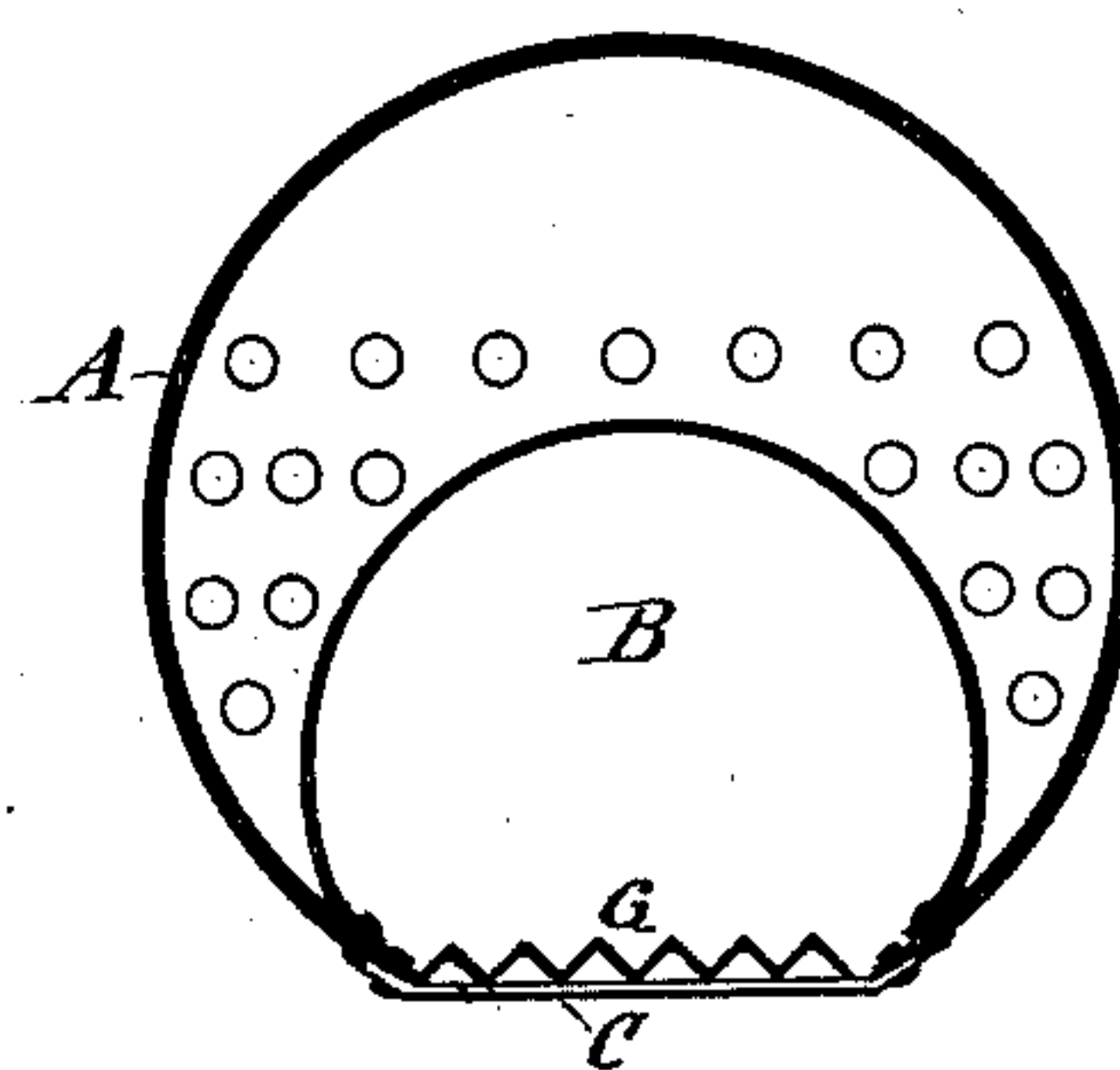
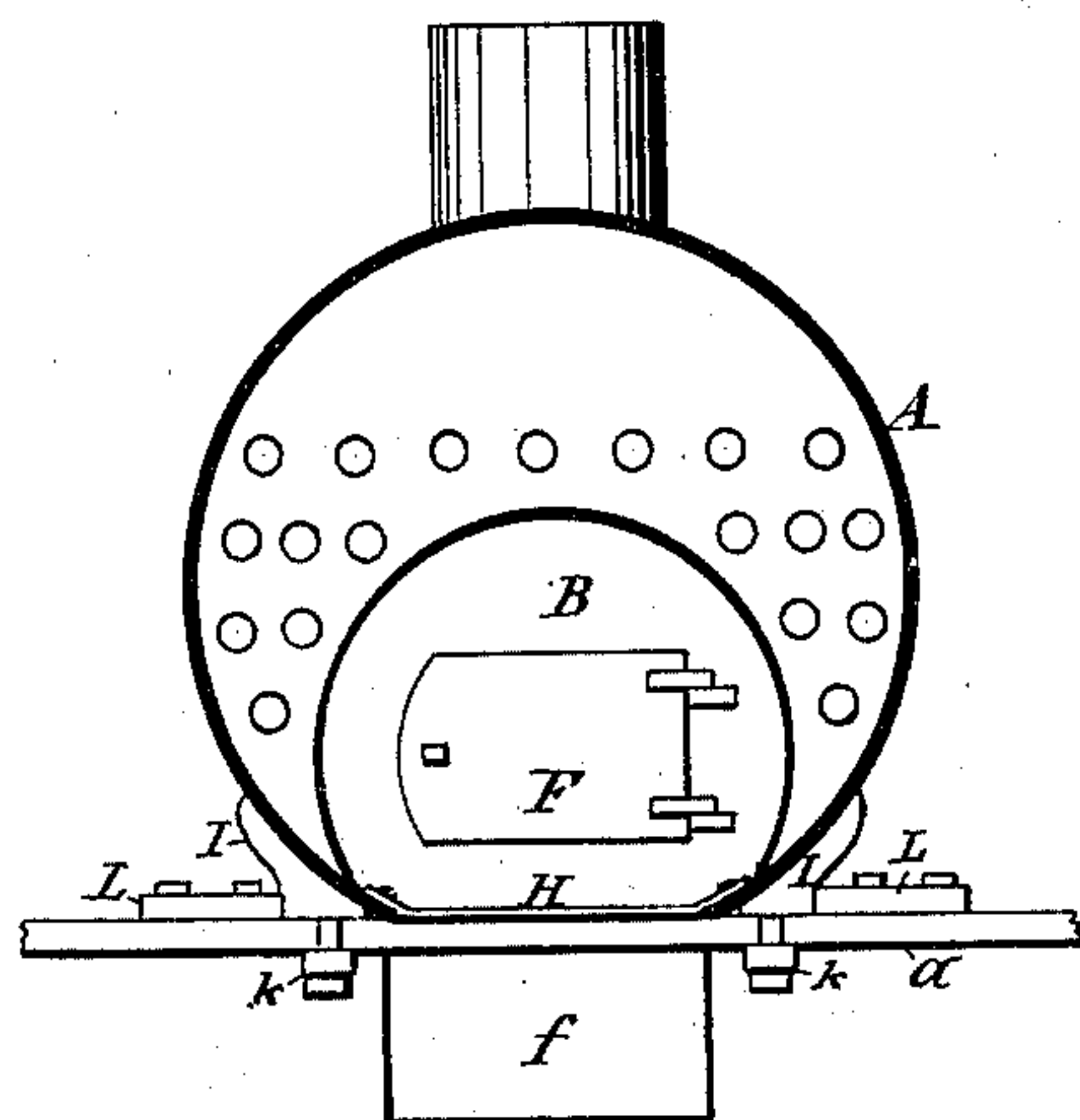
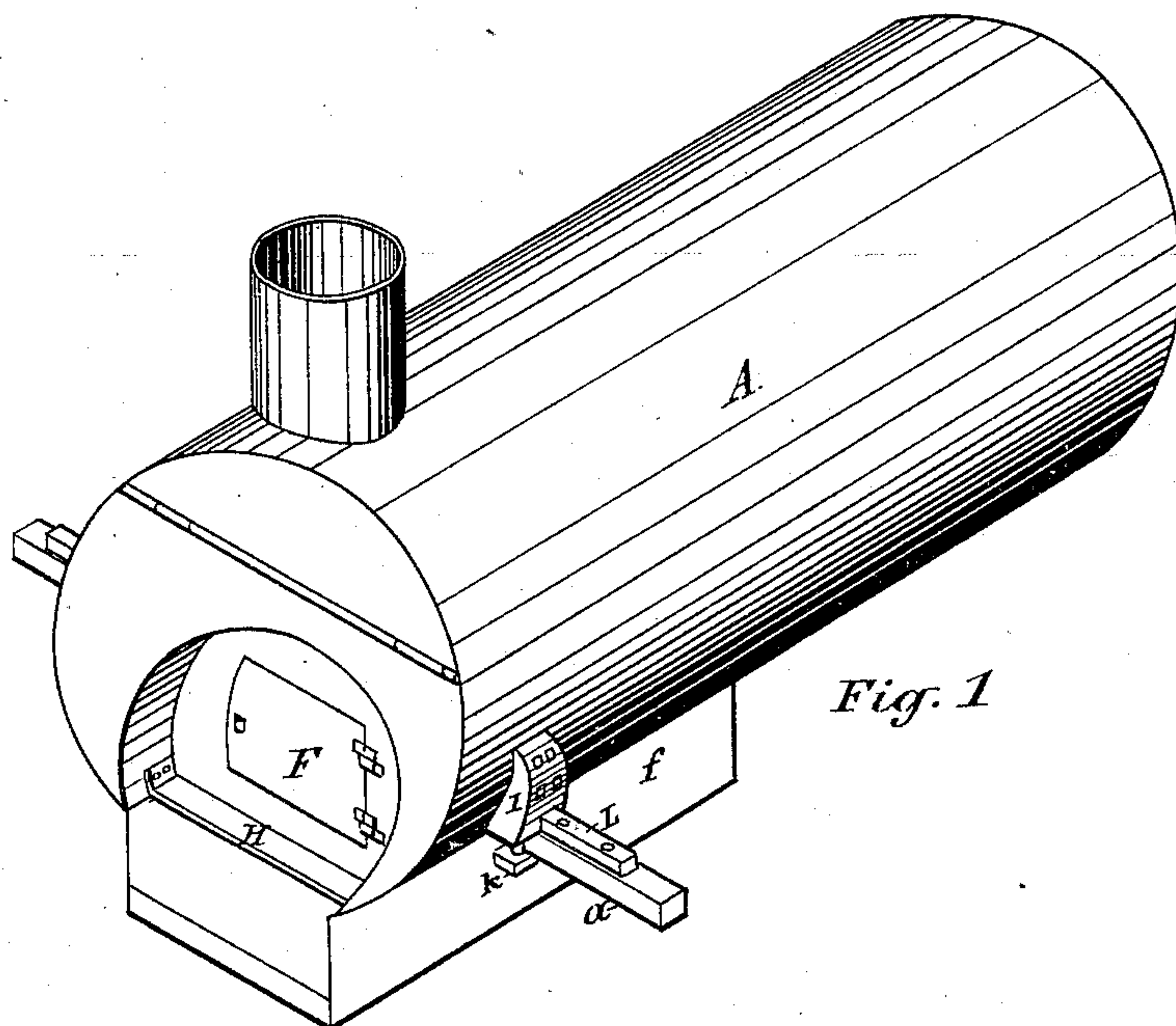


W. R. MICHENER.
PORTABLE STEAM BOILER.

No. 255,183.

Patented Mar. 21, 1882.



WITNESSES:

G. Bendixen
E. Laass

INVENTOR:

William R. Michener,
for Duell, Laess & Hay
Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM R. MICHENER, OF OSWEGO, NEW YORK.

PORTABLE STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 255,183, dated March 21, 1882.

Application filed December 4, 1879.

To all whom it may concern:

Be it known that I, WILLIAM R. MICHENER, of Oswego, in the county of Oswego, in the State of New York, have invented new and useful
5 Improvements in Portable Steam-Boilers, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to certain improve-
10 ments in the construction of the steam-boiler for which I obtained Letters Patent of the United States No. 193,378, and dated July 24, 1877. Practical tests of the said boiler have developed the fact that, owing to the peculiar
15 arrangement of the fire-box and main flue in relation to the shell of the boiler, and the connection of the former with the latter, the resultant unequal distribution of the pressure of the steam upon the shell of the boiler and the di-
20 rect exposure of the unprotected bottom portion of the latter to the action of the fire caused the said portion of the boiler-shell to be drawn out of its original curvature and assume the shape of a chord of an arc whose radius is distended
25 by the aforesaid depression in the periphery of the boiler-shell, and this action produced opening of the joint of the main tube on the boiler-shell, and consequent leakage through same. I have also discovered that the opening
30 for the reception of the grate at the front end of the boiler weakened the shell to such an extent as to require additional stays against the exterior thereof and a more thorough support on the axle. It is to obviate the injurious effects
35 of the former and to obtain the latter which my invention has for its object; and to this end my invention consists, first, in making the shell of the boiler in form of a segment of a cylinder, to the edges of which are riveted
40 respectively the edges of the segmental main flue and those of a straight plate, which latter closes the longitudinal opening in the shell of the boiler and forms the bottom of the main flue; secondly, in applying to the top surface
45 of the bottom plate of the main flue a removable plate, corrugated longitudinally and confined laterally between the sides of the said flue, which plate effectually shields the said bottom from being directly impinged by the
50 fire, and is capable of expanding and contracting without danger of becoming displaced from

its position in the flue, and at the same time is readily removed for repairs or renewal and to facilitate the cleaning of the flue; thirdly, in tying the front end of the boiler-shell by a
55 plate extended across the front of the fire-box and secured at its extremities to the bottom edges of the aforesaid shell; and, fourthly, in securing to the exterior of the boiler-shell, near the bottom thereof, saddles or cheek-
60 pieces, resting on top of the axle or shaft, and having bolts engaging a clip-bar on the under side of said axle, and stayed by a block secured on top of same, all as hereinafter more spe-
65 cifically set forth and described.

In the accompanying drawings, Figure 1 is an isometric view of my improved steam-boiler. Fig. 2 is a vertical transverse section taken im-
70 mediately in front of the smoke-stack, and Fig. 3 a vertical transverse section immedi-
75 ately back of the fire-box.

Similar letters of reference indicate corresponding parts.

The boiler proper is, as heretofore made, crescent shape in cross-section; but instead of
75 employing a complete cylinder for the main shell A, I now make it in the form of a segment of a cylinder, terminating with its longitudinal edges at or near their junction with the smaller
80 segmental shell, which is riveted thereto, as heretofore, and constitutes the main portion of the main fire-flue B and fire-box. The bottom of this crescent-shaped boiler I tie by a flat
85 plate, C, placed across the longitudinal opening of the segmental shell and riveted at its edges to those of the main shell A. The flat plate C forms the bottom of the main flue B, and being in the form of a chord of the cut-
90 away arc of the hitherto circular boiler-shell, the spreading of the boiler incident to the straightening and distention of the formerly curved plate is entirely obviated. The bottom
95 plate, C, terminates at the inner or rear end of the fire-box F and its subjacent ash-pan f, which at its upper edges is secured to the bot-
tom edges of the boiler-shell.

For the purpose of protecting the bottom of the flue B from the destructive effects of the products of combustion which pass over it, I place upon the said bottom a removable plate, 100
G, which is corrugated longitudinally or parallel with the range of said flue, and held in posi-

tion by its sides abutting against the sides of the flue. The corrugations allow the said plate to expand and contract, according to the variations of the heat it is subjected to, without danger of being thrown out of its position. When desired to be removed for the cleaning of the flue or for repairs, it is readily withdrawn through the end of the flue, and as readily replaced, either by sliding it in endwise or springing it into position.

I am aware that the interior of the combustion-chamber at the end of the boiler has been lined with cast-iron staves for protecting the shell and preventing loss of heat by radiation. Hence I do not claim broadly a shield applied to any unprotected part of a boiler.

H is a plate extended across the bottom of the boiler in front of the fire-box and attached to the two bottom edges of the boiler-shell, thereby tying that end of the said shell, so as to prevent its spreading. To further stay that part of the boiler-shell which contains the furnace and ash-pan, and to provide it with a better support on the axle or shaft which usually passes through the ash-pan, I attach to the exterior of the boiler-shell saddles or cheek-pieces I, resting on top of the axle *a*, and having pendent bolts connected to a clip-bar, *k*, on the under side of said axle. To the top of the latter are secured blocks L, which abut against the cheek-pieces I, and thus thoroughly brace the same in their position.

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

1. The improved steam-boiler herein described, consisting of the outer or main shell, A, of segmental form in cross-section, the inner segmental shell, B, of smaller diameter, united at its bottom edges with those of the main shell, and the independent flat bottom

plate, C, secured to the edges of one of the segmental shells aforesaid and constituting the bottom of the main fire-flue, substantially as described.

2. The combination, with the bottom plate, C, of the removable plate G, corrugated longitudinally and confined laterally between the sides of the flue B, substantially as described and shown.

3. The combination, with the crescent-shaped boiler and its main flue, formed of the segmental plates A and B and bottom plate, C, and having at the end the fire-grate and the subjacent ash-pan *f*, as described, of the plate H, extended across the front of the latter and attached to the bottom edges of the boiler-shell, substantially as and for the purpose set forth.

4. The combination, with the segmental boiler-shell A, of the cheek-pieces I, secured to the exterior thereof and resting on the axle *a*, and the block L, attached to the latter and abutting against the cheek-pieces aforesaid, substantially as described, for the purpose set forth.

5. The combination, with the segmental boiler-shell A, of the cheek-pieces I, secured to the exterior thereof and having pendent bolts engaging a clip-bar, *k*, on the under side of the axle *a*, and the blocks L, attached to the top of the latter, substantially in the manner described and shown, for the purpose set forth.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga and State of New York, this 17th day of November, 1879.

W. R. MICHENER.

Witnesses:

E. LAASS,

J. H. HERRMAN.