

R. C. MUDGE.  
FLUE CONSTRUCTION FOR STEAM CARRIAGES.

(Application filed Apr. 30, 1900.)

(No Model.)

2 Sheets—Sheet 1.

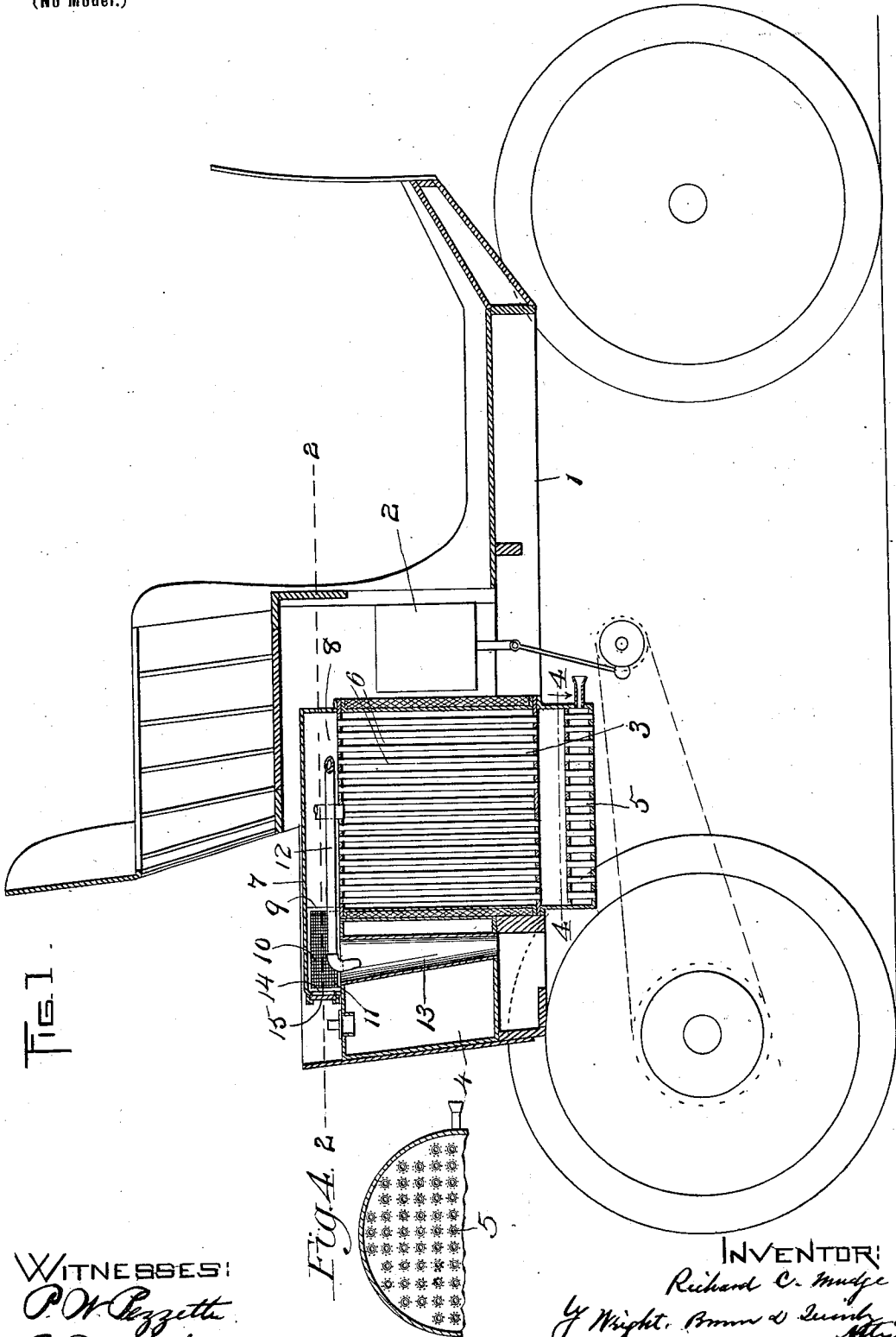


FIG. 1.

FIG. A.

WITNESSES:  
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E. Batchelder

INVENTOR:  
Richard C. Mudge  
By Wright, Brown & Lundy  
Attys.

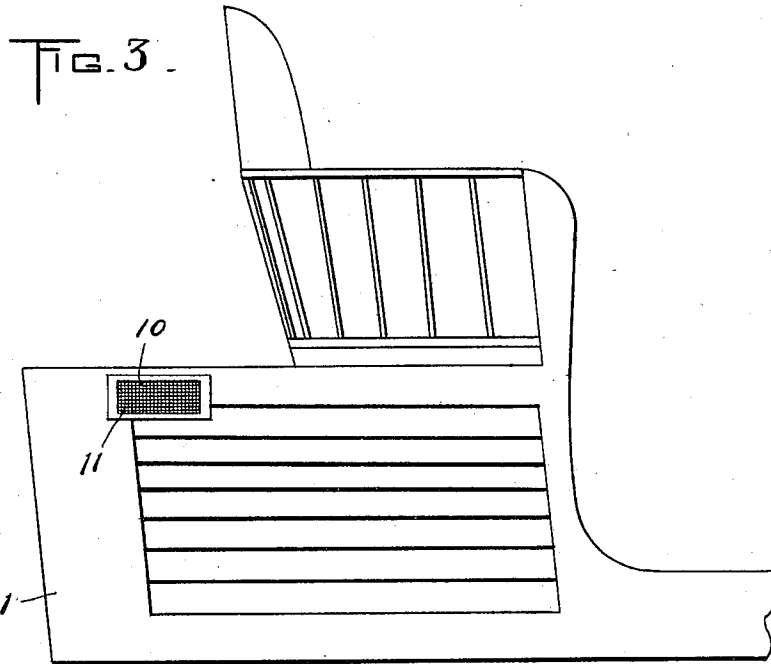
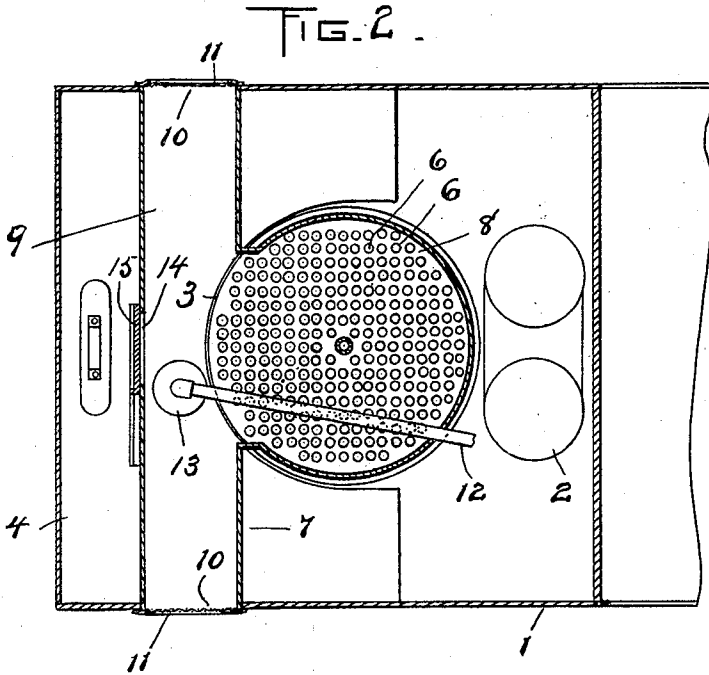
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2 Sheets—Sheet 2.



WITNESSES  
*P. H. Dwyer*  
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# UNITED STATES PATENT OFFICE.

RICHARD C. MUDGE, OF NEW YORK, N. Y., ASSIGNOR TO THE LOCOMOBILE COMPANY OF AMERICA, OF SAME PLACE.

## FLUE CONSTRUCTION FOR STEAM-CARRIAGES.

SPECIFICATION forming part of Letters Patent No. 658,114, dated September 18, 1900.

Application filed April 30, 1900. Serial No. 14,792. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD C. MUDGE, of New York, in the county of New York and State of New York, have invented certain  
5 new and useful Improvements in Flue Constructions for Steam-Carriages, of which the following is a specification.

This invention relates to steam-driven automobile vehicles, and more particularly to  
10 the construction and arrangement of the flue for disposing of the products of combustion from the burner used to heat the boiler.

The object of the invention is to prevent the occurrence of a back draft or reverse draft  
15 through the flue.

It has been common heretofore in certain classes of these vehicles to employ a longitudinal flue with but a single upper outlet to the atmosphere and no stack or vertical portion of substantial length, the stack being objectionable for many reasons. On many occasions the wind will blow back through a flue of this kind and down through the boiler-flues in the reverse direction from the normal draft, causing the fire to be extinguished or to lose its full heating effect on the boiler and often in the latter case causing injury to the burner or to the carriage. My invention does away with this objection, as will fully appear  
30 from the succeeding description.

Of the accompanying drawings, Figure 1 represents a longitudinal sectional view of a steam-carriage provided with my improvement. Fig. 2 represents a horizontal section  
35 on the line 2 2 of Fig. 1. Fig. 3 represents a partial side elevation of the carriage-body, showing one of the flue-outlets. Fig. 4 represents a top plan view of a portion of the burner looking down upon same and taken upon the  
40 line 4 4 of Fig. 1.

The same reference characters indicate the same parts in all the figures.

1 designates the body of the carriage or vehicle.

2 designates an engine from which power is transmitted to the driving-wheels in a suitable manner, and 3 designates a boiler for supplying steam to said engine, the boiler and engine being supported in a suitable manner within the carriage-body 1. To the rear

of the boiler is a water-tank 4, also supported within the body 1.

5 represents a burner, which may be of any suitable pattern, located underneath the boiler 3 and adapted to heat the same. The boiler here shown is of the shell or fire-tube type, though my invention is not limited to such, the boiler being provided with a series of vertical fire tubes or flues 6 6, through which the products of combustion from the burner  
60 5 rise.

Above the boiler 3 is located a cap or casing 7, which forms a flue for conducting the products of combustion to the atmosphere. Said flue, as here shown, has a middle or enlarged part 8 immediately over the boiler and is provided with two divergent branches disposed on either side of and to the rear of said part 8 and together constituting a transverse part 9. The part 9 extends from side to side  
70 of the carriage, over the water-tank 4, and terminates in two outlets 10 10, which coincide substantially with the planes of the side walls of the carriage-body and are preferably covered with wire-gauze gratings 11 11 to prevent the entrance of foreign matter into the flue.

12 represents an exhaust-pipe, partly contained within the flue 7 and adapted to conduct exhaust-steam from the engine into the atmosphere, said pipe discharging downwardly through a flue or passage 13, which traverses the water-tank 4.

It will be seen that should a wind or draft of air blow into the flue 7 through either of its outlets 10 it will merely traverse the transverse portion 9 of the flue and emerge through the other outlet 10 without destroying or interfering with the natural updraft from the burner through the boiler-flues, the tendency  
85 being, on the contrary, to increase the updraft. My invention on this account greatly increases the steaming efficiency of the boiler and conduces to safety and durability of the carriage.

I do not limit myself to a disposition of the divergent branches of the flue or of the outlets of said branches, as shown in the drawings, since the same may be differently arranged and modified without varying the  
95 100

principle of operation disclosed or departing from the spirit of the invention.

I have also shown in the rear vertical wall of the flue 7 an opening 14, covered by a slide 15, whereby access may be obtained to the interior of the flue.

The burner and boiler here shown are of the general type shown in patent to Stanley, No. 637,176, and to which reference may be had for details thereof, as they form no part of this invention; nor is this invention confined to that type of burner or boiler, but may be used and is designed for use in connection with any preferred type of either burner or boiler where it is desired to make use of the invention set out in the present application.

I claim—

1. The combination with a carriage, of a steam-boiler carried thereby and having a burner for heating it, and a flue for disposing of the products of combustion from the burner, said flue having substantially-horizontal divergent branches, which are provided with outlets to the atmosphere and are arranged on either side of that portion of the flue which connects with the flues or heating-passages of the boiler, said branches together forming a through-passage for disposing of atmospheric currents which might otherwise reverse the normal draft of the burner.

2. The combination with a carriage-body, of a steam-boiler carried thereby and having a burner for heating it, and a flue for dispos-

ing of the products of combustion from the burner, said flue having substantially-horizontal divergent branches extending transversely of the carriage-body and terminating in outlets to the atmosphere which coincide substantially with the planes of the side walls of the carriage-body, said branches being arranged on either side of that portion of the flue which connects with the flues or heating-passages of the boiler, and together forming a through-passage for disposing of atmospheric currents which might otherwise reverse the normal draft of the burner.

3. The combination with a carriage, of a steam-boiler carried thereby and having a burner for heating it, and a substantially-horizontal flue at the top of the boiler for disposing of the products of combustion from the burner, said flue having a middle or enlarged part immediately covering the boiler and a transverse part disposed to the rear of said middle or enlarged part and consisting of divergent branches having outlets to the atmosphere, and together forming a through-passage for disposing of atmospheric currents which might otherwise reverse the normal draft of the burner.

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

RICHARD C. MUDGE.

Witnesses:

A. T. DAVIS, Jr.,  
WILLIAM QUINBY.