

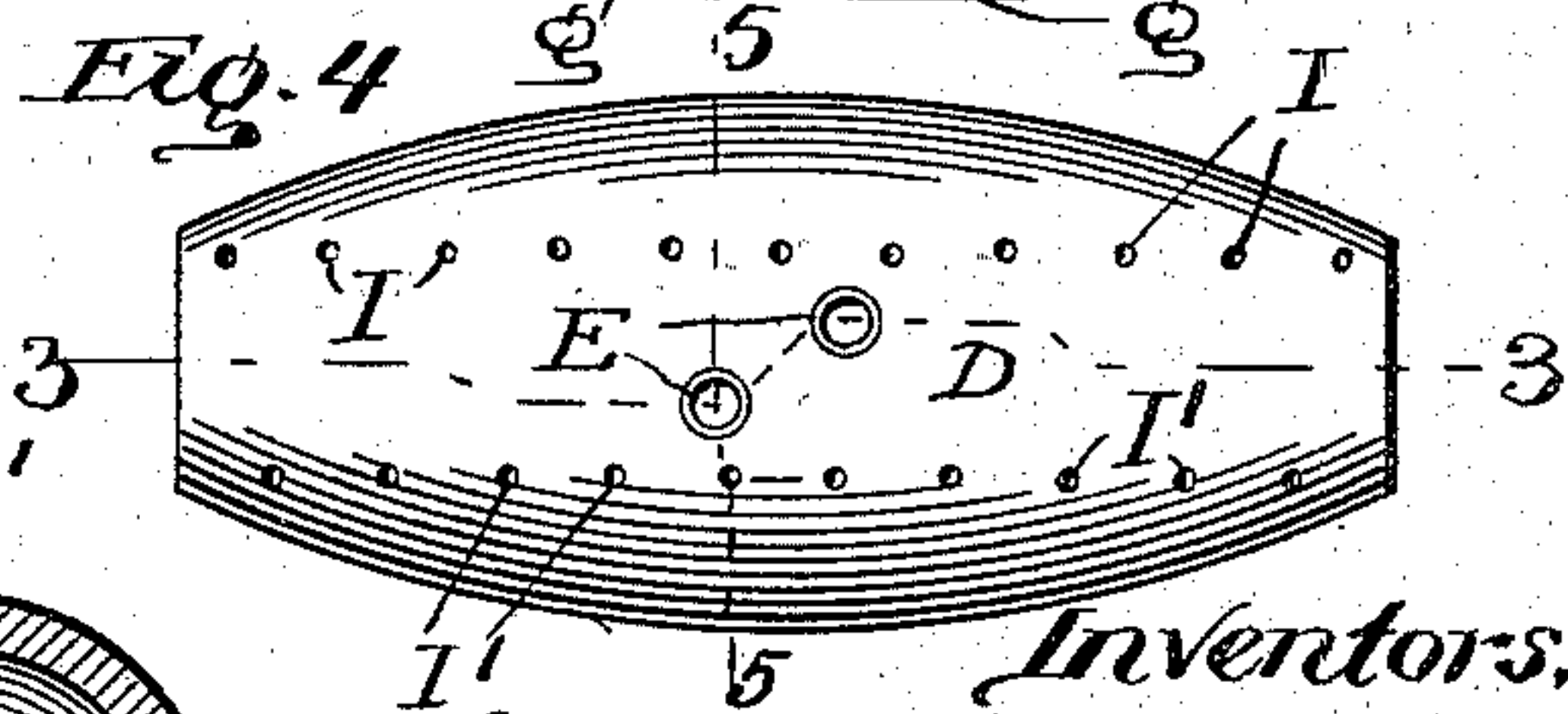
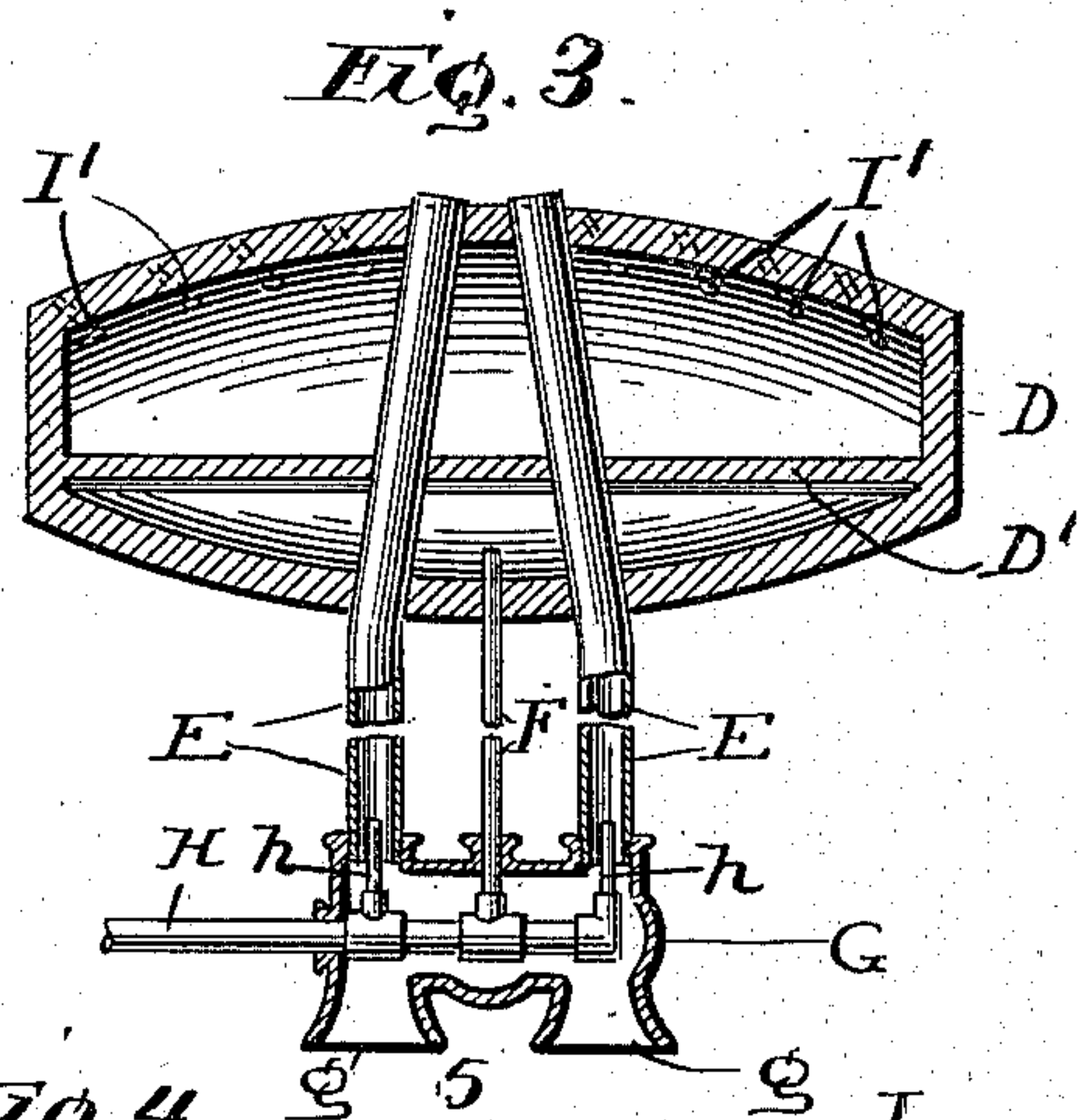
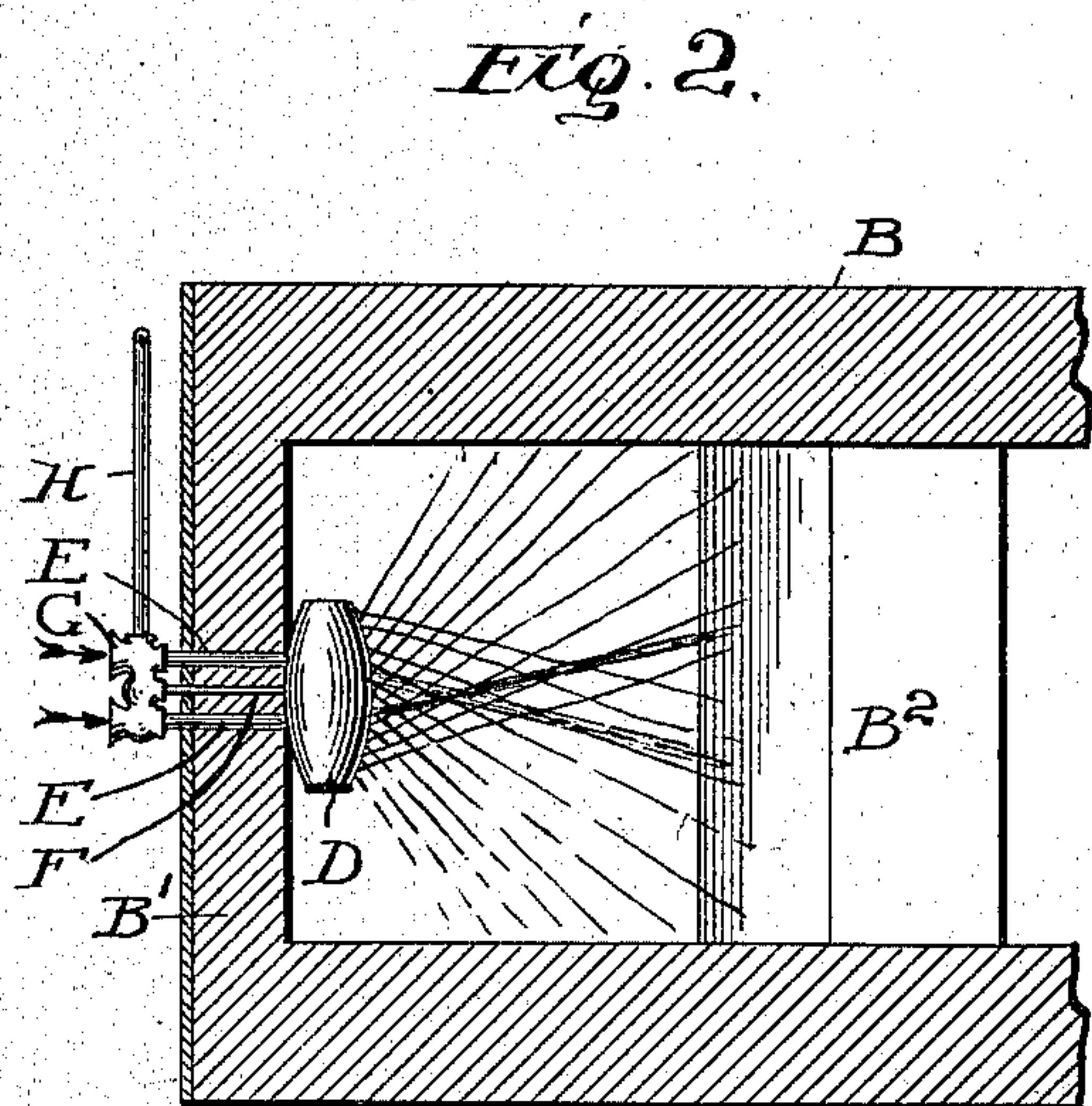
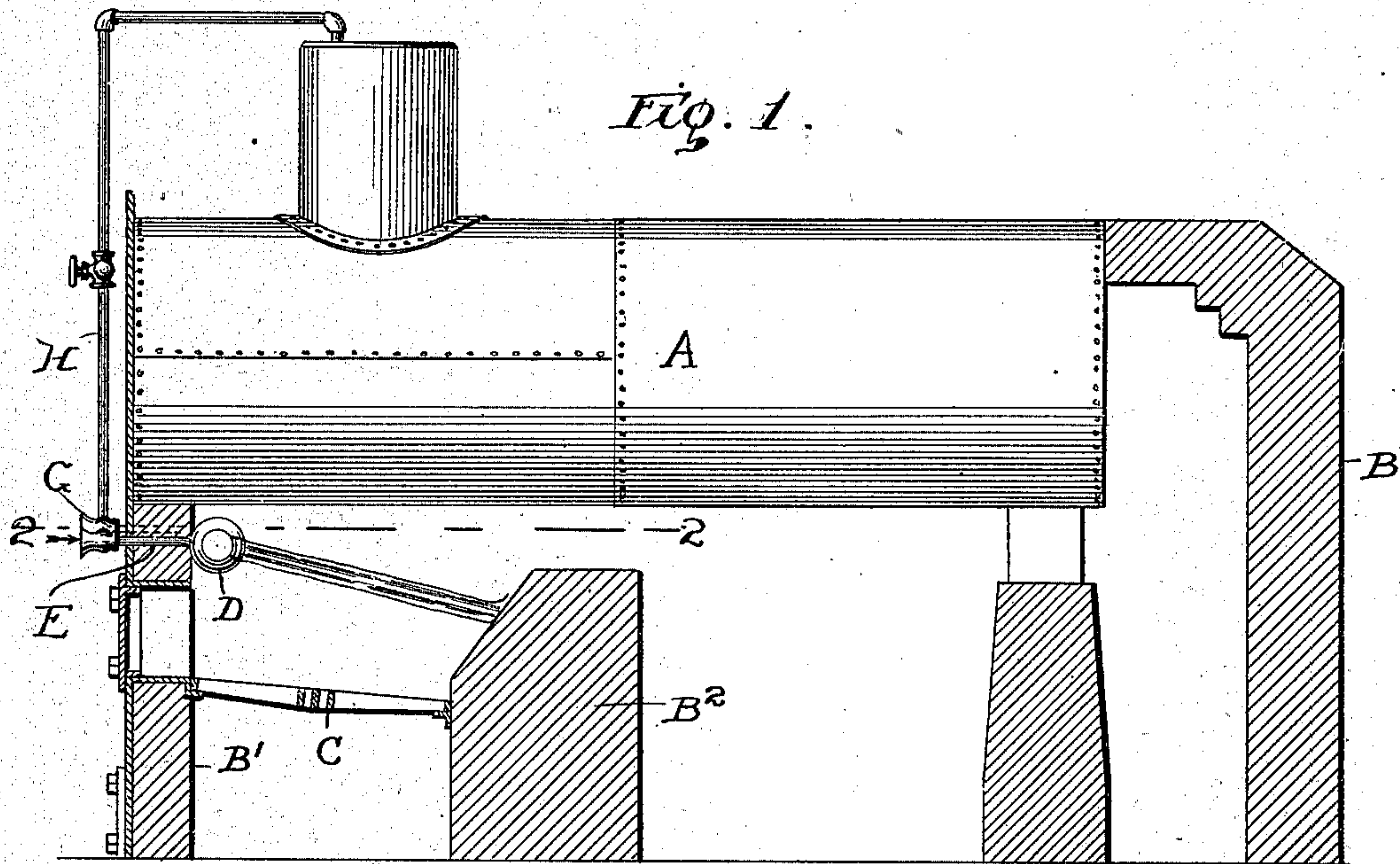
No. 723,104.

PATENTED MAR. 17, 1903.

J. & W. WILDMAN.  
SMOKE CONSUMER.

APPLICATION FILED JULY 14, 1902.

NO MODEL.

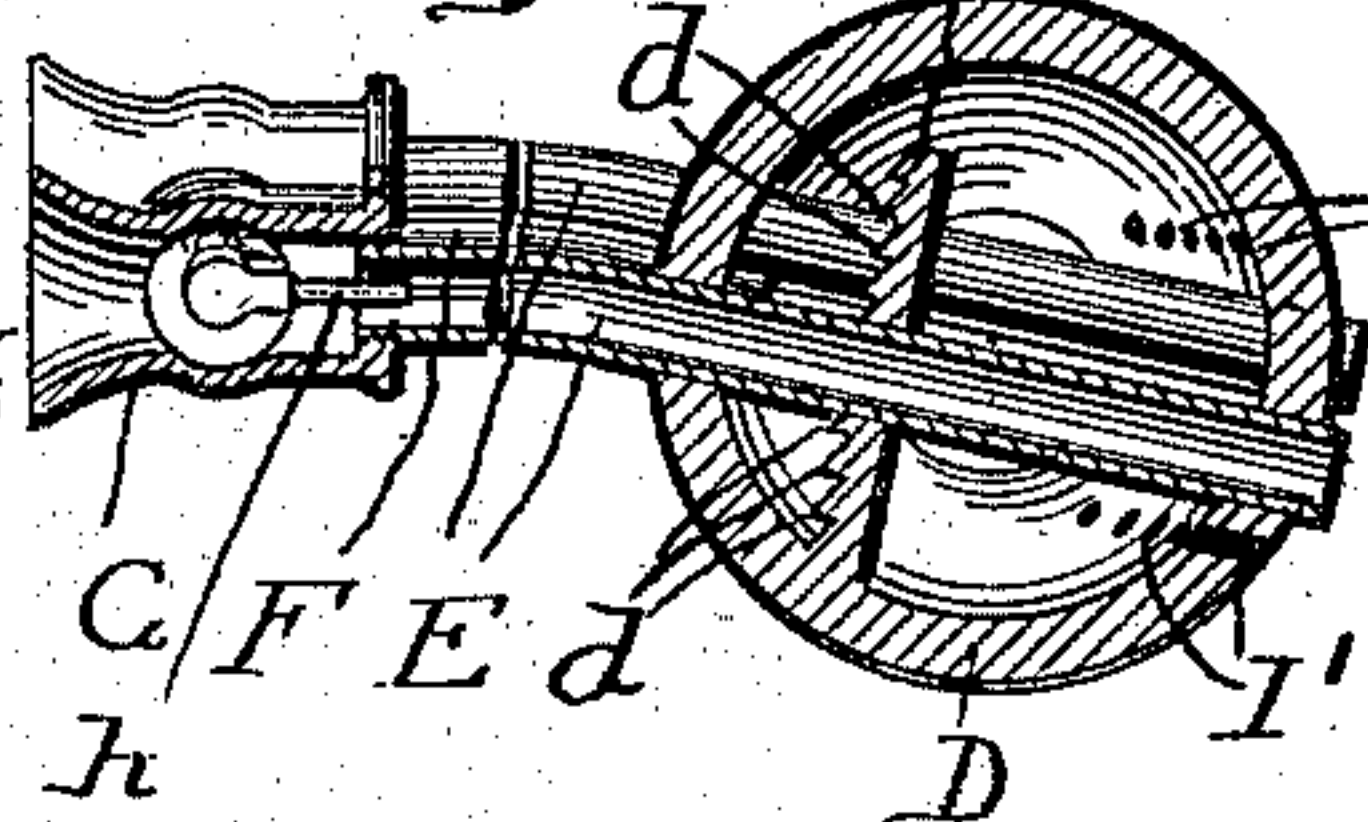


Witnesses:

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*Fig. 5.*



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# UNITED STATES PATENT OFFICE.

JAMES WILDMAN AND WILLIAM WILDMAN, OF CHICAGO, ILLINOIS.

## SMOKE-CONSUMER.

SPECIFICATION forming part of Letters Patent No. 723,104, dated March 17, 1903.

Application filed July 14, 1902. Serial No. 115,394. (No model.)

*To all whom it may concern:*

Be it known that we, JAMES WILDMAN and WILLIAM WILDMAN, citizens of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Smoke-Consumers, of which the following is a specification.

Our invention relates to certain new and useful improvements in smoke-consumers; and its object is to provide a small and compact device of this sort which shall combine with perfection of operation simplicity, cheapness, and compactness.

To these ends our invention consists in certain novel features of construction not heretofore known or used, which are fully illustrated in the accompanying drawings and described in this specification.

In the aforesaid drawings, Figure 1 is a section through a fire-box having our improved smoke-consumer in place, the boiler of the structure being shown in elevation. Fig. 2 is a horizontal section in the line 2 2 of Fig. 1. Fig. 3 is a central horizontal section through the smoke-consumer, taken in the broken line 3 3 of Fig. 4. Fig. 4 is an elevation of the smoke-consumer looking toward the front of the fire-box—that is, looking to the left in Fig. 1 from the inside; and Fig. 5 is a section in the line 5 5 of Fig. 4.

Referring to the drawings, A is a boiler of the usual type, supported by suitable walls B. A suitable grate C is supported between the front wall B' and a short vertical wall B<sup>2</sup>. This is an ordinary boiler construction, and it will be understood, of course, that any form may be used. A hollow drum D is supported in the front of the fire-box. This drum is barrel-shaped, as is clearly indicated in Figs. 3 and 4. Across this drum runs a vertical partition D', extending part way across the hollow of the drum, Fig. 5, and this partition is provided with a series of longitudinal corrugations d, the purpose of which will presently be explained. The drum D is supported by three pipes E, E, and F, respectively, which run through the front wall of the fire-box to a suitable casing G. A steam-pipe H runs from the boiler or other suitable source of steam-pressure and enters the casing G. The pipe H after entering

said casing G gives off three branches, one of them being the pipe F, heretofore referred to, which runs through the wall of the fire-box and directly into the drum D. The other two branches of the pipe are designated by h h, and these pipes extend a short distance into the pipes E. Immediately behind the pipe E in the casing G are funnel-shaped openings g g, so that steam passing out of the pipes h h will set up an injector action and draw air with it from the funnel-shaped openings g g through the pipes E E. The pipes E extend directly through the drum D, being turned toward one another and extending to different elevations, as shown in Figs. 4 and 5. The side of the drum D farthest removed from the front of the fire-box is pierced by two rows of holes I and I', respectively. The holes I run at an angle to the holes I', but in a plane parallel to the plane of said openings.

The operation of the device will now be apparent. Steam passes down the pipe H and through the pipes F and h h. The steam which passes through the pipes h h draws in a large volume of air and shoots it out through the pipes E, two jets of steam and air thus passing out in different parallel planes and at different angles, as indicated by the dark sprays in Fig. 2. The air becomes greatly heated in passing through the pipes E E, which aids in the perfect operation of the device. The steam which passes through the pipe F strikes the corrugated diaphragm D', and any water which may be in it is separated out by the corrugations and is revaporized and superheated by the intense heat at which the drum is kept. This superheated steam then passes on, fills the drum, and shoots out through the perforations I I', forming two sprays of steam in different parallel planes, one extending to the left and one to the right of the drum D and the two together forming a half-circle of steam-spray. This is clearly indicated by the lines in Fig. 2. The result of thus shooting the superheated steam across the surface of the burning coal upon the grate C and over the gases which are arising from said coal is to burn the gases completely, all coal-dust and soot being entirely consumed. It will be noted that this is an extremely compact smoke-consumer and that the cost of



installing it will be very slight. In operation it is extremely effective.

We realize that many changes can be made in the details of this construction and that our invention is not limited to the exact construction shown.

We claim as new and desire to secure by Letters Patent—

1. In a device of the class described, the combination with a suitable fire box and grate, of a suitable steam-nozzle adapted to discharge two parallel sheets of steam across said fire-box substantially parallel to said grate, the lines of flow of the steam in one of said planes crossing the lines of flow of the other of said planes, substantially as described.

2. In a device of the class described, the combination with a fire box and grate, of a suitable steam-nozzle adapted to discharge two parallel sheets of steam across said fire-box and means for discharging a jet of air across said fire-box between said sheets of steam, substantially as described.

3. In a device of the class described, the combination with a fire box and grate, of a suitable steam-nozzle adapted to discharge two parallel sheets of steam across said fire-box, and means for discharging two jets of air across said fire-box between said sheets of steam, substantially as described.

4. In a device of the class described, the combination with a fire box and grate, of a suitable steam-nozzle adapted to discharge two parallel sheets of steam across said fire-box, and means for discharging two jets of air across said fire-box between said sheets of steam and at different elevations, substantially as described.

5. In a device of the class described, the combination with a hollow drum, of a steam-nozzle entering said drum and a plurality of perforations in said drum opposite said steam-nozzle, said perforations being arranged in two parallel planes at different elevations and extending in different directions with respect to said drum, substantially as described.

6. In a device of the class described, the combination with a hollow drum having suitable perforations on one side thereof, of a steam-nozzle entering said drum on the side opposite said perforations, and a corrugated partition extending partially across said

drum opposite said nozzle, substantially as described.

7. In a device of the class described, the combination with a suitable hollow drum having a suitable entrance and exit for steam, of a pipe running through said drum and means for forcing air through said pipe, substantially as described.

8. In a device of the class described, the combination with a hollow drum having a suitable entrance and exit for steam, of a pipe for a discharge of air running through said drum and ending adjacent to the exit for steam from said drum and suitable steam injector-pipes opening into said air-pipes and adapted to force air through them, substantially as described.

9. In a device of the class described, the combination with a hollow drum having a suitable entrance for steam, of means whereby two parallel sheets of steam may be discharged from said drum, two air-pipes passing through said drum and ending between said jets of steam, and means for forcing air through said air-pipes and discharging it between said sheets of steam, substantially as described.

10. In a device of the class described, the combination with a fire-box, of a hollow drum supported in said fire-box and subjected to a high degree of heat, air-tubes extending through said drums and opening into the fire-box, steam-nozzles entering said tubes and a steam-nozzle entering directly into the drum, said drum being provided with two sets of perforations, one immediately above and the other immediately below the plane of the air-pipes, whereby steam on entering said drum will be superheated before passing out through the perforations and the air passing through the air-pipes will be greatly heated in its passage therethrough, substantially as described.

In witness whereof we have hereunto set our hands, at Chicago, in the county of Cook and State of Illinois, this 11th day of July, A. D. 1902.

JAMES WILDMAN.  
WILLIAM WILDMAN.

Witnesses:

A. J. WILDMAN,  
THEODORE DILKS.