2 Sheets--Sheet 1.

D. C. PROCTOR.
Heating-Stoves.

No. 156,817. Patented Nov. 10, 1874.

FIG II

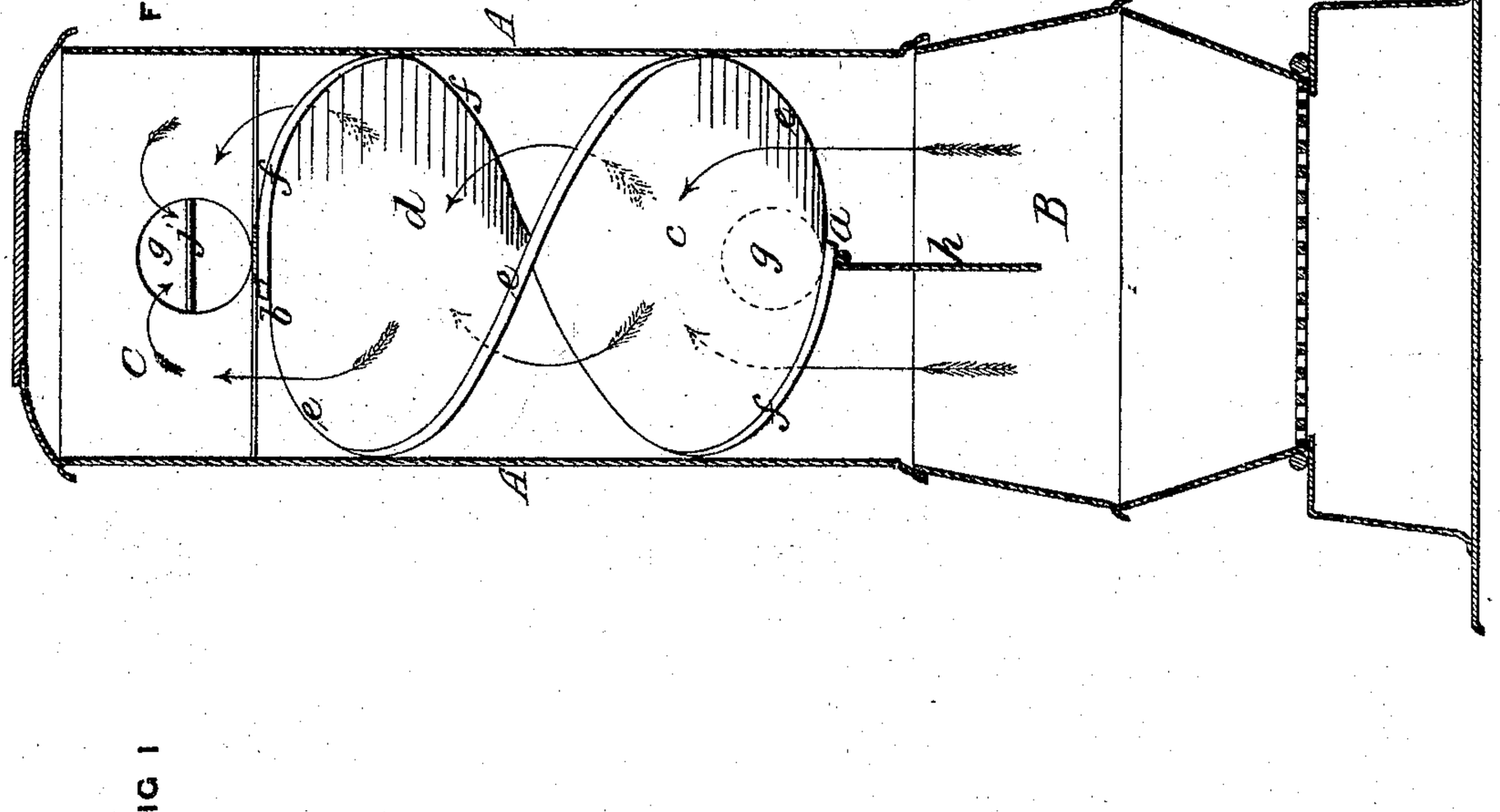
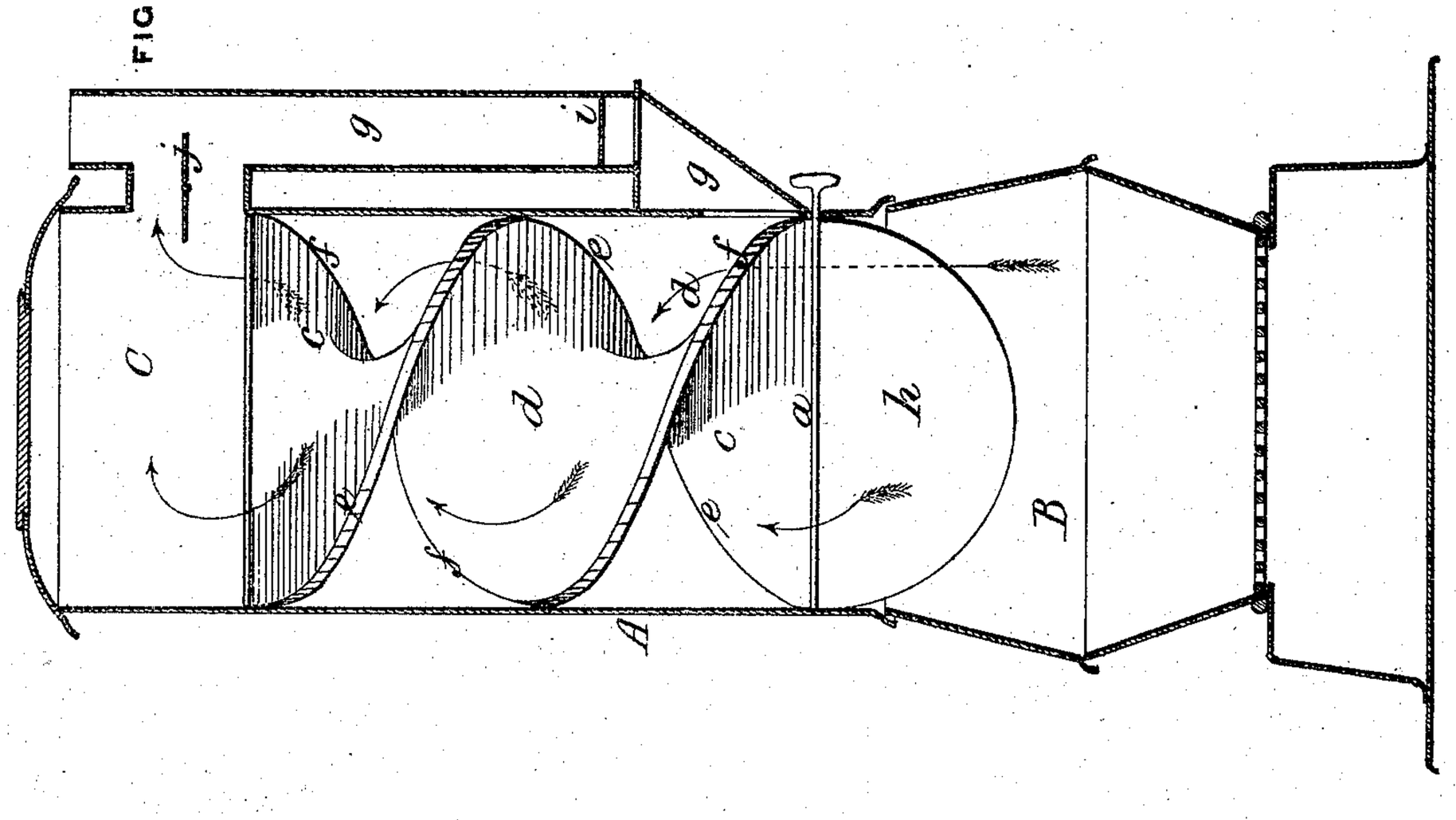


FIG I



WITNESSES

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2 Sheets--Sheet 2.

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FIG V

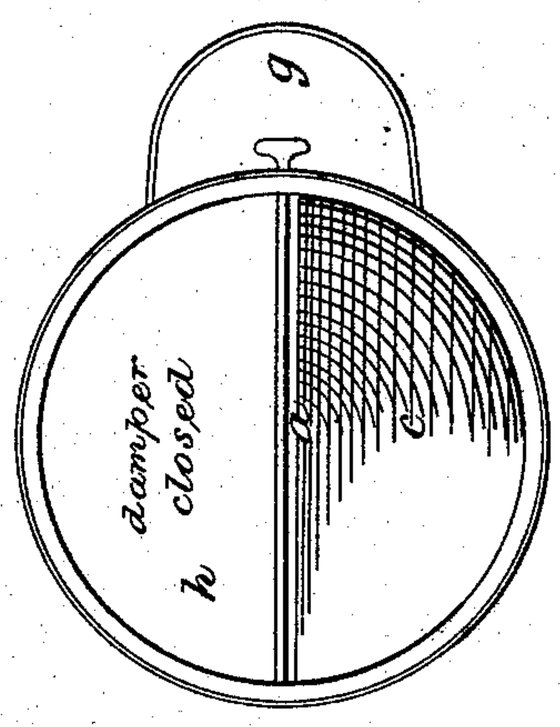


FIG VI

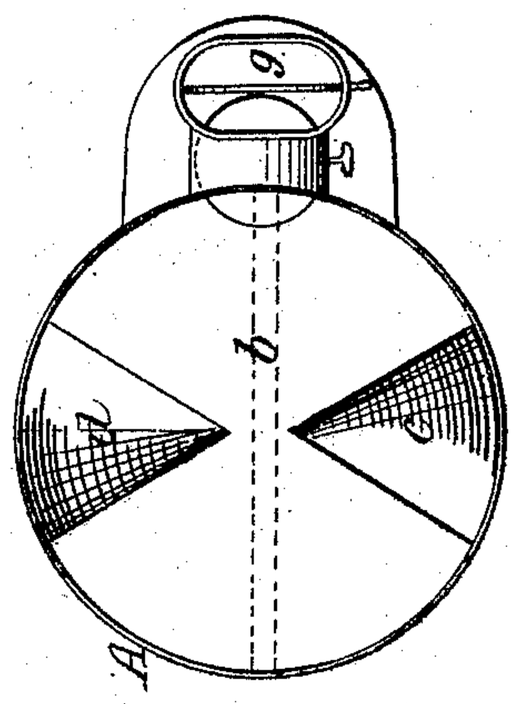


FIG III

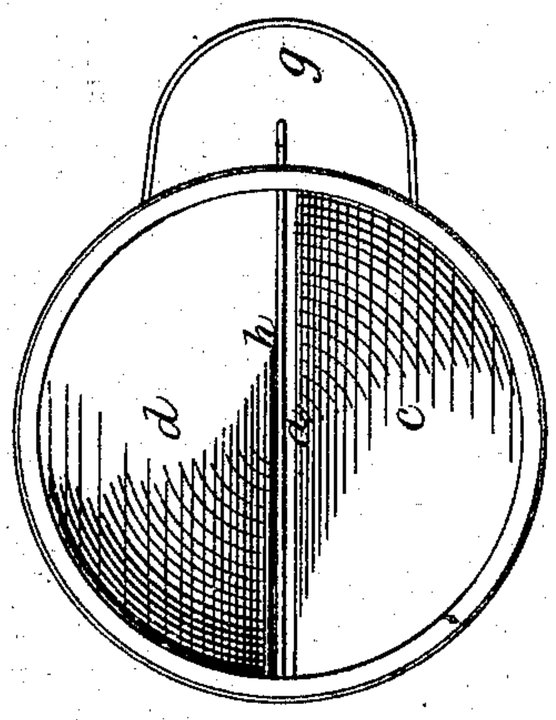
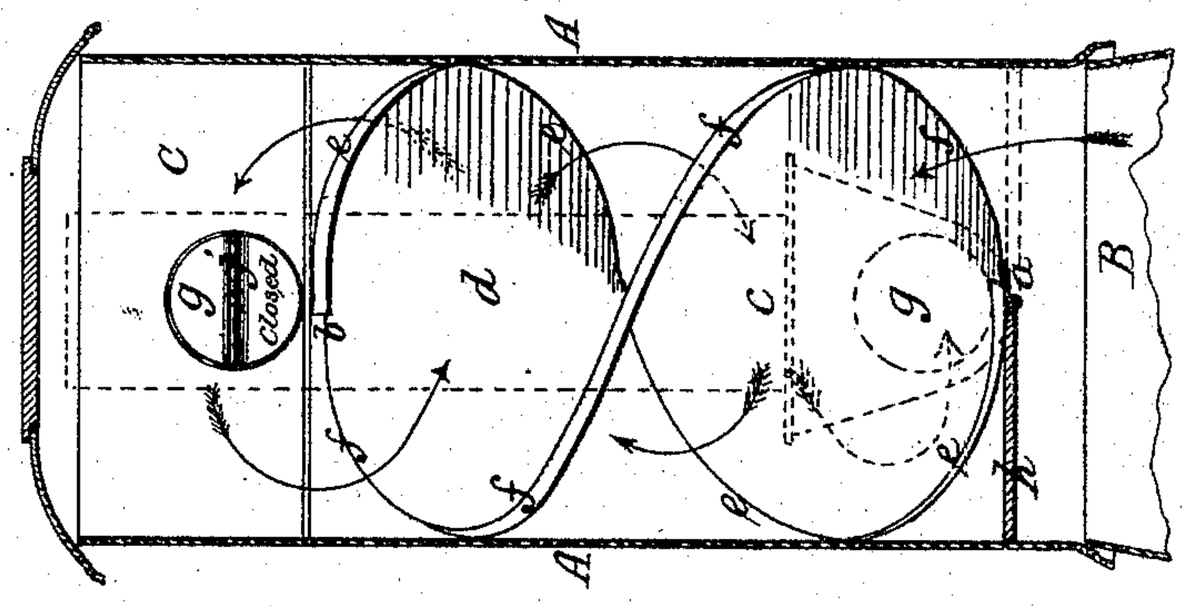


FIG IV



WITNESSES

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UNITED STATES PATENT OFFICE.

DAVID C. PROCTOR, OF PEORIA, ILLINOIS.

IMPROVEMENT IN HEATING-STOVES.

Specification forming part of Letters Patent No. **156,817**, dated November 10, 1874; application filed September 9, 1874.

To all whom it may concern:

Be it known that I, DAVID C. PROCTOR, of Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Heating Stoves and Furnaces; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention is applicable as a heater for compartments, or as a furnace for buildings.

The first part of my invention relates to double spiral folds, formed by the combination of two flues, one above the other, a horizontal base cross-division of said flues, and an inclosing-case, whereby the entire space in the case is divided into two equal flues, commencing on opposite sides of the base cross-division, and terminating in a top chamber, and producing in effect a flue-heating space twice the height of one formed by a single flue, and which gives the advantages of bringing the flues near the fire, rendering the combustion slower and more uniform, preventing the too-rapid escape of the heat, consuming the smoke, gases, and soot, and reducing the expense in the stove by the double short flue.

The second part of my invention relates to the combination of a double spiral flue, a semicircular damper, arranged upon its base cross-division, and an exterior side-dampered exit-pipe, communicating near the bottom with one of the double flues, whereby the double flues may have free communication with the fire-chamber, or one of them formed into a revertible flue by closing one of the flues at the bottom, and carry the draft thereby up one flue, over the top division, and down the other to the exit-pipe, so that the double flue combines also the advantage of an ascending and dividing flue within the same spiral folds and inclosing-case, while the semicircular damper, having equal adjustment on both sides of the base-division, is turned, when necessary, to close one of the double flues to cut off the draft from half the stove, and control the heat thereof, especially at night, when a comparatively small heating-surface is only necessary, so that the damper, by its combination with the double spiral flue, serves the several purposes of leaving their open ends free as ascending-flues, converting one into a revertible flue, and closing one of the double flues, all by the three several positions in which said damper is capable of adjustment.

In the accompanying drawings, Figure 1 represents a side view of my improved heater, with the case in section. Fig. 2 represents a vertical section, with the double spiral flues in open communication with the fire-chamber; Fig. 3, a bottom view thereof; Fig. 4, a vertical section, with the base-damper closed to form a revertible flue in the double spiral; Fig. 5, a bottom view of the same; and Fig. 6, a top view of the double spiral flue.

Double screw-folds *e f*, with a surrounding case, A, form (by means of base and top cross-divisions *a b*) double flues *c d*, each opening within the fire-chamber B, on opposite sides of the cross-division *a*, Fig. 2, and terminating within a top chamber, C, on opposite sides of the cross-division, *b*, Fig. 4. The draft is upward, within and through these flues, which are formed one above the other upon double folds *e f*, and open into the chamber B, which opens into the exit-pipe *g*. These flues make an effective heating-surface, as the flues, being double, are thereby made short, and effect the combustion of the gases and soot therein, while they serve to produce a more uniform combustion than could result from a long single flue. In connection with these open flues *c d* a semicircular damper, *h*, is arranged upon their base cross-division *a*, so as to hang centrally between the flues, as in Figs. 1 and 2, when the latter have a double ascending draft, and to be turned into a horizontal position, as in Fig. 4, to close one of these flues, *d*, and convert it into a diving-flue, communicating at or near its lower end with the exit-pipe *g*, which has a damper, *i*, at this point, by which to effect such communication, and a damper, *j*, at its point of connection with the chamber C, by which to cut off the communication of the latter with the exit-pipe *g*, so that the draft ascending through one flue, *c*, descends the other, *d*, and escapes into the exit-pipe, and thus the double ascending flues are con-

verted into a single ascending and descending flue within the same spiral folds, to obtain the greatest possible benefit from the heat.

In using the heater with the upward double flues the damper *i* is closed, and the damper *j* is open, as in Fig. 1.

In either adjustment of these dampers as described, the heating-surfaces of the double spiral flues will be fully utilized, but by turning the base damper so as to close the flue *c*, as shown by dotted lines in Fig. 4, the draft will be cut off from one-half of the stove from the fire-chamber, leaving a single flue, *d*, open at both ends, and thereby decreasing the draft from one-half the heating-surface. This may be very desirable at times, in order to control the heat of the stove, and particularly at night when a large heating-surface and double flues are not required.

I have shown a reversible swinging damper, but do not wish to be confined to such construction and arrangement so long as the double spiral flue may, by any equivalent device, be converted into a revertible flue or a single spiral flue.

I claim—

1. The double spiral folds *e f*, formed by the combination of two flues, *c d*, in one casting, upon opposite surfaces, one above the other, a base cross-division, *a*, and an inclosing-case, A, substantially as and for the purpose specified.

2. The combination of the double spiral flues *c d*, formed as described, a semicircular damper, *h*, above the damper, arranged upon the flue base-division *a*, and the exterior dampered exit-pipe, *g*, communicating near the bottom with one of said flues, whereby a revertible flue may be formed within one side of the spiral folds.

3. The combination of the semicircular damper *h*, with the double spiral flues *c d*, substantially as and for the purpose set forth.

4. The combination of the double spiral flues *c d*, with the top chamber C, into which they open, and the side exit-pipe *g*, communicating with the flue *d*, whereby the latter may be converted into a revertible flue, as described.

In testimony that I claim the foregoing as my own I have affixed my signature in presence of two witnesses.

DAVID C. PROCTOR.

Witnesses:

JNO. E. HUNTER,

HENRY B. DOX.