(No Model.)

F. V. CROUCH.

HEATING APPARATUS FOR OMNIBUSES, CARRIAGES, &c.

No. 426,926. Patented Apr. 29, 1890.

Fig. 2

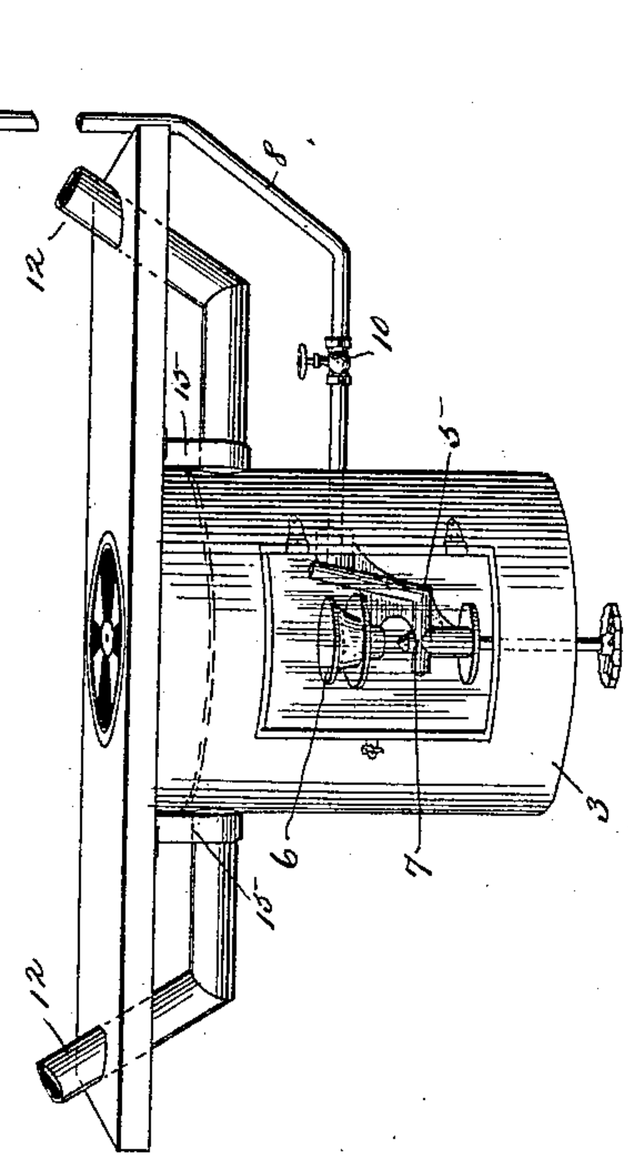

Fig. 3.

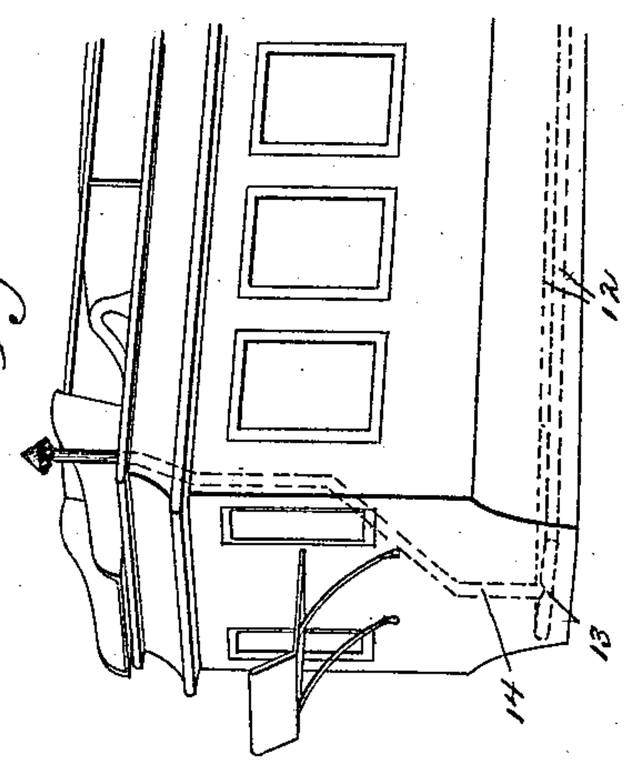

Fig. 1

Attest:
E. D. Smith
Robt Ewett.

Inventor:
Frank V. Crouch.
James L. Norris.
By
Atty.

UNITED STATES PATENT OFFICE.

FRANK V. CROUCH, OF CARROLLTON, MISSOURI.

HEATING APPARATUS FOR OMNIBUSES, CARRIAGES, &c.

SPECIFICATION forming part of Letters Patent No. 426,926, dated April 29, 1890.

Application filed March 21, 1889. Serial No. 304,189. (No model.)

To all whom it may concern:

Be it known that I, FRANK V. CROUCH, a citizen of the United States, residing at Carrollton, in the county of Carroll and State of Missouri, have invented new and useful Improvements in Heating Apparatus for Omnibuses, Carriages, Cabs, and Land Conveyances, of which the following is a specification.

My invention relates to heating apparatus for omnibuses, carriages, cabs, and similar land conveyances, and the purpose thereof is to provide novel, simple, and safe means whereby heat may be generated at a point removed from the interior of the vehicle and distributed to the point or points within the same, where it may be most advantageously utilized.

It is also one purpose of my invention to provide means whereby the fuel employed may be carried in bulk at a point removed from the sphere of combustion and supplied thereto in small uniform quantities, the volume of supply being capable of variation or being cut off altogether, as circumstances may require, the products of combustion being carried off by a flue discharging outside the vehicle and at a distance from a point where the heat is generated.

The invention consists in the several novel features of construction and new combinations of parts hereinafter fully set forth, and then definitely pointed out in the claims following this specification.

Referring to the accompanying drawings, Figure 1 is a rear end elevation of an omnibus in which my invention is embodied. Fig. 2 is a detail view, on an enlarged scale, of the heat-generator, showing the manner of connecting the heat-supply pipes, the fuel-conductor, and the burner. Fig. 3 is a side elevation of the vehicle, showing the arrangement of the flue.

In the said drawings the reference-numeral 1 denotes an omnibus or other vehicle of any desired or known construction. Beneath the floor 2 of the same I arrange a drum 3, formed of sheet metal and having any suitable form and dimensions. This drum is provided with a door 4, which may contain a sheet of mica to permit inspection of the interior, and within said drum I arrange a heater 5 of the type commonly employed in burning liquid hydrocarbon. This heater may be provided with any suitable form of Argand burner 6, and has also a needle-valve 7, by which the flow of oil may be regulated, such valve having its stem extending downward through the bottom wall of the drum, as indicated in Fig. 2.

Entering the drum 3, and connected to the heater or burner 5, is an oil-supply pipe 8, which extends along the side of the body 1, and is connected to a reservoir 9 at or near the top, said reservoir containing a quantity of oil, preferably hydrocarbon oil. A stop-cock 10 may be placed in this pipe at any suitable point where it is accessible to the operator, driver, or conductor.

Entering the drum 3 at or near its top upon opposite sides of the same are heating-pipes 12, which extend laterally a short distance, and are then carried up through the floor of the conveyance, entering the interior beneath the seats on either side. These pipes extend longitudinally beneath the seats from one end of the carriage to the other, and at the end remote from the heating-drum they are united by a transverse pipe 13, to which is connected a flue-pipe 14, which runs upward, passes through the roof of the carriage, and discharges above the roof. I prefer to arrange the drum 3 at or near the body 1, and arrange the flue so that it will discharge at the front or forward end thereof and upon one side of the driver's seat.

The pipes 12 afford convenient means for attaching the drum to the floor of the carriage by means of straps 15, which are looped around said pipes and have their ends bolted to the floor, as shown in Fig. 2. The heating-pipes being arranged beneath the seats, they are removed from the passage-way, and the heat imparted is not only communicated to the feet of the passenger, but naturally rises and gives a pleasant temperature to the whole interior. The burner being outside and being locked within the drum, all danger of fire as the result of accident or collision is avoided, while the small quantity of oil supplied momently to the burner avoids all possible danger from the presence of said oil. The products of combustion, also, are mostly consumed, and the discharge being at the

top and distant from the burner not only is all danger from this source removed, but all possibility of annoyance from this cause is effectually obviated.

Having thus described my invention, what I claim is—

1. The combination, with a vehicle, of a heating-drum located beneath its bottom and having two heating-pipes extending laterally from opposite sides and carried up through the floor of the car, entering the interior beneath the seats and running longitudinally the whole length of the vehicle, and then uniting with a branch pipe, which is carried up through the roof, the laterally-extending portions of the pipe being surrounded by loop-straps, which are fastened to the bottom of the vehicle to support the burner and pipes, substantially as described.

2. The combination, with a vehicle, of a heating-drum having pipes extending laterally in opposite directions, then carried through the floor and longitudinally through the length of the car, and then united with a branch pipe, which is carried up through the roof, a hydrocarbon-burner located in the drum, an oil-reservoir connected with a heater beneath the drum, and a needle-valve stem extending through the bottom of the suspended drum into the heater, said stem operated below the drum, and the heater being sustained by loop-straps encircling the lateral portions of the pipes and fastened to the floor, substantially as described.

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

FRANK V. CROUCH.

Witnesses:

RALPH F. LOZIER,

WM. R. PAINTER.