

No. 814,533.

PATENTED MAR. 6, 1906.

A. S. GOLDIE.  
FURNACE FOR STEAM BOILERS, &c.  
APPLICATION FILED MAY 31, 1905.

3 SHEETS—SHEET 1.

FIG. 1.

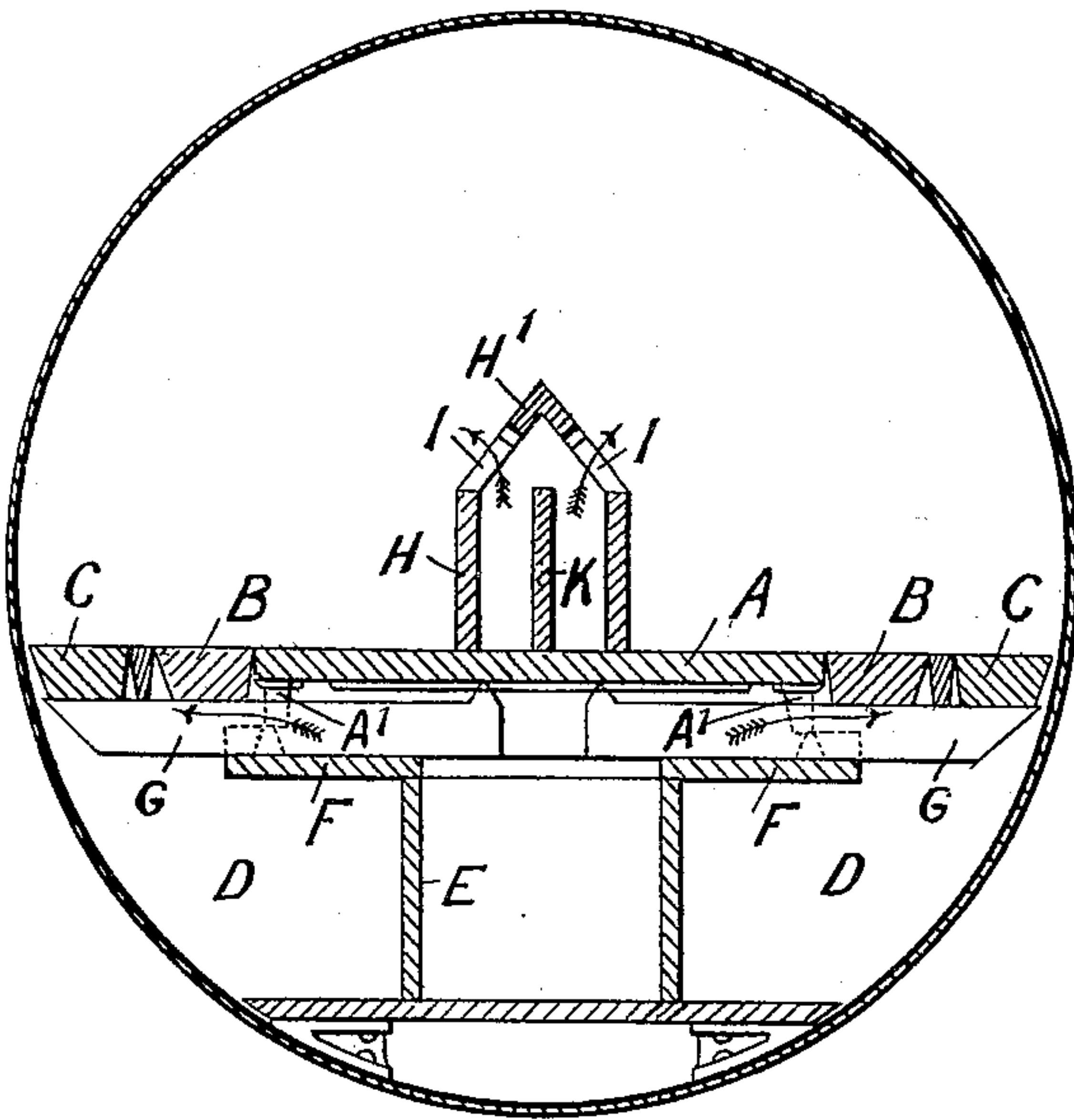
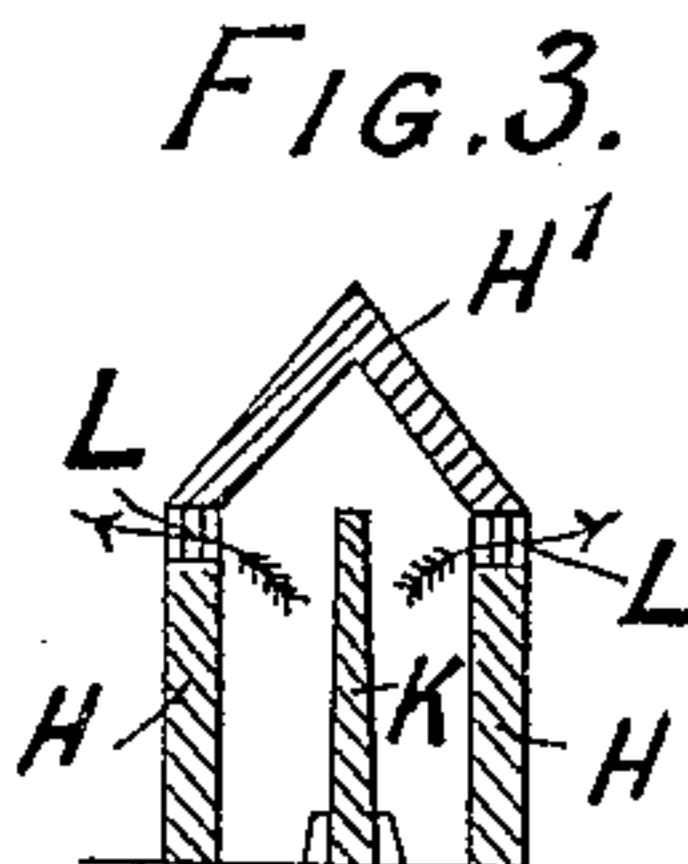
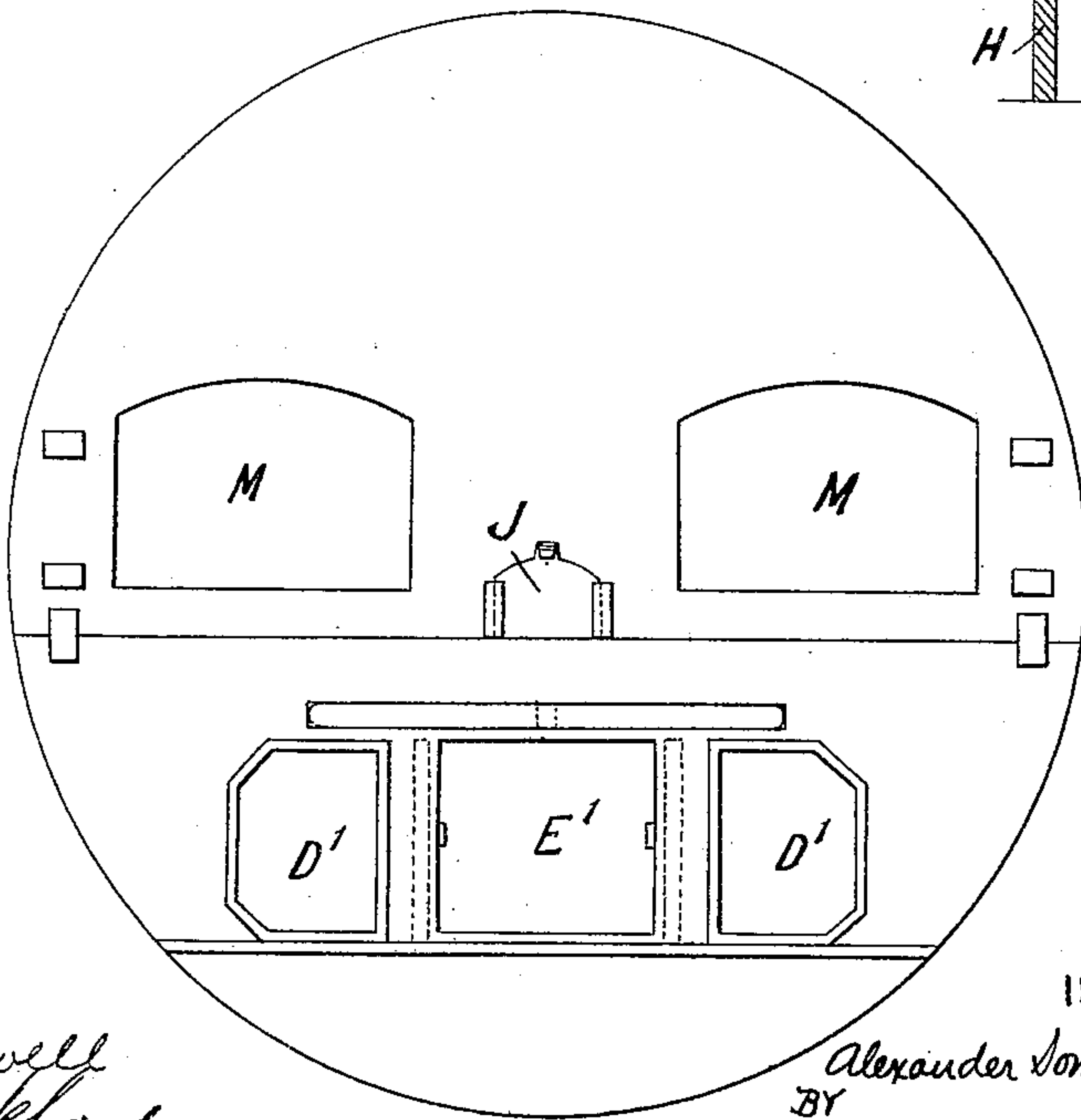


FIG. 2.



WITNESSES

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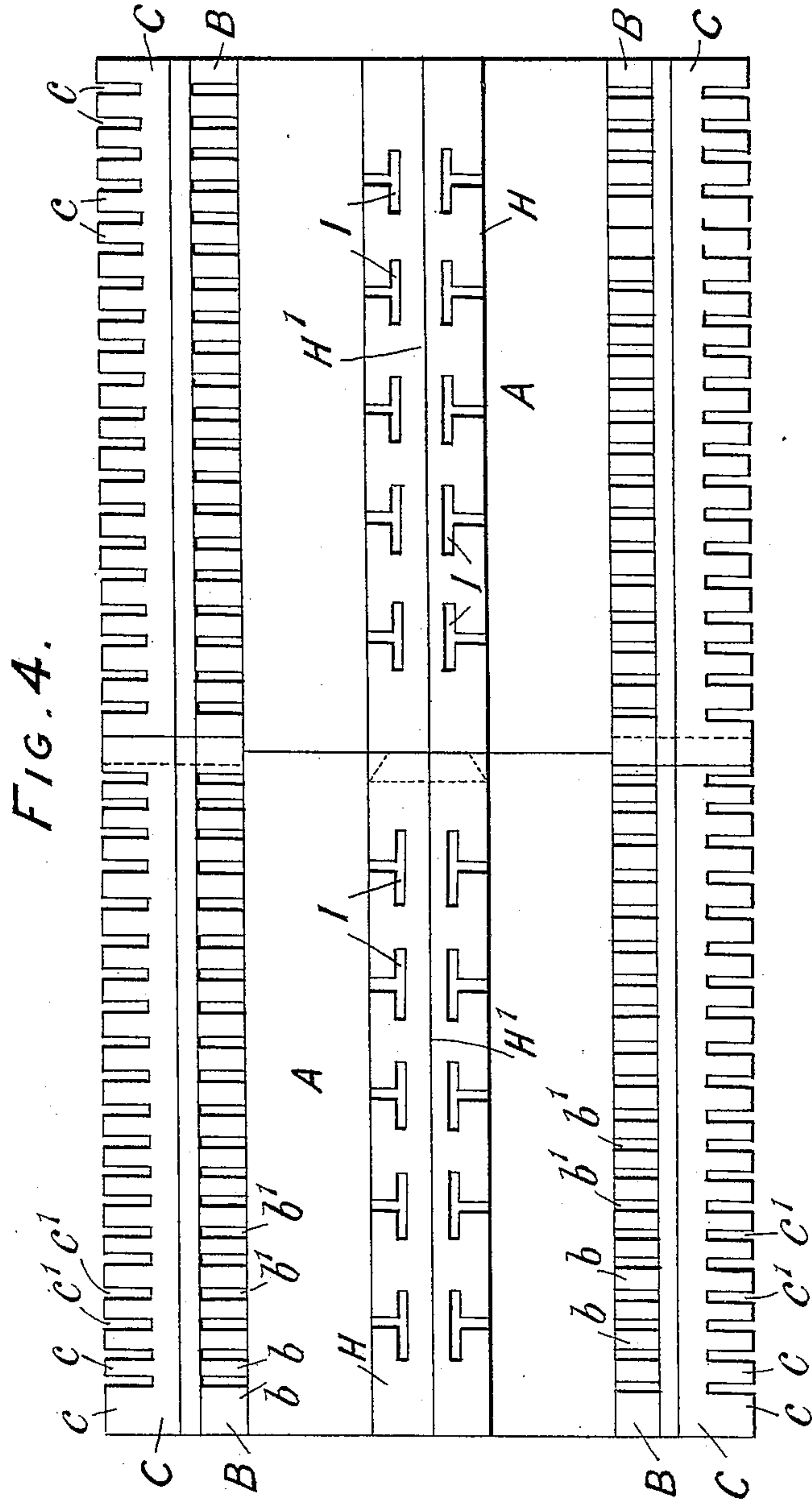
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3 SHEETS—SHEET 2.



WITNESSES

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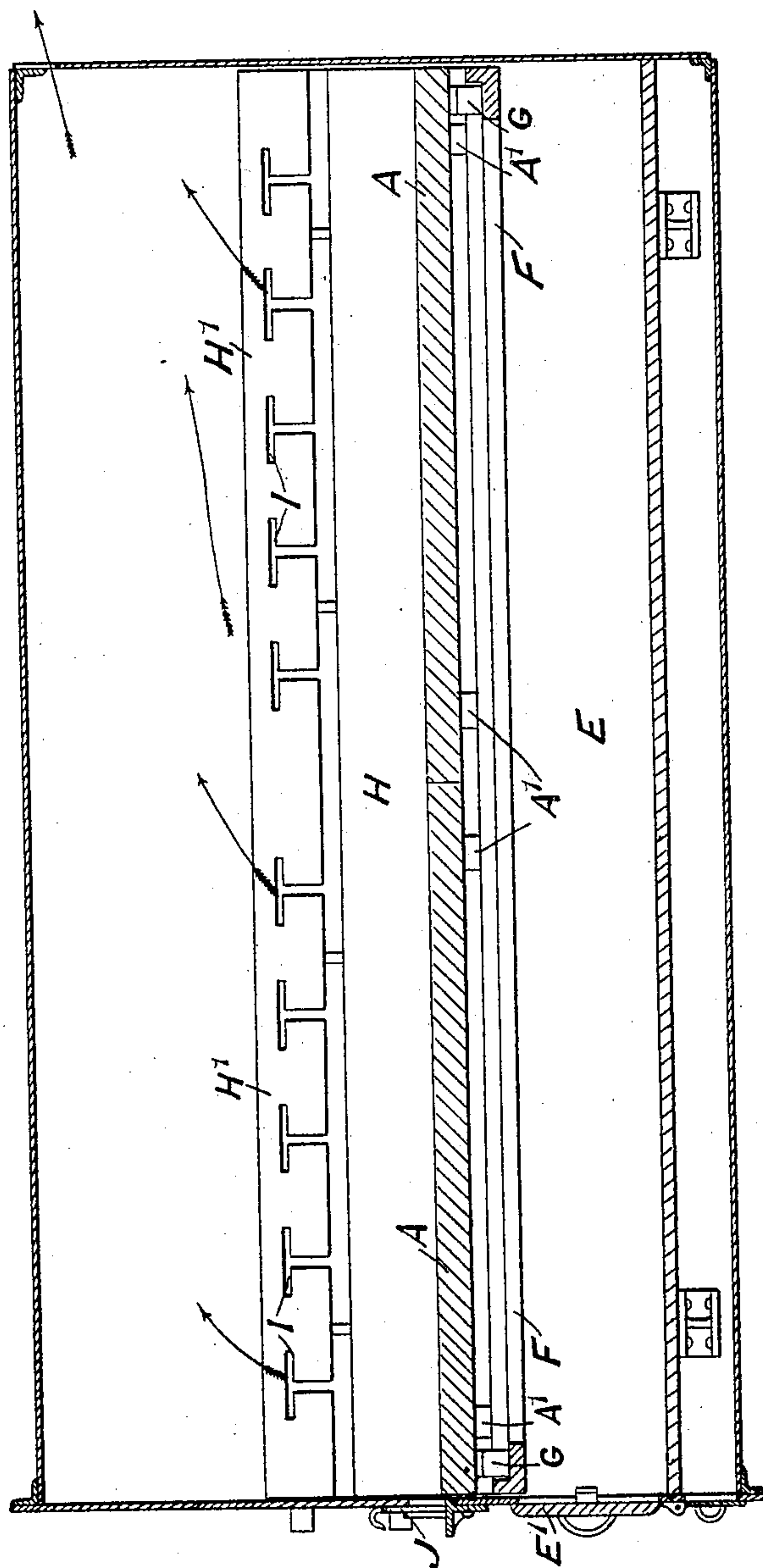
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3 SHEETS—SHEET 3.

Fig. 5.



WITNESSES

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# UNITED STATES PATENT OFFICE.

ALEXANDER S. GOLDIE, OF UDDINGSTON, SCOTLAND.

## FURNACE FOR STEAM-BOILERS, &c.

No. 814,533.

Specification of Letters Patent.

Patented March 6, 1906.

Application filed May 31, 1905. Serial No. 263,105.

*To all whom it may concern:*

Be it known that I, ALEXANDER SUMMERVILLE GOLDIE, a subject of the King of Great Britain and Ireland, and a resident of Uddingston, county of Lanark, Scotland, have invented certain new and useful Improvements in Furnaces for Steam-Boilers and the Like, of which the following is a specification.

This invention has reference to improvements in and relating to the furnaces of steam-boilers and the like, and essentially comprises the fitting of an air-heating chamber within the furnace above the fire-bar plates.

In the accompanying drawings, Figure 1 is a transverse section, and Fig. 2 a front end view, of the furnace part of a horizontal type of steam-boiler as constructed in accordance with my improvements. Fig. 3 is a detached transverse section of the air-heating chamber above center fire-bar plates slightly modified in construction from that shown in Fig. 1. Fig. 4 is a plan view corresponding to Fig. 1, and Fig. 5 is a central longitudinal sectional elevation corresponding to Fig. 1.

I fit within the furnace a series of longitudinal plates, the center one A, which is plain, being very much broader than the sets B C at each side of same, while the latter have short projecting fingers *b c*, respectively, round and over which the air is led through the open spaces *b' c'*. A central air-heating chamber E is fitted at the lower part of furnace below the fire-bars A B C and extends, preferably, the full length of furnace. On each side of chamber E are formed the ash-pits D below the narrow bars B C. The doors E' D' are fitted on the outside for cleaning purposes. The air passes from the outside of the boiler by suitable regulating means, such as a door E', fitted at front of chamber E, and a tray F with an open center part is fitted over the top of chamber E and extends the full length of furnace. The central fire-bar plate A has projections A', which bear over the edges of the tray, leaving an open space between the tray F and plate A for the passage of heated air to the side projections and open spaces *b' c'*, from whence the heated air passes to furnace, as indicated by the arrows. The side fire-bars B C are supported over the tray F by the bearer-plates G.

The solid central plate A has running longitudinally along the center of same a channel-way chamber H, preferably formed with tapered hooded top H', which chamber H conveys air from outside the boiler to the fuel on each side of this chamber by means of T-shaped or other suitable openings I. These air-openings I in the hooded air channel-way H H' may be of any convenient number and distributed as best suited to the different furnaces. The air is admitted to the chamber H by a sliding door J or like regulator at the front end. A partition K or partitions may also be fitted within this channel-way H for the greater part of its height to divide the same, so as to cause a better distribution of the air to each side of the furnace.

As shown in Fig. 3 and also in Fig. 5, the hooded part H' is detachably spaced from the lower part and may be supported by flanged bearings L on the latter, leaving air-spaces between for the exit of heated air to commingle with the products of combustion in furnace.

Suitable doors M are fitted at the front plate of boiler on each side of the hooded air-chamber H H' for charging the furnace with fuel.

I claim as my invention—

1. In the furnaces of steam-boilers and the like, fuel-supporting plates and a hooded central air-chamber located above said plates, with exits for the outflow of heated air, and a dividing-partition in said chamber in combination with an air-admitting sliding door at the front end of said chamber.

2. In the furnaces of steam-boilers and the like, the combination of a solid central fire-bar plate, an air-heating chamber below said plate, a narrow bar on each side thereof, open spaces on each side of said narrow bars through which the heated air passes to the furnace from said chamber, and a hooded chamber above said central plate with exits therein for the outflow of heated air.

3. In the furnaces of steam-boilers and the like, the combination of a solid central fire-bar plate, a chamber beneath said solid plate, a bar on each side of said plate, open spaces on each side of said bars through which the heated air passes to the furnace from said

chamber, a hooded chamber above said plate with exits therein for outflow of heated air, and means to regulate the air admitted to said chamber.

- 5 4. In the furnaces of steam-boilers and the like, the combination of the fire-bar plates, a central air-heating chamber below said plates, and a hooded chamber above said plates, said hooded chamber having its detachable hood-

ed part supported by flanged bearings on the lower part.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALEX. S. GOLDIE.

Witnesses:

JOHN SIME,  
R. C. THOMSON.