

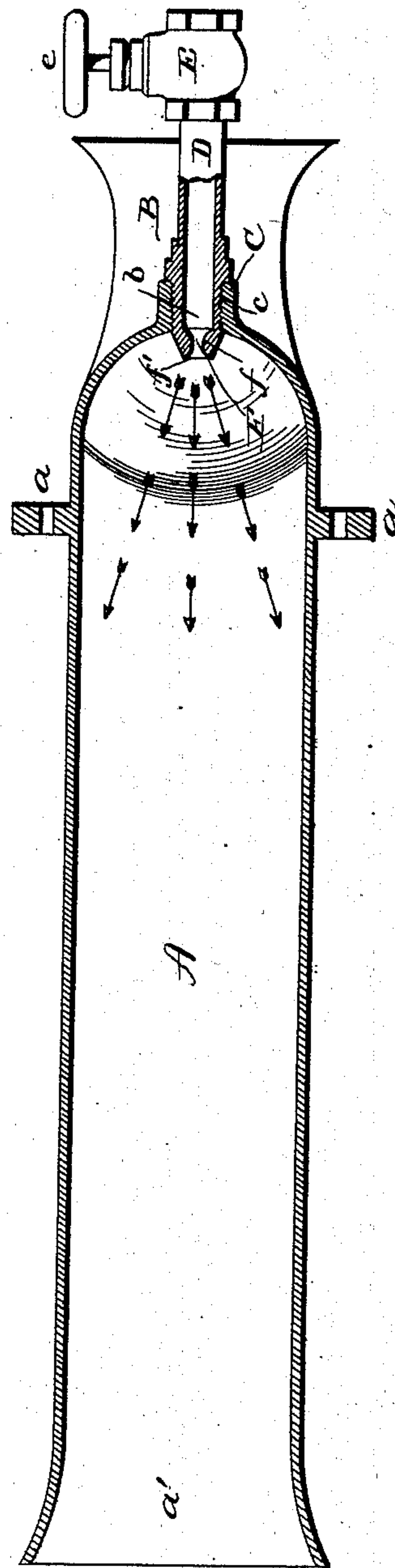
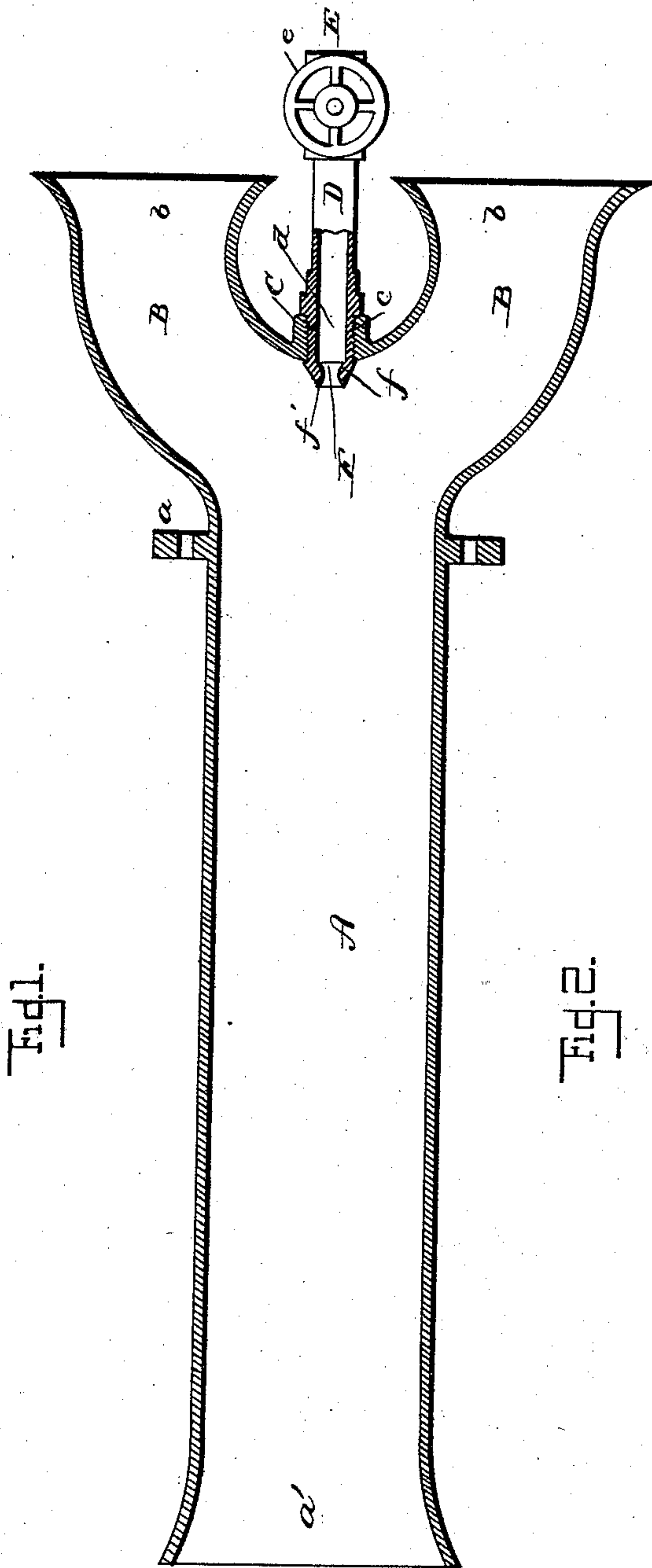
(No Model.)

2 Sheets—Sheet 1.

C. A. GOYNE  
BLOWER FOR FURNACES.

No. 410,091.

Patented Aug. 27 1889.



WITNESSES  
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A. W. Elliott

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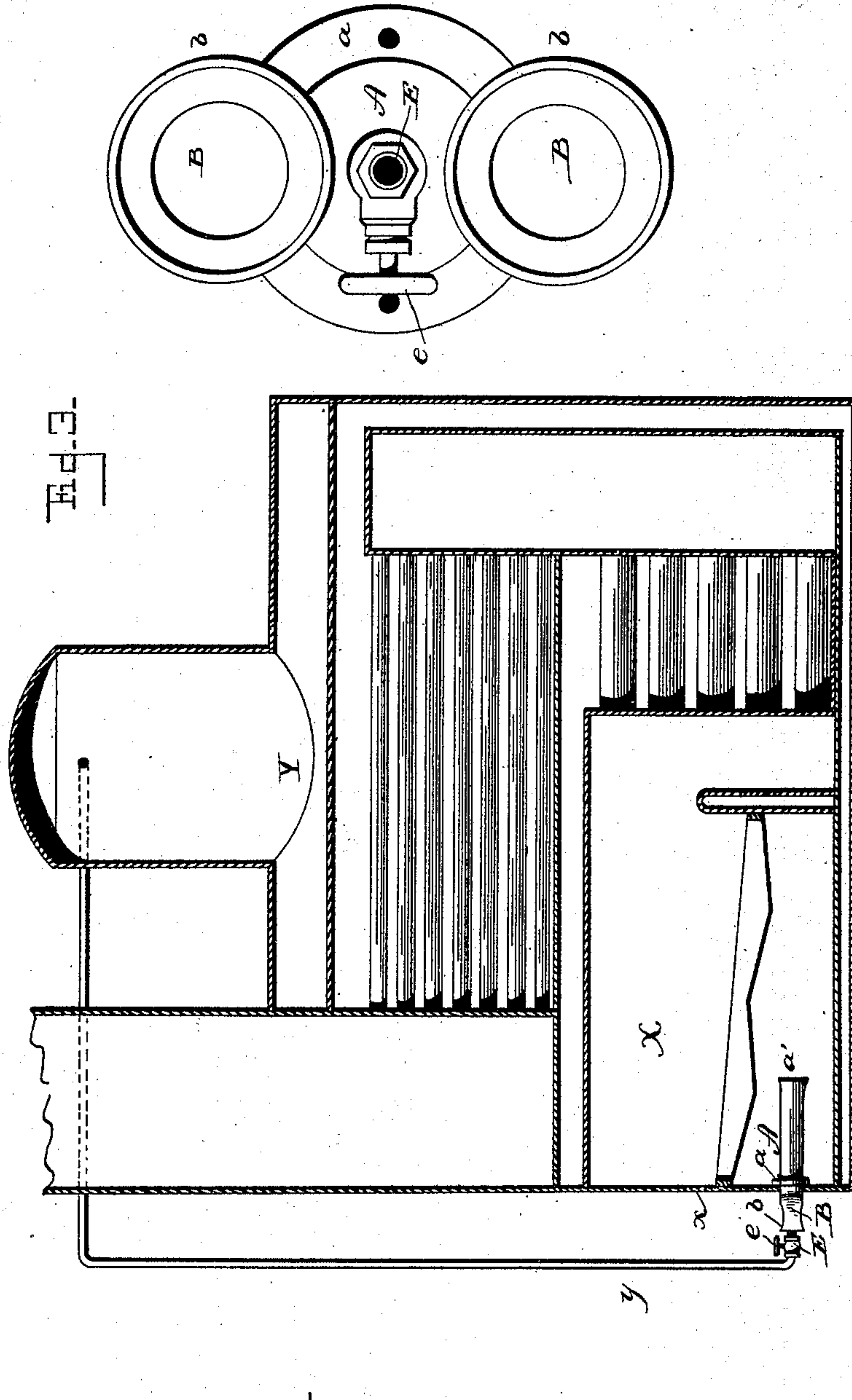
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WITNESSES  
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R. W. Elliott, Jr.

INVENTOR  
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By Lewis Baggett & Co.  
Attorneys.



# UNITED STATES PATENT OFFICE.

CHARLES A. GOYNE, OF ASHLAND, PENNSYLVANIA, ASSIGNOR OF THREE-  
FOURTHS TO F. H. GOYNE, ARTHUR H. GOYNE, AND THOMAS R. GOYNE,  
ALL OF SAME PLACE.

## BLOWER FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 410,091, dated August 27, 1889.

Application filed April 10, 1889. Serial No. 306,681. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES A. GOYNE, a citizen of the United States, and a resident of Ashland, in the county of Schuylkill and State of Pennsylvania, have invented certain new and useful Improvements in Blowers or Draft-Increasers for Furnaces of either Stationary or Locomotive Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to blowers or draft-increasers for furnaces of either stationary or locomotive steam-engines, the object being to increase the inflow of air by means of a current of steam from the boiler above said furnace.

The invention consists in the construction and novel combination of parts hereinafter described, illustrated in the accompanying drawings, and pointed out in the claims here-to appended.

In the accompanying drawings, Figure 1 represents an axial section of the device, which section passes diametrically through the outer diverging inflow-tubes. Fig. 2 represents a similar section at right angles to that shown in Fig. 1. Fig. 3 represents a front view of the device. Fig. 4 represents a furnace and boiler with the device attached.

Referring to the drawings by letter, A designates the main tube of the device, provided with the peripheral flange *a*, having suitable perforations, by means of which and engaging-bolts of proper dimensions the device is secured to the front of a furnace X, with the main tube projecting through an opening in the said front *x* below the grate. In practice the main tube will project into the ash-box. The inner end *a'* of the main tube A stands below the grate-bars, and is flared to facilitate the escape of the inflowing air and cause the latter to spread out or diverge under the grate-bars, and thereby equalize the draft below all portions of the grate. Outside of the peripheral flange *a* are the similar diverging

inflow-tubes B B—two or more in number—each of which has a flared mouth *b* to permit the air to enter more readily therein.

C is an outwardly-projecting boss situated at the meeting point or junction of the inflow-tubes B, and provided with a central threaded bore *c* to engage the threaded portion *d* of the steam-injector nozzle D, the outer end of which is connected by a pipe *y*, flexible or otherwise, with the steam-dome of the boiler Y.

E is a regulating-valve in the outer portion of said nozzle, which valve can be more or less opened by a lever or hand-wheel *e*. The point F of the steam-nozzle within the main tube is of a conical frustum shape, and its bore is contracted at *f*, whence the said bore widens outwardly, as at *f'*, to the end of the nozzle, in order to spread the discharge of steam therefrom into the main tube.

In practice the united areas of the cross-sections of the inflow-tubes B are about equal to the area of the cross-section of the main tube.

In operation, when the steam is driven from the boiler through the injector-nozzle D the jet passes into the main tube A and causes partial vacuums in each of the inflow-tubes B, into which the outside air rushes and passes through the main tube to a point below the grate, whence it rises through the furnace and promotes combustion, the action being similar to that of a water-injector. By widening the outer portion of the bore of the nozzle D at *f'*, as described, the steam-jet is widened, and thereby is caused to act with equal force upon all the inflow-tubes B, so that the draft is equalized and comes with equal force from all points. This is apparent from the direction of the arrows in Fig. 2.

Having thus described my invention, I claim—

1. The herein-described draft-increasing device, consisting of the main tube having the inner flaring mouth, the outer curved diverging inlet-tubes having flaring mouths, the opening between said inflow-tubes, and the steam-injector nozzle fitting in said opening provided with a regulating-valve and

having its inner end contracted and then widened or flared, substantially as and for the purpose described.

2. The herein-described draft-increasing  
5 device, consisting of the main tube having the inner flaring mouth and annular flange, the curved inflow-tubes having flaring mouths, the threaded boss in the main tube between said inflow-tubes, the steam-injector  
10 having its inner end engaging said boss and having the point of its nozzle conical and the bore thereof contracted and then flaring out-

ward, the steam-pipe communicating with the nozzle, and the regulating-valve in the nozzle, said parts being arranged and combined and 15 operating substantially in the manner and for the purpose described.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

CHARLES A. GOYNE.

Witnesses:

J. C. GARNER,

ALT. L. LAUBENSTEIN.