined limits.

It is usually considered inadvisable to allow the temperature to fall below 100 or to rise above 103 during the first week of incubation, the temperature being usually held at either 102 or 103 during that period. During the latter part of the hatch, especially during the third week, the temperature is often allowed to run higher than 103 although at no time is it desirable to have the temperature fall below 100 or 101, although slight changes in temperature are believed to be beneficial by many experienced operators.

The object of this invention is to permit changes of temperature only within the limits of safety and to signal the attendant as soon as the temperature drops below or rises above the safety limit.

With this object in view, the invention consists in providing an electrically operated alarm, which is preferably in the form of a bell, the usual damper rod lifted and lowered by the action of the thermostat forming a part of the electric circuit, and a pair of adjustable arms extending above and below said rod and marking the safety limit of its rise and fall, a circuit through the bell being completed and an alarm given as soon as the rod contacts with either of said arms.

In the accompanying drawings, Figure 1 is a side elevation, a portion of an incubator and an incubator heater being shown, and my device being applied thereto, the electric circuit being indicated in diagram. Fig. 2 is a plan view of Fig. 1, the circuit being shown diagrammatically. Fig. 3 is a section on the line 3—3 of Fig. 1.

In these drawings, 1 represents an incubator of any make, 2 the heater, 3 the damper rod, 4 the damper, and 5 the thermostat rod or needle. The rod 3 is pivotally mounted upon a suitable support 6. These

parts are common to incubators in general use, and the details of their construction vary with different makes, although the general principle of all of them is substantially the same. It will of course be understood that as the temperature of the egg chamber falls, the damper rod 3 also falls and permits the damper 4 to close the upper end of the flue in the heater 2, thus throwing the heat into the egg chamber. As the heat increases and passes beyond a certain limit the rod 3 will rise and will lift the damper 4, thus permitting heat to escape. Ordinarily a properly adjusted thermostat with a properly hung damper will hold the temperature at the point desired which is usually in the neighborhood of 103 degrees F. However, there are certain limitations to the ability of a thermostat to control the temperature, and it will be obvious that if the lamp should burn out from lack of oil, or if a thick crust is permitted to form upon the top of the wick, or if the flame is turned too low, the thermostat can accomplish nothing beyond closing the damper and retaining what heat there may be in the egg chamber but if the amount furnished is insufficient no action of the thermostat can increase it or prevent a further drop in temperature. Furthermore, if the lamp flame should creep up or be left too high, or if the machine is located in a building exposed to the sun, the temperature is likely to rise faster than the lifting of the damper can reduce it. In order to give warning of these accidental or unexpected conditions, I place upon the top of the incubator 1, a suitable base 7 upon which is mounted a post 8, at one end, and a bracket 9 at the opposite end, the bracket being provided with what may be termed upper and lower horizontally projecting arms 10. Suitable adjusting screws 11 work vertically through the bracket arms 10 and diverging arms 12 are pivotally connected to the posts 8. The arms 12 are not pivoted loosely but are locked sufficiently tight to the post, so that they will remain in an adjusted position. To permit of exactness of adjustment, the screws 11 are provided, and by bringing them to bear upon the arms, the levers can be adjusted toward each other with such exactness that the space between them will correspond exactly to the movement of the damper rod, vertically, during a variation of three degrees in the temperature of the egg chamber. It will

of course be understood that no two thermostats will expand or contract exactly alike, and consequently the exact adjustment of the arms 12 can be determined only
 5 by experimenting in connection with the thermostat actually used, and this adjustment will also depend to some extent upon the distance of the said arms from the pivotal point of the damper rod 3. It will
 10 be assumed however, that said arms are so adjusted that when the temperature falls to 100 the damper will engage one of the arms, that adjusted by the lower screw 11, and when the temperature reaches 103 or
 15 more preferably $103\frac{1}{2}$ or even 104, that it will engage the other arm. It is of course advisable to adjust said arms so that they will not interfere with the proper movement of the damper rod within normal
 20 limits.

Attached to the damper rod 3 in any manner and at any desired point, as for example at its pivotal point with the support 6 is one
 25 end of an electric circuit 13, and the other end of said circuit is connected to the post 8 at the point where the levers 12 are pivoted. This circuit includes a battery 14 and a bell 15 may be placed upon the incubator, or the bell may be located in another room or building and at any reason-
 30

able distance from the machine. It will be obvious that as soon as the damper rod engages either one of the levers, a circuit will be completed through said levers, through
 35 the circuit wire 13, including the bell and battery and through the damper rod. This will cause the bell to ring and will give any person within hearing, warning of the fact that the temperature has either fallen below or risen above the safety limit.

What I claim is:—

The combination with an incubator having a damper rod, of a suitable base secured upon said incubator and at right angles to the damper rod, a post carried by said base, a
 45 bracket having laterally extending arms carried by the base, the said post and bracket being upon opposite sides of the damper rod, diverging arms carried by the post, the damper rod working between said arms, ad-
 50 justing screws working through the arms of the bracket and adapted to engage respectively said arms and an electric circuit including said arms and the damper rod, a suitable alarm forming also a part of said
 55 circuit.

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."