No. 894,454. PATENTED JULY 28, 1908.

J. McLAUGHLIN.

LUMBER KILN.

APPLICATION FILED AUG. 26, 1907.

2 SHEETS—SHEET 1.

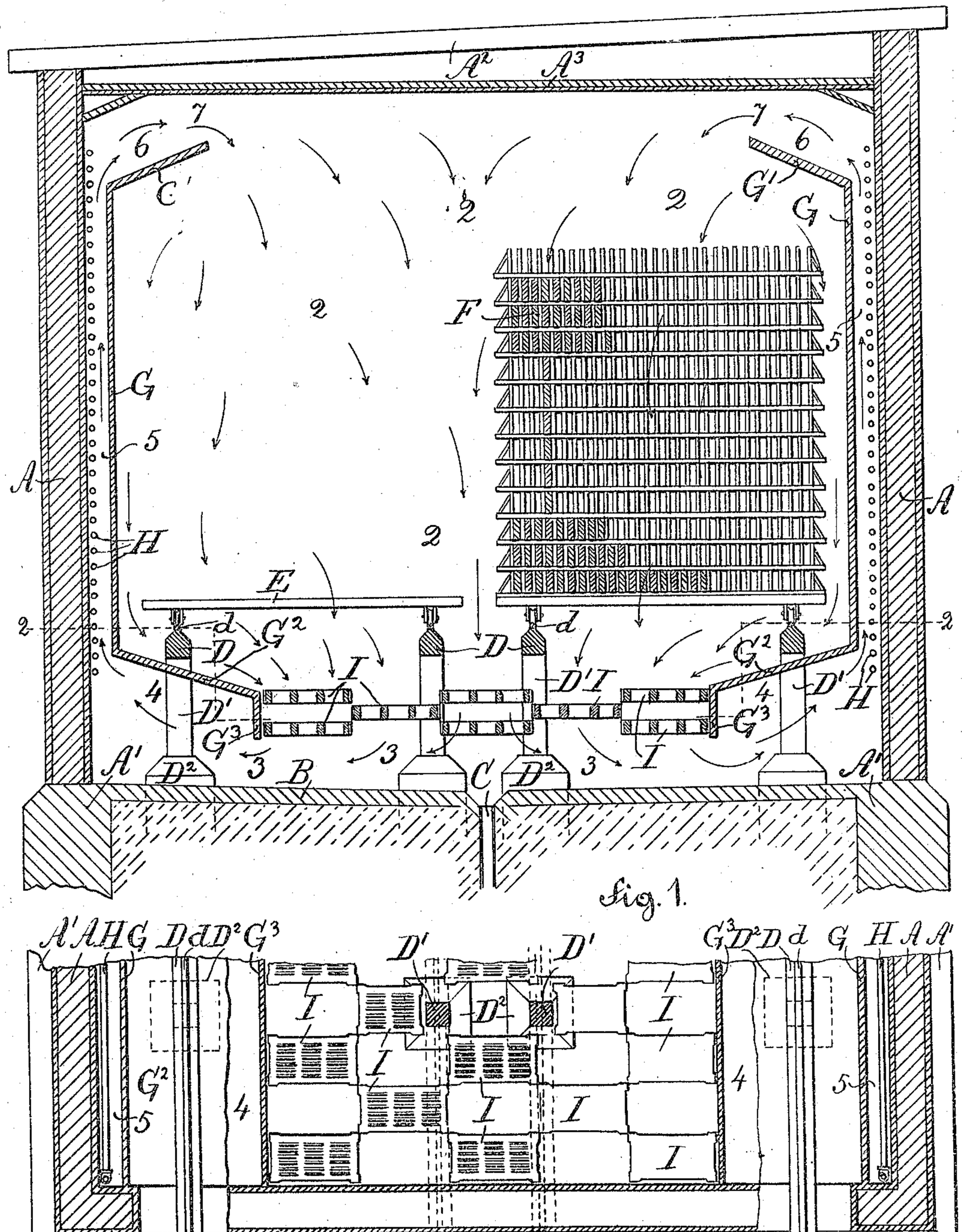

Fig. 1.

Fig. 2.

Witnesses:
M Helem
W. S. Manchester

John McLaughlin
Inventor.
by A & B Harvey
his Attorneys

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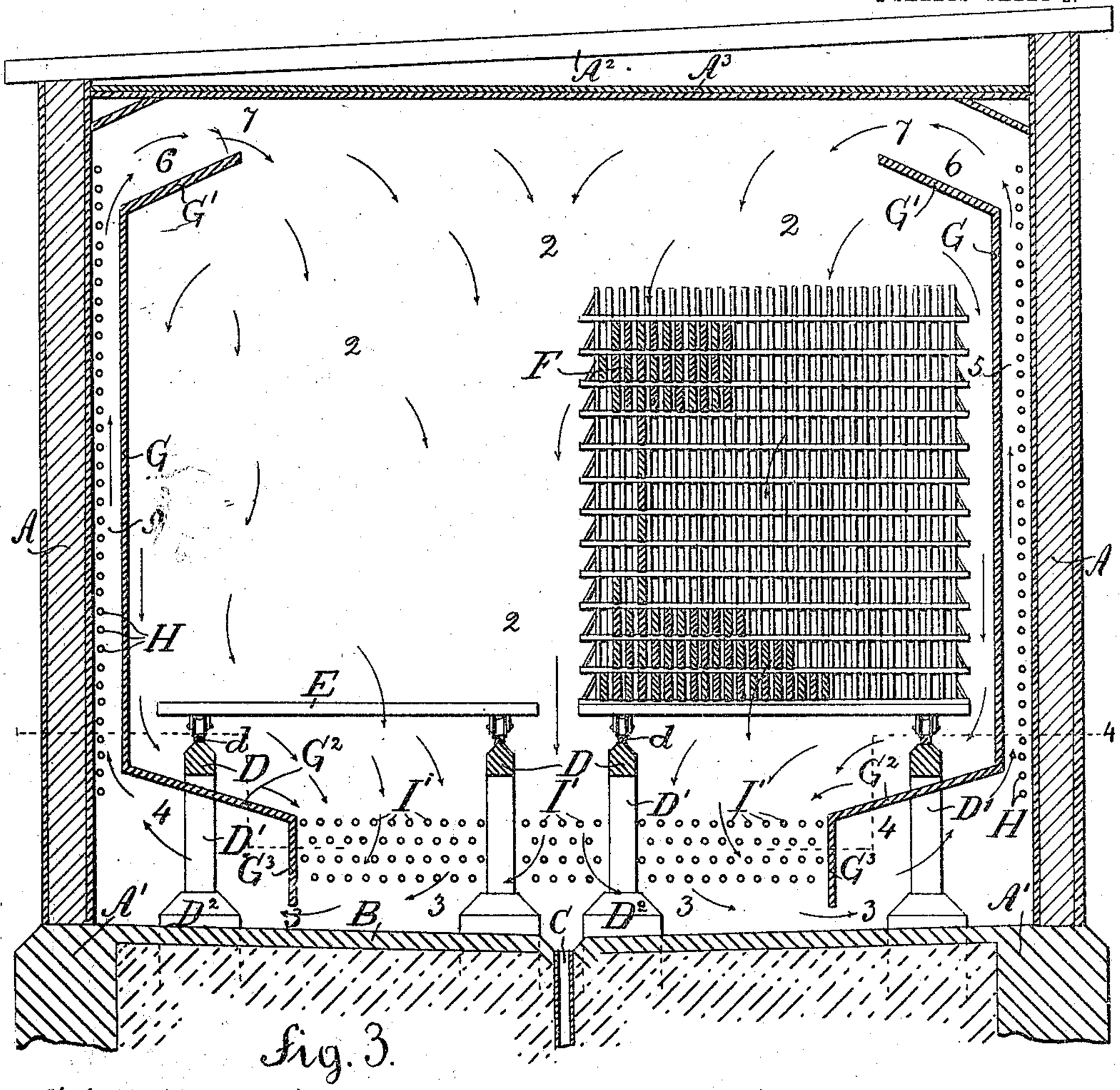

Fig. 3.

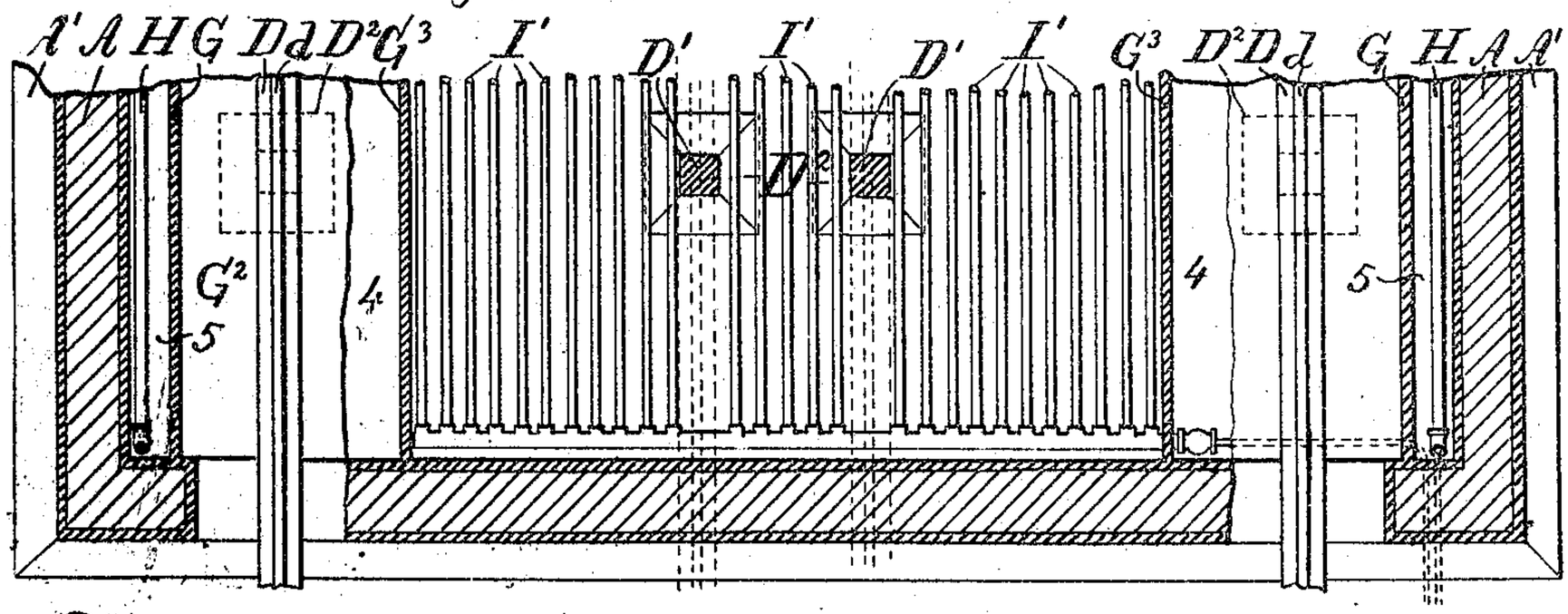

Fig. 4.

Witnesses:
F. F. Fleming
L. L. Lennan

John McLaughlin
Inventor
by A. & B. Harvey
his Attorneys

UNITED STATES PATENT OFFICE.

JOHN McLAUGHLIN, OF OTTAWA, ONTARIO, CANADA.

LUMBER-KILN.

No. 894,454. Specification of Letters Patent. Patented July 28, 1908.

Application filed August 26, 1907. Serial No. 390,176.

To all whom it may concern:

Be it known that I, JOHN McLAUGHLIN, residing at Ottawa, in the county of Carleton, Province of Ontario and Dominion of Canada, have invented new and useful Improvements in Lumber-Kilns, of which the following is a specification.

My invention which will be hereinafter fully set forth and claimed relates to kilns for seasoning and drying lumber.

The object of my invention is to improve the circulation of air within the drying chamber, in which is involved the proper heating of the same and the removal therefrom of moisture; also to economize space and increase generally the facilities for working the kiln and its general effectiveness.

Figure 1 is a transverse section of my improved kiln, shown somewhat diagrammatically and giving a general view of the arrangements, omitting well understood details. Fig. 2 is a partial plan of the same, being a horizontal section on the broken line 2—2, Fig. 1. Fig. 3 is a transverse section of my improved kiln, in all respects similar to Fig. 1, except in respect of the condensers, and Fig. 4 is a partial plan of the same, being a horizontal section on the broken line 4—4, Fig. 3.

A A are the inclosing walls upon a foundation, A^1, A^2 is the roof and A^3 the ceiling, all forming a chamber, 2. The floor, B, slopes down to the center, where a drain, C, is placed, to carry off the precipitated water. Two tracks are provided; rails, *d*, being placed on stringers, D, which are supported at intervals by posts, D^1, upon foundation blocks D^2, these tracks are adapted for cars, E, carrying the lumber, F, to be treated. The two opposite side walls are each cased in or covered by a false wall, G, forming an ample air space or flue, 5, in which the heating coils, H, are placed and are thus made the heating chambers also. These water coils may be for steam or hot water. The false walls G do not quite extend to the floor nor up to the ceiling, but at the top are sloped inwardly, as G^1, leaving a wide outlet, 7, to the sloping part, 6, of the heating chamber or flue 5. Near the floor the false wall G is also sloped downwards and inwards, as G^2, finishing with a vertical lip or low wall G^3, some distance above the floor B and leaving a space, 3, merging into the space 4 under the slope G^2. The space between the two foot walls or lips G^3 of the opposite false walls forms the condensing chamber or space in which are placed the condensers, I, Figs. 1 and 2, or I^1 Figs. 3 and 4. I prefer to use radiators I in which a circulation of cold water or other cooling medium is maintained, but coils, I^1, may be used if preferred, as shown in Figs. 3 and 4. The arrows show the circulation of air.

In Figs. 1 and 3 the lumber to be treated is shown as piled on edge, a method of piling which I prefer, but which is not essential. It will be seen that the air in the heating chamber or flues 5 will be heated, become lighter, therefore rise and pass out by the outlets 6 and 7 into the upper part of the space 2. Here it will be saturated with moisture emanating from the lumber to which it will give off some of its heat, it will therefore become heavy and sink to the lower part of the chamber 2 and finally come in contact with the condensers I or I^1 which will condense the vapors it carries into water that will drop off the condensers and be collected in the center of the sloping floor B and carried off by the drain C. The air has now become dry and cooler and will gradually sink into the space 3 below the condensers I or I^1, and from thence will be drawn through the spaces 4 into the heating chambers 5, by reason of the partial vacuum formed therein by the rising hot air, and the round will be repeated. Each round will bring down more moisture from the lumber in the space 2, which will be condensed and pass off through the drain until all the moisture is eliminated. The heating chambers being at the side, the greatest heat will not be directly under the lumber as heretofore, when the lower layers were apt to be spoiled by the heat. The heat will therefore be more uniform and equally diffused and therefore uniformly effective. The circulation being effected by the rising dry and warm air confined at the sides and the sinking moist air in the center, there is a saving of energy which inures to the effectiveness of the kiln.

I claim as my invention;—

1. In a lumber kiln, the combination of walls, floor and ceiling forming a chamber, said floor formed with a draining slope, a drain in said floor, rails forming tracks within said chamber, stringers supporting said rails, posts supporting said stringers and footings for said posts, heating coils placed on two opposite side walls, condensers placed in the central part of the chamber near the

floor and false walls having their footings some distance above the floor at the sides of the condensers rising vertically then sloping upwards and towards the inclosing walls then rising parallel therewith a little distance to form heating chambers or flues and terminating upwardly and inwardly sloping outlets at the top, substantially as set forth.

2. In a lumber kiln, the combination of inclosing walls, floor and ceiling forming a chamber, false walls covering the side walls to form heating chambers or flues, an inwardly and downwardly sloping lower part of each false wall terminating in a vertical wall footing some distance above the floor, an inwardly and upwardly sloping upper part of each false wall terminating some distance from the ceiling, condensers placed between the said vertical foot walls, heating coils placed within the flues or heating chambers formed by the false walls, means of carrying off the water precipitated to the floor and means of supporting the lumber within the chamber, substantially as set forth.

3. In a lumber kiln, the combination of a suitable inclosure forming a chamber, a false wall covering each of two opposite side walls and commencing some distance above the floor rising vertically to form a foot wall then sloping upwards and outwards then rising parallel with the main wall and then sloping inwards and upwards and terminating some distance from the ceiling and forming a heating chamber having a large intake at the bottom and an outlet at the top, heating coils placed within said heating chamber, condensers placed between the said footwalls, means for carrying off the water precipitated on the floor and means of supporting the lumber to be treated within the chamber, substantially as set forth.

4. In a lumber kiln, the combination of walls, floor and ceiling forming a chamber, said floor formed with a draining slope, a drain in said floor, heating chambers at the sides having centrally extending inlets near the floor and outlets at the top means of heating said heating chambers, a condensing space at the bottom between the air-inlets to the heating chambers and means for providing cold condensing surfaces in said condensing space, substantially as set forth.

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

JOHN McLAUGHLIN.

Witnesses:

A. HARVEY,

B. HARVEY.