

A. C. Fletcher,
Steam-Boiler Condenser.
No 39,040. Patented June 30, 1863.

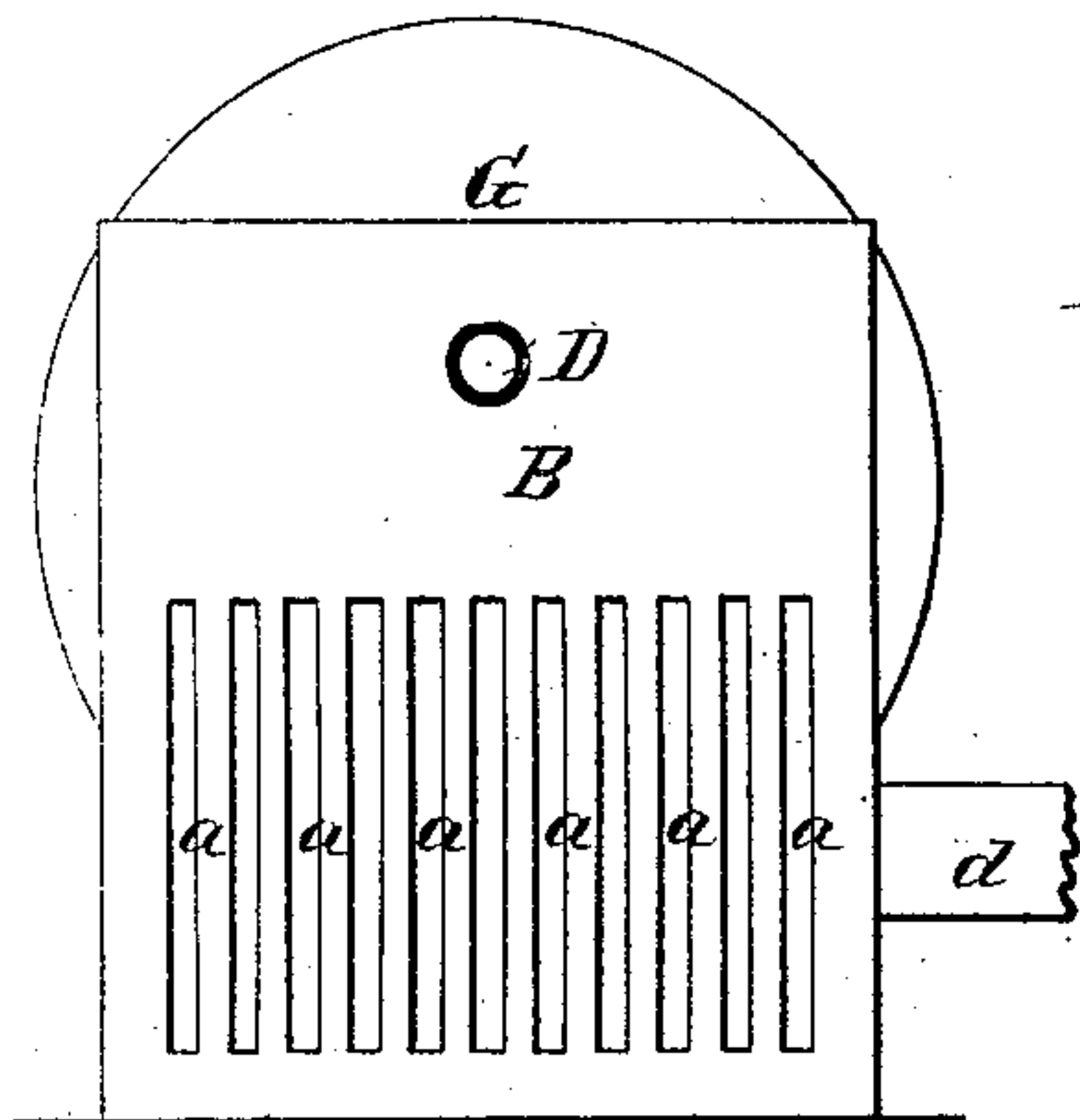


Fig. 2.

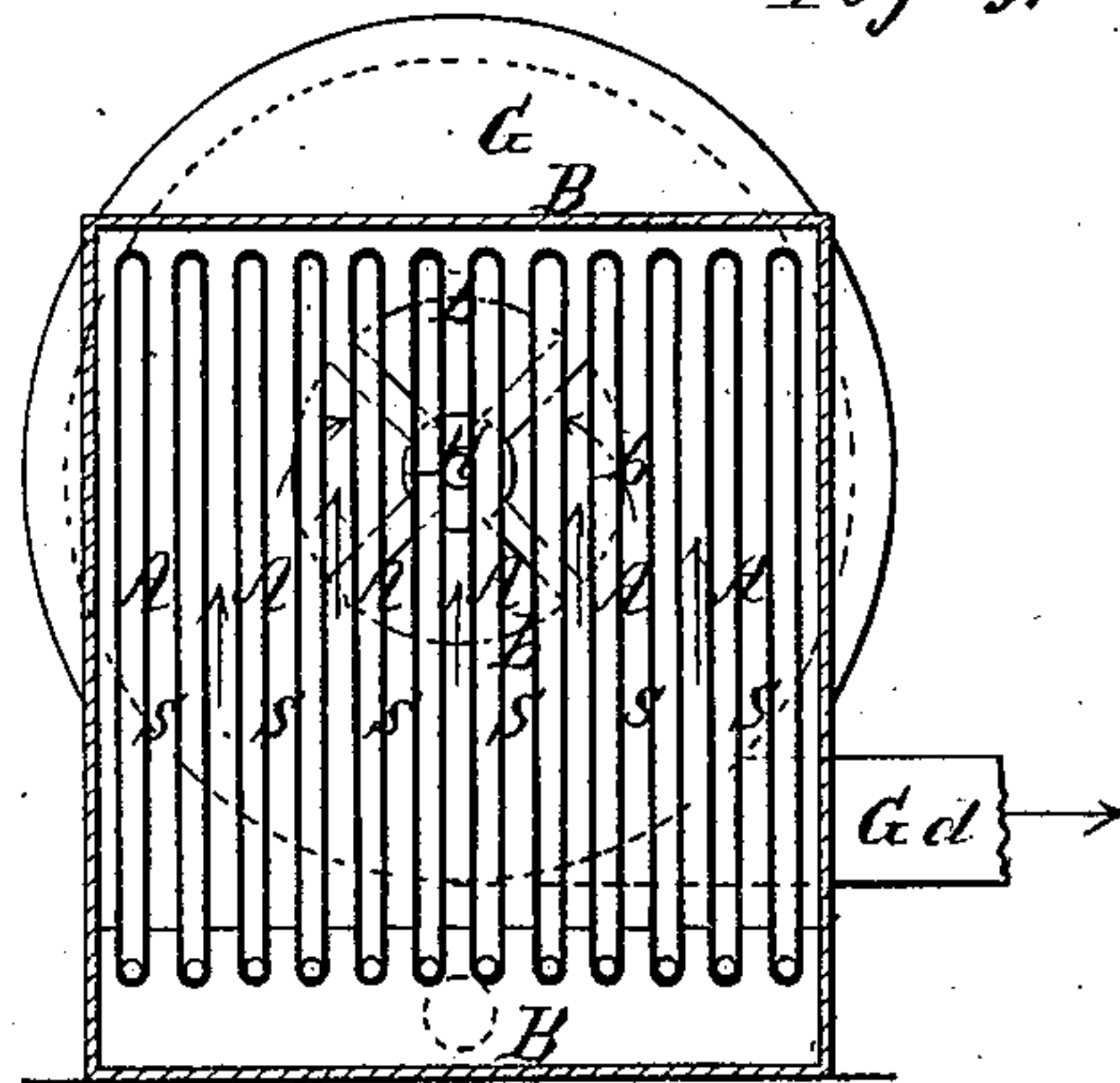


Fig. 3.

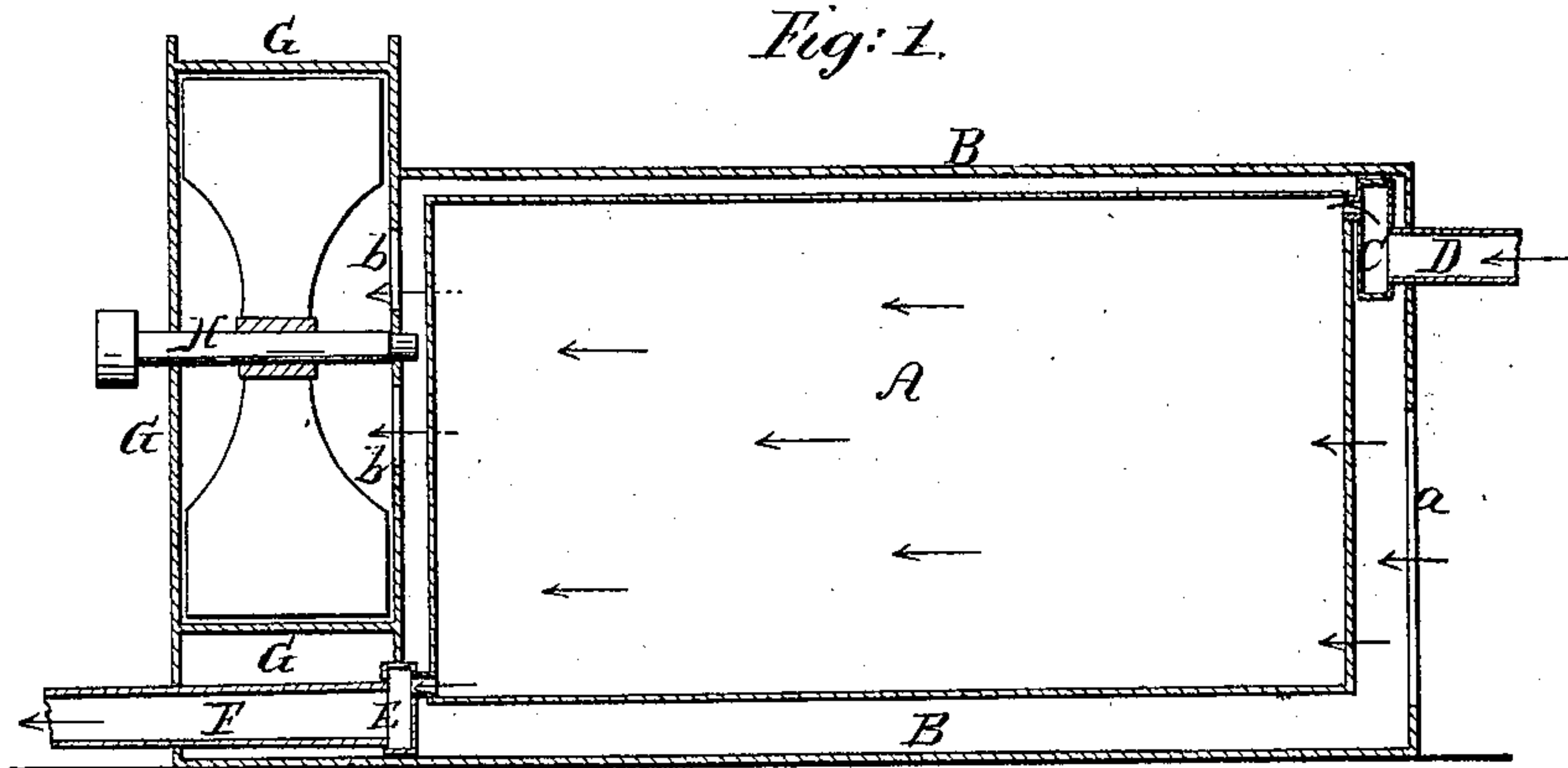


Fig. 1.

Witnesses;
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UNITED STATES PATENT OFFICE.

ADDISON C. FLETCHER, OF NEW YORK, N. Y.

IMPROVEMENT IN CONDENSERS FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. 39,040, dated June 30, 1863.

To all whom it may concern:

Be it known that I, ADDISON C. FLETCHER, of the city, county, and State of New York, have invented a new and useful improvement in apparatus for reclaiming the heat of exhaust-steam and effecting the condensation of such steam for the return of its water to the boiler; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is vertical longitudinal section of the apparatus. Fig. 2 is an end view of the same. Fig. 3 is a transverse vertical section of the same.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in a certain arrangement of a rotary fan used in connection with a box or chamber containing a series of parallel radiators, into which the exhaust-steam from an engine is delivered, whereby air is drawn copiously and directly through the intervening spaces between the said radiators for the purpose of carrying off the heat from, and effecting the condensation of, the steam, and the said air heated by the heat abstracted from the steam is conveyed to the boiler-furnace or other apparatus, where such heat may be utilized.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A A are the radiators, made of flat form, and arranged vertically side by side and very near together within the oblong box or chamber B, and severally connected at one end near the top with the horizontal steam-box C, with which the exhaust-steam pipe D of an engine is connected, and at the other end near the bottom with the horizontal water-box E, from which a pipe, F, leads to a hot-well, for the collection of the water of condensation, which is to be returned to the boiler by the feed-pump at a temperature as near the boiling-point as is practicable. The box or chamber B may be of iron, wood, or brick-work, or of iron covered with wood. The inlet-openings *a a*, provided in the box or chamber B for the ingress of cold air, are arranged in one end of the said box or chamber opposite to the intervening spaces *s s* between the radiators,

with which they may correspond in number and extend from the bottom about or more than half-way up to the top of the box or chamber to admit the air to circulate between and over the surfaces of the radiators. At the opposite end of the casing, a little above the center thereof, is the outlet-opening *b*, of circular form, for the egress of the air after it has abstracted the heat from the radiators.

G is the casing of the rotary fan, arranged close to and across that end of the box or chamber B in which the outlet-opening *b* is situated, so that the said opening constitutes an inlet-opening into the side of the said casing concentric with the shaft H of the fan, and the air is drawn from the said box or chamber from between the radiators without the intervention of any pipes or passages, thus producing a much freer and more copious circulation of air between the several spaces *s s* than could be produced by any other arrangement of the fan relatively to the said box or chamber, besides bringing the whole apparatus into a more compact form, and making it occupy less space than with any other arrangement of the fan.

The circulation of the steam and water is indicated in Fig. 1 by red arrows, and the circulation of the air is indicated in Figs. 1 and 3 by black arrows, the steam entering at the pipe D and circulating through the box C and the radiators A A, in which it is condensed, and the water of condensation being collected in the box E and carried off by the pipe F, and the air entering at *a a* circulating and being heated in the spaces *s s*, and passing through the opening *b* to the fan and being driven off through the outlet *d* of the fan to the furnace or other place where its heat is utilized.

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

The arrangement of the rotary fan to draw the air directly through the box or chamber B and between the radiators A A, without the intervention of pipes or passages, substantially as and for the purpose herein set forth.

ADDISON C. FLETCHER.

Witnesses:

M. S. PARTRIDGE,
DANIEL ROBERTSON.