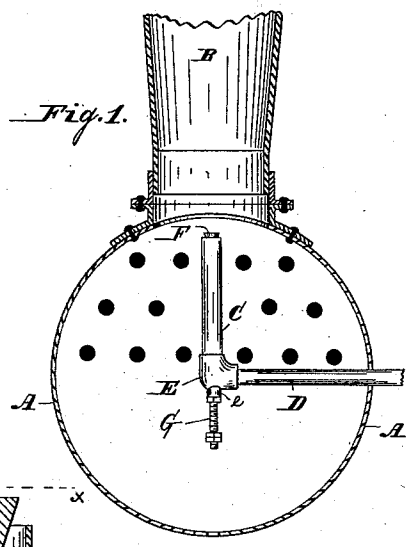
(No Model.)

J. F. MARKS.

EXHAUST NOZZLE.

No. 254,146. Patented Feb. 28, 1882.

Fig. 1.



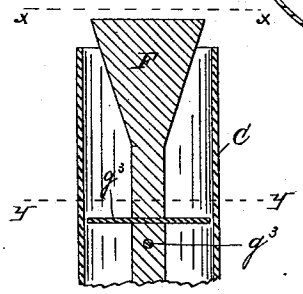


Fig. 2.

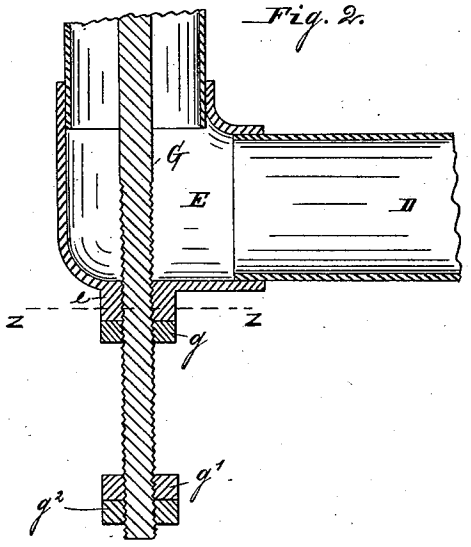


Fig. 3.

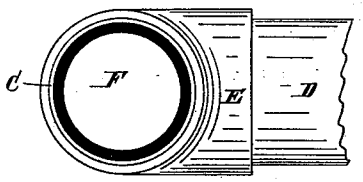


Fig. 4.

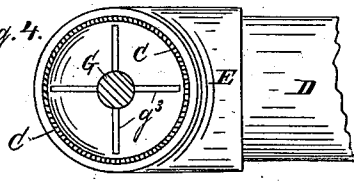
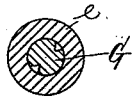


Fig. 5.



WITNESSES

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JAMES F. MARKS, OF CRAWFORDSVILLE, INDIANA.

EXHAUST-NOZZLE.

SPECIFICATION forming part of Letters Patent No. 254,146, dated February 28, 1882.

Application filed October 11, 1881. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. MARKS, of the city of Crawfordsville, county of Montgomery, and State of Indiana, have invented certain new and useful Improvements in Exhaust-Nozzles, of which the following is a specification.

The object of my said invention is to produce a nozzle by which the force of the exhaust of the steam into the smoke-stack can be governed and its direction controlled; and it consists in the application to the nozzle of an inverted cone-shaped device, and in combining therewith devices for regulating the same, as will be hereinafter more particularly described.

I am aware that it is not new to provide nozzles with devices of a conical form, and I therefore desire to be understood as disclaiming that which I do not specifically claim.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a side elevation of a portion of the exhaust-pipe and my improved nozzle, the smoke-space in front of the boiler and so much of the smoke-stack as is shown being shown in section; Fig. 2, a vertical section of the nozzle and cone and the means by which the latter is operated; Fig. 3, a top view of the same as seen when looking downwardly from the dotted line *x x* in Fig. 2; Fig. 4, a horizontal section, looking downwardly from the dotted line *y y;* and Fig. 5, a horizontal section on the dotted line *z z*.

In said drawings, the portions marked A represent the shell of the boiler; B, the smoke-stack; C, the nozzle; D, the pipe leading thereto; E, an elbow which joins the nozzle C and pipe D together; F, an inverted cone in the nozzle C, and G a rod by which said cone is operated.

The several parts A, B, and D are similar to the corresponding parts as ordinarily used. The nozzle C is formed of the same size throughout, instead of being contracted at the top end, as is usual. The elbow E, which joins said nozzle and the pipe D together, is provided with a boss for the purpose of affording a better support for the rod G.

The cone F is of slightly less diameter than the inside diameter of the nozzle, and is usually situated about in the position shown, but is easily regulated by means of the screw-rod G, on which it is mounted. It divides the steam escaping into a funnel-shaped jet and directs it outwardly against the inside of the stack B, thus entirely filling the same and causing much more draft force than when its course is directly upward through the center of the stack.

The rod G carries the cone F and regulates its position. It is screw-threaded along its lower portion, and is screwed (preferably rather loosely) through the boss on the elbow E, and is provided with a jam-nut, *g*, by which it is held securely in position. It also is preferably provided with two nuts, g' g^2, on its lower end, which take the place of a head, whereby it can be turned. Any other form of head, however, would do equally as well, except that most others are more costly. Cross-arms g^3 g^3 are inserted in this rod (preferably near its upper end) to guide and retain it and the cone F in a substantially exact central position, so that the steam will escape equally on all sides of said cone.

It is well understood, of course, that the smaller the orifice the greater the force will be of a given quantity of steam escaping through it. Therefore, when it is desired that the draft shall be increased the rod G is turned so as to draw the cone F down close to the top of the nozzle. When it is desired to have a less forcible draft, however, the rod is turned so as to elevate the cone, and thus leave a greater space between it and the walls of the nozzle.

I desire to call especial attention to the fact that my device secures an unbroken jet of steam, which entirely fills the stack, without reference to its volume or force.

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

The combination of the nozzle C, pipe D, elbow E, having boss *e*, cone F, and rod G, having cross-bars g^3, a jam-nut, *g*, and a head upon its lower end, whereby the cone can be easily, conveniently, and expeditiously regulated to the desired position, substantially as shown and described, and for the purposes specified.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 6th day of October, A. D. 1881.

JAMES F. MARKS. [L. S.]

In presence of—

C. BRADFORD,

C. DUVALL.