

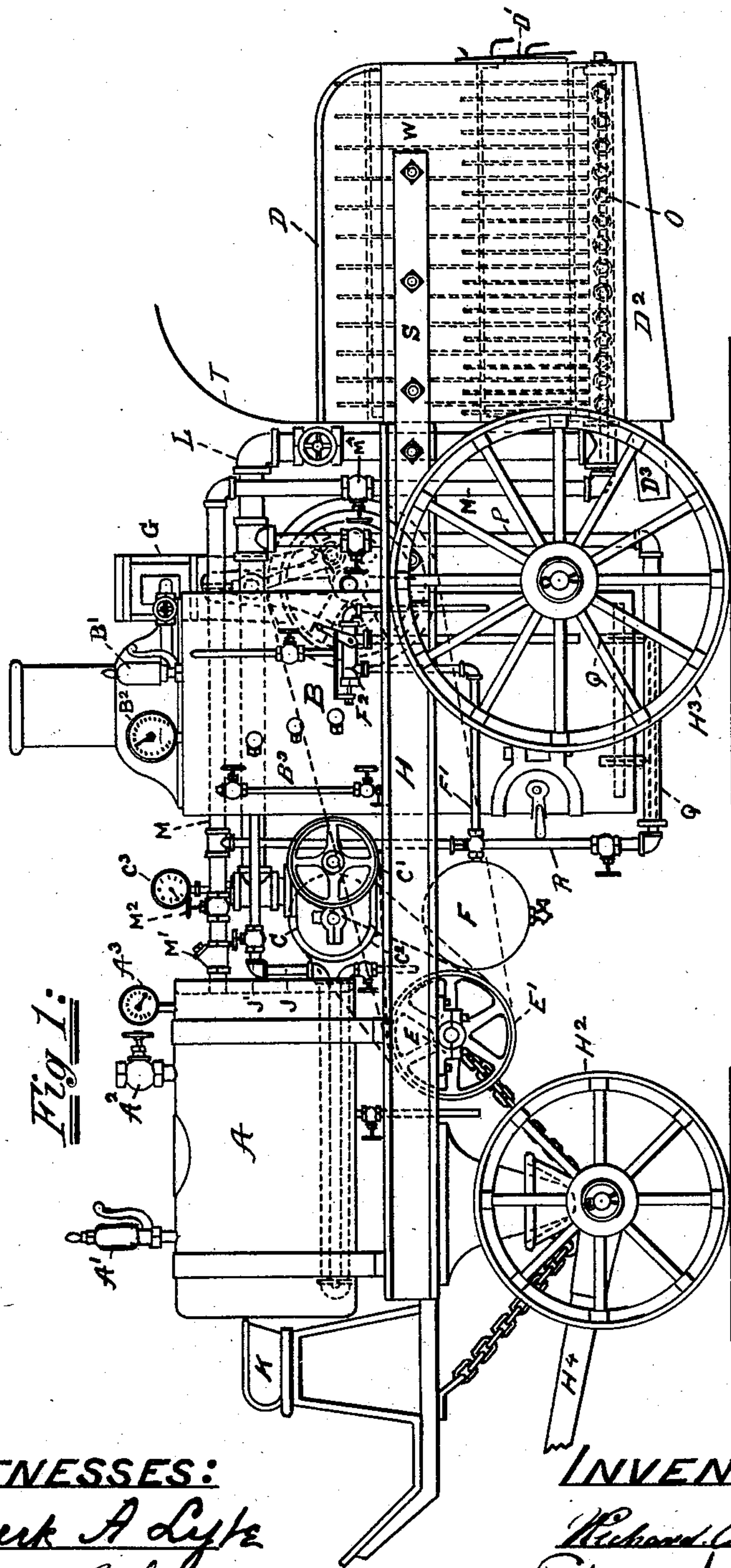
(No Model.)

2 Sheets—Sheet 1.

R. A. HEALY & E. D. CUNDELL.
SNOW MELTING MACHINE.

No. 506,499.

Patented Oct. 10, 1893.



WITNESSES:
Robert A. Lyte
Rich T. Butler

INVENTORS:
Richard A. Healy
Edward D. Cundell
By *John F. Kerr*
Attorney.

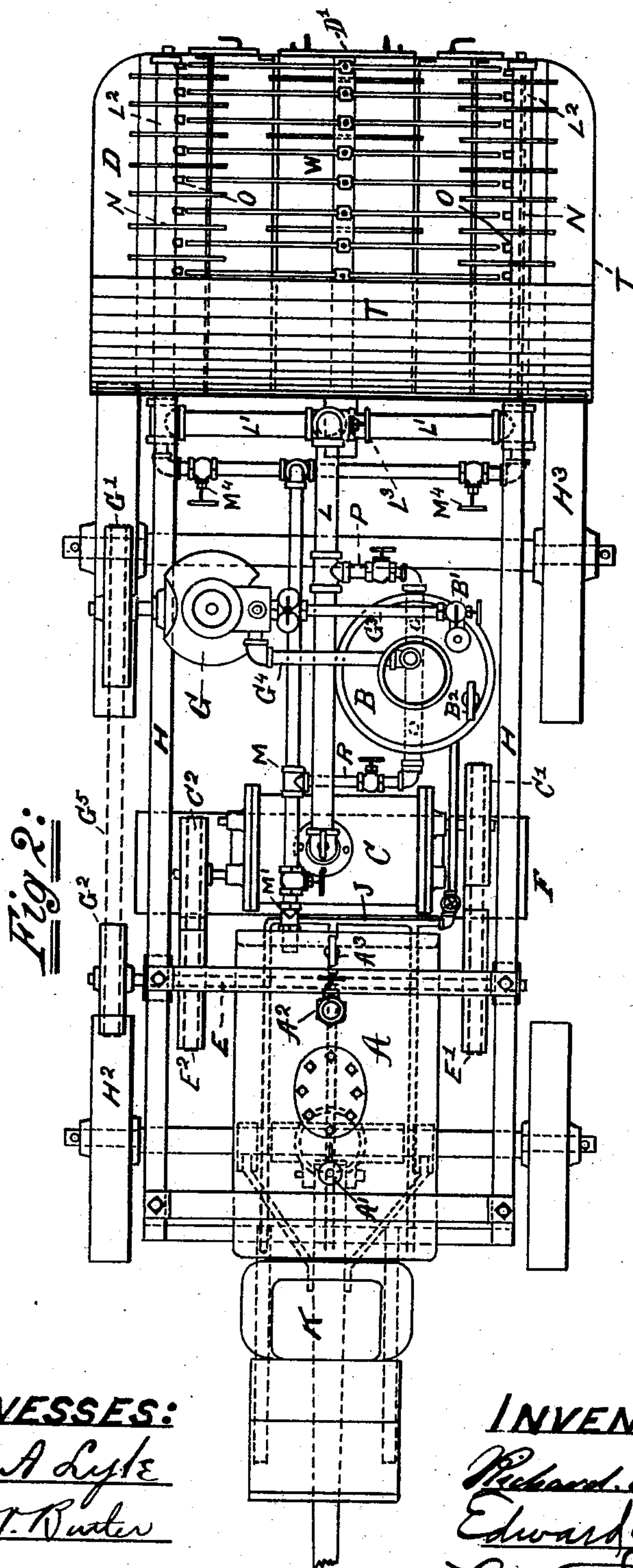
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UNITED STATES PATENT OFFICE.

RICHARD A. HEALY AND EDWARD D. CUNDELL, OF PATERSON, NEW JERSEY,
ASSIGNORS OF ONE-THIRD TO JOHN HINCHLIFFE, OF SAME PLACE.

SNOW-MELTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 506,499, dated October 10, 1893.

Application filed March 20, 1893. Serial No. 466,936. (No model.)

To all whom it may concern:

Be it known that we, RICHARD A. HEALY and EDWARD D. CUNDELL, citizens of the United States, and residents of the city of Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Snow-Melting Machines, of which the following is a specification.

Our invention relates to improvements in machines mounted on wheels and designed to receive and melt the snow and ice that have fallen and accumulated on streets for the purpose of rapidly disposing of this snow and ice.

The object of our invention is to provide a new and improved snow melting machine, which can easily be transported to the place where it is to operate, is capable of melting vast quantities of snow and ice very rapidly at a small expense, can rapidly begin the melting operation after having been started, is compact and strong, requires little attendance further than to feed the ice and snow into it and which is complete in all respects in itself.

In the drawings accompanying this specification and forming a part thereof and in which like letters of reference designate the same parts in both of the figures—Figure 1 is a side elevation of our improved snow melting machine. Fig. 2 is a plan view thereof.

The machine is constructed with a main supporting frame composed of two steel or iron side bars —H— suitably braced and connected and which main supporting frame is mounted on the front wheels —H²— and rear wheels —H³—.

A suitable pole —H⁴— for animals of draft and a driver's seat K are provided.

On the front part of the frame a tank —A— for naphtha, benzine, gasoline or some other volatile combustible oil or substance is mounted and this tank is provided with a safety valve —A'—, a filling pipe —A²— having a valve and a pressure gage —A³—.

An upright steam boiler —B— is suitably mounted between the side bars —H— and is provided with a safety valve —B'—, pressure gage —B²—, water tube B³ and such other fit-

tings as are required for a steam boiler or generator.

Adjacent to the boiler —B— a steam engine —G— is mounted between the side bars —H— and is connected with the boiler by the live steam pipe —G³—, the exhaust steam passing through the pipe —G⁴— into the smoke stack of the boiler. By means of a belt —G⁵—, shown in dotted lines in Figs. 1 and 2, and passed over the pulley —G'— on the driving shaft of the engine, the pulley G² is rotated which is fixed on the transverse shaft —E— mounted on the side bars —H— and which has also fixed thereon the belt pulleys E' and E². Belts —C'—C²— shown in dotted lines pass around the pulleys E' and E² and also around the pulleys of a rotary pressure blower —C— mounted on the main frame, which blower has a pressure gage —C³—.

A pipe J having a cock J' extends from the boiler B to the tank A and forms a serpentine or coil in the bottom part of the same, the free end of said pipe projecting from the tank and having a cock J² for drawing off the water of condensation.

F is a water tank supported below the main frame and from the same a feed pipe F' extends to the injector F² and from the same to the boiler.

A pipe L leads from the blower C to the rear part of the frame, then extends downward and then laterally in opposite direction as at L' and then extends to the rear in two branches L² within a melting chamber D at the rear end of the main frame and which will be described hereinafter. The pipe L has a valve L³ for controlling the amount of compressed air passing through it.

A pipe M having the check valve M' and the controlling valves M² and M³ extends from the top of the rear end of the tank A to the rear end of the main frame, and is then branched to both sides and the rear, each branch N having a valve M⁴, and then entering the branches L² of the compressed air conducting tube, through which they pass longitudinally, the branches passing through suitable stuffing boxes in the front ends of the branches L², the rear ends of the said

branches L^2 being closed. Those parts of the branches N within the air pipe branches L^2 are provided with apertures corresponding to the burner tips —O— on the inner sides of the branches L^2 . A branch pipe P of the pipe L leads down under the boiler and from the same burner tips —Q— project up through the fire box of the boiler. A branch pipe R of the pipe M extends down to that part of the pipe P under the boiler, both the pipes P and R having suitable controlling valves.

The melting chamber D consists of a sheet metal casing suspended between two bracket arms S fastened to and projecting from the rear ends of the side bars —H—. It has rear doors D' for removing stones that may be thrown into it with the snow and ice and an inclined bottom D^2 having a nozzle or neck D^3 to which a hose can be coupled for carrying off the water produced by the melting of the snow. A curved hood T protects the machinery, &c., from the effects of the flame in the melting chamber.

The melting chamber has a grate formed of inclined rods W, which grate with other parts of the melting chamber form the subject matter of another application for a patent and are not described and shown in detail here, as the construction has no special bearing on the machine described in the present application.

The operation is as follows: The machine having been drawn to the place where the snow is to be melted a wood fire is kindled in the fire box and kept going till steam is generated. The steam passes into the pipe in the tank A and vaporizes a quantity of the oil in said tank, the vapor or gas generated passing through the pipes M and R to the burners in the fire box. The engine is started so as to operate the air compressor and the mixture of gas and air escaping from the burner tips under the boiler is ignited, the wood fire having been removed. The generating of steam is thus continued and increased and when sufficient pressure has been obtained the mixture of gas and air issuing from the burner tips O in the melting chamber D is ignited and now snow and ice are thrown as rapidly and in as great quantities as possible into the melting chamber or compartment where they are almost instantly converted into water by the crossing flames and by coming in contact with the grate bars which are always at a bright red heat, even while snow is being filled into the chamber D. The gas generator thus supplies gas, not only for the snow melting chamber or compartment but also for producing the steam and the steam boiler is used not only for producing power but also for generating the gas. The melting chamber being suspended beyond the rear end of the main frame is accessible at three sides thus permitting a great number of men to throw and shovel snow and ice into it at the same time, without in any wise interfering with the machinery, or without in any wise exposing the lat-

ter to injury or interference by the masses of snow thrown into the melting chamber or compartment. This melting chamber or compartment is that part of the machine apt to become worn out first on account of the enormous heat in the same. Should this occur it can readily be replaced or repaired without in any wise interfering with any part of the machinery and without requiring any removal or readjustment of the same.

With the above description of our invention, what we claim is—

1. A snow melting machine composed of a vehicle frame, a gas generator mounted on said frame, a fan blower also mounted on said frame, a steam motor mounted on said frame, a steam boiler on said frame for providing steam for the steam motor and the gas generator and a melting chamber or compartment supported on the rear end of said frame, substantially as herein shown and described and for the purposes set forth.

2. The combination with a vehicle frame of a gas generator on the same, an air compressor on said frame, a melting chamber or compartment supported by said frame beyond the rear end of the same, and tubes for conducting gas and compressed air to said melting chamber or compartment, substantially as herein shown and described and for the purpose set forth.

3. The combination with a vehicle frame, of a gas generator on the same, an air compressor on said frame, bracket bars projecting beyond the rear end of said frame, a melting chamber or compartment supported by the projecting ends of said bracket bars and tubes for conducting gas and compressed air to said melting chamber or compartment, substantially as herein shown and described and for the purpose set forth.

4. The combination with a vehicle frame of a gas generator on the same, a steam boiler on said frame, a steam engine on said frame, a fan blower on said frame and operated by the engine, a melting chamber or compartment supported on said frame beyond the rear end of the same, and pipes for conducting gas and compressed air to said melting chamber or compartment and to the fire box of the boiler, substantially as herein shown and described and for the purpose set forth.

5. The combination with a vehicle frame, of a gas generator on the same, a steam boiler mounted on the frame, a steam engine on the frame, a fan blower on the frame and driven from the engine, a melting chamber or compartment supported by the frame at the rear end of the same, a pipe for conducting steam from the boiler to the gas generator, and pipes for conducting gas and compressed air to the melting chamber or compartment and to the fire box of the boiler, substantially as herein shown and described and for the purpose set forth.

6. The combination with a vehicle frame, of a gas generator on the same, a steam boiler

mounted on the frame, a steam engine on the
frame, a fan blower on the frame and driven
from the engine a melting chamber or com-
partment supported by the frame at the rear
5 end of the same, a pipe for conducting steam
from the boiler to the gas generator, pipes
for conducting gas and compressed air to the
melting chamber or compartment and to the
fire box of the boiler and valves for control-

ling the supply or flow of steam, gas and com- 10
pressed air, substantially as herein shown
and described and for the purposes set forth.

RICHARD A. HEALY.
EDWARD D. CUNDELL.

Witnesses:

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G. J. KERR.