

(No Model.)

2 Sheets—Sheet 1.

A. CAMERON & H. H. SCHUMAKER.
STEAM GENERATOR.

No. 443,067.

Patented Dec. 16, 1890.

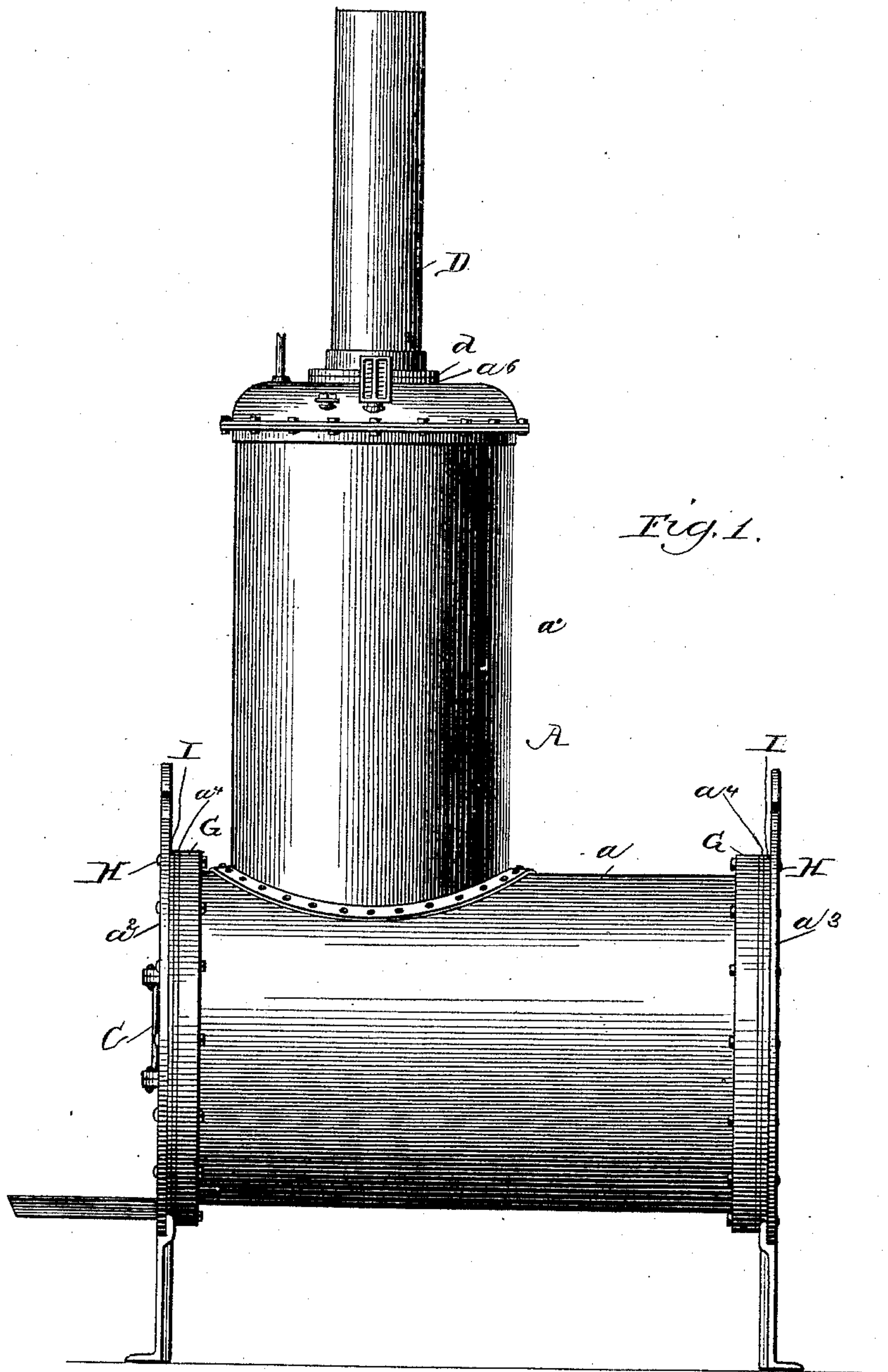


Fig. 1.

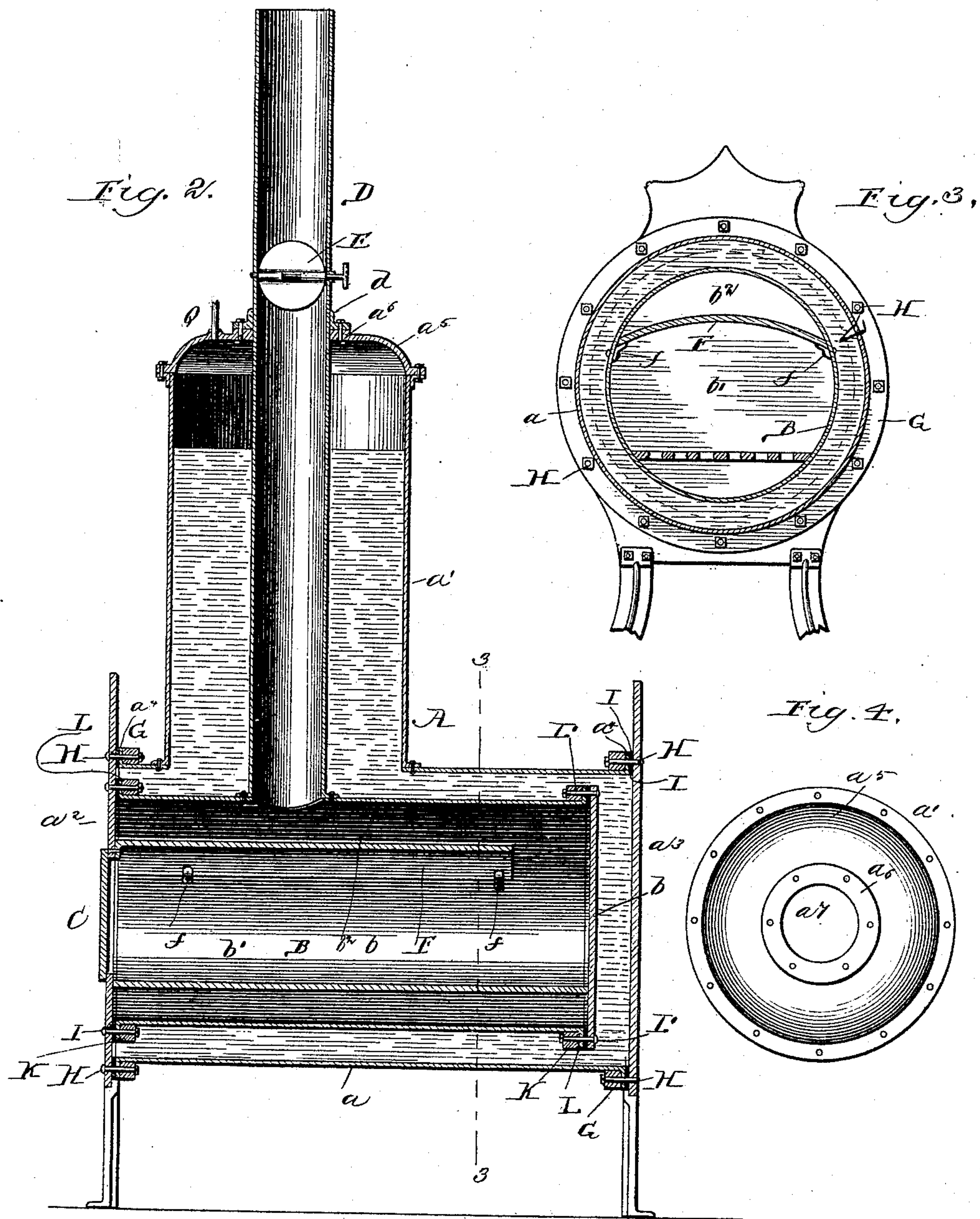
Witnesses
H. Foster
Fred. H. Mee

Inventors,
Arthur Cameron
Henry H. Schumaker
By Chas. G. Page
Their Atty.

2 Sheets—Sheet 2.

No. 443,067.

Patented Dec. 16, 1890.



Witnesses
H. Foster.
Fredk. H. Allen.

Inventors.
Arthur Cameron
Henry A. Schumaker -
By Chas. G. Page
their Atty.

UNITED STATES PATENT OFFICE.

ARTHUR CAMERON AND HENRY H. SCHUMAKER, OF CHICAGO, ILLINOIS,
ASSIGNORS TO FREDERICK C. AUSTIN, OF SAME PLACE.

STEAM-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 443,067, dated December 16, 1890.

Original application filed December 19, 1888, Serial No. 294,120. Divided and this application filed February 28, 1889. Serial No. 301,566. (No model.)

To all whom it may concern:

Be it known that we, ARTHUR CAMERON and HENRY H. SCHUMAKER, both citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Portable Steam-Generators, of which the following is a specification.

Our invention relates more particularly to portable steam-generators for generating steam to be used in cooking feed, laundry work, and for other like uses which do not necessitate a high steam-pressure, and which are of a character to render the employment of an economically-constructed portable boiler a desirable matter.

The object of our invention is to provide simple and reliable means for providing tight joints between the boiler and its end-closing plates and to likewise provide simple and reliable means for providing tight joints between the fire-chamber drum and certain plates which serve to close its ends.

To the attainment of the foregoing and other useful ends our invention consists in matters hereinafter described, and particularly pointed out in the claim.

In the accompanying drawings, Figure 1 represents in side elevation a steam-generating apparatus embodying our invention. Fig. 2 represents a central vertical section of said apparatus. Fig. 3 is a section on line 3-3, Fig. 2. Fig. 4 is a top plan view of the vertical portion of the boiler.

In said drawings, A denotes a boiler constructed with a horizontally-arranged cylindric portion a and an upright cylindric portion a' , which latter rises from and is in open communication with said lower horizontally-arranged portion. The horizontal portion a of the boiler is closed at its ends by the front and back plates a^2 and a^3 , and contains a drum B, adapted and arranged to provide within the boiler a submerged fire-chamber.

The fire-chamber drum B is suitably secured to the front plate a^2 of the boiler and closed at its rear end by a plate b . The front end of said drum is closed by the front plate a^2 , which is provided with a suitable opening

and a door C for closing the same, whereby, when so desired, ready access can be had to the fire-chamber. In addition to the support derived by its securement to the said front plate, the fire-chamber drum E can be further supported by any suitable means either between its front and rear ends, or at its rear end, if so desired.

The flue D, which connects with the fire-chamber, rises centrally within the vertical portion a' of the boiler and extends up through the closed top of said portion of the boiler. The flue serves to heat the water in the upper portion of the boiler, and the provision of a tight joint between the flue and top of the boiler assists in holding the drum B suspended within the lower portion of the boiler.

The flue D can be provided with any known or suitable valve or damper, and is herein shown provided at a point above the boiler with a simple and common form of stove-pipe damper E.

F denotes a stationary deflector, which is arranged within the fire-chamber, so as to subdivide the fire-chamber for a portion of its length into a lower portion b' , wherein the fuel is thrown and burned, and an upper horizontally-arranged passage b^2 , which extends back from the front plate a^2 of the boiler and at its rear end communicates with the lower main portion b' of the fire-chamber.

The deflector F consists of a plate, which is curved transversely to the length of the fire-chamber drum, and which to a certain extent resembles the damper shown in the Letters Patent hereinbefore referred to. In the present apparatus, however, the construction is simplified by providing the flue with any ordinary damper and adapting plate F to serve simply as a deflector or partition, which can be readily introduced and held stationary within the fire-chamber. To such end the plate F is of such width that when introduced within the upper portion of the cylindric fire-chamber drum the side edges of said plate may fit against the inner wall of said drum along horizontal lines somewhat above the longitudinal center of the fire-chamber, in

which position said plate or deflection can be held and steadied in any suitable way—as, for example, by cleats *f*, secured to the inner wall of the drum and arranged to form supports on which the side edges of the deflector can rest. Since the deflector is made somewhat shorter than the length of the fire-chamber, it can, if preferred, be also attached at its front end to the front plate *a*² of the boiler, so that accidental shifting of the deflector to the rear of the fire-chamber will be prevented.

As a simple and economical mode of securing the end plates *a*² and *a*³ to the ends of the horizontal portion of the boiler, a couple of metal rings *G* (preferably of steel) are fitted upon the cylindric drum or shell of said horizontal portion *a* and set back from the ends thereof, so as to permit a portion of each end of the cylindric shell to be turned outwardly to form an annular flange *a*⁴. The metal rings *G* are set so as to abut against the end flange *a*⁴, which latter prevent the rings from slipping off from the boiler and further provide bearings for bolts *II*, whereof a suitable number are provided for bolting the front and back plates, respectively, to the flanges at the front and rear ends of the horizontal portion of the boiler. Packing-rings *I* are arranged between the said flanges and plates, and are clamped between said members by the bolts which engage the end plates, flanges, and rings and hold said parts firmly together, as best shown in Fig. 2. In like manner metal rings *K* are to be slipped upon and somewhat back from the ends of the fire-chamber drum *B* before placing said drum within the boiler, and said ends can then be bent or turned out to provide the drum with flanges *L*, against which the rings *K* may abut. With such arrangement the rear end of the fire-chamber drum *B* is closed by bolts *L'*, arranged to pass through the end plate *b*, the flange at the rear end of the drum, a packing between said plate and flange, and the ring that is arranged on the rear end of the fire-chamber drum. In like manner the front

plate *a*² and the fire-chamber drum can be securely tied together by bolts arranged to pass through the front plate, a packing, and the flange and ring at the front end of said drum.

In constructing steam generators such as hereinbefore described we have experienced considerable difficulty in providing a tight and simple form of joint between the flue *D* and the top end of the vertical portion *a'* of the boiler, it being not a practicable matter to grind off the top end of said portion of the boiler in order to provide a smooth and true seat for a collar *d*, that is securely fitted upon the flue. In order to overcome such difficulty we form the top *a*⁵ of the upright portion *a'* of the boiler with an annular collar or raised seat *a*⁶, which said annular seat surrounds the opening *a*⁷, Fig. 4, that is provided for the flue *D*. When thus formed, the top face of the seat *a*⁶ can be ground off perfectly true and the collar *d* then bolted upon or otherwise suitably secured on said seat.

It is herein understood that any suitable or desired means can be provided for feeding the boiler or that we can employ means such as set forth in our application, Serial No. 294,120, filed December 19, 1888, of which the present application is filed as a division.

What we claim as our invention is—

The combination, with the boiler having its end portion turned outwardly to form the annular end flanges *a*⁴, of the rings *G*, fitting upon and embracing the sides of said boiler and resting against the inner sides of said flanges, annular packings *I*, held against the outer sides of the flanges, end plates of the boiler held against the packings, and tie-bolts *II*, extending through the end plates, packings, and flanges so as to clamp said parts together, substantially as described.

ARTHUR CAMERON.

HENRY H. SCHUMAKER.

Witnesses:

CHAS. G. PAGE,
ANNIE COATES.