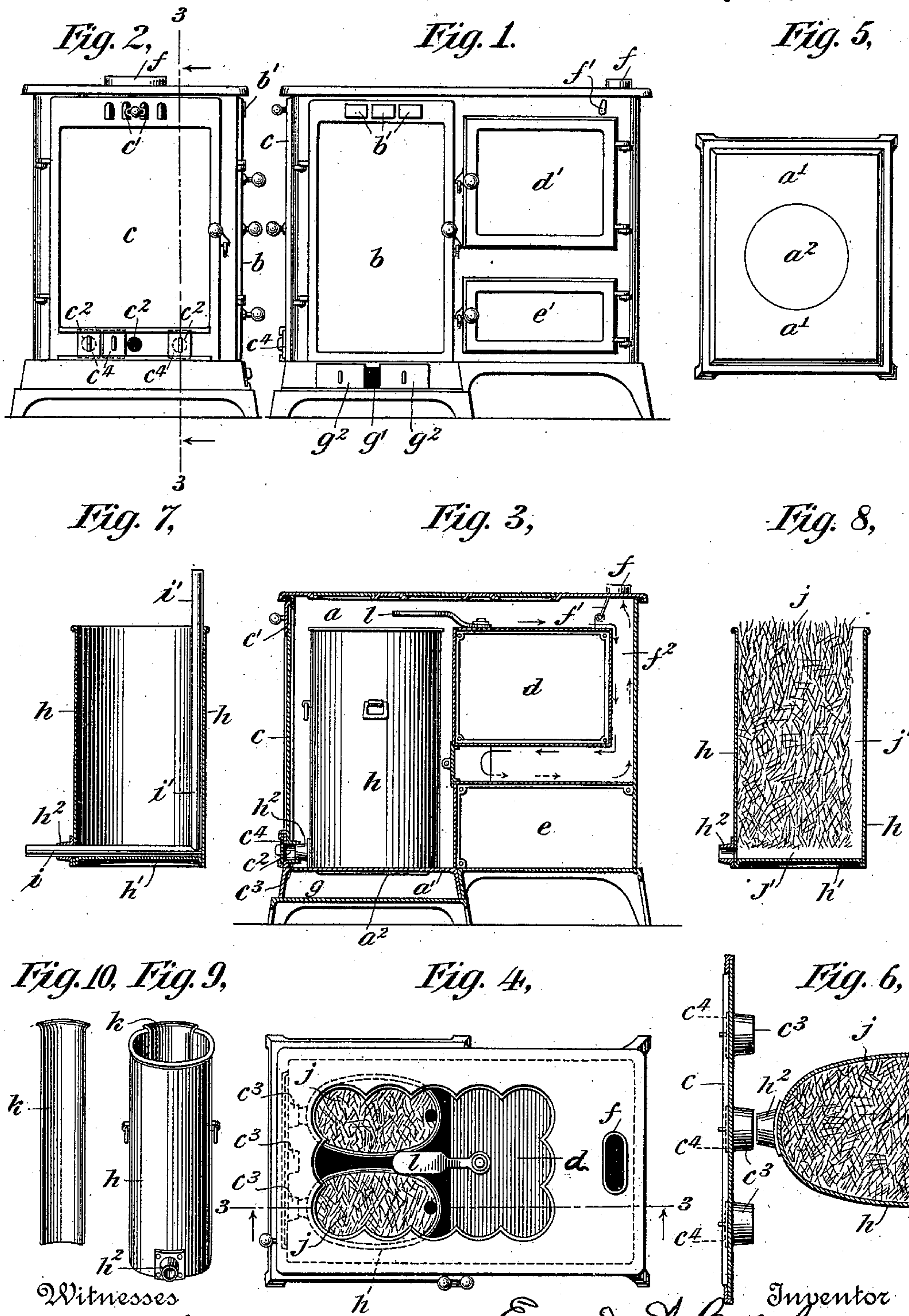


(No Model.)

E. A. CALAHAN.  
STRAW BURNING STOVE.

No. 523,806.

Patented July 31, 1894.



Witnesses  
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# UNITED STATES PATENT OFFICE.

EDWARD A. CALAHAN, OF BROOKLYN, NEW YORK.

## STRAW-BURNING STOVE.

SPECIFICATION forming part of Letters Patent No. 523,806, dated July 31, 1894.

Application filed September 26, 1893. Serial No. 486,509. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD A. CALAHAN, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Straw - Burning Stoves, of which the following is a specification.

This invention covers improvements in that class of stoves in which straw, husks, sawdust and other waste vegetable products are used as fuel, and it consists in so constructing the stove proper and the removable fuel-containing receptacles or magazines that the consumption of the fuel can be perfectly controlled, full advantage being taken of the heat produced thereby, and all parts easy of access and manipulated with facility.

To fully describe my invention, I will refer to the drawings, forming part of this specification, in which—

Figure 1 is a front elevation of a stove embodying my improvements. Fig. 2 is an end elevation; Fig. 3 a longitudinal section; Fig. 4 a plan view with the top covers removed; Fig. 5 a plan view of the bottom of the combustion chamber. Fig. 6 shows a portion of the side door and portions of a fuel magazine. Fig. 7 is a section of one of the magazines showing the application of the draft flue-forming rods. Fig. 8 shows in section one of the magazines charged with fuel. Fig. 9 is a perspective view of a magazine, and Fig. 10 the fire shield of the same detached.

The stove is of the ordinary box pattern having the combustion chamber *a* at one end which is provided with a front door *b* and side door *c* comprising nearly the whole end of the stove.

The flues, the main oven *d* with its door *d'*, the warming oven *e* with its door *e'* are of the ordinary construction.

The products of combustion from the chamber *a* pass over the top of the oven *d*, and directly through the opening *f*, when the damper *f'* is open; otherwise they pass down the sides of the central flue *f<sup>2</sup>* and side of the oven *d*, between the ovens *d* and *e* through the central flue *f<sup>2</sup>* and out of the opening *f*.

On account of the construction of the fuel-containing vessels or magazines, which will be hereinafter described, the bottom *a'* of the

combustion chamber is subjected to considerable heat, and as the bottom is preferably made of cast iron, it would, if made of a single piece of metal, be liable to become warped or cracked, and to obviate this I propose to form in this bottom *a'* a central opening, and close said opening with a separable plate *a<sup>2</sup>* as shown at Fig. 5. Now to take advantage of this heat at the bottom of the combustion chamber *a* and also to afford ample protection to the floor beneath the stove, I construct an auxiliary oven *g* having an opening *g'* below the front door *b*, and sliding doors *g<sup>2</sup>* to cover this opening as desired.

In the upper part of the door *b* are placed the windows *b'* of mica or other suitable material, for visual observation of the fire within the combustion chamber *a*, and in the upper part of the end or side door *c* is placed the register opening *c'* to admit air to the upper part of the chamber *a*.

At the lower part of the door *c* are formed three openings *c<sup>2</sup>* provided with internally projecting flanges, *c<sup>3</sup> c<sup>3</sup>*, the object of which will be hereinafter explained. The openings are provided with sliding doors *c<sup>4</sup> c<sup>4</sup>* adapted to close them at pleasure.

The fuel magazines consist of sheet metal cans having vertical sides *h* preferably elliptical in form, closed bottom *h'* and a flanged hub or spout *h<sup>2</sup>* secured over an opening formed in the side near the bottom. The straw or other fuel packed in these magazines is provided with a draft flue. This flue I form by placing, before charging the magazine, a rod *i* through spout *h<sup>2</sup>* and along the bottom to the side opposite the spout, and a rod *i'* vertically arranged against the side with its lower end resting on or in contact with the end of the rod *i* as shown in Fig. 7, and then packing the fuel *j'* compactly in the magazine; when this is done the rods *i i'* are withdrawn leaving the fuel *j'* along the bottom and upwardly against the side of the magazine as shown at Fig. 8. The draft flue thus formed and arranged is of considerable length and insures a perfect combustion of the fuel, and by reason of its vertical portion being against the side of the magazine, that is placed adjacent to the oven of the stove when the magazines are placed in the combustion chamber, as shown in Figs. 3 and 4,



the heat due to the combustion of the fuel radiates directly from the side of the magazines to the side of the ovens  $d$  and  $e$ , and so quickly raises the temperature of the same. This heat passing from the sides of the magazines makes the interior of the chamber  $a$  very warm, and also greatly aids the heat passing from the top of the fuel in raising the temperature of anything placed on the top of the stove. By reason of the fuel  $j'$  being along the side of the magazine, this part would be apt to become burned and to prevent the too rapid destruction of the magazine, I propose to apply thereto a protection  $k$ , composed of a piece of metal placed inside the magazine as shown at Fig. 9, and shown detached at Fig. 10. These magazines may be kept charged with fuel ready for use as required, and when placed in the combustion chamber  $a$  of the stove the spouts  $h^2$   $h^2$  are opposite to or enter the flanges  $c^3$   $c^3$  of the opening  $c^2$   $c^2$  in the door  $c$ , so that a direct draft of air is had in the flues  $j$  from the outside of the stove, which draft may be regulated at pleasure, by the manipulation of the doors  $c^4$   $c^4$ . These horizontal openings and horizontal draft flues in the fuel permit of the easy stirring of the fire by means of a poker when the same becomes necessary.

Either one or two charged magazines may be used; when only one is placed in the combustion chamber then it will be set so as to take air through the central opening  $c^2$ , as shown at Fig. 6, when two are used they will be arranged as shown in Fig. 4 to take air through the two outside openings  $c^2$   $c^2$ . When the magazines are arranged ready for operation the flue is started by igniting the fuel on the top at the mouths of the draft flue openings, and with two in the stove the fire in one may be started before the other, so that there will always be one burning in the stove while the exhausted one is being replaced by a freshly charged magazine. To facilitate handling them they may be supplied with handles on the fronts adjacent to the end door  $c$ , as shown at Fig. 3, as well as on their sides.

I have found it desirable in stoves of this character to prevent in some cases the direct impact of the products of combustion issuing from the draft flues of the fuel, against the under side of the top of the stove or against any utensil placed on the stove. To do this I provide a deflector  $l$  which may be set over any of the draft flues so as to deflect and

spread the flame. This deflector  $l$  is shown pivoted to the top of the oven  $d$  so as to be readily set in any desired position; a deflector fitted in a guide way to be slid in any desired position over the said draft openings would answer the purpose perfectly as well.

The deflector described and shown is not claimed herein, but the claims are intentionally drawn so as not to include or cover that part of the organization; and the deflector may or may not be used in stoves constructed according to my invention.

I claim as my invention—

1. A stove having a closed combustion chamber with an opening in the side wall of the chamber near the bottom thereof, in combination with the fuel magazine adapted to be placed vertically in said chamber and having an opening in its side near the bottom registering with the opening in the side wall of the chamber, substantially as and for the purpose set forth.

2. A stove having a closed combustion chamber with a draft opening in the side wall of the chamber near the bottom thereof, and means for varying the area of said opening to control the draft, in combination with the fuel magazine adapted to be placed vertically in said chamber and having an opening in its side near the bottom registering with the draft opening in the side wall of the chamber, substantially as and for the purpose set forth.

3. A stove having a combustion chamber closed by a door  $c$  having a regulatable draft opening therein near the bottom, in combination with the fuel magazine adapted to be placed vertically in said chamber and having an opening in its side near the bottom registering with the draft opening in the door  $c$ , substantially as and for the purpose set forth.

4. A stove having a closed combustion chamber with a draft opening in the side wall of the chamber near the bottom thereof, and an oven located at the opposite side of the chamber, in combination with the fuel magazine, adapted to be placed vertically in said chamber and having an opening in its side near the bottom registering with the opening in the side wall of the chamber, substantially as and for the purpose set forth.

In testimony whereof I have hereunto subscribed my name.

EDWD. A. CALAHAN.

Witnesses:

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