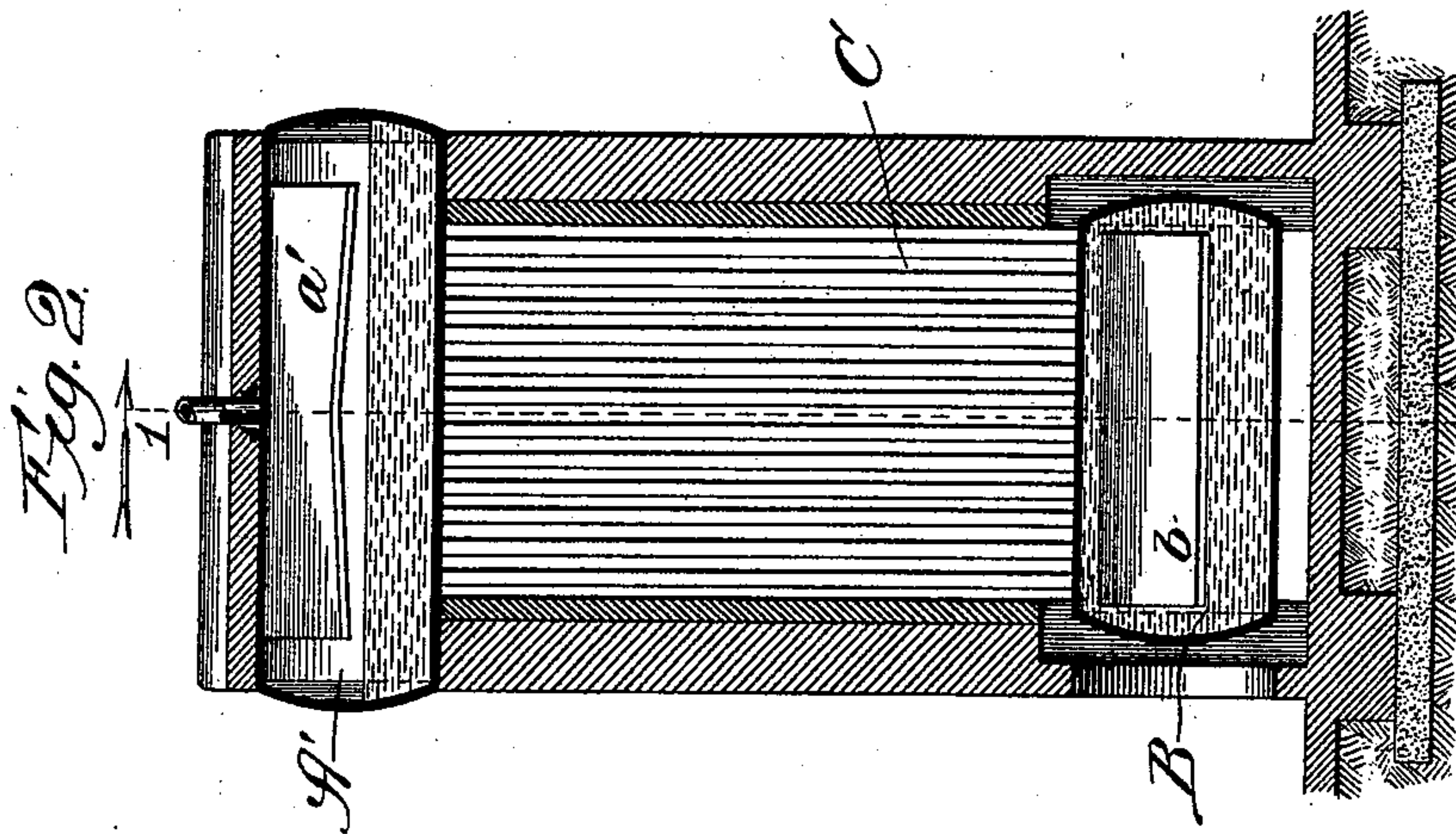
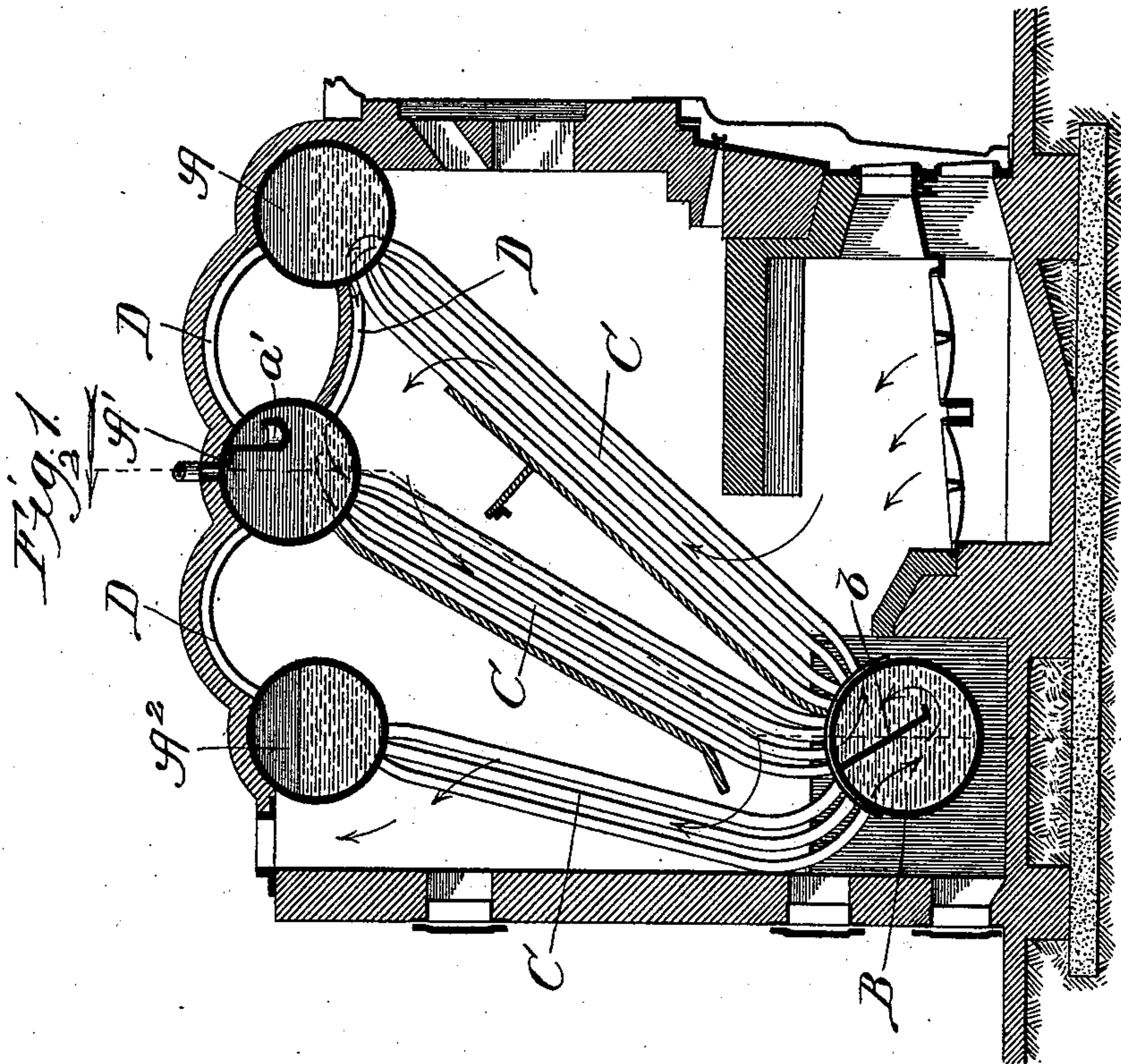


(No Model.)

H. S. PELL.  
STEAM BOILER.

No. 539,189.

Patented May 14, 1895.



Witnesses:  
Chas. E. Gaylord,  
Lute S. Allen

Inventor:  
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Attys.



# UNITED STATES PATENT OFFICE.

HARRY S. PELL, OF AKRON, OHIO, ASSIGNOR TO THE STIRLING COMPANY,  
OF CHICAGO, ILLINOIS.

## STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 539,189, dated May 14, 1895.

Application filed June 5, 1894. Serial No. 513,585. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY S. PELL, of Akron, Summit county, Ohio, have invented a new and useful Improvement in Steam-Boilers, of which the following is a specification.

The object of my invention is to improve the general type of boiler described in the Stirling patent, dated July 26, 1892, No. 479,687; and the invention consists in the features and combinations hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a sectional elevation of my improved boiler, taken on line 1 of Fig. 2; and Fig. 2, a sectional elevation taken on line 2 of Fig. 1.

A A' A<sup>2</sup> are the front, middle and rear elevated steam and water drums, and a' a drip pan in the middle drum; B, the lower mud drum, and b a deflecting plate therein; C, water tubes connecting the lower mud drum to the elevated steam and water drums, and D steam and water pipes connecting the elevated steam and water drums together.

In constructing my improved boiler, I arrange the front, middle and rear elevated drums, which for convenience I call steam and water drums; the lower drum, which for the same reason I call a mud drum, the water tubes, and steam and water pipes in the position and relation to each other usual in a Stirling boiler.

The object of my invention is to improve this type of boiler; and it consists in several features which may be used separately or together as desired.

One part of my invention provides for the use of a drip pan in the middle upper drum, the purpose or object of which is as follows: Owing to the rapid generation of steam in the front bank of tubes and front upper drum, water is sometimes thrown over through the steam pipes into the middle drum, and thence carried out with the steam. This, of course, impairs the character of the steam—wet steam being produced whenever water is thus carried over, instead of dry steam. In order to catch the water thrown over, and thus prevent its mingling with the steam, I place a suitable drip pan in the middle upper drum and under the end of the steam pipe. I prefer to form this drip pan in the form of a

trough and somewhat helical in shape, so that water may be caught therein and carried to one or both ends of the drum which enables it to pass into the tubes or pipes communicating with the mud drum.

Another part of my invention provides for the use of a deflecting plate to facilitate precipitation of sediment in the lower mud drum. I prefer to place this deflecting plate between the entrance of the tubes connecting the rear upper drum with the mud drum and the entrance of the tubes connecting the middle upper drum therewith; and to place it at an angle so as to cause the feed water to pass down into the mud drum a considerable distance before it is taken up in circulation. This arrangement affords opportunity for precipitation of sedimentary matter, and provides for arresting particles which might otherwise be carried up in the rapid circulation which takes place in the tubes and upper drums.

A third part of my invention relates to supporting the lower mud drum. Instead of supporting the mud drum by masonry, I prefer to suspend it from the elevated steam and water drums, thus supporting it and its contents by the water tubes which connect it with the steam and water drums. Of course the elevated steam and water drums, being built into the masonry, are always held in fixed position; but the lower mud drum, not being so built in but suspended as above, is left free to permit of contraction and expansion of the parts without displacing or injuring any portion of the boiler or its setting. In this way, and notwithstanding the great weight of the lower mud drum and its contents, I am able to construct a boiler having upper and lower drums and tubes or pipes connecting the same together, in which ample provision is made for the expansion and contraction of the parts.

In the drawings I have shown only one mud drum, but it will of course be understood that more than one may be used, as desired; and when more than one is used they may all be supported as above, or some of them supported in this way and others otherwise. In some cases also, it may be found advisable not to have the mud drum connected to all the elevated drums, but only to such of them as may



be necessary for its support and the proper working of the boiler.

As already suggested, my inventions may be used separately or together as desired; and  
5 as some of them—especially the drip pan and deflecting plate—are capable of being used in other forms of drums or boilers, I of course do not wish to be understood as limiting myself to their use in the particular combinations described. On the contrary, I contemplate using each of them in any positions or forms of construction in which they may be found applicable; and, generally, I contemplate changing or varying the form or construction of these features and the positions  
15 or combinations in which they are used, as circumstances may suggest or render expedient.

I claim—

1. In a water tube boiler, the combination  
20 of elevated steam and water drums, pipes con-

necting the steam and water drums, a drip pan in one of the elevated steam drums under the end of the steam pipe for separating water from steam, a lower mud drum, and tubes communicating between the elevated steam and  
25 water drums and lower mud drum, substantially as described.

2. In a water tube boiler, the combination of elevated steam and water drums communicating with each other, a lower mud drum, and  
30 tubes communicating between the elevated steam and water drums and lower mud drum and sustaining the weight of the mud drum and its contents, whereby provision is made for expansion and contraction of the drums  
35 and pipes, substantially as described.

HARRY S. PELL.

Witnesses:

R. W. HAINES,  
A. R. HENRY.