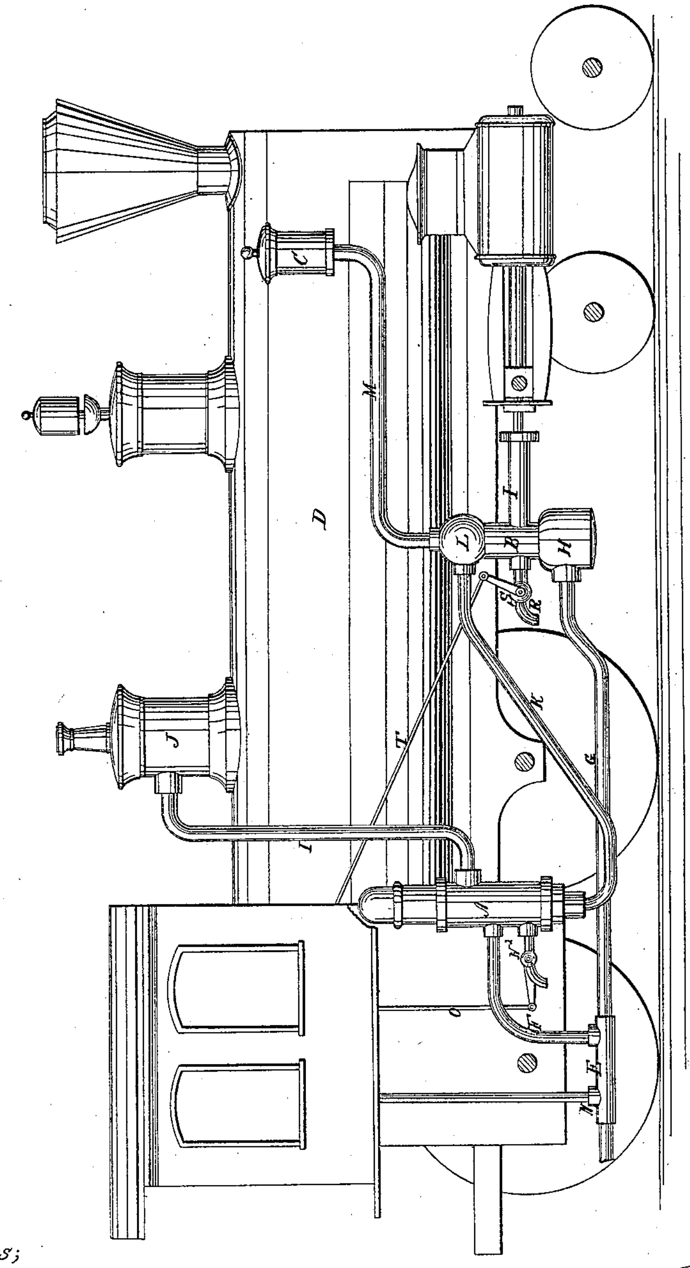
J. H. Pease,

Steam-Boiler Water-Feeder,

№ 53,864. Patented Apr. 10, 1866.



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JAMES H. PEASE, OF READING, PENNSYLVANIA.

IMPROVEMENT IN FEED-WATER APPARATUS.

Specification forming part of Letters Patent No. **53,864**, dated April 10, 1866.

To all whom it may concern:

Be it known that I, JAMES H. PEASE, of Reading, in the county of Berks and State of Pennsylvania, have invented a new and Improved Arrangement and Combination of the Injector and Feed-Pump of Locomotive and other Boilers; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification.

The present invention principally consists in connecting the injector and the feed-pump of a steam-boiler with one and the same suction-pipe, thereby dispensing with one suction-pipe and feed-pipe, with their necessary connections, and one check-valve, and also rendering it unnecessary to use a frost-pipe, now commonly applied in connection with the feed-pipe of the force-pump.

In the accompanying plate of drawings the figure is a side elevation of a locomotive-boiler, showing my improved connection and combination of the feed-pump and injector.

A in the drawing represents an injector of the class commonly known as "Giffard's," and B the feed-pump, of any of the ordinary constructions and arrangements, both being placed upon the same side of the boiler and communicating, through a common check-valve of the box C, with the interior of the boiler D by means of a peculiar arrangement of connecting-pipes, to be presently explained.

E is the feed-pipe, connected by a branch pipe, F, with the injector A, and by the suction-pipe G with the lower valve-box, H, of the pump I, the steam-pipe forming communication between the injector A and the dome J of the boiler D; and K, a pipe connecting the lower end of injector or its discharge-outlet with the upper valve box or chamber, L, of pump B, from which extends a pipe, M, connecting the pump with the check-valve of the boiler.

At the point N of the feed-pipe E is arranged a three-way cock, by turning which in the proper directions communication can be either established between it and the injector or the feed-pump, according as may be desired, or with both at one and the same time. When the injector is in communication with the feed-pipe the water passing into the injector through the connecting-pipe F is, by the usual operation of the injector, driven in the form of a jet and discharged through the pipe K into the upper portion of the pump, from whence, passing through the pipe M, it enters the boiler at the check-valve of the same, the pump, when in communication with the feed-pipe, drawing the water through its suction-pipe and forcing it up and through the same pipe M into the boiler, as above explained.

N^2 is a stop-cock placed in the discharge-pipe of the overflow of the injector, which stop-cock, by properly pulling the lever O, extending to the locomotive-cab, can be opened or closed, as may be desired. By thus arranging a stop-cock in the discharge pipe or orifice of the injector-overflow the breakage of the jet, which now often occurs in the use of the injector, especially when the locomotive is running at high speed, and also running over switches or crossings of the railway-track, is entirely prevented, as by then keeping the stop-cock closed the entrance of air to the overflow, and thus to the jet, is cut off, thereby also obviating the necessity of frequent adjustment of the injector-rams, the annoyance and trouble to accomplish which are well known to all conversant with the running of locomotive-engines. In addition to the above, the stop-cock also enables steam to be blown through the injector and its communicating-pipe with the boiler through the check-valve without the use of another steam-pipe, as has heretofore been necessary, for connecting the boiler and boiler-conducting pipe of the injector—a quite important advantage, the water in the overflow of the injector being first drawn out or discharged from the same by opening the said cock, when the cock is then closed and the steam blown through the injector, &c., as above stated.

From the above description of the manner in which the injector and feed-pump are connected with the check-valve of the boiler it is obvious that the use of the pipes and other parts and connections hereinbefore recited is entirely dispensed with; and, furthermore, that, by shutting off the communication between the tender of the locomotive and the injector and feed-pump, steam can be blown through all the connecting pipes of the injector

and feed-pump with the boiler, as well as through the injector and feed-pump, (the water contained in the suction-pipe of the feed-pump and the pump being discharged through the nozzle R, having a suitable stop-cock, S, for opening and closing it,) and thus the liability of their being frozen entirely prevented.

T is a lever connected at one end with stop-cock S of the feed-pump nozzle R and extending to the locomotive-cab, by pulling which lever in the proper direction the stop-cock S can be opened or closed, as may be desired, this stop-cock being opened when the injector is in operation.

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

1. The arrangement of the injector of a locomotive or other boiler, in combination with the feed-pipe of its force-pump, when such pipe has a suitable stop-cock for opening or closing the communication through the same, substantially as and for the purpose specified.

2. The combination of the feed-pump and the injector whereby to supply water to a locomotive or other boiler by one set of pipes and connections, substantially as herein described.

3. The stop-cock, in combination with the discharge-orifice of the injector-overflow, for the purposes specified.

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