H. H. HILL & F. MOORLEN.

Steam Fire-Engine.

No. 208,314. **Patented Sept. 24, 1878.**

Fig: 1.

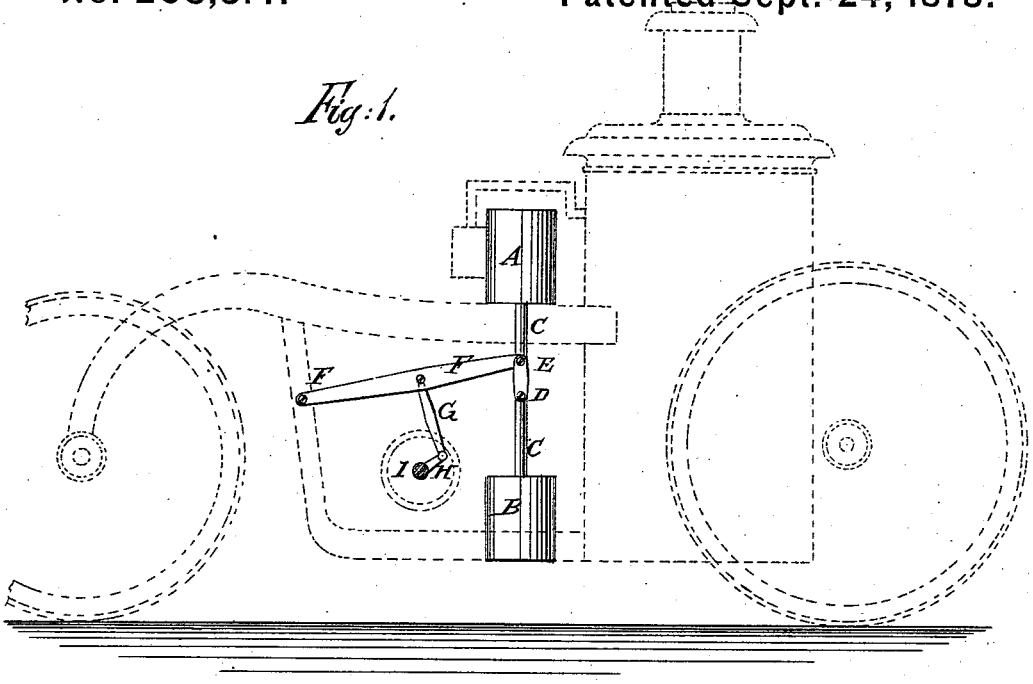


Fig: 2.

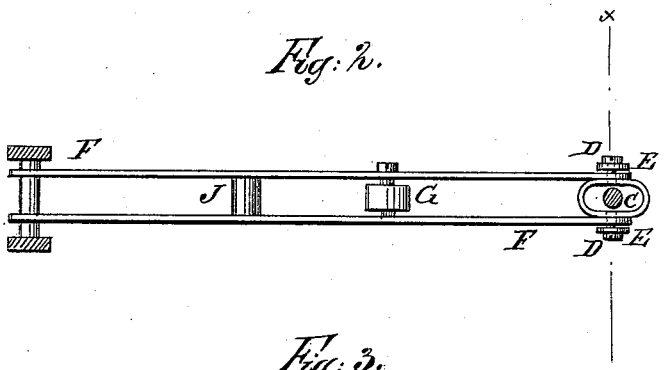
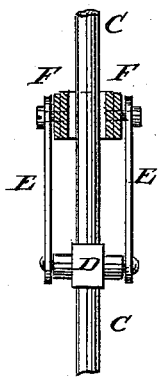


Fig: 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HIRAM H. HILL AND FRANK MOORLEN, OF AUGUSTA, MAINE.

IMPROVEMENT IN STEAM FIRE-ENGINES.

Specification forming part of Letters Patent No. **208,314**, dated September 24, 1878; application filed August 28, 1878.

To all whom it may concern:

Be it known that we, HIRAM HOVEY HILL and FRANK MOORLEN, of Augusta, in the county of Kennebec and State of Maine, have invented a new and Improved Steam Fire-Engine, of which the following is a specification:

Figure 1 is a side view of a part of a steam fire-engine, showing our improvement. Fig. 2 is a top view of the same, the piston-rod being shown in cross-section. Fig. 3 is a detail section taken through the line *x x*, Fig. 2.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved vertically-working steam fire-engine, which shall be so constructed that its action shall be more steady and easy than engines constructed in the ordinary way, which shall work with less friction and more power than said ordinary engines, and which at the same time shall be simple in construction.

The invention consists in the half walking-beam, in combination, in a vertically-working steam fire-engine, with the piston-rod having the piston of the steam-cylinder attached to one end, and the piston of the water-cylinder attached to its other end, and with the main connection and the crank of the valve-eccentric shaft, as hereinafter fully described.

A represents the steam-cylinder, which is connected with the boiler in the usual way; and B is the water-cylinder, about the construction of which there is nothing new.

The steam-cylinder A is placed directly over the water-cylinder or pump B, and their pistons are attached to the opposite ends of the same piston-rod C. To the piston-rod C, between the two cylinders A B, is attached a short cross-head, D, to the ends of which are pivoted the lower ends of two short connecting-rods, E. The upper ends of the connecting-rods E are pivoted to the end of the lever or half walking-beam F, through a guide-hole, in the said end of which the piston-rod C passes, the said hole being made large enough to allow the said half walking-beam to have a free movement.

The half walking-beam F is about two feet long, and its other end is pivoted to the framework of the engine.

To the half walking-beam F, at a point about eight inches from its head or moving end, is pivoted the upper end of the main connection G, the lower end of which is pivoted to the crank H of the main shaft I. This connection limits the movements of the pistons and works the valve-eccentric, which is upon the said shaft I.

To the half walking-beam F, at a point about sixteen inches from its head or moving end, is connected the feed-pump for the boiler. The feed-pump is not shown in the drawings; but its point of connection is indicated by the block J.

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

In a vertically-working steam fire-engine, the half walking-beam F, the links E, the piston-rod C, and cross-head D, in combination with pistons of the steam-cylinder A and the water-cylinder B, and with the connecting-rod G and the crank H of the eccentric-shaft I, substantially as and for the purpose described.

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Witnesses:
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