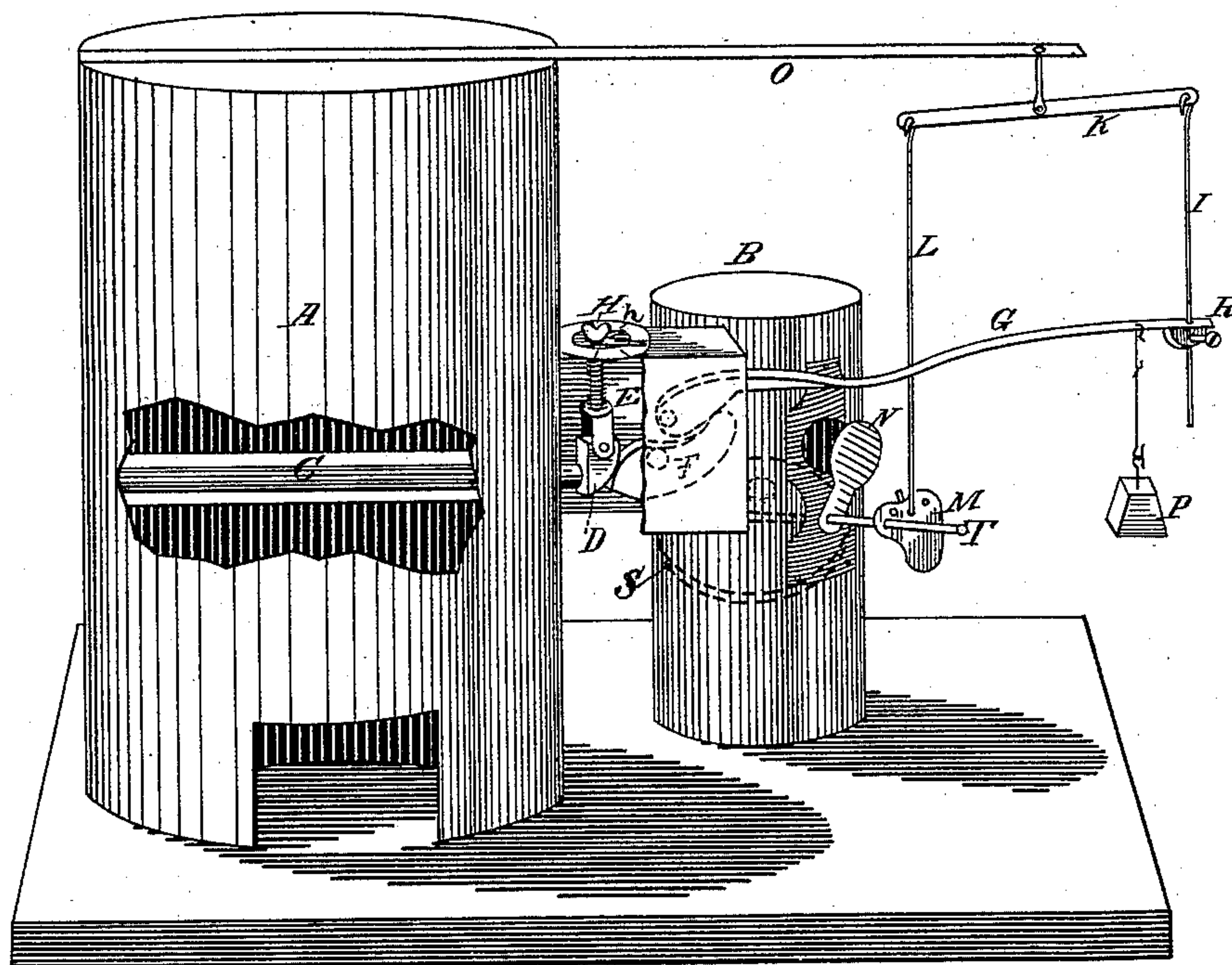
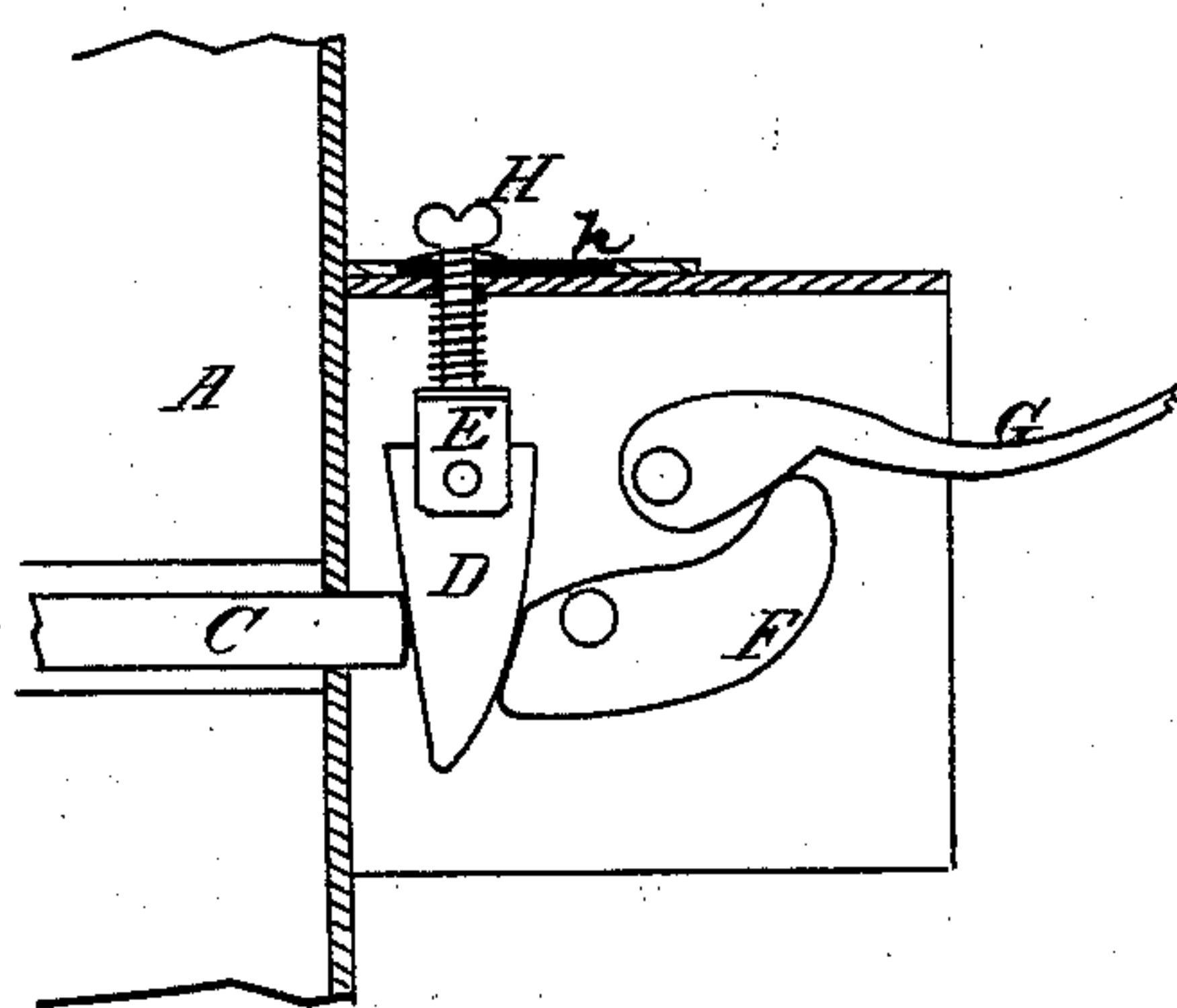


G. O. SANDERSON.  
 Draft-Regulator for Furnaces and Stoves.  
 No. 221,978.      Patented Nov. 25, 1879.



*Fig. 1.*



*Fig. 2.*

*Witnesses:*  
 John W. Brodriek  
 T. J. Gally

*Inventor:*  
 Geo. O. Sanderson  
 by J. H. Adams  
 Atty



# UNITED STATES PATENT OFFICE.

GEORGE O. SANDERSON, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO  
HIMSELF AND ALLEN N. ADAMS, OF SAME PLACE.

## IMPROVEMENT IN DRAFT-REGULATORS FOR FURNACES AND STOVES.

Specification forming part of Letters Patent No. **221,978**, dated November 25, 1879; application filed  
September 6, 1879.

*To all whom it may concern:*

Be it known that I, GEORGE O. SANDERSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Draft-Regulators for Furnaces, Stoves, &c., of which the following is a specification.

My invention relates to an improvement in the mechanism or devices applied to furnaces, stoves, or boilers for the automatic regulation of the heat or draft.

My invention consists in a combination of devices for connecting the expansible rod or bar which passes through a hot-air or combustion chamber with the draft-damper in the smoke-pipe or the draft-door of a furnace, which is effected by interposing between the free end of the expansible rod and a cam or lever connected with a series of other levers a wedge or movable cam, which operates the cam or lever communicating with the series of levers between the said wedge and the damper in the smoke-pipe.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

I apply my automatic heat or draft regulator to furnaces, stoves, or boilers constructed in any of the usual forms.

Figure 1 of the drawings hereto annexed presents a perspective view of a common form of furnace with my improved automatic heat or draft regulator applied thereto, and having a part of the frame of the attachment next to the furnace cut away to display the mechanism and operation thereof. Fig. 2 is an enlarged view in detail of an adjustable swinging wedge or cam and of the parts with which it is immediately connected.

A represents the hot-air chamber of a furnace, through which passes horizontally a brass or other expansible metal rod, C, one end of which is suitably secured to the wall of the furnace A, the other end being free to move in obedience to its contraction or expansion occasioned by the difference in the temperature of the air or gases surrounding it in the hot-air chamber.

D is a wedge or movable cam interposed between the free end of the expansible rod C and

the cam-lever F, and is pivoted to the saddle E, so as to admit of a free lateral motion. The saddle E is attached to the screw H, which turns loosely in the said saddle, and, passing through the top of the casing, is provided with a thumb-piece, by which it is turned to raise or lower the cam or wedge D.

The swinging capability of the wedge D (in connection with its vertical adjustability) renders the wedge very sensitive to the movement of the expansible bar C, and this effect extends to the system of levers connecting with the damper to be operated upon. As the rod or bar C expands, the outer or curved surface of the wedge D operates against the cam or lever F, which, in turn, lifts the lever G, to which is attached the weight P, connected to the lever I by the adjusting attachment R. The lever G communicates motion to the series of levers I K L, suitably supported, as at O, or in any other convenient manner, and, finally, to the shaft T, which carries the check-draft valve N and the interior damper, S, opening or closing the latter, as required, the check-draft N opening correspondingly as the damper S closes. When the expansible rod C contracts, the weight P depresses the series of levers L K I G, which causes the interior damper, S, to open and the check-draft N to close. The lever G, being depressed by the weight P, presses against the cam or lever F, causing it to maintain contact with the curved surface of the wedge or cam D.

The wedge or cam D may be held in an elevated or depressed position by the adjusting-screw H, thus causing the damper S and check-draft N to open or close (more or less) with the same degree of expansion in the rod C, by which means a higher or lower standard of heat may be maintained.

To the upper end of the screw-rod H, which supports the cam D, is attached a pointer, h, placed over a circular plate constituting a dial, for the purpose of indicating the amount of the opening of the damper and its adjustment to the degree of heat required.

What I claim as my invention is—

1. In combination with an expansible rod to be actuated by the differences in the temperature of the air or of the escaping gases from stoves or furnaces, a vertically-adjustable and

swinging cam or wedge for controlling the amount of opening to be given to the damper and a series of levers and rods for operating the dampers, the parts being arranged for operation substantially as set forth.

2. The combination of the expansible rod C, the adjustable cam or wedge D, the levers F and G, and a weight, P, for returning the parts to their original positions when the rod C contracts, substantially as set forth.

3. The combination of the expansible rod C, the adjustable swinging cam or wedge D, the

levers F and G, the rod I, lever K, rod L, or their equivalents, the attachment M, the shaft T, and the damper S, and the check-draft N, the parts being arranged for operation substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEO. O. SANDERSON.

Witnesses:

A. N. ADAMS,  
J. H. ADAMS.