(No Model.) 2 Sheets—Sheet 1.

J. K. GILCREST.

HEAT REGULATOR.

No. 599,959. Patented Mar. 1, 1898.

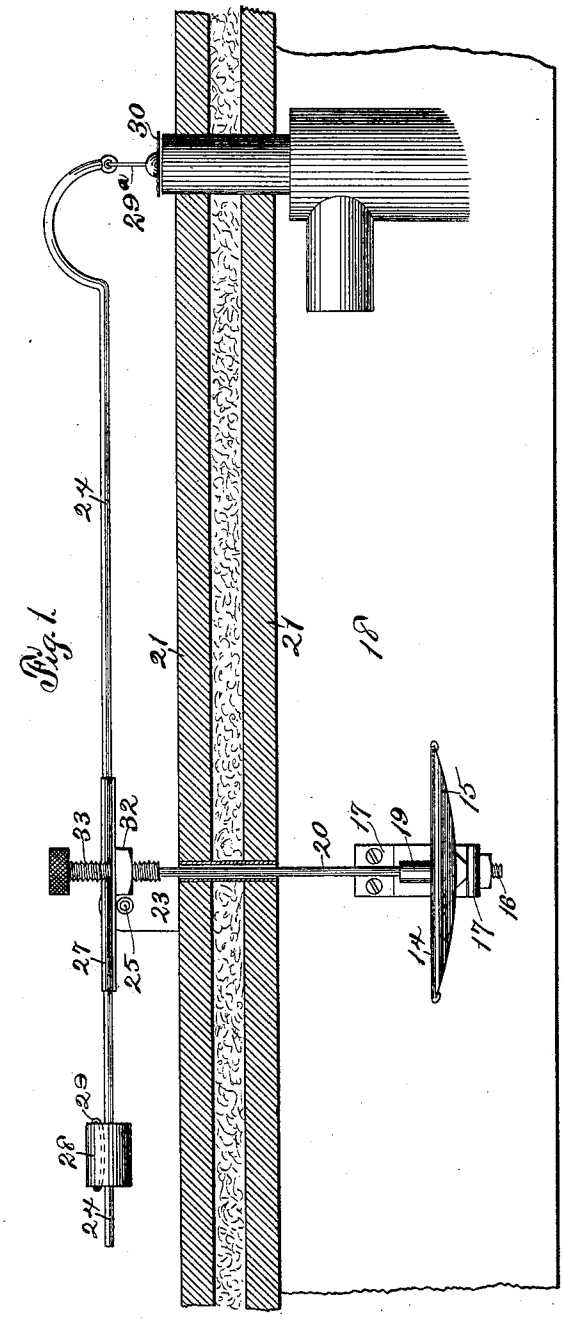


Fig. 1.

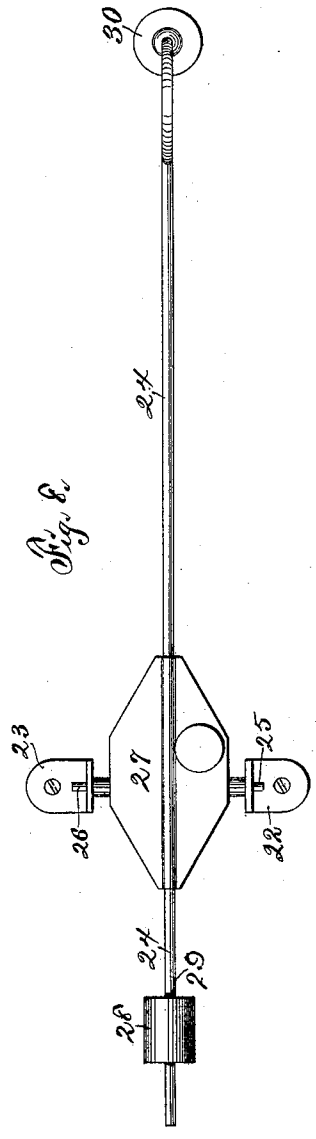


Fig. 2.

Witnesses:
J. A. Bramhall
Geo. Amburn.

Inventor:
Jacob K. Gilcrest
By J. H. Swoope
Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

J. K. GILCREST.

HEAT REGULATOR.

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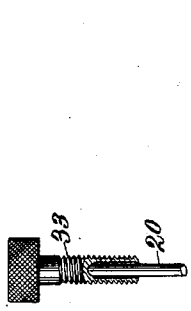


Fig. 6.

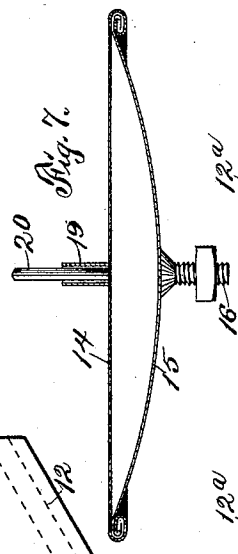


Fig. 7.

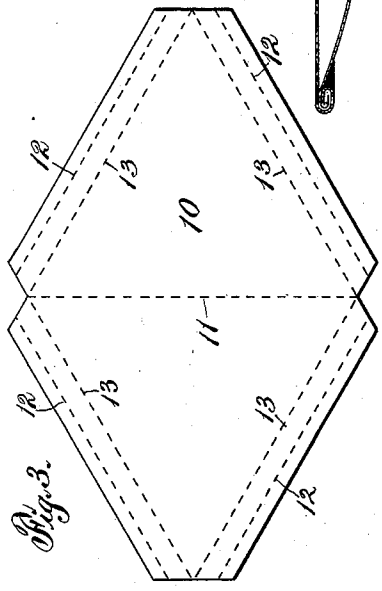


Fig. 3.

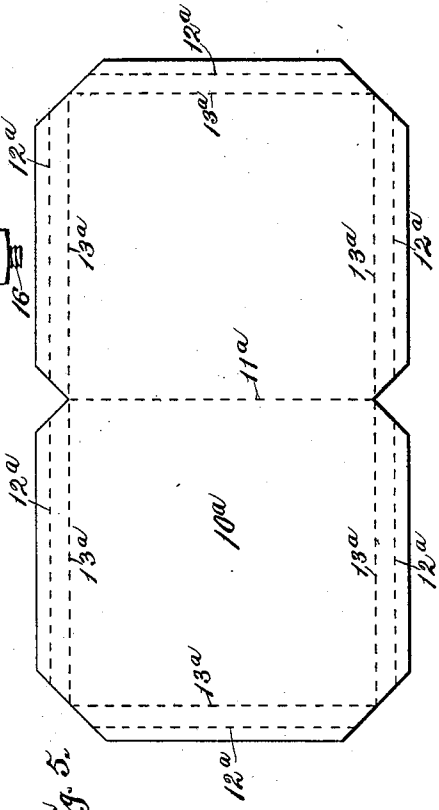


Fig. 5.

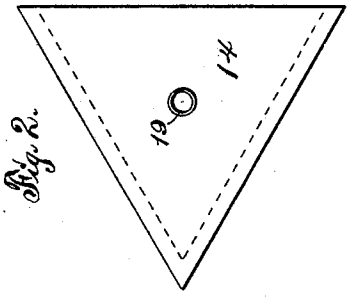


Fig. 2.

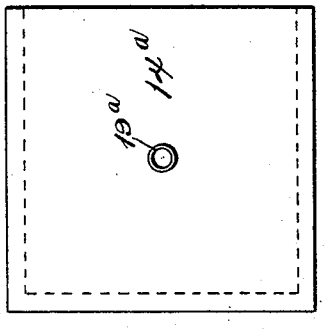


Fig. 4.

Witnesses:
J. A. Bramhall.
Geo. Amburn.

Inventor:
Jacob K. Gilcrest.
By J. H. Sweet
Att'y.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JACOB K. GILCREST, OF DES MOINES, IOWA, ASSIGNOR TO THE DES MOINES INCUBATOR COMPANY, OF SAME PLACE.

HEAT-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 599,959, dated March 1, 1898.

Application filed March 12, 1897. Serial No. 627,260. (No model.)

To all whom it may concern:

Be it known that I, JACOB K. GILCREST, a citizen of the United States of America, and a resident of Des Moines, in the county of Polk and State of Iowa, have invented a new and useful Heat-Regulator, of which the following is a specification.

The object of my invention is to provide improved means for regulating the dissemination of heat automatically through and by reason of the heat previously disseminated; and my invention is especially applicable and desirable for use upon incubators and brooders of modern construction, wherein heat is generated by an oil-lamp and discharged into a chamber containing eggs or chickens or into or through an improved hot-water chamber or receptacle to heat the water therein.

My invention consists, further, in the construction of a thermostatic chamber of a blank longer than its width, bent on its shortest diameter to form an integral edge of the chamber, and having its mating edges approximated and sealed.

Referring to the accompanying drawings, Figure 1 is an elevation illustrating the operation of my complete device. Fig. 2 is a plan of one form of my expanding and contracting device or regulator complete and ready for mounting. Fig. 3 is a plan of the blank of which my device as shown in Fig. 2 is formed. Fig. 4 is a plan of a slightly-modified form of expanding and contracting device or regulator, and Fig. 5 is a plan of the blank of which my device shown in Fig. 4 is constructed. Fig. 6 is a detailed view of the adjusting-screw employed in my apparatus. Fig. 7 is a transverse sectional elevation of the device shown in Fig. 2, illustrating more clearly the details of construction thereof. Fig. 8 is a plan of the regulating-lever and the supporting devices therefor detached from the incubator.

In the construction of the apparatus as shown the numeral 10 designates a blank formed of a single piece of brass or some sheet metal of diamond shape, which is to be bent upon the dotted lines 11 to form a triangular shape and then bent successively upon the dotted lines 12 and 13 to fold the open edges of the blank together on right lines or in straight planes, after which folding the seams are soldered or hermetically sealed. The device as now constructed is a triangular chamber having one flat side 14 and one side 15 slightly arched or bulged or swelled relative to the other side, forming a cavity, within which or into which I introduce some substance—such as alcohol, mercury, ether, or the like—that is very susceptible to the variations of temperature, and after the introduction of such substance I hermetically seal the aperture or opening through which the same is introduced.

A bolt 16 is located on and projects at right angles from the center of the side 15 of the chamber and traverses an aperture or seat formed in a bracket 17, mounted on and projecting forwardly from the rear wall 18 of the incubator or a similar device. The socket 19 is fixed to and projects at right angles from the center of the side 14 of the chamber, and an actuating-rod 20 is stepped at its lower end in said socket and extends upwardly therefrom through the top 21 of the incubator or other device. A pair of angle-irons 22 23 are positioned on the upper surface of the top 21 of the incubator, and a lever 24 is fulcrumed by means of journals 25 26 in said angle-irons. The journals 25 26 are connected to the lever 24 and at right angles thereto by means of a cap-plate 27, soldered thereon, and the rear end portion of the lever carries a poise 28, adjustably mounted thereon and held against accidental movements by a spring 29, carried by the poise and engaging the said lever. The forward end portion of the lever 24 is of greater length than the rear portion thereof, and the extreme forward end of said portion is arched and has at its extremity an aperture to receive the upper ends of the hanger or pendent rod 29^a. The lower end of the pendent rod 29^a carries a flat lid or cover 30, arranged for engagement over and above the draft-flue of a lamp or other source of heat. The cap-plate 27 has an aperture immediately in front of the journal 26 and to the right of the lever 24, and a nut 32 is mounted below said cap-plate and soldered thereto in registration with the aperture therein. An adjusting-screw 33, having a tubular end portion, is

seated in the nut 32, and the tubular portion thereof admits, receives, and engages the upper end portion of the actuating-rod 20, which upper end portion of the actuating-rod is rounded or made spherical to form a ball-and-socket joint, as it were, in the adjusting-screw.

It will be observed that by means of the poise the lever may be accurately balanced and the temperature of the air within the incubator-chamber raised to the desired degree, and then by adjusting the screw so that the actuating-rod just touches at its ends on the center of the plate 14 of the chamber and in the adjusting-screw any variation of temperature, necessarily resulting in the expansion of the chamber or regulator, will tilt the lever 24 and elevate the lid or cover 27 from the lamp-flue. The lifting of the cover or lid from the lamp-flue permits the escape of the heat direct to the atmosphere rather than the discharge thereof into the incubator-chamber.

Heretofore it has been common and well known to construct regulating-chambers similar to the one herein shown and described, but circular in plan view, and it has been found next to impossible to so construct such chamber or regulator and solder the edges together in such a manner as to avoid bulging and springing of the sides, such bulging and springing resulting in uneven irregular expansion and unsatisfactory operation of the lever governing the draft-flue. By forming a device triangular or in similar shape of a blank having a length greater than its width, so as to bend or fold the blank on its shortest diameter so as to form an integral edge and bring the open edges of the sheets together in right lines or straight planes, I am enabled to rigidly and solidly connect and hermetically seal said open edges, with the result of an equal and satisfactory expansion and contraction from the centers of the sides of the casing or chamber, and by rigidly bolting one of said sides to a fixed object and forming a connection with one or the other of the sides through the socket and actuating-rod to the lever I am enabled to secure results in the immediate, positive, and accurate actuation of the lever that are much superior to any heretofore obtained by me. I believe that part of the good results arising from the use of a device constructed as described is due to the forming of the edges of the expanding and contracting device on right lines or in straight planes rather than with curved lines or with a circular margin, and in the provision of one integral edge in the completed chamber provision is made for an expansion and contraction of said edge of the chamber that compensates for and relieves the strain upon the rigidly-soldered or hermetically-sealed margins of the chamber and insures the retention of the contents and separation to the maximum degree of the centers of the side faces of the chamber. I also have found it advantageous and a saving of material, time, and labor to construct this device of single pieces or blanks of sheet-brass or similar material rather than of two pieces soldered on all sides on the margins.

In Fig. 4 I have shown the device approximately of square form carrying a bolt and socket; and I do not wish to be limited to either triangular or square form, since either form may be slightly varied without departing from the spirit of my invention.

I claim as my invention—

1. A thermostatic chamber made from a blank having a length approximately twice its width, bent on its shortest diameter and having its margins doubled upon each other and hermetically sealed.

2. A thermostatic chamber made from a blank of diamond form having its corners notched, which blank is bent on its shortest diameter and has its margins doubled upon each other and hermetically sealed, the doubled portion of the blank forming an integral edge of the chamber.

3. A thermostatic chamber or cell formed from a blank, folded upon itself and having its meeting edges sealed.

JACOB K. GILCREST.

Witnesses:
S. C. SWEET,
J. S. GILCREST.