

(No Model.)

2 Sheets—Sheet 1.

C. FINGER.  
STEAM BOILER.

No. 528,086.

Patented Oct. 23, 1894.

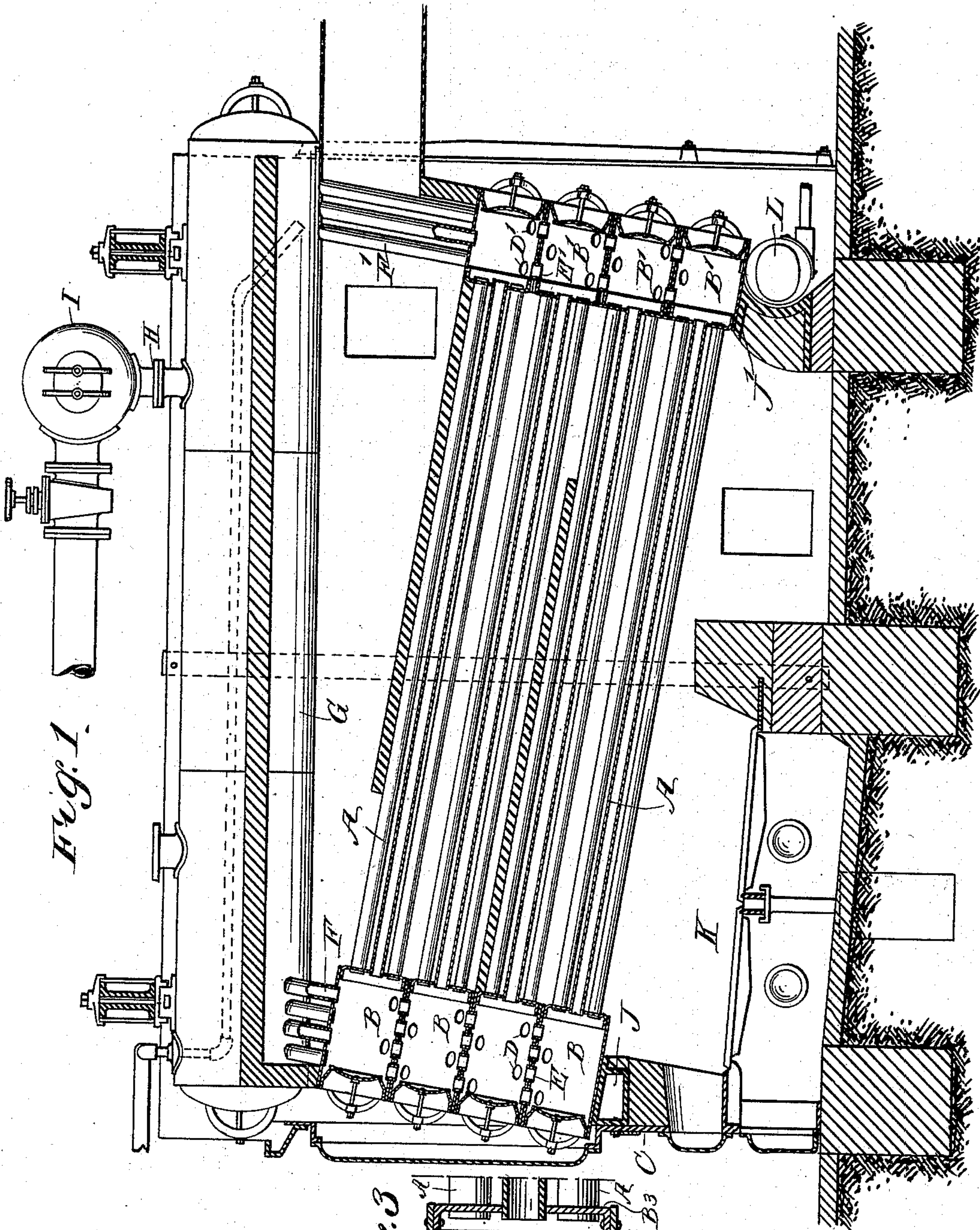


Fig. 1.

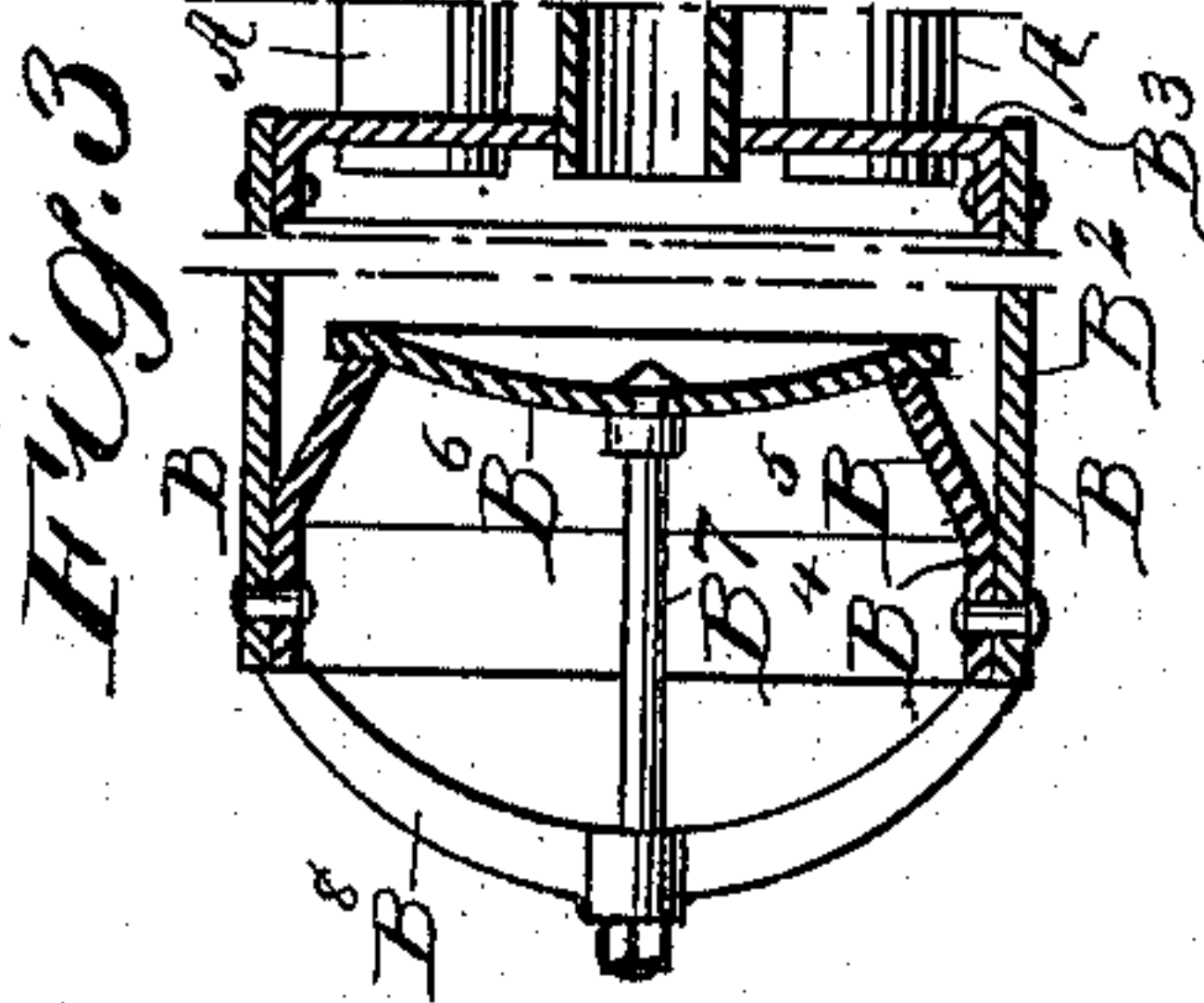


Fig. 3.

WITNESSES:  
*John Beeghly*  
*C. Sedgwick*

INVENTOR  
*C. Finger*  
BY *Kum & Co*  
ATTORNEYS.



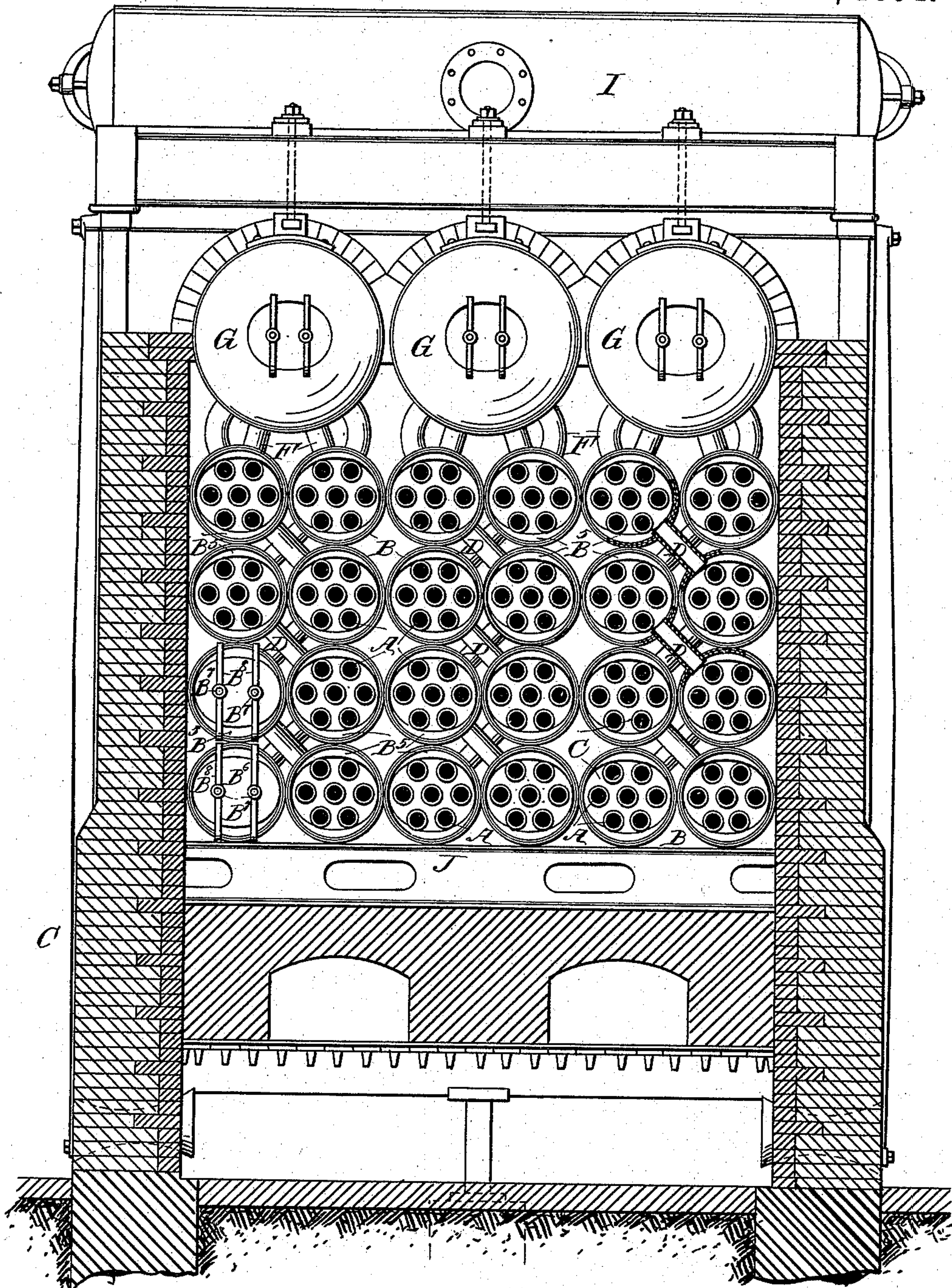
(No Model.)

2 Sheets—Sheet 2.

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No. 528,086.

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WITNESSES:

John B. Berghman  
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Fig. 2

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# UNITED STATES PATENT OFFICE.

CARL FINGER, OF WILKES-BARRÉ, PENNSYLVANIA.

## STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 528,086, dated October 23, 1894.

Application filed December 11, 1893. Serial No. 493,347. (No model.)

*To all whom it may concern:*

Be it known that I, CARL FINGER, of Wilkes-Barré, in the county of Luzerne and State of Pennsylvania, have invented a new and Improved Steam-Boiler, of which the following is a full, clear, and exact description.

The invention relates to sectional tubular boilers, and its object is to provide a new and improved boiler which is comparatively simple and durable in construction, is constructed entirely of wrought iron, dispensing with all stay bolts, and is arranged for conveniently cleaning the several parts or repairing the individual water tubes whenever necessary.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement. Fig. 2 is an enlarged transverse section of the same with parts in elevation; and Fig. 3 is an enlarged sectional side elevation of one of the heads.

The improved steam boiler is provided with sets of longitudinally extending and inclined water tubes A, each set being connected at its upper end with a head B, and at its lower end with a head B', arranged in the front and rear ends of the brick-work C supporting the boiler.

The heads B and B' are arranged in pairs, as is plainly indicated in Fig. 2, one pair being located above the other and connected with each other by cross pipes D, and short pipes E at their contacting rims. Any desired number of such sets of pairs of heads may be arranged alongside of each other, as will be readily understood by reference to Fig. 2, in which three sets of such pairs of heads are located alongside of each other. The uppermost pair of heads B or B' is connected by pipes F or F' respectively, or with suitably shaped saddles or branches with the longitudinally extending steam drum G provided with an upwardly extending pipe H supporting a superheated steam drum I, from which

the steam to be used in the engine or other device, is taken. It will be understood that there is a separate steam drum for each set of pairs of heads, as will be seen in Fig. 2.

The lowermost row of heads B or B' is supported on transversely extending beams J or J' respectively, built in the brick-work, as is plainly shown in Figs. 1 and 2. In the brick-work is arranged the usual fire box K, extending under the uppermost ends of the sets of water tubes A and part of the heads B, as will be readily understood by reference to Fig. 1.

Each head B or B' is made circular in shape, and is provided with a circular rim B<sup>2</sup> carrying at its inner end a sheet B<sup>3</sup>, in which extend the ends of the tubes A of the set belonging to the corresponding head, as shown in Fig. 3. The front end of each rim B<sup>2</sup> is provided with a ring B<sup>4</sup> riveted to the inside of the said rim and formed with an inwardly extending flange B<sup>5</sup> made oblong so as to form a seat for the man-hole cover B<sup>6</sup> preferably curved and seated on the inner edge of the flange B<sup>5</sup>. Each man-hole cover B<sup>6</sup> carries one or more bolts B<sup>7</sup> extending outward and held in the usual bridge piece B<sup>8</sup> seated against the outer end of the rim B<sup>2</sup>. It will be seen that by this arrangement the man-hole B<sup>6</sup> can be readily removed from its seat on the flange B<sup>5</sup>, so as to give access to the several tubes entering this head, to permit of expanding the tubes or otherwise repairing the same in case of injury. It will be seen that by this construction no stays whatever are necessary for the heads B or B', so that the entire boiler can be constructed from wrought iron, thus rendering the boiler stronger and at the same time permitting of generating steam to a correspondingly higher pressure.

The lowermost row of heads B' is connected with the usual mud drum L in which the sediment contained in the water can readily accumulate.

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

1. A boiler comprising water tubes arranged in sets, round heads connected to the

front and rear ends respectively, of the sets of water tubes, said round heads being arranged in sets of pairs, a steam drum connected to each set of pairs of heads, and diagonal cross pipes connected to adjacent heads 5 belonging to the same set of pairs, so that water and steam can pass from one round head to that located laterally above and connected to the same steam drum, substantially 10 as described.

2. A steam boiler provided with a head comprising a circular rim, a sheet secured to the inner end of the said rim and carrying

the water tubes, a ring secured to the outer end of the said rim and formed with an inwardly extending oblong flange, a man-hole 15 cover adapted to be seated on the inner edge of the said flange, rods carrying the said cover, and bridges carrying the said rods and adapted to rest on the outer end of the said 20 rim, substantially as shown and described.

CARL FINGER.

Witnesses:

CHAS. AHLBORN,  
GEORGE KRAFT.