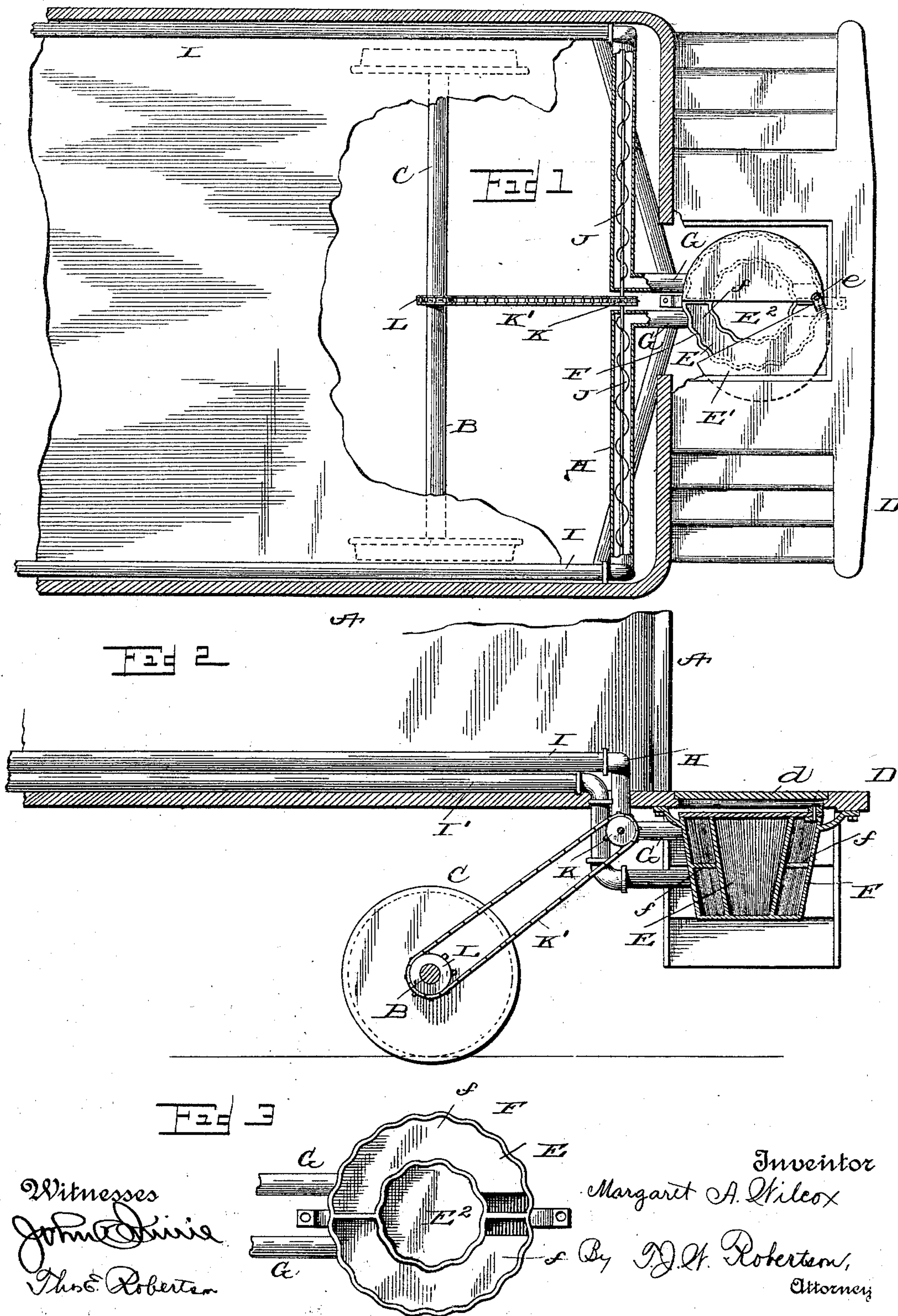


(No Model.)

M. A. WILCOX.
CAR HEATER.

No. 509,415.

Patented Nov. 28, 1893.



Witnesses
John D. Kinie
Thos. E. Robertson

Inventor
Margaret A. Wilcox
By *J. H. Robertson*,
Attorney

UNITED STATES PATENT OFFICE.

MARGARET A. WILCOX, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WILCOX WATER HEATER COMPANY, OF SAME PLACE.

CAR-HEATER.

SPECIFICATION forming part of Letters Patent No. 509,415, dated November 28, 1893.

Application filed August 9, 1892. Serial No. 442,565. (No model.)

To all whom it may concern:

Be it known that I, MARGARET A. WILCOX, a citizen of the United States of America, residing at Chicago, Cook county, and State of Illinois, 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.

This invention relates to certain new and useful improvements in car heaters of that class in which is employed a combustion chamber suspended beneath or outside the car and circulating pipes for conducting the hot water to the desired points within the car.

It has for its objects among others to provide an improved heater of this class which will possess maximum heating power with economy of fuel and of apparatus and in which the circulating will be accelerated by means arranged within the pipes.

I provide a suspended combustion chamber designed to burn fuel oil which is inclosed in a tank hermetically sealed from the outside air and chemically charged with oxygen and the other properties necessary to support combustion; this chamber is preferably, though of course not necessarily, arranged beneath the front or rear platform where it will be out of the way, convenient for access thereto when desired and where there will be no possibility of danger from fire should the car be overturned or a collision take place. A casting or water-pipe section is arranged within the combustion chamber surrounding the fire-pot and within lateral branches of the circulating pipe near its junction or connection with that portion surrounding the fire-pot I arrange a spiral water-carrier or conveyer to accelerate the movement of the water. Motion is given to this carrier or conveyer through connection with the axle of the car so that while the car is in motion this carrier is also always in motion. The water is thus forced with great rapidity through the pipes above the car floor on either side of the car and returns through the return pipes to be again heated and forced through the pipes as before. The rapidity of motion will be determined by the diameter of the axle and the relative sizes of the sprocket wheels or pulleys employed for con-

veying the motion from the axle to the carrier.

Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be specifically defined by the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a horizontal section through a portion of a car equipped with my improvement, the section being taken just above the upper pipes. Fig. 2 is a longitudinal vertical section through the combustion chamber. Fig. 3 is a plan of the combustion chamber with the cover removed.

Like letters of reference indicate like parts throughout the several views in which they appear.

Referring now to the details of the drawings by letter, A designates a portion of a car of known construction, of which B is the axle, C the wheels and D the platform. In this latter is provided a trap door *d* through which access may be had to the heater which is arranged beneath the platform.

E is the combustion chamber which is supported in any suitable manner from the under side of the platform and which is provided with a movable cover *E'* preferably in two parts pivoted as at *e*, see Fig. 1. The fire-pot *E*² of this combustion chamber is designed to burn a smokeless fuel; I prefer fuel oil which is chemically charged with oxygen and the other necessary properties and which is designed to be fed to the combustion chamber from a tank or other receptacle conveniently located and provided with regulating valve or cock by which the supply may be regulated or shut off when desired. As these elements form no part of the present invention and their construction and operation will be readily understood and as their location will be varied under varying circumstances, I have not shown them.

F is a casting surrounding the fire-pot of the combustion chamber, and it is sub-divided by suitable partitions as seen best in Fig. 3 so as to divide the same into two like parts,

one upon each side of the fire-pot, and each part is provided with a horizontal diaphragm *f* from the upper side of which leads the out-going pipe *G* which communicates with the lateral branch *H*. From the outer ends of these branches extend the pipes *I* which are designed to extend along each side of the car above the floor, say under the seats and then return by pipes *I'* to the lower compartments of the casting *F* as seen in Figs. 1 and 2. Water is supplied to the casting from any suitable source, and within the lateral branches *H* are arranged the spiral water carriers *J* of any suitable construction, being suitably mounted upon shafts journaled within the said branches and the adjacent ends of the shafts being connected with and designed to receive their rotation from a sprocket wheel *K* which in turn derives its power through the medium of a sprocket chain *K'* passed around a sprocket wheel *L* on the car axle as seen best in Figs. 1 and 2. The water is forced rapidly through the pipes and returns through the return pipes to the heater to be again forced out.

The spiral carriers may receive their motion through other sources, for instance frictional gearing may be substituted for the sprocket wheels and chain, and other modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages. Suitable air valves may be provided at the required points.

The peculiar arrangement of my heater with a central vertical division allows of one side of a car being provided with a greater supply of heat on one side than on the other, as is frequently necessary where the wind is blowing strongly on one side of the car, as such side is frequently quite cold when the other side is comparatively warm. By supplying the fuel or heating material on the windward side of the heater, the water on that side will be kept the hotter and thus the car will be equably heated.

In the heaters as ordinarily constructed where there is a forced motion imparted to the heating water, a single fan or propeller has been employed to give motion to the water, with the result that an unequal amount of heat is given out on the different sides of the

car. By my arrangement, with a single heater I employ two distinct currents of water each driven by a distinct spiral conveyer or propelling device, whereby the both sides of the car are heated exactly alike, which is a great advantage over the plans heretofore proposed.

I am aware that it has been proposed to use two distinct currents of water to heat cars, but in such arrangement there has been no propeller used to give the forced motion to the water and consequently the circulation of the water in such an arrangement is necessarily comparatively slow, whereas by my arrangement the motion is necessarily rapid and the heat is therefore more readily equable at all parts of the car. Moreover, by my peculiar arrangement of the pipes, propeller, &c., motion imparted to one shaft operates both propelling devices, thus cheapening the construction and lessening the friction, and, consequently, the power necessary to drive the propelling devices.

What I claim as new is—

1. The combination, in a car heating system, of a combustion chamber, two distinct water compartments surrounding the same, two pipes running in opposite directions transversely of the car, a single shaft running in both of said pipes, a wheel on said shaft between said pipes, a spiral conveyer in each of said pipes operated by said shaft, and intermediate connections substantially as described between said wheel and the car axle, all substantially as described and shown.

2. A casting for a car heater, having a central combustion chamber and a water jacket around the same provided with vertical partitions to divide the same into two compartments, a horizontal diaphragm in each of said compartments to divide the same into upper and lower sections, and a connection for an out-going and a return pipe to each compartment, one above and the other below the diaphragm, as set forth.

In testimony whereof I affix my signature, in presence of two witnesses, this 1st day of August, 1892.

MARGARET A. WILCOX.

Witnesses:

MARY J. BROWN,

MARTHA D. CADWELL.