(No Model.)

O. KLING.

MARINE STEAM BOILER.

No. 578,753. Patented Mar. 16, 1897.

Fig. 1.

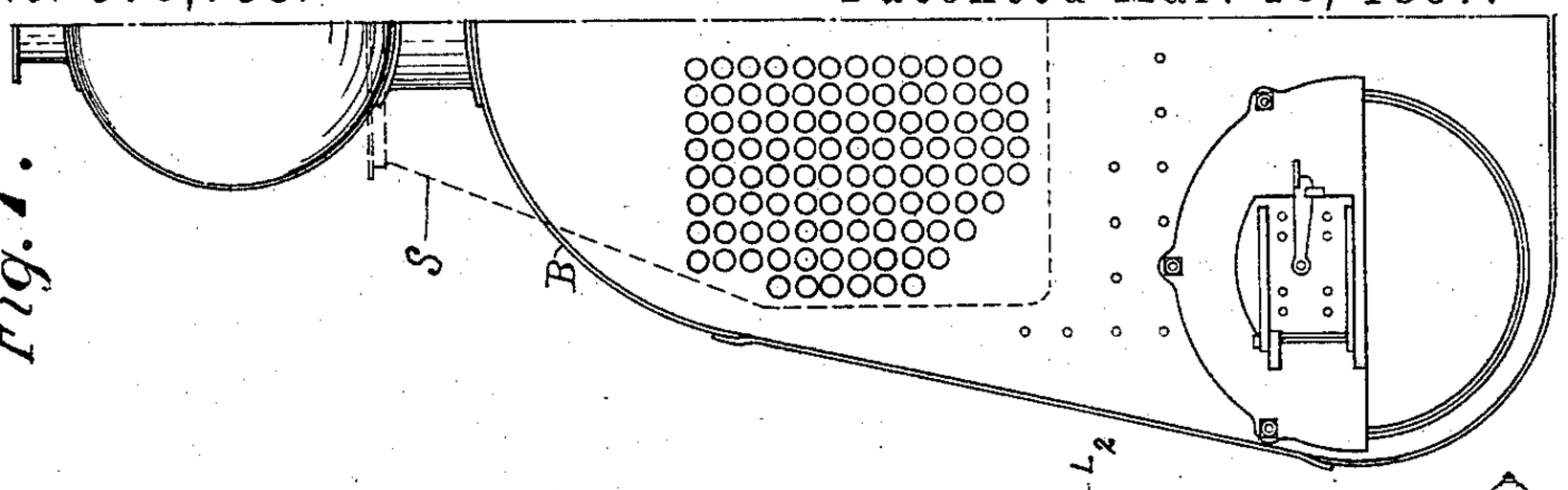

Fig. 2.

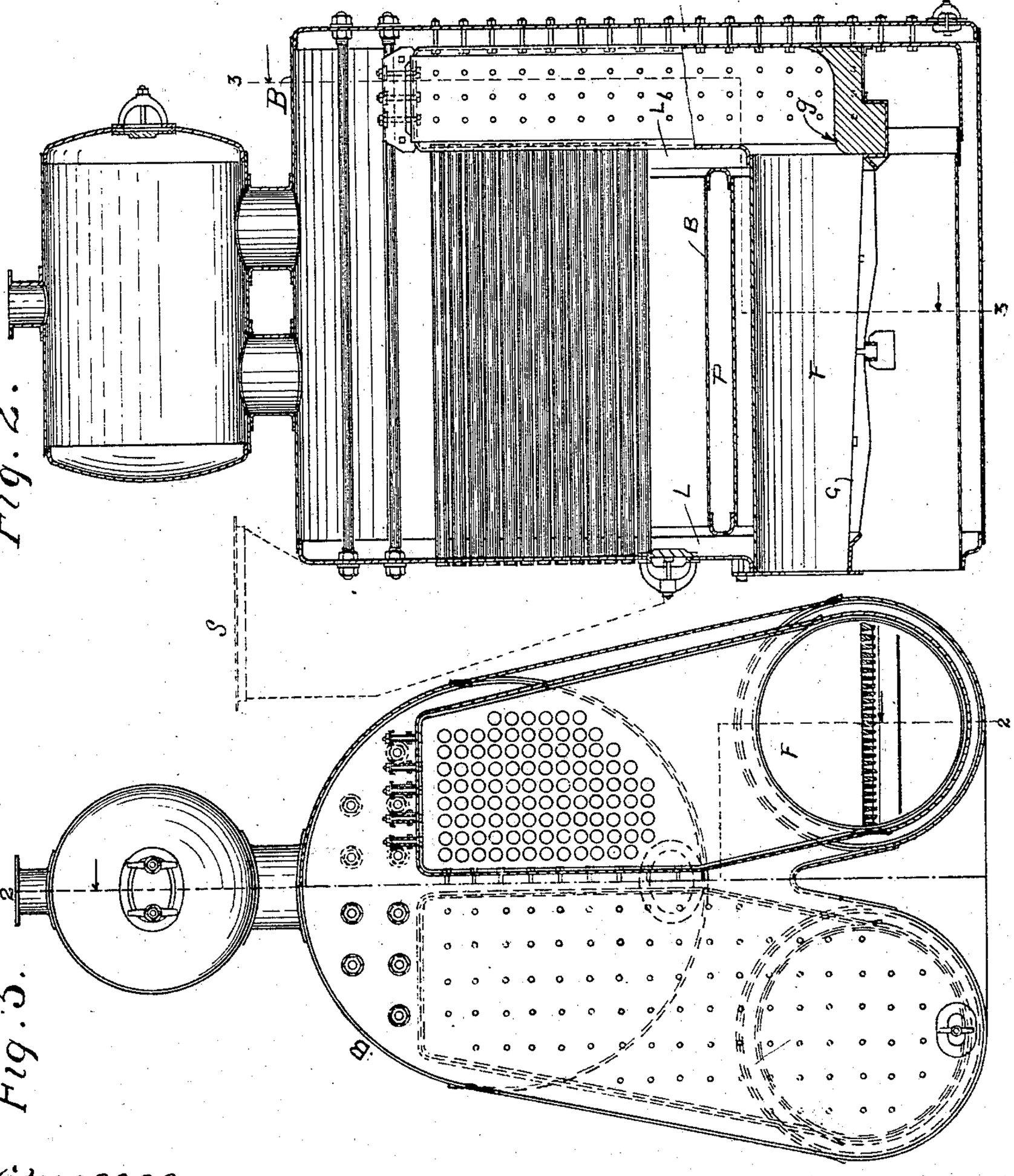

Fig. 3.

Witnesses
Frank H. Deans
L. W. Murphy.

Inventor
Olof Kling
By W. E. Williams Atty.

UNITED STATES PATENT OFFICE.

OLOF KLING, OF CHICAGO, ILLINOIS.

MARINE STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 578,753, dated March 16, 1897.

Application filed April 15, 1896. Serial No. 587,592. (No model.)

To all whom it may concern:

Be it known that I, OLOF KLING, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Marine Steam-Boilers, of which the following is a specification.

The object of my invention is to produce a boiler compact in form having the maximum heating-surface, together with a design inexpensive of construction and one that will require but little repairing; and the invention consists of the devices set forth in the claims hereof.

Reference will be had to the accompanying drawings, in which—

Figure 1 is a front elevation of the left half of the boiler. Fig. 2 is a vertical sectional longitudinal view on line 2 2 of Fig. 3. Fig. 3 is a rear elevation with one side in section on line 3 3 of Fig. 2.

In the drawings, B designates the main-flue shell of the boiler, and F F the fire-box drums.

S designates the smoke-flue. (Shown only in dotted lines in Figs. 1 and 2.)

G designates the grate-bars in the interior of the fire-box drums, at the ends of which there is a block of fire-brick *g*.

The fire-box drums F are water-jacketed at all sides, save at the furnace-door ends, and the water-legs L, L′, and L^2 connect the drums with the flue-shell B. As the water-legs L′ L^2 extend around the four sides of the flues, they may be considered as a single leg having the smoke-flues in its middle and a short distance from each of its sides. Between the water-legs, which are at the ends of the drums and main shell, the jacketed fire-box drums and the main shell are not necessarily connected in any way, although the metal sheets forming the inclined walls may, if desired, be extended the whole length of the boiler. Whether or not they be so extended, the space P between the main shell and fire-box drums may be filled with brickwork or the like.

The water-legs L, L′, and L^2, connecting the water-jackets of the fire-box drums, give the best possible circulation, and the flue-sheets at the ends of the water-legs L L′ extend straight down to the drums, which is a desirable form and inexpensive.

The flue-shell of the boiler may be made thinner than when the fire-boxes are contained within the shell, since the diameter of the shell is less, and the outside dimensions of the boiler are less for the same capacity of boiler than the marine boiler having the fire-boxes within the main shell.

What I claim is—

1. The combination with the two water-jacketed fire-box drums, of the main-flue shell located centrally above the two and at a short distance from each and provided at its ends with water-legs forming an open connection between it and the corresponding ends of the water-jackets of the drums.

2. The combination with the two water-jacketed fire-box drums, of the main-flue shell located centrally above the two at a suitable distance from each and provided at its ends with water-legs connecting it with the drum-jackets, and smoke-flues located centrally in the legs at one end of the main shell and connecting the fire-boxes with the flues of the latter.

3. The combination with the two separated fire-box drums, of the water-jackets encircling said drums, respectively, the main-flue shell located above said drums and having its end sheets extended below the corresponding ends of the drums and rigidly united to the latter to form one whole of the drums and shell, water-legs connecting corresponding ends of the three members, and sheet-metal flues extending from the rear ends of the drums upward into the main shell and receiving the ends of the flue-tubes therein.

4. In a boiler of the class described, the combination of a main-flue shell and fire-box drums independent of the flue-shell, and with water-legs connecting the fire-box drums at each end, and at a point intermediate between the ends the sheets of metal forming the flue-sheets of the main shell extending downward and forming sides of the water-legs, substantially as shown and described.

In witness whereof I have hereunto subscribed my name, on this 2d day of April, 1896, in the presence of two subscribing witnesses.

OLOF KLING.

Witnesses:

CHARLES KLING,

F. H. DEANE.