

(No Model.)

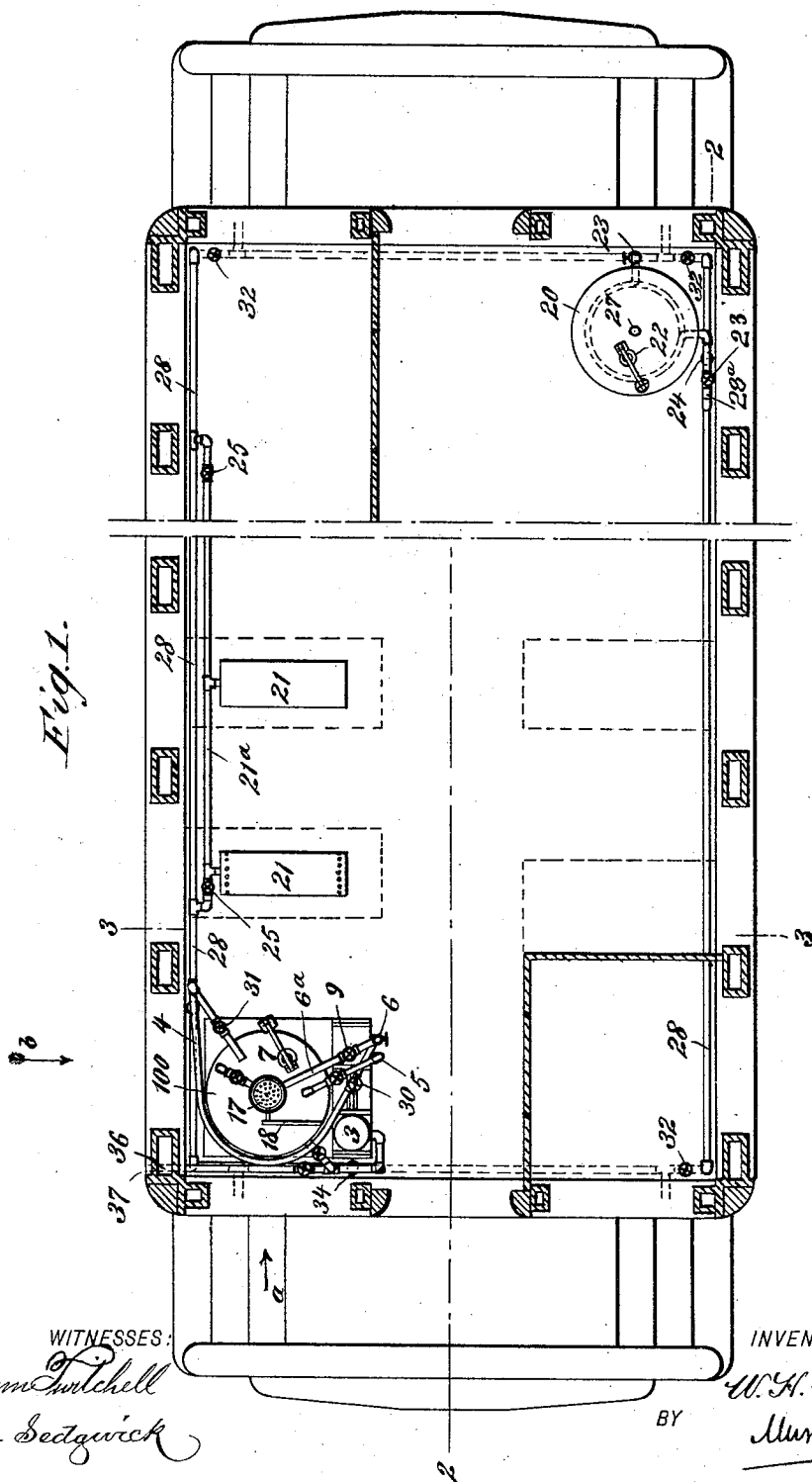
3 Sheets—Sheet 1.

W. H. BEACH.

FIRE EXTINGUISHING APPARATUS FOR RAILWAY CARS.

No. 443,385.

Patented Dec. 23, 1890.



WITNESSES:

W. H. Beach
Munn & Co.

INVENTOR:

W. H. Beach
Munn & Co.
ATTORNEYS

(No Model.)

3 Sheets—Sheet 2.

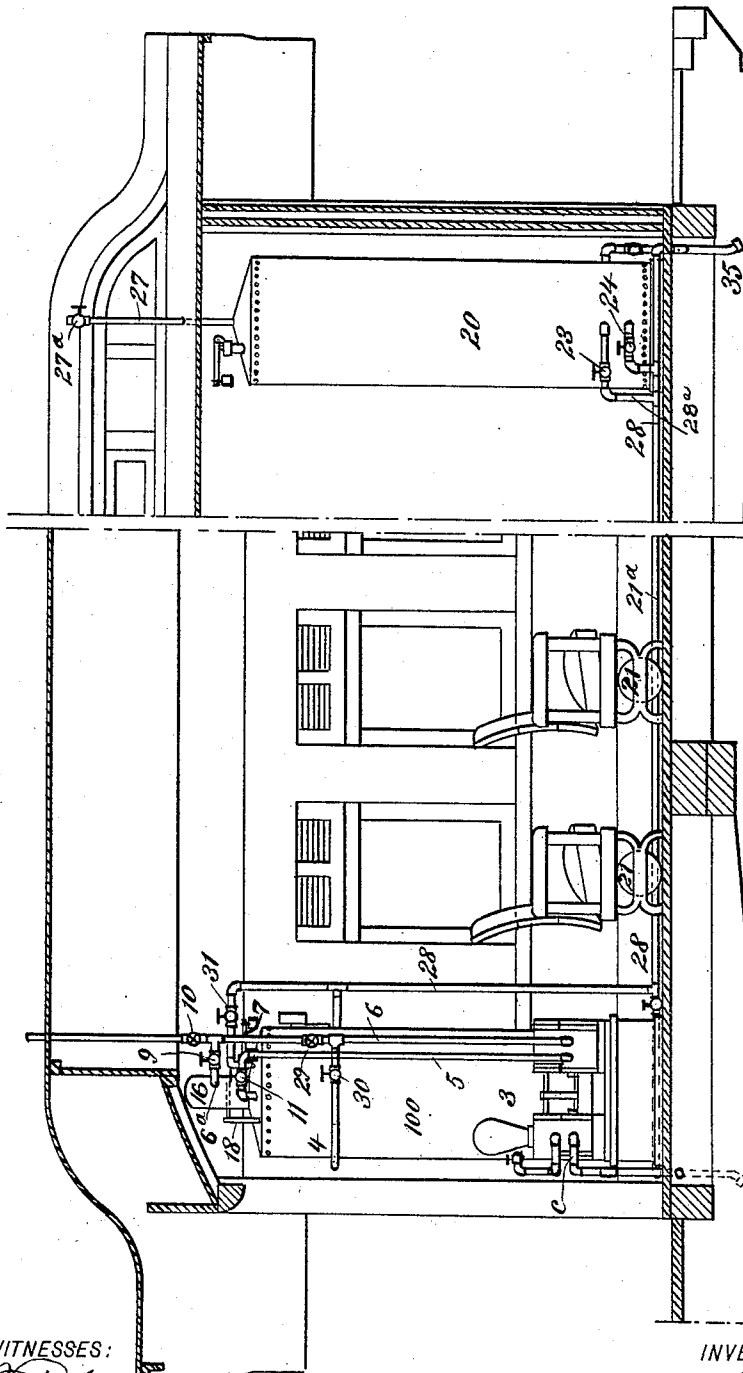
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Fig. 2.



WITNESSES:

Donn Twitchell
C. Sedgwick

INVENTOR:

W. H. Beach
BY *Munn & Co.*
ATTORNEYS

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Fig. 3.

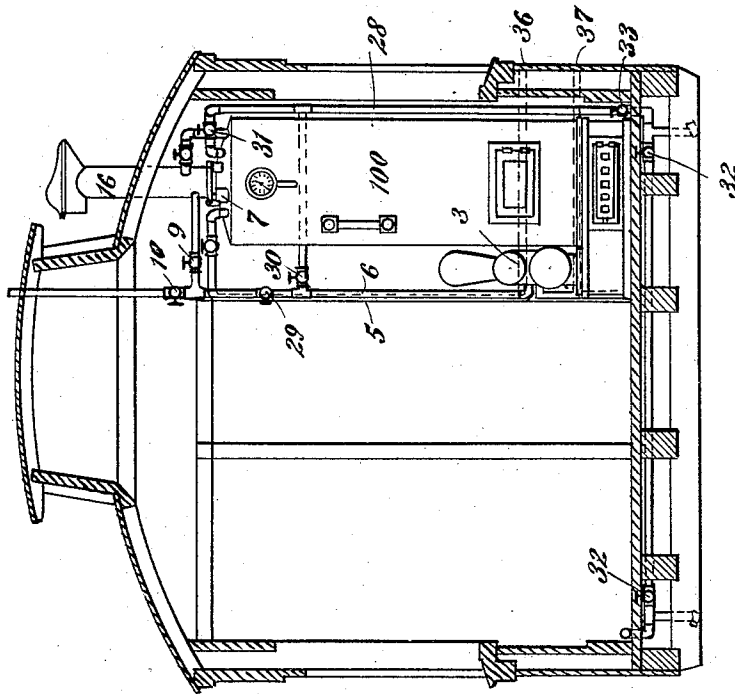


Fig. 4.

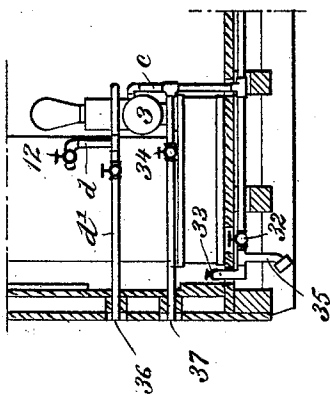
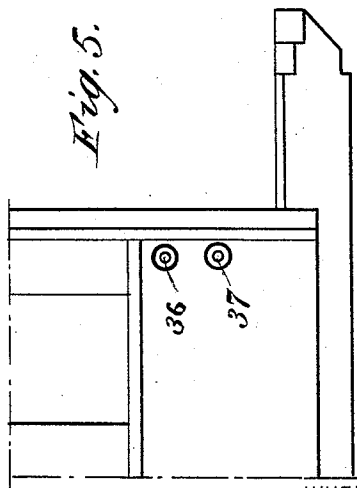


Fig. 5.



WITNESSES:

Donn Twitchell
C. Sedgwick

INVENTOR:

W. H. Beach
BY
Munn & Co.
ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM H. BEACH, OF MINNEAPOLIS, MINNESOTA.

FIRE-EXTINGUISHING APPARATUS FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 443,385, dated December 23, 1890.

Application filed January 8, 1890. Serial No. 336,224. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. BEACH, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented a new and Improved Fire-Extinguishing Apparatus for Railway-Cars, of which the following is a full, clear, and exact description.

The object of this invention is to provide a means for extinguishing fires which from any cause may occur on railway-cars, bridges, at stations, or other structures along the route; and to the end named the invention consists, essentially, of a steam-pump, a series of reservoirs, and connections between the reservoirs and the pump, substantially as will be hereinafter described, and specifically pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional plan view of a portion of a car, representing it as it appears when provided with my improved fire-extinguishing apparatus. Fig. 2 is a longitudinal sectional view of a car on the line 2 2 of Fig. 1. Fig. 3 is a cross-sectional view on line 3 3 of Fig. 1. Fig. 4 is a view of the heating apparatus, taken in the direction of the arrow *a* shown in Fig. 1; and Fig. 5 is a view of a portion of the exterior of a car, taken from the point indicated by the arrow *b* in Fig. 1.

In carrying out my invention I provide a steam-boiler 100, which by preference is located in one corner of the car. In connection with this boiler there is arranged a steam-pump 3, steam being led to said pump from the boiler through a pipe 5, the exhaust being carried off by a pipe 6. The pipe 6 extends outward through the roof, but is connected with the smoke-stack 16 by means of a branch pipe 6^a, in which there is located a valve 9, while just above the branch pipe there is a valve 10, the arrangement being such that by closing the valve 10 and opening the valve 9 the exhaust-steam may be led directly to the stack and a heavy draft obtained.

In any convenient position, but preferably in the corner of the car that is diagonally opposite that in which the boiler is located, I lo-

cate a combined reservoir and heating-drum 20, which is connected with the boiler through the medium of piping 28, such piping extending around the car, and being provided with valves 32 and 33 and with coupling-sections 35, which are connected to the piping 28 at points between each pair of valves 32 and 33. The feed-water reservoir 20 has arranged within it a heating-pipe 28^a, which is connected at both ends with the pipe 28, through which pipe 28^a steam may be directed by opening the valves 23 therein. The pipe 28 is led to the top of the boiler, and is connected with the exhaust-pipe 6 by means of a pipe 4, that partially encircles the boiler, a valve 30 being located in this pipe 4, while a valve 29 is located in the pipe 6 directly above the branch pipe 4. The pipe 28, near the top thereof, where it connects with the boiler, is provided with a valve 31.

Beneath the seats of the car or in any other convenient position I locate reservoirs 21, that are connected by a pipe 21^a, which is also connected with the pipe 28, valves 25 being located in the pipe 21^a, as indicated in Fig. 1. The pipe 28 is connected with the suction-chamber of the pump 3 by a pipe *c*, while the delivery-chamber of the pump is connected with the boiler through a pipe *d*, in which there is located a valve 12, a branch pipe *d'* leading to a coupling-nozzle 36. The boiler is provided with a safety-valve 7, as shown, and a damper 17 is arranged within the stack, said damper being provided with an operating rod or handle 18.

In coupling the cars the valves 32 and 33 are closed and the couplings 35 of the abutting cars are connected, after which the valves 32 are opened at each end of train. In this way I provide for a continuous circulation throughout the cars, it being understood that the valves 32, located in the cars at the ends of the train, are left open and that all of the valves 33 are opened.

In addition to the plug or coupling 36, which will constitute a connection for a delivery-hose, I provide the pump with a pipe or plug 37, which for the purposes of description I term an "outside connection," and which is for the purpose of establishing connection by means of a suction-hose or other suitable

means between the pump and any convenient water-supply. This outside connection 37 is provided with a valve 34, which is closed when the pump is to be supplied from the car-reservoirs.

To fill the reservoirs, a supply-hose is attached to one of the pipes 27, that lead upward from the reservoir 20, such pipes being provided with valves 27^a, the valves 24 at this time being open, thus permitting water entering a particular reservoir to which the supply-hose is connected to pass therefrom and into the reservoirs of the system.

In case of fire on the train the apparatus would be manipulated as follows: First the valve 9 would be opened and the valve 10 closed in order that the exhaust-steam may be directed into the smoke-stack, it being understood that at this time the damper would be wide open and that the valves 30 and 31 would be closed. The throttle 11 and all of the valves 24 and 25 would then be opened and a hose would be connected to the plug or coupling 36, and the valve arranged in connection with said coupling would be opened.

In case of a fire upon any structure in close proximity to the track which it is desired to extinguish a suction-hose would be attached to the plug or connection 37, and the end of said hose would be run to the tank of the tender or to any other convenient source of supply, and then the valve arranged in connection with the plug 37 would be opened, the other connections being established as before stated, except that the valves controlling suction from the car-reservoirs would be turned off.

Such an apparatus as the one above described will enable the train-men to obtain complete control in an exceedingly short time over any fires which may occur.

To heat the water in the reservoir 20 by means of exhaust-steam, the following valves are closed: the valve 24 in the pipe which connects the reservoir 20 with pipe 28, the valve 25 in pipe 21^a, the valve 29 in exhaust-pipe 6, the valve 31 in the upper end of pipe 28, and that valve 32 adjacent to the reservoir 20. (See Fig. 1.) The following valves are opened: the valve 30 in branch pipe 4, and the valves 23 in heating-pipe 28^a. The exhaust-steam will now pass from the exhaust-pipe 6 through the branch pipe 4 into the main pipe 28, and thence into and through the heating-pipe 28^a to the pipe 28 again, the water in the pipe 28 and the condensed steam being allowed to escape through one of the couplings 35. In like manner live steam may be employed to heat the water-reservoir, the following valves being closed: the valve 30 in branch pipe 4, either of the valves 9 10 in exhaust-pipe 6, the valve 24, the valves 25 in pipe 21^a, and that valve 32 which is adjacent to the reservoir 20. The following valves are opened: valve 31 and that valve 32 which is shown at the upper right-hand corner of Fig. 1. Live steam will now pass through valve 31, through pipe 28 to heating-pipe 28^a, and

through said pipe 28^a to the pipe 28 again, and out through one of the couplings 35. Except when the water in the reservoir 20 is to be heated, the valves 23, 30, and 31 remain closed. When it is desired to pump water from the reservoir 20 alone, the auxiliary reservoirs 21 are cut off from pipe 28 by closing the valves 25. The valve 34 is also closed and the valve 24 and those valves 32 between the reservoirs and the suction-pipe *c* of the pump are opened. The pump having been started, water will be pumped from the reservoir through the pipe 28 and suction-pipe *c* and out through the pipe *d'* to extinguish a fire or into the boiler as feed-water through the pipe *d*. By closing valve 24 and opening valves 25 water will be pumped from the auxiliary reservoirs 21 only. By opening both the valve 24 and valves 25 water will be pumped both from the auxiliary reservoirs 21 and the reservoir 20.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A fire-extinguishing apparatus for railway cars, comprising the car, the boiler, a steam-pump operated therefrom, a reservoir in the opposite end of the car, a pipe 28, extending around the car, provided with valves 32 33, and having a valved connection 24 between its ends with the reservoir, a pipe 4, provided with a valve 30 and connecting one end of the pipe 28 with the exhaust-pipe 6, a valve 29 in the exhaust-pipe above pipe 4, a heating-pipe 28^a, extending through said reservoir, connected at both ends with pipe 28, and provided with valves 23 23, a pipe connecting the pipe 28 with the suction-pipe of the pump, a valved pipe *d*, connecting the delivery-chamber of the pump with the boiler, and a valved hose supply-pipe *d'*, leading from said delivery-chamber to the exterior of the car, substantially as set forth.

2. A fire-extinguishing apparatus for railway-cars, comprising the car, a boiler, and pumping-engine at one end and a reservoir 20 at the opposite end thereof, a pipe 28, extending around the car and having a valve-connection at 24 with the interior of the reservoir, a pipe 28^a, extending through the reservoir, connected at both ends with pipe 28, and having valves 23 23, a valved connection at 31 between pipe 28 and the top of the boiler, a valved pipe 4, connecting the pipe 28 below 31 with the exhaust-pipe 6, a valve in the exhaust-pipe above pipe 4, a connection between pipe 28 and the suction-pipe of the pump, and a valved connection between the delivery-chamber of the pump and the boiler, whereby the water in the reservoir may be heated by exhaust or live steam prior to being fed thereto by the said pump, substantially as set forth.

3. A railway fire-extinguisher comprising a car having a boiler and pump at one end, a reservoir 20 at its opposite end, auxiliary reservoirs, a pipe 28, extending around the car and having coupling-sections 35 35 and

valves 32 32 where it crosses the ends of the
car, a pipe 28^a, extending through the boiler,
connected at both ends to the pipe 28, and
provided with valves 23 23, a pipe 21^a, con-
5 necting the auxiliary reservoirs, provided with
valves 25 25 and connected at both ends to
pipe 28, a valved steam-connection between
pipe 28 and the boiler, a suction-pipe *c*, con-
necting the pipe 28 with the delivery-cham-
10 ber of the pump, a feed-water pipe *d*, connect-

ing said delivery-chamber with the boiler, a
pipe *d'*, leading from said chamber to the ex-
terior of the car and provided with a coup-
ling 36, and an outside connection 37, leading
to suction-pipe *c* and provided with valve 34, 15
substantially as described.

WILLIAM H. BEACH.

Witnesses:

A. W. LAIRD,

ORRIN F. SMITH.