

No. 736,354.

PATENTED AUG. 18, 1903.

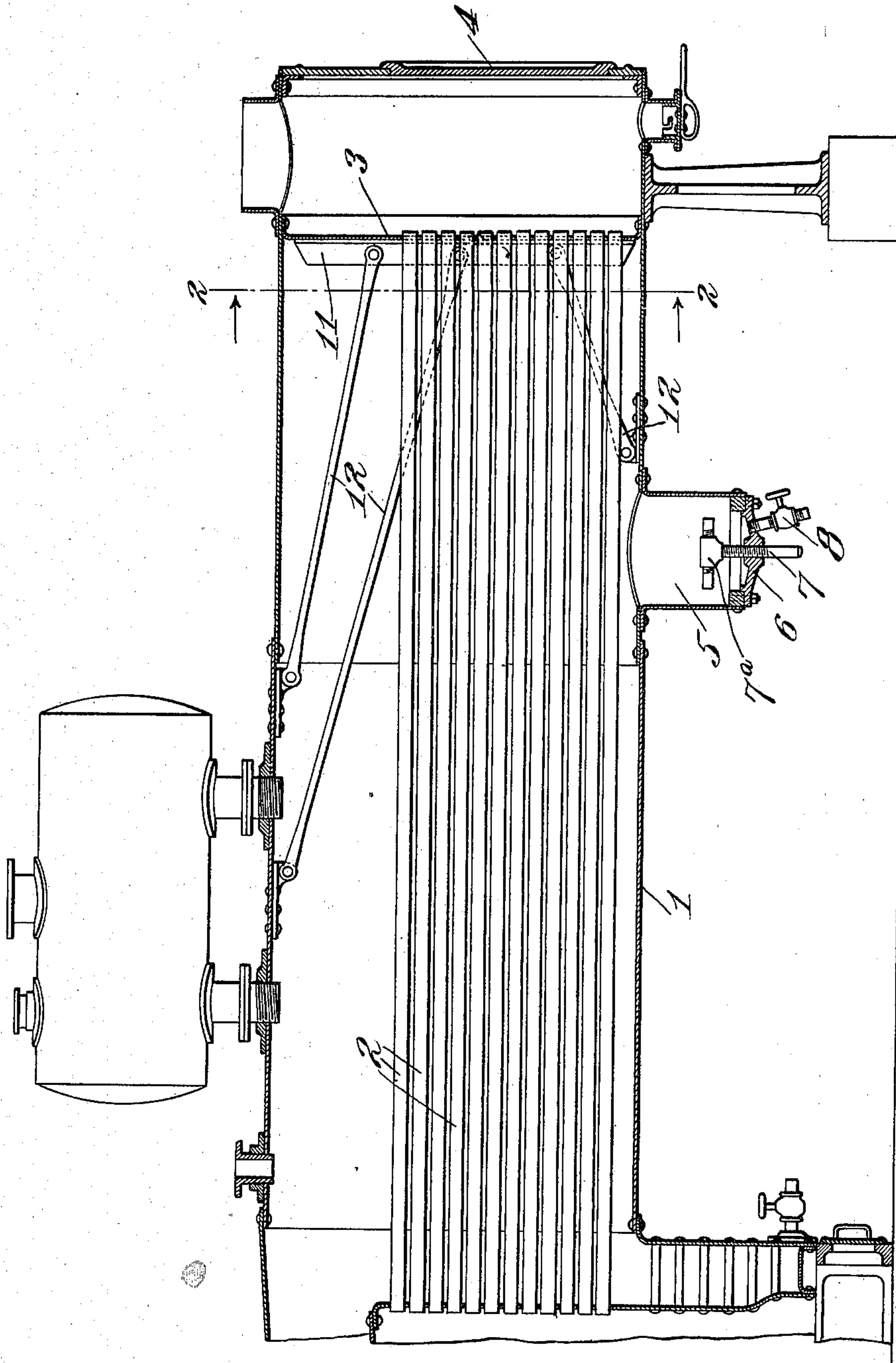
W. D. BOYCE.  
BOILER.

APPLICATION FILED MAR. 3, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

*Fig. 1.*



*Witnesses:*  
*E. A. Pennington*  
*Giles Moore*

*Inventor,*  
*William D. Boyce,*  
*by Bakewell & Cornwall*  
*Attys.*

No. 736,354.

PATENTED AUG. 18, 1903.

W. D. BOYCE.

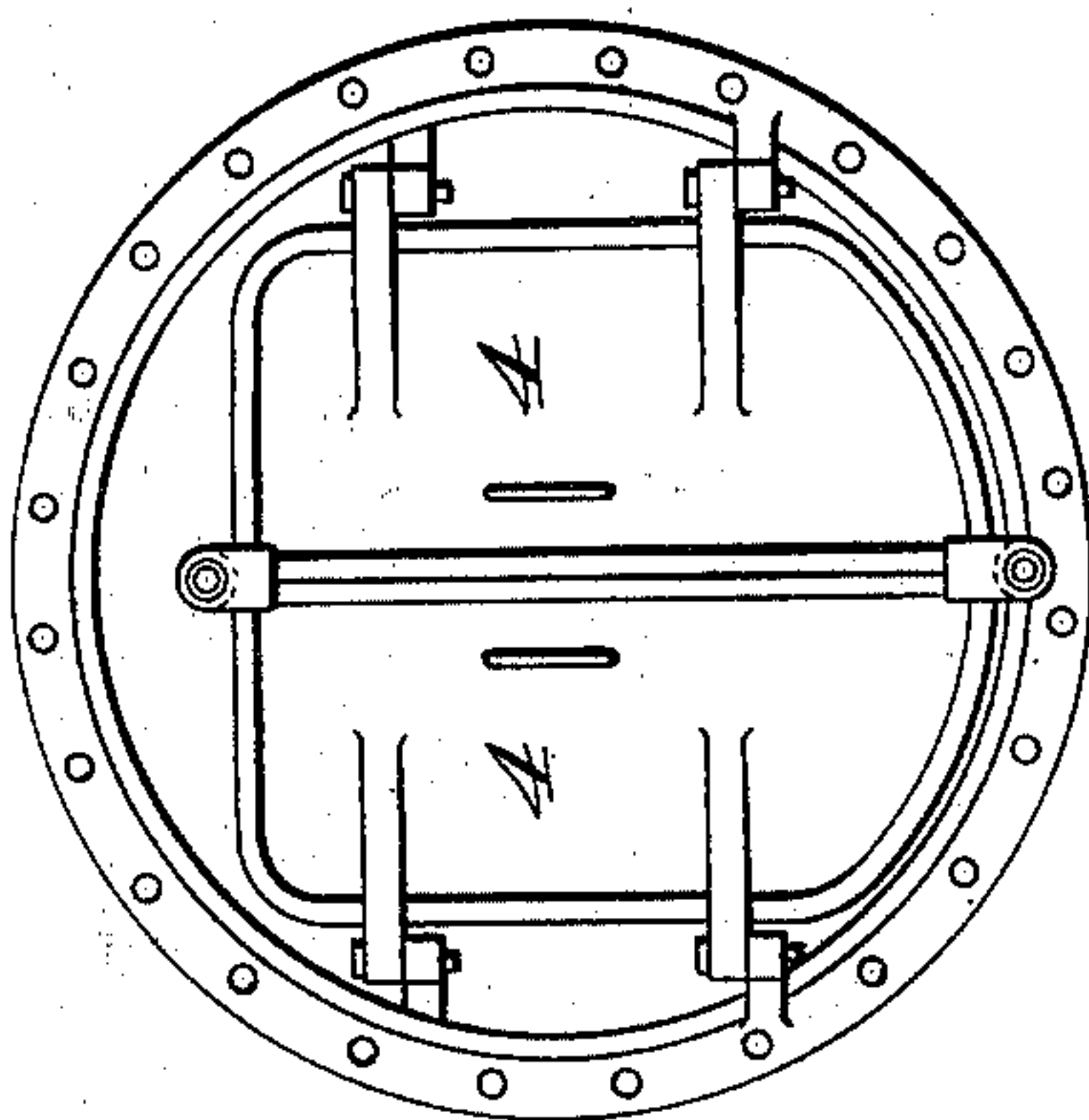
BOILER.

APPLICATION FILED MAR. 3, 1902.

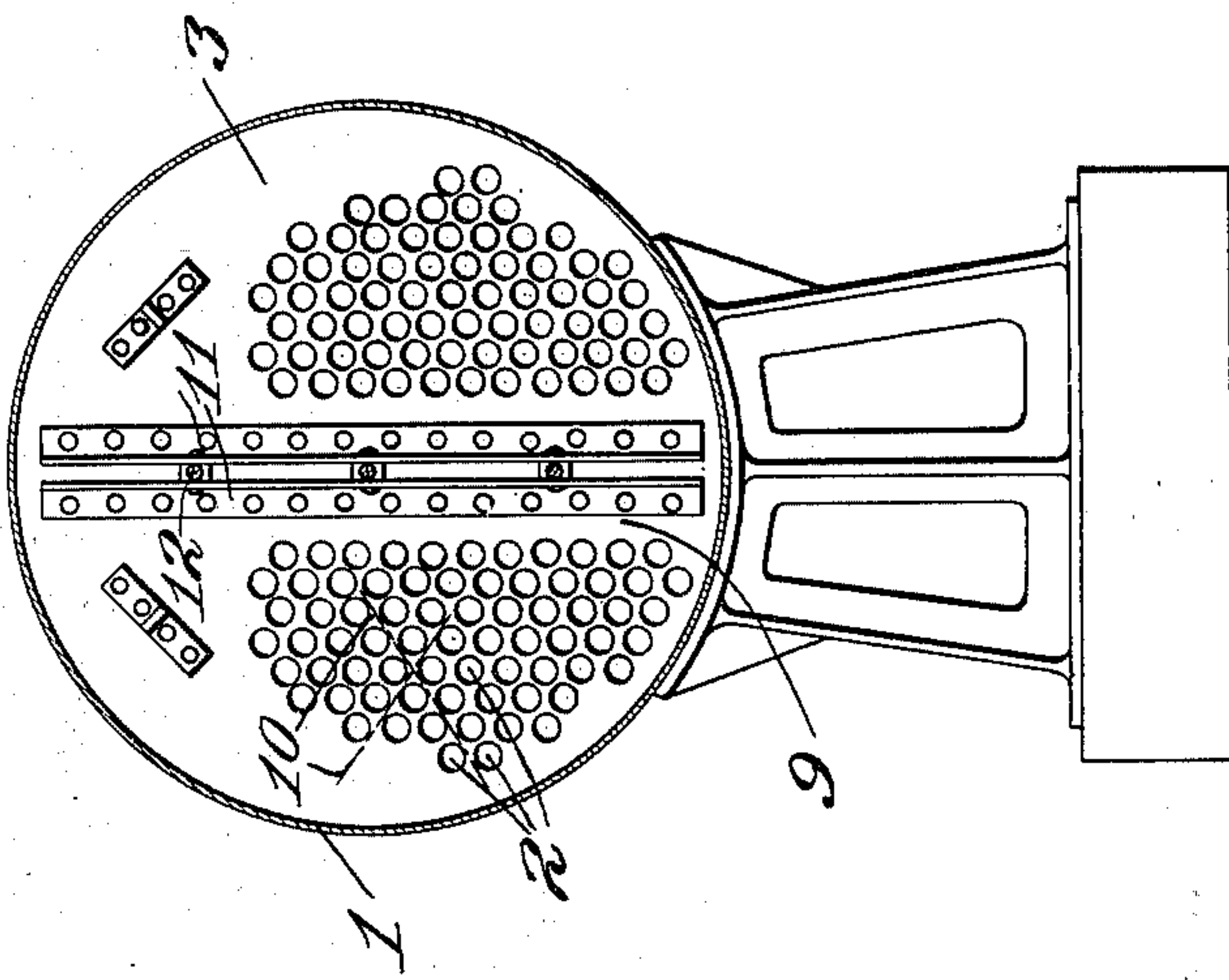
NO MODEL.

2 SHEETS—SHEET 2.

*Fig. 3.*



*Fig. 2.*



*Witnesses:*  
*G. A. Pennington*  
*Gales P. Moore*

*Inventor:*  
*William D. Boyce,*  
*by Bakewell Cornwall,*  
*Attys.*



# UNITED STATES PATENT OFFICE.

WILLIAM D. BOYCE, OF ST. LOUIS, MISSOURI.

## BOILER.

SPECIFICATION forming part of Letters Patent No. 736,354, dated August 18, 1903.

Application filed March 3, 1902. Serial No. 96,474. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM D. BOYCE, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Boilers, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal sectional elevation. Fig. 2 is a transverse elevation, partly in section, on the line 2-2 of Fig. 1; and Fig. 3 is a front elevation.

My invention relates to improvements in boilers, and more particularly to steam-boilers of the tube type, my objects being to provide a settling-chamber for catching and retaining the mud in the water, to provide for firmly securing the boiler-head in place, and to so arrange the tubes that their outer surfaces can be readily cleaned and access can be conveniently had to the interior of the boiler and the tie-rods which secure the head in place.

To these ends and also to improve generally upon devices of the character indicated my invention consists in the various matters hereinafter described and claimed.

Referring now more particularly to the drawings, 1 represents the boiler shell or casing; 2, the tubes or flues thereof; 3, the end head, and 4 doors opening into the front of the casing. Depending from the casing and communicating with the interior thereof is a settling-chamber 5, whose lower end is closed by a removable head or cover 6, said chamber forming a manhole through which access can be had to the interior of the boiler. A supply-pipe 7 extends through said head and empties into the said chamber, and said head is provided with a discharge or blow-off cock 8. Upon the inner end of the vertical supply-pipe is a T-coupling 7<sup>a</sup>, by means of which the incoming water is discharged horizontally against the inner wall of the settling-chamber. Thus the cold water is not discharged against a flue or flues, and the temperature of said flue or flues thereby reduced, and as water enters the

boiler the mud and like matter are caught and retained in the settling-chamber, which can be cleaned by means of the blow-off cock or by removing the head 6.

The tubes 2 are secured in the head 3 in the usual manner, but are arranged in sets, as shown in Fig. 2, there being a passage-way 9 between said sets and communicating with the opening into the chamber 5. This passage-way is of such size that a man can stand therein, whereby by entering the boiler through the said chamber access can be readily had to the interior and the tubes can be cleaned, the hereinafter-mentioned tie-rods can be adjusted or repaired, or there can be performed any other operation requiring the presence of a man in the boiler. Furthermore, the tubes of each set are arranged in lines with spaces between them, as indicated at 10 in Fig. 2, whereby a man standing in the space between the sets of tubes can insert a cleaning instrument between the line of tubes.

Extending vertically in the space between the said sets of tubes and secured upon the head 3 are angle-irons 11, between which are secured tie-rods 12, whose other ends are fastened to the casing in any suitable manner. Thus the spacing of the sets of tubes as described not only permits ready and convenient access to be had to the interior of the boiler, but also affords space for firmly securing tie-rods to the head 3 and makes it possible to easily reach these tie-rods for purposes of adjustment, repair, &c. The settling-chamber not only acts as such, but also forms a manhole through which access can be had to the space between the sets of tubes. Furthermore, the tubes support or strengthen the head in the usual manner, and the said angle-irons not only serve as members upon which to secure the tie-rods, but also strengthen the head over the space between said tubes.

I am aware that many minor changes in the construction, arrangement, and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.



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

5 1. In a boiler, a casing, a head, tubes upon said head and arranged in sets spaced apart, angle-irons in the space between said sets of tubes, and tie-rods supported between said angle-irons and secured to said casing; substantially as described.

10 2. In a boiler, a casing, a chamber depending therefrom and communicating therewith, said chamber forming a manhole, a removable head closing the lower end of said chamber, an inlet-pipe emptying into said chamber, and tubes in said casing and arranged in

sets with a passage-way therebetween, said passage-way communicating with said manhole; substantially as described.

3. In a boiler, a casing, a head, tubes upon said head and arranged in sets spaced apart, 20 and a strengthening member upon said head between said sets of tubes; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, 25 this 28th day of February, 1902.

WILLIAM D. BOYCE.

Witnesses:

GEORGE BAKEWELL,  
GALES P. MOORE.