R. S. HAZEN, Sr.

Agricultural Boiler and Steamer.

No. 130,996. Patented Sep. 3, 1872.

Fig 1

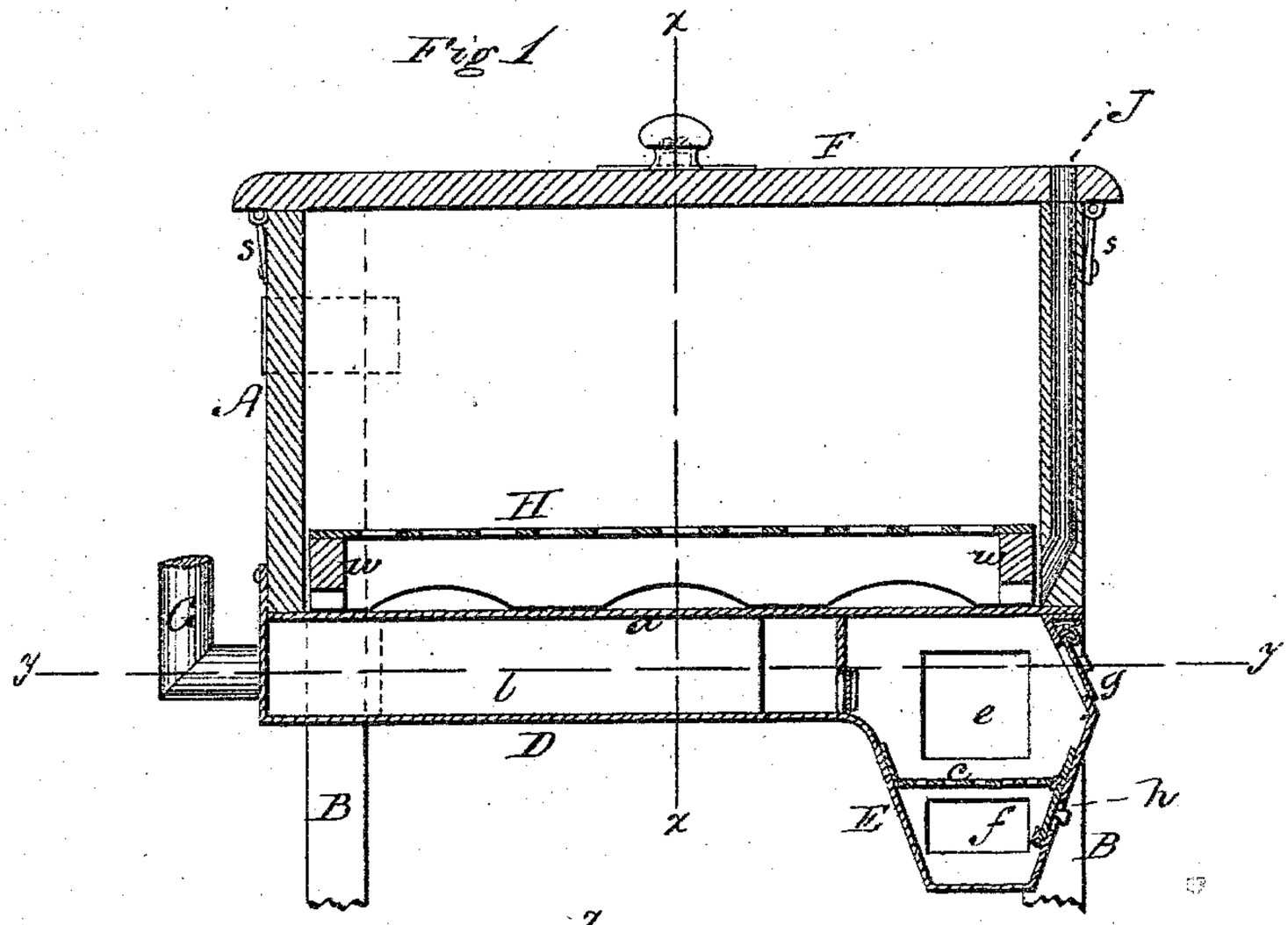

Fig 2

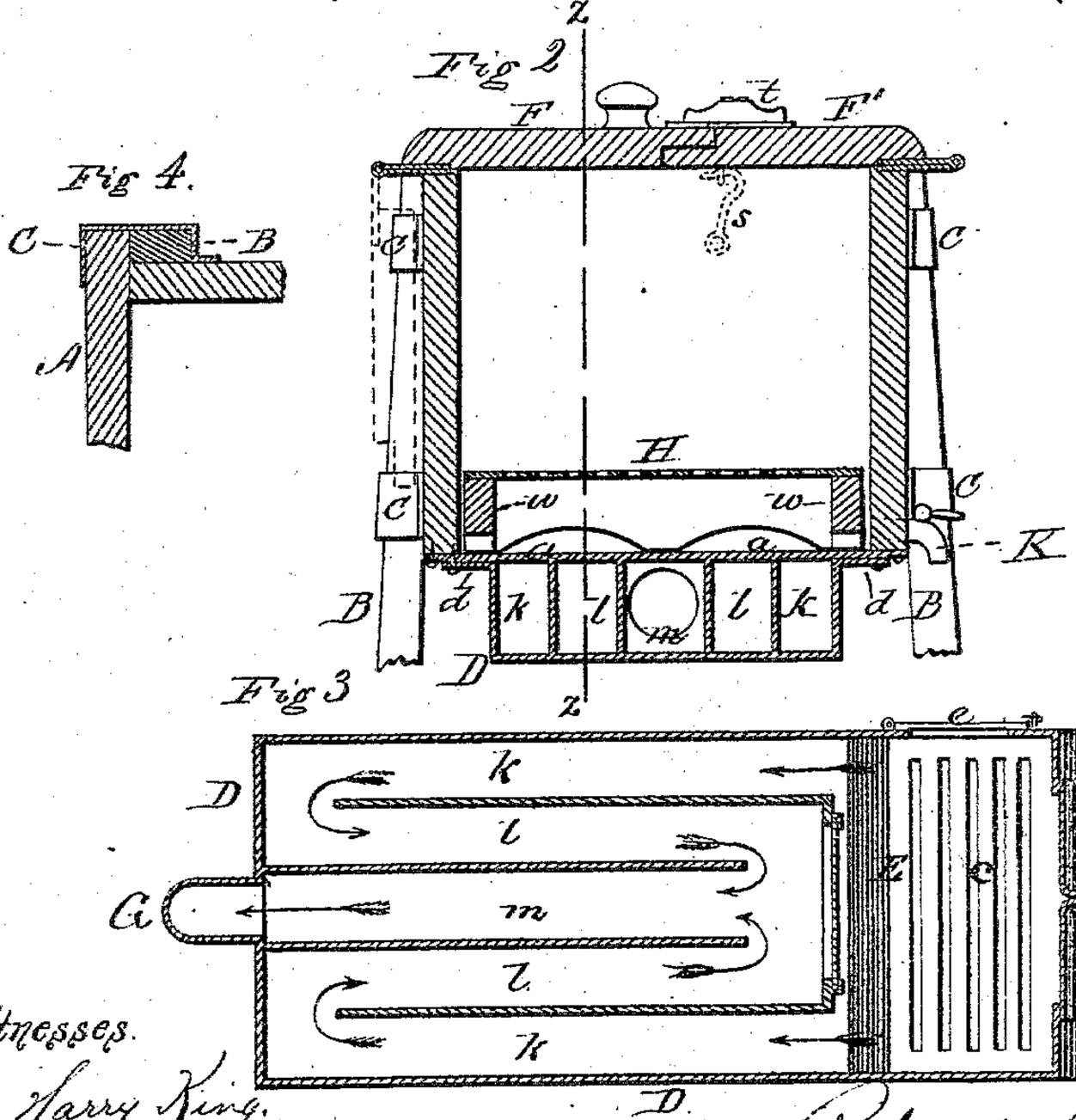

Fig 4.

Fig 3

Witnesses.

Harry King.

Philo. T. Dodge

Inventor.

Robert S. Hazen Sr.

by Dodges Munn

Attys.

UNITED STATES PATENT OFFICE.

ROBERT S. HAZEN, SR., OF CALAMUS, IOWA.

IMPROVEMENT IN AGRICULTURAL BOILERS AND STEAMERS.

Specification forming part of Letters Patent No. **130,996**, dated September 3, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, ROBERT S. HAZEN, Sr., of Calamus, in the county of Clinton and State of Iowa, have invented certain Improvements in a Steamer and Boiler, of which the following is a specification, reference being had to the accompanying drawing.

My invention relates to boilers, such as are used for cooking feed and generating steam; and the invention consists in a novel manner of constructing a boiler, whereby it is rendered very strong; adapted for burning both coal and wood; a very large heating-surface obtained; and the top or cover permitted to fold down against the outside of the body, out of the way.

Figure 1 is a longitudinal vertical section through the center of my boiler. Fig. 2 is a transverse vertical section of the same on the line *x x* of Fig. 1. Fig. 3 is a horizontal section through the fire-box and flues on the line *y y* of Fig. 1; and Fig. 4 is a view, showing one of the corner pieces or sockets for holding the body together and the legs in place.

A represents the body of my boiler, which is made of wood in a rectangular form, and provided with a sheet-metal bottom, nailed fast, and four legs, B, upon which it stands. The legs extend up along the sides of the body, and are each held in place by two sockets or corner pieces, C, which are made of the shape and secured in the manner shown in Fig. 4, so as to serve both as sockets and as corner pieces to strengthen the body. Under the entire bottom of the body A there is a flat metal box or chamber, D, having a flange, *d*, turned outward around its upper edges, and being secured in place by nails driven through said flanges and through the bottom *a* into the lower edges of the body A, as shown in Fig. 2. At one end of the box or chamber D there is a fire-box, E, containing a grate, *c*, and provided at one end with two doors, *e* and *f*, above and below the grate, respectively, and on the front side with a long sliding door, *g*, above the grate, and a small damper, *h*, below the same. The fire-box, thus arranged, can be fed with coal or peat through the front door *g*, or with wood through the end door *e*, the draft being regulated by the door *f* and the damper *h*. The box or chamber D, back of the fire-box, is divided, by partitions, into five longitudinal flues, *k k l l* and *m*, the latter being in the middle, and communicating with a smoke-pipe, G, at the back end of the boiler, as shown. The flues are arranged, as shown in Fig. 3, so that the products of combustion pass from the fire-box along both sides of the box, through the flues *k*, and then forward again through the flues *l*, and finally back through the central flue *m*, and out into the smoke-pipe G. It will thus be seen that the products of combustion are three times carried the entire length of the bottom of the boiler in direct contact therewith, and fully utilized. As the said products are first carried through the outside flues, the outer or side portions of the boiler-bottom are subjected to the greatest heat, by which I have found, in practice, the water is more rapidly heated than otherwise. The body is provided with a top or cover, made in two sections, F and F′, which are hinged to the sides of the body, as shown in Fig. 2, the hinges being made of such length and so applied that when the covers are opened they can be turned down against the outside of the body, as shown in dotted lines in Fig. 2, so as to be out of the way of the operator, and free from danger of being broken off. The edges of the covers are provided with lap-joints where they meet, so as to be perfectly tight; and one of the covers is fastened down by hooks *s* on the body, and provided with a button, *t*, for locking the other cover, as shown in Figs. 1 and 2. Within the body there is placed a false bottom, H, of perforated sheet metal, which is supported by strips *w* nailed to its under edges, as shown, the under side of the strips being cut away, so that they only bear on the bottom at intervals, and cover but little of the heating-surface. A hole, J, is bored down through one of the covers and the end of the body, so as to open inward under the false bottom. Through this hole water may be introduced into the boiler without opening the same; and, as the hole opens below the water-line, steam cannot escape through it. A pipe for conveying the steam from the boiler, when desired, may be attached in any suitable manner. A cock or faucet, K, is applied to one side of the boiler at the bottom for drawing off the water.

The boiler, constructed as above described,

is simple, cheap, and strong. It generates steam rapidly and with economy of fuel; and being adapted for both wood and coal, it is suitable for use in all sections of country.

Having thus described my invention, what I claim is—

1. In a steamer and boiler, substantially such as herein described, I claim the combination of the body A and the furnace E, constructed substantially, whereby it is adapted to use either wood or coal for fuel, as set forth.

2. The boiler, having its furnace D and bottom *a* secured in place by a single set of nails or screws passed through them both into the wooden body A, as shown and described.

3. The loops C attached to the body A, as described, whereby they form sockets for the legs, and also serve as angle-irons to secure the corners of the body.

4. The covers F F′, hinged to the body so as to turn down parallel with its sides, substantially as and for the purpose set forth.

5. The passage J, made through the cover and the wall of the body, as described, for the introduction of water, as set forth.

R. S. HAZEN, SR.

Witnesses:
W. L. CARROLL,
B. W. GARTSIDE.