

No. 628,551.

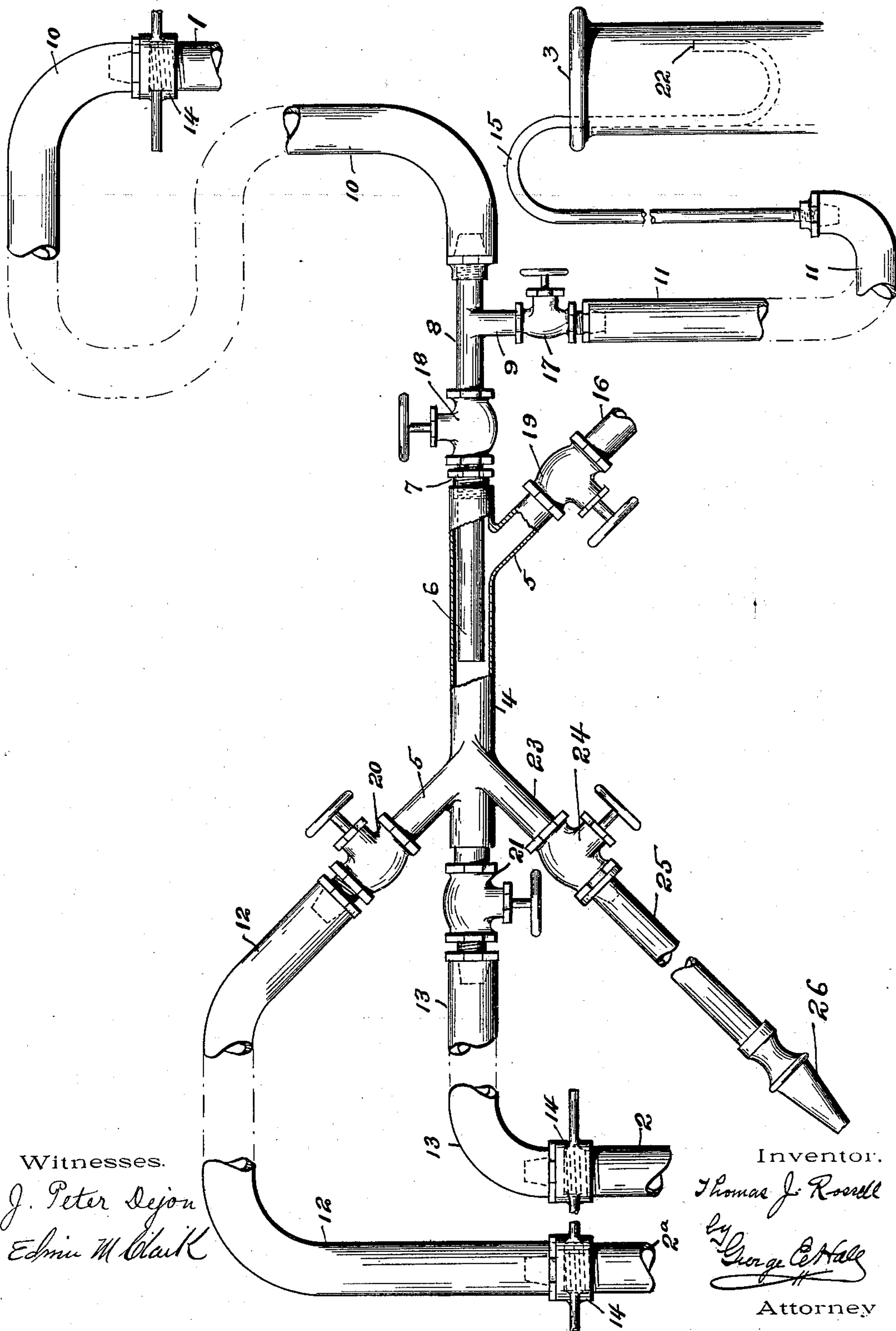
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T. J. ROSSELL.

DEVICE FOR CLEANING LOCOMOTIVE BOILERS.

(Application filed Mar. 27, 1899.)

(No Model.)



Witnesses.

J. Peter Dejon  
Edwin M. Clark

Inventor.

Thomas J. Rossell

By George C. Hall

Attorney



# UNITED STATES PATENT OFFICE.

THOMAS J. ROSSELL, OF NEW HAVEN, CONNECTICUT.

## DEVICE FOR CLEANING LOCOMOTIVE-BOILERS.

SPECIFICATION forming part of Letters Patent No. 628,551, dated July 11, 1899.

Application filed March 27, 1899. Serial No. 710,601. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS J. ROSSELL, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Devices for Cleaning Locomotive-Boilers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to devices for washing and filling locomotive-boilers and for producing an artificial draft in the stack.

It is the object of my invention to construct a simple device for washing out the interior of locomotive-boilers with warm water and to refill the same by the use of the same device and without additional operations, to combine in the same device means for producing an artificial draft in the smoke-stack of the locomotive for the purpose of assisting in the operation of cleaning out the boiler-tubes and building the new fire in the fire-box, a further object being to operate the device by the steam from a live locomotive, which would otherwise be wasted, thereby reducing the cost of operating the device to a minimum.

To this end my invention consists in the device having certain details of construction and combinations of parts, as will be hereinafter described, and more particularly pointed out in the claims.

It is customary upon the return of a locomotive to the roundhouse to immediately dump the fires, wash out the boiler, and clean the boiler-tubes, and before it again leaves for a trip the boilers are refilled and the fires again started. Frequently the conditions are such that the locomotive must be cleaned and prepared for another trip within a very short period of time, which under the present methods is almost impossible to accomplish, due principally to the fact that the devices now used only allow the several operations to be performed successively and not simultaneously, as in my device. The common method is to dump the fires and empty the boiler at one and the same time, and after the boiler has cooled the tubes are cleaned and the

boiler washed. The time consumed in waiting for the boiler to cool is entirely wasted and the metal in the boiler is liable to warp and crack from the rapid change of temperature, frequently breaking the bolts. The boiler tube or flue cleaning devices now used are also designed to be operated only while the tubes or flues are cool. I overcome all of these difficulties by washing out the boiler while the same is being emptied without waiting for it to cool off, at the same time cleaning out the flues by a device which will be made the subject of another patent, and also maintaining an artificial draft in the stack, which materially assists in the operation of cleaning out the flues. After these operations are completed the boiler is refilled and the new fire made in the fire-box at one and the same time, the artificial draft in the smoke-stack, above referred to, being used to assist in building the fire.

In the drawing, which represents a plan view of the device, the numeral 1 designates the injector of a live locomotive, which for convenience is preferably run upon the track next to the dead locomotive being operated upon, 2 2<sup>a</sup> the injectors, and 3 the smoke-stack of the said dead locomotive.

The construction of the injectors is immaterial to my invention, and I have therefore illustrated only a portion of the coupling end of the same.

The numeral 4 designates the central heating-pipe, having a branch 5 radiating therefrom at either end; 6, a steam-inlet pipe projecting within the interior of the said pipe 4 and secured rigidly thereto by the reducing-coupling 7, so that an open space surrounds the exterior of said steam-inlet pipe; 8, an intermediate pipe having a branch 9 radiating therefrom; 10, 11, 12, and 13, lengths of flexible steam-hose; 14, water-couplings of the ordinary construction for connecting the ends of the hose 10, 12, and 13 to the injectors 1, 2, and 2<sup>a</sup>, respectively; 15, the stack-tube, the end 22 of which is inserted in the stack and the opposite end being joined to the flexible hose length 11, and 16 a water-inlet pipe.



17, 18, 19, 20, and 21 designate valves, which determine the supply of steam or water admitted to the several tubes or pipes and may be of any of the well-known forms common to the art.

The operation of the device is as follows, it being understood that the live and dead locomotives are upon adjacent tracks and the device lying between them: The plugs in the boiler of the dead locomotive are removed, allowing the water to escape and emptying the same. The end of the steam-hose 10 is connected with the injector 1 and the ends of the steam-hose 12 and 13 are connected with the injector 2 2<sup>a</sup> by means of the water-couplings 14, and the water-inlet pipe is connected with a source of water-supply, which may be a well, pump, the ordinary city supply, or any other convenient source. Steam is driven back through the injector 1 of the live locomotive through the flexible steam-hose 10, intermediate pipe 8, and steam-inlet pipe 6, whence it comes in contact and unites with the water-supply, which is being admitted to the heating-pipe 4 through the water-inlet pipe 16 and branch 5, and thereby raising the temperature of the same to any desired degree. The water, which is now hot, is forced through the steam-hose pipes 12 and 13 and into the boiler of the dead locomotive through the injectors 2 and 2<sup>a</sup>. The water being admitted through both injectors at one and the same time under a very considerable pressure, all particles of sediment or foreign substances within the boiler are forced out through the plug-outlets, leaving the boiler absolutely clean. As soon as the water passing through the plug-outlets becomes clear, thereby disclosing that the boiler interior has been thoroughly washed, the plugs are inserted and the boiler is refilled by retaining the water passing through the injectors, as above described.

To economize time, the washing operation can proceed during the operation of emptying the boiler, and as the boiler-outlets are of greater area than the inlets from the injectors the inlet and outlet streams finally become equal.

The artificial draft in the stack is created by a continuous jet of steam which is conveyed from the main source of steam-supply through the branch 9, steam-hose 11, stack-tube 15, and thence escapes through the mouth 22 at the open end of the said stack-tube in an upward direction, causing a suction in the lower part of the stack, and consequently an additional draft in the boiler-tubes and fire-box, which are connected with the said stack. A new fire can be quickly built in the fire-box by the aid of the artificial draft above described and using the same source of steam-supply that is used to heat the water entering the boiler.

It is obvious that by opening or closing the

several valves any or all of the several pipes may be opened or closed, as desired.

Two locomotives may be operated upon with this device by connecting one of the steam-hose pipes 12 or 13 to each locomotive and only using one injector.

My invention enables a locomotive to be prepared for a trip in much less time than has heretofore been customary by allowing the several operations to be performed at one and the same time, and has many advantages over the devices now used in that the necessary steam is obtained from a live locomotive in the roundhouse that would be otherwise wasted. The boiler is not allowed to cool. The artificial draft in the stack facilitates the flue-cleaning operation and materially assists in building the new fire. The device is portable and simple in construction, &c.

To facilitate the washing of the boiler-legs, I prefer in some cases to attach a separate hose, and one method of doing this is shown in the drawing, wherein the numeral 23 designates an auxiliary branch from the heating-pipe, 24 a valve, 25 a flexible hose, and 26 an ordinary hose-nozzle. It is apparent that by simply guiding the nozzle 26 a stream of hot water under considerable pressure can be spread over the boiler-legs and wash away any mud or sediment that has settled there.

There are minor changes that can be made in the construction of my invention, and I would therefore have it understood that I do not limit myself to the exact construction herein shown and described, but claim all that falls fairly within the spirit and scope of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a device of the character described, the combination with a central tube member having independent inlet means for admitting a stream of water and a jet of steam at one end thereof; of one or more flexible connections attached to the opposite end of said central tube member and adapted to convey the said water and steam to the points of distribution, substantially as described.

2. In a device of the character described, a central tube having auxiliary branches connected therewith, and a steam-pipe within said tube, the combination therewith of flexible hose connections between the said steam-pipe and a source of steam-supply, and flexible outlet connections leading from the said central tube and adapted to be attached to the injectors of a locomotive, substantially as described.

3. In a device of the character described, a central tube, a steam-pipe within said tube and a flexible connection between said steam-pipe and a source of steam-supply; the combination therewith of an intermediate pipe between the said steam-pipe and flexible connection, a stack-tube and a flexible connec-



tion between the said intermediate pipe and stack-tube, substantially as described.

4. In a device of the character described, a central tube having branches radiating  
5 therefrom, a steam-pipe within said tube and a flexible connection between said steam-pipe and a source of steam-supply, a flexible hose connection with each of the said branches, whereby water is admitted into the said cen-

tral tube through one of said branches and 10 hot water ejected through the other branches, substantially as described.

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

THOMAS J. ROSSELL.

Witnesses:

GEORGE E. HALL,  
EDWIN M. CLARK.