

(No Model.)

2 Sheets—Sheet 1.

H. M. HOFFMAN. SECTIONAL BOILER.

No. 568,198.

Patented Sept. 22, 1896.

Fig 1.

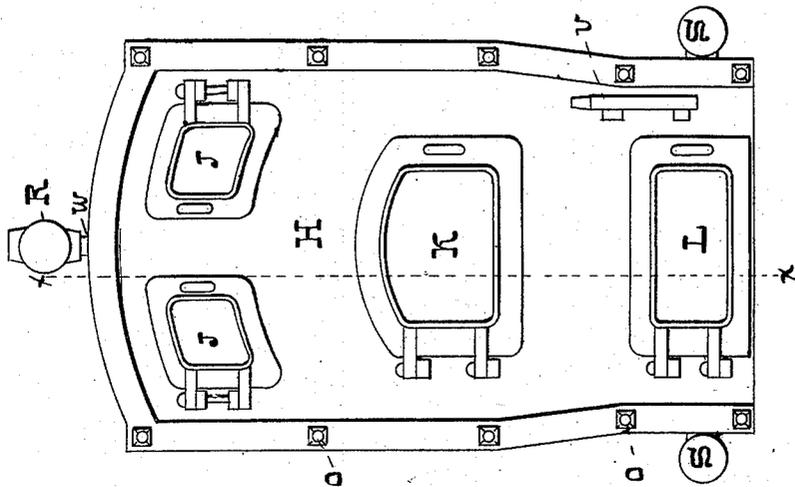
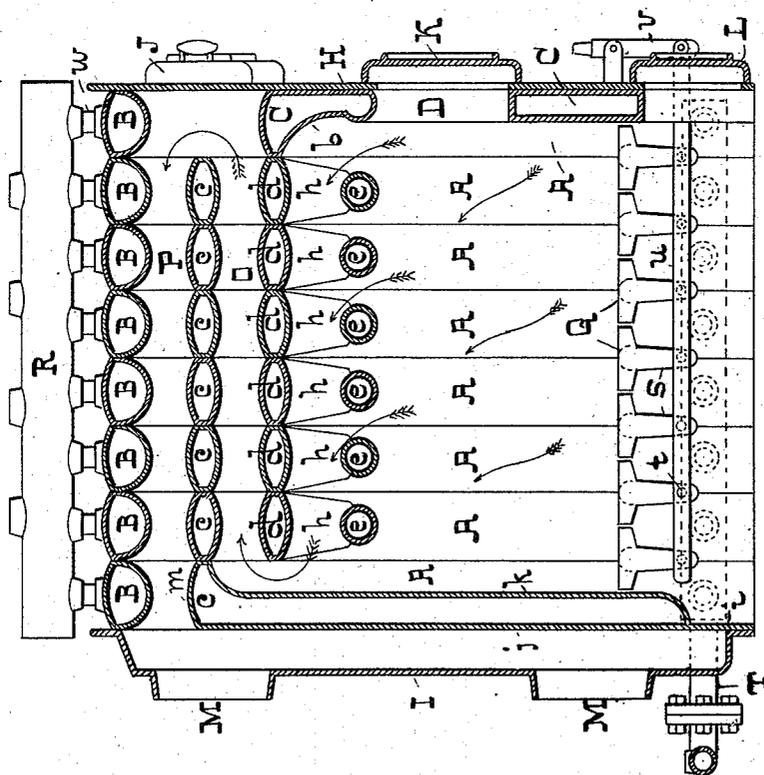


Fig 2.



-WITNESSES-

Dan'l Fisher
Harry Constantine,

-INVENTOR-

Henry M. Hoffman,
by W. H. J. Adams,
att.

UNITED STATES PATENT OFFICE.

HENRY M. HOFFMAN, OF BALTIMORE, MARYLAND, ASSIGNOR TO
FRANK O. SINGER, OF SAME PLACE.

SECTIONAL BOILER.

SPECIFICATION forming part of Letters Patent No. 568,198, dated September 22, 1896.

Application filed April 15, 1896. Serial No. 587,601. (No model.)

To all whom it may concern:

Be it known that I, HENRY M. HOFFMAN, of the city of Baltimore, and State of Maryland, have invented certain Improvements in Sectional Boilers to be Used in Hot-Water Heating, of which the following is a specification.

This invention relates to certain improvements in boilers for the above-named purpose, which are built up of cast-iron sections placed face to face and interiorly connected by manifolds, pipes, and nipples, so as to admit of the free passage of water from one section to another.

The said invention consists in certain peculiarities in the construction of the said sections, as will hereinafter fully appear.

In the description of the said invention which follows reference is made to the accompanying drawings, forming a part hereof, in which—

Figure 1 is an exterior front view of the improved sectional boiler. Fig. 2 is a section of Fig. 1, taken on the dotted line *xx*. Fig. 3 is a front view of the front or first section of the boiler. Fig. 4 is a similar view of one of the intermediate sections. Fig. 5 is a similar view of the rear section. Fig. 6 is a cross-section of Fig. 5, taken on the dotted line *yy*. Fig. 7 is a section of Fig. 4, taken on the dotted line *zz*. Fig. 8 is a side view of the lower part of the leg of any one of the sections. Fig. 9 is a cross-section of a part of the boiler, as hereinafter described.

Referring now to Figs. 2 and 3 of the drawings, in which are shown, respectively, a vertical section and an interior front view of the first or front section of the boiler, *A A* are the hollow legs, connected at the top by the hollow crown *B* and below the crown by the hollow central plate *C*, which contains the furnace or fire-box door opening *D*. The central portion or hollow plate *C* is united to the crown *B* by the pipe *a*. In cross-section the legs *A* are oval or elliptical, and the upper wall of the crown is of a curvature corresponding with that of the walls of the legs. The lower wall of the crown is semicircular, as shown in Fig. 2. The upper wall of the hollow plate *C* is of the same curvature as that of the walls of the legs, but the lower one is flat and

forms the upper edge of the ash-pit opening. The portion of the front section above the hollow plate *C* is considerably thicker than the remaining part, and where the two parts come together the rear plate *b* is flared. (See Fig. 2.)

Referring now to Figs. 2 and 4, it will be seen that the legs *A* and the crown *B* of the intermediate sections correspond in shape and construction with those of the front section, but instead of the hollow plate *C* the legs are connected by the curved concentric pipes *c*, *d*, and *e*. The pipes *c* and *d* are oval or elliptic in cross-section and the one, *e*, circular. The pipes *c* and *d* are in communication with the crown by means of the branch pipes *f* and *g*, which are elliptic in cross-section. The pipes *d* and *e* are in communication by means of the tapering branches *h*, which are of elliptic cross-section. (See Fig. 9.) The tapered branches *h*, of which there are a large number, stand apart, as shown in Fig. 4, and occupy, with their intervening spaces, the entire width between the legs *A*.

Referring now to Figs. 2 and 5, it will be seen that in the rear section of the boiler the legs and crown correspond in shape with those of the other sections. It also has the upper wall *m* of the pipe *c* of the intermediate sections and the branch pipe *f*. The lower part of the rear wall of this section is not hollow, but consists of a single wall *i*, which forms the rear end of the ash-pit. From this point to the upper wall *m* the plate is hollow and the two walls *j* and *k* thereof are corrugated and the wall *k* is flared inward to join the wall *m*. The corrugations of the wall *k* stand apart, there being a flat space *n* between them, (see Fig. 6,) while those of the wall *j* come together. The object in separating the corrugations of the wall *k* is to increase the heating-surface at that part of the boiler.

The various sections as described are placed face to face, as shown in Fig. 2, and the front and rear plates *H* and *I* placed against them, the whole being secured by bolts *o*, which pass through lugs *p*.

In the front plate *H* are the cleaning-doors *J*, the fire-box door *K*, and the ash-pit doors *L*. The rear plate *I* has the smoke-connection

nozzles M, and to provide a space between the rear section and the smoke-nozzles the rear plate I is dished or offset, as shown in Fig. 2.

5 It will be seen by reference to Fig. 2 that the curved pipes *c* separate the space between the crown and the pipes *d* into two compartments O and P, through which the products of combustion from the fire-box pass to the
10 chimney-nozzles M, as shown by the arrows in Fig. 2.

The legs of the sections of the boiler are thrown in from the point of their junction with the curved pipes *e* to the points *q*, which
15 are about in alinement with the upper surfaces of the grate-bars Q. This construction gives an unusual width of furnace for a contracted width of grate-surface and effects considerable economy in fuel.

20 The grate-bars Q are of the rocking description, and their ends enter lugs *r* on the inner surface of the sections. The grate-bars have tailpieces *s*, having pins *t*, which are connected by a rod *u*, leading to the front of
25 the boiler, where it is provided with a shaking-bar *v*, to which a handle may be applied.

R is a manifold having nipples *w*, screwed into the crowns of the sections and from which extend the pipes (not shown) to con-

vey hot water to the various apartments of 30 the building to be heated.

S S are manifolds at the sides of the boiler, connected at the rear end by a pipe T, which extends across the outside of the boiler. To this pipe the return or cool-water pipes (not 35 shown) are led. The side manifolds are united to each section by nipples. (Shown in dotted lines in Fig. 2.)

I claim as my invention—

1. In a sectional boiler, the intermediate 40 sections thereof having the expanded legs, and the curved crown, combined with the curved concentric pipes connected by branches, and the two lower pipes connected by a series of separated tapering pipes, substantially as 45 specified.

2. In a sectional boiler, the rear section thereof having the expanded legs, connected by a curved crown and a corrugated hollow plate the upper end of which is united to the 50 crown by a pipe and terminating at the lower end in a single wall which serves as the rear side of the ash-pit, substantially as specified.

HENRY M. HOFFMAN.

Witnesses:

WM. T. HOWARD,
DANL. FISHER.