M. R. Clapp,

Steam Fire Engine.

No. 34,087. Patented Jan. 7, 1862.

Fig 1.

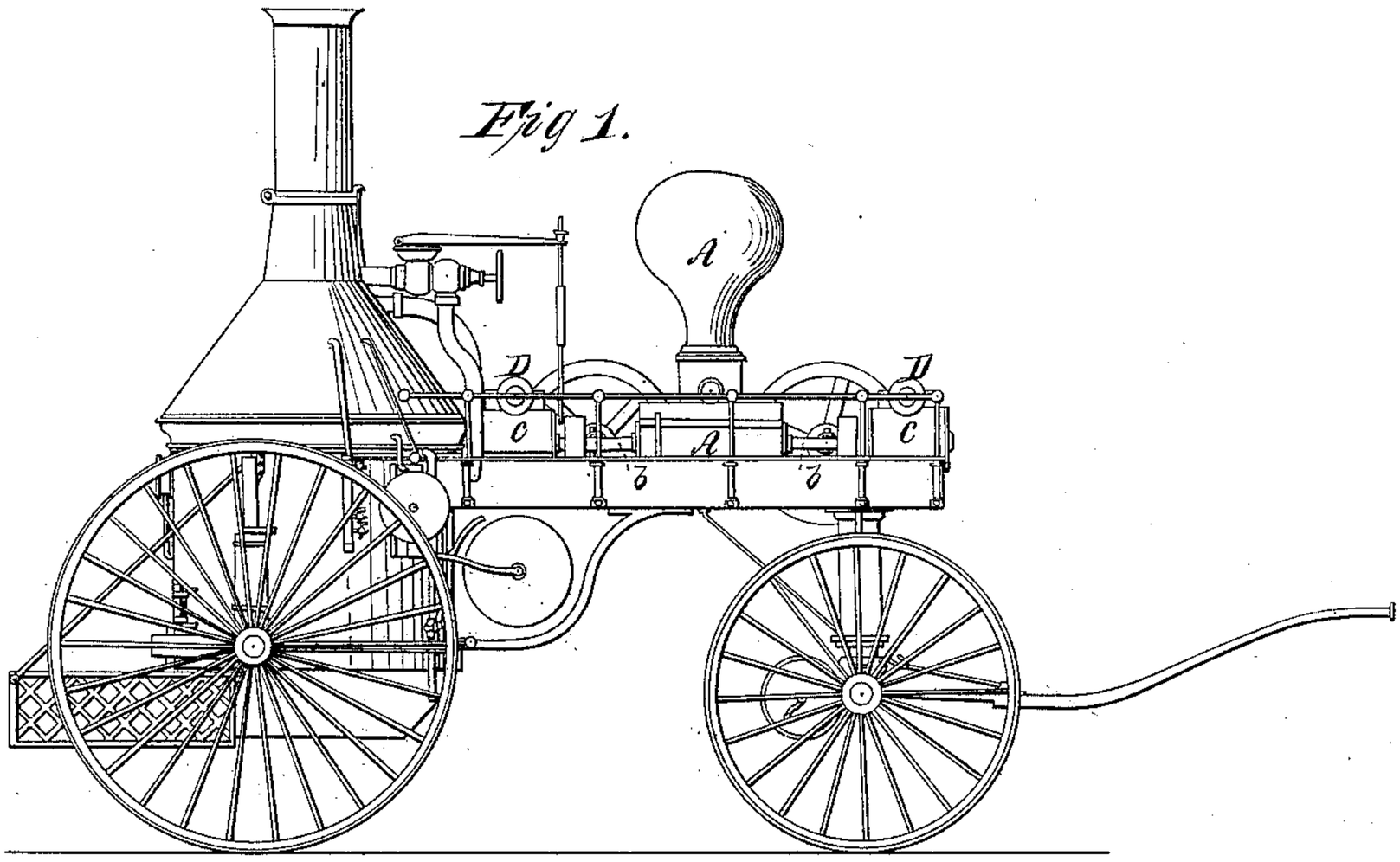
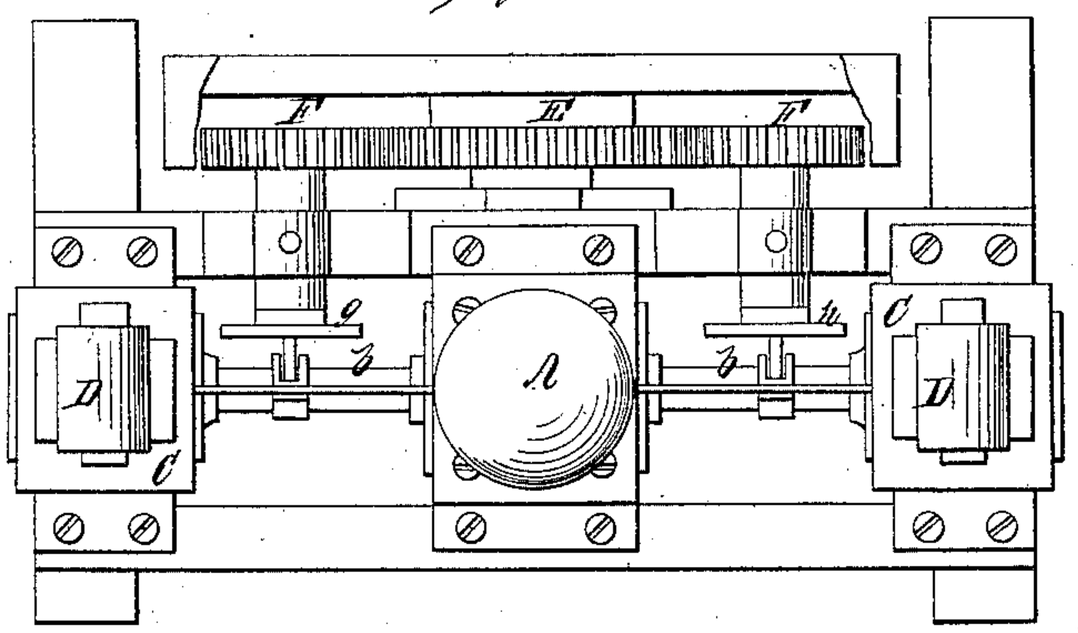


Fig 2.



Witnesses.
Chas. F. Spencer
D. C. Johnson

Inventor
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UNITED STATES PATENT OFFICE.

M. R. CLAPP, OF SENECA FALLS, NEW YORK, ASSIGNOR TO HIMSELF AND EDWARD MYNDERSE, OF SAME PLACE.

IMPROVEMENT IN STEAM FIRE-ENGINES.

Specification forming part of Letters Patent No. **34,087**, dated January 7, 1862.

To all whom it may concern:

known that I, M. R. CLAPP, of Seneca Falls, in the county of Seneca and State of New York, have invented a new and useful Improvement in Steam Fire-Engines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation of a complete fire-engine of my improved construction. Fig. 2 is a plan view, which is designed to show the arrangement and motion of the essential parts of my invention without presenting all the details of the working-machine.

Like letters designate corresponding parts in both of the figures.

It is well known that steam-engines when placed upon wheel carriages for portable use, like those employed for extinguishing fires in cities, are subject to tremulousness or vibration, occasioned by the motion of the pistons of the engines and pumps. This unsteadiness cannot be counteracted by any ordinary bracing or blocking of the wheels of the carriage, in which lightness of construction is of paramount importance, and it amounts (where piston-engines are employed) to a difficulty of grave importance, involving the serious wear and deterioration of many parts of the machinery.

The object of my invention (and one which it successfully accomplishes) is to obviate this defect by arranging two cylinders of the engine in such relation to each other and to the pump that their strokes are made simultaneously in opposite directions. The force which each piston exerts being equal the effect of opposing the momentum of one to that of the other completely neutralizes the jar or vibration which their motion imparts to the machine, causing it to remain passive, although supported on wheels constructed for the greatest freedom of locomotion.

As represented in the drawings, A, Fig. 2, is the air-chamber of a double-acting pump, occupying a position immediately below it and in about the center of the frame of the machine. The pump is operated by the piston-rods *b b* of two steam-cylinders *c c*—one at either end of the frame.

D D represent the position of the valve-boxes on the top of the cylinders.

In order to simulate the motion produced by the working of the pistons by means of the steam in the cylinders, the engine, as shown in Fig. 2, is provided with a driving-wheel E, with two pinions F F placed on each side and gearing with it. Cranks *g* and *h* on the shaft of each pinion are connected with the piston-rods *b b* by means of vertical blocks in grooves in which the crank-pins slide. The relative position of the cranks toward each other is such that their rotation carries them alternately to and from each other, as represented in the drawings, *g* being at the highest and *h* at the lowest point of rotation. This represents the motion of the engine where steam is employed as the motive power, the reciprocating movements of the pistons being simultaneous and in opposite directions, as also are those of the force-pump.

It will readily be seen that this arrangement secures the desired object in a perfect manner.

The pistons may be placed side by side or both on one side of the pump if the proportions of the machine should require it, and the same motion employed with substantially the same effect.

I disclaim placing the pump and engine pistons on the same piston-rod, and also all arrangements of double pistons moving in various ways when applied to stationary engines and pumps, my improvement being confined to portable fire-engines or pumps; but

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

The combination and arrangement of two steam-cylinders, the pistons of which move simultaneously in opposite directions, with the pump of a steam fire or other portable engine, substantially in the manner and for the purposes herein described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

M. R. CLAPP.

Witnesses:
FRANCIS W. HENRY,
SIDNEY L. BURRITT.