G. A. MOORE.

THERMOSTAT.

APPLICATION FILED FEB. 27, 1908.

914,859. Patented Mar. 9, 1909.

Fig. 2.

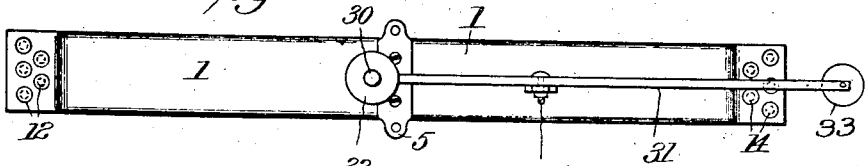


Fig. 1.

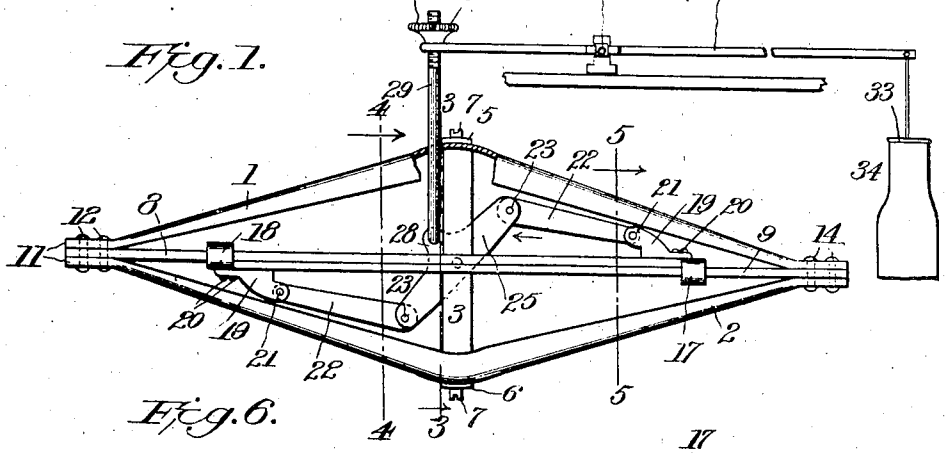


Fig. 6.

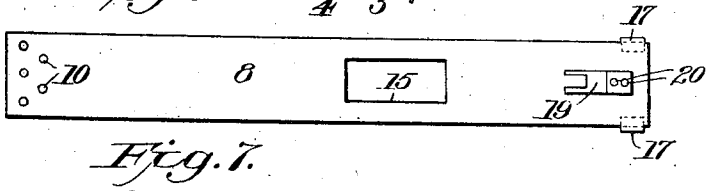


Fig. 7.

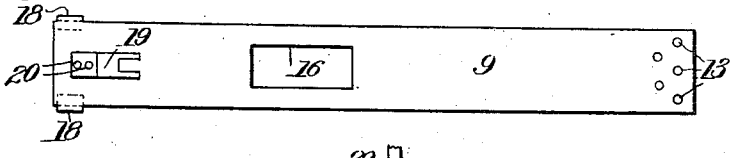


Fig. 3.

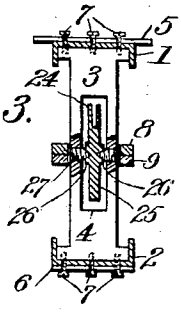


Fig. 4.

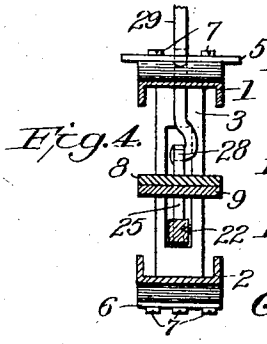
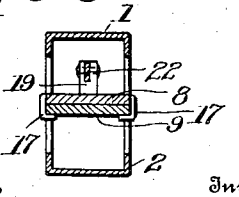


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

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THERMOSTAT.

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To all whom it may concern:

Be it known that I, GEORGE A. MOORE, residing at Marengo, in the county of McHenry and State of Illinois, have invented certain new and useful Improvements in Thermostats, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in thermostats, and particularly to a thermostat or regulating device to be used, preferably, upon an incubator.

The object of the invention is the provision of means for facilitating the regulation of the temperature in an inclosure, for instance, an incubator, through the medium of a peculiarly-constructed thermostat or heat-actuated device, for preventing or permitting the inflow and escape of heat.

Another object of the invention is the peculiar construction of a comparatively simple device, which comprises a minimum number of parts, and which is efficient and positive in operation, and which device can be quickly assembled or disassembled.

With these and other objects in view, the invention consists of certain novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described and claimed.

In the drawings: Figure 1 is a view in side elevation and shown partly in section, of a thermostat device constructed in accordance with the present invention. Fig. 2 is a top plan view of the structure depicted in Fig. 1. Fig. 3 is a transverse, sectional view taken on line 3, 3, Fig. 1. Fig. 4 is a transverse, sectional view taken on line 4, 4, Fig. 1. Fig. 5 is a transverse, sectional view taken on line 5, 5, Fig. 1. Figs. 6 and 7 are plan views of the sliding members or strips.

Referring to the drawings by numerals, 1 designates, preferably, the upper and 2 the lower expansible sections of the frame, which may be formed of zinc or any suitable metal affected by heat. Each member 1 and 2 is bent, near its center, and is, preferably, provided with flanges at its edges for reinforcing the same.

A central brace or spacing standard 3 is interposed between the upper and lower sections 1 and 2, and said brace or standard 3 is provided with an elongated, vertical opening, or aperture 4. Reinforcing plates 5 and 6 are positioned upon the upper and lower sections 1 and 2, respectively, of the frame, and suitable fastening means, as for instance, screws, or threaded bolts 7 extend through plates 5 and 6, and are threaded into the upper and lower ends of the standard 3, Fig. 3, thereby fixedly securing the central portions of the sections or members 1 and 2, and preventing the expansible sections 1 and 2 from expanding vertically or transversely, but said sections 1 and 2 can expand longitudinally or horizontally.

A primary sliding member 8 and an auxiliary sliding member 9 are positioned between the upper and lower sections or members 1 and 2, and are secured in position as follows: The primary sliding member or piece 8 is provided with suitable apertures 10, at one end, which register with similarly-constructed apertures in the ends 11 of the members 1 and 2, and through which suitable fastening means extend, as for instance, rivets 12, fixedly securing the contiguous ends of said sections 1 and 2, and the end of the primary sliding member 8 together. The opposite ends of the sections 1 and 2 are also provided with apertures, which register with apertures 13, formed in the outer end of the sliding member 9, and in these apertures are positioned suitable fastening means, as for instance, rivets 14, for securing the contiguous ends of said sections and the sliding member in a fixed position. The primary sliding member 8 is provided with an elongated or enlarged opening or aperture 15, and the auxiliary sliding member 9 is also provided with an enlarged, elongated opening or aperture 16. The openings 15 and 16 register when the members are in the position shown in Figs. 1, 2, and 3, and said sliding members surround the standard 3, and are capable of sliding movement around the same. At the inner end of the primary member 8, and formed at the longitudinal edges thereof are angle lugs 17, which surround portions of the edges and the body of the primary sliding member 8, whereby, while the inner end of each sliding member is fastened to the other sliding member, so as not to become separated, or hang apart, still the members are permitted to slide freely one upon the other, as said lugs 17 and 18 form fastening or surrounding means and perform the function of a guide, during

the sliding movement of the sliding members. These sliding members may be formed of steel, as it is not necessary that they be formed of expansible material, as is the case with the members or sections 1 and 2, forming the outer frame.

Upon the outer faces of the primary sliding members 8 and 9, and contiguous to their inner ends, are positioned shoes or lugs 19, which are provided with outer or upper bifurcated ends, and with flat portions, through which any suitable fastening means, as for instance, rivets or screws 20 pass, for securing the lugs or shoes to the sliding members. In the bifurcated end of each lug or shoe 19, is pivotally mounted, as at 21, the outer end of a link 22. The link 22 is pivotally mounted, as at 23, in the bifurcated ends 24 of the lever 25. The lever 25 is provided with short stub-shafts 26, engaged by screw trunnions or members 27, whereby said lever 25 is rotatably mounted within the standard or post 3. The lever is provided, above its pivot, with an integral, apertured extension 28, within which apertured extension is hooked, or otherwise secured, a vertically-movable rod 29. The rod 29 is provided with an upper screw-threaded end 30, having one end of the lever 31 movably mounted thereon, and secured in position by the thumb-nut 32. The lever 31 is pivotally mounted, upon any suitable support, as at 32'. The outer end of the lever is provided with an ordinary damper 33 for opening and closing the upper end of the chimney or flue 34.

When the frame is expanded by heat, the sections 1 and 2 will spread longitudinally, causing the sliding members 8 and 9 to move one upon the other, drawing their ends toward the center and, consequently, through the medium of links 22, for swinging the lower end of the lever downward and the upper end of the lever upward, and thereby drawing downward upon the rod 29, and through the medium of lever 31 opening the flue or chimney for permitting the heat to escape into the outer atmosphere, thereby allowing the device to cool, when placed in an inclosure, and when the temperature has been lowered sufficiently the contraction of the frame will cause the upper end of the lever to swing downward and the lower end to swing upward, reversing the operation and causing the damper to close, for preventing part or all of the heat from escaping into the outer atmosphere. Of course, I have not shown the means for conducting the heat to the inclosure, in which the device is positioned for operation, as any ordinary means may be employed, but I state the operation, so that by referring to the art, the function of the members will be understood. The operation of the device is accomplished to a nicety by rotating the thumb-nut 32 for obtaining the desired adjustment of the lever 31 for causing the damper to be actuated by a slight expansion or contraction of the frame, through the medium of my peculiarly-constructed means for actuating said lever 31.

It will be noted that I have provided damper-actuating means, operated by the lever and its coöperating parts, and said damper-actuating means constitutes valve-means, and consequently, in speaking of the damper and its actuating means, the same is used generically, for said damper performs the function of a valve for closing or opening an outlet.

What I claim is:

1. In a device of the character described, the combination of a frame, means extending transversely of the frame for preventing the same from expanding transversely or vertically, a lever, means fixedly secured at its ends to and movable longitudinally of said frame and connected to said lever for swinging the same upon the expansion or contraction of said frame, and damper-actuated means connected to said lever.

2. In a device of the character described, the combination of a sectional, expansible frame, each section bowed or bent outwardly near its center, a spacing standard fixedly secured to and between the sections, lever means pivotally mounted upon said standard, means connected to the lever means and secured between and at the ends of said sections and being capable of moving longitudinally of the frame for swinging said lever upon the expansion or contraction of said frame, and damper-actuating means connected to the lever means intermediate its ends.

3. In a device of the character described, the combination of an expansible frame, a standard positioned within said frame, a lever pivotally mounted upon said standard, means connecting the ends of said lever to the ends of said frame, whereby when said frame is expanded, said lever will be swung upon said standard, and damper-actuating means pivotally connected to the lever near its center.

4. In a device of the character described, the combination with an expansible frame, of overlapping sliding members secured at their ends to said frame, a support, a lever pivotally mounted upon said support, links pivotally connected at their inner ends to the ends of said lever, means connecting the outer end of each link to one of said sliding members, and damper or valve-actuating means connected to said lever.

5. In a device of the character described, the combination of a sectional frame, sliding members having their ends positioned between the ends of the sectional frame,

means securing the ends of the frame and the sliding members together, each sliding member provided, at its inner end, with means overlapping the other sliding member and securing the members together, a support, a lever pivotally mounted upon said support, means connecting the ends of said lever to said sliding members, and valve or damper-actuating means secured to said lever.

6. In a device of the character described, the combination with a frame, of sliding members secured at their ends to said frame, each sliding member provided with an elongated or enlarged opening, said openings of the sliding members registering, a standard positioned in the openings, a lever pivotally mounted in said standard and the openings of said sliding members, said lever provided with bifurcated ends, said lever provided with an extension near its center, means positioned in the bifurcated ends and pivotally connecting said lever to said sliding members, and a damper or valve-actuating rod pivotally mounted in the extension of said lever.

7. In a device of the character described, the combination with an expansible frame, of a pair of overlapping and sliding members fixedly secured near their ends to opposite portions of said frame, lever means, means pivotally connecting said lever means to said sliding members, and damper or valve-actuating means movably connected to said lever intermediate its ends.

8. In a device of the character described, the combination with an expansible frame, of a lever provided with short shafts extending from opposite sides thereof, means supported upon said frame and engaging said shafts for pivotally mounting said lever thereon, means movably connected to said lever and to opposite portions of said frame, whereby when said frame contracts or expands, said lever will be swung, and means movably connected to the lever and being adapted to actuate lever or damper means.

9. A thermostat-device, comprising an expansible frame, provided with overlapping members, one sliding upon the other, each member provided with an elongated opening, the openings of said members registering, and valve or damper-actuating means positioned in said opening and pivotally connected to the sliding members.

10. In a device of the character described, the combination with a frame, of overlapping and sliding members fixedly secured near their outer ends to opposite portions of said frame, each sliding member provided near its inner end with angle lugs overlapping portions of the other sliding member, lever means positioned contiguous to said sliding members and pivotally connected near its end to portions of said members, and valve or damper-actuating means movably connected to said lever means.

11. In a device of the character described, the combination with a frame, of a spacing-standard secured between portions of said frame, said spacing standard provided with a central opening or aperture, a lever, adjustable means pivotally mounting said lever in the opening of said standard, means connecting said lever to opposite portions of said frame, whereby said lever will be swung when said frame contracts or expands, and means secured to said lever and being capable of operating valve or damper means.

12. In a device of the character described, the combination of a sectional longitudinally-expansible frame, horizontal, slidable, overlapping members positioned between the sections of said frame and having their outer ends secured between the ends of the sections, each sliding member provided at its outer end with a pair of angle-lugs, said lugs overlapping portions of the opposite sliding member, each overlapping member provided with an elongated opening or aperture intermediate its ends, the apertures of the members registering, a vertical spacing-standard fixedly secured, at its ends, to opposite portions of said frame, a standard positioned in the registering apertures of said sliding members, said standard provided with an elongated opening, a lever, means pivotally mounting said lever near its center in the aperture of said standard, said lever provided with bifurcated ends, said lever provided near its center with an apertured extension, lugs fixedly secured to the outer faces of said overlapping members, links pivotally secured at their inner ends in the bifurcated portions of said lever and at their outer ends to said last-mentioned lugs, and a vertically-movable rod pivotally secured at its inner or lower end in the apertured extension of said lever.

13. A device of the character described, comprising an expansible frame, overlapping sliding members fixedly secured near their outer ends to opposite portions of said frame, a support extending through said overlapping members, lever means movably mounted upon said support, means connected to the lever means near its outer ends and to the overlapping members, whereby, when said frame expands or contracts, said lever means will be swung, and valve or damper-actuating means movably secured to said lever means.

14. A device of the character described comprising an expansible frame, overlapping and sliding members positioned between the frame and one of the members, adapted to slide longitudinally upon the other member, lever means pivotally supported upon the

frame and extending through the overlapping members, means connecting said lever means to said overlapping members, and valve or damper-actuating means connected to said lever means.

15. A device of the character described, comprising an expansible frame, a pair of parallel members fixedly secured, at their outer ends, to the ends of the frame, and being capable of sliding one upon the other as said frame is expanded or contracted, and valve or damper-actuating means connected to opposite portions of the members and being adapted to move when the members are adjusted one upon the other.

16. A device of the character described, comprising an expansible frame, means extending transversely of the frame and rigidly connecting opposite portions of the same, near its center, and permitting longitudinal expansion and contraction of said frame, lever means mounted upon said transverse connecting means, means positioned between the sides of the frame and connected only to its ends and also connected to the lever for operating said lever means when said frame is contracted or expanded, and valve or damper-actuating means connected to said lever means.

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

GEORGE A. MOORE.

Witnesses:
JOHN ILIS,
LOOMIS SHATTUCK.