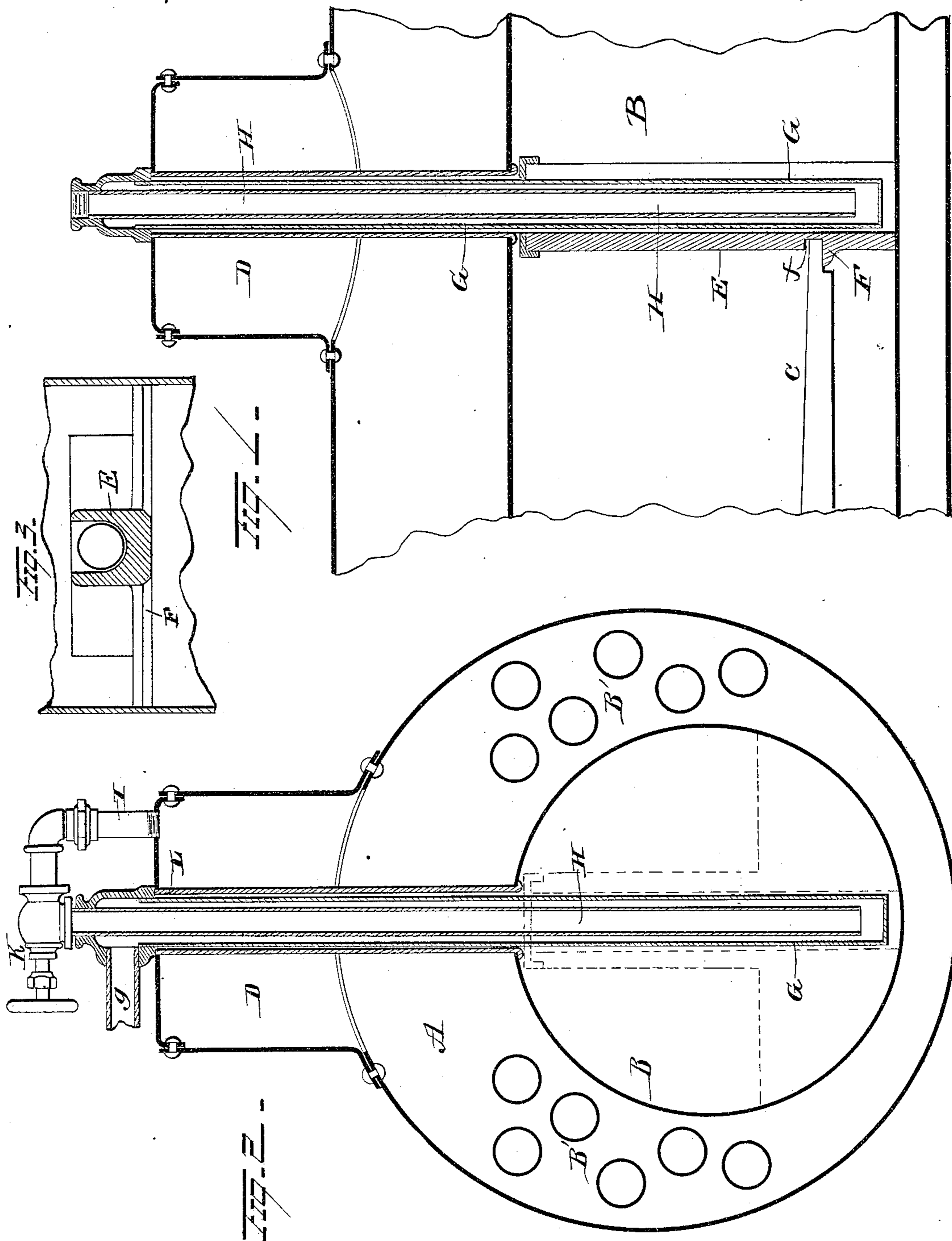


(No Model.)

E. HUBER.
STEAM BOILER.

No. 351,441.

Patented Oct. 26, 1886.



WITNESSES

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UNITED STATES PATENT OFFICE.

EDWARD HUBER, OF MARION, OHIO.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 351,441, dated October 26, 1886.

Application filed June 23, 1886. Serial No. 206,489. (No model.)

To all whom it may concern:

Be it known that I, EDWARD HUBER, of Marion, in the county of Marion and State of Ohio, have invented certain new and useful
5 Improvements in Steam-Boilers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

10 My invention relates to an improvement in steam-boilers.

The object is to provide a simple and effective means for superheating the steam, and in connection therewith to provide means for
15 more completely consuming the smoke and gases, and at the same time shielding the steam-pipes from the direct action of the flames, and thereby preventing them from being rapidly burned out.

20 With these ends in view my invention consists in certain features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is
25 a view of a boiler embodying my invention in vertical longitudinal section. Fig. 2 is a view in vertical cross-section through the line $x x$ of Fig. 1; and Fig. 3 is a view in horizontal section of the pedestal which serves to separate the flame and shield the steam-pipes.
30

A represents a steam-boiler of the return-flue type, the fire-flue B extending from the inner ends of the grate-bars C through to the front end of the boiler and returning in the form of nests of flues B', located longitudinally within the boiler on each side, and thence passing into the uptake. (Not shown.) The steam-dome D is located about centrally over the inner ends of the grate-bars, and may be
40 attached to the boiler in any well-known or approved manner. At the center of the fire-flue B, and immediately in inner ends of the grate C, is located a pedestal, E, which extends from the top to the bottom of the fire-flue, and serves to separate the flame as it enters the flue B into two sections. The pedestal E is made inverted-T-shaped in cross-section, with the stem of the T extending toward the fire and serving to divide the flames. The
45 bridge-wall F, on which the inner ends of the grate-bars rest, may be formed integral with

the pedestal, and when so formed is provided with notches, as shown at f , adapted to receive the ends of the bars. A steam-pipe, G, extends from a point above the top of the dome
55 D centrally down through the dome and the boiler, and down through the fire-flue B, immediately in front of the pedestal E, to the base of the boiler. Its lower end is closed steam-tight, and its upper end is provided with
60 a branch pipe, g , leading to the engine. A second steam-pipe, H, of so much less diameter than the former as to leave a space between its exterior and the interior of the pipe G, extends from the upper end of the pipe G centrally down through the same to a point near
65 the base. Its lower end is open and its upper end is connected with the steam-dome D by a pipe, I, provided with a valve or stop-cock, K.

The steam from the dome is caused to pass
70 down through the pipe H, and thence up around the outside of pipe H, within the pipe G, to the pipe g , whence it is supplied to the engine. The opening L, through the dome and boiler, in which the pipe G is located, is
75 preferably somewhat larger than the pipe G, and a space is thus left between the wall of said opening and the exterior of the pipe G, in which the heat from the fire-box or fire-flue is allowed to circulate. The steam is, how-
80 ever, for the most part, superheated by the heat from the flames in the fire-flue B. The shape of the pedestal E is such that the flames, as they are parted by the pedestal and sweep past its sides, tend to form an eddy in front
85 of the pedestal, which produces cross-flames and causes the smoke and gases to mingle and become consumed, producing a high degree of heat around the surface of the pipe G, while the direct action of the flame from the fire-box
90 is avoided, and the consequent rapid burning out of the pipes is prevented.

It is evident that the steam might be led from the steam-dome down through the outer pipe and up through the inner pipe, instead of
95 in the opposite direction, as above described, and that the pedestal might have other forms in cross-section than the plain T-shaped form shown, and that other slight changes might be resorted to in the form and arrangement of
100 the several parts without departing from the spirit and scope of my invention; hence I do

not wish to limit myself strictly to the construction herein set forth; but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a steam-boiler, of a steam-conduit extending down through the steam-dome, boiler, and fire-flue, at or near the inner ends of the grate-bars, and back through the boiler and dome, one end of said conduit being adapted to communicate with the steam in the dome and the opposite end with the place where it is to be used, substantially as set forth.

2. The combination, with a steam-boiler, of an inner and outer pipe extending down through the steam-dome, boiler, and fire-flue at the inner ends of the grate-bars, one of said pipes being adapted to take the steam from the steam-dome and the other to feed it for use, substantially as set forth.

3. In a steam-boiler, the combination, with a pedestal located centrally in the fire-flue at or near the inner end of the grate, of a steam-pipe leading from the steam-dome down through the steam-dome, boiler, and fire-flue, and upwardly through the same, said steam-pipe being located immediately in front of the pedestal, substantially as set forth.

4. In a steam-boiler, the combination, with a pedestal located centrally in the fire-flue at the inner end of the grate, of a superheating

steam-pipe located at the front of the pedestal and adapted to be shielded from the direct action of the flames thereby, substantially as set forth.

5. In a steam-boiler, a pedestal located at the inner end of the grate and extending to the top of the fire-flue, and adapted to part the flames and produce cross-currents of smoke, gases, and flame, substantially as set forth.

6. The combination, with the boiler, of the steam-conduit consisting, essentially, of an inner and an outer pipe located within an opening formed through the steam-dome and boiler and extending down through the fire-flue, and a pedestal or shield adapted to part the flames and turn them upon oppositesides of the steam-pipe, substantially as set forth.

7. In a return-flue boiler, the double superheater-pipe extending across the fire-flue, substantially as set forth.

8. In a steam-boiler, the combination, with the fire flue and grate, of the pedestal located centrally in the flue at the front of the grate and extending from a point below the grate to the top of the fire-flue, substantially as set forth.

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

EDWARD HUBER.

Witnesses:

J. E. DAVIDS,

JOHN C. JOHNSTON.