2 Sheets. Sheet 1.

B. Mc Ginnis,

Steam-Boiler Water-Tube.

No. 46,193. Patented Jan. 31, 1865.

Fig. 2.

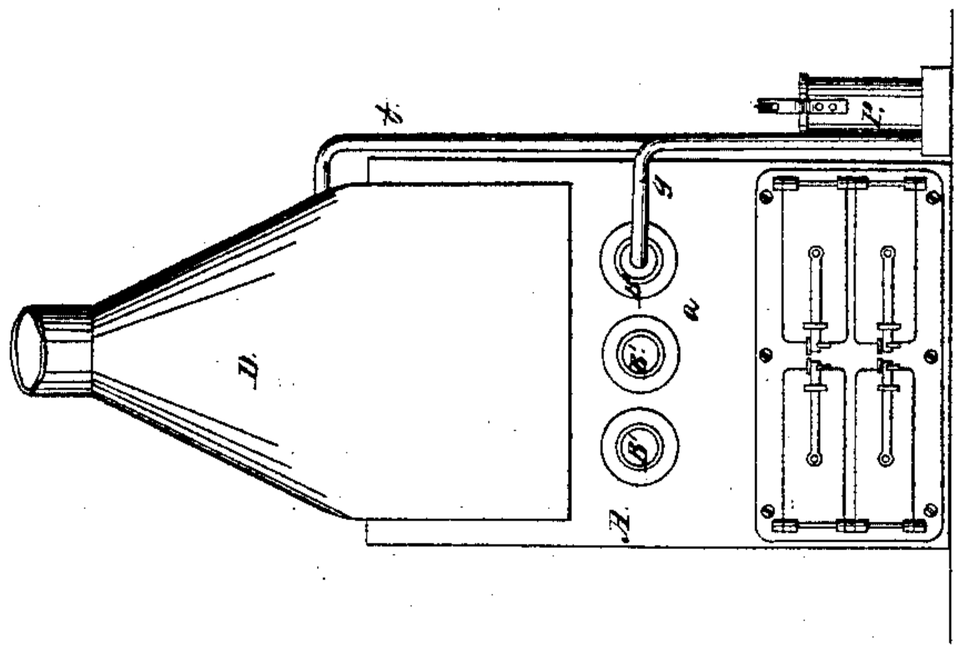
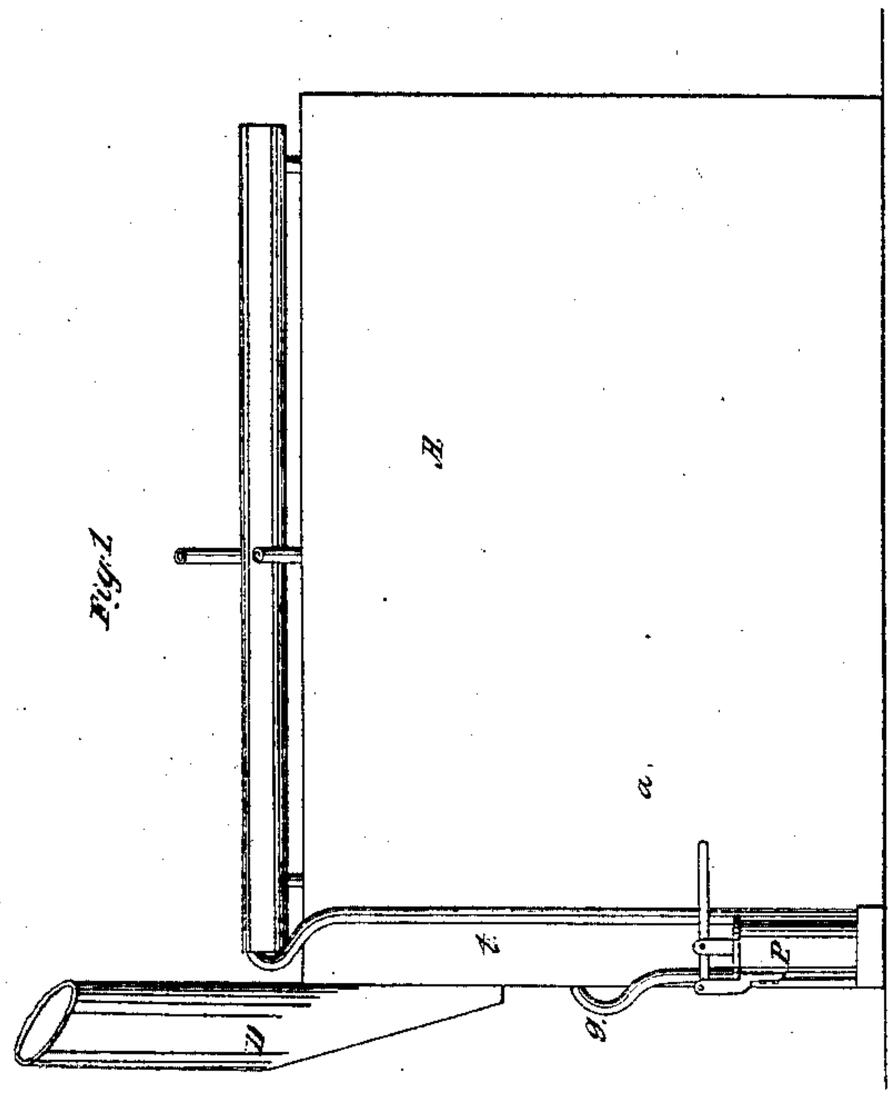


Fig. 3.



Witnesses:
Wm. F. McNamara
Jas P. Hall.

Inventor:
Barney McGinnis

2 Sheets. Sheet 2.

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Fig. 4.

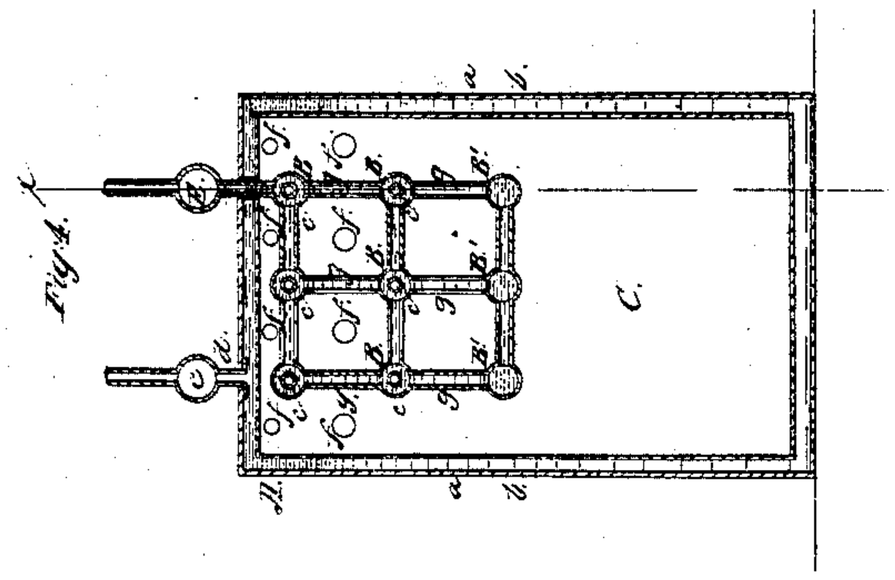
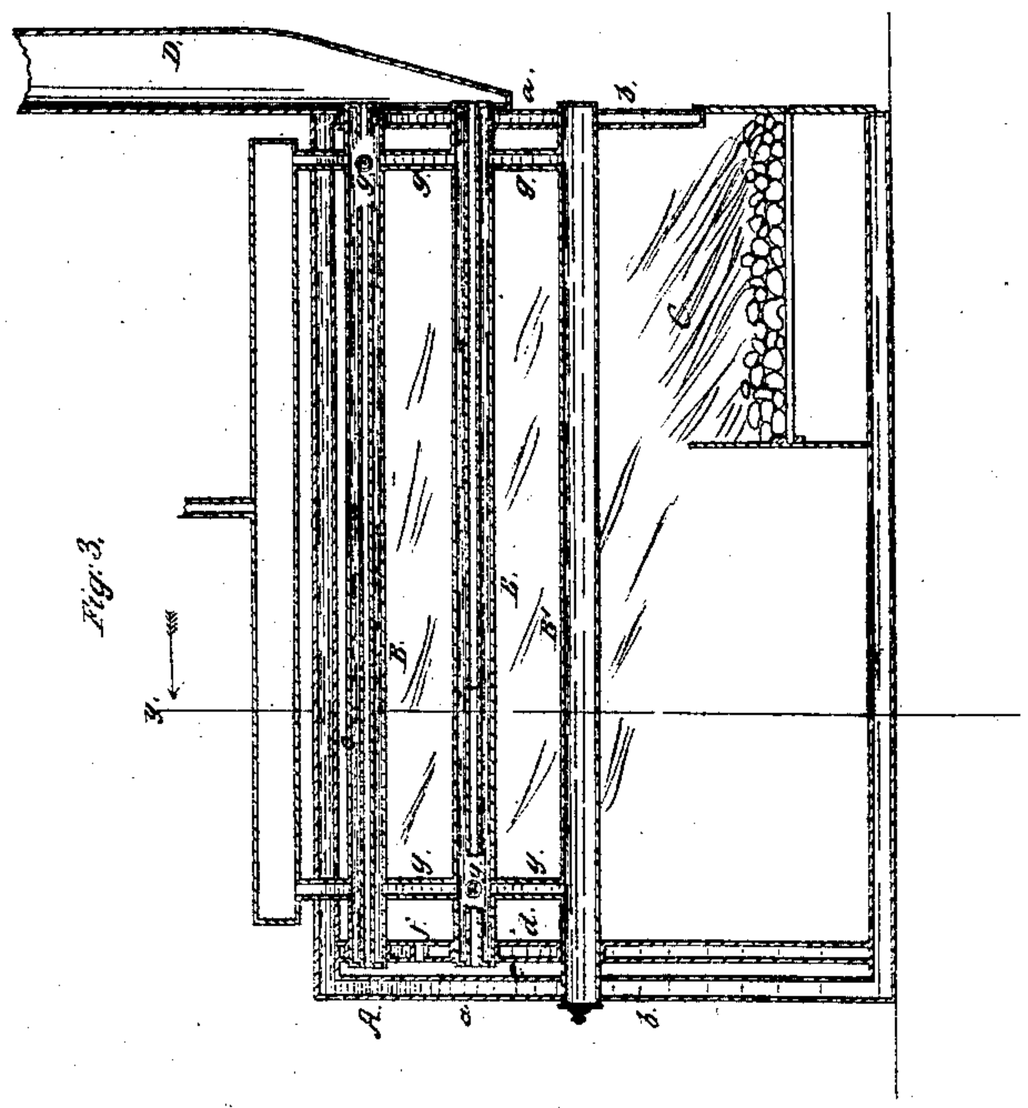


Fig. 3.



Witnesses:

Wm. F. McNamara

Jas P. Hall,

Inventor:

Barney McGinnis

UNITED STATES PATENT OFFICE.

BARNEY McGINNIS, OF NEW YORK, ASSIGNOR TO HIMSELF AND REUBEN S. TORREY, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN STEAM-GENERATORS.

Specification forming part of Letters Patent No. **46,193**, dated January 31, 1865.

To all whom it may concern:

Be it known that I, BARNEY MCGINNIS, of the city, county, and State of New York, have invented a new and Improved Steam-Boiler; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a side elevation of this invention. Fig. 2 is a front elevation of the same. Fig. 3 is a longitudinal vertical section of the same, the line *x x*, Fig. 4, indicating the plane of section. Fig. 4 is a transverse vertical section of the same, the plane of section being indicated by the line *y y*, Fig. 3, and looking in the direction of the arrow marked opposite to that line.

Similar letters of reference indicate corresponding parts.

This invention consists in the arrangement of a system of high pressure boilers, calculated to carry steam of two hundred (more or less) pounds pressure to the square inch in the interior of a double shell, which forms a low-pressure boiler calculated to carry steam of twenty (more or less) pounds pressure to the square inch, and connected together in such a manner that the inner or high-pressure boilers can be supplied with water from the outer or low-pressure boiler, and if salt water or impure water is used all the sediment will be retained in the outer boiler, from which it can be readily removed. The inner boilers will be always supplied with clean water, and high-pressure steam can thus be produced from salt-water as well as from fresh water, without injury to the boilers.

A represents a steam-boiler, the outside shell, *a*, of which is provided with a double wall, with an intermediate space, *b*, which forms the water-space for a steam-boiler, and which is sufficiently strong to sustain a pressure of twenty pounds (more or less). A dome, *c*, which communicates by means of pipes *d* with the water-space *b*, serves to receive the steam rising from the water in said space, and the steam accumulating therein can be used in a low-pressure engine of the ordinary construction.

The interior space of the shell *a* is occupied by a system of boilers, B B, each of sufficient strength to carry steam of two hundred pounds (more or less) pressure to the square inch, and by the furnace or fire-place C. Said boilers are either plain cylinder-boilers, and in that case they extend clear through the exterior walls of the shell *a*, and suitable man-holes give access to their interior for the purpose of cleaning them out, or for repairs, if necessary or they may be made with return-flues *c*, and in that case they are supported on one end by an inner partition, *d*, which may be made double and filled with water and placed at such a distance from the inner surface of the shell *a* that a back flue, *e*, is formed, which forms the communication between the several return-flues *c* of the boilers B. The back flue, *e*, communicates with the fire-space C through short tubes *f*, and the heat and products of combustion rising from the fire will pass through these tubes in the back flue, *e*, and thence through the return-flues *c* to the chimney D. The front ends of the boilers B pass through both walls of the shell A, and terminate within the chimney-flue, as clearly shown in Fig. 3. The boilers B B′ are intended to be placed quite close together, and they communicate with each other by a series of horizontal and vertical tubes, *g*, as clearly shown in Fig. 4, and the steam rising from the water contained in the same collects in a dome, E, on the top of the shell *a*. This dome communicates with one of the boilers, B, and through it with the whole system.

The shell *a*, which is filled with water, and forms a low-pressure boiler, prevents the radiation of heat from the boilers B B′, and steam of a very high pressure can be produced with a comparatively small quantity of fuel. The steam from either boiler or set of boilers may be used in separate or in one and the same engine; or the steam from one boiler may be used to work a pump or other device independent of the regular steam-engine. The principal object of my boiler, however, is to produce in a boiler of comparatively small capacity high-pressure steam of sufficient quantity to work an engine on a boat or vessel with little labor and with a comparatively small expenditure of fuel. Furthermore, by connecting the inner and the outer boilers the inner or high-pressure boilers can be sup-

plied with water from the low-pressure boiler. In order to effect this purpose, a pump, P, is connected with the boiler, and the supply pipe *t* of this pump extends into the shell A, whereas the discharge-pipe *s* leads to one of the high-pressure boilers, B′. By working the pump the water is drawn from the low pressure boiler and forced in the high-pressure boilers. Instead of the pump, an injector or any other suitable device might be used, capable of supplying water to the high-pressure boilers B B′ from the low-pressure boiler or shell A. All sediment remains in the latter, and high-pressure steam can be produced without danger from salt-water.

I claim as new and desire to secure by Letters Patent—

1. The system of high-pressure boilers B B′, arranged in the interior of the shell or boiler *a*, in the manner and for the purpose substantially as herein shown and described.

2. The back flue, *e*, in combination with the double-walled shell *a*, and return-flue boilers B, constructed and operating substantially as and for the purpose set forth.

BARNEY McGINNIS.

Witnesses:
WM. F. MCNAMARA,
C. L. TOPLIFF.