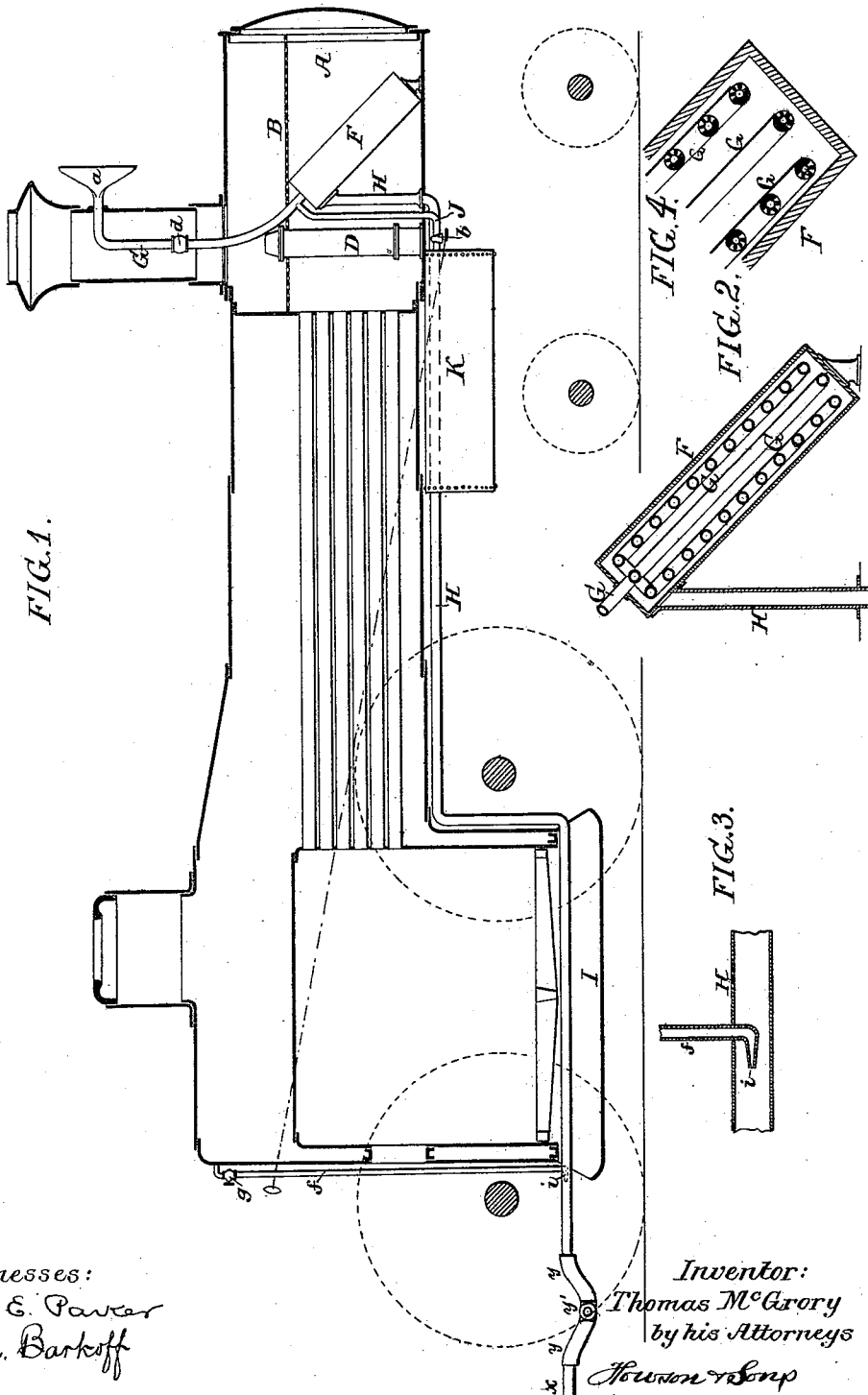


(No Model.)

T. McGRORY.
HEATING RAILWAY CARS.

No. 463,405.

Patented Nov. 17, 1891.



Witnesses:
John E. Paver
Alex. Barkoff

Inventor:
Thomas McGroary
by his Attorneys
Houston & Son

UNITED STATES PATENT OFFICE.

THOMAS McGRORY, OF PHILADELPHIA, PENNSYLVANIA.

HEATING RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 463,405, dated November 17, 1891.

Application filed May 23, 1887. Serial No. 239,084. (No model.)

To all whom it may concern:

Be it known that I, THOMAS McGRORY, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain
5 Improvements in Heating Railway-Cars, of which the following is a specification.

The object of my invention is to provide simple and effective means for utilizing the waste heat of a locomotive for the purpose of
10 heating volumes of air to be afterward conveyed to the cars of the train, so as to dispense with the necessity of employing stoves or other heating devices in each car.

In the accompanying drawings, Figure 1 is
15 a longitudinal section of sufficient of a locomotive to illustrate the application of my improved heating device thereto. Fig. 2 is an enlarged sectional view of the heating-drum, and Fig. 3 an enlarged sectional view of
20 other part of the device. Fig. 4 is a sectional view of part of the heating-drum, on a still larger scale than Fig. 2, in order to show the perforated character of the air-pipe within the drum.

25 A represents the usual elongated smoke-box of a locomotive; B, the horizontal spark-arresting screen of the same; and D, the usual jet-pipe beneath the stack, the position of the driving and front truck wheels being shown
30 by dotted lines.

In advance of the pipe D, and beneath the screen B, I locate a drum F, preferably of oval form, and suitably supported in the inclined position shown in Fig. 1, so that while
35 the products of combustion can circulate freely around, under, and over the drum, no opportunity will be afforded for the lodgment of sparks on the upper surface of the same.

Within the drum adjacent to the curved
40 wall and flat front and rear sides of the same, is a coiled pipe G, which extends from the drum upward into the stack for some distance, and terminates in a flaring mouth or receiver *a* in advance of the stack, and preferably
45 just below the top of the same.

From the drum F extends a discharge-pipe H, which, in the present instance, is carried back beneath the boiler and through the ashpan I, although the course taken by this discharge-pipe may be varied, as desired, without departing from the essential feature of
50 my invention.

When the engine is in motion, air enters the flaring mouth or receiver *a* of the pipe G and is forced down through the same and escapes
55 from perforations in the coiled portion of the pipe within the drum F, these perforations being so arranged that the air is delivered in a series of fine jets, which constantly impinge upon all portions of the interior of the casing
60 of the drum, and as the latter is highly heated by reason of the continual circulation of the heated products of combustion around the same, the air must likewise be highly heated before it can escape through the discharge-pipe H.

The devices described provide for the supply of air to the heating-drum only when the engine is in motion, and in order to maintain the supply when the engine is stopped at a
70 station, or whenever the supply through the pipe G fails from any other cause, I provide said pipe G with a branch pipe J, which communicates with the usual compressed-air reservoir K used in connection with the braking
75 mechanism of a train, said pipe being provided with a suitable valve *b*, which should be under the control of the engineer, so that air from the reservoir K may be permitted to enter the drum F whenever it may be necessary.
80

In order to prevent the escape of air upwardly through the pipe G in the latter case, I provide said pipe with a check-valve *d*, which
85 should be so constructed as to close against pressure from below, but to open readily to permit the flow of air downward through the pipe.

It is advisable to supply a certain amount of moisture to the heated air before permitting
90 the same to gain access to the cars of a train. Hence I provide a pipe *f*, which communicates with the steam-space of the boiler and is furnished with a valve *g*, within easy reach of the engineer, said pipe terminating in a
95 rearwardly-projecting nozzle *i* in the pipe H, so that a jet of steam of any desired volume may be projected into the current of hot air traversing the pipe, in order to supply the same with the desired amount of moisture
100 without unduly lowering the temperature of the air. By reason of the rearward projection of the nozzle, moreover, the steam-jet is available as a means of causing or assisting

the rapid rearward flow of the current of air through the pipe.

Instead of being arranged at the rear of the boiler, the pipe *f* may, if desired, communicate with any available steam space or passage of the boiler.

It should be understood that the tender and the various cars of the train are provided with suitable air-conveying pipes *x*, having flexible connections *y*, with detachable joints *y'*, so that the air heated in the drum *F* can be conveyed rearward to the various cars of the train.

I am aware that it is not new to locate a heater in the smoke-box of a locomotive and to supply the same with air through a pipe extending up to a point in front of the stack and provided with a flaring mouth or receiver, and I am also aware that special pumping mechanism has been proposed for supplying such heater with air when the engine is not running. Hence I do not claim either of these things, broadly considered; but

I claim as my invention and desire to secure by Letters Patent—

1. The combination of the elongated smoke-box of a locomotive, having a horizontal spark-arresting screen therein, with a heater located beneath the screen and in advance of the jet-nozzle and in front of the flues of the tubed barrel of the boiler, with a pipe for

supplying cold air to said heater, and another pipe for conveying the heated air therefrom, substantially as specified.

2. The combination of the smoke-box of a locomotive, the heating-drum therein, an air-supply pipe coiled within the drum and perforated so as to discharge the air in contact with the entire inner surface of said drum, and an outlet-pipe for said heated air, substantially as specified.

3. The combination of the initial pipe of the hot-air-pipe system of the train, a heater located in the smoke-box of the locomotive, a pipe for supplying air to said heater, a pipe for conveying the hot air therefrom, a connection between said pipe and the initial pipe of the train system, and a valved pipe providing communication between the steam space or passage of the locomotive and the hot-air pipe on the same at a point between the heater and the train-pipe, so as to effect the admixture of steam with the hot air after it leaves the heater, but before it enters the train-pipes, all substantially as specified.

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

THOS. McGRORY.

Witnesses:

JOHN MEIDAN,
HENRY HOWSON.