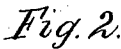


Patented Mar. 2, 1869.



J. M. Croombs
J. W. Haynes

Merrilltown R. Coluppo

UNITED STATES PATENT OFFICE.

MIRTILLOW R. CLAPP, OF NEW YORK, ASSIGNOR TO HIMSELF AND EDWARD D. JONES, OF BROOKLYN, N. Y.

IMPROVEMENT IN STEAM-ENGINE MECHANISMS.

Specification forming part of Letters Patent No. 87,468, dated March 2, 1869.

To all whom it may concern:

Be it known that I, MIRTILLOW R. CLAPP, of the city, county, and State of New York, have invented a new and Improved Combination of Steam-Engine and Boiler, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 represents a vertical section of a combined steam-engine and boiler constructed in accordance with my improvement, and Fig. 2 a plan of the base portion of the valve-chest with bed-plate attached.

Similar letters of reference indicate corresponding parts.

This my improvement is designed for the working of a steam-pump as applied to a steam fire-engine, and in which a vertical boiler is used; and my invention consists in a novel arrangement with the boiler of the engine, with its bed-plate, induction and eduction passages, and stop-valve, whereby great compactness and solidity are insured and other advantages are attained. Also, the invention includes a novel disposition of the exhaust pipe or pipes from the engine by causing the same to enter the boiler below the crown-sheet, and to pass out or connect with an opening or openings through said sheet, whereby the smoke-box may be connected and disconnected without interfering with or disturbing the exhaust, and provision is made for attaching a steam nozzle or nozzles to the latter in direct line with the chimney or draft.

Referring to the accompanying drawing, A is a vertical steam-boiler, which may be of any suitable construction, but preferably such as described in Letters Patent No. 61,162, issued to M. R. Clapp and E. P. Jones, assignees of M. R. Clapp, January 15, 1867.

Bolted to the side of the boiler is the engine bed-plate B, which has induction and eduction passages formed in it, and also which carries the stop-valve C.

D is the engine-cylinder, bolted so as to occupy a horizontal position to the bed-plate, which latter may form one end or cover to the cylinder. E is the working-valve chest arranged on top of the engine-cylinder or plate formation F thereon, forming a base to the

valve-chest, and on which is the valve-seat G, that is provided with the usual exhaust-passage *a* and inlets *b b* to opposite ends of the cylinder. Any suitable valve may be used to uncover alternately the inlets *b b* for passage of the steam to the cylinder, and to connect each one successively with the exhaust-passage *a*.

The steam is supplied to the valve-chest by an induction-passage, *c*, formed in the bed-plate, and connected at its lower end by an extension, *c'*, of said passage, through the base F, with the valve-chest, while the upper end of such passage *c* is under control of the stop-valve C, arranged, as it is opened or closed, to admit or shut off the passage of steam from the boiler through an opening, *c''*, in the bed-plate and pipe *c'''*, which latter is extended up into the steam-space of the boiler.

The exhaust-passage *a* is extended to form lateral branches *a' a'* in the base portion F, which lateral branches connect with eduction openings or passages *a'' a''* in and through the bed-plate. Each of these eduction-passages *a'' a''* has connected with it a pipe, *a'''*, that is extended to run up into the smoke-box, and is provided with an adjustable nozzle, *a''''*, under control of a lever from the outside, for regulating the draft or blast caused by the escape of the spent steam.

By this arrangement of parts great compactness and solidity are insured and a general working efficiency attained, also by it the cost of construction reduced, which advantages make it a desirable arrangement for steam fire-engines, to which purpose it is particularly applicable, the piston working in the cylinder D being connected in the usual or any suitable manner to the pump.

The bed-plate B, it will be observed, not only carries the entire engine and has the induction and eduction passages arranged in or through it, but also carries the independent stop-valve, so that, on removal of the bed-plate from the boiler, every necessary appendage to the engine is detached with it, which will be found a great convenience when necessary to repair the engine or boiler or when necessary to substitute a new boiler.

By running the exhaust pipe or pipes *a'''* from the engine, whether the latter be connected

with the boiler, as described, or otherwise, so that said pipe or pipes enter the boiler below the crown-sheet *s*, and then bend or incline upward, so as to establish escape of the spent steam through the crown-sheet, not only is an efficient disposition obtained for the steam nozzle or nozzles *a'*, attached to said pipe or pipes in line with the draft or chimney *H*, but the smoke box or cap *I* may be removed and replaced without any interference with or disturbance of the exhaust pipe or pipes whenever it is necessary, either for the purposes of cleaning or repair, to get at the tubes or interior of the boiler from above.

What is here claimed, and desired to be secured by Letters Patent, is—

1. The arrangement of the bed-plate *B*,

formed with induction and eduction passages in or through it, with reference to the cylinder *D*, valve-chest *E*, and boiler *A*, substantially as shown and described.

2. The arrangement of the stop-valve *C* with the bed plate *B*, essentially as specified.

3. The arrangement of the exhaust pipe or pipes from the engine, substantially as described, whereby they are made to enter the boiler below the crown-sheet and to pass up or establish connection through the latter, substantially as described and set forth.

MIRTILLOW R. CLAPP.

Witnesses:

FRED. HAYNES,

J. W. COOMBS.