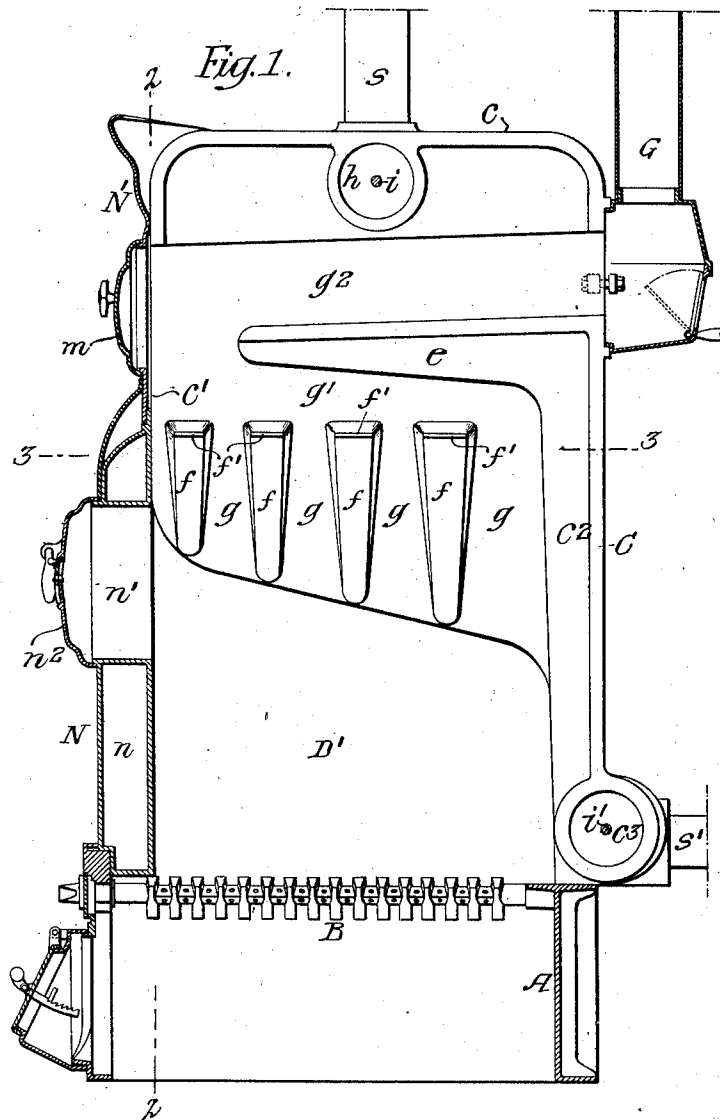


A. C. EDGAR.
HOUSE HEATING BOILER.
APPLICATION FILED FEB. 6, 1911.

1,044,363.

Patented Nov. 12, 1912.

3 SHEETS—SHEET 1.



Witnesses—
John P. Pullinger
Willie H. Burrows

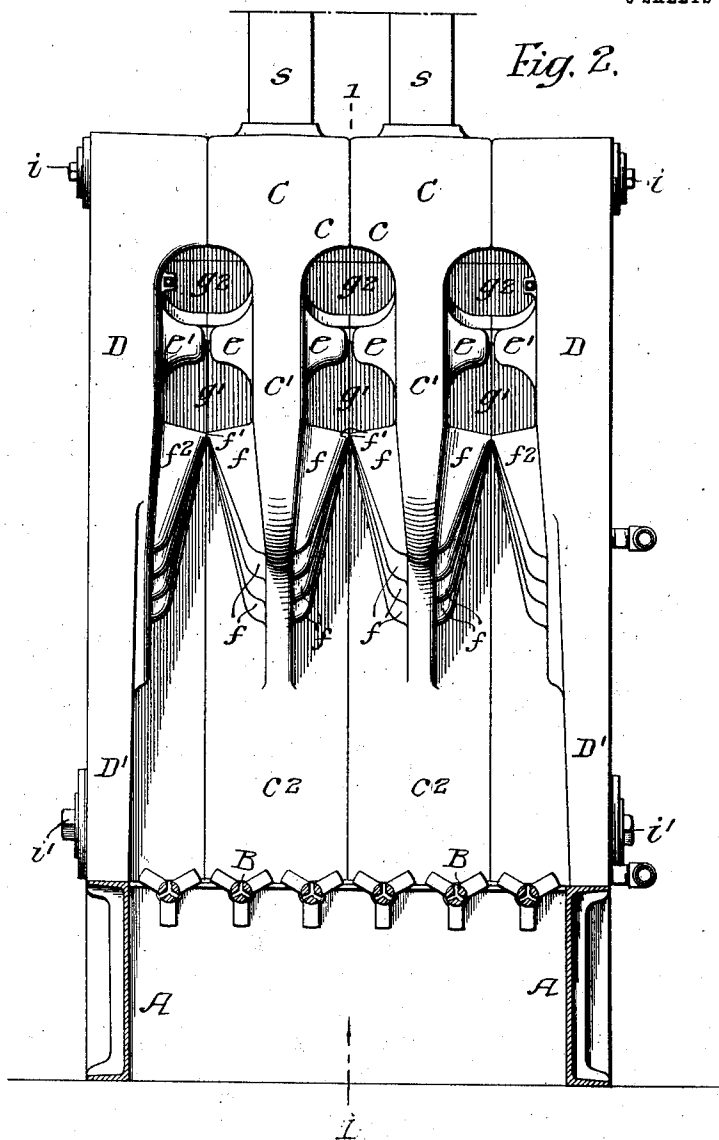
Inventor—
Andrew C. Edgar
by his Attorneys—
Hornum & Hornum

A. C. EDGAR.
HOUSE HEATING BOILER.
APPLICATION FILED FEB. 6, 1911.

1,044,363.

Patented Nov. 12, 1912.

3 SHEETS—SHEET 2.



Witnesses:
Walter C. Pullinger
Willa A. Burrows

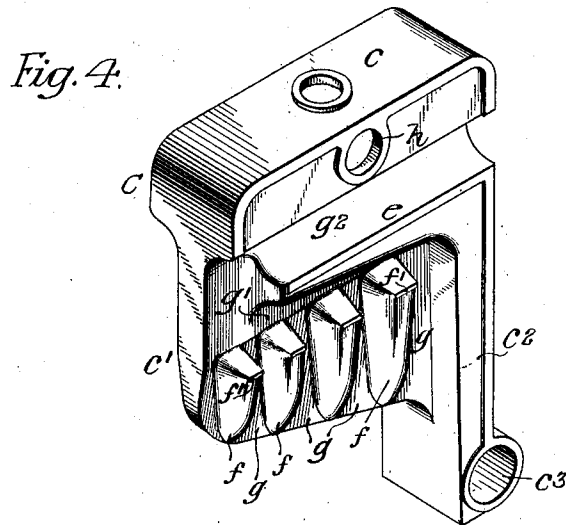
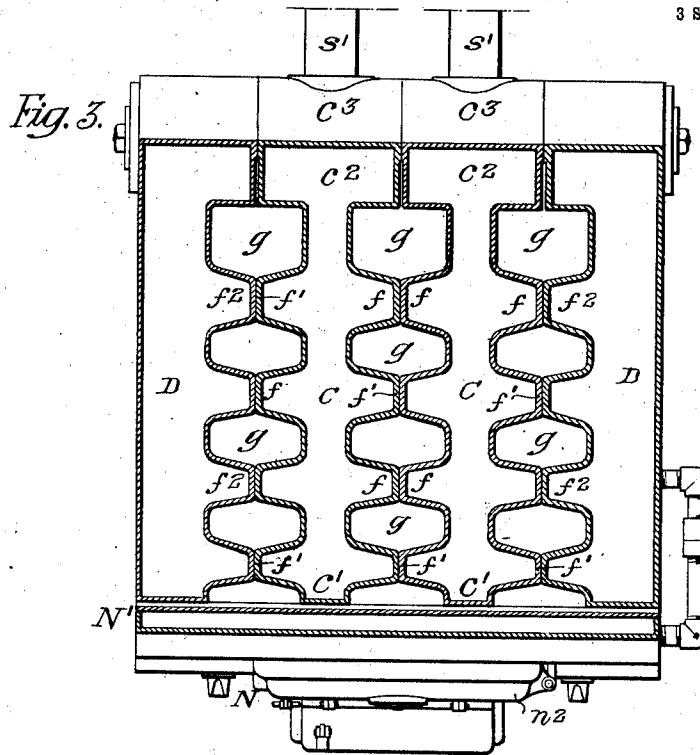
Inventor:
Andrew C. Edgar
by his Attorneys:
Horn & Horn

A. C. EDGAR.
HOUSE HEATING BOILER.
APPLICATION FILED FEB. 6, 1911.

1,044,363.

Patented Nov. 12, 1912.

3 SHEETS-SHEET 3.



Witnesses:-
Walter P. Pullinger
Wille A. Runow

Inventor:-
Andrew C. Edgar
by his Attorneys:-
Hiram Hiram

UNITED STATES PATENT OFFICE.

ANDREW C. EDGAR, OF NEWTOWN SQUARE, PENNSYLVANIA, ASSIGNOR TO ABRAM C. MOTT, OF PHILADELPHIA, PENNSYLVANIA.

HOUSE-HEATING BOILER.

1,044,363.

Specification of Letters Patent.

Patented Nov. 12, 1912.

Application filed February 6, 1911. Serial No. 606,732.

To all whom it may concern:

Be it known that I, ANDREW C. EDGAR, a citizen of the United States, residing in Newtown Square, Delaware county, Pennsylvania, have invented certain Improvements in House-Heating Boilers, of which the following is a specification.

My invention relates to certain improvements in steam boilers or hot water heaters used particularly in heating buildings.

The invention relates particularly to that type of boiler made up of a series of cast sections which extend over the fire chamber.

The object of the invention is to improve the construction of this type of boiler, whereby the heating surface is increased.

In the accompanying drawings:—Figure 1, is a vertical sectional view on the line 1—1, Fig. 2, of a boiler illustrating my invention; Fig. 2, is a sectional view of the boiler on the line 2—2, Fig. 1; Fig. 3, is a sectional plan view of the boiler on the line 3—3, Fig. 1; and Fig. 4, is a perspective view of one of the sections.

A is the base of the boiler having bearings for the grate bars B made in triangular form and perforated, in the present instance, and actuated either directly or by gearing, as desired.

The boiler consists of one or more central sections C and end sections D. The central sections C are made as clearly illustrated in Fig. 4, and consist of a body portion forming the steam or water chamber *c* at the upper end and depending from this chamber is a tongue *c'* connected at the rear with the back leg *c²*, which terminates in the lower header *c³*. The sections C are made hollow and water circulates freely through all parts of the sections. Projecting laterally from each side of the tongue some distance below the upper chamber are hollow ribs *e*, and on each side of the tongue below the ribs are hollow projections *f*.

It will be noticed that the base of the tongue slants toward the rear of the furnace, so that any accumulation of mud will pass readily from the tongue into the back leg.

The projections are made tapered both vertically and transversely, as shown clearly in Fig. 1, and are rounded at the bottom. At the upper end of each projection is a rib *f'* which abuts a rib of the tongue of an adjoining section, so that there is no through

circulation between the opposite ribs; but, as the projections *f* are tapered, the products of combustion can enter the space between the projections and are deflected at the ribs. The projections on the tongues are spaced a sufficient distance to form vertical flues *g* for the passage of the products of combustion. These flues connect with a horizontal flue *g'* between the horizontal rib *e* and the ends of the hollow projections *f*, and this flue in turn connects at the outer end with the upper horizontal flue *g²*, which communicates with the pipe G leading to the stack.

The hollow projections *f* are so spaced that the vertical flues at the rear of the furnace are of greater area than the vertical flues at the front of the furnace, so that the greater portion of the products of combustion will pass to the rear of the furnace.

The end sections D have hollow projections *f²*, which are similar to the hollow projections *f* on the intermediate sections C and also have horizontal ribs *e'* similar to the ribs *e*. The inside of each end section is similar in all respects to the side of one of the central sections, but, in addition, the sections D have a hollow end plate D', which forms the end of the combustion chamber and fire pot, as clearly illustrated in Figs. 1 and 2.

The several sections have transverse passages *h* connecting the steam spaces of the several sections of the boiler, and a rod *i* extends through these openings, holding the several sections together. The lower header *c³* of each section are also in line when the parts are assembled, and a bolt or rod *i'* passes through the sections and holds them together at this point.

The front of the boiler, in the present instance, consists of a casing made hollow, forming a water chamber *n*. This water chamber surrounds the fire door opening *n'*, in the present instance, and is connected by pipes to one of the end sections D. In some cases, however, the water chamber may be dispensed with and a solid front may be used in its stead. The fire door opening *n'* is provided with any type of door *n²*, as desired. The upper section N' of the front has a clean-out door *m* so that access can be had to both the flues *g'* or *g²*, when it is desired to clean these flues.

s' is the water supply or return pipe lead-

ing into the lower header in the present instance, and *s, s* are two pipes leading from the upper portion of the boiler.

It will be noted from the above description that by constructing the boiler sections in the manner shown, a large heating surface is obtained, which is directly above the fire and the hollow projections forming the extended heating surfaces are within the direct line of radiation from the bed of coals in the fire pot, making the boiler more effective than heretofore.

It will be noticed that the hollow rib *e* of each section is tapered from the back toward the front, so as to provide an inclined under surface and an inclined upper surface. By making the internal upper surface of the rib inclined the heated water will travel more rapidly than if the rib was absolutely horizontal.

While the invention is particularly adapted for use as a boiler for generating steam or for hot water for heating purposes, it will be noted that it may be used for other purposes without departing from the essential features of the invention.

I claim:—

1. The combination in a sectional boiler, of end sections and one or more intermediate sections having a body portion at the upper end; a leg; a tongue depending from the body portion and connected to the leg, said tongue having a horizontal hollow rib some distance from the body section and a series of vertical hollow projections at each side and some distance from the hollow horizontal rib, so as to form a series of vertical flues between the sections and two horizontal flues, the lower of said horizontal flues connecting with the vertical flues, and the upper flue connecting with the stack.

2. The combination in a sectional boiler, of end sections and one or more intermediate sections having a body portion at the upper end; a rear leg; and a depending hollow narrow tongue extending from the fire chamber and connected to the body portion and the leg, said tongue having a horizontal hollow rib projecting from each side

and extending from the leg to a point some distance from the front of the tongue; a series of vertical hollow projections on each side of the lower portion of the tongue some distance from the horizontal hollow rib, the whole forming a series of vertical flues connected to a lower horizontal flue which is in turn connected to an upper flue which communicates with the stack.

3. The combination in a steam boiler, of the sectional type, of end sections and an intermediate section, said intermediate section having a body portion at the upper end; a leg at the back; and a depending tongue extending over the fire pot and connected to the body portion and to the leg, having a horizontal rib at each side below the body portion; and a series of hollow vertical projections at each side, the inner wall of each end section having a horizontal rib and vertical hollow projections alining with the ribs and projections of the intermediate section, each vertical projection being tapered and the edges of the horizontal ribs abutting, forming a series of vertical flues; and two horizontal flues between each section of the boiler.

4. The combination in a steam boiler of the sectional type, of end sections and a series of intermediate sections, each intermediate section consisting of a body portion having a depending leg at the rear and a lower header at the base of the said leg, the intermediate section also having a depending hollow tongue communicating with the leg and extending forward to the front end of the furnace, a horizontal hollow rib on each side of each intermediate section, the upper inner wall of the hollow rib being tapered on the upper side and forming flues for the passage of the products of combustion.

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

ANDREW C. EDGAR.

Witnesses:

WM. E. SHUPE,
WM. A. BARR.