

(No Model.)

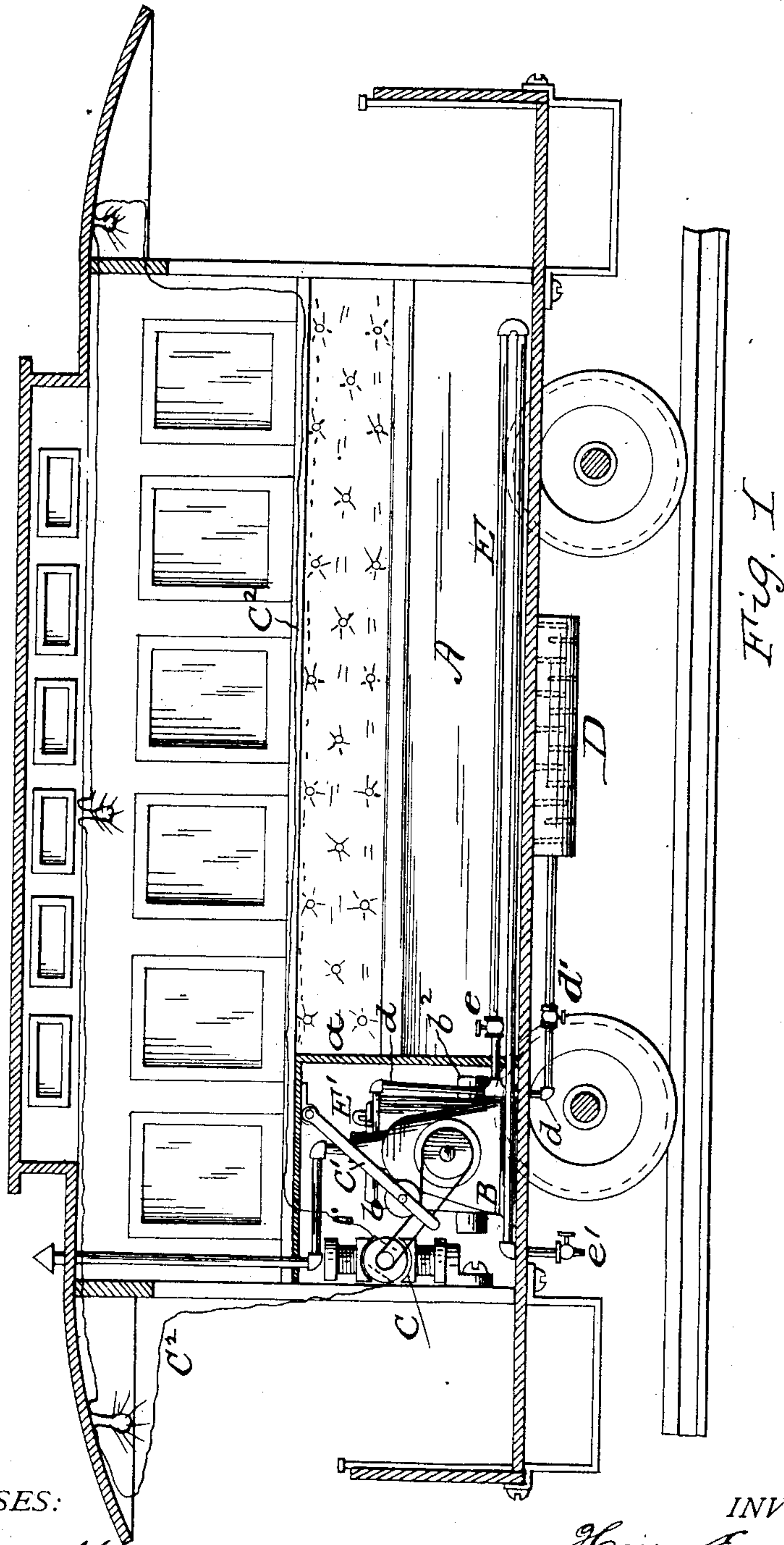
2 Sheets—Sheet 1.

H. E. FREESE.

CAR HEATER.

No. 325,796.

Patented Sept. 8, 1885.



WITNESSES:

Wm. H. Van Horn
E. W. Williams

INVENTOR,

Harry E. Freese

By S. J. Van Stavern
ATTORNEY

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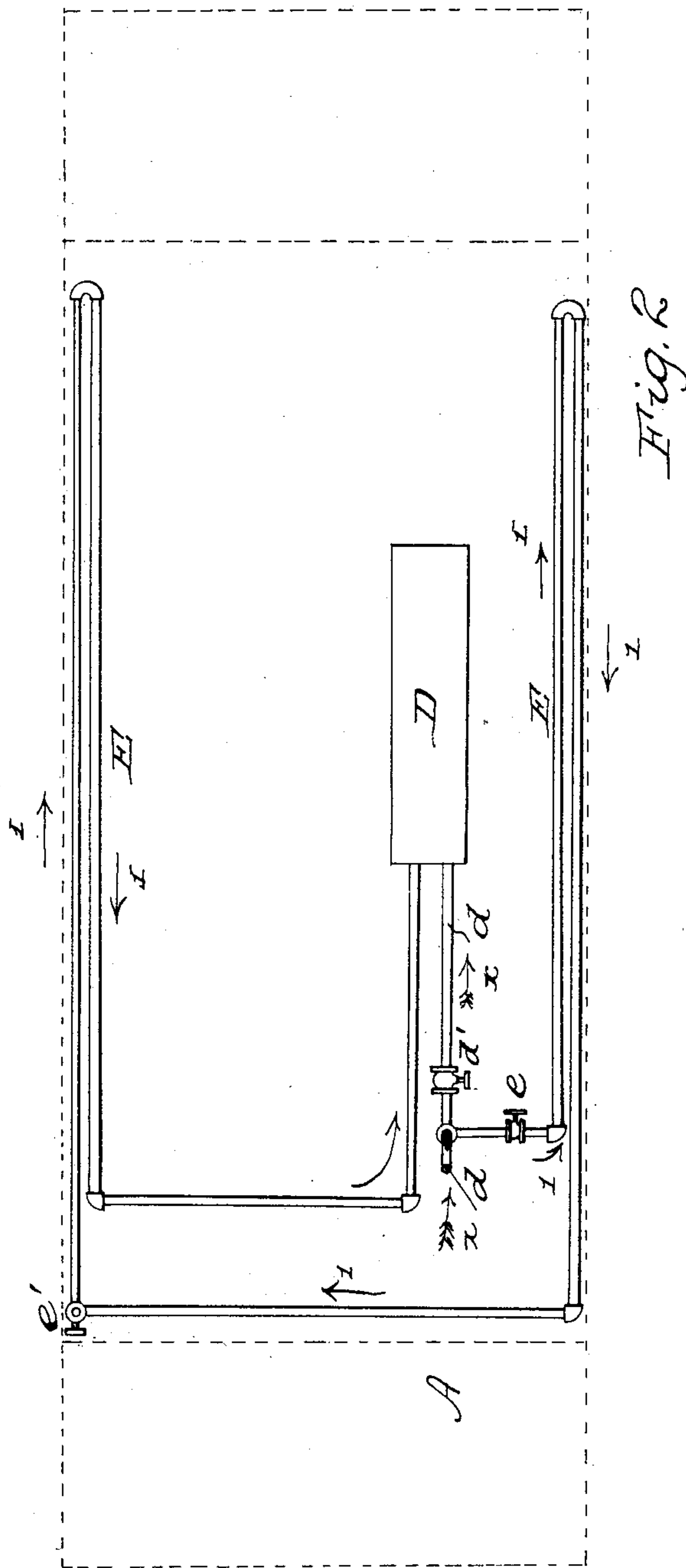


Fig. 2

WITNESSES:

Wm. H. Van Stover
C. W. Williams

INVENTOR,

Harry E. Freese

By S. J. Van Stavoren
ATTORNEY

UNITED STATES PATENT OFFICE.

HARRY E. FREESE, OF PHILADELPHIA, PENNSYLVANIA.

CAR-HEATER.

SPECIFICATION forming part of Letters Patent No. 325,796, dated September 8, 1885.

Application filed March 14, 1885. (No model.)

To all whom it may concern:

Be it known that I, HARRY E. FREESE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Car-Heaters, of which the following is a specification, reference being had therein to the accompanying drawings, wherein—

Figure 1 is a vertical longitudinal section of a car, showing engine appliances and steam-heating pipes or radiators embodying my invention; and Fig. 2 is a detail plan of heating-pipes.

My invention has relation to that form of motor, driving, and other appliances for propelling and lighting street or other cars as described in an application filed by me of an even date herewith, and also in application filed by F. G. Freese on February 17, 1885; and it has for its object to utilize the exhaust-steam for heating purposes, and to provide a noiseless escape for the exhaust-steam, and also to simplicity and compactness of parts.

My invention accordingly consists of the combination, construction, and arrangement of parts, as hereinafter described and claimed, having reference particularly to a car having an engine with preferably an oil-vapor-fuel supply, a system of heating or radiator pipes having connection at one end with the exhaust-pipe of the engine and at the other with a condenser, and having suitable valves for directing the flow of steam through the radiators and condenser or through the latter only.

In the drawings, A represents a street or other car having an apartment, *a*, in which is placed an engine, B, having boiler *b*, provided with oil-supply tank *b*², for feeding an oil-vapor fuel to the furnace-burner or fire-box of said boiler, as desired.

This engine may be in gear with one of the car-axles for propelling the car, as shown in the above first-named application, or otherwise, as desired, and also with an electric generator, C, having belt-pressure appliance or a lever, C', and lamp or light circuit C², for electrically lighting the car, as fully set forth in said last-named application.

The exhaust-steam pipe *d* of the engine is

provided with a valve, *d'*, and leads to a suitable condenser, D, preferably located beneath the floor of the car, as indicated.

E represents a system of heating or radiator pipes suitably arranged as desired, and preferably connected to exhaust-pipe *d*, provided with valve *e*, drip-cocks *e'*, and leading to or terminating in condenser D, as more plainly shown in Fig. 2.

By closing one and opening the other of cocks *d'* and *e*, the exhaust steam is either directed into the radiator or pipes E, as indicated by arrows 1 1, Fig. 2, and from thence into the condenser, or passes directly into the condenser, as indicated by arrows *x*, in said last-named figure. In either case such steam must pass through the condenser before it escapes into the open air, and by suitably proportioning and constructing the condenser such exhaust has a noiseless escape therefrom.

The radiator pipes E are also connected at E' (see Fig. 1) to the boiler *b* for obtaining, when desired, a supply of live steam for heating purposes.

The condensation in radiator-pipes may be from time to time blown out through the condenser by using the live-steam pressure in the boiler, or passed off by way of the drip-cocks *e'*.

What I claim is—

1. The combination, with a railway-car, of engine B and its boiler, a condenser for the exhaust-pipe of the engine-cylinder, a system of radiator or heating pipes having connection with said exhaust-pipe and boiler and also with the condenser, and valves *d'* and *e* for the exhaust and radiator pipes, substantially as shown and described.

2. In a car, the combination of engine B, having exhaust-pipe *d*, with valve *d'*, condenser D, and steam-heating pipes E, having valve *e*, and connected at one end to exhaust-pipe *d* of engine-boiler and at the other to condenser D, substantially as shown and described.

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

HARRY E. FREESE.

Witnesses:

S. J. VAN STAVOREN,
CHAS. F. VAN HORN.