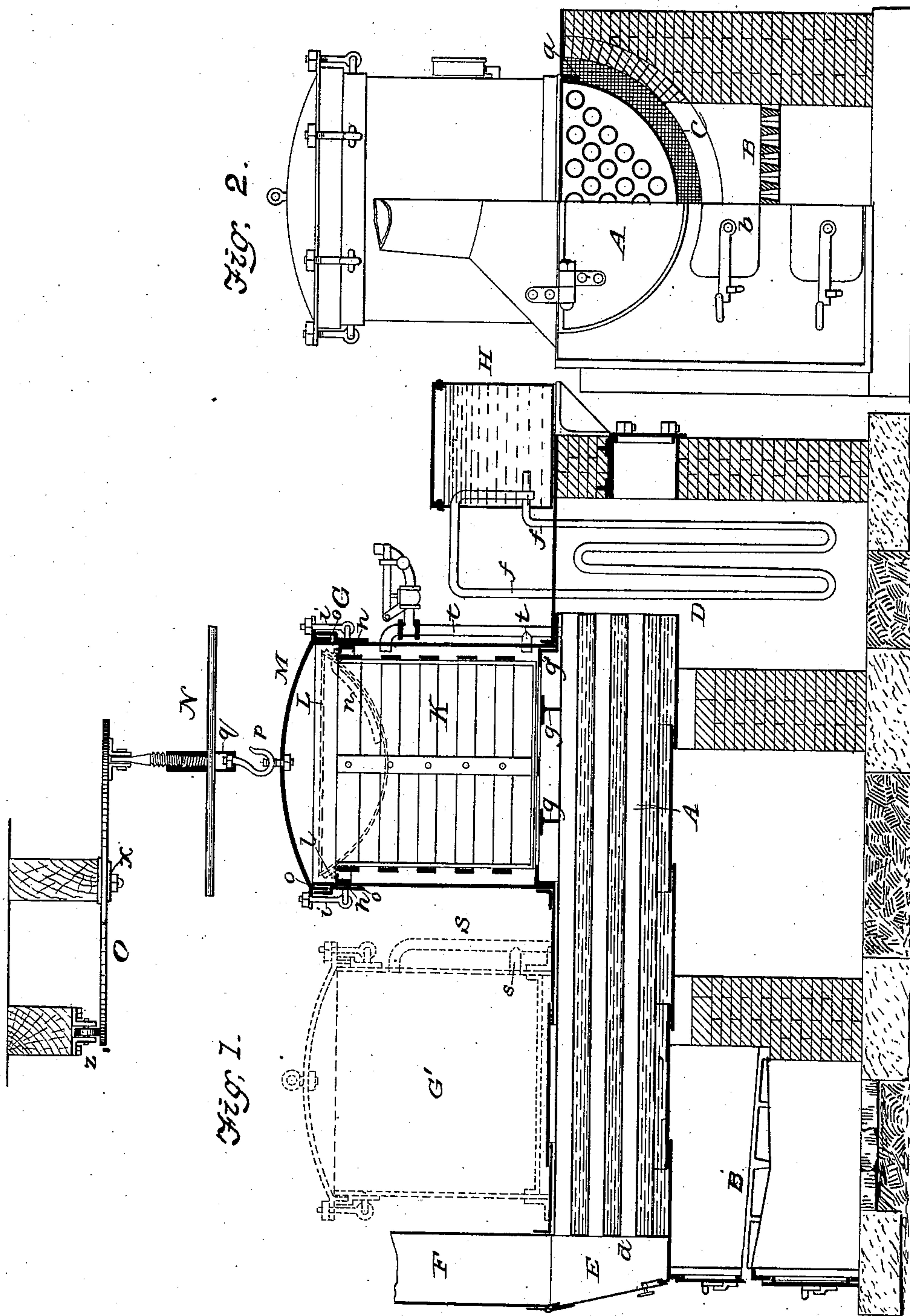


(No Model.)

E. H. FRAZIER.
Combined Process Kettle and Boiler.
No. 243,540.
Patented June 28, 1881.



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UNITED STATES PATENT OFFICE.

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COMBINED PROCESS-KETTLE AND BOILER.

SPECIFICATION forming part of Letters Patent No. 243,540, dated June 28, 1881.

Application filed April 28, 1881. (No model.)

To all whom it may concern:

Be it known that I, EDWARD H. FRAZIER, of Baltimore city, in the county of Baltimore and State of Maryland, have invented a new and useful Improvement in Combined Process-Kettle and Boiler; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention is a combined process-kettle and boiler, designed for use either as a processing-kettle or as a boiler or steam-generator, whereby one apparatus is made to serve the same purposes for which two or three have been heretofore required. The invention relates, also, to the form of the structure, whereby great compactness and strength are obtained.

The general form of processing-kettles is old and well known, and those parts of my invention which include such old elements are described necessarily in connection with my improvements. These special improvements made by me are, however, distinctly indicated in the claims.

In the drawings hereto attached, and forming part of this specification, Figure 1 is a central longitudinal section, and Fig. 2 a transverse vertical section, partly in elevation.

The main portion of the kettle consists of two parts, a horizontal semi-cylindrical and an upper cylindrical part connected to the first. The horizontal semi-cylindrical part is indicated at A, made of boiler-iron or any other suitable material, and suspended upon angle-irons *a* in the brick-work. A grate, B, is placed underneath the semi-cylindrical part, and access is had thereto by means of the hinged door *b*. Products of combustion from the grate pass through the open space C underneath the kettle and upward into a smoke-chamber, D, at the rear end; thence they pass through flues *d* in the horizontal part of the kettle to a front smoke-chamber, E, from which they are discharged into the chimney F. The heat of the products of combustion is completely utilized by means of this circuitous passage, and the rounded bottom exposes a maximum of surface to the heat.

It will be understood that the water is contained in the horizontal part A of the kettle, the vertical or cylindrical part or steam-cham-

ber G receiving the cage which is to contain the cans to be processed.

Upon the rear of the brick-work inclosing the boiler I place a hot-water tank, H, which is connected by pipes *ff* with the heating-coil in the smoke-chamber D, the pipes *ff* being arranged to give a circulation of water, so that as the products of combustion pass through the chamber D the coil will be heated, and heat thereby imparted to the tank H.

The upper part, G, of the process-kettle is made of cylindrical form in order that it may better withstand the pressure of the steam. It is supplied at the bottom with bars or rods *g g*, which cross each other at right angles, or small brackets or a ring of angle-iron, as shown at *g'*, may be used to support the cage.

The cage is represented at K. It is made of a size and shape adapted to fit closely into the steam-chamber G, and the bars thereof are sufficiently near together to hold the cans, while admitting freely the steam to circulate throughout.

In the upper part of the chamber G, I place flanges *h*, which support a dry pan, L, which may be used for rendering lard, or for any similar purpose. This pan is formed with a flange, *l*, which fits over and rests upon the flange *h*, and the pan being made of smaller diameter than the interior diameter of the kettle or chamber G leaves an annular space about said pan for the action of the steam. A pipe, *n*, may be inserted in the upper part of the pan, said pipe being bent downward and projecting inward, as shown in the figure, whereby steam from the outside may be admitted to the lard or other substance within said pan.

Upon the top of the chamber G, I place a cover, M, which is held by swivel-bolts *i i*, which swing into notches in the flange of the cover, as shown in Fig. 1. The cover may have double flanges *o o*, and any suitable packing may be introduced between the joints to render the cover steam-tight. The cover may be screwed down by the nuts on the swivel-bolts *i*. It is provided with an eye in the center, and may be readily removed by means of a swinging bar, O, suspended on pivot *x* from the ceiling, as shown in Fig. 1. The end projecting over the kettle is provided with a hook,

p, which is connected to bar *O* by means of a swivel and screw, so that when the hook is connected to the cover the cover may be slightly raised by turning the swivel, and then swung sidewise by means of the bar. The swivel may be provided with small handles *N* for convenience in turning. The end of the bar *O* opposite to that from which the cover is suspended is widened sufficiently to give it space to travel upon a small pulley, *z*, so that the bar may be swung sufficiently to remove the cover sidewise. It will be understood that the bar *O* has only horizontal motion upon its pivot *x*.

In Fig. 1, in dotted lines, is shown a second tank or kettle, *G'*, said kettle being provided with a bottom and not admitting the water of the horizontal kettle into it. It is designed to be supplied with steam directly from the horizontal part of the kettle by means of pipes *S*, having branches *s*, with suitable cocks in said branches, so that dry steam can be admitted either into the upper or lower part, or into both, and thereby fruit may be scalded or any other substance subjected to the action of the steam, as may be desired.

It will be observed that the chamber *G* opening into the horizontal chamber *A* permits the water to rise freely therein. It is not intended, ordinarily, that the water shall rise to the lower part of the cage, and I have shown an arrangement of pipes by which dry steam may be introduced into the chamber *G*. This arrangement of pipes is shown at *t t*, said pipes being connected directly to the upper part of the chamber *A*. To the pipes *t* may be attached the safety-valves and steam-gage, as shown in Fig. 1.

This form of combined kettle and boiler unites great strength to resist strain of steam, serves various purposes, and economizes heat.

Having thus described my invention, what I claim is—

1. The semi-cylindrical boiler *A*, provided with return-tubes, and set in the described relation to the furnace, in combination with the cylindrical steam-chamber *G*, set upon the flat top of such boiler, opening into the same, and provided with a removable cover and removable cage.

2. The semi-cylindrical boiler *A*, provided with tubes and set as described, in combination with the open-bottomed cylindrical chamber *G*, and the closed-bottom cylindrical chamber *G'*, provided with tubes *S*, substantially as described.

3. The combination of the boiler *A*, semi-cylindrical, and provided with return-tubes, and set in relation to the furnace, as shown, with cylindrical chamber *G*, and with hot-water tank *H*, pipes *ff*, and coil extending downward into the smoke-chamber *D*.

4. The combination, with the boiler *B*, having cylindrical top *G*, of the cover *M*, the suspending-bar *O*, working on pivot *x*, the swiveled and screw-threaded connection between the cover and said bar provided with handle *N*, whereby the cover may be raised and swung sidewise.

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

EDWARD H. FRAZIER.

Witnesses:

HORATIO WALLACE,
WM. S. GORTON.