2 Sheets--Sheet 1.

JAMES W. BEACH.

Hot-Air Jacket for Marine Steam-Boilers, for Heating Purposes.

No. 127,950. Patented June 18, 1872.

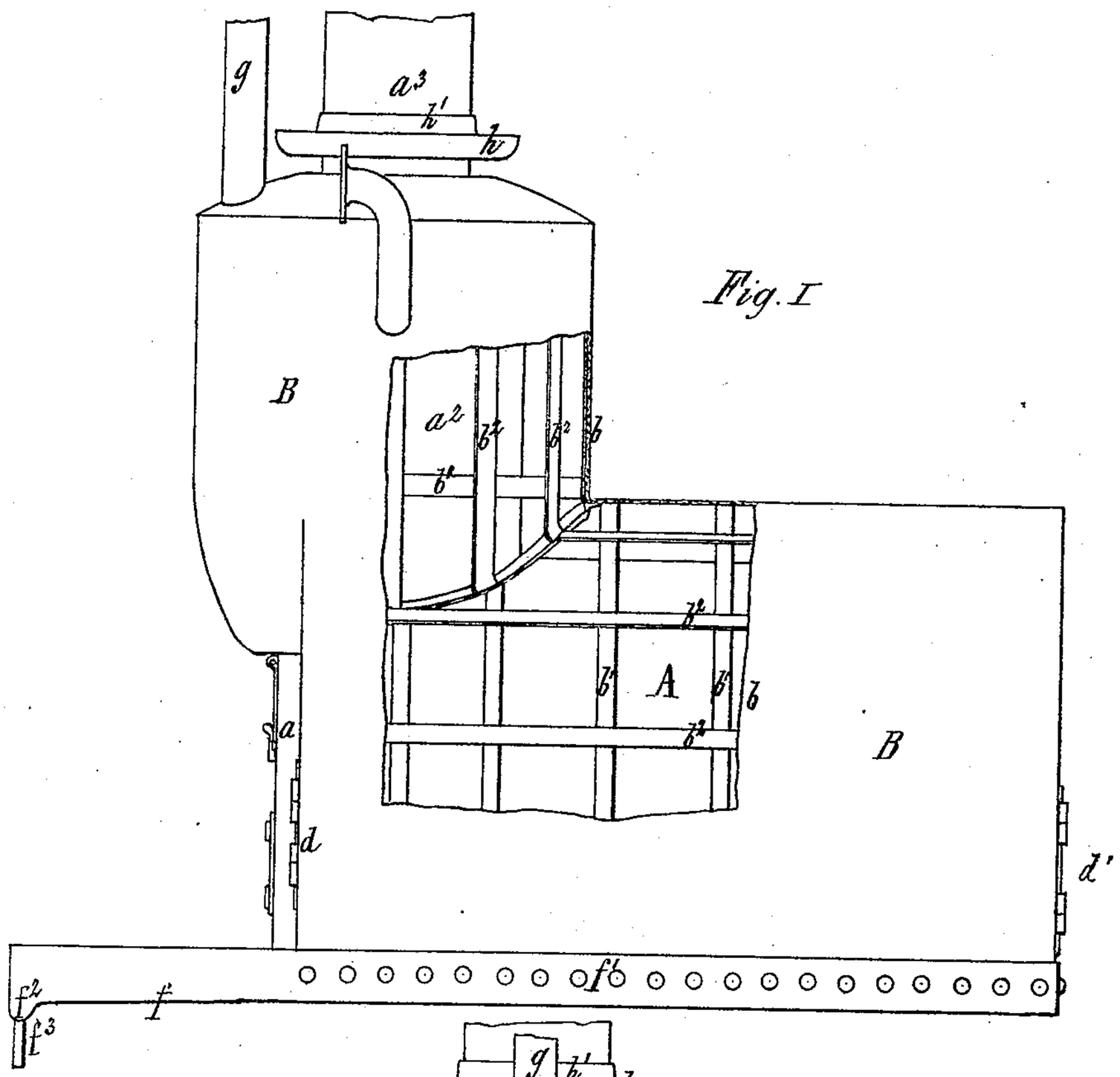

Fig. I

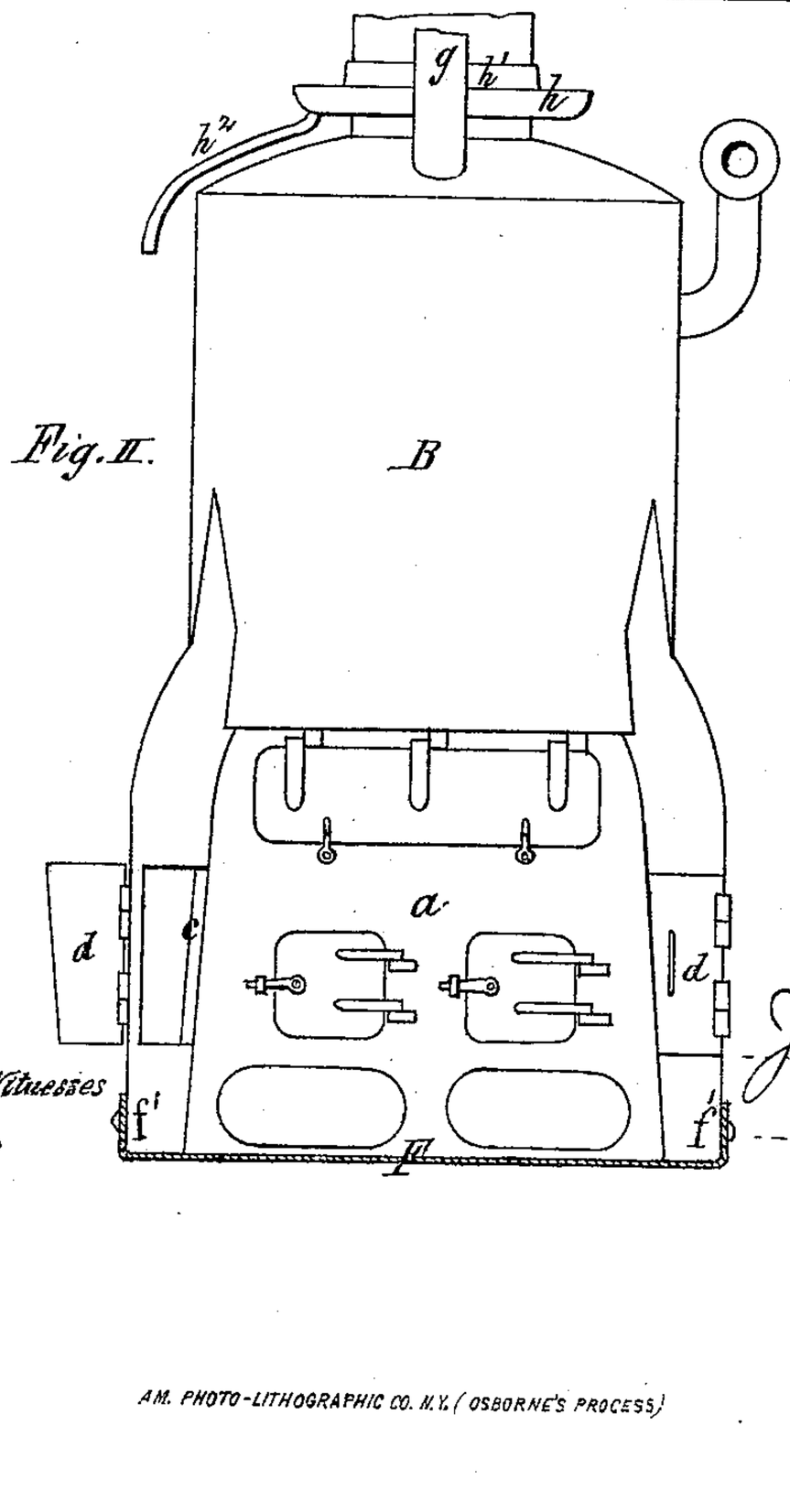

Fig. II.

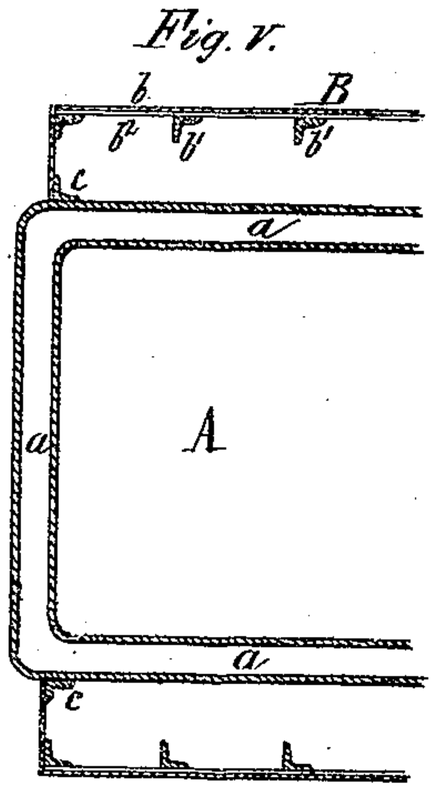

Fig. V.

Witnesses
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2 Sheets--Sheet 2.

JAMES W. BEACH.

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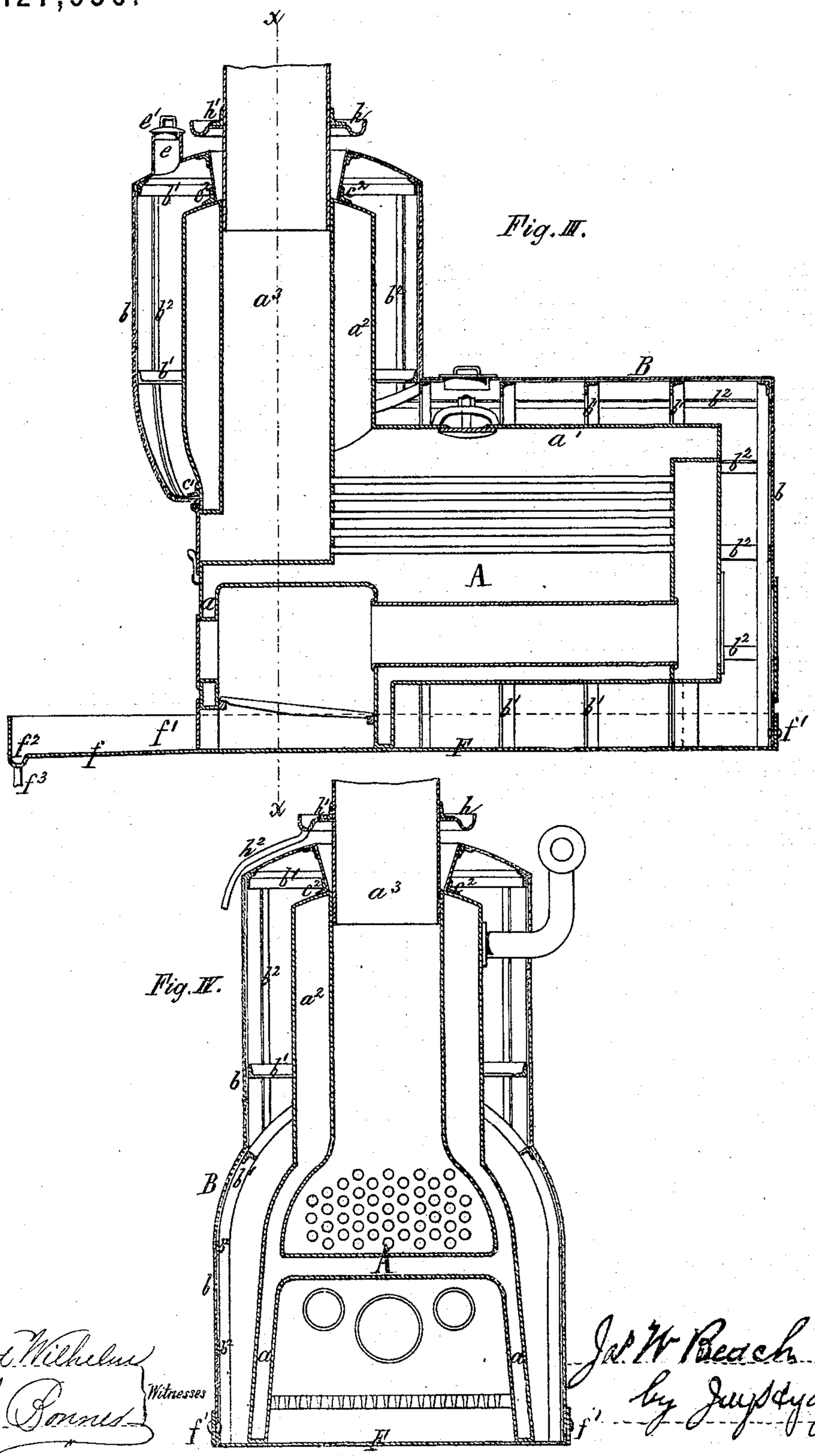

Witnesses
Edward Wilhelm
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127,950

UNITED STATES PATENT OFFICE.

JAMES W. BEACH, OF BUFFALO, NEW YORK.

IMPROVEMENT IN HOT-AIR JACKETS FOR MARINE STEAM-BOILERS FOR HEATING PURPOSES.

Specification forming part of Letters Patent No. 127,950, dated June 18, 1872.

SPECIFICATION.

I, JAMES W. BEACH, of the city of Buffalo, in the county of Erie and State of New York, have invented certain Improvements in Steam-Boilers, of which the following is a specification:

My invention relates more particularly to that class of boilers which are used on vessels propelled by steam-power; and consists, first, in the combination, with a marine steam-boiler, of a metallic shell or covering, arranged around the boiler so as to form a non-conducting air-space between the case and boiler, which space is of sufficient width to allow of access therein for examining and repairing the boiler without removing the case; second, in the combination, with a marine steam-boiler and surrounding metallic case provided with air-inlet apertures near its bottom, of a hot-air discharge-pipe for conducting the hot-air from the space between the case and boiler to an adjoinining apartment for heating the same; third, in the combination, with with a marine steam-boiler and a surrounding metallic case, of a metallic base-plate, upon which the boiler rests, and which is provided with upturned edges or flanges for securing the case thereto, and an inclined front portion terminating in a gutter for collecting and removing the drippings of the boiler; fourth, in the combination, with the chimney of a marine-boiler, of a circular gutter arranged around the chimney above the boiler, and provided with a discharge-pipe, so as to receive and carry off the drippings which may descend on the outside of the chimney, and which, if this gutter was not provided, would come in contact with and corrode the boiler.

In the accompanying drawing, consisting of two sheets, Figure I is a side elevation of a steam-boiler provided with my improvements, part of the outer case being broken away so as to expose the frame to which it is secured. Fig. II is a front elevation of the same. Fig. III is a longitudinal sectional elevation thereof. Fig. IV is a cross-section on line *x x*, Fig. III. Fig. V is a fragmentary horizontal section through the fire-box.

Like letters designate like parts in each of the figures.

A represents a return-flue steam-boiler, of ordinary construction. *a* is the water-jacket around the fire-box; a^1, the cylindrical part of the boiler; a^2, the steam-drum; and a^3, the chimney passing through the latter. B is the case surrounding the whole boiler, with the exception of the lower portion of its front, which is left uncovered on account of the furnace and other doors arranged therein. The case B is composed of an outer shell, *b*, constructed of suitable metal, and a frame consisting of ribs of angle-iron, b^1, and flat strips of metal, b^2. The ribs b^1 are arranged concentric with the surface of the steam-drum and the upper half of the main portion of the boiler, and at such a distance therefrom that sufficient space is left at all points between the case B and the boiler for examining and repairing the latter without removing the case. The strips b^2 are arranged at right angles to the ribs b^1, and rigidly attached thereto at the proper distances apart, so as to connect the same. The outer shell *b* is secured to the strips b^2 by soldering or riveting or in any other suitable manner. The main portion of the case B is attached to the boiler proper only at the front, where it is secured to the water-jacket *a* by means of an angle-iron or flange, *c*, as shown in Fig. V, and to the front of the boiler by an angle-iron, c^1, as shown in Fig. III. The upper portion of the case B surrounding the steam-drum is secured to the top of the latter by an angle-iron, c^2, Figs. III and IV. With the exception of these fastenings the case B is entirely disconnected from the boiler, so that a free circulation of air around the surface of the boiler is obtained within the case B. The latter is provided at its front with one or more doors, *d*, and at the rear with a door, *d'*, through which access is had to the interior of the case. *e* is a short pipe or collar projecting from the upper portion of the case B. It is ordinarily closed by a plug or cover, *e'*, as clearly shown in Fig. III. F is the base-plate, of boiler-iron, upon which the boiler rests. It is provided with upturned edges or flanges f^1, to which the lower edges of the perpendicular sides and end of the case B are tightly secured by riveting or otherwise. The front portion *f* of the plate F is slightly inclined toward its end, where it is provided with a gutter, f^2, as clearly shown in Fig. III, for the reception of the

drippings, which are carried off through a waste-pipe, f^3. The doors d d' and pipe e being closed the air confined in the space between the boiler and the case B acts as a non-conductor of heat, whereby the loss by radiation is greatly reduced. I prefer to construct the outer shell of the case B of bright metal, such as tin or zinc, and paint the outer surface to protect it from the influence of moisture, while the bright inner surface reflecting back the heat from the boiler absorbs much less heat than an unpolished one would. When applied to marine boilers the case B also serves to protect the boiler from the corroding influence of the water which may leak through the deck; and, furthermore, forms in connection with the base-plate F a fire-proof covering, which separates the boiler from the combustible material around the same. By attaching a discharge-pipe to the collar e, as shown at g, in Figs. I and II, and admitting air through the doors d or other suitable apertures near the bottom of the case B into the space between the latter and the boiler, the case B is made to operate in connection with the boiler as a heating apparatus, the hot air being discharged through the pipe g, by which it is conducted to the apartments intended to be heated. h is a circular gutter, arranged above the steam-drum around the chimney a^3, to which it is tightly secured by an angle-iron or flange, h^1. The drippings which may descend on the outside of the chimney are received by the gutter h and discharged therefrom by a waste-pipe, h^2, so as not to come in contact with the boiler or surrounding case.

I claim as my invention—

1. The combination, with a marine steam-boiler, of the metallic case B, forming a non-conducting air-space around the boiler of sufficient width to permit access for examining and repairing the boiler, substantially as hereinbefore set forth.

2. The combination, with a marine steam-boiler and surrounding metallic case, B, provided with suitable air-inlet apertures, of the hot-air conducting-pipe g, substantially as and for the purpose hereinbefore set forth.

3. The combination, with a marine steam-boiler and surrounding metallic case, B, of the metallic base-plate F f, provided with flanges f^1 and gutter f^2, substantially as and for the purpose hereinbefore set forth.

4. The combination, with the chimney of a marine steam-boiler, of the surrounding annular gutter h and discharge-pipe h^2, substantially as and for the purpose hereinbefore set forth.

JAMES W. BEACH.

Witnesses:

EDWARD WILHELM,

JOHN J. BONNER.