

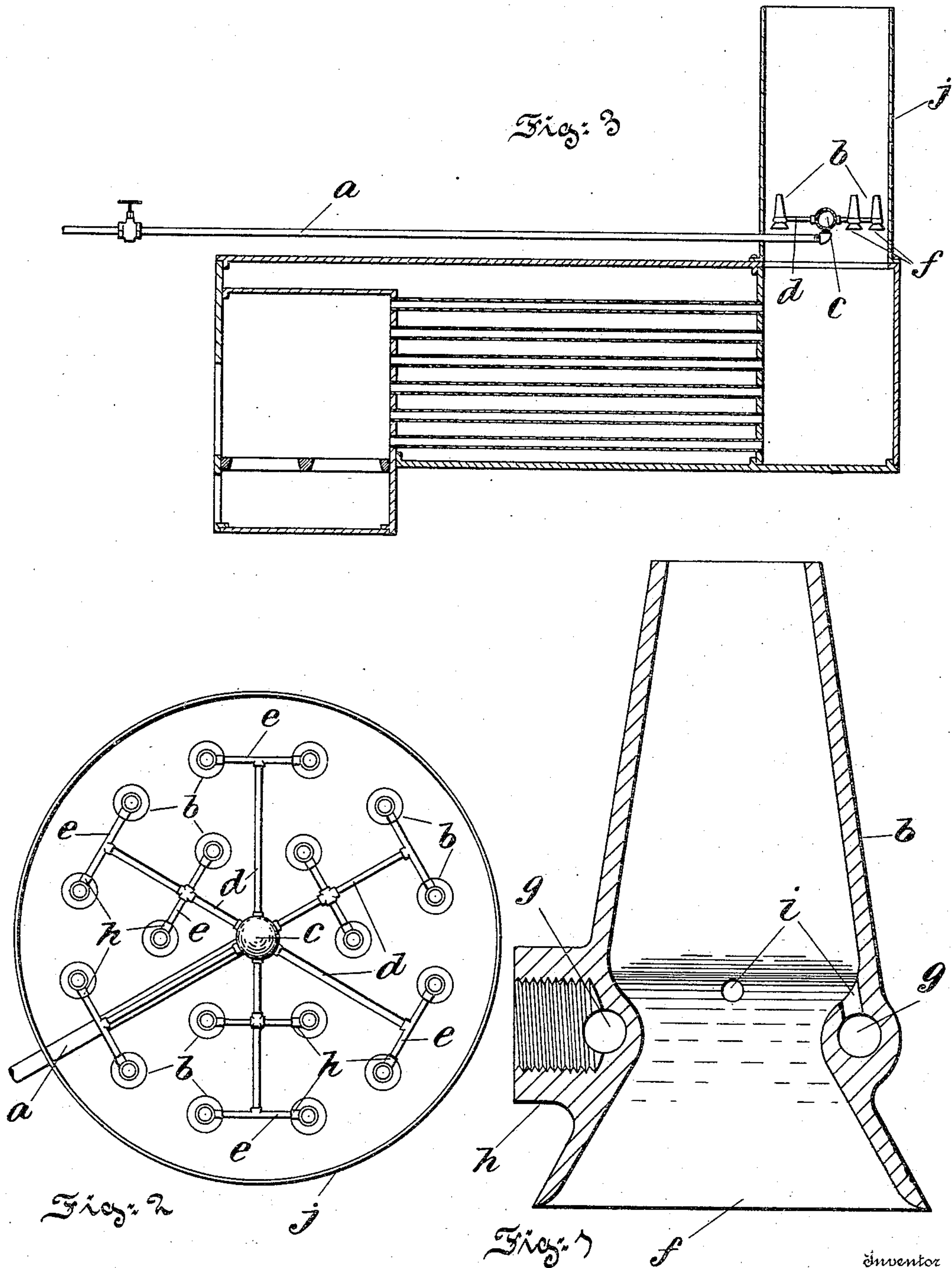
No. 765,967.

PATENTED JULY 26, 1904.

W. FREDERICKS.  
DRAFT PRODUCING APPARATUS.

APPLICATION FILED APR. 25, 1904.

NO MODEL.



Witnesses

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## UNITED STATES PATENT OFFICE.

WILLIAM FREDERICKS, OF PHILADELPHIA, PENNSYLVANIA.

## DRAFT-PRODUCING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 765,967, dated July 26, 1904.

Application filed April 25, 1904. Serial No. 204,688. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM FREDERICKS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Draft-Producing Apparatus, of which the following is a specification.

One object of the present invention is to increase the draft in a stack or similar vent by means of one or more exhaust-nozzles adapted to be operated by steam, air, or other suitable mediums.

Another object of the present invention is to attain this result in a manner that reduces the expense of operation to a minimum.

A further object is to provide apparatus for attaining the above results that is light, strong, durable, and comparatively inexpensive to manufacture.

Other objects will appear hereinafter.

The invention consists of the improvements hereinafter described and finally claimed.

The nature, characteristic features, and scope of the invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is a sectional view of an exhaust-nozzle of the invention. Fig. 2 is a plan view of a stack, illustrating how the exhaust-nozzles may be grouped to afford a maximum amount of induced draft; and Fig. 3 illustrates in central section a boiler and its complementary parts with exhaust-nozzles applied within the stack thereof.

Referring to the drawings, *a* is a valved pipe leading from any suitable source of supply and adapted to deliver steam, air, or other suitable medium to one or more exhaust-nozzles *b*. Obviously the number of nozzles to be used depends entirely upon the diameter of stack to which they are applied. For instance, a stack twelve inches or less in diameter may be equipped with one nozzle, while a stack forty-eight inches in diameter requires approximately eighteen. For the sake of illustration a multiplicity of nozzles are shown. The supply-pipe *a* may terminate in a spherical casting *c*, which is hollow and which may be termed a "distributor." Radially extend-

ing therefrom may be a number of pipes *d*, which in turn are subdivided into branches *e*. These branches communicate with the nozzles, as shown.

As illustrated in Fig. 1, the nozzle comprises a casting having a passage through it and somewhat resembling a truncated cone and having a flaring mouth *f* at its lower extremity. Intermediate of its base and top it is provided with an annular channel *g*, having communication with the internally-threaded boss *h* and with the interior of the nozzle, as by the ports or openings *i*. By this novel construction a medium, as steam, passing by way of the pipe *a*, distributor *c*, pipes *d* and *e*, channel *g*, and ports *i* to the passage or interior of the nozzle excites an increased draft in the stack *j* and accomplishes the same in a three-fold manner. First, the steam passing upward through the nozzle draws or sucks, as it were, through the flaring mouth the gaseous or other vapors exposed thereto; second, the velocity of the escaping steam at the same time drives all other vapors which may be above the nozzle clear of the stack, and, third, the velocity with which the above vapors are expelled will create a suction or draft throughout the stack, which obviously will tend to draw any remaining vapors which may be around or between the nozzles clear of the top of the stack.

The above-described apparatus is simple, durable, and comparatively inexpensive to manufacture and possesses the commercial value of being applicable to existing types of stacks, &c., without in any way interfering with the ordinary draft or requiring alteration to said stack to accommodate the apparatus. Experienced operators or mechanics are not necessary to its operation, installation, or repair, and it requires less consumption of fuel when installed. With special reference to Fig. 2, the nozzles are shown as being in such a position that the space between each nozzle is substantially equal throughout the entire area of the stack. This affords a maximum amount of draft, as will be self-evident when it is taken into consideration that an equal distribution of pressure is maintained at all points.

It will be obvious to those skilled in the art

to which my invention relates that modifications may be made in details without departing from the spirit thereof. Hence I do not limit myself to the precise mode of construction; but,

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with a stack, means for creating an induced draft comprising one or more exhaust-nozzles having a flaring mouth and a gradually-contracting apex, there being a passage through said nozzle, a channel of circular cross-section surrounding said passage and ports the walls of which are parallel with the gradually-contracting walls of the nozzle between the channel and passage, substantially as described.

2. In combination with a stack, means for creating an induced draft comprising one or more exhaust-nozzles having a flaring mouth at its base and a gradually-contracting apex, the said nozzle having a passage through it, an inlet in close proximity to the base for the admission of a medium under pressure, a channel in the same plane and communicating with the inlet and surrounding the passage and ports the walls of which are parallel with the upper walls of the nozzle between the passage and nozzle, substantially as described.

In testimony whereof I have hereunto set my hand this 8th day of April, 1904.

WM. FREDERICKS.

In presence of—

WM. J. FREDERICKS,  
ANDREW J. DAVIDSON.