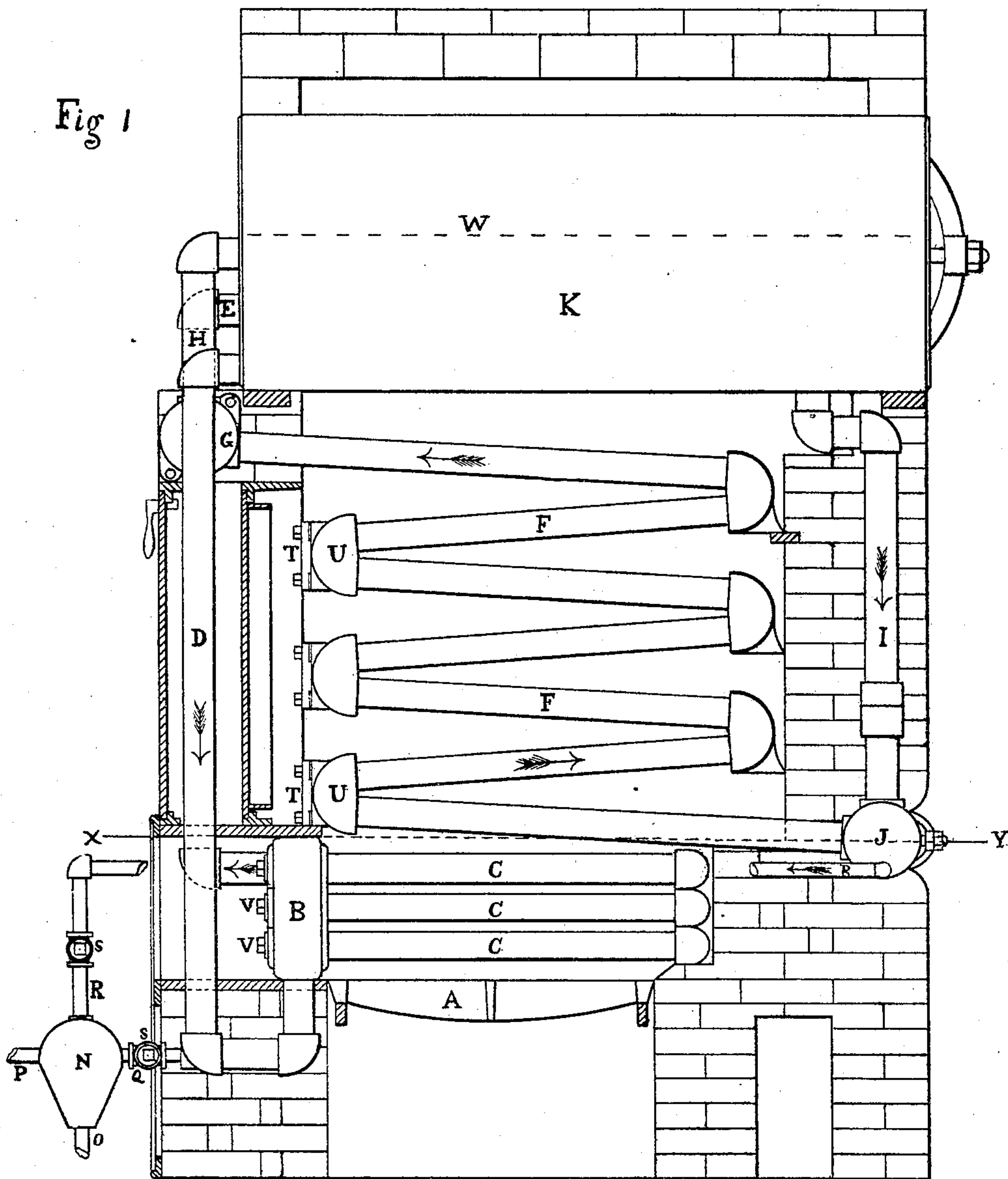


J. D. LYNDE.

Sectional Steam Generators.

No. 145,743.

Patented Dec. 23, 1873.



Witnesses,  
*Mrs Musgrave*  
*John H Sebold*

Inventor,  
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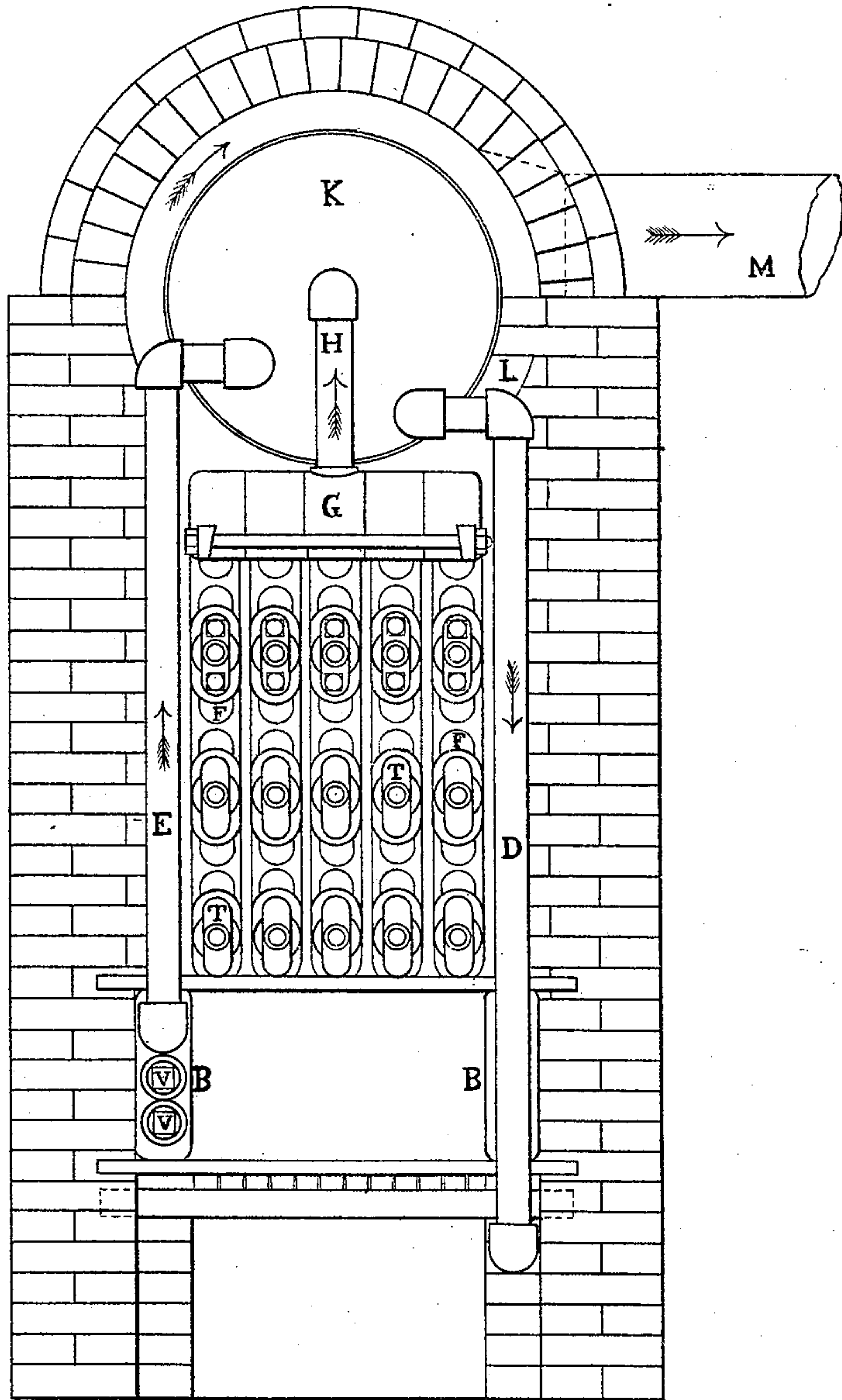
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Fig 2, .



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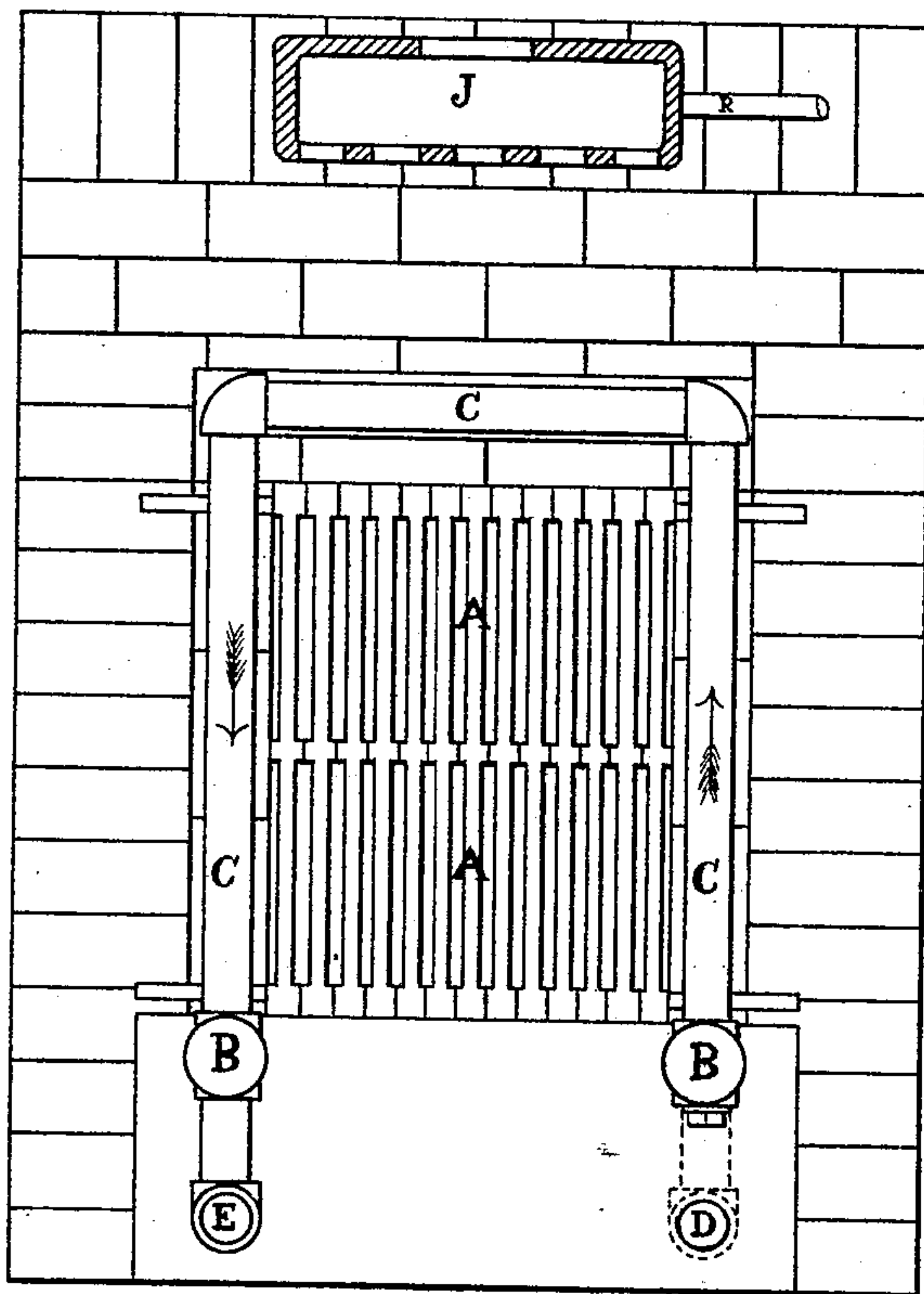
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Fig 3,



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# UNITED STATES PATENT OFFICE.

JOHN D. LYNDE, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN SECTIONAL STEAM-GENERATORS.

Specification forming part of Letters Patent No. **145,743**, dated December 23, 1873; application filed September 4, 1873.

*To all whom it may concern:*

Be it known that I, JOHN D. LYNDE, of Philadelphia, State of Pennsylvania, have invented new and useful Improvements in Steam-Generators; and I do hereby declare that the following is a full and exact description of the construction and operation of the same, reference being had to the annexed drawings forming part thereof.

The object of this invention is to construct a steam-generator that will have most rapid circulation through all its parts, large comparative heating-surface, freedom of expansion and contraction, safety from explosion, and a provision for depositing the sediment existing in the water, where it can readily be blown out; also preventing the usual destruction of the sides of the furnace by burning.

Referring to the drawings, Figure 1 is a side elevation. Fig. 2 is a front elevation with doors and plates left off. Fig. 3 is a cross-section through the line *x y*, giving a top view of the furnace.

A A are the grate-bars. B B' are manifolds, to which are joined the pipes C C C, inclosing the sides and back of the furnace. The advantage of this arrangement is, that the heat that usually impinges against and burns into the side walls now strikes the pipes C, and is utilized in making steam, and the walls are safe, not needing fire-bricks in their construction. Water is supplied to these pipes from steam-cylinder K through pipe D, and the steam and attenuated water are constantly rushing up into K through pipe E. The heat, in rising, passes among the series of pipes F F, causing the water to rush up, as indicated by the arrows, through the manifold G and pipe H, into cylinder K, W showing the proper water-line. Water is constantly supplied to pipes F F from cylinder K through pipe I and manifold J. The heat then impinges on the bottom of cylinder K, and, being stopped off at L, it passes around and over the top of the cylinder, thus in a measure superheating the steam, which is drawn from the cylinder at

one end through a perforated dry pipe. Thus is secured exceedingly rapid circulation, causing continual change of water in all parts of the generator.

It is found that in a rapidly circulating boiler the sediment seeks and is deposited in the quietest place at the bottom of generator. To provide such a place from which the deposit could be readily removed, the receiver N is placed so as to attach the blow-off pipe O at bottom, the feed-pipe P to one side above the center, and on the opposite side, on the same line, the pipe Q, connecting the receiver N with manifold B. A pipe, R, is inserted at the top of N, connecting manifold J to the receiver N. The pipes Q and R now are the blow-off pipes to the whole generator. By use of stop-cocks S and S', either part is blown off at will. The sediment first finds a semi-quiet place in J, from which a constant stream flows through pipe R to the receiver N, carrying the sediment and depositing it in the still water at bottom of N, from which it is easily blown off daily, or as required. The return-bends U U' are supplied with caps T T, which can readily be removed to clean the pipes F F; also, plugs V V can be taken out to clean pipes C C, which has, however, not yet been found necessary after much use, as the extraordinary circulation keeps the pipes clear.

Having thus described the nature and operation of my said invention, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The combination of the pipes C C C and manifolds B and B', with cylinder K and pipes D E, constructed and arranged substantially as and for the purpose described.

2. The combination of the pipes C C F F and cylinder K with receiver N, constructed substantially as herein described.

JOHN D. LYNDE.

Witnesses:

WM. MUSGRAVE,  
JOHN H. SEBOLD.