

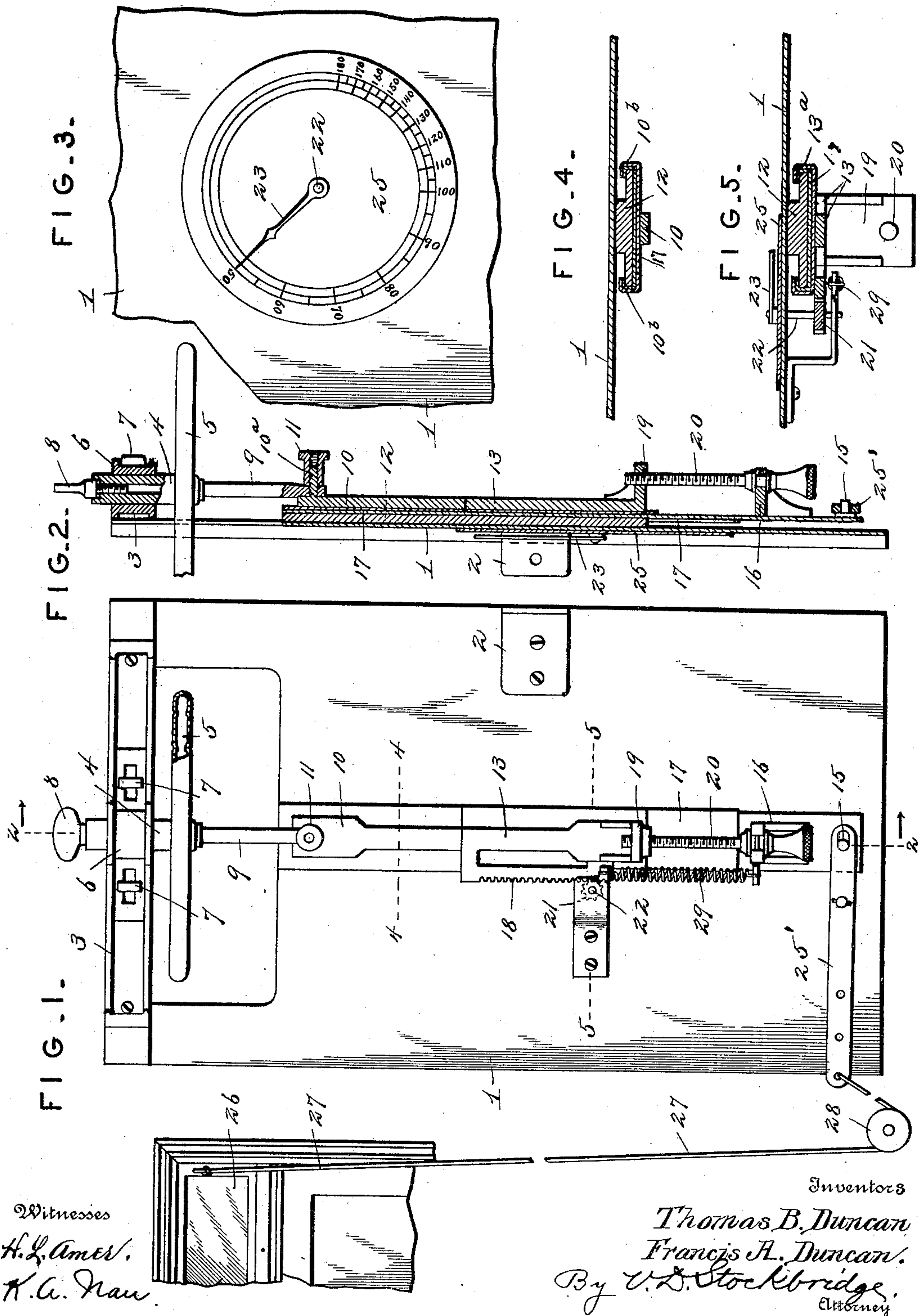
No. 652,253.

Patented June 26, 1900.

T. B. & F. A. DUNCAN.
THERMOSTAT.

(Application filed June 8, 1899.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

THOMAS B. DUNCAN AND FRANCIS A. DUNCAN, OF NEWBERG, OREGON.

THERMOSTAT.

SPECIFICATION forming part of Letters Patent No. 652,253, dated June 26, 1900.

Application filed June 8, 1899. Serial No. 719,830. (No model.)

To all whom it may concern:

Be it known that we, THOMAS B. DUNCAN and FRANCIS A. DUNCAN, citizens of the United States, residing at Newberg, in the county of Yamhill and State of Oregon, have invented a certain new and useful Thermostat, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to thermostats for regulating the temperature in a compartment or chamber, as the rooms of a dwelling-house, church, incubator, or drier, or in any place where a regular predetermined temperature is desirable.

The object of the invention is to provide a simple device which is readily adjustable for regulating and maintaining a constant predetermined temperature in a room or chamber.

The invention consists in certain combinations hereinafter described, and specifically pointed out in the claims.

In the drawings forming a part of this specification, Figure 1 is a view showing the operative parts of our invention in elevation. Fig. 2 is a section on the line 2 2 of Fig. 1. Fig. 3 is an elevation of the dial and pointer on the reverse side of the plate or support for the operative parts. Fig. 4 is a detail section on the line 4 4 of Fig. 1, and Fig. 5 is also a detail section on the line 5 5 of Fig. 1.

1 is a plate or frame upon which is mounted the operative parts of our improved thermostat. The upper end of this plate is cut away, as shown, to provide space for a hollow disk. The plate or frame is provided with a bracket 2 for conveniently attaching the same to the side wall of a room or compartment. Instead of these brackets it is obvious that the frame or plate may be provided with a hanger for suspending the device, or it may be provided with a pedestal or base for raising or supporting the frame upon a shelf. Across the upper end of the plate 1 is secured a cross-bar or thwart 3, provided with a socket for embracing the hollow neck 4 of the hollow disk 5, the neck being clamped or held in place by a clamp 6, which is removably held against the cross-bar 3 and the neck 4 by means of buttons or thumb-nuts 7 7. The hollow disk 5 is made of thin resilient plate and by pref-

erence corrugated to provide for ready expansion. This hollow disk is to be filled with a volatile liquid for expansion at a moderate degree of heat. The disk is filled with the liquid through the hollow neck 4, and is hermetically sealed by a screw-plug 8, having a shoulder fitting on a packed seat in the neck, so as to close the disk gas-tight. To the side of the disk opposite the neck is connected a connecting-rod. This rod is coupled with a sliding or reciprocating part 10 by means of a stud 10^a and thumb-nut 11.

Arranged to freely reciprocate on the T-piece 12 and within the part 10, having flanges 10^b, is a second slide or bar 17, constituting an adjustable extension of the part 10. This extension 17 carries a stud 15 and bracket 16. Mounted upon the bar 17 is a sliding part 13, (having flanges 13^a,) adjustable with relation to part 10. Carried by the part 13 is a rack-bar 18 and a bracket 19. This part 13 is adjustable with relation to the part 10.

For convenience of construction the parts 10 and 13 are each made up of a thin sheet and heavy plate metal. The thin sheets are readily bent to form grooved flanges, and the body parts soldered or otherwise attached to them by means of a set-screw 20, having its bearings in the brackets 16 and 19, as clearly shown in the drawings. The object of this adjustment of the rack-bar is to set the apparatus for operation at a predetermined degree of temperature. The rack-bar 18 engages or intergears with a pinion 21, which operates shaft 22, which carries on the reverse side of the plate 1 a pointer 23 for indicating, in connection with a dial 25, the degree of heat which it is intended to have maintained in the room or compartment.

In adjusting the apparatus the set-screw 20 is turned so as to bring the pointer to the degree of heat desired to have maintained, and in doing this the sliding part 13 is adjusted with relation to the part 10 and so that it will be operated by said part 10 upon the expansion of the liquid in the hollow disk when the temperature rises above that for which the apparatus is set. The expansion of the liquid through connecting-rod 9 and part 10 operates part 13 and the rack-bar 18, simultaneously operating the pointer to indicate the degree of heat and simultaneously operating

a vibrating bar or lever 25', pivoted to the frame and connected with the stud 15. The vibrating bar or lever is conveniently connected with a transom or valve 26 for closing and opening a fresh-air passage through the medium of a cord 27 and suitable guide-pulleys 28. The part 13, carrying the rack-bar 18, is drawn back to normal position by means of a coil-spring 29.

10 Having described our invention, what we claim, and desire to secure by Letters Patent, is—

1. A thermostat comprising a base, a thermic cell mounted thereon, a rail connected with the base, a reciprocating part operatively connected with the thermic cell, consisting of two members one of which slides upon the rail and the other upon the first member, means for adjusting the relative positions of the two members, a valve, and connection between said valve and said reciprocating part.

2. A thermostat involving the combination of a plate or support, a T piece or rail connected with the support, a thermic cell, a sliding part mounted upon the rail and operatively connected with the thermic cell, an adjustable extension telescopically connected with the sliding part, and means for making the adjustment between the parts, substantially as described.

3. In a thermostat, the combination of a base, a thermic cell provided on one side with a neck and on the other with a connecting-rod, means for clamping the neck of the thermic cell to the base, a rail mounted on the base, a sliding part reciprocating upon the rail carrying a stud to which the connecting-rod is adapted to be attached, means for securing the latter thereon, and connections between the sliding part and the valve, substantially as described.

4. A thermostatic cell involving the combination of a frame having a guide-rail, a thermic cell readily removable from said frame, a sliding part connected with the thermic cell consisting of two members, one of which slides on the rail and the other on the first member, the parts being adjustable toward and away from each other by means of a thumb-screw, a valve, and connections between the same and the reciprocating part, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

THOMAS B. DUNCAN.
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Witnesses:

NOAH HEATER,
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