

E. A. WILDT.
STEAM JETTING DEVICE,
APPLICATION FILED AUG. 16, 1907.

924,121.

Patented June 8, 1909.

Fig. 1.

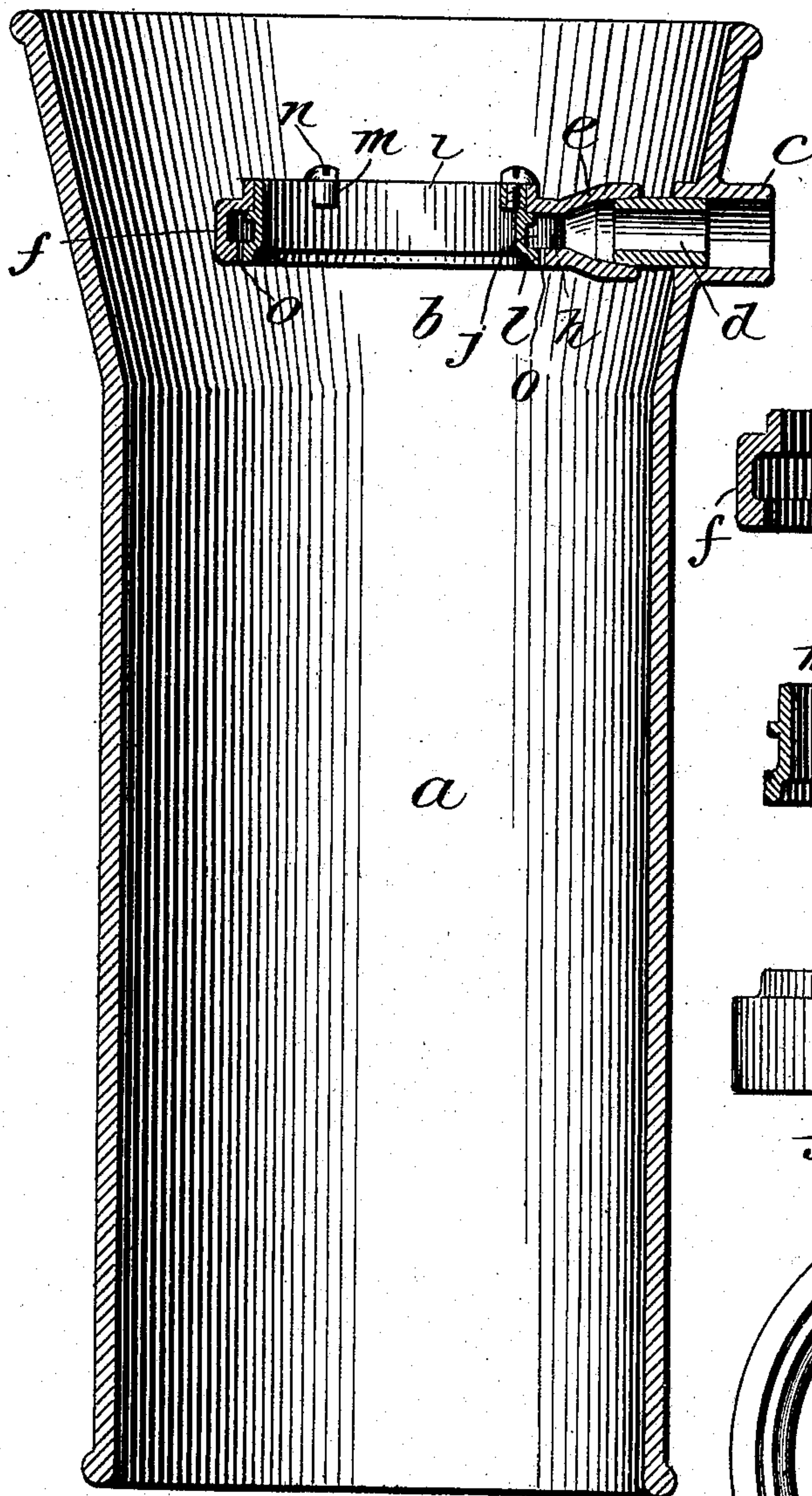


Fig. 2.

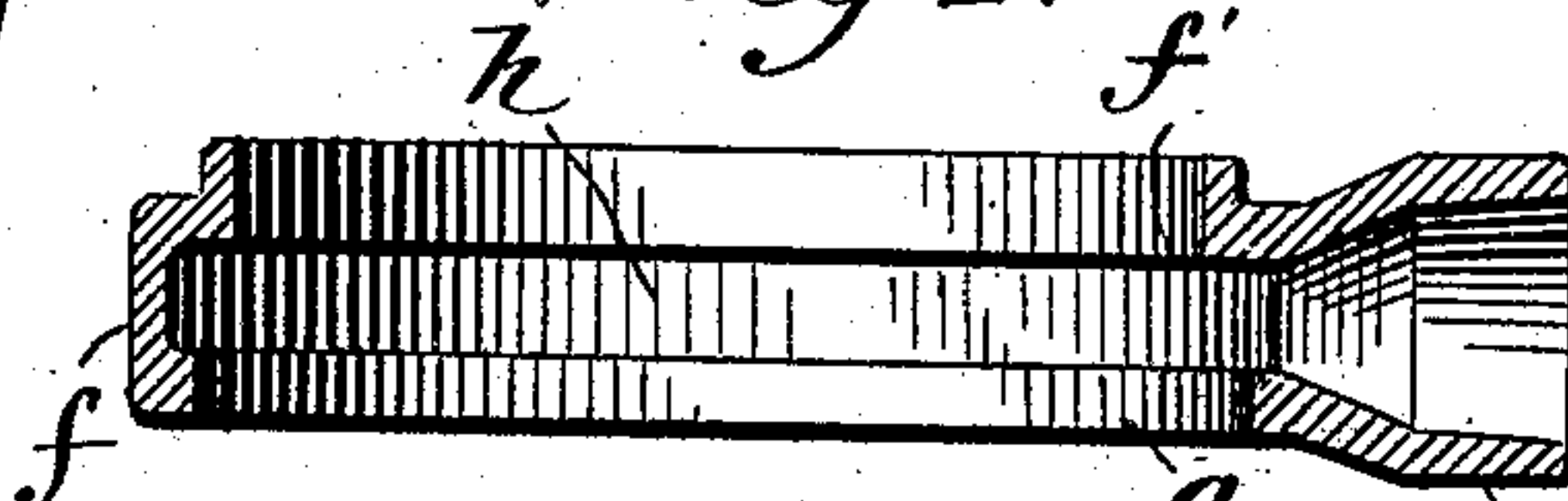


Fig. 3.

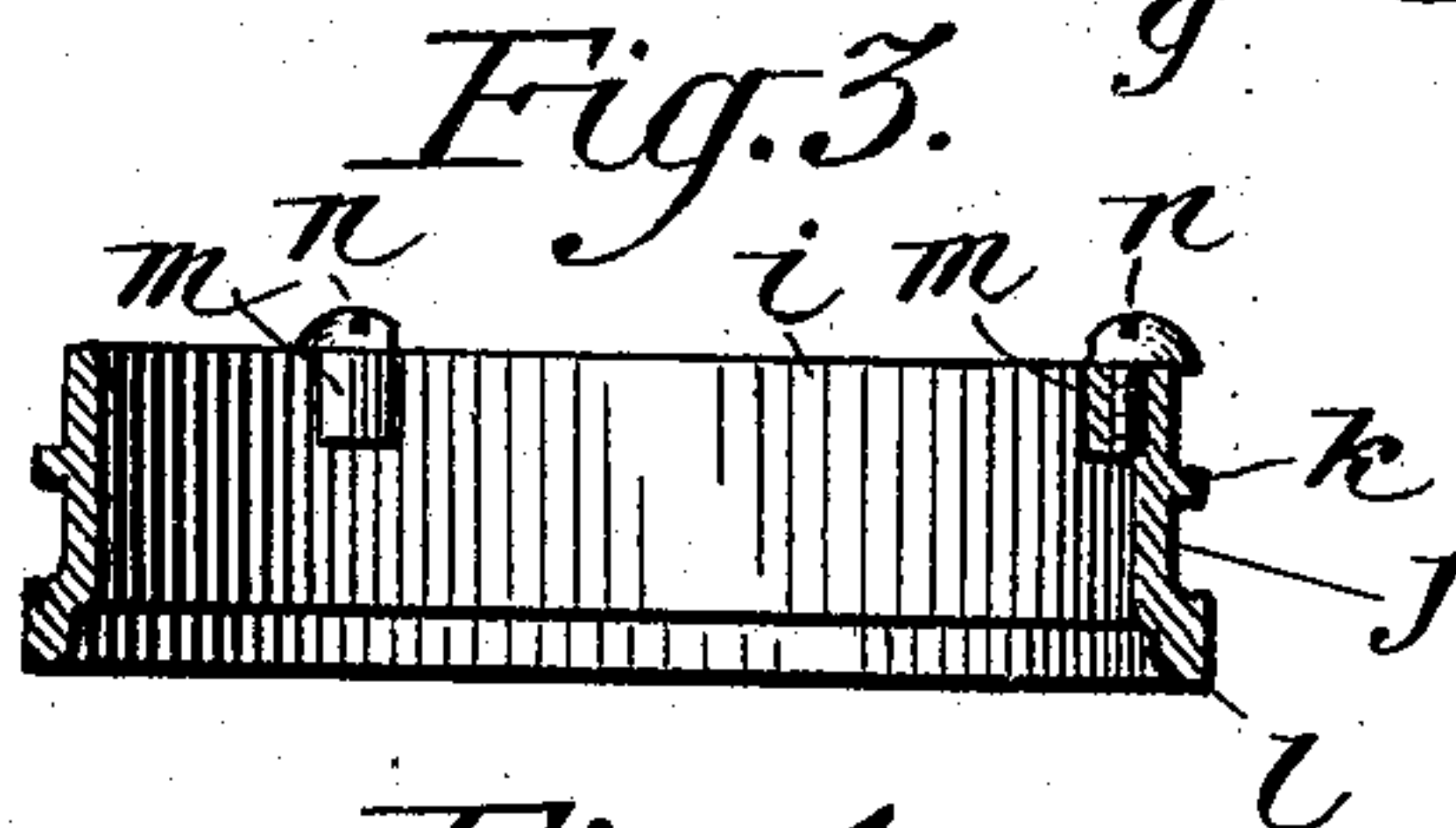


Fig. 4.

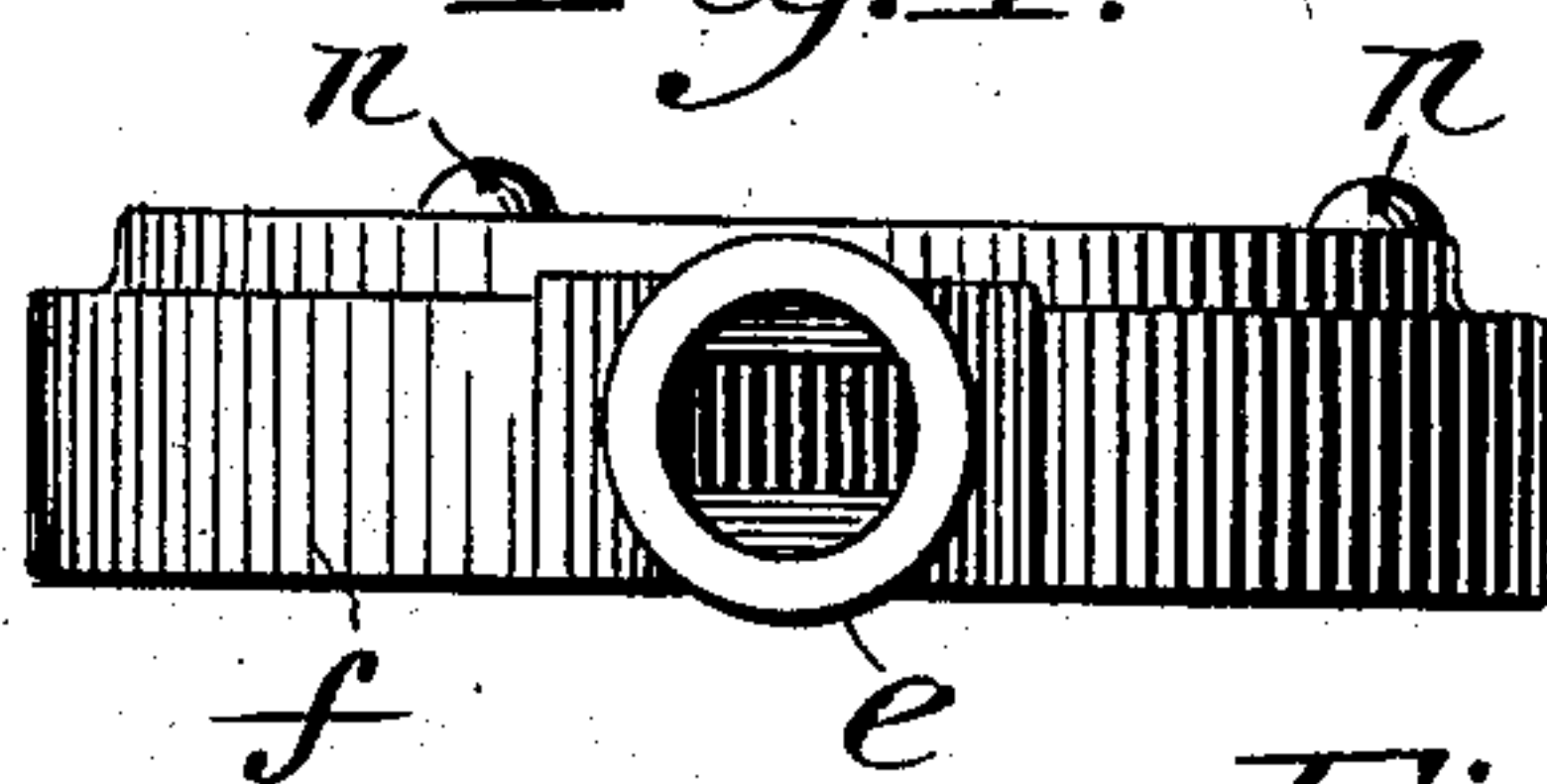
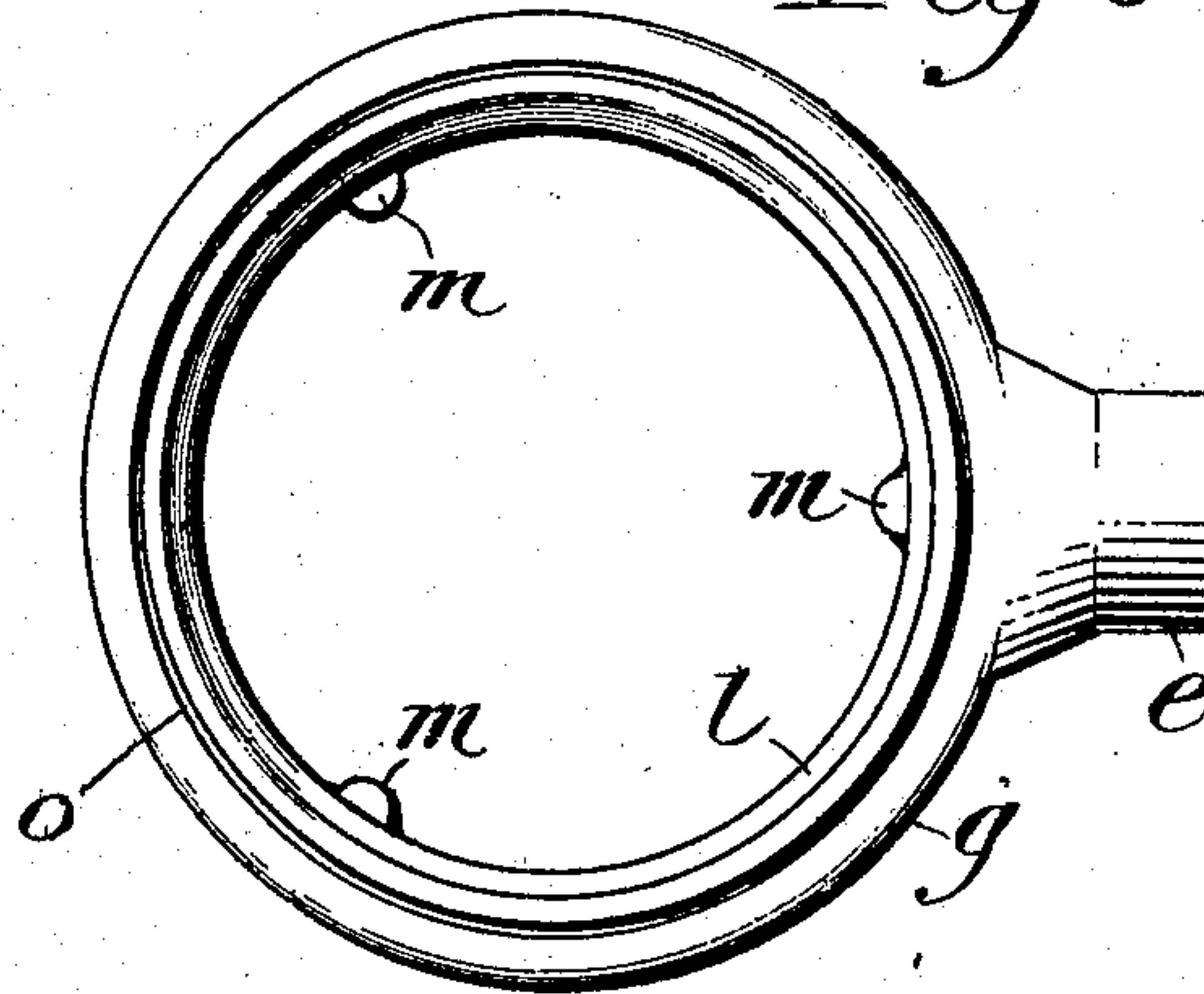


Fig. 5.



Witnesses:

[Signature]

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Inventor:

E. A. Wildt

by *[Signature]*

UNITED STATES PATENT OFFICE.

EDWARD A. WILDT, OF SCRANTON, PENNSYLVANIA.

STEAM-JETTING DEVICE.

No. 924,121.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed August 16, 1907. Serial No. 388,779.

To all whom it may concern:

Be it known that I, EDWARD A. WILDT, a citizen of the United States, residing in and having my post-office address at 704 Connell Building, Scranton, county of Lackawanna, State of Pennsylvania, have invented certain new and useful Improvements in Steam-Jetting Devices; 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.

The object of the invention is to provide an improved form of steam jetting device for furnace blowers and the like, whereby the steam, instead of being admitted to the air duct in a series of separate jets, as heretofore practiced, is delivered into the air duct in a continuous annular jet which expands in the duct and entrains larger quantities of air than is practicable in the older form of jetting devices.

In the accompanying drawings: Figure 1 is a longitudinal section of an air duct for a boiler furnace or the like having the invention applied thereto; Fig. 2 is a similar section through the outer ring of the jetting device; Fig. 3 is a corresponding view of the inner ring; Fig. 4 is an edge view of the jetting device; Fig. 5 is a plan view thereof.

Referring to the drawings, *a* indicates the air duct adapted to be connected with the furnace below the grate bars and may, of course, be formed as an integral part of the furnace structure or built in the walls thereof as desired. The entrance end of the duct is preferably funnel-shaped to permit free admission of air.

The jetting device, as is usual, is mounted centrally in the air duct and preferably in the tapering conical end thereof so as to deliver the steam jet longitudinally of said duct *a*, and to carry with it regulable volumes of air into the fire-box.

In the forms of jetting devices as heretofore employed, it has been customary to construct the jet forming member as a hollow casting of annular form provided with a large number of nipples or orifices from which individual jets of steam would be delivered longitudinally of the air duct. Such devices have been found unsatisfactory for the reason that the relatively small orifices or nipples were liable to become clogged, and for the further reason that the apparatus was generally inefficient and

wasteful of the steam owing to the fact that the air was carried along by a large number of relatively small or attenuated jets of steam. The present invention has in view the provision of a device whereby the clogging of the jet orifices is prevented and a uniform solid annular jet of steam, delivered longitudinally of the air duct which, expanding in the latter, entrains and carries along with it large quantities of air with a minimum expenditure of steam. The jetting device proper consists of an outer rim *f*, which may be of any desired geometrical form, but is conveniently made in the form of a ring or annulus having at one side a nipple *e*, which is connected by a small coupling member *d* with a nipple *c* on one side of the air duct *a*, which nipple in turn is connected with the steam supply pipe. The ring *f* is preferably provided with a depression *h*, defined by a rearwardly projecting flange *f'* and a front flange *g*. Within the outer rim or ring *f*, there is fitted an inner ring *i*, the outer rear peripheral portion of which is of substantially the same diameter as the inner peripheral surface of the flange *f'*, so that the two surfaces fit together with a substantially steam-tight joint when the two rims are assembled. In order to insure the tightness of the joint between the rings at their rear meeting edges, a lateral flange *k* is formed about the ring *i*, which abuts against the shoulder on the ring *f* formed by the flange *f'*. The forward peripheral edge *l* of the ring *i* is spaced from the inner peripheral edge of the flange *g* on ring *f*, to afford a narrow annular passage opening into the hollow chamber *h* and forming an exit for the steam.

In order to secure ring *i* to ring *f* and lock the same in position, said ring *i* is provided with a series of spaced lugs *m* on its inner periphery, which are provided with suitable holes to receive screws *n*, the heads of said screws *n* overlapping the joint between the inner and outer rings and serving to draw said rings firmly together with the flange *k* engaging the inner surface of ring *f* behind said flange *f'*. In order to permit the inner ring *i* to be removed, one side of each screw *n* is cut away so as to clear the edge of flange *f*, when the cut-away portions of the screws are turned outwardly. The meeting surfaces of the lateral flange *k* of the inner ring and of the shoulder or seat

for said flange on the outer ring can be finished smoothly in order to produce an absolutely steam tight fit between the parts; and it is an important feature of the invention
 5 that the means for clamping together the two rings, viz; the screws *n*, are located at the rear edges of the rings and entirely independent of the lateral flange *h*, whereby the liability of leakage is still further lessened.

10 As thus constructed it will be observed that the jetting device provides a clear annular chamber *h*, which opens into the air duct *a* through an unobstructed annular slot *o*, which latter may be cleaned of any ob-
 15 structing matter lodging therein by running a thin piece of metal around the slot, and should the interior hollow chamber become obstructed it may be readily cleared by removing the inner ring. The jet of steam dis-
 20 charged by this device is in the shape of a complete ring or cylinder, which, after entering the duct *a*, expands in all directions completely filling the tube ahead of the jetting ring, thereby entraining the air
 25 throughout substantially the entire area of the entrance end of the air duct and forcing said air in large volumes into the fire-box.

As before stated, the jet of steam discharged by the device, is in the form of a
 30 cylinder, it being non-convergent as distinguished from the usual jets which converge toward the center of the air duct. It has been found that by forming the annular slot *o* in such a manner that the jet will be
 35 directed parallel to the axis of the air duct, a larger amount of air will be sucked into the duct than would otherwise be the case.

What I claim as my invention is:

1. The combination with an air duct, of
 40 an annular jetting device located therein and comprising inner and outer rings detachably assembled and removable from the air duct and forming between them an annular slot through which the steam passes to entrain
 45 the air through the duct.

2. A jetting device comprising an outer ring formed with an annular steam chamber and having a rearwardly projecting flange creating a shoulder, an inner ring forming in connection with the outer ring a jet pas- 50
 sage, a lateral flange formed on the inner ring at its outer face and seated against said shoulder, and means independent of said flange by which the latter is drawn and held tightly against the shoulder in order to se- 55
 cure the rings together.

3. A jetting device comprising an outer ring formed with an annular steam chamber and having a rearwardly projecting flange creating a shoulder, an inner ring forming 60
 in connection with the outer ring a jet passage, a lateral flange formed on the inner ring at its outer face and seated against said shoulder, and fastening devices threaded into the inner ring and having heads over- 65
 lying the flange of the outer ring, whereby the lateral flange may be held tightly on its seat.

4. A steam jetting device consisting of an outer ring *f*, provided with an inlet nipple 2, 70
 and having the front and rear ends of its bore formed in two diameters of which the rear diameter is the smaller, an inner concentric ring *i*, slipped into the outer ring with its rear portion snugly fitting the smaller 75
 diameter of the outer ring and there provided with an annular flange *h*, resting against the shoulder formed by the reduced bore of said outer ring, and the forward end of the inner ring being of less diameter than 80
 the forward bore of the outer ring thus forming a continuous annular jet orifice, and means for securing the rings together, substantially as described.

In testimony whereof I affix my signature, 85
 in presence of two witnesses.

EDWARD A. WILDT.

Witnesses:

W. S. McMILLAN,
 E. A. BIDDLEMAN.