

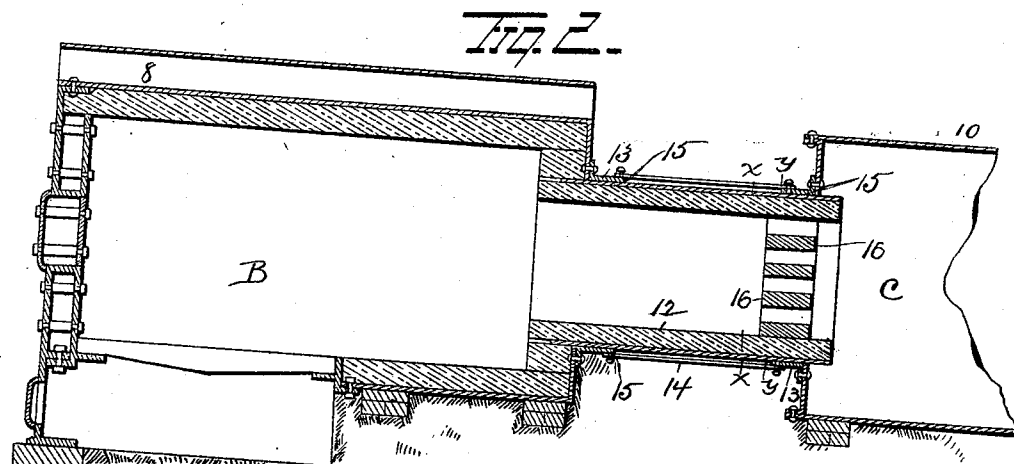
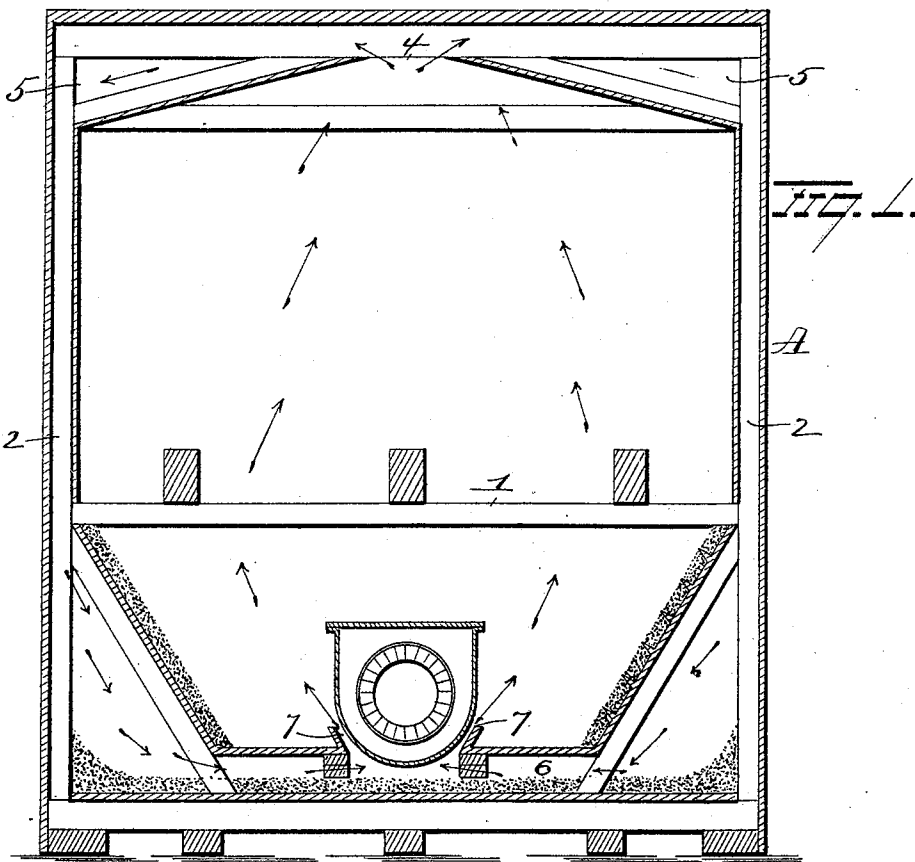
(No Model.)

2 Sheets—Sheet 1.

W. GRAHAM.
LUMBER DRYING KILN.

No. 538,412.

Patented Apr. 30, 1895.



Witnesses
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G. F. Downing.

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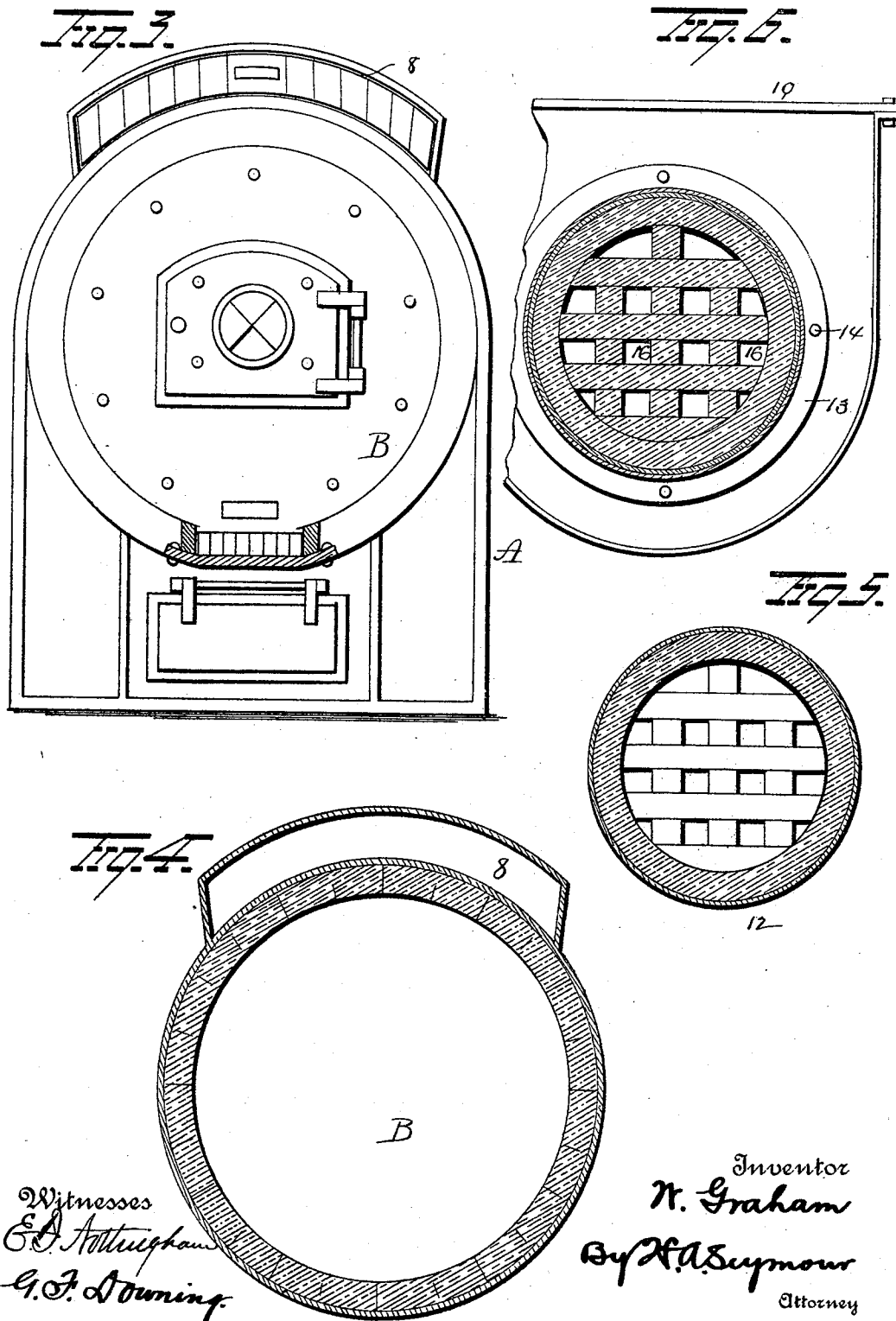
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2 Sheets—Sheet 2.

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LUMBER DRYING KILN.

No. 538,412.

Patented Apr. 30, 1895.



UNITED STATES PATENT OFFICE.

WILLIE GRAHAM, OF MERIDIAN, MISSISSIPPI.

LUMBER-DRYING KILN.

SPECIFICATION forming part of Letters Patent No. 538,412, dated April 30, 1895.

Application filed September 15, 1894. Serial No. 523,130. (No model.)

To all whom it may concern:

Be it known that I, WILLIE GRAHAM, of Meridian, in the county of Lauderdale and State of Mississippi, have invented certain
5 new and useful Improvements in Lumber-Drying Kilns; 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
10 make and use the same.

My invention relates to an improvement in lumber drying kilns and it consists in certain novel features of construction and combinations of parts which will be hereinafter described and pointed out in the claims.

In the accompanying drawings, Figure 1 is vertical sectional view through the building. Fig. 2 is a longitudinal sectional view through the furnace, radiator, and expansion-joint.
20 Fig. 3 is a view in front elevation. Fig. 4 is a transverse sectional view on line *x x* of Fig. 3. Fig. 5 is a transverse section on line *y y* of Fig. 2, and Fig. 6 is a front perspective of the radiator.

25 A represents the kiln or building. This is arranged so as to have the drying chamber occupy as much space as possible. To this end the building is preferably divided into two chambers, the dividing cross-beams 1, 1, constituting an open work floor on which the
30 lumber is piled and through which the heated air from the chamber below ascends. The drying chamber preferably has double walls, the spaces 2 between forming condensing chambers for the return currents of air. The
35 top of the chamber has a central outlet 4 for the escape of the air. The ceiling is also double leaving an airspace 5 which communicates with the outlet 4 and the spaces 2 for the return of the air as it becomes cooler, to the
40 chamber at the bottom of the building where it is again heated and returned. For this purpose there is an air space 6 in the bottom of the building. The bottom is preferably
45 covered with sand or similar material.

In the lower compartment the furnace and radiator are located and a space 7 is left on either side thereof through which the heated
50 air passes.

B is the furnace. This is preferably lined with fire-brick and otherwise it does not differ materially from other furnaces except

that a cold air duct 8 is formed about it whereby this air is heated directly from the furnace on its way into the building, and the
55 top of the furnace is the better protected.

C is the radiator. This is preferably U-shaped in cross section with a flat top 10, the advantage of this form being that it prevents warping and that there are more square
60 inches of heating surface to the running foot without having to make the first story of the kiln so high as if the radiator were round. The only part of this radiator liable to burn out is the top and this is easily repaired.

65 Connecting the furnace and radiator is the expansion joint adapted to compensate for the expansion and contraction due to heat and cold. This consists in a large pipe 12 extending from the furnace to the radiator.
70 This pipe is lined with fire brick as shown, the bricks extending beyond the ends of the pipe thus protecting the latter against being burned out and permitting expansion and contraction due to heat and cold. Collars 13,
75 13, extend outwardly toward each other from the furnace and radiator and rods 14, 14, extend from the lugs 15, 15 on these collars to hold the furnace and radiator together. Inside are flues 16, 16, which prevent the flames
80 from entering the radiator. These are piled inside the expansion joint like checker work and being entirely independent thereof may be readily removed and replaced in case they become burned out. The air passing up
85 around this expansion joint and radiator is heated thoroughly and thus prepared to cure the lumber which is located above it.

Although I have only described one furnace radiator and expansion joint it is obvious that several might be used as the exigency of the occasion may require.

It is evident that other slight changes might be resorted to in the form and arrangement of the several parts described without departing from the spirit and scope of my invention
95 and hence I do not wish to limit myself to the exact construction herein set forth, but,

Having fully described my invention, what I claim as new, and desire to secure by Letters
100 Patent, is—

1. The combination with a furnace, and radiator, of an expansion joint between the two, said joint consisting of a pipe having a fire

brick lining and removable flues therein, substantially as set forth.

2. The combination with a furnace, and radiator, of an expansion joint between and connecting the two, said joint consisting of a
5 pipe two collars, and rods connecting these collars together, substantially as set forth.

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

WILLIE GRAHAM.

Witnesses:

W. E. BROACH,

HENRY F. BROACH, Jr.