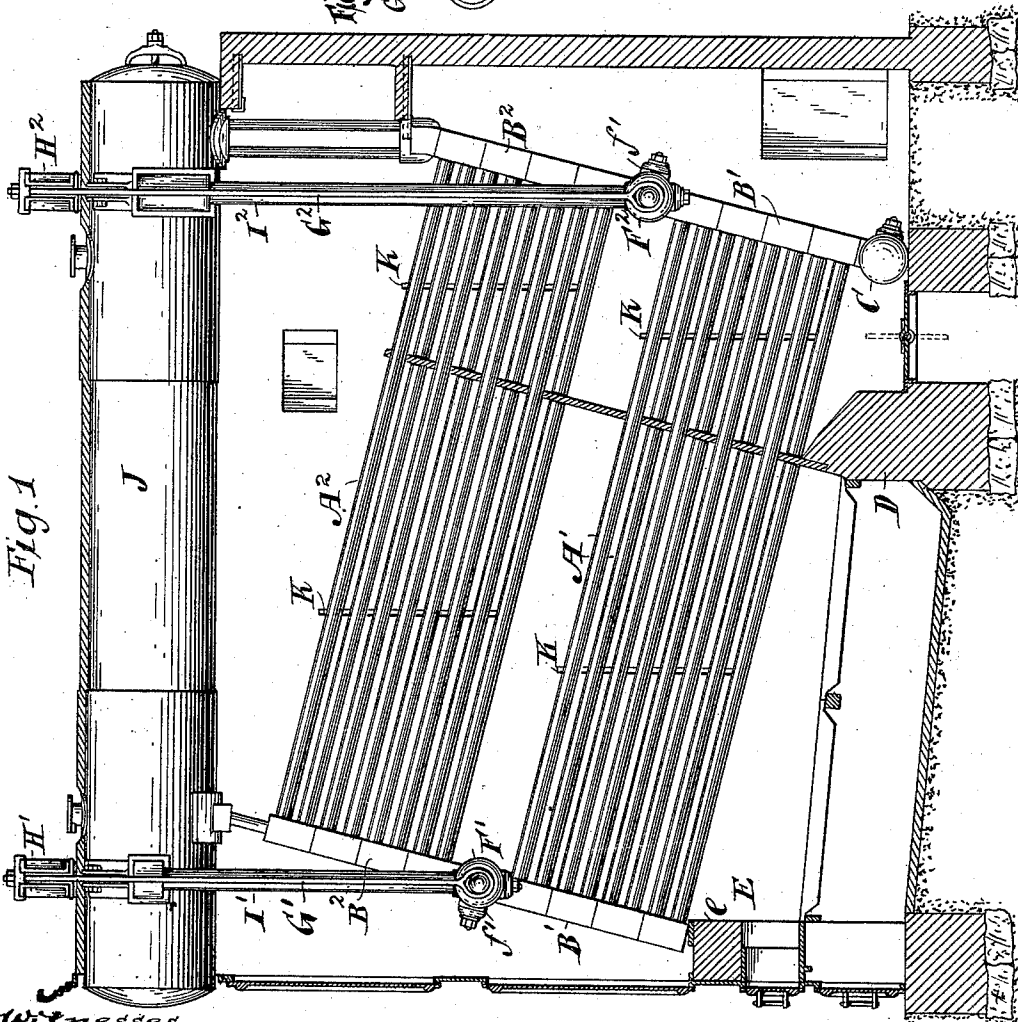
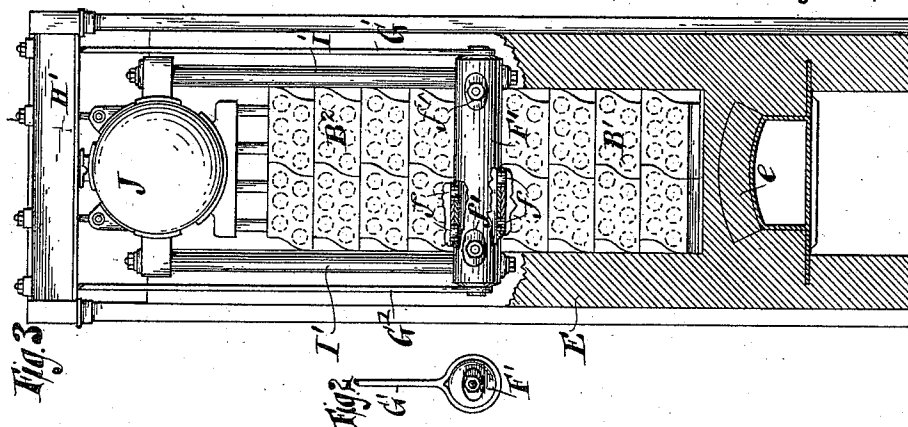


(No Model.)

W. E. KELLY.
STEAM GENERATOR.

No. 540,211.

Patented May 28, 1895.



Witnesses
Geo. Wadman
Jas. G. Fullen

Inventor
William E. Kelly
By his attorney
Edwin H. Brown

UNITED STATES PATENT OFFICE.

WILLIAM E. KELLY, OF NEW BRUNSWICK, NEW JERSEY.

STEAM-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 540,211, dated May 28, 1895.

Application filed June 29, 1894. Serial No. 516,087. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. KELLY, of the city of New Brunswick, county of Middlesex, and State of New Jersey, have invented certain new and useful Improvements in Steam-Generators, of which the following is a specification.

I will describe a steam generator embodying my improvement, and then point out the novel features in the claims.

In the accompanying drawings, Figure 1 is a sectional side view of a steam-generator embodying my improvement. Fig. 2 is a side view of certain parts, illustrating a modification. Fig. 3 is a sectional end view of the same.

Similar letters of reference designate corresponding parts in all the figures.

A', A² designate water tubes arranged to occupy inclined positions and fitted at their ends in headers B', B². They and the headers may be of ordinary or any other approved construction. It will be seen that there are two distinct sets of water tubes A' and A² and that these sets are arranged as tiers one above the other. The headers B' with which the lower ends of the set A' of water tubes communicate are arranged above and connected to communicate with a mud drum C; in the present example of my improvement this mud drum being located rearward of a bridge wall D forming part of the furnace of the generator.

The mud drum C may be partly or wholly supported from below.

It will be seen that the headers B' with which the forward and upper ends of the set A' of water tubes communicate, extend over a portion *e* of the masonry E of the generator. Obviously these headers may be wholly or partly supported on this portion of the masonry, or entirely from overhead.

F', F² designate two chambers which are interposed between the two sets of headers B', B². They are intended to be connected above and below with the two sets of headers and preferably this connection will be made by nipples *f* expanded at their ends. When this mode of connection is adopted, suitable hand holes *f'*, and removable covers, will be pro-

vided in the chambers F', F² and furnished with removable covers. These will also be useful for cleaning purposes.

The ends of the chambers F', F² are constructed to engage with means for supporting or contributing to their support from above. In the present instance their ends are constructed to form trunnions and the latter enter loops or eyes on bolts G', G², which are secured to overhead girders H', H², resting upon the tops of the columns K', K² or the walls of the masonry E.

From the chambers F', F², and preferably from their end portions, extending beyond the headers B', B², pipes I' I² extend upwardly to a water and steam drum J; the communicating opening being above or below the water line in the case of the pipes I' and below the water line in the case of the pipes I².

The headers B² communicate in the usual way or in any other suitable way with the drum J. In the present instance they communicate with the under side of the drum J.

In Fig. 2 I have shown that the end portions of the chambers F', F² may, without being reduced, be fitted into the loops or eyes of the bolts G', G² and that then the ends of the chambers may be provided with hand holes, *f'*, fitted with removable covers.

Obviously there may be any desirable number of sets with corresponding chambers F', F² and bolts G', G².

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a steam generator the combination of a steam and water drum, a number of sets of water tubes, a number of sets of headers for the sets of water tubes, chambers between the sets of headers, connections between the upper set of headers and the steam and water drum and connections between the chambers and the steam and water drum, substantially as specified.

2. In a steam generator the combination of a steam and water drum, a number of sets of water tubes, a number of sets of headers for the sets of water tubes, chambers between the sets of headers, connections between the upper set of headers and the steam and water drum, connections between the chambers and

the steam and water drum, and independent supports for the sets of headers, substantially as specified.

3. In a steam generator the combination of
5 a steam and water drum, a number of sets of water tubes, a number of sets of headers for the sets of water tubes, chambers between the sets of headers, connections between the upper set of headers and the steam and water
10 drum, connections between the chambers and the steam and water drum, and independent supports for the sets of headers, the supports

for the upper set of headers being bolts from overhead and engaging with the chambers which are arranged between the sets of headers, substantially as specified. 15

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

WILLIAM E. KELLY.

Witnesses:

ANTHONY GREF,
JAC. KLEMANN, Jr.