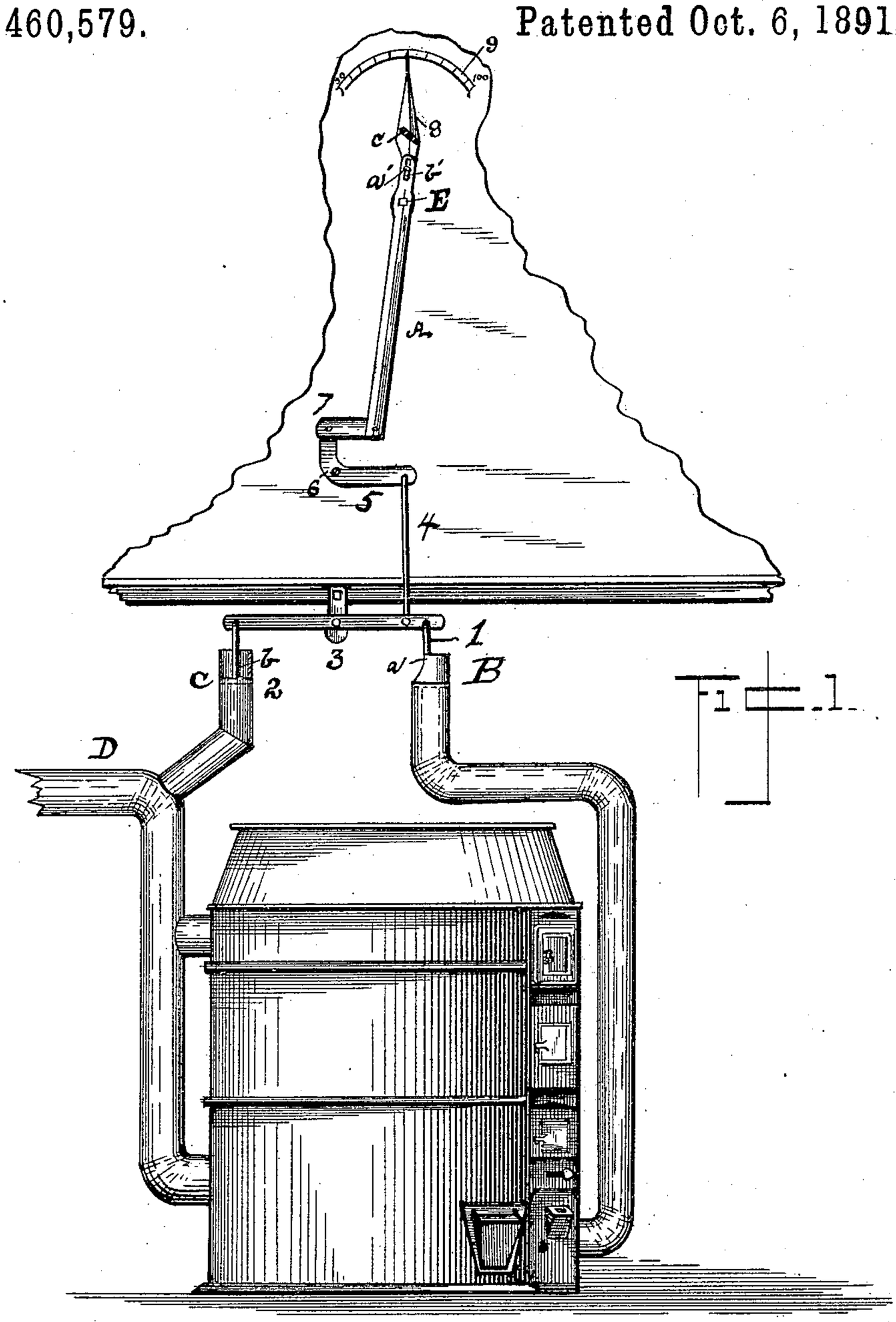
(No Model.) 2 Sheets—Sheet 1.

C. D. HOWARD.

AUTOMATIC DRAFT REGULATING DAMPER.

No. 460,579. Patented Oct. 6, 1891.



Witnesses:
O. W. Johnson.
James G. Jester

Inventor:
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By J. R. Nottingham
Ass. Atty

(No Model.) 2 Sheets—Sheet 2.

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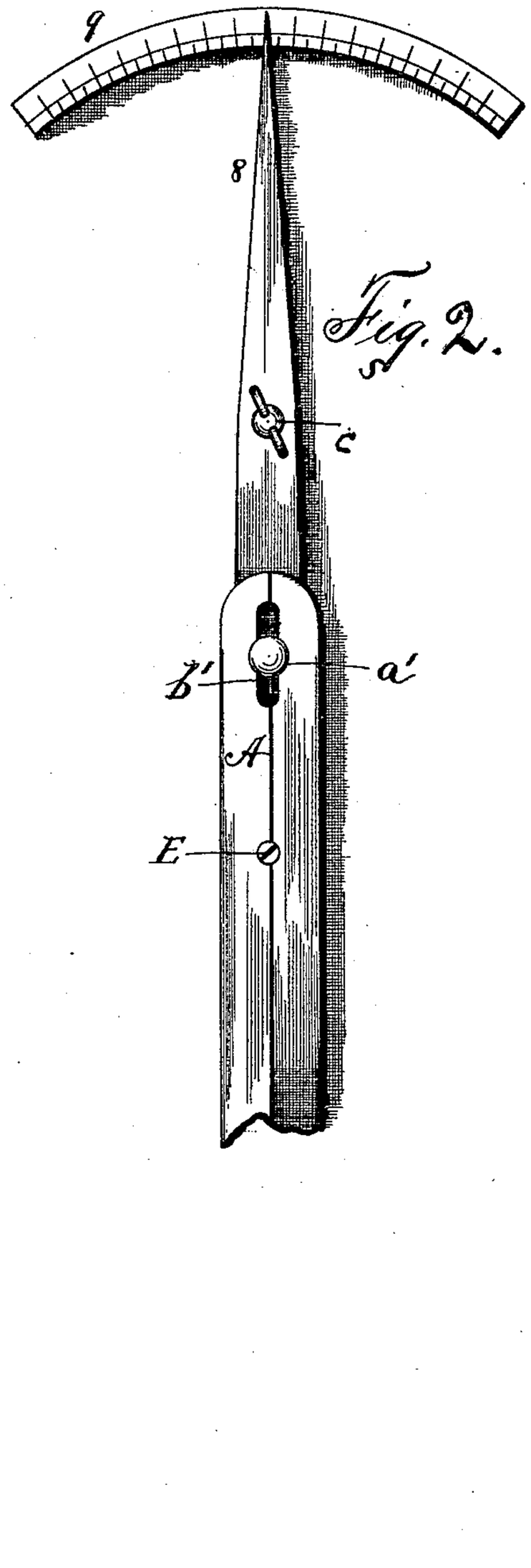

Fig. 2.

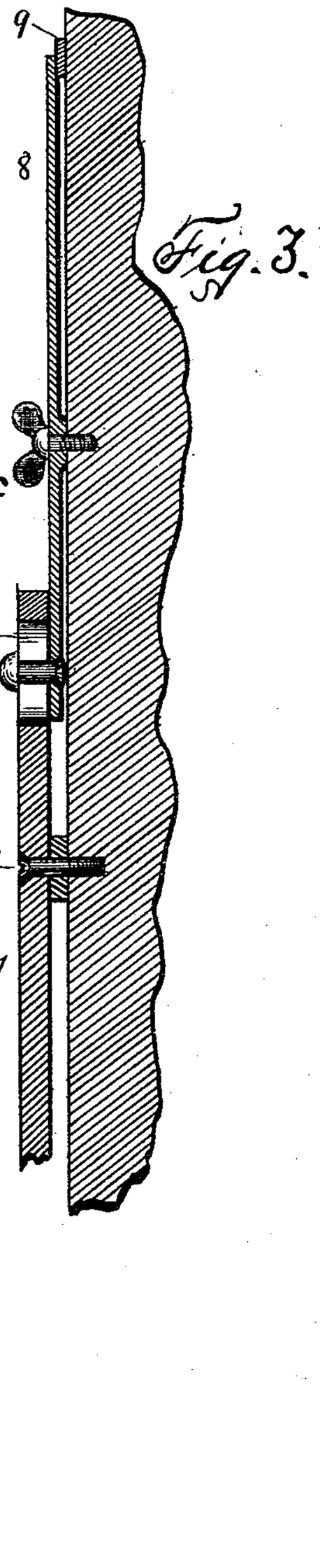

Fig. 3.

WITNESSES:
Herbert. A. Carhart.
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Charles D. Howard
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Smith & Denison
ATTORNEYS

UNITED STATES PATENT OFFICE.

CHARLES D. HOWARD, OF SYRACUSE, NEW YORK.

AUTOMATIC DRAFT-REGULATING DAMPER.

SPECIFICATION forming part of Letters Patent No. 460,579, dated October 6, 1891.

Application filed January 30, 1891. Serial No. 379,613. (No model.)

To all whom it may concern:

Be it known that I, CHARLES D. HOWARD, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Automatic Draft-Regulating Dampers, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to thermostatic devices for regulating the drafts or dampers of heating apparatus dependent for their action upon the temperature of the room in which the thermostat is located.

My object is to produce a thermostatic draft or damper regulator controlled by the temperature of the room being heated and in which the thermostat is located, and which can be adjusted so that I can readily vary the temperature to which the room is to be heated by varying the extent to which the drafts will be opened, thus changing the character of the fire from a quick and lively one, as in cold weather, to a slow one in warmer weather, giving the fire more or less direct draft or check-draft, as may be desired, all this being done either with or without an indicator. When used, the indicator is automatically set by the adjustment hereinafter specifically described, and herein lies the principal novelty of my invention.

My invention consists in the several novel features of construction and operation hereinafter described, and which are specifically set forth in the claim hereunto annexed. It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1 is an elevation of the draft-regulator complete and connected to the direct-draft and check-draft dampers of a furnace. Fig. 2 is an enlarged front elevation of part of the thermostatic bar, the indicator, and their connections, and the scale. Fig. 3 is a longitudinal section of the same.

A is an ordinary thermostatic bar, constructed of materials possessing different expansible properties—as, for instance, hard rubber and brass—shown in the drawings as suspended from and rigidly secured upon a bolt or pin E upon the wall of the room to be heated.

B and C are respectively the direct and check draft pipes, the one opening into the ash-pit and the other into the smoke-pipe. Pistons 1 and 2 are suspended in the upper ends of these pipes from a centrally-balanced lever 3, mounted beneath the floor above the furnace. A rod 4, connected to this lever near one end, extends up through the floor, having in Fig. 1 a pivotal connection to the bell-crank 5. This bell-crank is pivoted at 6, and its upper arm is connected by the connecting-rod 7, connected to the lower end of the thermostat by an ordinary pivot-joint.

In the figures I show the thermostatic bar pivoted near the top upon the pin E and connected by the pin a', through the slot b' in the bar, into the lower end of the indicator-hand, which latter is pivoted upon the thumb-screw c, loosely inserted through it into the wall and by which the indicator-hand can be set at any point upon the scale 9. When so set and secured, this thumb-screw c and the lower pin E together operate to hold the top of the thermostat securely and prevent it from swinging upon the lower pin. It is operated as follows: When the temperature stands at the normal point—say 70°—both of the pistons will stand in the pipes, substantially as shown in Fig. 1. When the temperature lowers below that point, the deflection of the thermostat to the left will, through the connections, raise the piston 1 and open the direct draft through the opening a, created by scarfing off one side of the pipe, and when the temperature rises above 70° the deflection of the bar to the right will force the piston 1 down, closing the direct draft and raising the piston 2, that pipe being also scarfed off, creating the opening b. In Fig. 2 I accomplish the same result by loosening the thumb-screw, then moving the indicator-point upon this screw as a pivot over to the right, which swings the upper end of the thermostat to the right and gives more check and less direct draft, and when so shifted according to the scale to the variation desired I tighten this thumb-screw and secure the thermostat in its new relation to the other parts. In like manner I obtain more draft and less check by moving the indicator to the left.

What I claim as my invention, and desire to secure by Letters Patent, is—

In an automatic draft-regulator, a thermostatic bar having different expansible properties pivotally suspended in the room desired

to be heated, in combination with intermediate connections between it and the draft-regulating pistons, the draft-regulating pistons, and an indicator-hand loosely connected to the thermostatic bar and pivoted upon and secured in the position at which it is set by the thumb-screw through it.

In witness whereof I have hereunto set my hand this 20th day of January, 1891.

CHAS. D. HOWARD.

In presence of—
H. P. DENISON,
C. W. SMITH.