

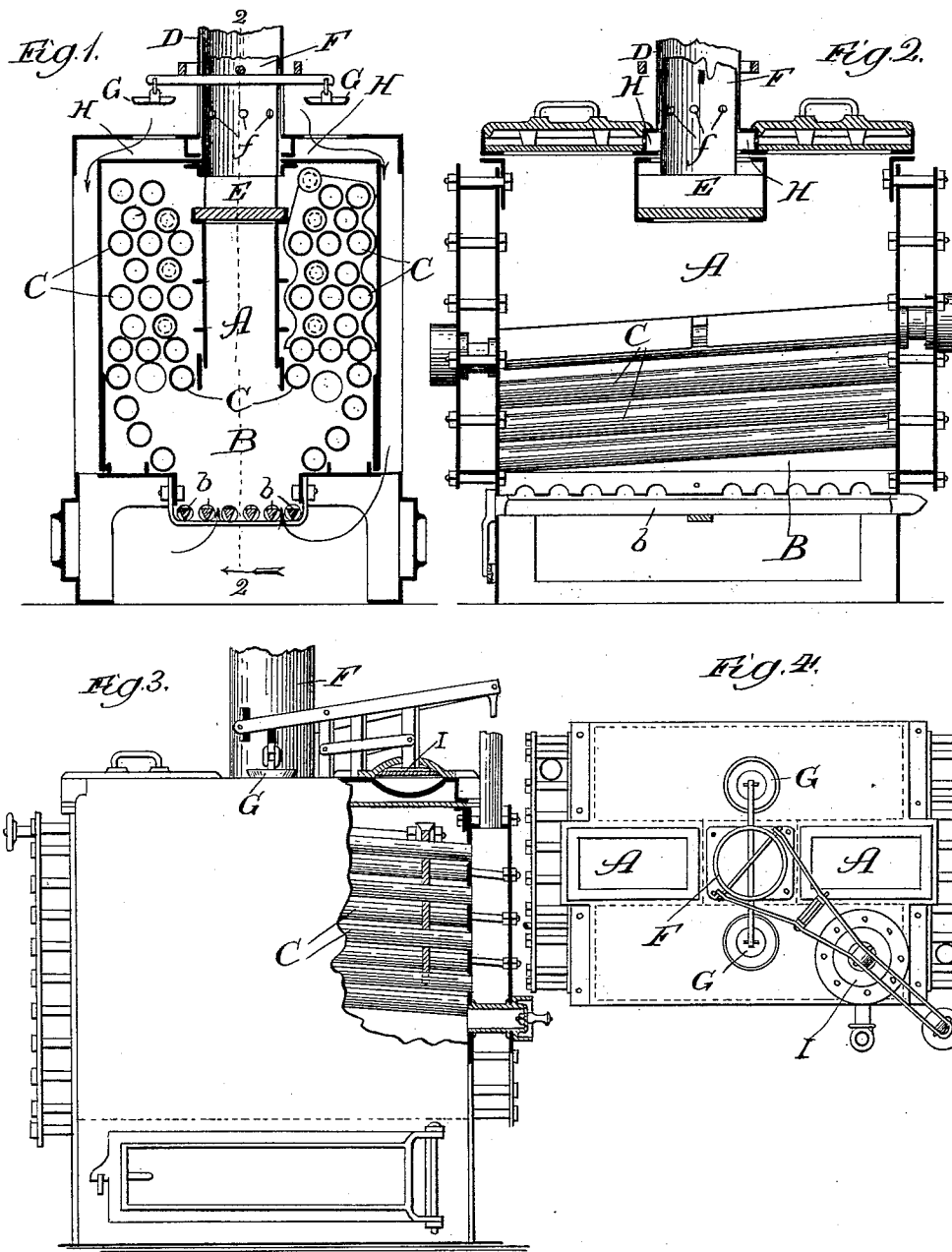
(No Model.)

2 Sheets—Sheet 1.

F. H. TREAT.
DRAFT REGULATOR.

No. 569,254.

Patented Oct. 13, 1896.



Witnesses:

Edw. E. Gaylord.
C. R. Shipley.

Inventor:

Francis H. Treat.

By Manning P. Manning & Payson,
Attys.

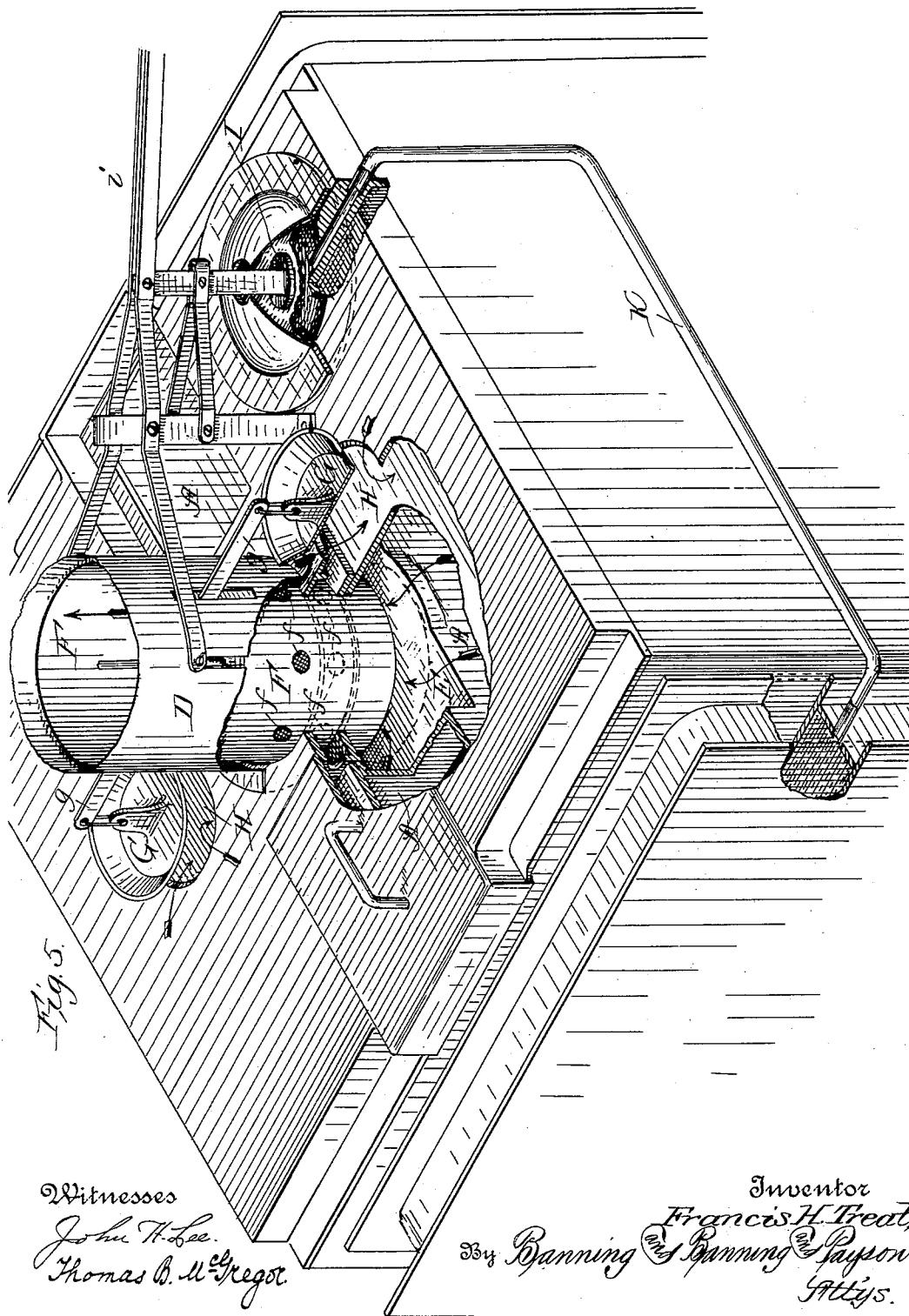
(No Model.)

2 Sheets—Sheet 2.

F. H. TREAT.
DRAFT REGULATOR.

No. 569,254.

Patented Oct. 13, 1896.



Witnesses

John H. Lee.
Thomas B. McGregor.

Inventor

Francis H. Treat,

By Banning & Banning Payson
Attys.

UNITED STATES PATENT OFFICE.

FRANCIS H. TREAT, OF CHICAGO, ILLINOIS.

DRAFT-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 569,254, dated October 13, 1896.

Original application filed November 13, 1890, Serial No. 371,287. Divided and this application filed April 13, 1891. Serial No. 388,655. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS H. TREAT, of Chicago, Cook county, Illinois, have invented a new and useful Improvement in Draft-Regulators, (for which I made application for Letters Patent November 13, 1890, Serial No. 371,287, of which this is a division,) of which the following is a specification.

The object of my invention is to provide a suitable draft-regulator to be used in connection with steam-boilers, particularly boilers used in houses to heat water or generate steam for warming purposes; and the invention consists in the features and combinations hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a cross-section of a boiler provided with my improvements; Fig. 2, a section taken on line 2 2 of Fig. 1, looking in the direction of the arrow; Fig. 3, a side elevation, partly in section; Fig. 4, a plan view of the boiler; and Fig. 5, a perspective view of the upper portion of the boiler, partly broken away and illustrating the movable pipe inside the chimney, the arrangement of saucer-dampers, and other features relating thereto.

A is the fuel-magazine, B the fire-box, and b the grate; C, the flues; D, the chimney; E, a longitudinal flue; F, a movable pipe in the chimney, and f openings in the movable pipe; G, saucer-dampers, and g a bar connecting the saucer-dampers with the movable pipe; H, an air-space in the top of the boiler; I, a diaphragm, and i lever mechanism connecting the diaphragm with the movable pipe, and K a pipe communicating between the steam-space of the boiler and the diaphragm box or space.

Since the construction of the fire-box, flues, and other features which form no part of the present invention is obvious from the drawings it is not considered necessary to give them any special or detailed description.

Immediately under the chimney and connecting therewith is a short horizontal flue E, extending across the magazine for causing a draft and furnishing an outlet for waste gases and products of combustion. Fitting loosely inside the chimney is a short pipe F, adapted to move up and down telescopically to regulate the draft. When a strong draft is desired, this pipe is raised and the gases or

products of combustion allowed to pass in under its lower edge and up and out through the chimney. When it is desired to reduce the draft, this pipe is lowered, contracting the space between its lower edge and the bottom of the horizontal flue, and when it is desired to shut off the draft entirely the pipe is allowed to come down and rest upon such bottom. In order that this inside pipe may be raised and lowered automatically, I provide for connecting it by lever mechanism to the draft-regulating diaphragm operated by the pressure of the steam in the boiler, as next hereinafter described.

The air required to support combustion is supplied to the fire through air-spaces around the boiler, as indicated by arrows. Saucer-dampers G outside the chimney may be used to close or partially close the circular openings for the admission of air, so as to regulate the draft as desired. These dampers are preferably suspended from a horizontal bar extending through a slot in the chimney and adapted to move up and down with its inside movable pipe.

A pipe extends from the boiler, preferably from a point below the water-level, to the diaphragm box or space, so that pressure from the boiler operates directly on the under side of the diaphragm, and the diaphragm being connected with the movable pipe in the chimney by lever mechanism the raising of the diaphragm by pressure on its under side operates to lower or depress the movable pipe. The diaphragm communicates with the damper in the chimney by lever mechanism or otherwise, (see Figs. 3, 4, and 5,) and pressure on the under side of this diaphragm causes both the damper in the chimney and the saucer-damper outside to move up and down in unison, so as to regulate the supply of air to the fire in unison with the regulation of the draft in the chimney.

To prevent the escape of gas into a room when the regulator in the chimney is entirely closed, I provide openings f in the movable pipe in the chimney. These openings are so arranged that when the sliding pipe is down they come into position opposite the air-space on the top of the boiler, thus forming a communication between the air-space and the chimney, whereby gases that leak into the

space are allowed to escape through the chimney. One or more of these openings may be used, as desired.

Although I have thus described the various parts of my invention, it will be understood that I do not intend to limit myself to minor features or details of construction. On the contrary, I intend to omit immaterial parts or to use equivalent forms or members, as circumstances may suggest or render expedient.

I claim—

1. In combination with the chimney of a boiler having openings at its top communicating with its ash-pit for the admission of air, a movable pipe inside the chimney and having dampers secured thereto at the sides of the chimney corresponding to the openings for the admission of air, whereby as the pipe

is moved to regulate the draft from the chimney the draft into the boiler is correspondingly regulated, substantially as described.

2. In combination with the chimney of a boiler, a movable pipe in the chimney, an opening near the chimney for the admission of air, a damper secured to the movable pipe and at the sides of the chimney and corresponding to the air-inlet, and means for moving the pipe by pressure of steam from the boiler, whereby as the pipe is moved to regulate the draft, the damper is correspondingly moved to open or close the air-inlet, substantially as described.

FRANCIS H. TREAT.

Witnesses:

EPHRAIM BANNING,
ANNIE C. COURTENAY.