

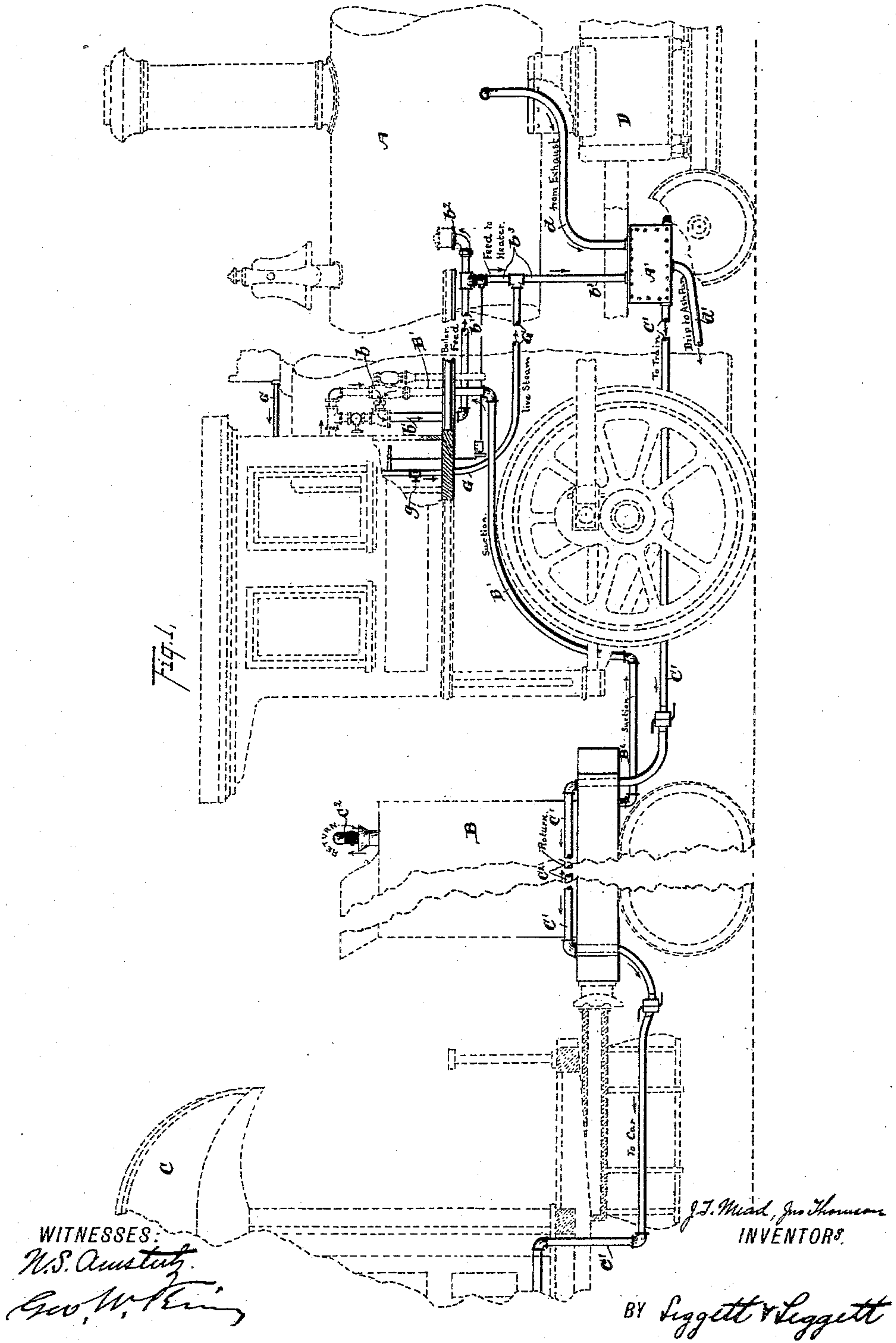
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3 Sheets—Sheet 1.

J. T. MEAD & J. THOMSON.
CAR HEATER.

No. 401,194.

Patented Apr. 9, 1889.



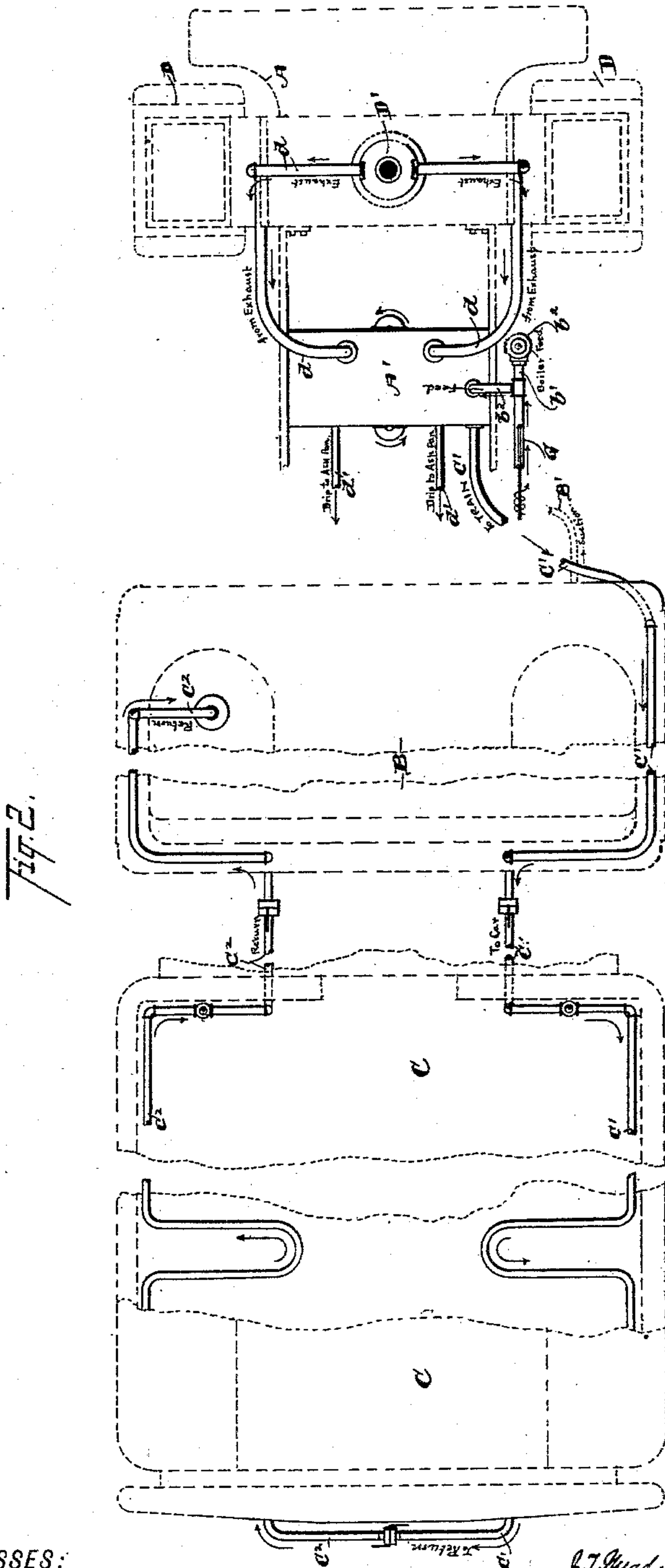
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WITNESSES:
W. S. Amstutz.
Geo. W. King

J. T. Mead, J. Thomson INVENTORS.

BY Siggitt & Siggitt

ATTORNEYS.

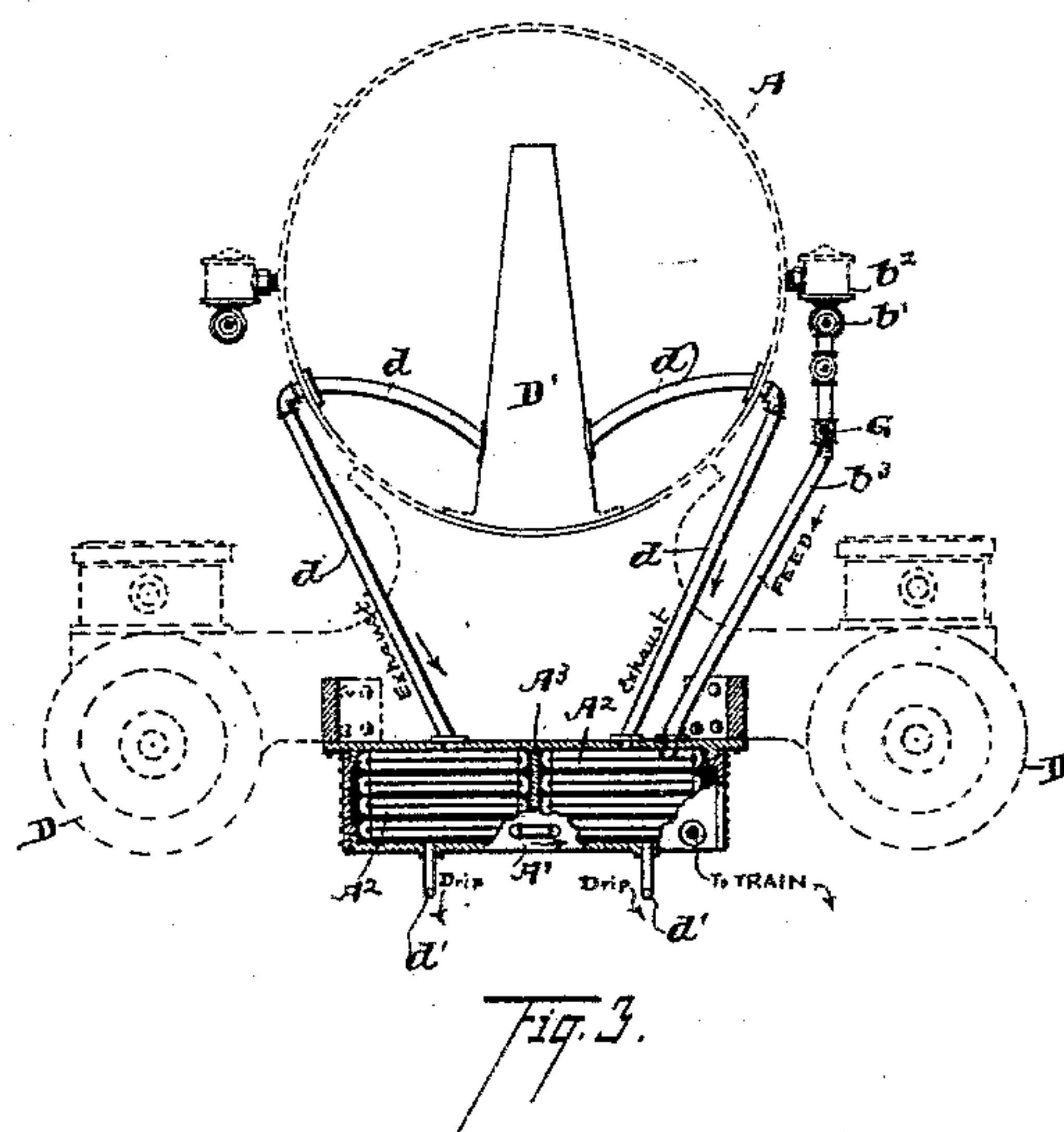
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UNITED STATES PATENT OFFICE.

JOHN T. MEAD AND JOHN THOMSON, OF CLEVELAND, OHIO.

CAR-HEATER.

SPECIFICATION forming part of Letters Patent No. 401,194, dated April 9, 1889.

Application filed June 28, 1888. Serial No. 278,492. (No model.)

To all whom it may concern:

Be it known that we, JOHN T. MEAD and JOHN THOMSON, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Car-Heaters; and we 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 pertains to make and use the same.

Our invention relates to improvements in car-heaters in which the overflow or excess of feed-water from the pump, injector, or whatever supplies the locomotive-boiler with feed-water is utilized in heating the cars, such excess or overflow water being conducted through a coil of pipe in a heater where exhaust-steam is introduced to heat the same, and from which heater the water is conducted by means of suitable pipes through the train, and from thence by suitable pipes is returned to discharge into the tank of the tender, from which tank the feed-water was in the first instance drawn, to the end that no extra pump, injector, or other motor is used in heating the cars, and that the necessary heat is supplied from the exhaust-steam without interfering with the draft, and that excess of heat in the water from the cars is utilized in heating the water in the tender or feed-tank.

With these objects in view my invention consists in certain features of construction and in combination of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation, and Fig. 2 a plan, in both figures portions being broken away to show the construction and to reduce the size of the drawings. Fig. 3 is an elevation in transverse section on the line $x x$, Fig. 1.

A represents the locomotive-engine, and B the feed-water tank of the tender.

C represents one of the cars of the train that is to be heated. The feed-water from tank B is drawn through suction-pipe B' to whatever motor supplies the boiler with feed-water, usually an injector or inspirator b , which supplies water faster than needed by the boiler. From such motor, whatever it may be, the water passes through pipe b' and through valve b^2 to the boiler, the supply being regulated by means of valve b^2 , and

the surplus water or overflow passing through pipe b^3 to heater A'. This heater is usually suspended under the boiler at such point as will be most out of the way. The heater is provided with coil of pipe A², the one end of this coil connecting with pipe b^3 , and the other end of the coil connecting with pipe C', the latter pipe leading through the train. This heater is preferably provided with a diaphragm, A³, that divides the heater into two equal steam-compartments for purposes hereinafter shown. Each cylinder D of the locomotive-engine is provided in the usual manner with exhaust-pipe discharging into the common nozzle D'. From either side of this nozzle leads a pipe, d , these pipes discharging, respectively, into the respective compartments of the heater. From each compartment of the heater leads the pipe d' , these latter pipes discharging into the ashpan for cooling same. By reason of the contracted discharging end of nozzle D' with each exhaust of either cylinder a quantity of steam is forced from nozzle D' into the respective compartments of the heater, and by reason of the diaphragm in the heater the discharges of the two pipes d do not in any manner counteract each other. The amount of steam passing back into the heater does not materially affect the sharpness of the draft, and if it were otherwise it would only be necessary to still further contract the discharging end of nozzle D'.

It will be understood that in most cases an inspirator or injector is used for supplying the boiler with feed-water, and in such cases the surplus from such inspirator or injector will be heated to such a degree that but little more heat need be imparted at the heater. If, however, a pump is used for supplying the boiler with feed-water, in such case the heater for heating the water to the train will have to be larger, and more exhaust-steam will be required for the purpose. Pipe C', as aforesaid, leads through the different cars of the train, and at the rear end of the train pipe C' connects with pipe C², the latter leading back through the train and discharging into tank B of the tender.

Both pipes C' and C² may merge into coils under the seats of the different cars or elsewhere to give sufficient radiating-surface for

heating cars, and whatever heat remains in the water after supplying the cars is of course utilized in heating the water in tank B. Provision is also made for blowing out the pipes of the train by means of live steam in case, for instance, a car is to be cut out or the train is to be left standing where the water in these pipes would be likely to freeze. For this purpose a pipe, G, having a suitable valve, g, connects with the boiler and with pipe b³, by means of which live steam can be blown through the pipes of the train to clear these pipes of water. The water from these pipes may be blown back into tank B, so that it is not wasted, and the pipes having been cleared of water the cars may be heated with live steam, as in case the cars are standing still. It is evident, however, that while the cars may be heated by steam, after the water has been blown from the pipes, and while the cars are standing still, they may be also heated by the circulation of the hot water by simply starting the injector, inspirator, or pump. If the boiler should have its full capacity of water therein, all the water drawn up by the injector, &c., would be forced through the cars, and hence the cars while still in motion can be heated either by the hot water or steam.

It will be observed that there is none of our improved car-heating mechanism but

what may be readily attached to cars or engines already in use, and that, too, without disarranging any of the parts and with but little change, the car-heating mechanism being simply added as auxiliaries for such heating purpose.

What we claim is—

1. In car-heater, the combination, with motor for supplying feed-water to the boiler, of heater arranged to receive the overflow feed-water, pipes for conducting the water from the heater through the train and returning the water to the supply-tank of the tender, and pipes connecting the heater with the exhaust of the engine, substantially as set forth.

2. The combination, with heater located under the boiler, such heater having a heating-coil and two steam-compartments, of pipes connecting the said compartments of the heater, respectively, with the exhaust and with the ash-pan of the engine, the said heating-coil being connected in the train-pipe, substantially as set forth.

In testimony whereof we sign this specification, in the presence of two witnesses, this 19th day of April, 1888.

JOHN T. MEAD.
JOHN THOMSON.

Witnesses:

CHAS. H. DORER,
S. G. NOTTINGHAM.