

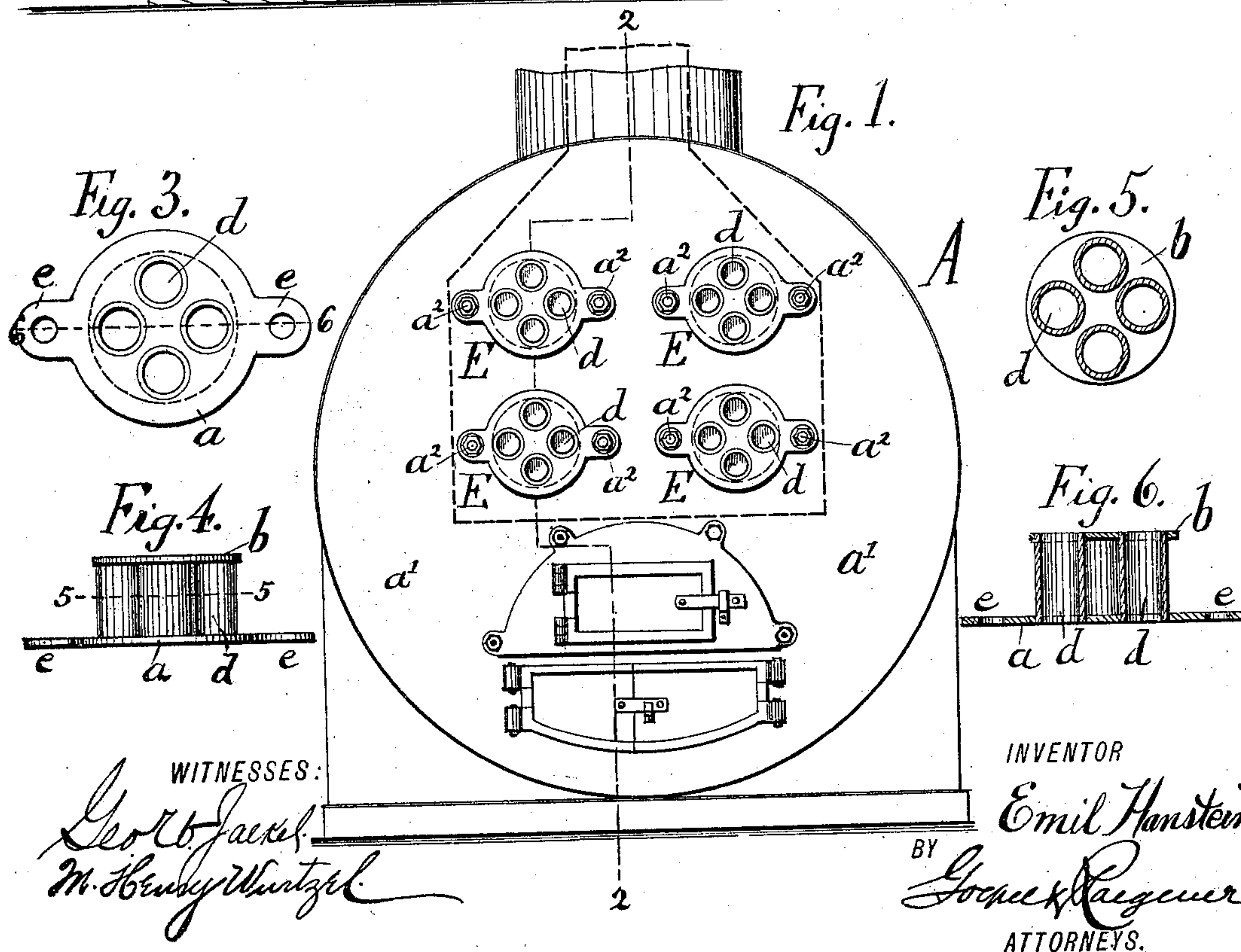
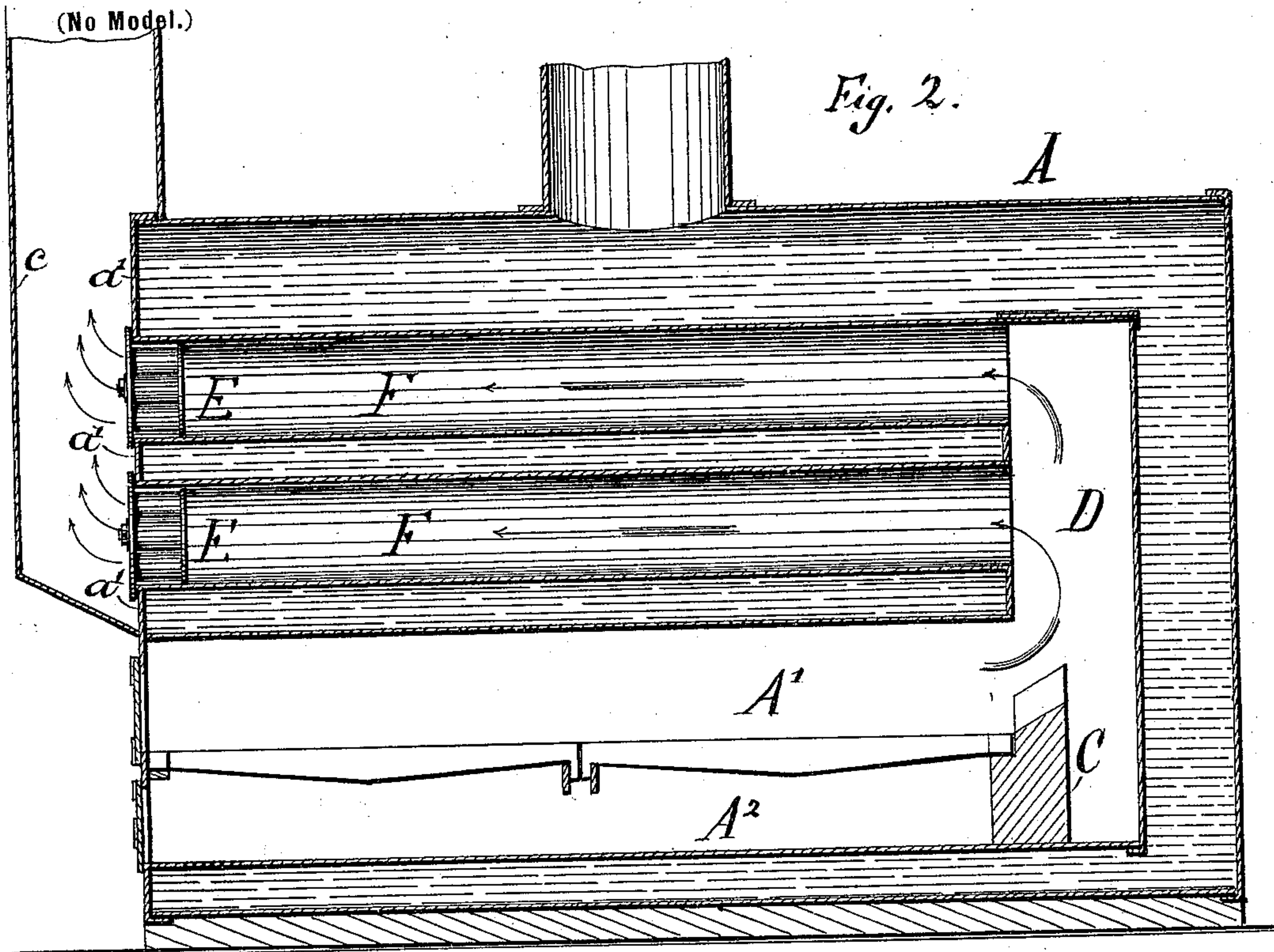
No. 617,570.

Patented Jan. 10, 1899.

E. HANSTEIN.
CHECK FOR BOILER FLUES.

(Application filed Sept. 8, 1898.)

(No Model.)



UNITED STATES PATENT OFFICE.

EMIL HANSTEIN, OF HOBOKEN, NEW JERSEY.

CHECK FOR BOILER-FLUES.

SPECIFICATION forming part of Letters Patent No. 617,570, dated January 10, 1899.

Application filed September 8, 1898. Serial No. 690,462. (No model.)

To all whom it may concern:

Be it known that I, EMIL HANSTEIN, a citizen of the Empire of Germany, residing in Hoboken, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Checks for Boiler-Flues, of which the following is a specification.

This invention has reference to an improved check for the flues of steam-boilers, by the use of which a more complete combustion of the fire-gases is obtained and a more economical generation of steam produced, so that the efficiency of the boiler to which it is applied is increased.

The invention consists of a check for the flues of steam-boilers, said check being inserted into the outgoing ends of the flues and constructed of front and rear plates and connecting-tubes between the said plates, the cross-area of said tubes being less than the cross-area of the flue into which the check is inserted, so that the movement of the fire-gases to the chimney is retarded and the more complete combustion of the same in the combustion-chamber produced. The front plate of each check is provided with ears, by which the check is attached to the front part of the boiler, and the rear plate is made of convenient size to fit into the flue, as will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents a front elevation of a steam-boiler with my improved flue-checks inserted in the flues of the same, the connection with the chimney being indicated in dotted lines. Fig. 2 is a vertical longitudinal section on line 2 2, Fig. 1. Fig. 3 is a detail front view of one of my improved flue-checks. Fig. 4 is a side view of the same. Fig. 5 is a section on line 5 5, Fig. 4; and Fig. 6 is a section on line 6 6, Fig. 3.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents a steam-boiler of that class in which the fireplace A' and ash-pit A² are arranged in the boiler and in which longitudinal flues of large size are arranged above the fireplace, said flues F F of large size connecting at their

rear ends with a combustion-chamber D, arranged above and back of the fire-bridge C. The longitudinal flues F connect at their front ends with a casing c, that is connected with the chimney. At the front or outgoing ends of the flues are arranged the flue-checks E, forming the subject-matter of this invention and which are shown in detail in Figs. 3 to 6. The front wall a of the flue-check is of larger size than the rear wall b of the same and is provided at diametrically opposite points with perforated ears e, which are attached to the front wall a' of the boiler by suitable fastening-bolts a², as shown in Fig. 1. The rear wall b of the flue-check is of a diameter corresponding to the inside diameter of the boiler-flue F, so that it may readily enter the flue. Between the front wall and the rear wall of the check are located connecting-tubes d, the cross-area of said connecting-tubes being considerably less than the cross-area of the flue F, so that a certain retarding action is exerted on the fire-gases as they pass from the fireplace A' and combustion-chamber D to the flues F and out the front end of the same. This retarding action produces the more perfect combustion of the fire-gases while passing through the combustion-chamber D and the flues, so that thereby a high heat is sustained in the flues and combustion-chamber, and by reason of the more perfect combustion a saving in fuel obtained.

The check is bolted to the front wall a' of the boiler and requires no further connection by brazing or otherwise. It can be readily detached from the flue by disconnecting the bolts a², so that access is readily had to the interior of the flue for cleaning the same. As a large size of flues may be used the interior of the boiler and the surface of the flues may be readily cleaned from the incrustations, so that the boiler is better adapted for marine and stationary purposes, as it avoids many of the inconveniences of water-tube boilers. A boiler in which the flues are provided with checks, as described, is cheaper in construction than one in which small tubes are used, especially as the checks can be replaced for little expense when worn out. It has the advantage of being economical in fuel, which is

due to the more perfect combustion of the fire-gases caused by the flue-checks, and it permits the easy cleaning of the flues, as well as the interior of the boiler, and avoids some of the objectionable features of water-tube boilers, such as leakage and bursting of the tubes.

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

- 10 1. The combination, with the flues of a steam-boiler, of checks inserted in the front ends of said flues, said checks being each constructed of a larger front wall having perforated ears, a rear wall equal in size with the
15 interior of the flue, and connecting-tubes between said front and rear walls, and bolts for

attaching said ears to the front plate of the boiler, substantially as set forth.

2. A check for boiler-flues, consisting of a front wall provided with perforated ears for 20 attaching the check to a boiler, a rear wall adapted to fit within the boiler-flue, and connecting-tubes between said front and rear walls, substantially as set forth.

In testimony that I claim the foregoing as 25 my invention I have signed my name in presence of two subscribing witnesses.

EMIL HANSTEIN.

Witnesses:

M. HENRY WURTZEL,
KARL KAELEBLE.