

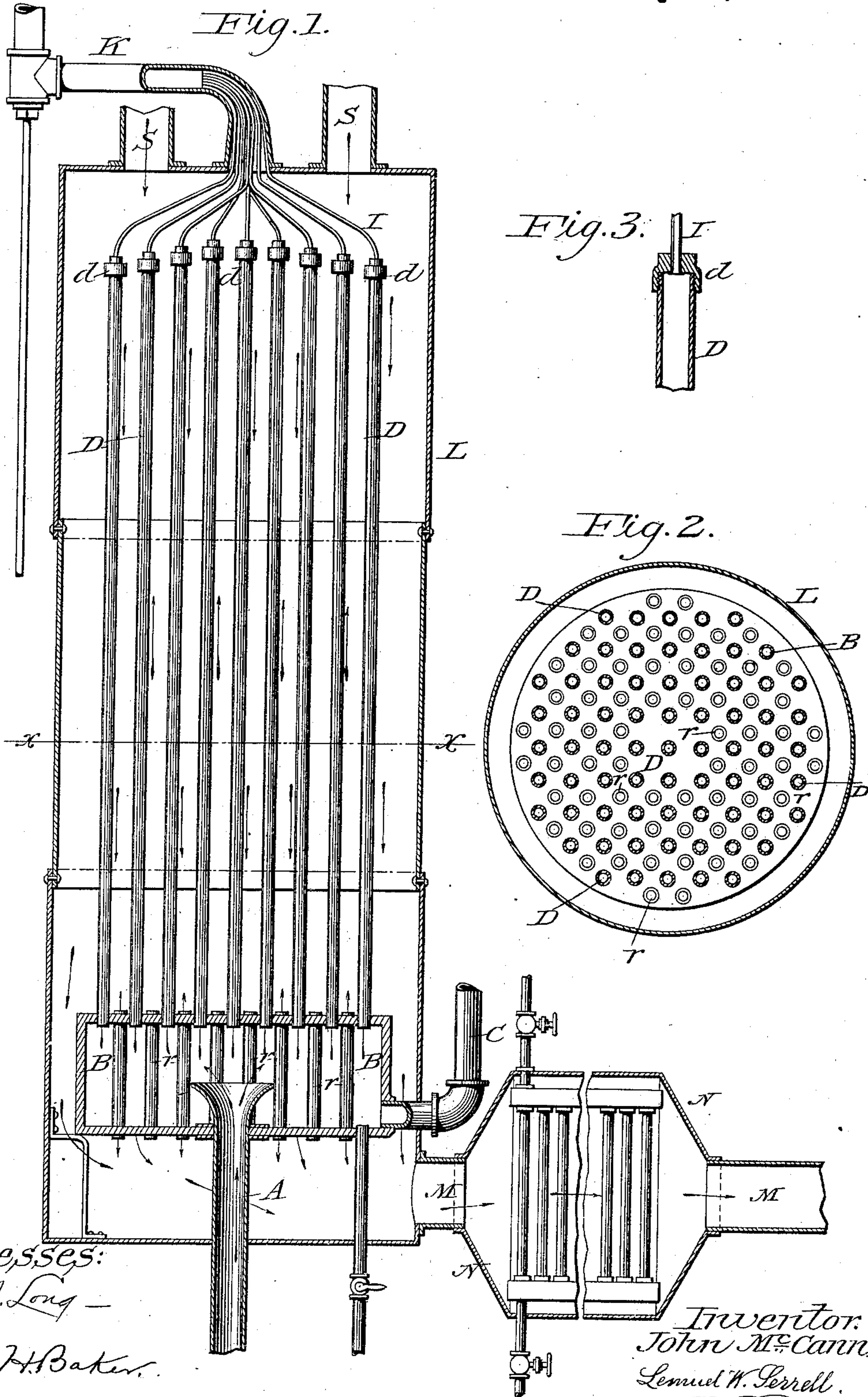
(No Model.)

J. McCANN.

AIR HEATING APPARATUS FOR DRYING ROOMS.

No. 341,591.

Patented May 11, 1886.





# UNITED STATES PATENT OFFICE.

JOHN McCANN, OF JERSEY CITY, NEW JERSEY.

## AIR-HEATING APPARATUS FOR DRYING-ROOMS.

SPECIFICATION forming part of Letters Patent No. 341,591, dated May 11, 1886.

Application filed July 13, 1885. Serial No. 171,450. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN McCANN, of Jersey City, in the county of Hudson and State of New Jersey, have invented an Improvement in  
5 Air-Heating Apparatus for Drying-Rooms, of which the following is a specification.

In planing-mills it is usual to provide a drying-room for the lumber and to heat the same by steam; but where the exhaust-steam from  
10 the engine is used for this purpose there is a loss of power by back-pressure upon the engine.

My improvement is made for preventing back-pressure upon the engine, for obtaining as high a temperature as possible from the  
15 exhaust-steam, and for adding to the temperature thus obtained the heat of live steam, thereby using only sufficient live steam to bring up the atmosphere that has become highly heated by the exhaust-steam to the  
20 temperature of the live steam, or nearly so.

In the drawings, Figure 1 is a vertical section of the apparatus complete. Fig. 2 is a sectional plan of the groups of tubes at *xx*, Fig. 1; and Fig. 3 is a section of the upper end of  
25 one of the vertical exhaust-steam tubes.

The exhaust-steam from the engine is led by the pipe A into the hollow cast-iron base B, within which the pipe A rises and terminates with a flaring mouth. From the base B a second pipe, C, leads to any chimney or free outlet; but as this pipe C is below the upper end  
30 of the pipe A the steam tends to pass first into the ranges of vertical pipes D that are screwed into the base B and are open at their lower ends.

In radiators having vertical pipes the air is likely to remain in such pipes and prevent the steam passing freely into the same, and it is difficult to connect the upper ends of the ranges of pipes without interfering with the  
40 free circulation of the atmosphere. To prevent this difficulty, I provide a screw-cap, *d*, for the upper end of each tube D, and into such cap is inserted the lower end of a thin metallic pipe, I, preferably of soft copper or brass, the extreme lower end being swelled out into the cap to make a tight joint. These pipes I are  
45 drawn toward one common point or massed together in one or more groups, and preferably bent off horizontally and entered into the flue or escape-pipe K, so that the steam or steam  
50 and air that rises and passes off through the tubes I insures the constant change of the

fluids within the pipes D, and the highest heat possible is obtained from the exhaust-steam, and there is no possibility of back-  
55 pressure, because a free escape is constantly open for the steam and a constant gradual circulation is maintained through the steam-pipes by the small vent to each through the small tube at the upper end. By this device  
60 the circulation is rendered more reliable and uniform than can be effected when cocks or valves are used. There is a case, L, around this radiator, and atmospheric air is forced into the same, preferably from the top at S, so  
65 as to become heated as it passes down among the tubes, and is led away from the bottom by the trunk M, that passes into the drying-room or other place to be heated, as usual; but in  
70 the trunk M is an enlargement, forming a case, N, within which are ranges of pipes that may be connected together by bends and elbows, but preferably by top and bottom hollow boxes with vertical pipes to form a coil that is adapted to withstand the boiler-pressure, so that  
75 steam may be passed through the same directly from the boiler and give to the pipes a sufficiently high temperature to bring the air that is already hot up to nearly the temperature of the live steam. This renders the heat  
80 of the drying or other room very efficient, and although this improvement is especially adapted to heating a drying-room for lumber it may be applied in heating any chamber or room.

I prefer to pass through the hollow base B  
85 the vertical pipes *r*, that are open at both ends and serve for the passage of atmospheric air as it is forced down among the pipes D.

By my improvement all elbows and bends are dispensed with, there is no risk of water  
90 remaining in the apparatus, and freezing and bursting the pipes or fitting.

Any desired number of pipes can be introduced into this radiator, according to the volume of air to be heated, and this apparatus  
95 produces no back-pressure upon the engine, even when only a small apparatus is employed, because the surplus steam has a free escape.

The cost of constructing this apparatus is small, and any tube that is defective can be  
100 removed with facility, the tubes in the middle portions being the longest, to allow them to be easily grasped by a wrench and unscrewed.

I claim as my invention—

1. The combination, with the base and steam-inlet pipe and vertical ranges of steam-radiating pipes, of caps to such pipes and small vent-tubes grouped together, and a common  
5 vent or discharge tube or tubes, substantially as set forth.
2. The combination, with the hollow base and the exhaust-steam pipe passing into the same, of the vertical range of radiating-pipes,  
10 a discharge-pipe, small vent-tubes connected with the upper ends of such pipes and passing to said discharge-tube, and a second pipe forming an escape from the hollow base for surplus steam, substantially as set forth.
- 15 3. The combination, with the steam-pipe, the hollow base, and the vertical ranges of radiator-pipes, a discharge-pipe, of the small vent-tubes from the upper ends of the radiator-pipes connecting with the discharge-pipe, and a case surrounding such radiator-pipes,  
20 an air-inlet pipe at the upper part of the case through which atmospheric air is forced and passes down around the vertical ranges of radiator-pipes, and a trunk leading from the case, substantially as set forth.

Signed by me this 8th day of July, A. D. 1885.

JOHN McCANN.

Witnesses:

F. B. CHIDESTER,  
WILLIAM A. BYERS.