2 Sheets—Sheet 1.

L. TAYLOR.

HAND FIRE-ENGINES.

No. 195,183. Patented Sept. 11, 1877.

Fig. 1.

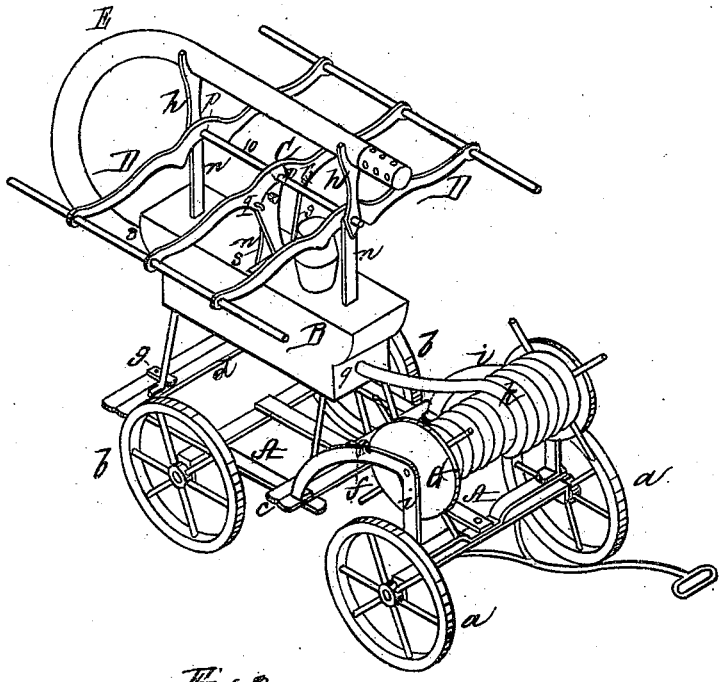
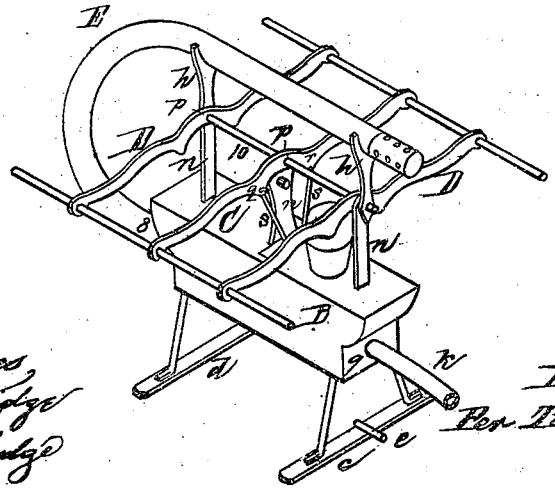


Fig. 2.



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2 Sheets—Sheet 2.

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HAND FIRE-ENGINES.

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Fig. 3.

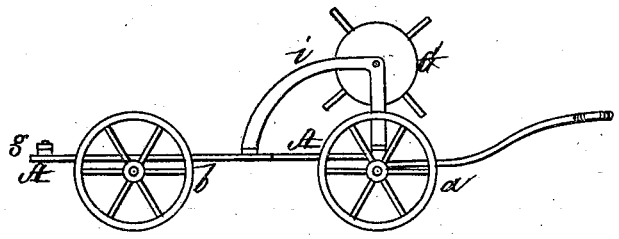


Fig. 4

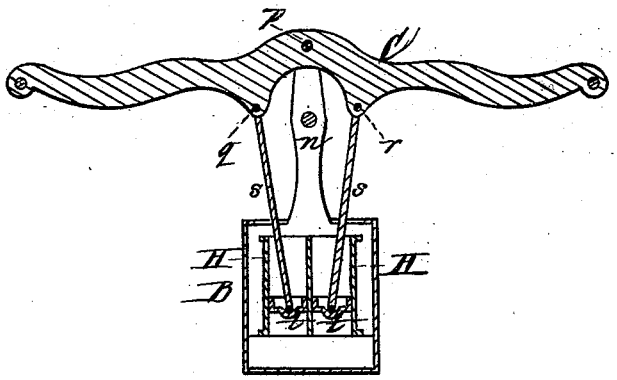
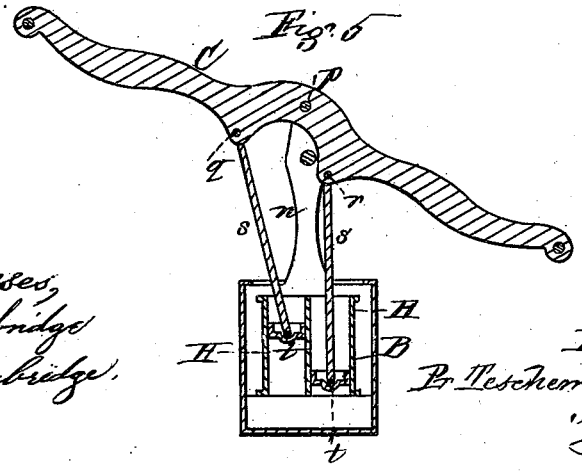


Fig. 5



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UNITED STATES PATENT OFFICE.

LEVI TAYLOR, OF MARLBOROUGH, MASSACHUSETTS.

IMPROVEMENT IN HAND FIRE-ENGINES.

Specification forming part of Letters Patent No. **195,183**, dated September 11, 1877; application filed February 14, 1877.

To all whom it may concern:

Be it known that I, LEVI TAYLOR, of Marlborough, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Hand Fire-Engines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of a fire-engine constructed in accordance with my invention. Fig. 2 is a perspective view of the engine removed from its truck or carriage. Fig. 3 is a side elevation of the carriage with its hose-reel, the engine being detached therefrom. Figs. 4 and 5 are transverse sections, illustrating the manner in which the power is transmitted from the brake-levers to the piston-rods.

This invention consists in making the body of the engine with its operating parts detachable from the truck or carriage on which it is mounted, so that it can be readily lifted off and placed upon the ground in a position ready to work, the truck having a hose-reel attached thereto, and being used as a hose-carriage for running off and laying the leading hose, by which construction the necessity of employing a separate hose-carriage, as heretofore, is avoided, while the leading hose, being always coupled to the engine, is ready for immediate use as soon as it is unwound from the reel.

My invention also consists in the peculiar construction and arrangement of the brake-lever, cylinders, and piston-rods with respect to each other, whereby a greatly-increased leverage, and corresponding increase of power, is secured, each piston-rod being so pivoted as to form one arm of a toggle-joint, the other arm being formed by that part of the curved portion of the brake-lever situated between the central pivot and the point where the upper end of the piston-rod is pivoted.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A represents the truck or carriage, which is provided with four wheels, *a b*, the forward wheels *a* swinging under to allow the machine to be turned in its own length.

Upon the rear portion of the truck is mounted the engine B, which rests upon supporting-frames *c d*, the former, *c*, being held in place by a projection, *e*, which enters an eye, *f*, and the latter, *d*, being secured by pivoted clamps or fingers *g*, which, when turned to one side, leave the engine with its operating parts free to be lifted off the truck and placed upon the ground over a well or reservoir ready to work, as seen in Fig. 2, in which position it rests upon the supporting-frames *c d*, the height of these frames being such as to raise the engine the required distance from the ground to enable the brake-levers C D to be conveniently operated.

Any suitable fastening device other than that shown may be employed for securing the engine upon the truck or carriage.

E is the suction-hose, which rests in bifurcated supports *h h*, one end being always coupled to the engine at 8; and in case a well or reservoir is not easily accessible water can be poured into the "tub" of the engine, and the suction-hose inserted therein, thus using the tub as a reservoir for the supply of water.

G is the hose-reel, which is mounted upon the front portion of the carriage A, between the two side frames *i i*, and immediately over the forward axle, the leading hose *k* being wound upon this reel and having one end always coupled to the engine at 9.

On the arrival of the engine at a fire it is merely necessary to lift the body B, with its operating parts, from the truck or carriage A, and set it on the ground upon its supports *c d*, which operation can be easily performed by two men, on account of the light weight of the engine. The truck A is then used as a hose-carriage to run off and lay down the leading hose, which, as before stated, is always coupled to the engine, and much valuable time is thus saved, while by combining a hose-carriage and engine in one, as described, the necessity of employing a separate hose-carriage, as heretofore, and the consequent additional expense, are avoided.

H H, Figs. 4 and 5, represent the cylinders of the engine, which are arranged in a verti-

cal position within the tub or body of the engine, and in close proximity to each other.

n n n are standards, to the upper ends of which, at *p*, are pivoted, on a rod, 10, the brake-levers C D, the central portion of the lever C from *q* to *r* being curved upwardly instead of being straight, as has heretofore been the case in that class of engines having the cylinders arranged close together in a vertical position.

s s are the piston-rods, the upper ends of which are pivoted to the brake-lever C at *q r*, their lower ends being pivoted in the usual manner to the pistons *t*.

As either end of the brake-lever C is depressed, as seen in Fig. 5, it will be seen that, as the curve of the portion *q p r* is short, the point *q* or *r*, to which the piston-rod on the side depressed is pivoted, will rapidly approach a line passing vertically through the central pivot *p*, the power constantly increasing until the piston-rod assumes a vertical position. Each of the piston-rods, in connection with that part of the curved portion of the brake-lever C between the central pivot *p* and the point at which the upper end of the piston-rod is pivoted, thus forms a toggle-joint, and consequently the power of the engine is greatly increased, so that it can be operated with much less force than has heretofore been necessary—a very important advantage, as an engine of a given power, constructed as above described, can be operated with less than one-half the number of men hitherto required. This feature, in connection with the light weight of the engine and the ease with which it can be handled, render it particularly adapted for thinly-settled localities, where it is impossible to assemble a large number of men at a moment's notice.

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

1. The engine B, in combination with, and made detachable from, a truck or carriage, A, provided with a hose-reel, substantially as and for the purpose set forth.

2. The hose-reel G, mounted upon the same truck as the engine B, and located in front thereof, to admit of the leading hose being always coupled to the engine ready for use, substantially as described.

3. The combination and arrangement of the brake-lever C, with its central portion curved upwardly, the vertical cylinders H H, and the piston-rods *s s*, each piston-rod being so pivoted as to form one arm of a toggle-joint, the other arm being formed by that part of the central curved portion of the brake-lever situated between the central pivot and the point where the upper end of the piston-rod is pivoted, whereby the point *q* or *r*, to which the piston-rod on the side depressed is pivoted, will rapidly approach a line passing vertically through the central pivot *p*, substantially as and for the purpose set forth.

Witness my hand this 8th day of February, A. D. 1877.

LEVI TAYLOR.

In presence of—
ADAM MCINTYRE,
JAMES GILES.