

(No Model.)

2 Sheets—Sheet 1.

B. McCERREN.
TUBULAR BOILER.

No. 389,893.

Patented Sept. 25, 1888.

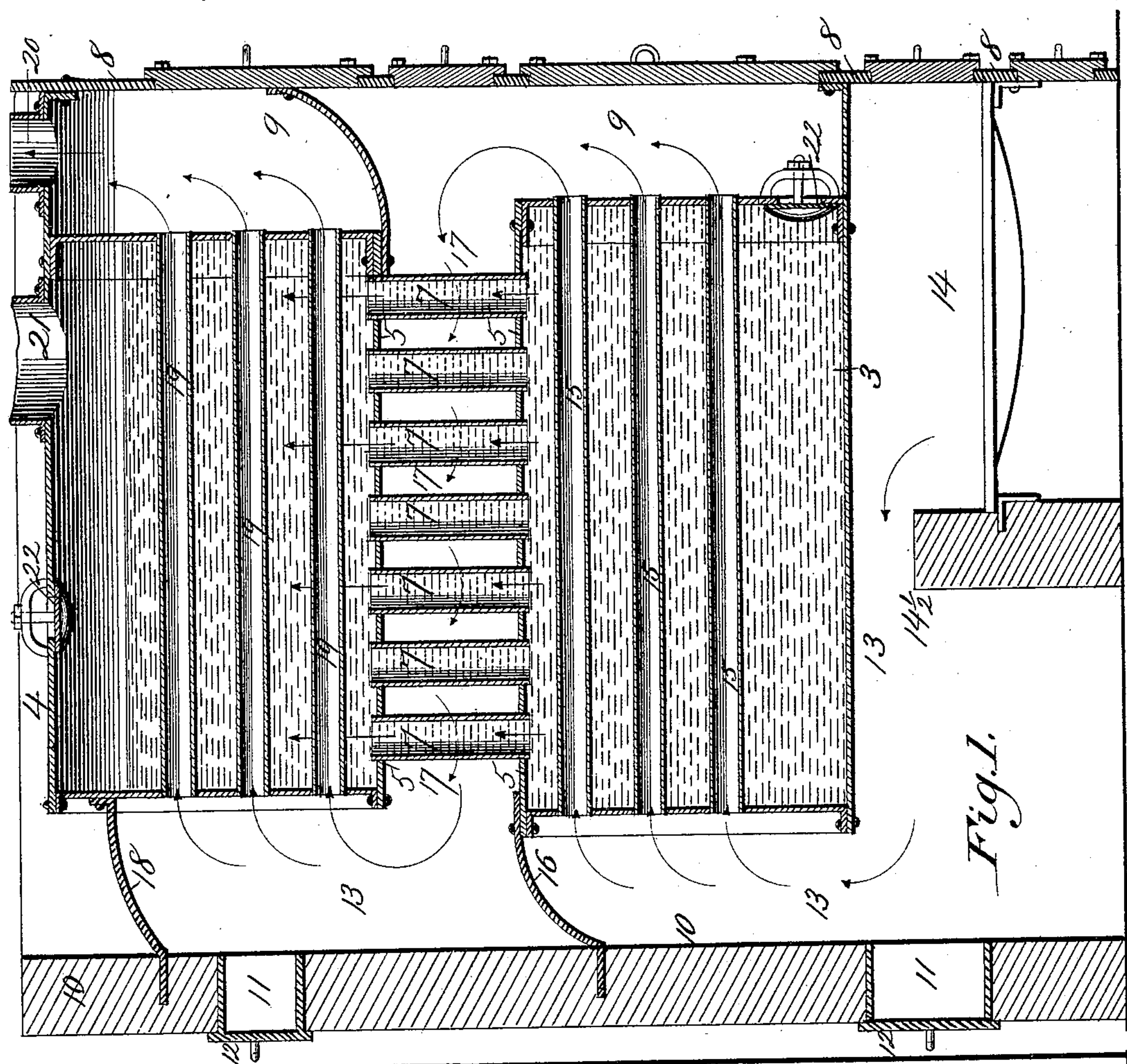
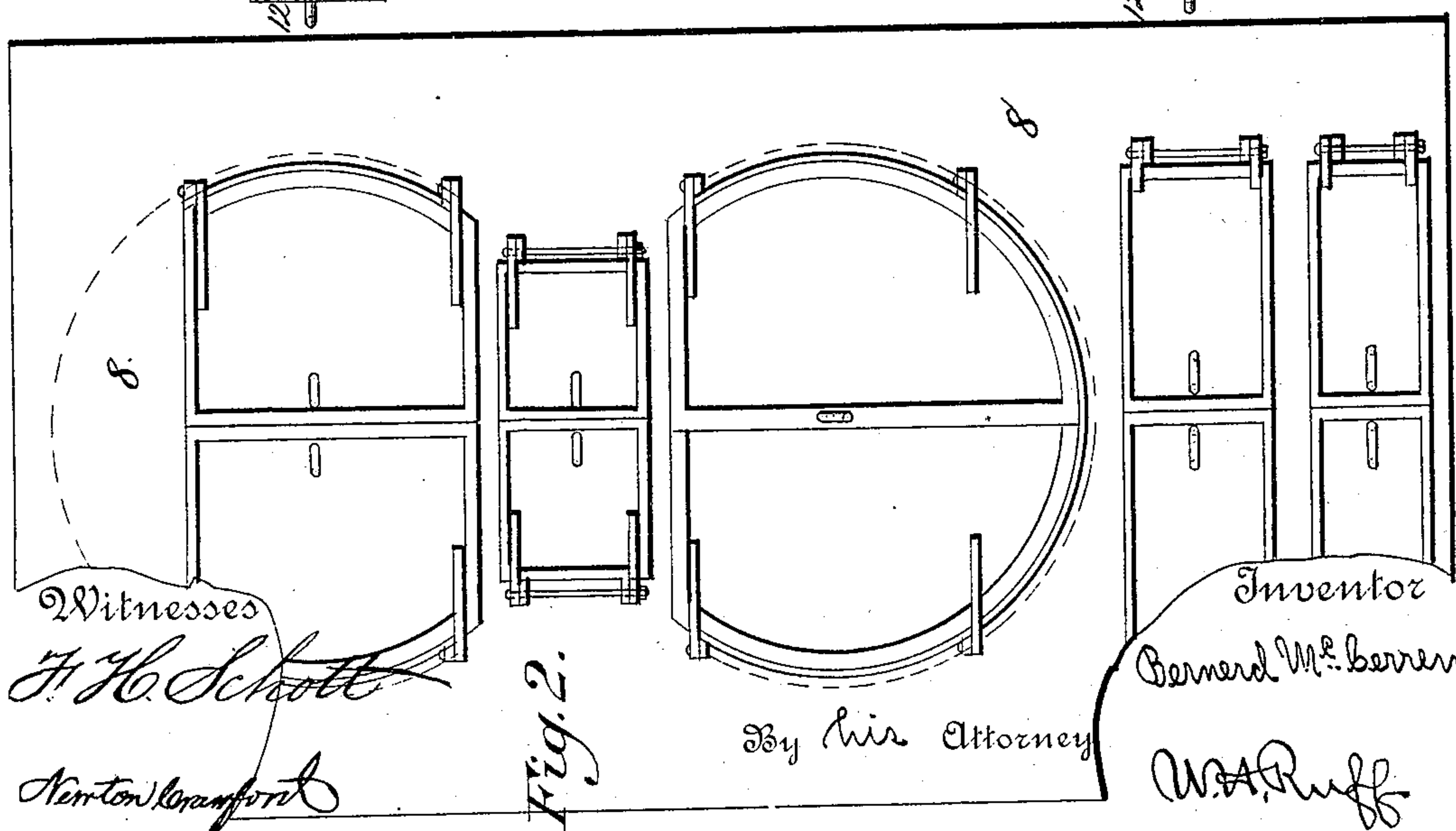


Fig. 1.



(No Model.)

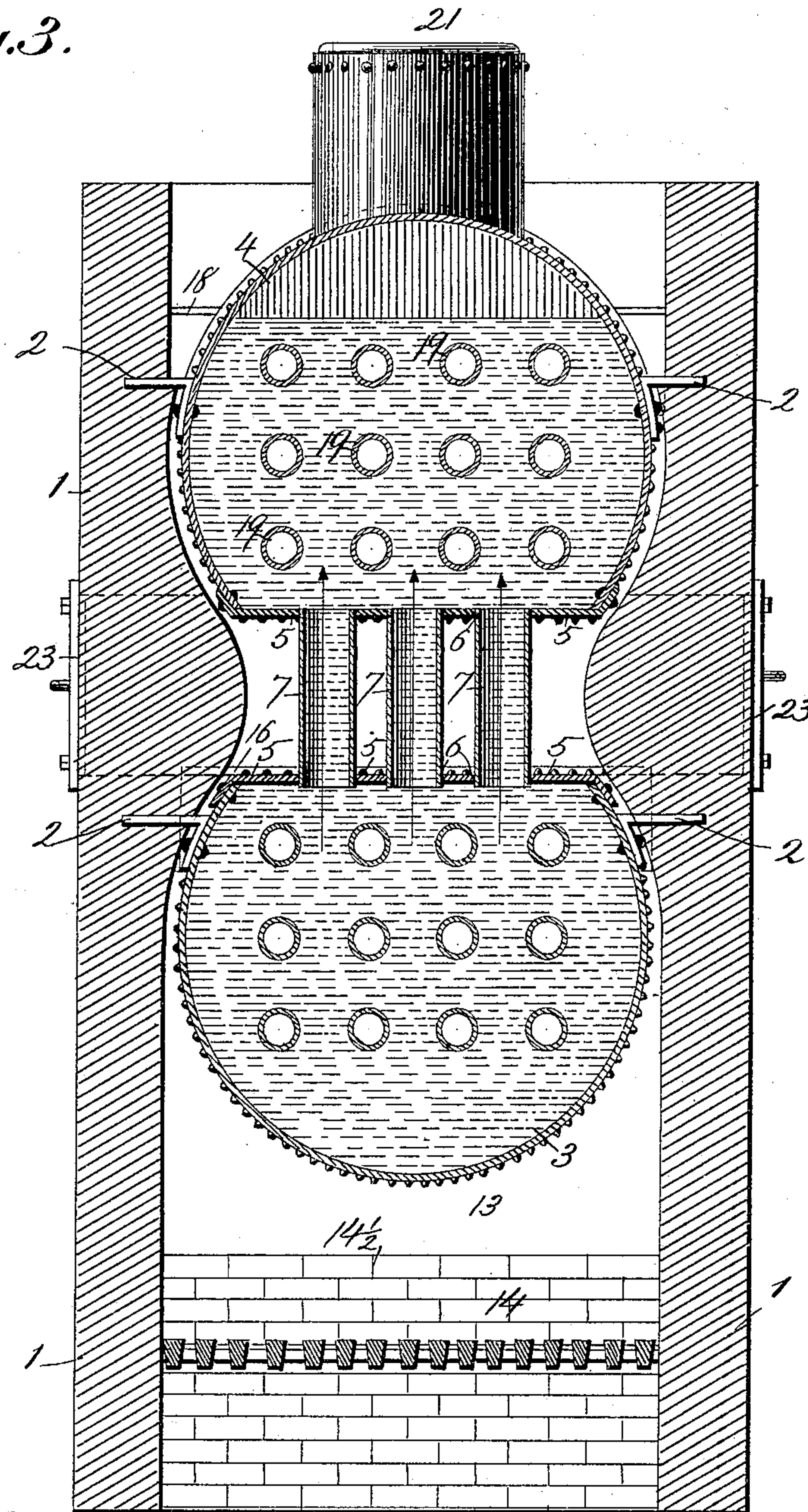
2 Sheets—Sheet 2.

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Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

BERNERD McCERREN, OF ROCKFORD, ILLINOIS.

TUBULAR BOILER.

SPECIFICATION forming part of Letters Patent No. 389,893, dated September 25, 1888.

Application filed March 9, 1888. Serial No. 266,658. (No model.)

To all whom it may concern:

Be it known that I, BERNERD McCERREN, of Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Tubular Boilers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in steam-boilers, the object of the same being to provide an improved tubular boiler in which the amount of space and material may be economized, and at the same time the amount of exposed heating-surface will be greater than in the present boilers of this class.

A further object is to provide a boiler of this character which will embody essential features in the construction thereof, whereby the same will be rendered especially strong and safe.

A further object is to so construct the boilers relative to each other that the tubes in the lower battery may be removed when occasion requires and placed in the upper boiler without damage to the tubes.

A further object is to provide a boiler embodying the above features which shall be simple and economical in construction and durable and efficient in use.

With these ends in view, my invention consists in the certain features of construction and combinations of parts, as will be hereinafter fully described, and pointed out in the claim.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of the boiler. Fig. 2 is a front end view thereof, and Fig. 3 is a cross-section.

The figure 1 represents the side walls adjoining the boilers, and in which the same are suspended by means of the arms 2, riveted to the boilers 3 and 4. The walls converge, as shown, about the pipes 7, and are provided with the man-holes 23. The boilers are formed in the arc of a circle and are cut away—the lower boiler, 3, at the upper curve and the upper boiler, 4, at the lower curve. To the boilers at the cut-away portions are secured in any suitable manner the heavy metallic plates 5, provided with a series of holes, 6, to receive the upright connecting-pipes 7, between the

two boilers. It will be observed that by providing the plates 5 the boilers are strengthened, in that the resistance is lessened in the portion of space occupied by the pipes 7.

The boilers are provided with a series of longitudinal tubes of any preferred number, the same being secured in the end shells thereof. The front frame-work, 8, is of ordinary construction, and is located at a suitable distance from the boiler to form the flue 9 for the conduct of the products of combustion. The rear frame-work, 10, is composed of brick or similar material, and is provided with the man-holes 11, having the set doors 12, the man-holes being so located as to render access to the flues 13 perfectly convenient for the purpose of cleaning the same.

The furnace 14 is beneath the front part of the boiler, and is cut off from the flues by means of the bridge-wall 14½. The fire starting at this point, the products of combustion will be drawn along the flue 13 and through the tubes 15, being deflected therein by the deflector 16. From the tubes 15 the products of combustion will continue their passage into flue 9, and thence through the passage 17, around the pipes 7, at which point, owing to the exposure of said pipes 7 and to the contraction of space due to the convergence of the walls 1 at this point, the heat is more intense than at the point immediately above the fire. The products of combustion passing through said passage are deflected from flue 13 into tubes 19 by means of the deflector 18, and thence pass up through the smoke-stack 20 into the open air.

The upper boiler, 4, is provided with the steam dome 21, of ordinary construction.

The boilers are provided with the man-holes 22, by means of which access is gained and the cleaning thereof rendered convenient. In construction the upper boiler is slightly shorter than the lower one, the object of which is to enable the tubes in said lower boiler, when removed from any cause, to be shortened and utilized in the upper boiler, thus effecting a great saving.

A boiler of this construction possesses superior strength, and, having four returns in a contracted space, will afford a great saving in fuel required to run the same.

Having fully described my invention, what I

claim as new, and desire to secure by Letters Patent, is—

In a tubular boiler, the combination, with
a lower boiler having a flat upper surface, a
5 shorter boiler having a flat lower surface lo-
cated directly over the lower boiler, a series
of tubes passing through said boilers, and a
series of upright pipes secured in the flat sur-
faces and connecting the boilers, of side walls
10 converging opposite said pipes, and flues 9

and 13, for the passage of the products of com-
bustion, substantially as shown and described.

In testimony whereof I have signed this
specification in the presence of two subscrib-
ing witnesses.

BERNERD McCERREN.

Witnesses:

W. H. RUEF,
NEWTON CRAWFORD.