No. 659,991. Patented Oct. 16, 1900.

F. E. & F. O. STANLEY.

STEAM GENERATOR.

(Application filed Dec. 29, 1899. Renewed Sept. 13, 1900.)

(No Model.)

Fig. 1.

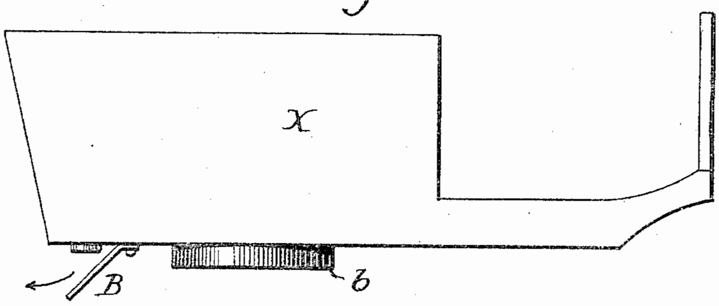


Fig. 2.

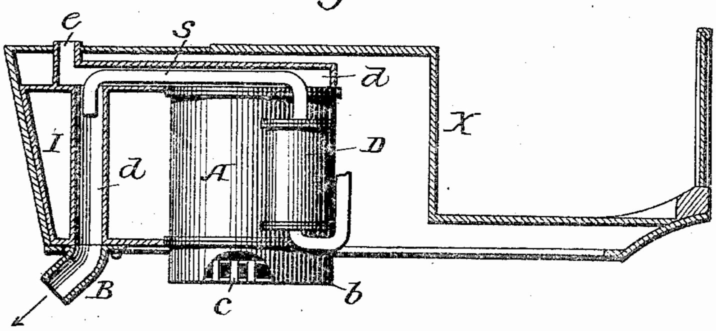
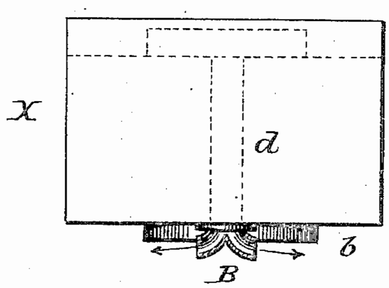


Fig. 3



Witnesses
J. G. Hinkel
Wm Gillman Jr.

Inventors
Francis E. Stanley
Freelan O. Stanley
By Foster & Freeman
Attorneys

UNITED STATES PATENT OFFICE.

FRANCIS EDGAR STANLEY AND FREELAN OSCAR STANLEY, OF NEWTON, MASSACHUSETTS, ASSIGNORS TO THE LOCOMOBILE COMPANY OF AMERICA, OF WHEELING, WEST VIRGINIA.

STEAM-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 659,991, dated October 16, 1900.

Application filed December 29, 1899. Renewed September 13, 1900. Serial No. 29,922. (No model.)

To all whom it may concern:

Be it known that we, FRANCIS EDGAR STANLEY and FREELAN OSCAR STANLEY, citizens of the United States, residing at Newton, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Steam-Generators, of which the following is a specification.

Our invention relates to certain improvements in boilers, and more especially to that class of boilers which are heated by means of burners rather than by furnaces and where the burners are supplied with air through openings below the same, as in some forms of motor-vehicles; and our invention consists in certain means for preventing interference with the supply of air to the burner, as fully set forth hereinafter and as illustrated in the accompanying drawings, in which—

Figure 1 illustrates part of a motor-vehicle with our improvement; Fig. 2, a sectional elevation showing a different form of deflector; and Fig. 3, a rear view, in part section, showing another form of deflector.

The boiler A is of any suitable construction, and below the same is a burner-casing *b*, the burner in which may be of any of the usual or suitable forms, but, as shown, has vertical tubes *c*, through which the air can pass upward to the flame and thence through the tubes of the boiler outward to a hood *d*, containing a horizontal flue.

In the construction shown there are two discharge-flues *e d*, the former permitting the gases to flow upward from the boiler when the apparatus is at rest and the latter extending downward and serving as a conduit for the exhaust-steam conducted thereto from a muffler D by an exhaust-pipe *s*, the end of which projects into the flue *d*, so that the steam acts as an injector to create a down-draft, carrying with it all the gases from the boiler and also drawing inward the air through the flue *e*.

While the arrangement above described has proved in use to be extremely effective, we have discovered that the steaming capacity of the boiler may be greatly increased by deflecting the downwardly-discharged gases away from the boiler and burner, and to this end we arrange, in connection with or below the down-flue *d*, a deflector of suitable character which will prevent any interference by the downwardly-projected gases with the updraft of air through the burner. Different means may be employed for thus deflecting the downwardly-discharged gases, and deflectors of different constructions may be used. As shown in Fig. 1, the deflector B consists of an inclined plate arranged below the lower end of the flue *d*. As illustrated, the parts are arranged within the body X of a motor-vehicle, the down-flue *d* extending through the water-tank I below the body and the deflector B being connected therewith and serving to so deflect the down gases that they cannot possibly flow to the air-currents which supply the burner *b*.

In the construction shown in Fig. 2 the deflector consists of a bent tube so arranged as to receive the products discharged by the down-flue *d*.

In the construction shown in Fig. 3 the deflector is bifurcated and arranged so that the gases may be discharged laterally in opposite directions.

Whatever construction and arrangement of deflector is employed, if it is so adjusted as to prevent any interference by the downwardly-flowing gases with the action of the burner the result is a very great increase in the steaming capacity of the boiler.

Without limiting ourselves to the precise construction and arrangement of parts shown, we claim—

1. The combination with a steam-boiler and burner below the same having a bottom plate with openings for the upward passage of air, of a flue extending downward, means for discharging the products of combustion downward through said flue, and means for deflecting the gases so discharged, substantially as set forth.

2. The combination with a boiler and burner below the same having a bottom plate with openings for the upward passage of air, of a flue extending downward adjacent to the burner, means for discharging the

products of combustion downward through said flue, and means for deflecting the gases so discharged, substantially as set forth.

3. The combination with a boiler, a burner below the same having air-inlets at the bottom for the upward passage of air, of a flue extending downward, means for discharging the products of combustion downward through said flue, and means for deflecting the gases so discharged, substantially as set forth.

4. The combination of a boiler, a burner having openings for the upward flow of air, two discharge-flues, one for the upward passage of the products of combustion, the other extending downward, means for forcibly discharging the gases downward through the latter flue, and means for deflecting the gases so discharged, substantially as set forth.

5. The combination with a steam-boiler and a burner having openings for the upward flow of air, of a flue extending downward, means for discharging the products of combustion downward through said flue, and a deflector arranged below the descending flue, substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

FRANCIS EDGAR STANLEY.
FREELAN OSCAR STANLEY.

Witnesses:
J. W. BACON,
CHARLES E. FOSTER.