

No. 639,507.

Patented Dec. 19, 1899.

H. BLESSINGER.  
WATER TUBE BOILER.

(Application filed Sept. 2, 1899.)

(No Model.)

Fig. 2.

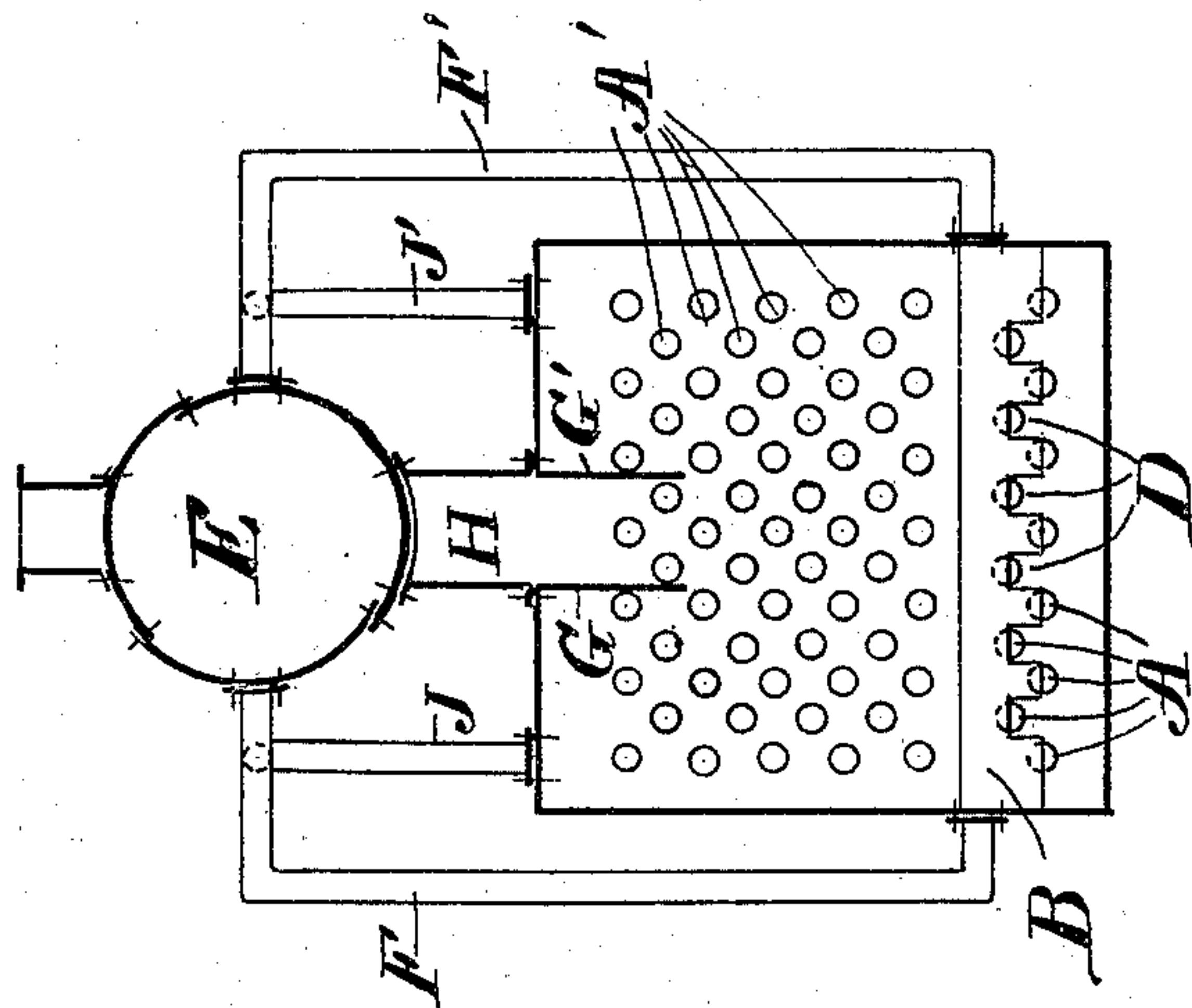
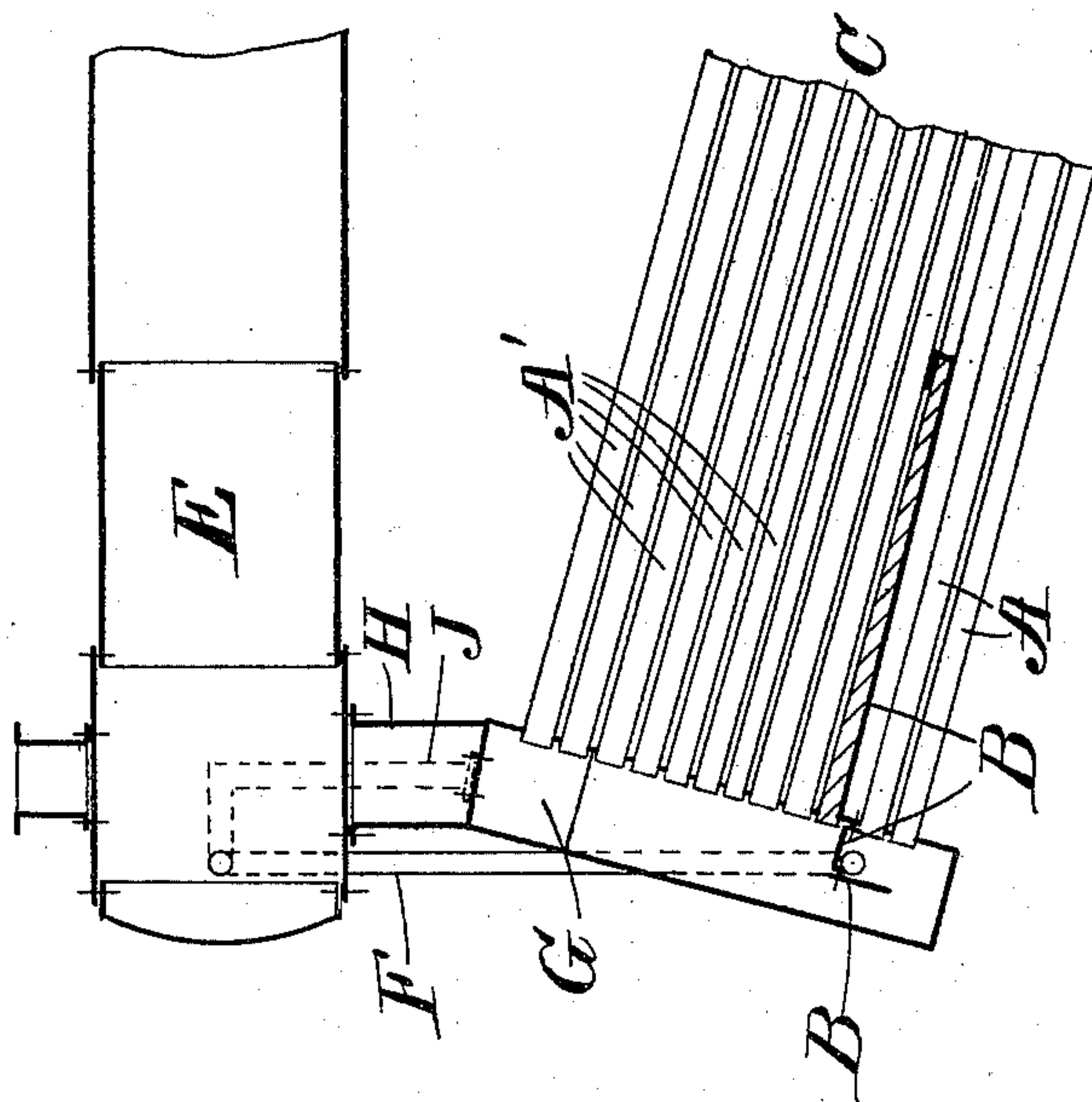


Fig. 1.



Witnesses:-

Clarence A. Bateman  
Rey C. Bowen

Inventor:-

Harman Blessinger  
By *W. H. Emerson & John*  
Attorneys.



# UNITED STATES PATENT OFFICE.

HERMANN BLESSINGER, OF MAGDEBURG, GERMANY.

## WATER-TUBE BOILER.

SPECIFICATION forming part of Letters Patent No. 639,507, dated December 19, 1899.

Application filed September 2, 1899. Serial No. 729,363. (No model.)

*To all whom it may concern:*

Be it known that I, HERMANN BLESSINGER, a subject of the Emperor of Germany and King of Prussia, and a resident of the city of Magdeburg, in the Province of Saxony and Empire of Germany, have invented certain Improvements in Water-Tube Boilers, of which the following is a specification.

My invention relates to improvements in water-tube boilers, and has for its objects the promotion of a more effectual circulation of the whole of the water in such boilers and the conveyance of the greater portion of the steam as fast as generated into the steam-drum apart from the water from which it has been formed, thereby obtaining a greater efficiency of the boilers than has hitherto been the case with those at present made and used.

It is well known with all water-tube boilers now in practical use that the steam in passing from the tubes to the water-chamber and from thence rising to the steam-drum does not have a sufficiently free passage by reason of the narrow limits that the connecting-tube between the water-chamber and the steam-drum is necessarily confined relatively to the size of the said water-chamber, the consequence being the generated steam and the circulation of the water is impeded, to obviate which is the purpose of my invention.

In order to enable my invention to be more clearly understood, I hereunto append one sheet of drawings, in which—

Figure 1 is a vertical section, partly broken away, of a water-tube boiler with my said improvements shown attached thereto, while Fig. 2 is a front sectional elevation of the same.

The essential feature of my invention is that above the two lowermost ranges of tubes A (which being exposed directly above the furnace generate by far the greater amount of steam) a suitably-disposed baffle-plate B, reaching approximately to the center of the water-chamber C, is riveted or otherwise fixed to the said water-chamber in such a manner that the mixture of water and steam upon discharge from the said tubes A impinges upon the baffle-plate B, which while allowing the water to flow freely by through apertures D, formed therein, intercepts the steam and conveys the same along its upper

surface to the steam-drum E, through the pipes or tubes F F', arranged laterally or otherwise, the water after passing the plate B being free to rise along the front surface of the water-chamber C in the usual way. As the steam in the remaining tubes A' cannot, however, be affected by the baffle-plate B by reason of their position above it, two downwardly-depending baffle-plates G G' are suitably riveted or otherwise fixed to the top of the water-chamber C and form a prolongation of the connecting-tube H, so that the steam discharged from the said tubes A' at each side of the baffle-plates G G' is thereby intercepted and conveyed separately through the tubes J J', fixed to the top of the water-chamber C and opening into the before-mentioned tubes F F' to the steam-drum E, as in the case of the steam from the tubes A, from which it will be seen that it is only the steam generated by that portion of the tubes A' which are situated immediately below the baffle-plates G G' and connecting-tube H that enters the steam-drum E through the said tube H with the circulating water; but as this is only a small fraction of the total volume of steam generated, being but one-sixth to one-eighth of same, it suffers no impeding effect, but, on the contrary, accelerates the whole circulation of the water throughout the boiler.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a water-tube boiler, the combination with a steam-drum, of an upper set of tubes; a header to which said tubes are connected; means for separating the steam generated in said upper tubes from the water; means for conveying said separated steam directly to said steam-drum; a lower set of tubes connected at one end to said header, the lower portion of said header being provided with means for separating the steam from the water; and means for conveying the steam from said tubes directly to said steam-drum, substantially as described.

2. In a water-tube boiler, the combination with a steam-drum, of an upper set of tubes below said drum connected to a header, said header being provided with steam and water connections to said drum, and a lower set of



tubes connected at one end to said header, the lower portion of said header being provided with means for separating the steam from the water and conveying the steam from  
 5 said lower tubes directly to said drum, substantially as described.

3. In a water-tube boiler, the combination with a steam-drum, of an upper set of tubes connected at one end to a header, a connection between the bottom of said drum and the  
 10 top of said header and conduits leading from the side of said drum to the top of said header, baffle-plates extending across said header below said connection, and a lower set of tubes  
 15 having steam and water connections to said drum, substantially as described.

4. In a water-tube boiler, the combination with a steam-drum, of an upper set of tubes connected at one end to a header said header  
 20 having separate steam and water connections to said drum, and a lower set of tubes connected to said header, and baffle-plates running longitudinally of the lower portion of  
 25 said header and inclosing the space around the ends of said lower set of tubes, and having steam-pipes for conducting the steam

from beneath said baffle-plates to said steam-drum, said baffle-plates having apertures for the escape of the heated water, substantially as described.

5. In a water-tube boiler, the combination with a steam-drum, of an upper set of tubes connected at one end to a header, a connection between the bottom of said drum and said  
 35 header, and conduits leading from the side of said drum to the top of said header, baffle-plates extending transversely across said header below said connection, a lower set of  
 40 tubes connected to said header, and baffle-plates running longitudinally of the lower portion of said header partially inclosing the space around the ends of said lower set of  
 45 tubes, and conduits for conducting the steam from beneath said baffle-plates to said steam-drum, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HERMANN BLESSINGER.

Witnesses:

F. T. STEPHAN,  
 PAUL MÜLLER.