

C. F. JENKINS.
 STEAM GENERATOR FLUE.
 APPLICATION FILED AUG. 27, 1901.

926,700.

Patented June 29, 1909.
 2 SHEETS—SHEET 1.

Fig. 1.

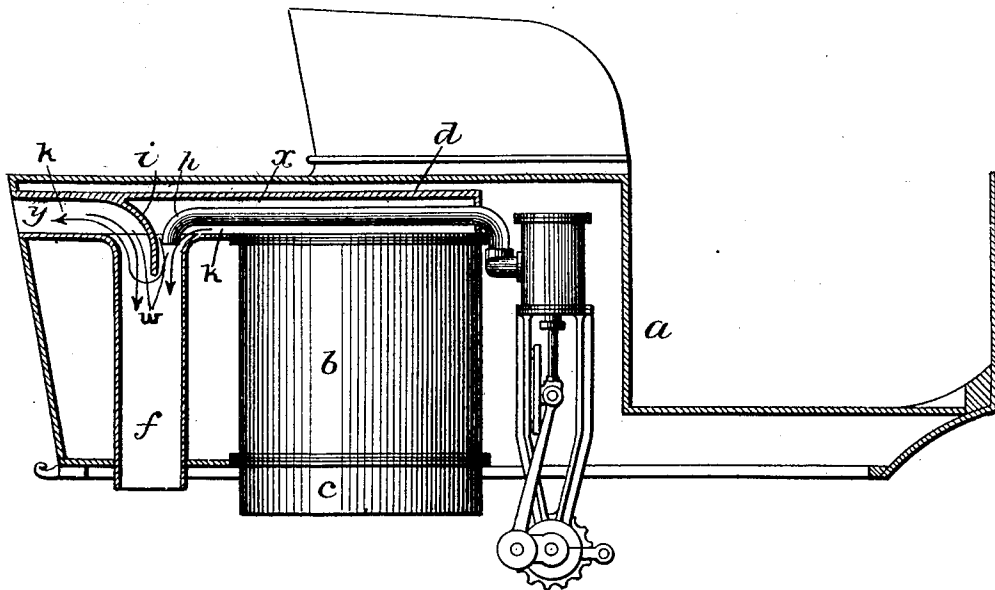
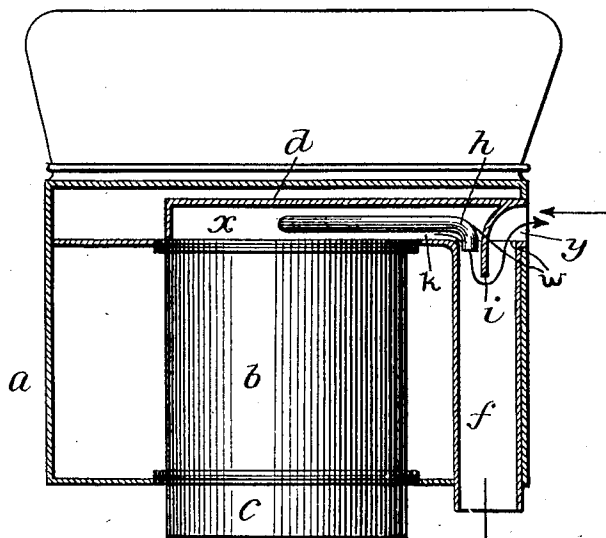


Fig. 2.



Witnesses

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Fig. 3.

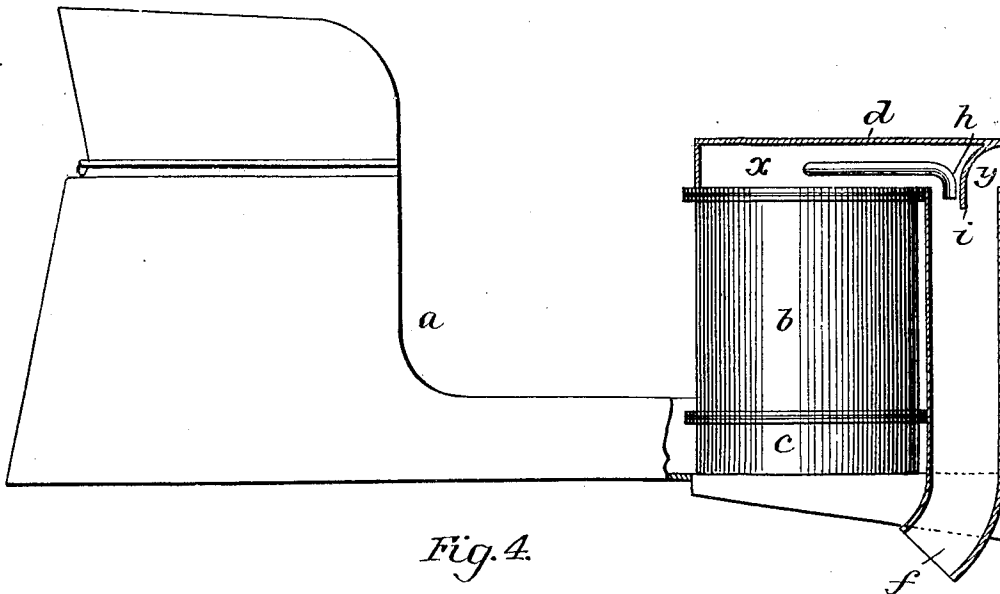
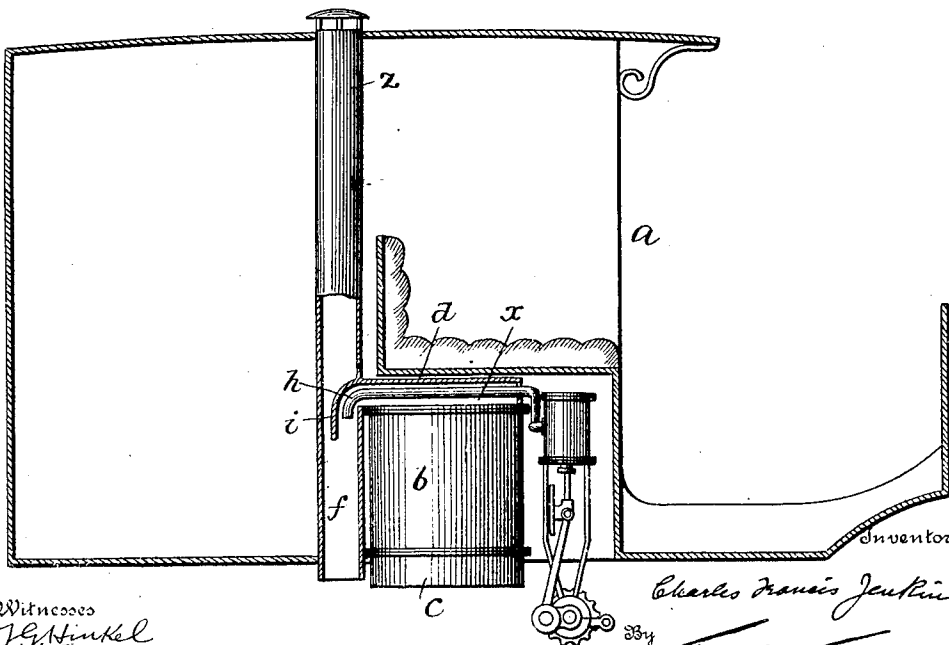


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES F. JENKINS, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

STEAM-GENERATOR FLUE.

No. 926,700.

Specification of Letters Patent.

Patented June 29, 1909.

Application filed August 27, 1901. Serial No. 73,471.

To all whom it may concern:

Be it known that I, CHARLES FRANCIS JENKINS, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Steam-Generator Flues, of which the following is a specification.

Heretofore great difficulty has been experienced in properly disposing of the products of combustion in motor vehicles and at the same time preventing the down drafts of wind from extinguishing the fire. To avoid this result and secure other advantages I construct the flues connected with the boiler as fully set forth hereinafter and as illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal sectional elevation of sufficient of a motor vehicle to illustrate my invention; Fig. 2 is a transverse section illustrating a different arrangement of flues; Fig. 3, is a partial longitudinal section with parts in elevation illustrating another arrangement; and Fig. 4, is a longitudinal section illustrating another arrangement with a carriage style of vehicle.

The body *a* of the vehicle may be of any suitable construction, as a runabout body, Figs. 1, 2 and 3, or a covered wagon body as in Fig. 4.

The generator *b* may be of any required character either fire tube or water tube with a burner *c* below the same and a chamber *x* inclosed by a suitable hood or casing *d* in position to receive the products of combustion.

With the hood or casing *d* is connected a flue *k* which opens at one end into the boiler casing, and at the other *y*, to the atmosphere, and between this end and the casing, the flue has an opening *w* which communicates with a flue *f* open at the lower end to the atmosphere.

The opening *y* as described would allow for the escape of the fire gases or products of combustion in kindling a fire or when the vehicle is at rest, but down currents of air would find their way beneath the hood *d* and tend to flow back or extinguish the fire. I therefore arrange adjacent the opening between the ends of the flue *k* a deflector plate *i* preferably extending into the flue *f*, dividing the opening *w* into two parts or openings, and so situated that air currents or puffs of wind passing inward through the opening *y* will not pass to the hood but will be deflected

downward, thus not only preventing the passage of currents back to the fire but also by passing downward tending to draw the fire gases outward from the hood into the second or down flue *f*. When there are no such down currents, the burned gases may readily escape by passing beneath the edge of the deflector *i* and out at the opening *y*, so there is no tendency to smother the fire, but on the contrary, an up draft is maintained which insures its continuance. The deflector is arranged to coöperate with the adjacent parts to form an orifice between the hood and flue *f* which serves to increase the suction or draft on the burner due to the passage of air currents through the flue *f*.

It will be seen that the strong air currents so objectionable with ordinary constructions are a material advantage with my improved construction and I therefore take advantage of this in some cases to place the flue with the opening *y* at the front so that in moving forward the air is forcibly directed into the opening *y* and downward in a way to materially increase the draft.

Generally the exhaust steam is the means of directing the products of combustion downward through the flue *f* when the vehicle is running. In such cases I place the exhaust nozzle *h* back of the plate *i* so as to draw out the gases from beneath the hood and force them downward, the air passing in at the opening *y* and facilitating the condensation of the exhaust steam.

The deflector extends to the sides of both branches of the flue so that there can be no leakage past its edges, and the branch *f* is preferably smaller than the opening *w*, as in Fig. 1, and its sides converge or flare from said opening so as to secure a more restricted passage below the opening and a greater velocity of flow of the gases. The deflector or wall is also curved and projects into and to this extent restricts the dimension of the flue *f*.

In the arrangement shown in Fig. 3 the boiler or generator is placed at the front end of the vehicle with the flue *f* extending downward from the flue *k* close to the front of the generator. The flue *k* is thus made as short as possible and is provided with the deflector *i* which divides the opening between the two flues into two parts and performs the same functions as in the other arrangements of the invention.

The hood or casing itself may constitute the horizontal part of the flue as in Fig. 4, and communicate directly with the flue *f* and also with the vertical flue *z* to conduct the gases, when standing or when firing up, through the body *a* of a vehicle.

All of the arrangements of my invention which I have shown and described are not claimed herein because some of them will be found in my divisional application, Serial No. 350,327, filed Jan. 2, 1907, pursuant to a requirement of division made by the U. S. Patent Office under rules 41 and 42 of Office practice.

In accordance with the provisions of the patent statutes, I have described the principle of operation of my invention, together with the apparatus which I now consider to represent the best embodiment thereof; but I desire to have it understood that the apparatus shown is only illustrative, and that the invention can be carried out by other means.

Without limiting myself to the precise construction and arrangements shown, I claim:

1. The combination with a motor vehicle, its engine and boiler, of a chamber above the boiler having upper and lower openings, the upper opening in a position to receive horizontal air currents, and a deflecting plate arranged opposite the upper opening but in position to permit the gases to pass to the opening from the chamber and to deflect downward, air passing into the upper opening.

2. The combination with a motor vehicle, its engine, exhaust pipe and boiler, of a chamber above the boiler having upper and lower openings, the upper opening in a position to receive horizontal air currents, a deflecting plate arranged opposite the upper opening but in position to deflect to the lower opening air passing into the upper opening and to permit the gases to pass in the opposite direction to the upper opening from the chamber, and a nozzle connected with the exhaust pipe and arranged to increase the draft on the boiler.

3. The combination with the body and boiler of a motor vehicle, of a chamber above the boiler, a flue extending downward from said chamber and provided with an opening near the top, a flue extending from the opening to the outside of the vehicle and open to receive horizontal air currents, and a deflecting plate opposite said opening arranged to deflect air passing inward through the opening downward to the down flue and to permit the flow of gases from the boiler.

4. The combination with the body and boiler of a motor vehicle, of a chamber above the boiler, a flue extending downward from said chamber and provided with an opening near the top, a flue extending from the open-

ing to the outside of the vehicle to receive horizontal air currents, a deflecting plate opposite said opening arranged to deflect downward air passing inward through said opening to said flue, and an exhaust pipe arranged to project the exhaust steam downward back of said plate.

5. The combination with a motor vehicle, of a boiler, a chamber above the same, a flue extending downward from said chamber, an opening at one side of the flue through which air flowing horizontally can pass inward and the products of combustion can pass laterally from said chamber, and a deflecting plate above the flue between the opening and the chamber to deflect downward into the flue the air passing into the said opening.

6. In combination, a boiler, a burner, a flue which at one end opens into the boiler-casing and at the other end to the atmosphere, the said flue being provided with an opening located between the boiler and the outer end, and a deflector which is mounted in the flue at a point adjacent to the opening for temporarily deflecting the fire-gases in a lateral direction from their path as they pass to atmosphere, and for preventing gusts or puffs of wind from entering the boiler by causing them to pass through the opening.

7. In combination, a boiler, a burner, a flue which opens at one end into the boiler-casing, and at the other end to the atmosphere, the said flue being provided with an opening located between the boiler and the outer end, a deflector which is mounted in the flue at a point adjacent to the opening, and a second flue in permanent and free communication with the first at a point opposite the deflector and permanently open at the lower end, so that when a forced draft is created the fire-gases and air will freely mingle in the second flue.

8. In combination, a boiler, a burner, a flue for carrying off the fire gases, a second flue opening into the first at one end and permanently open to the atmosphere at the other, and a deflector which extends into the second flue and deflects gases at that point, the said deflector also forming a restriction in the second flue.

9. The combination with a vehicle, of a boiler and a flue having two branches with free openings, one for natural and the other for forced draft, with a deflector permanently mounted at the junction of the branches to prevent air currents from passing to the boiler.

10. In combination, a boiler, a burner, a flue which acts as a natural draft, a second flue opening into the first at a point between the ends, a deflector, and a connection for discharging steam into the second flue.

11. The combination with a vehicle, of a boiler and a flue having two branches with free openings, one for natural and the other

for forced draft, and one below the body and the other at one side thereof, with a deflector permanently mounted at the junction of the branches, to prevent air currents from passing to the boiler.

12. In combination, a boiler, a burner, a flue leading from the boiler and provided with two free openings, a deflector projecting into one of the openings, and a steam-jet so located that it draws fire-gases from the boiler and air from one of the flue openings and discharges them through the second flue-opening.

13. As an article of manufacture, a boiler-flue comprising horizontal and vertical portions opening into each other, each of said portions having an end that is in permanent and unrestricted communication with the atmosphere, and a deflector which is secured to one portion of the flue and extends into the other, the said deflector being arranged to make a tight fit with the sides of both portions and also to form a slight restriction in the vertical flue.

14. In combination, a casing containing a fire chamber, an open-ended flue communicating therewith which forms a double outlet for the products of combustion, one end be-

ing arranged to serve as an inlet for air currents which discharge the products of combustion from the other end, and a device for preventing the air currents from passing into the casing and for causing them to draw off the products of combustion therefrom which device permits the products of combustion to escape through the inlet when air currents are absent.

15. The combination with the body and boiler of a motor vehicle, of a chamber adjacent one end of the boiler, a downwardly extending flue having two openings adjacent its upper end, one of the openings connecting it with the chamber, a wall between the two openings, and a flue connecting with the other opening and extending to the outside of the vehicle so that air currents in this flue pass downward through the first flue and tend to draw the contents of the chamber through the opening into it.

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

CHAS. F. JENKINS.

Witnesses:

A. E. T. HANSMANN,
H. M. GILLMAN, Jr.