

(No Model.)

3 Sheets—Sheet 1.

M. J. WALSH.  
MEANS FOR HEATING CARS.

No. 263,266.

Patented Aug. 22, 1882.

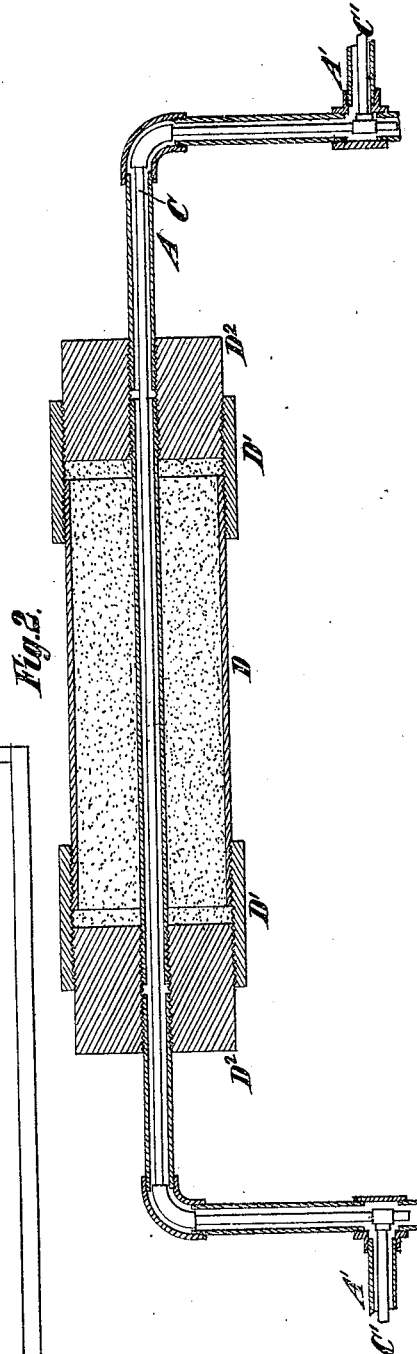
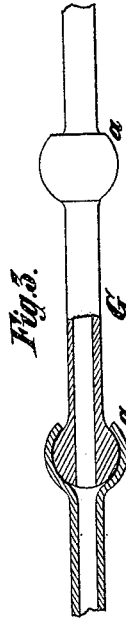
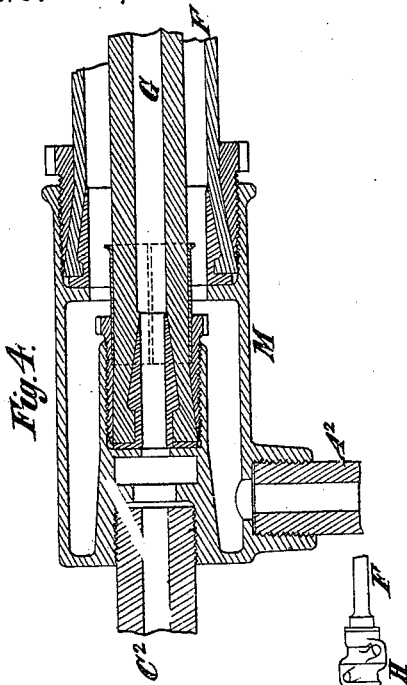
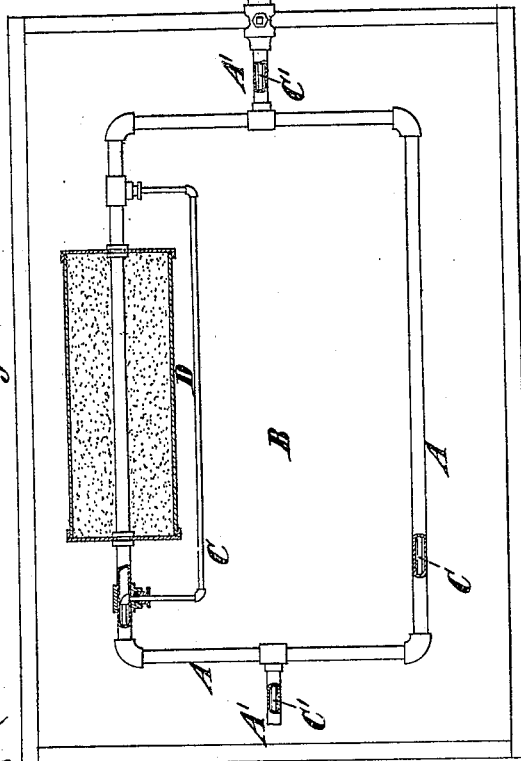


Fig. 1.



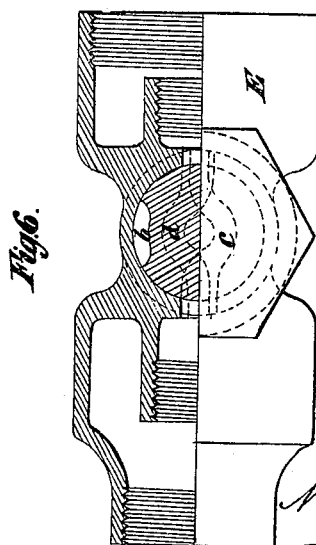
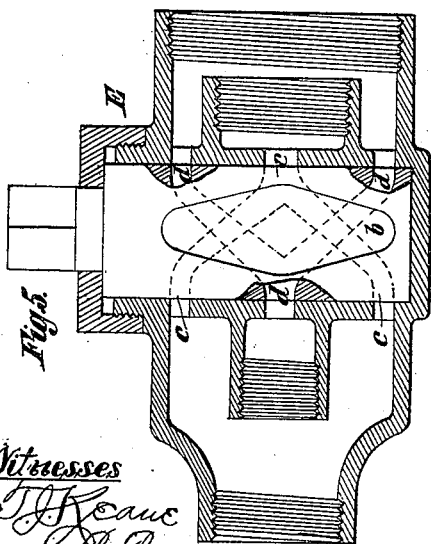
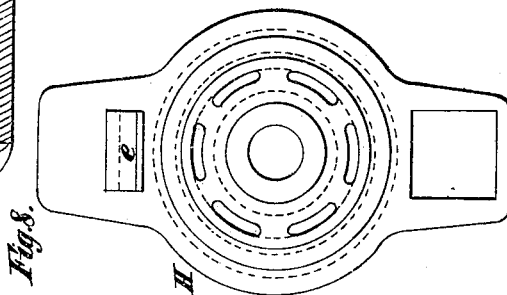
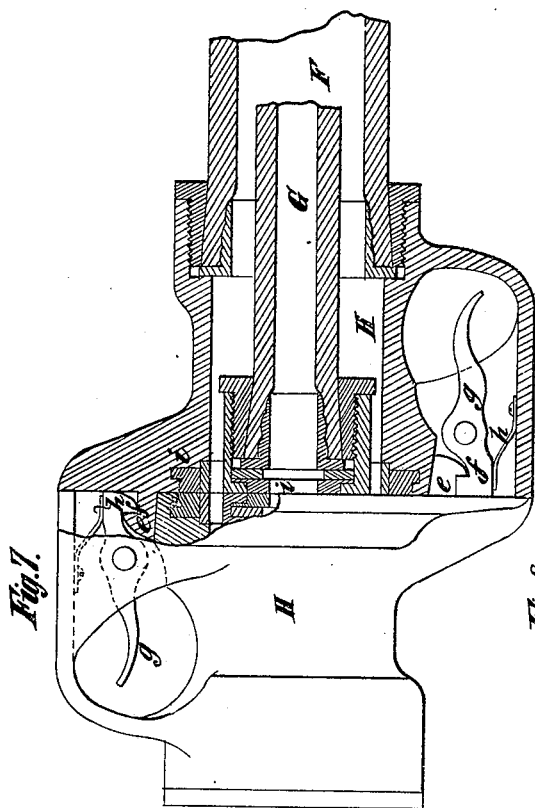
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M. J. WALSH.  
MEANS FOR HEATING CARS.

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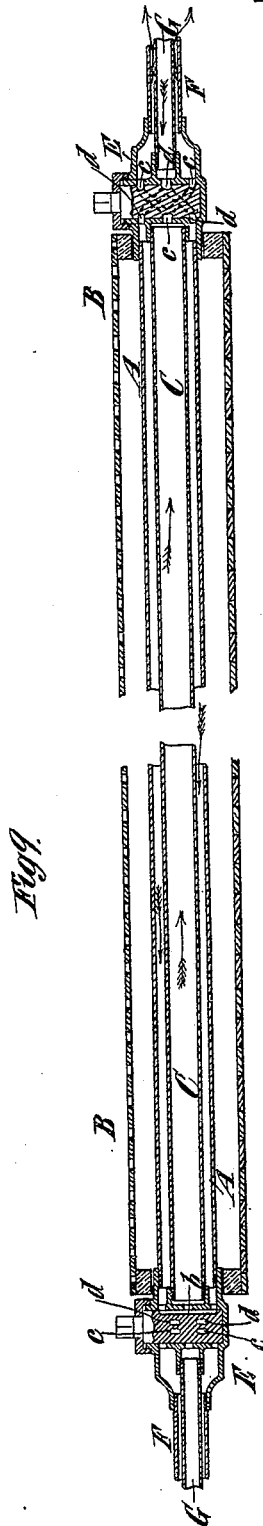
(No Model.)

3 Sheets—Sheet 3.

M. J. WALSH.  
MEANS FOR HEATING CARS.

No. 263,266.

Patented Aug. 22, 1882.



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# UNITED STATES PATENT OFFICE.

MAURICE J. WALSH, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO MARY C. WALSH, OF SAME PLACE.

## MEANS FOR HEATING CARS.

SPECIFICATION forming part of Letters Patent No. 263,266, dated August 22, 1882.

Application filed March 1, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, MAURICE J. WALSH, of New York, in the county and State of New York, have invented a certain new and useful  
5 Improvement in Means for Heating Railway-Cars, of which the following is a specification.

The improvement consists in the combination, with two pipes extending around a car, one arranged within the other, the outer containing the heating agent and the inner conveying the waste or expended heating agent  
10 off, of a flexible pipe or pipes extending beyond the car and a cock for controlling communication between the pipes within and the  
15 pipe or pipes extending beyond the car.

The improvement also consists in the combination, with two pipes extending around or through a car, one arranged within the other, the outer containing the heating agent and the  
20 inner conveying the waste or expended heating agent away, of a jacket for the outer pipe, containing acetate of potash or a mixture of about two parts, by weight, of caustic soda and about eleven parts, by weight, of acetic  
25 acid, a flexible pipe or pipes extending beyond the car, and a cock for controlling communication between the pipes within and the pipe or pipes extending beyond the car. Much latent heat will be thus stored up in the jackets,  
30 and will become sensible even after the supply of the heating agent is cut off. Hence a constant supply of the heating agent will be unnecessary.

The improvement also consists in the combination of pipes extending around a car for containing a heating agent, other pipes for conveying the waste or expended heating agent  
35 back again, and flexible pipes, one within the other, extending beyond the car.

The improvement also consists in the combination of pipes for conveying a heating agent around or through cars and other pipes for conveying the waste or expended heating agent  
40 back again, flexible pipes extending beyond the car and inner sections of rigid pipe connected by universal joints, so as not to materially interfere with the yielding of the flexible pipe, and couplings for connecting the said flexible pipes and sections of rigid pipe belonging  
45 to different cars.

The improvement also consists in the combination,

with pipes for conveying a heating agent around a car, pipes arranged within the first-mentioned pipes, for conducting the waste or expended heating agent from the car, 55 two pipes outside the car, arranged one within the other for respectively conveying the heating agent to and the waste heating agent from the car, and a cock adapted to establish communication between the outer of the pipes within 60 the car and the inner of the pipes outside the car, as also between the inner of the pipes within the car and the outer of the pipes outside the car, or to connect the pipes between the car. By this means the waste or expended 65 heating agent passing outside the live heating agent in transit from one car to another is thereby prevented from unduly cooling.

The improvement also consists in other combinations of parts, hereinafter described and 70 claimed.

In the accompanying drawings, Figure 1 is a plan of the floor of a railway-car provided with heating-pipes extending around it. Fig. 2 is a view on a large scale, illustrating a 75 modification of the apparatus. Fig. 3 is a view, also on a large scale, of a pipe composed of sections connected by universal joints and designed to be used between two adjacent cars. Fig. 4 is a view illustrating the forward ends 80 of the pipes, through which the live and expended heating agent are conducted. Fig. 5 is a longitudinal section of a cock embodying certain features of my improvement. Fig. 6 is a partial under side view and partial section 85 of the cock. Fig. 7 is a partial side view and partial longitudinal section of couplings employed in my improvement. Fig. 8 is an end view of one of these couplings; and Fig. 9 represents a longitudinal section of the floor 90 portion of a car, with heating-pipes extending directly through it.

Similar letters of reference designate corresponding parts in all the figures.

Referring first to Figs. 1, 3, 5, 6, 7, and 8, 95 A designates pipes for conveying a heating agent—such as steam, air, gas, or water—around a car, B. These pipes may be made of iron or other suitable material, and may be composed of sections connected by elbows in 100 a well-known manner.

C designates pipes for conveying the waste

or expended heating agent back again to its source. It is desirable that the waste heating agent, where it consists of water, or where it becomes water through condensation, should be conducted back to its source to obviate the necessity of carrying too much water. Even where it is air it may be desirable to return it, as it will be more economic to reheat it than to heat other air from the normal temperature, as the waste or expended air will not be reduced to the normal temperature in passing through a car or cars. This pipe C may be constructed of the same material and in the same manner as the pipe A. As here shown, it is arranged within the pipe A. From the portion of the pipes A and C opposite the center of the ends of the car there extend branch pipes A' C'; but in Fig. 9 I have shown the pipes A' C' as continued through the center of the car, instead of connecting with pipes extending around the car. I have shown one of the portions of the pipe A which are adjacent to the sides of the car with a surrounding jacket, D, which may be made of metal or any other suitable material, and constitutes a vessel for containing acetate of potash or a mixture of about two parts, by weight, of caustic soda and about eleven parts, by weight, of acetic acid. The pipe C, as here shown, passes out of the pipe A beyond the ends of this jacket and outside of the same. The acetate of potash or the mixture of caustic soda and acetic acid will absorb a great quantity of heat and retain much of it latent, wherefore the supply of the heating agent may be intermittent instead of constant, if desirable, and in any case it will tend to effect a uniform heating of the car.

Connected to the branch pipes A' C', and to each end of the pipes A' C', shown in Fig. 9, is a cock, E, and extending from the latter are pipes F and G, the latter of which is contained within the other. At the ends of these pipes F G are couplings H, which operate in conjunction with corresponding couplings H belonging to adjacent cars. The pipe F is flexible, and may consist of hose of any suitable kind connected to the barrel of the cock E and the corresponding couplings H similarly and in any desirable manner. The pipe G, although not so shown, except in Fig. 3, is preferably composed of a number of rigid sections of metal or other desirable material, united by universal joints *a* of any approved kind. It can therefore yield so as not to materially interfere with the flexure of the pipe F. The plug of the cock E has a port, *b*, consisting of a recess in its exterior, and adapted, when the said plug is properly turned, to establish communication between the branch pipe A' and the branch pipe C'. This will effect the return of the heating agent from the rear end of the car when it is at the end of a train to the pipe C. The left-hand cock in Fig. 9 is shown in this position. The plug of this cock has also cross-ports *cd*, which, when the plug is suit-

ably turned, as shown in Figs. 5 and 6, will conduct the live heating agent from the outer branch pipe, A', to the inner flexible pipe, G, and the waste or expended heating agent from the inner branch pipe, C', to the outer flexible pipe, F. Thus the live heating agent will be passed through the inner pipe and inside the waste heating agent in its transit between the cars, so that the latter will serve to prevent or retard its cooling. All the cars of a train are intended to be furnished with devices corresponding to those of the car shown and just described.

Each of the couplings H is provided with one rigid hook, *e*, and a hook, *f*, formed on a lever, *g*, pivoted in place and actuated by a spring, *h*. When the couplings are pressed together end to end the hooks *f* slip over and engage with the hooks *e*, owing to the round ends or faces of both sets of hooks. The springs *h* then hold them in engagement. Washers *i*, of any proper kind, may be employed to prevent leakage between the ends of the couplings. I may combine the couplings and cocks so that the act of uniting them will effect or absolutely necessitate the operation of the cocks, so that it will be impossible to neglect the latter.

Instead of passing the inner pipe, C, outside the jacket D, as shown in Fig. 1, it may be continued along the pipe A through the said jacket, as shown in Fig. 2. The latter figure illustrates the preferable mode of constructing the jacket. The ends of the jacket D, as here shown, are screwed into thimbles D', and in the latter are also screwed plugs D<sup>2</sup>, closing the ends of the jacket. Into these plugs are screwed separate sections of the pipe A. The pipe C passes through the sections of the pipe A.

In Fig. 4 I have shown the extreme forward ends of the pipes through which the live heating agent is conveyed to and the expended heating agent is conducted from the cars. These ends are marked A<sup>2</sup> C<sup>2</sup>, and the former extends to the source of the heating agent and the latter to the receptacle for the waste or expended heating agent. They both connect with a shell, M, which has attached to it flexible pipes F G. These flexible pipes are provided with couplings such as I have before described.

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

1. The combination, with two pipes extending around or through a car, one arranged within the other, the outer containing the heating agent and the inner conveying the waste or expended heating agent away, of a flexible pipe or pipes extending beyond the car and a cock for controlling communication between the pipes within and the pipe or pipes extending beyond the car, substantially as specified.
2. The combination, with two pipes extending around or through a car, one arranged within the other, the outer containing the heat-

ing agent and the inner conveying the waste or expended heating agent away, of a jacket for the outer pipe, containing acetate of potash or a mixture of about two parts, by weight, of caustic soda and about eleven parts, by weight, of acetic acid, a flexible pipe or pipes extending beyond the car, and a cock for controlling communication between the pipes within and the pipe or pipes extending beyond the car, substantially as specified.

3. The combination of pipes for conveying a heating agent around or through cars, other pipes for conveying the waste or expended heating agent back again, and flexible pipes, one within the other, extending beyond the car, substantially as specified.

4. The combination of pipes for conveying a heating agent around or through cars, other pipes for conveying the waste or expended heating agent back again, flexible pipes extending beyond the car, and inner sections of rigid pipe connected by universal joints, substantially as specified.

5. The combination, with pipes for conveying a heating agent around a car, pipes arranged within the first-mentioned pipes, for conducting the waste or expended heating agent from the car, two pipes outside the car, arranged one within the other, for respectively

conveying the heating agent to and the waste heating agent from the car, and a cock adapted to establish communication between the outer of the pipes within the car and the inner of the pipes outside the car, as also between the inner of the pipes within the car and the outer of the pipes outside the car, or to connect the two pipes within the car, substantially as specified.

6. The combination of pipes for conveying a heating agent around cars and back again, flexible pipes arranged one within the other and extending outside the car, couplings for the flexible pipes, and cocks controlling communication between the pipes within the cars and the flexible pipes outside the cars, substantially as specified.

7. The combination, with two sections of pipes arranged one within the other and couplings therefor, of duplicate packings for the inner pipes and duplicate packings for the outer pipes, said packings being arranged in the couplings aforesaid, substantially as specified.

MAURICE J. WALSH.

Witnesses:

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