

(No Model.)

2 Sheets—Sheet 1.

P. REILLY.

STEAM HEATING APPARATUS FOR RAILWAY CARS.

No. 502,204.

Patented July 25, 1893.

Fig. 1.

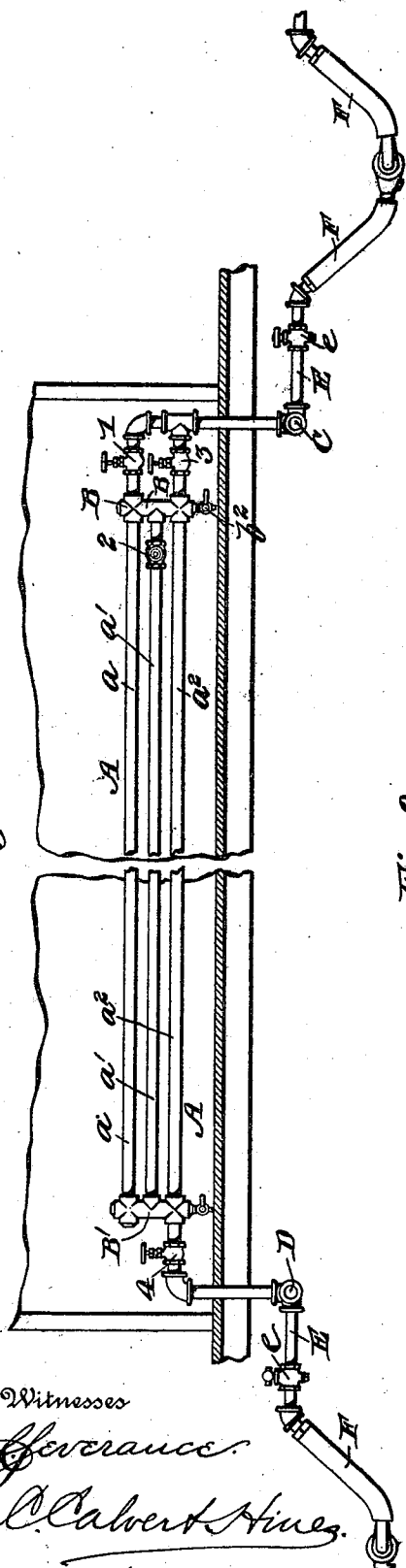
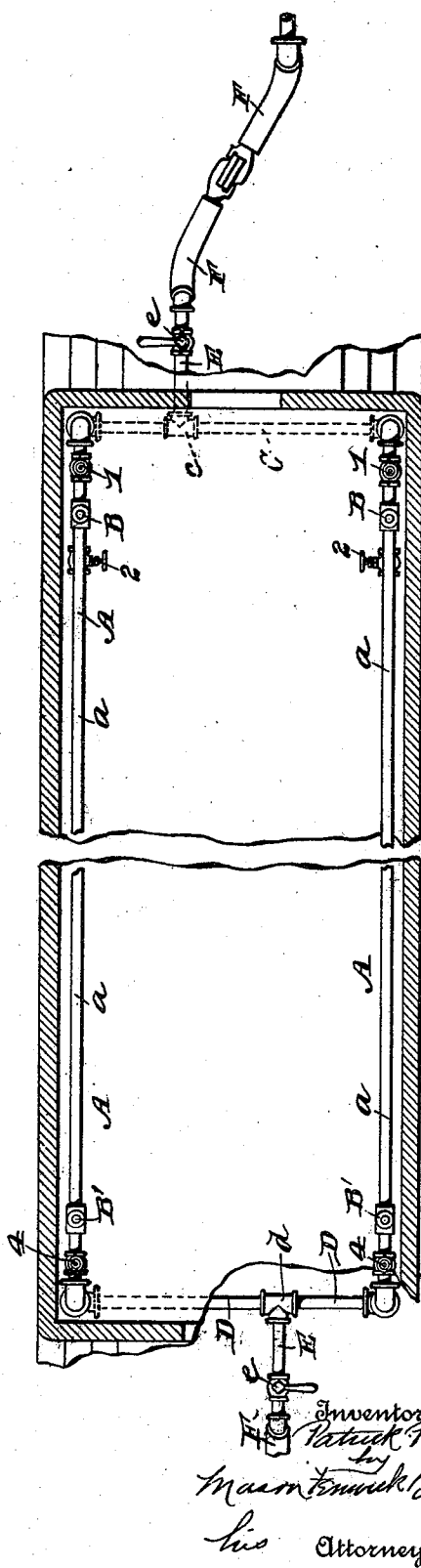


Fig. 2.



Witnesses

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Fig. 3.

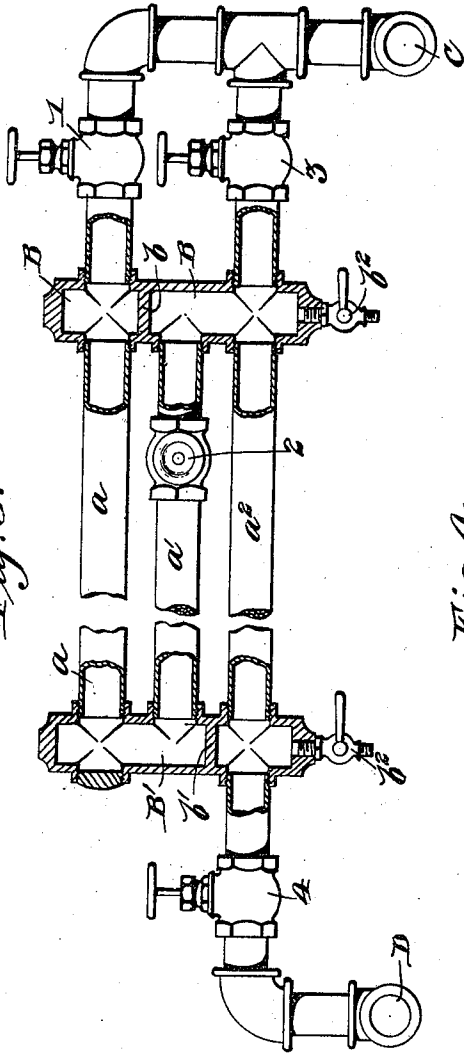
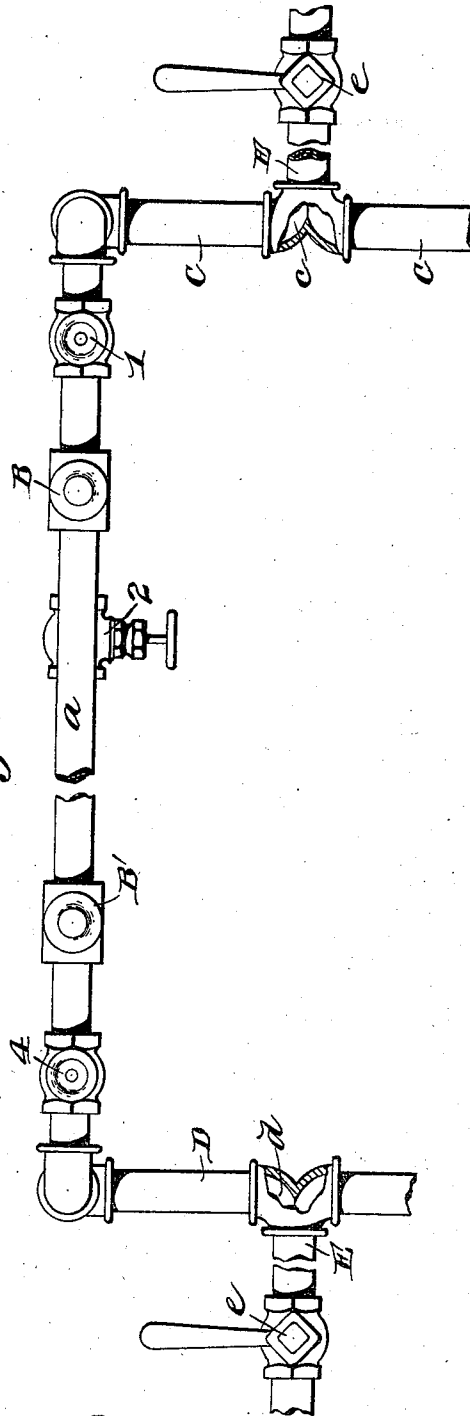


Fig. 4.



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UNITED STATES PATENT OFFICE.

PATRICK REILLY, OF LIMA, OHIO.

STEAM HEATING APPARATUS FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 502,204, dated July 25, 1893.

Application filed April 7, 1893. Serial No. 469,466. (No model.)

To all whom it may concern:

Be it known that I, PATRICK REILLY, a citizen of the United States, residing at Lima, in the county of Allen and State of Ohio, have invented certain new and useful Improvements in Steam Heating Apparatus for Railway-Cars; 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 make and use the same.

My invention relates to steam heating apparatus for railway cars, and in consists in so arranging and constructing the service pipes and cocks that an improved heater is produced, and also the heat of a single car can be regulated independently of another car, or the heat of all the cars kept uniform as desired, as will be hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a longitudinal section through a portion of a car showing the steam piping on one side of the same, the other side of the car being similarly piped. Fig. 2 is a horizontal section through a car, showing the coils of pipes on opposite sides of the car and connected by cross pipes formed with a T-coupling by which the pipes of one car are connected with the pipes of another car. Fig. 3 is a side elevation of the system of pipes and cocks as arranged on one side of a car and provided with end cross connecting pipes, and Fig. 4 is a top plan view of the same, showing also a cock in the end of the connecting pipe for shutting off the steam from entering the pipes of an adjoining car.

A in the drawings represents a system of pipes and cocks arranged on each side of a car, both systems being the same in construction and arrangement so that a description of one will suffice for both. The system of pipes consists of a series of pipes preferably three a , a' , a^2 arranged longitudinally along the sides of the car, one above the other. The three pipes are united by connections B B', both of which connections are constructed with diaphragms or bridges b b' respectively for a purpose presently to be described. The diaphragm b is arranged in the connection B between the pipes a and a' and the diaphragm

b' is arranged in the connection B' between the pipes a' and a^2 . The pipe a is provided with a cock 1, pipe a' with cock 2 and pipe a^2 with cocks 3 and 4. The end connections B B' are also provided in their lower ends with waste cocks b^2 b^2 for letting out water formed by the steam condensing. The pipes a and a^2 are joined at one of their ends by a cross connecting pipe C and the pipe a^2 is connected at its other end with a cross connecting pipe D. The cross connecting pipes are provided with T-shaped joints c and d respectively, in which are screwed pipes E provided with cocks e , to which pipes flexible connections F are attached, as shown in Figs. 1 and 2.

The arrangement and construction of the pipes, cocks and connections of one car are the same in all the cars. The cross pipes and their connections are under the floor of the car while the steam pipes are inside the car along both sides of the same.

The operation of the invention is as follows: Steam from the engine boiler passes through the flexible connection into the T-shaped joint or coupling c and passes to the pipes on one or both sides of the car. The passage of the steam through the pipes is controlled by the arrangement and operation of the cocks. If it is desired to utilize the full heating capacity of the steam, cocks 1, 2 and 4 are opened and cock 3 is closed. By this arrangement the steam first passes into and along the upper pipe a , thence through the connection B' into and back along the pipe a' into the connection B and thence into and along the pipe a^2 to the end connecting pipe, and from thence through the flexible connection to the system of pipes in another car. The arrangement just described utilizes all the pipes and secures the greatest amount of heat as the steam is caused to pass through the car three times before leaving the same. When a less amount of heat is required, cocks 1 and 2 are closed and cocks 3 and 4 left open so that the steam passes only through pipe a^2 directly to the coil of the next car and by similarly arranging the cocks in this coil the steam will pass through in the same manner. Or, if desired, all the cocks in a coil in one car may be left open while only cocks 3 and 4 may be left open in the coil of another car, so that

the temperature may be different or the same in each car as circumstances may require; or again, a coil on one side of a car can be cut out entirely and all the pipes or a single pipe of the coil on the opposite side of the car utilized. My car heating system practically consists of a direct heating section and a circulating section either of which can be used as circumstances may require. The regulation of the steam in one car does not in any way affect the temperature of the other cars in the train.

Most of the steam heating systems for cars employ a main pipe beneath the car connected with small radiating pipes inside the car. In my system I dispense with the main pipe and arrange all the pipes inside the car except the cross pipes at the ends of the cars and the connections between the cars. By actual test in train service I find that I can heat a train in less than one half the time required by systems employing a main train pipe. My system will be found very simple and cheap and free from all complicated valves and traps, and also obviates the necessity of placing one pipe within the other for securing the return of the steam before leaving the car.

What I claim as my invention is—

1. In a car heating system, the combination of a direct main heating line section a^2 , provided with inlet and outlet cocks 3 and 4, and a circulatory section comprising a series of longitudinally arranged pipes a, a' , the pipe a being provided with a cock 1 and the pipe a' being provided with a cock 2, both sections being located inside of and running through the car and connected by hollow end connections B B', each of which latter is provided with a diaphragm, the diaphragm b in the

connection B being arranged between the points where the pipes a, a' enter said connection and the diaphragm b' in the connection B' being between the points where the pipes $a' a^2$ enter said connection, whereby by a proper manipulation of the cocks, the steam may be passed in a direct line through the car or caused to circulate back and forth through the pipes and pass out at the opposite end of the system of pipes from which it entered, substantially as described.

2. In a car heating system the combination of a direct main heating line section a^2 , provided with inlet and outlet cocks 3 and 4, and a circulatory section comprising a series of longitudinally arranged pipes a, a' , the pipe a being provided with a cock 1 and the pipe a' being provided with a cock 2 both sections being located inside of and running through the car and connected by hollow end connections B B' each of which latter is provided with draw-off cocks and a diaphragm, the diaphragm b in the connection B being arranged between the points where the pipes a, a' enter said connection and the diaphragm b' in the connection B' being between the points where the pipes $a' a^2$ enter said connection, whereby by a proper manipulation of the cocks, the steam may be passed in a direct line through the car or caused to circulate back and forth through the pipes and pass out at the opposite end of the system of pipes from which it entered, substantially as described.

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

PATRICK REILLY.

Witnesses:

W. E. REILLY,
D. W. MORRIS.