

No. 750,590.

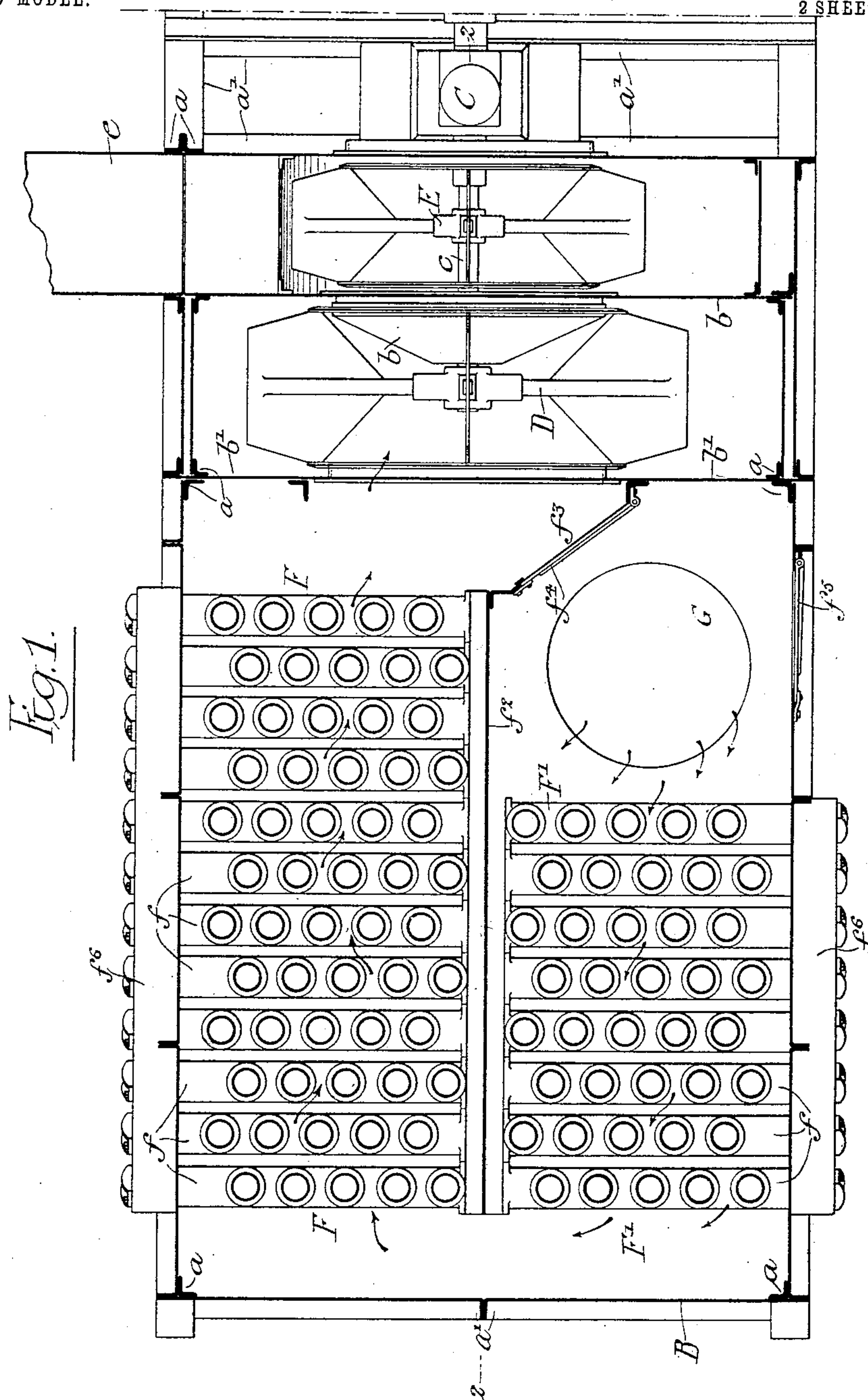
PATENTED JAN. 26, 1904.

G. H. BURPEE.
FUEL ECONOMIZING APPARATUS

APPLICATION FILED AUG. 26, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:-

Frank L. A. Graham.
Litus H. Irons.

Inventor:-

George H. Burpee,

by his Attorneys:

Howson & Howson

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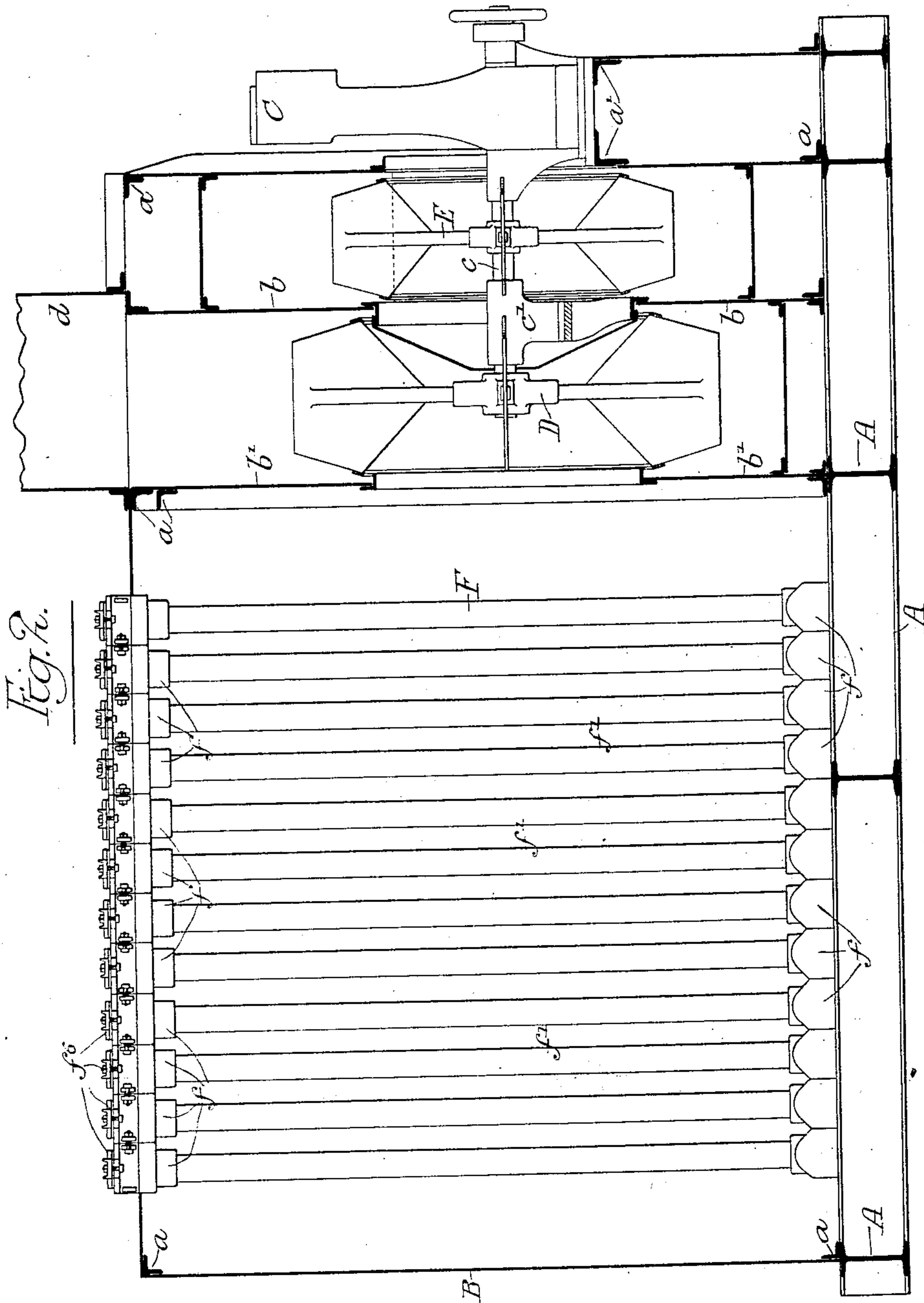
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UNITED STATES PATENT OFFICE.

GEORGE H. BURPEE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
FUEL ECONOMIZER COMPANY OF AMERICA, OF CAMDEN, NEW JERSEY,
A CORPORATION OF NEW JERSEY.

FUEL-ECONOMIZING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 750,590, dated January 26, 1904.

Application filed August 26, 1902. Serial No. 121,058. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. BURPEE, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain
5 Improvements in Fuel-Economizing Apparatus, of which the following is a specification.

My invention consists in certain improvements in fuel-economizers having for its object the provision of a novel construction and
10 arrangement of apparatus for propelling, as well as utilizing, the heated gases from boiler or other furnaces to heat feed-water or any other liquid or for superheating steam which shall for a given capacity occupy a minimum
15 space and which in addition shall be economical to construct and efficient in operation. These objects I attain as hereinafter set forth, reference being had to the accompanying drawings, in which—

20 Figure 1 is a plan view of a fuel-economizer plant constructed according to my invention; and Fig. 2 is a sectional elevation of the device illustrated in Fig. 1, taken on the line 2 2 in said figure.

25 In the above drawings, A A are the main supporting-beams for the whole structure and carried by these and attached to them in any suitable manner is a framework, in the present instance formed of angles a , upon
30 which is placed the casing B, inclosing the economizer proper and the two draft-fans. This casing B is divided into three chambers by means of two transverse partitions b and b' , extending across it, and is provided with
35 inlet and outlet openings for the air and flue-gases. A portion a' of the framework is extended at one end and outside of the casing and forms the support for a blowing-engine C, which is direct-connected to the single driv-
40 ing-shaft c for the fans. The said shaft has in addition to its bearings on the engine-frame a bearing c' , carried by the partition b , and it extends beyond this for the purpose of supporting the exhaust-fan D, which operates in
45 the chamber between the two partitions b and b' .

Between the partition b and the end of the casing nearest the blowing-engine C is the

draft-fan E of the system, there being an opening in said end for the admission of air to be
50 forced to the grate or grates of the boilers operating in connection with the economizer plant illustrated.

The chamber in which the fan E operates has an outlet e , leading to the boilers to be
55 supplied with air, while the chamber of the second or exhaust fan D has an inlet-opening in connection with the relatively large chamber between the partition b' and the end of the casing farthest from the engine in ad-
60 dition to an outlet d , connected to a stack.

Within the large chamber, above referred to, are a number of series of headers f in communication with manifolds f^6 and connected
65 by a number of vertical pipes or tubes f' , the whole forming an economizer of the well-known form for the utilization of the heat remaining in the flue-gases after these have
70 passed from a boiler or series of boilers to heat feed-water for use in the boilers or for any other desired purpose. As shown in Fig, 1, the economizer is carried on the main sup-
75 porting-beams A and in the apparatus illustrated is in two sections F and F'. These have between them a longitudinal partition f^2 , and it will be noted that there is a space left between the economizer-sections and the
80 partition b' , as well as between said sections and the end of the casing farthest from the blowing-engine, the said partition being limited in length to the length of the economizer-sections. An opening G into the bottom of
85 the casing is connected by any desired form of duct to the flue from the boilers, and there is in the present instance a partition f^3 , extending in continuation of the end of the partition f^2 and between it and the transverse partition b , there being, moreover, a door f^4 in said
90 partition f^3 , through which access may be had to the fan D and to the other parts of the economizer for purposes of inspection and
cleaning, as well as a door f^5 into the casing.

In operation both fans D and E are directly driven from the engine C, the fan E forcing
95 air to the boiler-grates through the outlet e and the fan D drawing the still hot gases of

combustion from the flues of the boilers through the opening G into the casing, around the economizer-tubes of the section F' and the tubes of the section F, finally expelling them through the outlet d, connected to the stack.

From the foregoing description it will be seen that the construction of apparatus of the type shown has been materially simplified by my improved arrangement of the various parts, for not only am I enabled to drive both the draft and the exhaust fans directly from a single engine, but these fans are so placed as to require a minimum quantity of material for their inclosing. Similarly the efficiency of operation is raised by placing the exhaust-fan in the immediate vicinity of the economizer, and by the arrangement illustrated the plant as a whole is so designed as to occupy the smallest possible amount of space.

I claim as my invention—

1. The combination of a casing having within it partitions forming chambers, a motor, a fan in each of two of said chambers operatively connected to said motor, and an economizer in another chamber, said latter chamber having an inlet and an outlet, there being an opening in the partition between one of the fan-chambers and the economizer, one of said fans being adapted to deliver air to the combustion-chamber of a boiler and the other being adapted to draw the products of combustion from said chamber through the economizer, substantially as described.

2. The combination of a foundation-framework, a single casing supported thereby, partitions in the casing forming three chambers,

an engine also supported on the foundation-framework, a fan in each of two of said chambers, the same being direct-connected to said engine, and an economizer in the third chamber, inlets and outlets to said chamber, there being an opening in the partition between one of the fan-chambers and the economizer, one of said fans being adapted to deliver air to the combustion-chamber of a boiler and the other being adapted to draw the products of combustion from said chamber through the economizer, substantially as described.

3. The combination of a supporting-framework, a single casing carried thereby, two transverse partitions in said casing forming three chambers, and a longitudinal partition in one of said chambers, a door-closed opening in said longitudinal partition and economizing-sections on both sides of the partition, a fan in each of the remaining chambers, one of said fans being adapted to deliver air to the combustion-chamber of a boiler and the other being adapted to draw the products of combustion from said chamber through the economizer, a direct-connected motor for operating said fans, the same being carried by the supporting-framework and being outside of the casing together with inlets and outlets for the several chambers, substantially as described.

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

GEORGE H. BURPEE.

Witnesses:

WILLIAM E. BRADLEY,
ELIAS H. WHITE.