

No. 629,019.

Patented July 18, 1899.

J. G. THOMAS.

DRAFT DEVICE FOR CHIMNEY STACKS.

(Application filed June 16, 1898.)

(No Model.)

Fig. 1.

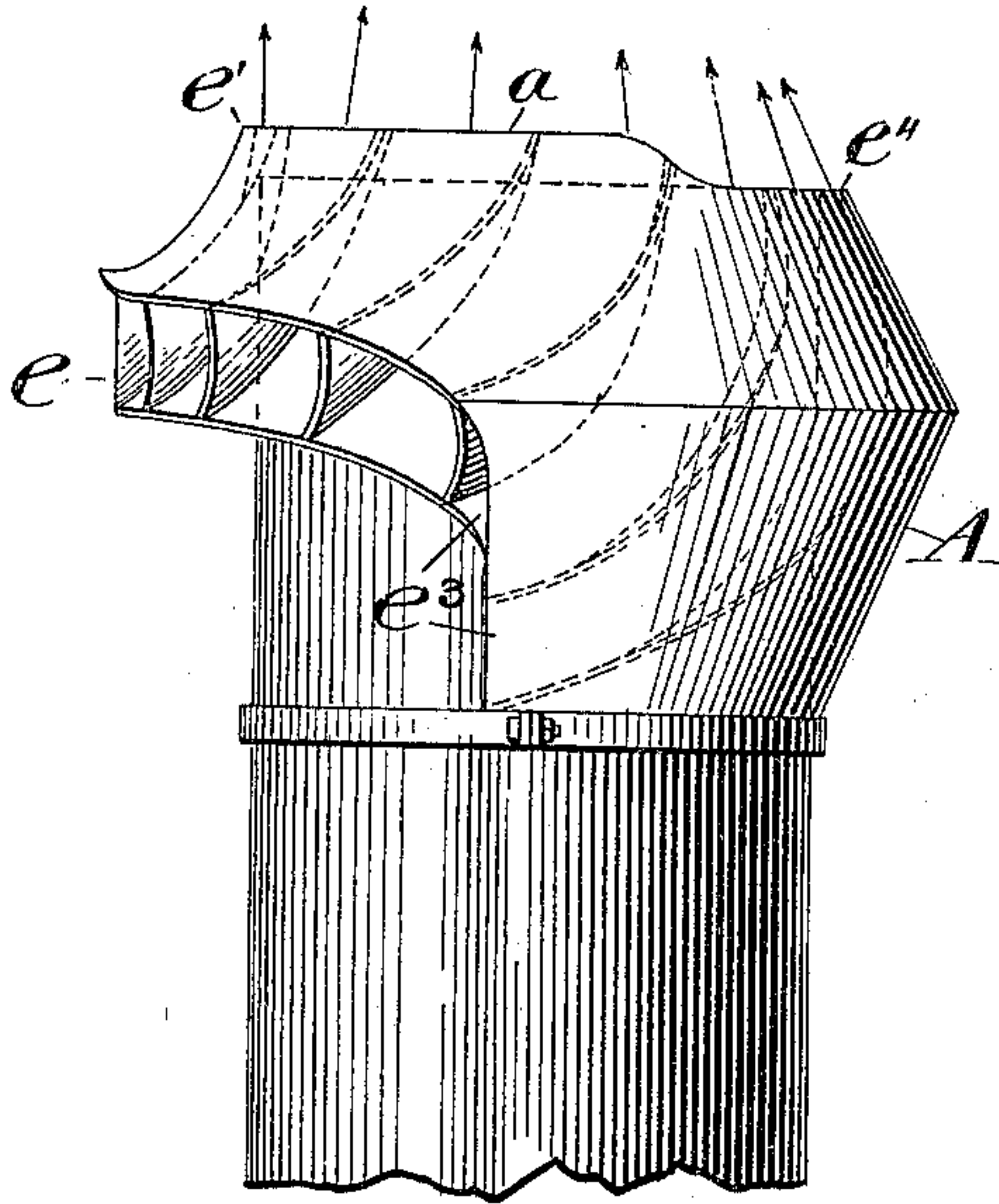


Fig. 4.

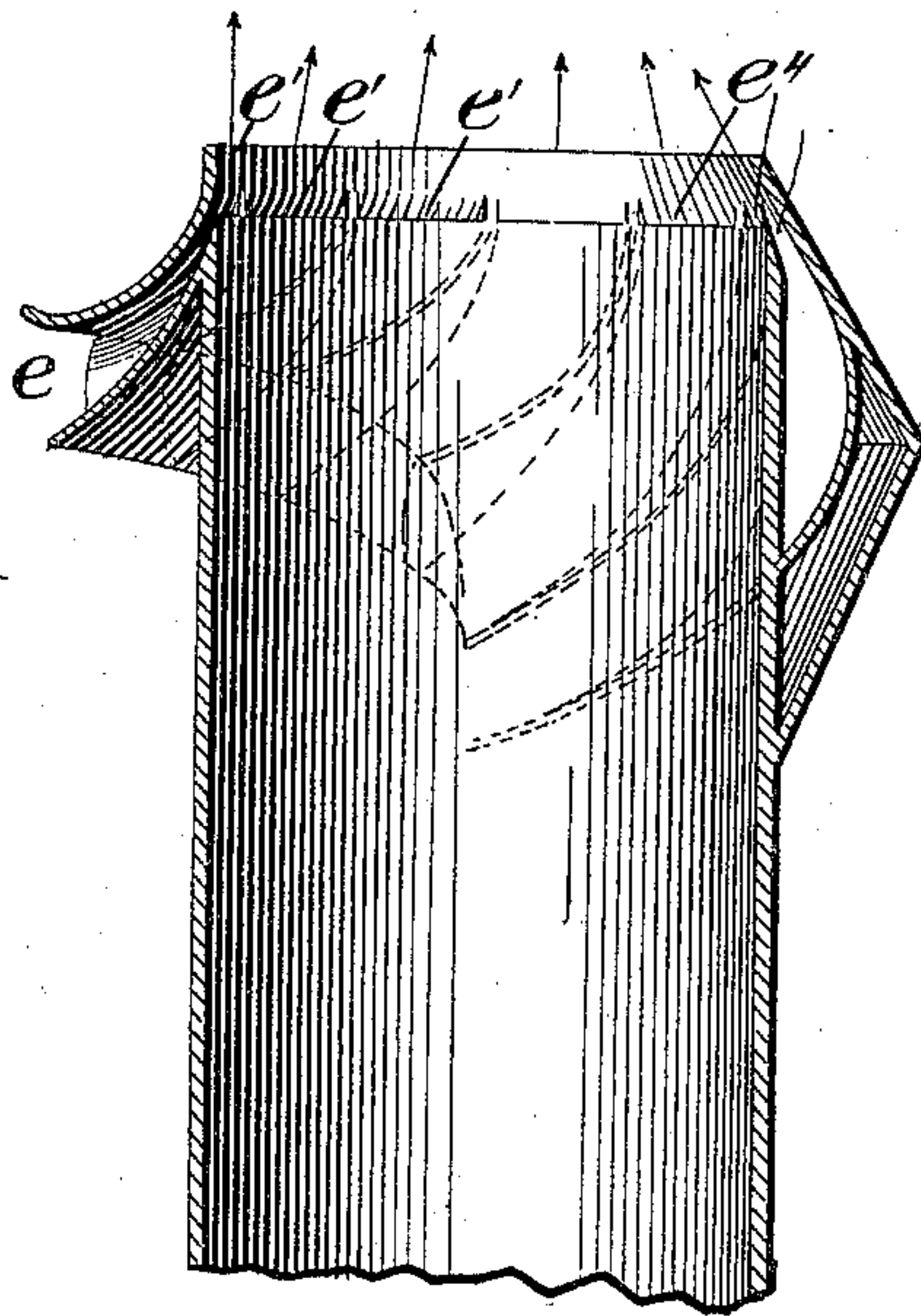


Fig. 2.

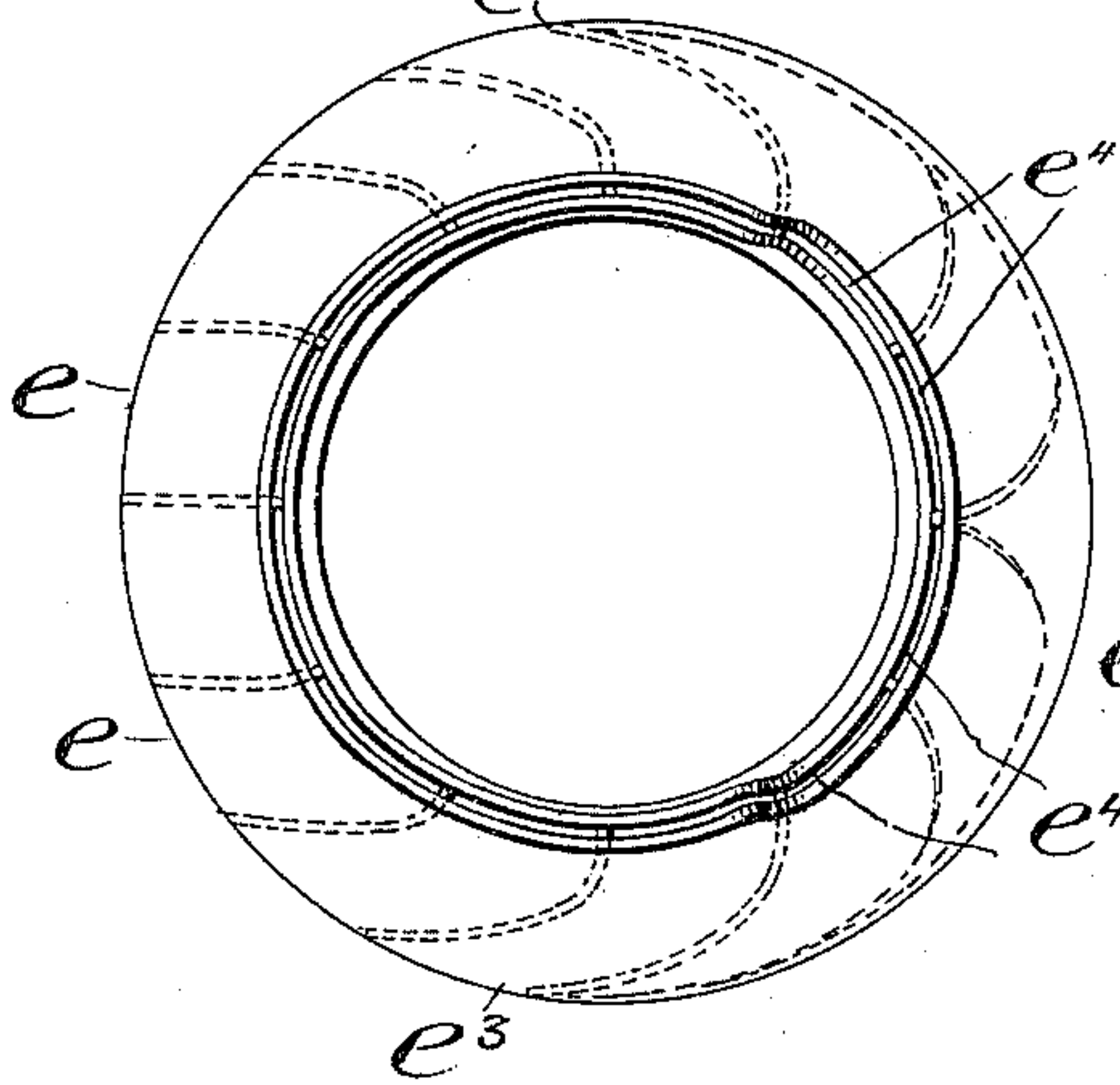
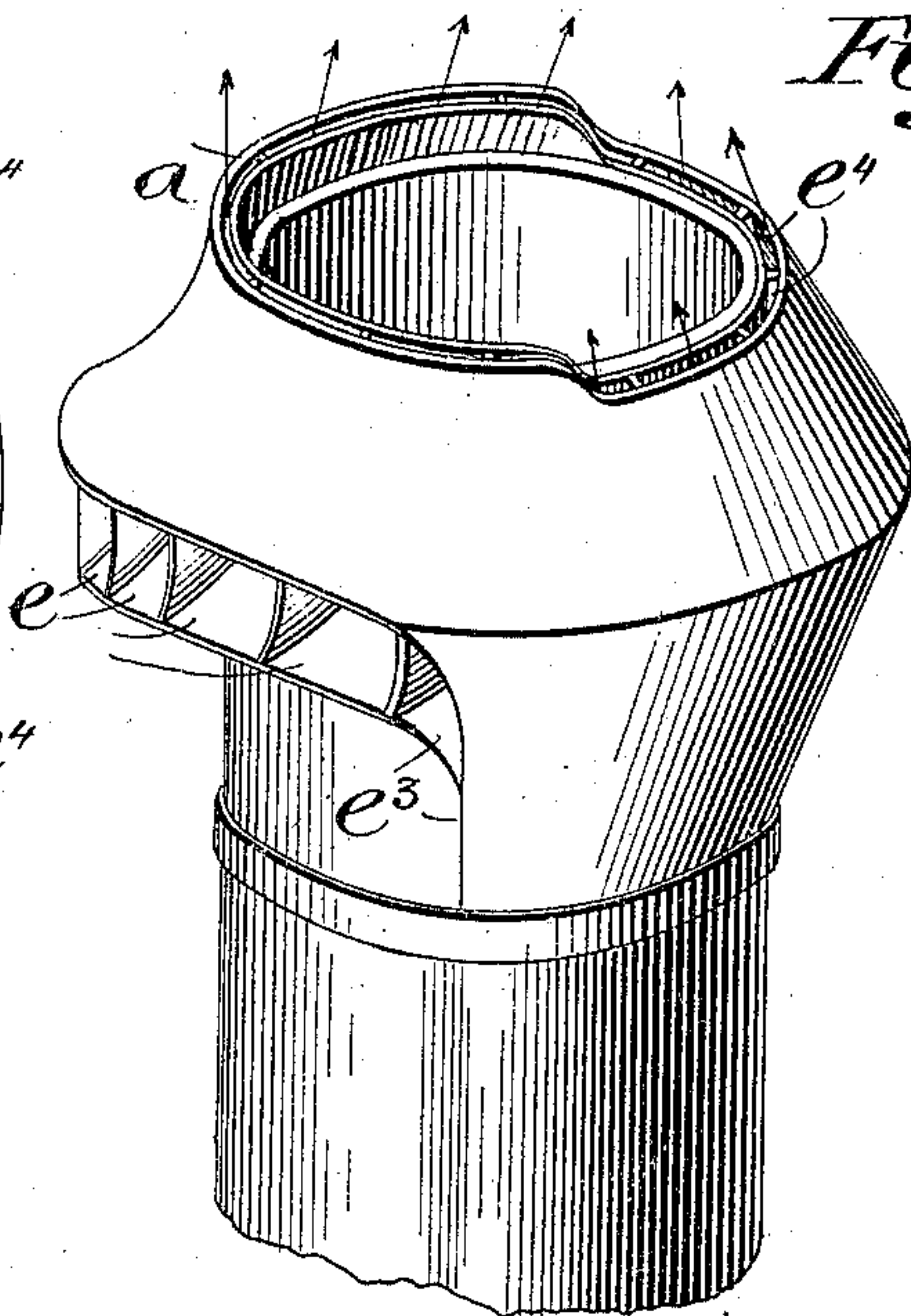


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

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DRAFT DEVICE FOR CHIMNEY-STACKS.

SPECIFICATION forming part of Letters Patent No. 629,019, dated July 18, 1899.

Application filed June 16, 1898. Serial No. 683,582. (No model.)

To all whom it may concern:

Be it known that I, JOHN G. THOMAS, a citizen of the United States of America, residing at Washington, in the District of Columbia, have invented a new and useful Draft Device for Chimney-Stacks, of which the following, taken in connection with the accompanying drawings, is a description.

The object of my invention is to provide means for increasing the draft of furnaces, especially of the locomotive type, although the device is applicable to steamboat-stacks or chimney-stacks of stationary furnaces.

A further object is to prevent what is known as "back draft" of locomotives—that is, when a locomotive is running and the steam is shut off while the furnace-door is open the gas and flame is caused by back draft to be forced in volume out of said door to the great discomfort of the fireman.

A still further object is to prevent the smoke from "trailing"—that is, when the locomotive or train is running and steam of the exhaust is shut off the smoke and gases from the locomotive-stack are forced by atmospheric pressure to take a downward course and not only obscure the sight of the engineer and fireman, but the same is drawn by suction caused by the momentum of the train and to pass down between the passenger-cars and in the open windows thereof to the great discomfort of the passengers.

A still further object is to provide an auxiliary draft to the exhaust-draft of a locomotive, and thereby to a certain extent assist the said exhaust.

Another object is to partially destroy the atmospheric pressure.

I attain these objects by constructing a device that can be slipped down over the stack and secured upon the upper outer periphery thereof, or it may, if desired, be cast integral with said stack, said device consisting of an assemblage of air-collectors formed of flaring horizontally-arranged openings at their lower ends and terminating in contracted vertically-arranged flat nozzles or slots so placed as to completely surround the upper end of the smoke-stack and constructed to extend vertically in front of said stack and inwardly at an angle of about thirty-five degrees toward the vertical center of said stack. The flar-

ing mouths of the collectors are arranged horizontal and all open toward the front of the stack or locomotive, the result being that when the locomotive is running a large volume of air is collected horizontally and discharged with considerable force by reason of the contracted openings in a thin sheet over the top of the stack, in a vertical sheet at the front, and in a substantially inverted cone shape at the sides and rear thereof toward the vertical center of said stack and shooting into the ascending gases at an almost right angle thereto, thereby creating a suction that considerably assists the exhaust of the locomotive and further acts as a continuous draft when said exhaust is shut off and the locomotive is in motion.

My invention can be better understood by referring to the accompanying drawings, in which—

Figure 1 gives a side view of my device as applied to a locomotive-stack, showing in dotted lines the partitions therein forming air-channels. Fig. 2 is a top and plan view. Fig. 3 is a perspective view of the device applied to a stack, and Fig. 4 represents in vertical section a locomotive-stack with my device cast integral therewith.

This draft device consists of a hood-shaped structure entirely open at the top, either secured upon the stack B or cast integral therewith, as stated, and extending around said stack, said device being open at the front and closed in the rear. Suitably placed therein are a number of air-collecting horizontally-arranged openings e e and e^3 , terminating in vertical or substantially vertical narrow elongated slots or nozzles e' and e^4 . The flaring openings or collectors e e^3 are all arranged to face in the direction of the front of the locomotive. Around the front the hood has a semicircular projection a , that extends a suitable distance above the top of front and to the rear portion of the sides of the stack, the object of this projection being to break the atmospheric pressure at the top of the stack, which is very strong and heavy when the locomotive is at full speed.

It will be noted, Fig. 3, that the openings or nozzles e open vertically at the top of the ridge or projection a , while those e^3 at opposite sides are inclined inward about thirty-

five degrees. The collectors e^3 slope downward upon opposite sides of the stack and terminate in slots or nozzles e^4 at the rear top of the stack. These latter nozzles, it will be
 5 seen, terminate flush with the rear top rim or edge of the stack.

When the device is cast integral with the stack, the slots or nozzles may be arranged just below the upper internal edge of the
 10 stack, as shown in Fig. 4, and all open on a slight incline toward the center of said stack. It will thus be seen that according to the arrangement shown in Figs. 1 and 3 when the locomotive is in rapid motion a practically
 15 unbroken column or wall or sheet of air, completely surrounding the upper end of the stack, is forced vertically over the front top of the stack and slightly inclined toward the center, at the sides, and rear of the stack, as indicated by the arrows, while by the arrange-
 20 ment shown in Fig. 4 the entire circumference of the wall of air is forced from just below the upper interior of the stack up in the shape of a cone over the top of the stack. Thus it will be seen that the ascending smoke
 25 and gases are not only facilitated in their ascent when the locomotive is running and they are under action of the exhaust, but after the steam is shut off and the exhaust not working the column of ascending air will lift the
 30 products of combustion high above the top of the stack, thereby preventing trailing of the smoke and overcoming back draft from atmospheric pressure, thereby keeping the cab
 35 of the locomotive clear and free from gases and flame. It will also be readily understood by those conversant with the steaming qualities of a locomotive that the auxiliary draft induced as described will to a very large extent
 40 relieve the exhaust, thus making it possible to enlarge the exhaust-nozzle, and thereby relieving the back pressure of steam in the cylinders.

I desire to have it understood that I do not wish to be confined to the exact shape or configuration of the device herein shown and described. Any means may be resorted to to
 45 collect large quantities of air and force the same out in thin sheets, entirely surrounding the top of the stack, so they fall within the scope of my invention. 50

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

1. A draft-top for locomotive-stacks, having a series of flaring, air-collecting, horizontal passages with their mouths all directed toward the front of the stack, such horizontal passages all communicating with and discharging through narrow vertical channels
 55 entirely surrounding the top of the stack, those in the front discharging the air straight upward while those toward and in the rear are so inclined as to discharge the air toward the center and above said stack, substantially
 60 as described. 65

2. A top for locomotive-stacks containing means for partially destroying atmospheric pressure, preventing the trailing of smoke and escapement of gas through the furnace-
 70 door, the same consisting of a device containing horizontal flaring air-collecting openings, opening into channels tapering to small narrow vertical nozzles encircling the entire upper end of said stack, and a semicircular ridge
 75 or projection A extending a suitable distance above the front and sides of said stack, the arrangement of said nozzles being such that a thin sheet of air is discharged straight upward over the front, and inclined toward the
 80 vertical center thereof at the sides and rear thereof, substantially as described.

JOHN G. THOMAS.

Witnesses:

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 A. R. TOWNSEND.