T. I. GALLOWAY.

AUTOMATIC HEAT REGULATING APPARATUS.

APPLICATION FILED OCT. 2, 1908.

929,580.

Patented July 27, 1909.

Fig. 2.

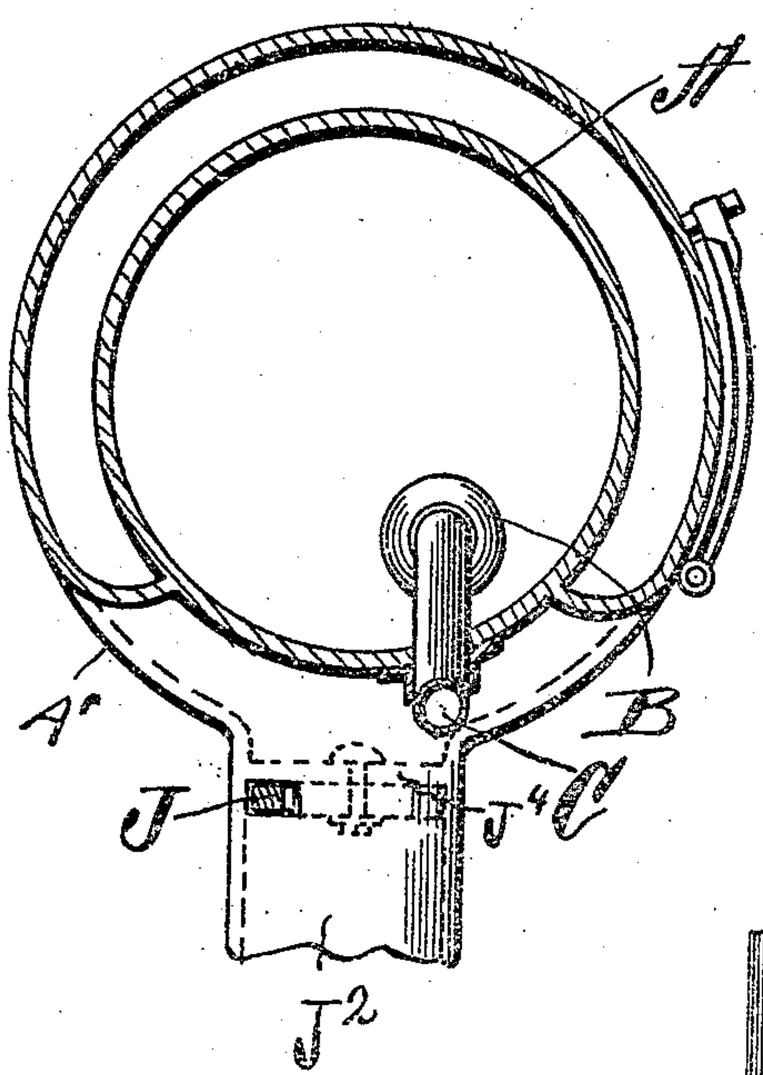
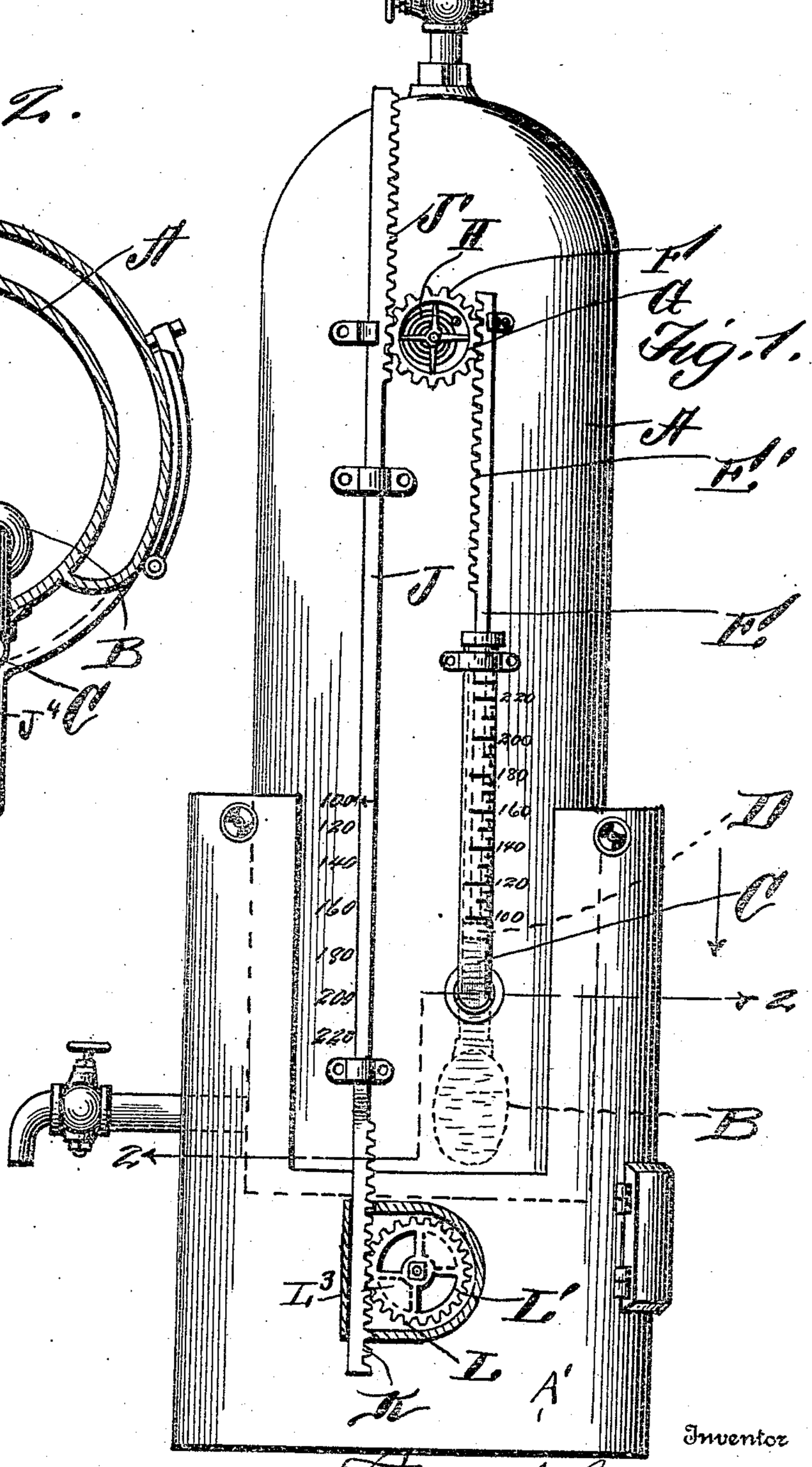


Fig. 1.



Witnesses

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AUTOMATIC HEAT-REGULATING APPARATUS.

No. 929,580. Specification of Letters Patent. Patented July 27, 1909.

Application filed October 2, 1908. Serial No. 455,806.

To all whom it may concern:

Be it known that I, THOMAS I. GALLOWAY, a citizen of the United States, residing at Menard P. O., in the county of Randolph and State of Illinois, have invented certain new and useful Improvements in Automatic Heat-Regulating Apparatus; 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, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in automatically operated means for regulating the temperatures of heating apparatus of various kinds, such as hot water tanks, incubators, etc., and comprises essentially a thermostatic apparatus actuated by the expansion of mercury within a bulb which acts upon a piston designed to communicate motion through a suitable medium to a controller or other means, whereby the heat may be regulated.

The invention comprises various details of construction, combinations and arrangements of parts which will be hereinafter fully described and then specifically defined in the appended claim.

I illustrate my invention in the accompanying drawings, in which:—

Figure 1 is a side elevation of a hot-water tank shown in the application of my invention thereto, and Fig. 2 is a cross sectional view on line 2, 2, of Fig. 1.

Reference now being had to the details of the drawings by characters, A designates a tank adapted to contain hot water and in which is positioned a bulb B adapted to contain mercury, and C is a tube projecting from said bulb in which a piston D is adapted to work airtight. About the lower portion of the tank is a heater A′ having a cutaway part about a portion of its circumference with a hot air space intervening between the heater and the wall of the tank, thus forming a heat retaining means. The top of said tube is closed and has an aperture through which the rod E is adapted to move. Said rod is provided with teeth E′ adapted to mesh with the teeth F of the gear wheel G mounted upon a suitable stub shaft. A spring H is fastened to said stub shaft and also to the gear wheel G and is designed to turn the gear wheel to its normal position after having been rotated by means of the gear teeth E′ as the rod E is thrust outward by the expansive pressure upon the piston D. Projecting from said heater is a flue J^2 having two openings L^3 in the partition wall J^4, shown clearly in Fig. 2 of the drawings, and which openings are adapted to be regulated by the gear damper wheel L′. Said flue is provided for the purpose of supplying air to the heater and causes a draft which is regulated by said damper wheel. A second rod or bar J is provided with gear teeth J′ adapted to mesh with the teeth F whereby, as the gear wheel G rotates, a longitudinal movement may be imparted to said bar J. Near the lower end of the bar J is a second series of rack teeth, designated by letter K, which are adapted to mesh with the teeth L of the controlling wheel L′ or, if desired, any form of means which might control the heat but not shown may be actuated by the rotary movement of the wheel L′. A suitable scale may be formed upon the tube C to indicate different degrees of temperature and to indicate the extent of the movement of the rod under different temperatures to actuate the controlling mechanism.

From the foregoing, it will be noted that, by the provision of a device as shown and described, a simple and efficient automatic means is provided which may be used in connection with various forms of heaters and so arranged that the heat to be generated may be regulated to a nicety by the automatic operation of the regulating means for allowing more or less electric energy of gas or oil as may be employed in the heater.

What I claim to be new is:—

An automatic heat regulating apparatus for hot water heaters, comprising a tank and heater, said heater having its circumferential wall extending about a portion of said tank and provided with a recess therein, a flue leading into said heater below said recess, a thermometer bulb mounted within the tank and having a graduated tube projecting therefrom through the wall of the

tank, a plunger within said graduated tube, a stem fixed to said plunger and having rack teeth thereon, a spring-actuated pinion wheel mounted upon the tank and in mesh with said teeth, a longitudinally movable rack bar engaging said pinion and guided in apertures in said flue, a damper mounted within the latter and having gear teeth upon its circumference engaging the teeth of said rack bar, as shown and described.

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

THOMAS I. GALLOWAY.

Witnesses:

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