

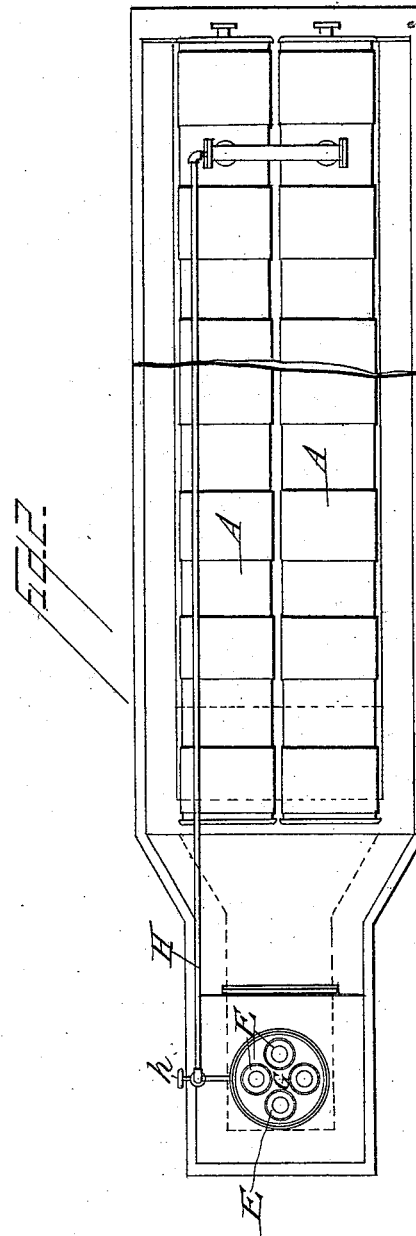
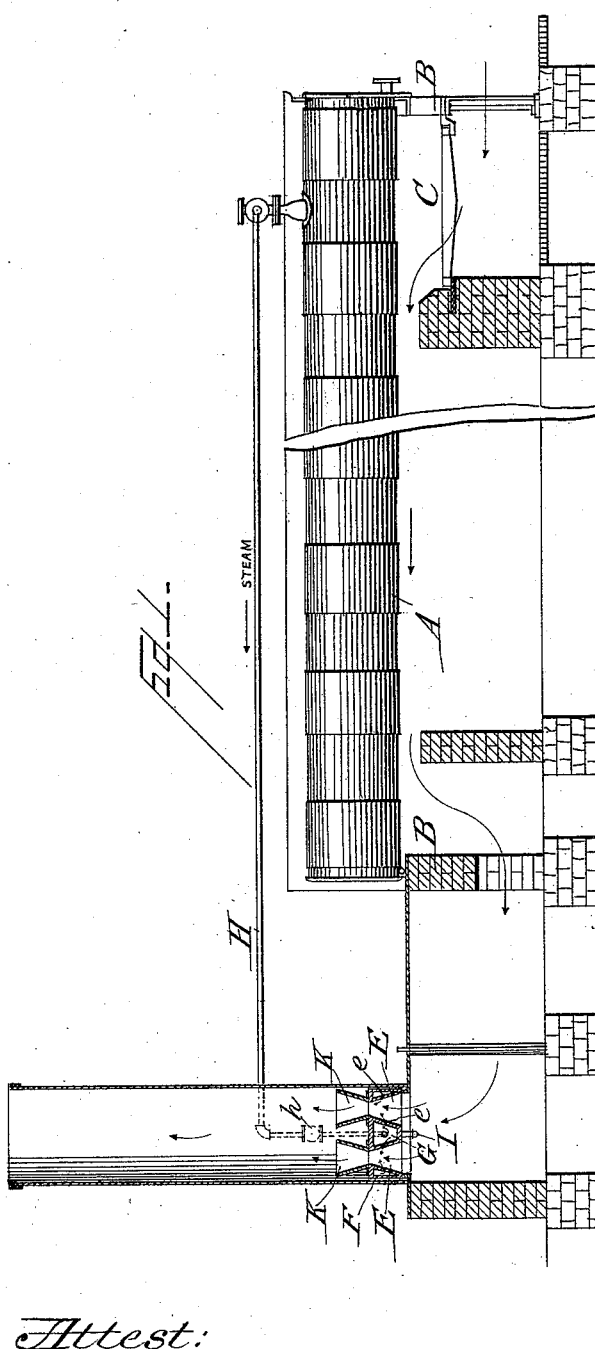
(No Model.)

4 Sheets—Sheet 1.

C. H. SCHARAR.
DEVICE FOR CREATING DRAFT.

No. 418,818.

Patented Jan. 7, 1890.



Attest:

H. H. Schott
W. C. Emory.

Inventor:

Christian H. Scharar
By his Attorney
W. A. Ruff

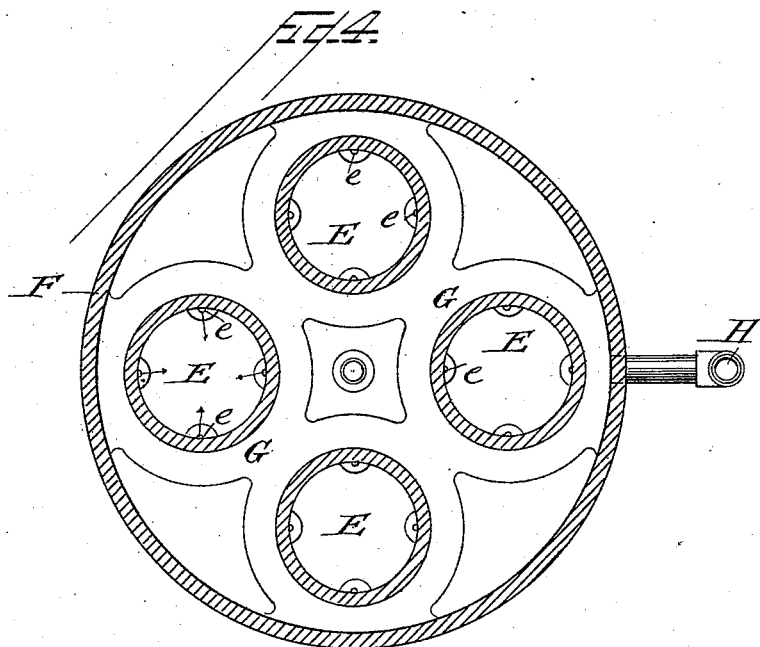
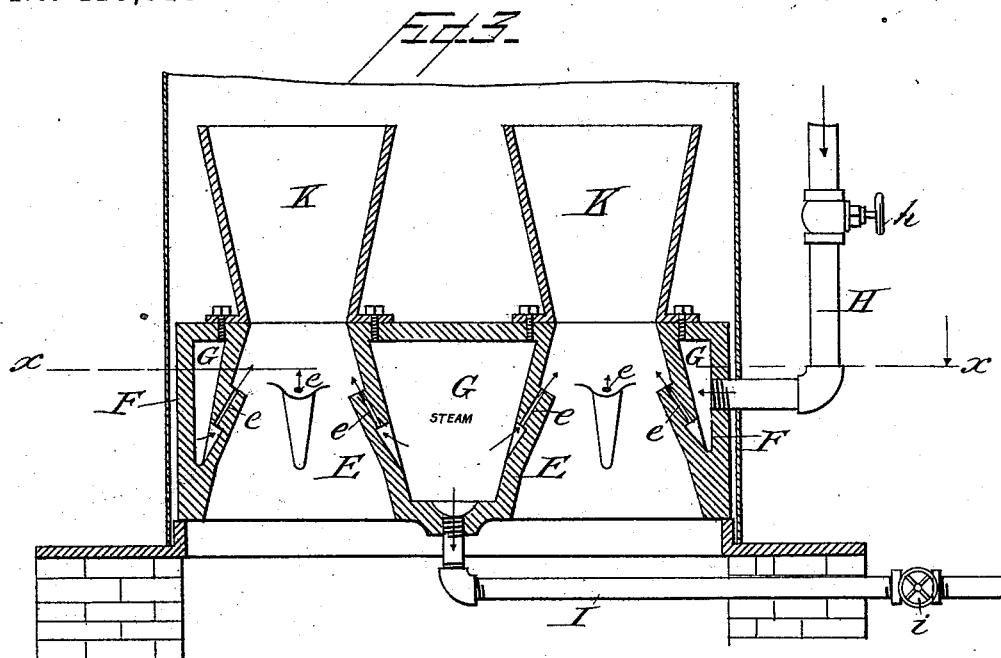
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4 Sheets—Sheet 2.

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J. H. Schott
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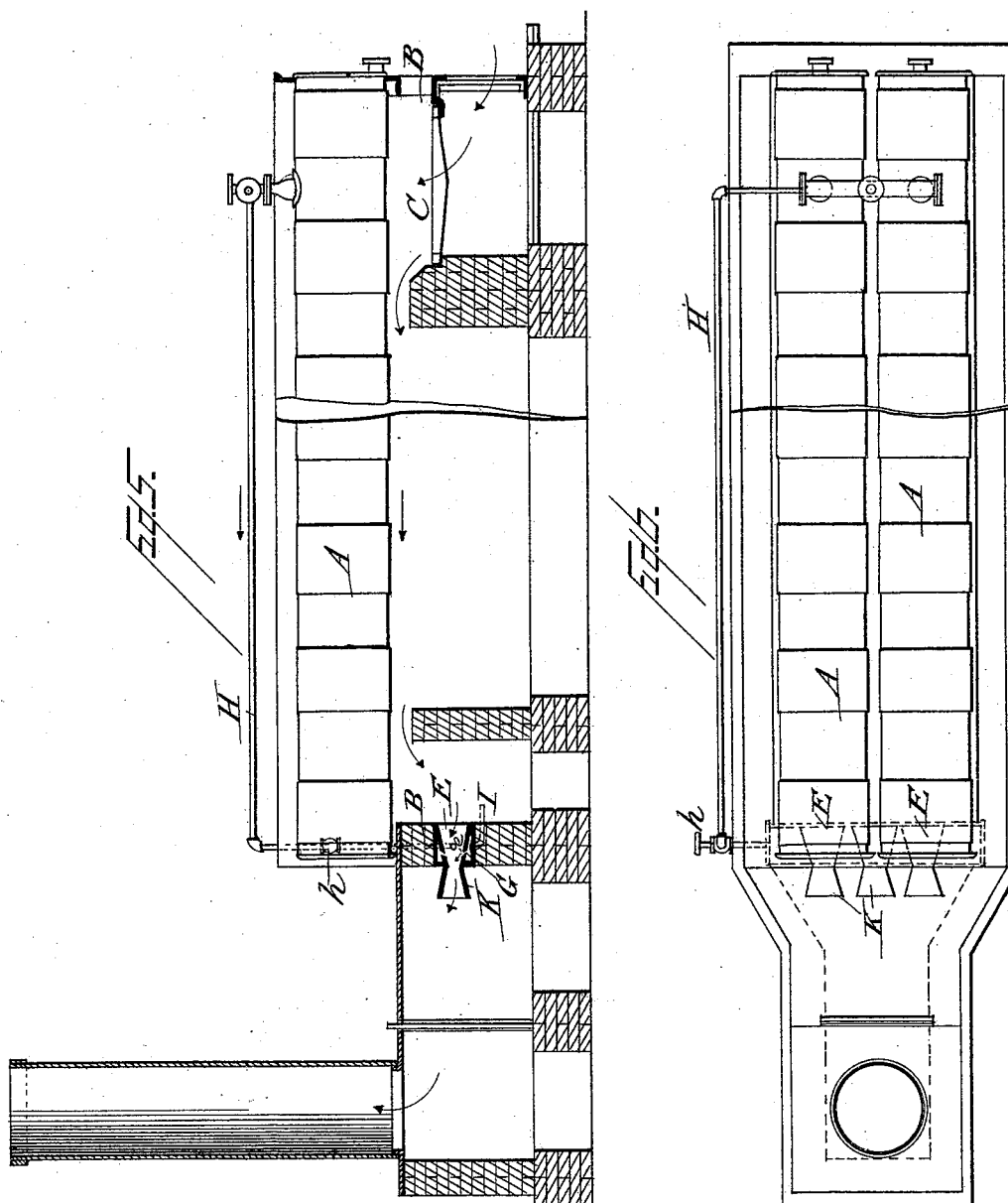
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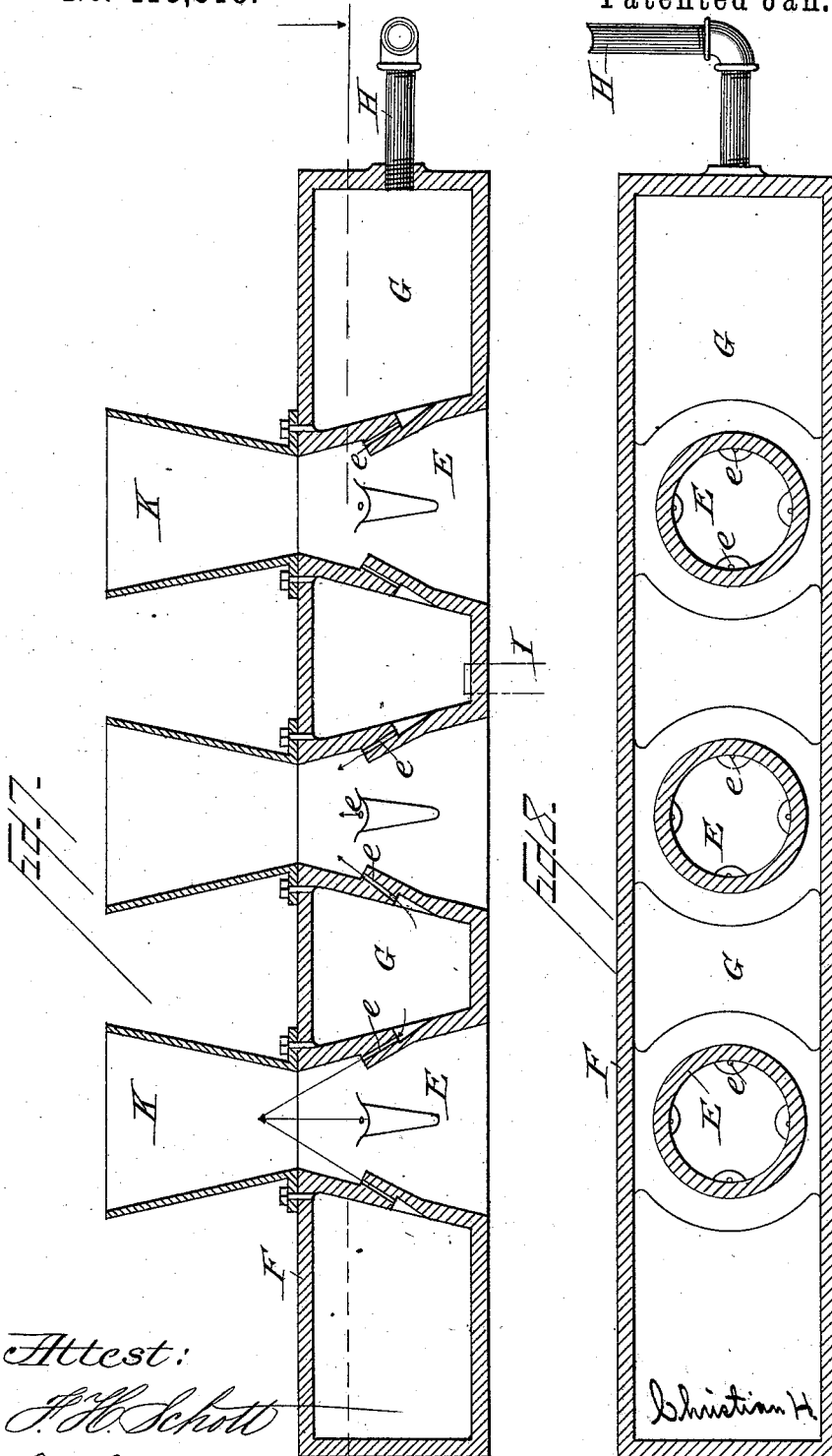
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4 Sheets—Sheet 4.

C. H. SCHARAR.
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UNITED STATES PATENT OFFICE.

CHRISTIAN H. SCHARAR, OF SCRANTON, PENNSYLVANIA.

DEVICE FOR CREATING DRAFT.

SPECIFICATION forming part of Letters Patent No. 418,818, dated January 7, 1890.

Application filed June 15, 1889. Serial No. 314,500. (No model.)

To all whom it may concern:

Be it known that I, CHRISTIAN H. SCHARAR, of Scranton, in the county of Lackawana and State of Pennsylvania, have invented certain new and useful Improvements in Devices for Creating Draft; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in devices for increasing draft.

The object is to provide simple and effective means, more particularly adapted to use in connection with steam-generating furnaces, whereby a draft of great force may be formed at pleasure with the loss or expenditure of a minimum amount of steam force.

With these ends in view my invention consists in certain features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a longitudinal vertical section of a steam-boiler furnace, showing my draft device in connection therewith. Fig. 2 is a plan view of the same. Fig. 3 is an enlarged vertical transverse section of the draft-increasing device in position at the base of the smoke-stack, and Fig. 4 is a horizontal section through line *xx* of Fig. 3. Figs. 5, 6, 7, and 8 represent, respectively, longitudinal vertical section, plan, enlarged horizontal section, and enlarged vertical section of a modified arrangement of the draft device.

A represents the boiler. In the present instance I have represented twin horizontal boilers set upon suitable supports B, through which the products of combustion from the furnace C pass to the uptake or smoke-stack D.

In Figs. 1, 2, 3, and 4 my draft-forcing device is represented as located at the base of the smoke-stack. The device consists of a group (in the present instance four are shown) of tubes E, contracted from their base upwardly, through which the products of combustion are obliged to pass to escape. This group of contracted passages is provided around the walls of each passage, below the more contracted portion of the passage, with several openings leading from without the tubes E upwardly

through the walls of the tubes to the interior thereof. These openings are represented by the letter *e*, and their slant is such as to cause the steam issuing therethrough to tend to focus a short distance above the more contracted end of the tube. The group of contracted tubes E is surrounded by a casing F, completely inclosing the side walls of the group and forming a chamber or steam-space G, encircling the sides of each one of the tubes of the group. The chamber or steam-space G is connected with the steam-space of the boiler by a pipe H, provided with a suitable stop-cock *h* for regulating the supply of steam. A return or waste pipe I, provided with a stop-cock *i*, is also connected with the lower portion of the steam-space G, for the purpose of removing water of condensation from the space. The contracted tubes E are provided with nozzles or expanding-tubes K, projecting upwardly from their more contracted portions, and preferably enlarged as they extend upwardly, forming a reverse taper relatively to the tubes E.

The effect of the above arrangement is as follows: The steam from the boiler admitted into the space surrounding the tubes E becomes superheated, because of its contact with the highly-heated walls of the tubes through which the products of combustion pass, and issues through the small openings *e* within the tubes E with great force, producing a vacuum or partial vacuum within the tubes beneath the issuing jets, which gases passing along the flue beneath the boiler rush to fill, and, together with the steam, are carried out of the nozzles K and up the smoke-stack. By arranging the several tubes E of the group around the axis of the uptake or smoke-stack, and by arranging the several passages or small openings *e* around the axis of the tubes E, the several jets have a tendency to fill the nozzles with a rapid upward current, and these several currents combined to fill the uptake and prevent any tendency to downward side currents, which are liable in many instances to interfere with an effective draft.

As a matter of simplicity of construction, the casing F and the group of contracted tubes E may be formed in a single casting,

and the nozzles K may be bolted to the casing F in position over the contracted ends of the tubes.

5 In Figs. 5, 6, 7, and 8 I have represented the group of contracted tubes with their nozzles arranged horizontally and in a line and located in one of the transverse supporting-walls beneath the boiler, in the path of the flue leading from the furnace to the uptake.
10 The principle upon which they operate is, however, the same in this arrangement as in that hereinbefore described, and it is evident that said tubes might be grouped in many other well known or approved forms and located at other positions in the draft-flue without departing from the spirit and scope of my invention. It is further to be noted that the chamber or steam-space G may be itself a steam-generating chamber, and that the steam
15 generated therein issuing from the nozzles, will, as before explained, produce the forced drafts.

20 Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination, a group of contracted tubes located in the draft-flue, a steam-space

surrounding the group of contracted tubes, flaring nozzles fitted to the tubes, the contracted tubes being provided with oblique openings extending through their walls, and a connection leading from the surrounding steam-space to the steam-supply, substantially as set forth.

2. A group of tubes E, provided with nozzles or expanding-tubes K, said tubes E being contracted from their base upwardly and provided around the walls of each passage below the contracted portions with openings, casing F, surrounding the tubes forming steam-space, the same being connected with the steam-space of the boiler by pipe H, a return or waste pipe I, connected with the steam-space G, for the purpose of removing water of condensation from the space, substantially as shown.

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

CHRISTIAN H. SCHARAR.

Witnesses:

W. L. LAWRENCE,

W. E. ANDERSON.