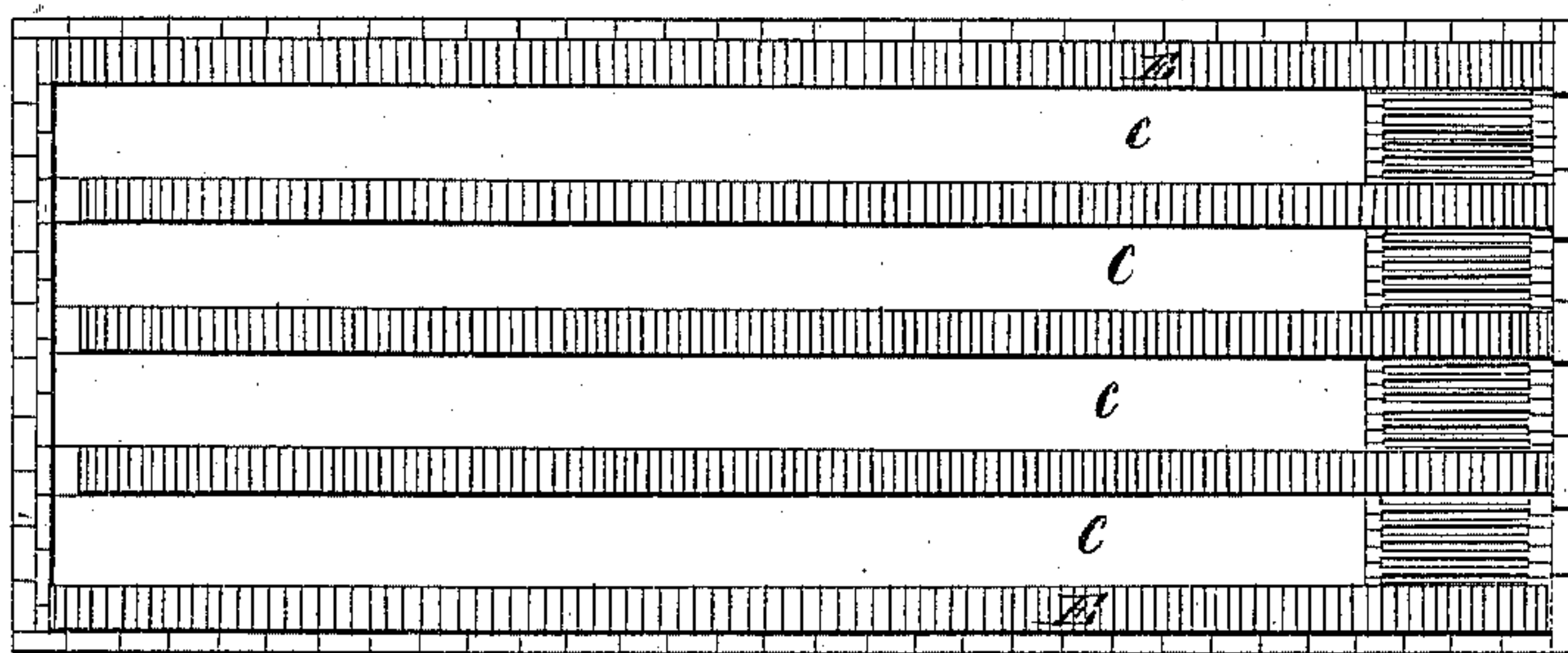


*Shryock & Underwood,  
Steam-Boiler Furnace.*

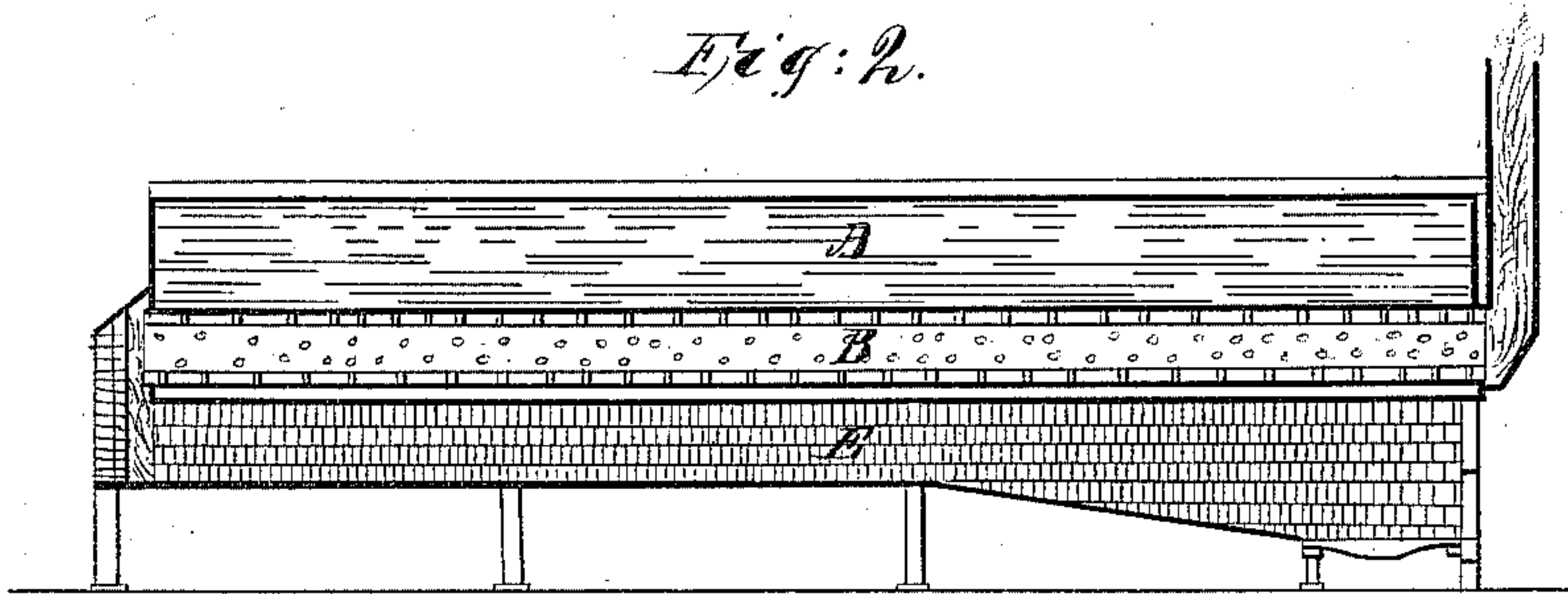
*N<sup>o</sup> 3,265.*

*Patented Sep. 14, 1843.*

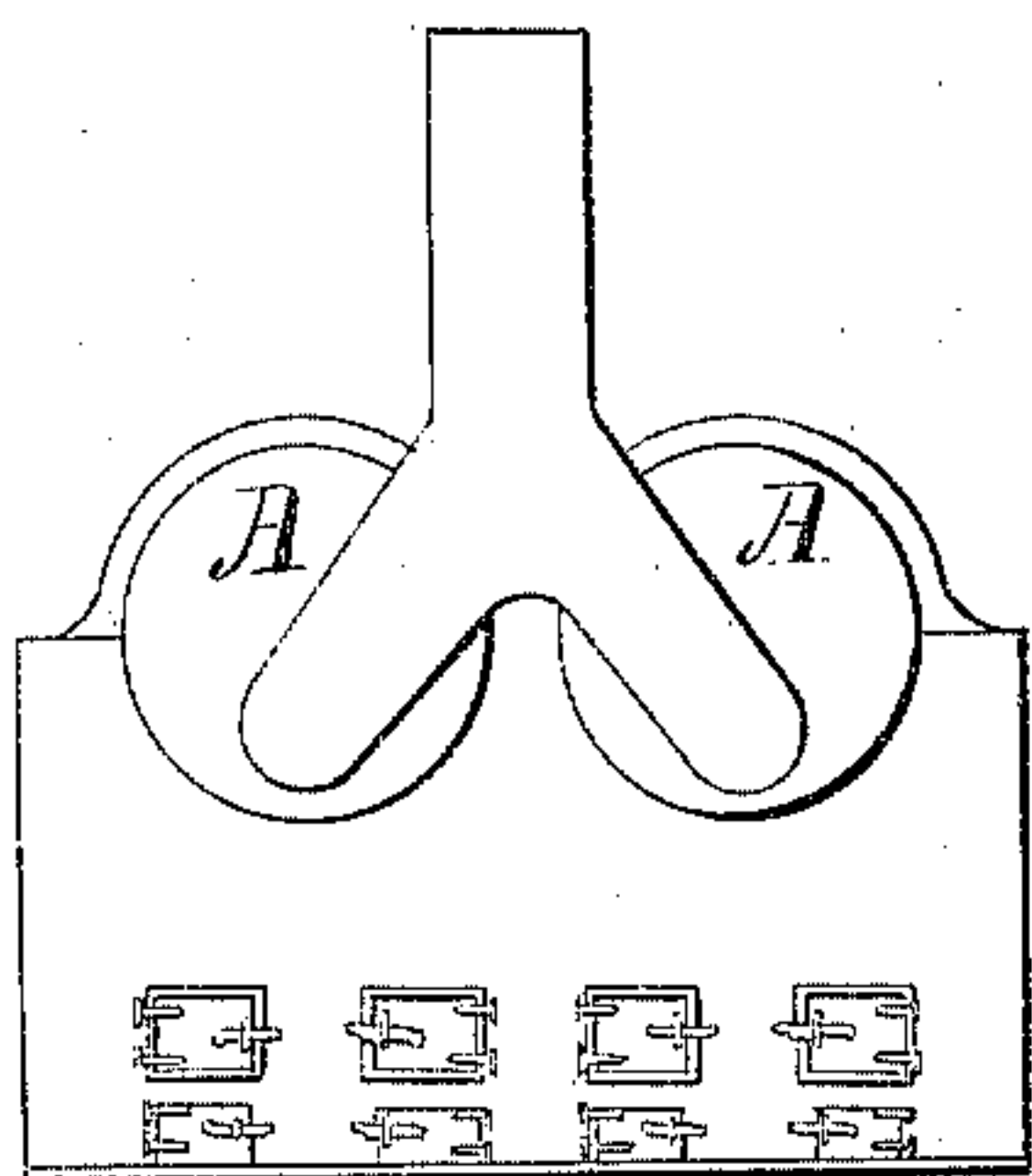
*Fig: 1.*



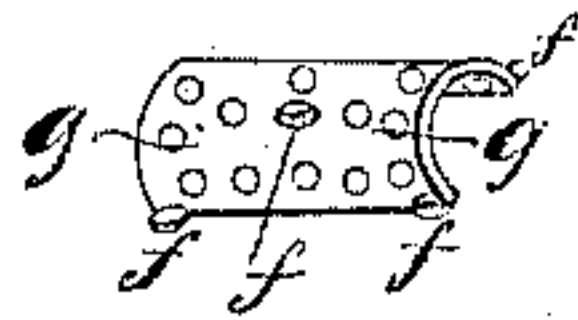
*Fig: 2.*



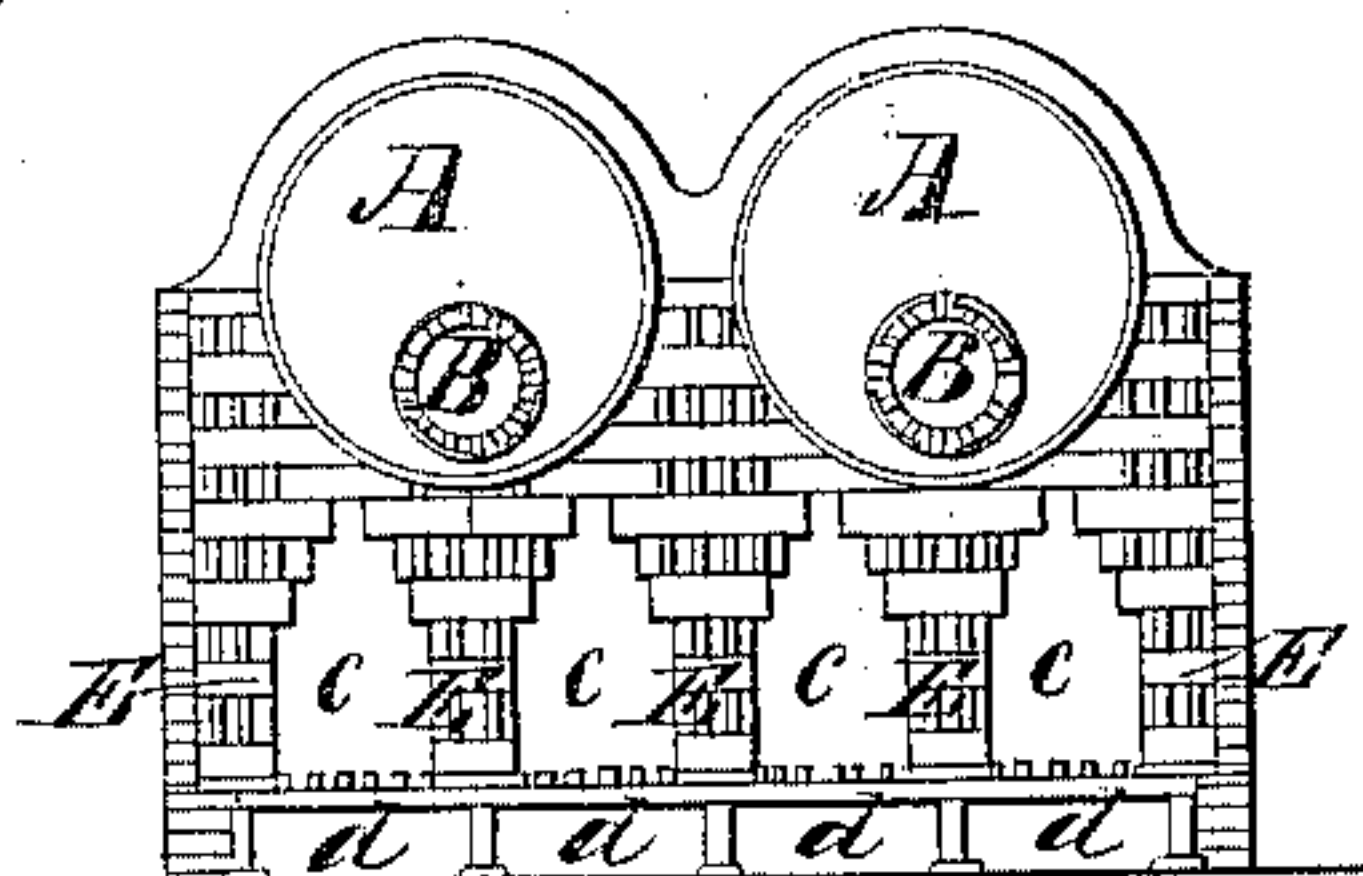
*Fig: 4.*



*Fig: 5.*



*Fig: 3.*





# UNITED STATES PATENT OFFICE.

GIDEON SHRYOCK AND SAMUEL UNDERWOOD, OF LOUISVILLE, KENTUCKY.

## FURNACE FOR STEAM-BOILERS.

Specification of Letters Patent No. 3,265, dated September 14, 1843.

*To all whom it may concern:*

Be it known that we, GIDEON SHRYOCK and SAMUEL UNDERWOOD, of the city of Louisville and State of Kentucky, have invented a new and useful Improvement in the Construction of Furnaces for Steam-Engines and other Boilers; and we do hereby declare the nature of our said improvement and the manner in which the same is to be applied are particularly described in and by the following description thereof, reference being had to the drawing hereunto annexed and to the figures and letters marked thereon.

Figure 1, shows the plan above the grate. Fig. 2, a longitudinal section. Fig. 3 a transverse section. Fig. 4, the front elevation of a furnace, for a steam engine with two boilers. Fig. 5, perspective view of one of the brick used for lining the flues of boilers; showing the projecting knobs *f, f*, which prevent the principal part of the brick from being in contact with the iron forming the flues.

In each of these figures the same letters of reference indicate similar parts.

*A, A*, represents the boilers. *B, B*, internal flues lined with fire brick, molded to fit the flues, and perforated with holes. *C, C*, places in which the fire is made. *d, d*, ash pits. *E, E*, fire brick placed so as to absorb the heat from the fire; and to permit the free passage of the heat between them; *f, f*, projecting knobs on the fire brick for the flues. *g, g*, large holes through the fire brick in the flues, to permit the free passage of the heat, to the metal forming the flues.

The object of our improvement, is to increase the efficiency of fuel, in the process of combustion; and apply the heat evolved in the most economical, and profitable manner, to the generation of steam; and the exaporation, or distillation of water, or other liquids.

Our improvement is intended to be applied to boilers of any of known forms; and consists in using under and about the boil-

ers; (and if necessary in the flues of boilers;) either fire brick, or any material which is a nonconductor of heat; made in the various shapes and forms, best adapted to suit the boilers; and built, or put up, with vacancies between them, in the manner in which unburned brick are set in a kiln; for the purpose of burning them; and so as to permit the free passage of the heat between them.

The space between the top of the grate, and the under part of the boilers, is divided transversely by the fire brick, or other material; into a number of compartments marked *C* in which the fuel is burned; these compartments extend longitudinally under the boilers; and are constructed in the same manner as the eyes and arches of brick kilns. The heat from the fire in these compartments; is absorbed by the fire brick, (or other material,) under and around the boilers; marked *E*, and in the flues of the same marked *B*, and the heat, being absorbed by the brick, is retained in the furnace; and about the boilers; instead of being carried off rapidly, by the draft of the chimney.

The fire brick in the flues are made with projecting knobs, so as to leave an interval of about an inch between the principal part of the brick; and the metal forming the flues; so as to permit the free passage of the heat between the brick and the flues.

What we claim as our invention, and desire to secure by Letters Patent; is—

The using, in the manner herein described; fire brick, (or any other material which is a nonconductor of heat); in the construction of furnaces, for the evaporation or distillation of liquids; and under and about the boilers, and in the flues of boilers for steam engines.

GIDEON SHRYOCK.

SAMUEL UNDERWOOD.

Witnesses:

DAVID NEVIN,  
W. S. EDWARD.