(No Model.)

W. H. COWELL.

RAISING STEAM IN LOCOMOTIVE BOILERS.

No. 347,420. Patented Aug. 17, 1886.

Fig. 2.

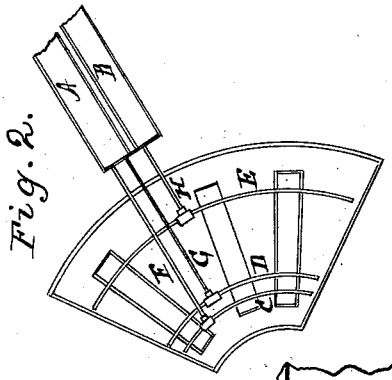
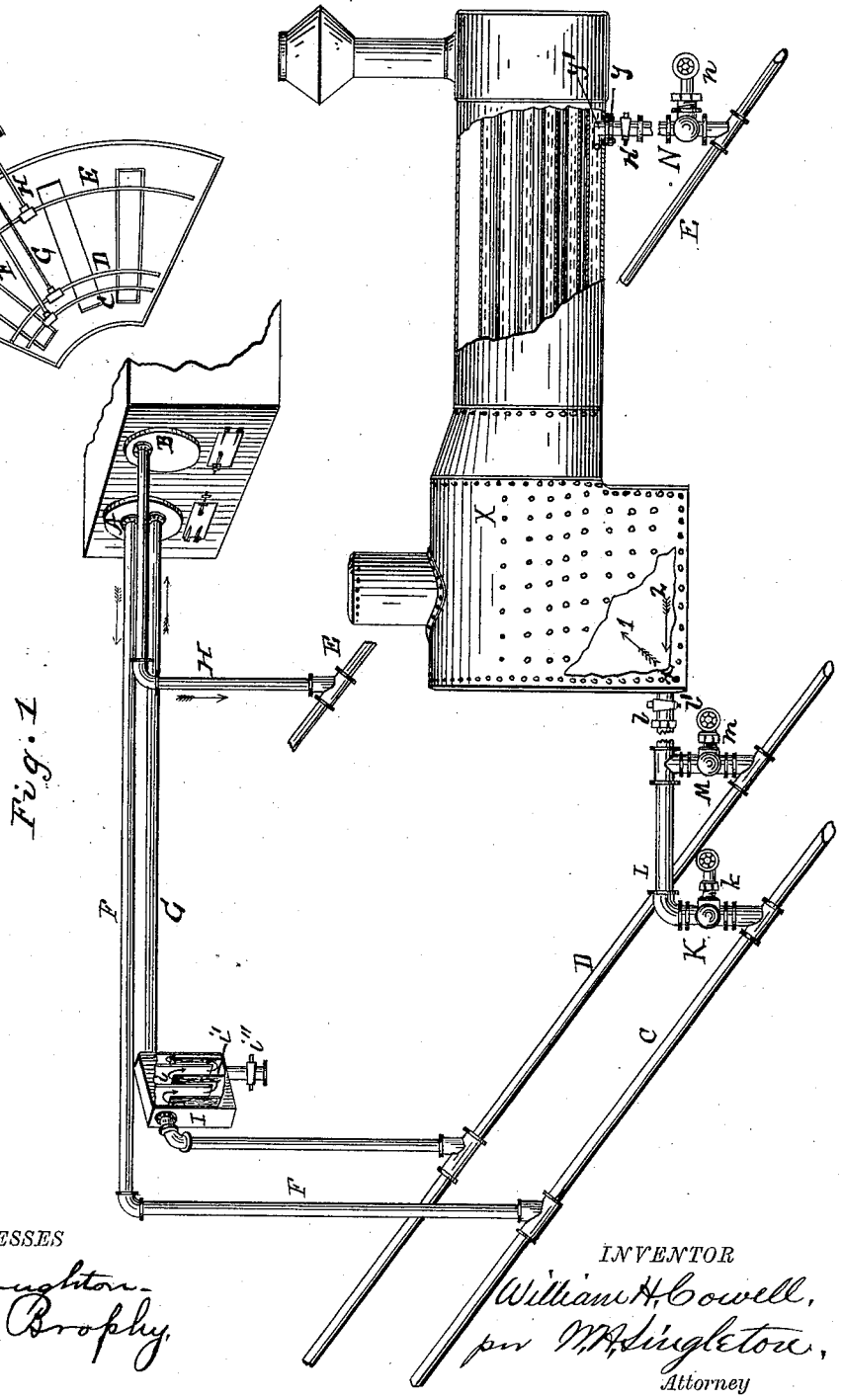


Fig. 1.



WITNESSES

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RAISING STEAM IN LOCOMOTIVE-BOILERS.

SPECIFICATION forming part of Letters Patent No. 347,420, dated August 17, 1886.

Application filed March 9, 1886. Serial No. 194,550. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. COWELL, a citizen of the United States, residing at Logan, in the county of Hocking and State of Ohio, have invented certain new and useful Improvements in Methods of Raising Steam in Locomotive-Boilers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

Figure 1 is a perspective view of the device. Fig. 2 is a diagrammatic view of a portion of a round-house in which the invention is located.

This invention relates to the raising of steam in locomotives in the round-house as they are needed for service; and it consists in the method and means hereinafter set forth and claimed.

In the annexed drawings, the letters A and B represent two boilers with their attendant appurtenances conveniently placed in the round-house and at a level above that of the locomotive-boilers when the locomotives are in the house. Passing around the round-house, below the level of the tracks, are three pipes, C, D, and E—C and D preferably close together, and E about as far from them as the length of an ordinary locomotive-boiler. At a suitable point the pipe C is connected with a pipe, F, leading to the boiler A, pipe D with a pipe, G, also leading to boiler A, and pipe E with a pipe, H, leading to the boiler B. In the pipe G is placed a trap or drop, I, consisting of a box, within which are vertical partitions *i i'*, the former, *i*, secured to the top, but not to the bottom; the latter, *i'*, to the bottom, but not to the top. This drop has a stop-cock, *i''*.

At each pit or track the pipe C has a pipe, K, rising therefrom, which is coupled to a pipe, L, the latter being horizontal and passing over the pipe D, with which it is connected by a pipe, M, the pipe L projecting beyond the pipe M, as at *l*. The pipes K and M have globe-valves *k* and *m*, and the extension *l* of pipe L has a stop-cock, *l'*. In a line with each set of pipes K and M the pipe E has a vertical pipe, N, furnished with a globe-valve, *n*, and stop-cock *n'*. Pipe N and extension *l* may have drops, like I, secured by flexible joints.

To have this apparatus ready for use all the valves are kept closed, and the boiler A is kept with a large body of water and a steam-pressure of about fifty pounds, and the boiler B with a large steam-space and a steam-pressure of about one hundred pounds.

Over each set of pipes K L M N a locomotive stands. When it is desired to steam up, the extension *l* of pipe L is connected with the boiler X at the extreme rear end at the bottom, as shown at *x*, and the pipe N at the extreme front end at the bottom, as shown at *y*, there being suitable openings and connections on the boiler. At the opening *y* the boiler is preferably furnished inside with a nozzle, *y'*, which projects and opens to the rear. The stop-cock *l'* and globe-valve *k* are first opened, and the hot water from the boiler A flows through the pipes F C K L *l* into the boiler, as indicated by the arrow 1. As soon as the boiler is full of hot water and thoroughly heated, the globe-valve *k* is closed, and the globe-valves *m* and *n* and stop-cock *n'* are opened. Now, as the pressure in the boiler B is twice that in the boiler A, steam from the boiler B will pass through the pipes H E N and out at the nozzle *y'* into the boiler X, forcing the water in said boiler out at *x*, as indicated by the arrow 2, through the pipes L, M, D, and G into the boiler A. This continues until the water in the boiler X reaches the water-level, when the stop-cock *l'* and globe-valve *m* are closed, stopping further flow. Steam continues to enter at *y* until the requisite pressure is obtained, when cock *n'* and valve *n* are closed. Connection with pipes L and N is opened, and the locomotive leaves the round-house, fuel being thrown in as usual.

By connecting the pipe L at the bottom or lowest point the hot water always rises and creates a uniform heat and equal expansion, the boiler being completely filled with water before steam is admitted from boiler B.

By connecting the pipe N to the locomotive below the water-line of the boiler X the steam enters the water and rises gradually into the steam-space, and thus gradually increases the heat and expansion. By turning the nozzle *y'* to the rear the steam drives any deposit in the boiler toward the point *x*, and stirring up such deposit it is carried by the current out the pipe L. Any such deposit would accu-

mulate in the drops I of pipes L or G, the flow being sluggish therein; and any impurities which might come with the water from the boiler A would also settle in the drop I of pipe L, and in the steam from the boiler B would settle in the drop I of the pipe N. A return-pipe distinct from the service-pipe is used, so that several locomotives may be charged at the same time.

Having described my invention, what I claim is—

1. The method of supplying locomotive-boilers with steam, which consists in introducing hot water into the boiler until the latter is supplied above the water-level, then introducing steam into said boiler to force out the water until it is reduced to the water-level, cutting off the further exit of the water, and continuing the supply of steam until the desired pressure is had, as set forth.

2. As a means of supplying locomotive-boilers with steam, two boilers, one of which has a service and return water-pipe and the other has a steam service-pipe, said pipes being adapted to be connected with the boiler of a locomotive, as set forth.

3. As a means of supplying locomotive-boilers with steam, the combination of the boiler A, the pipes C, D, K, L, and M, with the boiler B, and the pipes H E N, such pipes provided with suitable valves, as set forth.

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

WILLIAM H. COWELL.

Witnesses:
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