

(No Model.)

J. BERGMANN.

STEAM BOILER.

No. 273,338.

Patented Mar. 6, 1883.

Fig. I.

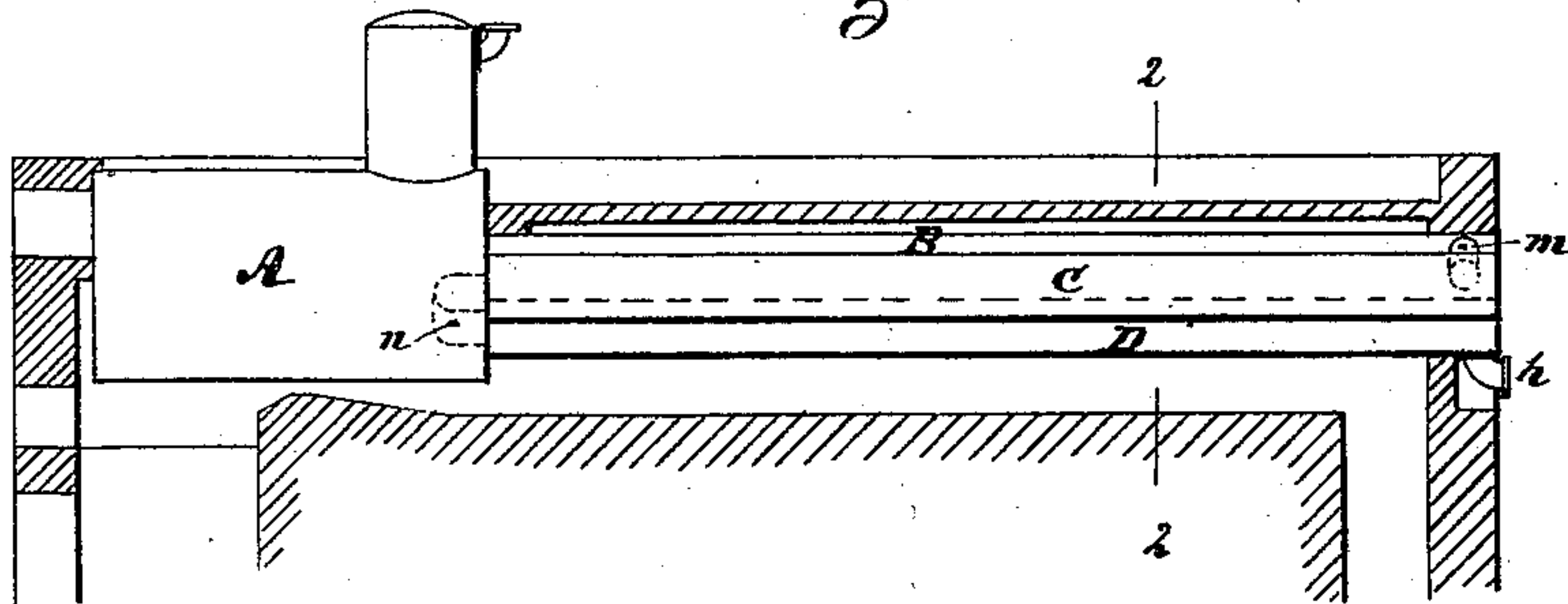


Fig. II.

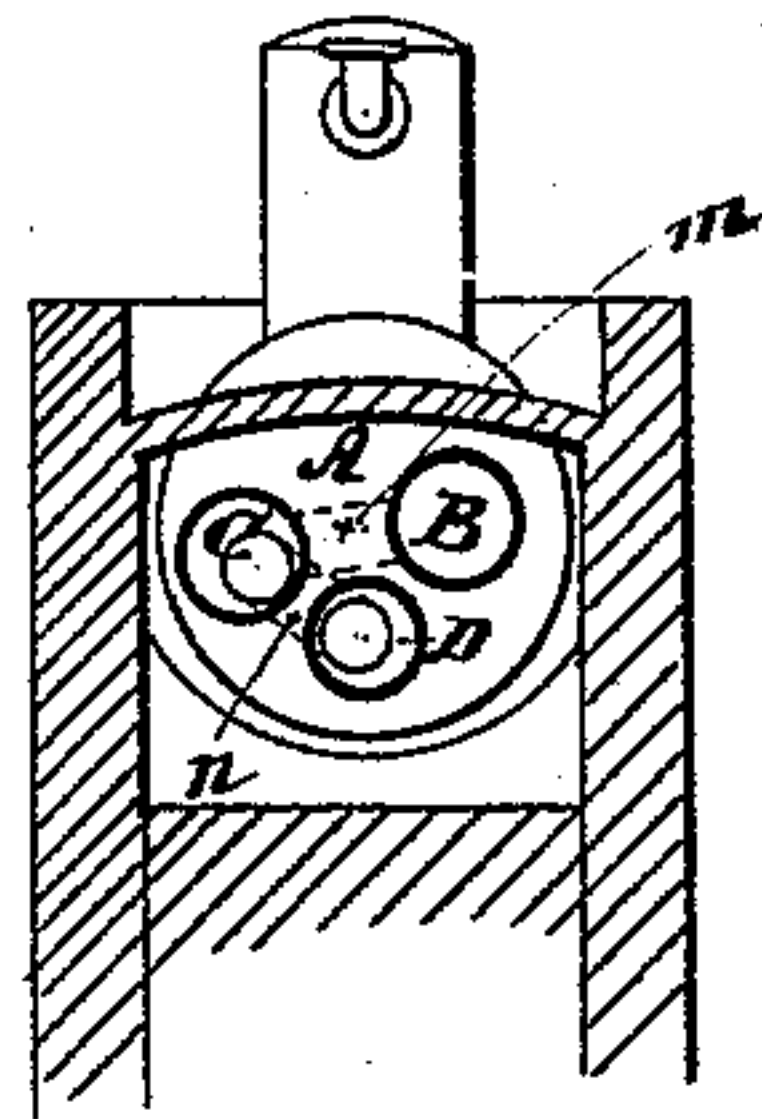


Fig. IV.

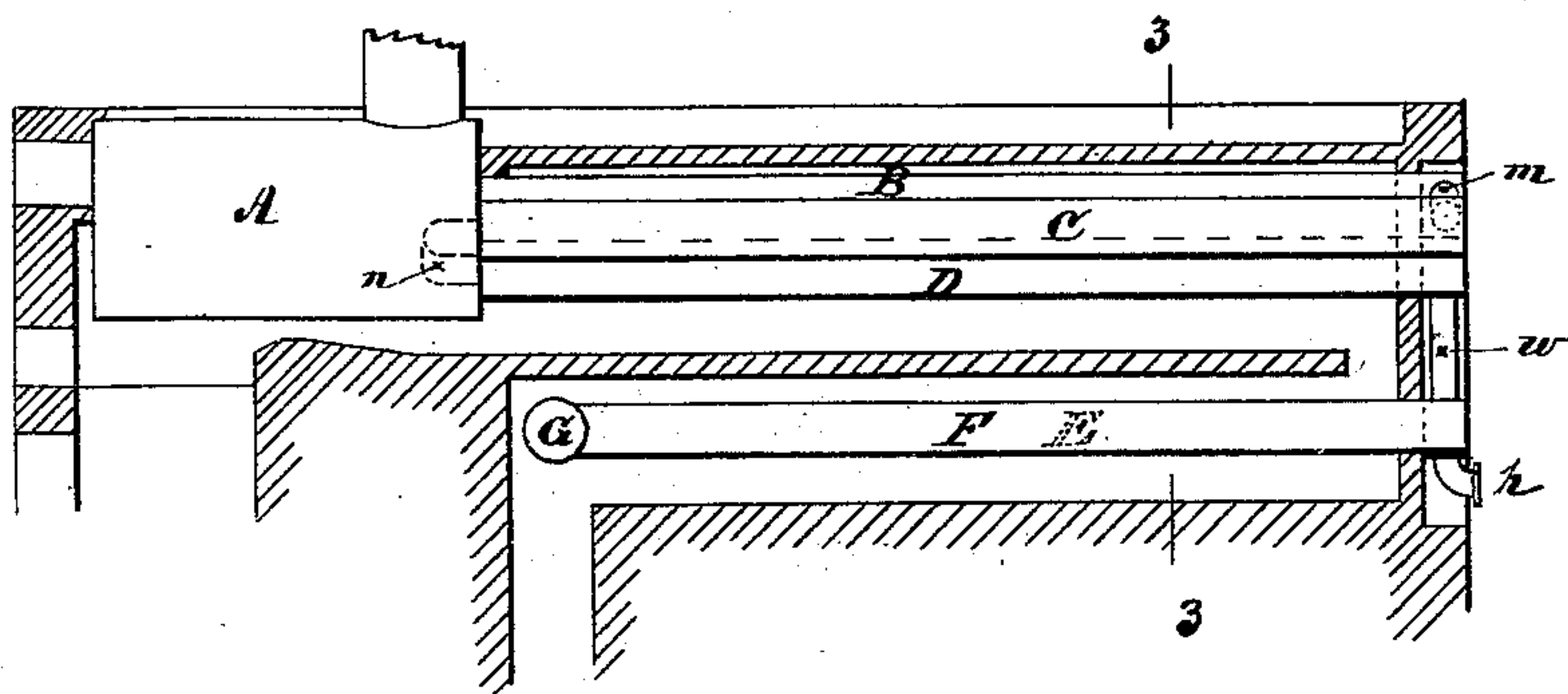


Fig. V.

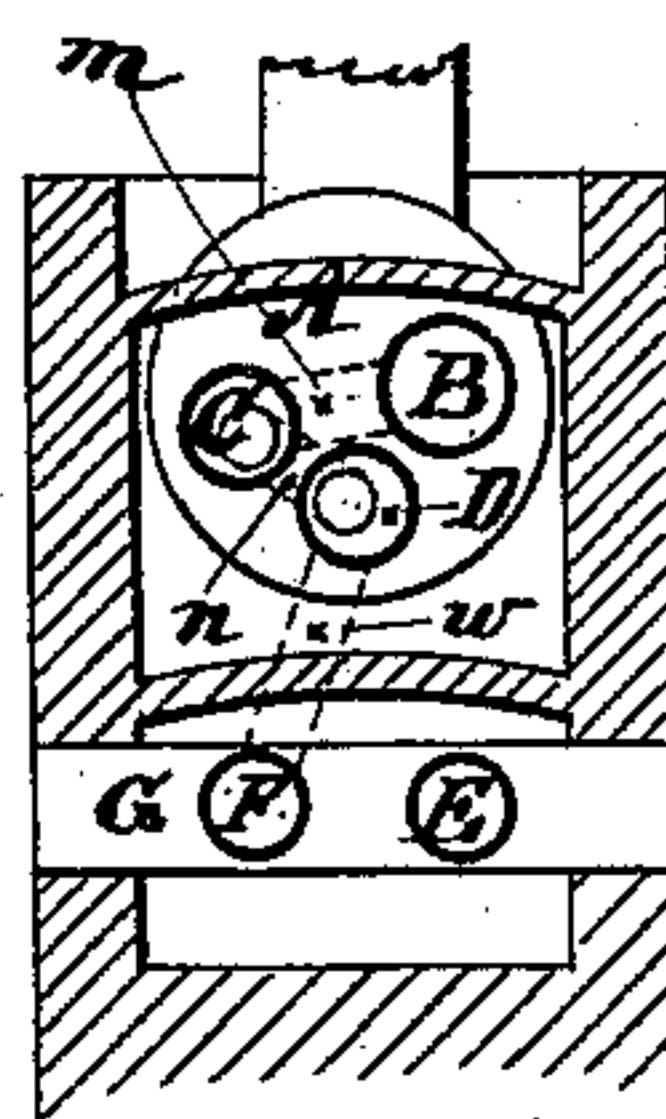
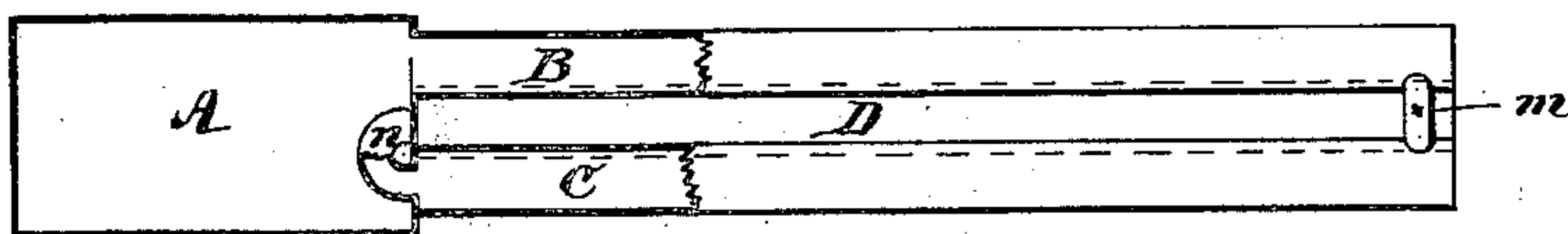


Fig. III.



Witnesses.
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JULIUS BERGMANN, OF HATTINGEN, GERMANY.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 273,338, dated March 6, 1883.

Application filed September 15, 1882. (No model.)

To all whom it may concern:

Be it known that I, JULIUS BERGMANN, a citizen of Germany, residing at Hattingen, in the Empire of Germany, have invented new and useful Improvements in Steam-Boilers, of which the following is a specification.

The nature of my invention consists in the construction of a flue cylindrical boiler having all connection pipes or branches between the flues so arranged as to be away from the effect of the direct action of the fire, and thereby prevent the formation of incrustation in the same, while a perfect circulation of the water is insured.

In the accompanying drawings, Figure I represents a side view of my improved boiler. Fig. II is a cross-section at line 2 2 of Fig. I. Fig. III is a top view or plan partly in section. Fig. IV shows a side view of the boiler with some modifications, and Fig. V is a cross-section of the same at line 3 3.

Similar letters represent similar parts in all the figures.

A is the main boiler, having a flue, B, connected to it.

C and D are flues running parallel with the flue B, attached to the end of the boiler A, but having no direct connection with the same. The flues B, C, and D are arranged in a triangle to each other, as shown in Figs. II and V. The flue D is connected with the flue C by an elbow or branch pipe, *n*, situated in the inside of the boiler A, and the flue C is connected to the flue B near their extreme outer ends by a pipe, *m*, placed outside of or in a recess in the wall surrounding the boiler. By this arrangement neither the connection-pipe *n* nor the connection-pipe *m* will be exposed to the action of the fire and heat. The feed-water is introduced through branch pipe *h* into the lowest flue, D, passes through the same and then through the connecting-pipe *n* into the flue C,

through said flue C and through the connecting-pipe *m* into the flue B, and from there into the main boiler A. By this arrangement a perfect circulation of the water through all the flues is insured.

When the boiler is set in the brick-work, arranged with a returning drop-flue, as shown in Figs. IV and V, flues E and F can be added and placed into said return drop-flue, connected together at their inner ends by a cross-branch, G. The feed-water is in this case introduced through the branch pipe *h* into the flue E, passes through the same and the cross-branch G into the flue F, and which latter being connected near its extreme outer end, (either outside of the end brick wall or in a suitable recess in said wall,) through the branch pipe *w*, with the flue D, into said flue D, and then successively through the flues D, C, and B into the main boiler A, as above described.

This construction of a steam-boiler, while producing a perfect circulation of the water through all flues successively, exposes at the same time the least number of joints to the direct action of the flame and heat of the fire.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In combination with a boiler, A, with connecting-flue B, the independent flues C and D, connected with each other and with the flue B through connecting-pipes *n* and *m*, substantially as and for the purpose described.

2. In a steam-boiler consisting of the boiler A with flue B and the independent flues C and D, the connecting-pipe *n*, situated in the inside of the boiler A, substantially as set forth.

JULIUS BERGMANN.

Witnesses:

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