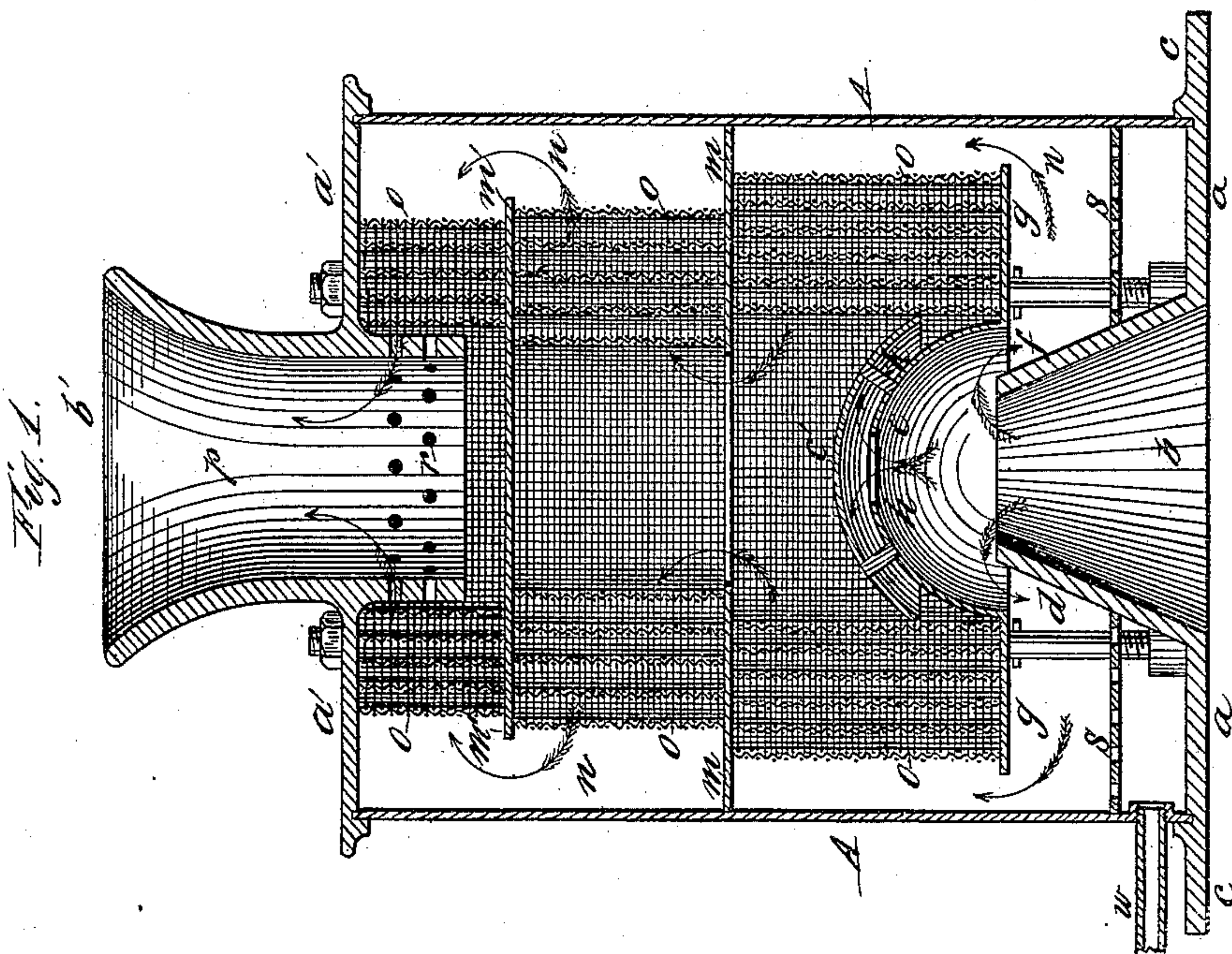
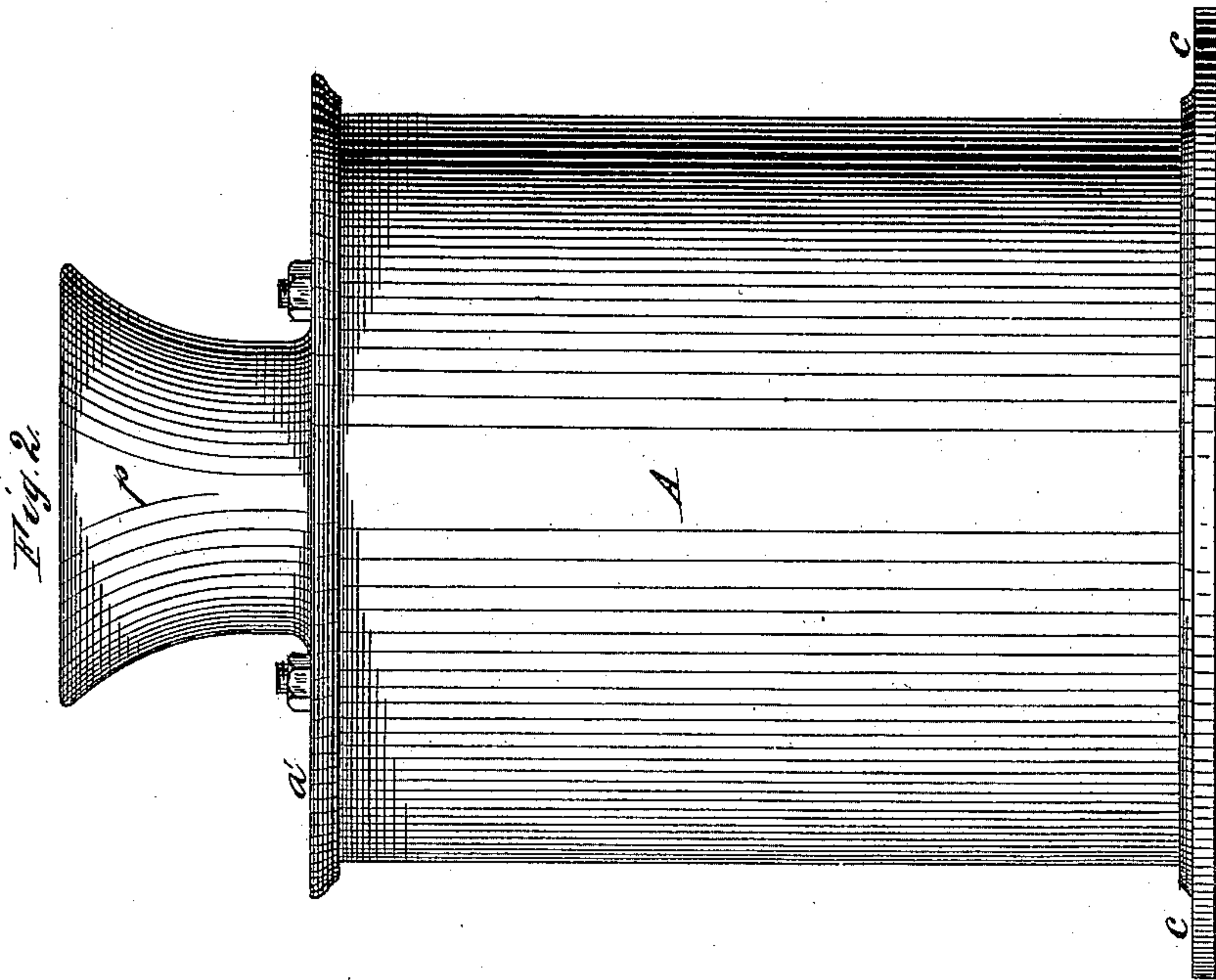


W. ZELLNER.  
Noise-Quieting Steam-Nozzle.

No. 227,341.

Patented May 4, 1880.



Witnesses:  
Charles F. Searle,  
Jules Halbran

Inventor:  
William Zellner  
per Chas. H. Forbes



# UNITED STATES PATENT OFFICE.

WILLIAM ZELLNER, OF PATERSON, NEW JERSEY, ASSIGNOR TO THE CONSOLIDATED SAFETY VALVE COMPANY, OF BOSTON, MASSACHUSETTS.

## NOISE-QUIETING STEAM-NOZZLE.

SPECIFICATION forming part of Letters Patent No. 227,341, dated May 4, 1880.

Application filed October 14, 1879.

*To all whom it may concern:*

Be it known that I, WILLIAM ZELLNER, of Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful Improvement in Noise-Quieting Steam-Nozzles; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents an elevation, and Fig. 2 a central vertical section, of a device embodying my invention.

The object of this invention is to subdue the noise of escaping steam.

The invention consists in constructing an escape-pipe nozzle or chamber, through which the steam passes in its passage to the atmosphere, with internal deflecting plates or partitions that form a circuitous passage there-through and subdivide the escaping steam by interposed wire-gauze, perforated plates, or other porous material.

In order that others may understand and use my invention, I will first proceed to describe the construction and operation of a device embodying the same, and subsequently to define in the claims the novel features thereof.

In the drawings, A represents a hollow cylinder or case, provided with fixed heads *a a'*, having central openings *b b'* for the inlet and exit of the steam.

The head *a* is provided with a projecting horizontal flange, *c*, to be connected to a corresponding flange upon an escape or exhaust pipe of the boiler, the central opening *b* forming the inlet-passage to the instrument.

The opening *b* is surrounded by an inwardly-projecting cone-shaped nozzle, *d*, its apex forming a contracted passage for the steam.

*e* represents a hemispherical plate of somewhat larger diameter than the opening at the inner end of the nozzle *d*, and located directly above the same, the base of the hemispherical plate *e* being in line with the inner end of the nozzle *d* and forming an annular passage, *f*, to the interior of the case or cylinder A, as indicated by the arrows, Fig. 2. The hemispherical plate *e* is also provided with a surrounding horizontal flange, *g*, that extends nearly to the

sides of the case A, having a passage, *n*, for the steam that is directed thereto by the hemispherical plate *e*. This plate *e* is also provided with a central opening, *h*, through which a portion of the steam is allowed to pass.

The opening *h* is covered by a cap, *c'*, corresponding in shape to the plate *e*, and affixed thereto by stud-bolts *k k*, to form an annular passage over and around the top of the plate *e*.

*m m'* are deflecting-plates, arranged horizontally, as shown, the plate *m* having a central opening for the passage of the steam, and the plate *m'* made solid and shortened to leave an annular passage, *n*, between it and the case A, similar to the arrangement of the flange *g* upon the hemispherical plate *e*.

*o* represents a series of wire-gauze partitions, arranged vertically between the deflecting-plates *m m'* and flange *g*, and with intermediate spaces, as shown. These partitions are interposed to fill the circuitous passage formed by the deflecting-plates for the purpose of subdividing the steam. Any number of such partitions may be introduced to make up the respective series, and any suitable material that will permit the passage of the steam in a divided state may be substituted therefor.

The exit-opening *b'* is fitted with a short pipe, *p*, extending through the head *a'*, projecting outward and provided with a flared end, and also projecting within the case or cylinder, as shown. The inwardly-projecting portion of this pipe may also contain a series of perforations, *r*, as shown, to continue the subdividing process up to the point of the final exit of the steam to the atmosphere.

S represents a perforated plate, which serves to cover a portion of the annular space surrounding the nozzle *d*, and within which water produced by condensation of the steam may lodge and be withdrawn through the pipe *w*.

The operation of my invention will be readily appreciated by an inspection of the relative arrangement of the parts and composition of the substance interposed within the circuitous passages for subdividing the escaping steam without further explanation, the effect of such a result being authenticated by variously-concocted devices involving the same principle. Therefore,



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

1. A pipe, nozzle, or chamber for the passage  
5 of escaping steam, provided with internal projecting plates, forming a circuitous passage therethrough, and having one or more interposed vertical partitions, composed of wire-gauze, perforated plates, or other porous material, whereby the escaping steam is separated  
10 or divided, for the purpose specified.

2. A pipe, nozzle, or chamber for the passage of escaping steam, provided with an inwardly-projecting nozzle, *d*, forming the inlet-  
15 passage, a hemispherical deflecting-plate, *e*, having a projecting flange, *g*, one or more horizontal deflecting-plates, *m m'*, forming a circuitous passage therethrough, and one or more

series of interposed partitions, composed of wire-gauze or analogous material, whereby the  
20 escaping steam is subdivided, for the purpose specified.

3. The hemispherical plate *e*, having the central aperture *h*, in combination with the cap *c'*, whereby a passage is formed for a di-  
25 vided portion of the steam, for the purpose specified.

4. The exit-opening *b'*, fitted with a pipe, *p*, projecting within and beyond the head *a'*, and with or without the perforations *r*, substan-  
30 tially as set forth.

WILLIAM ZELLNER.

Witnesses:

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