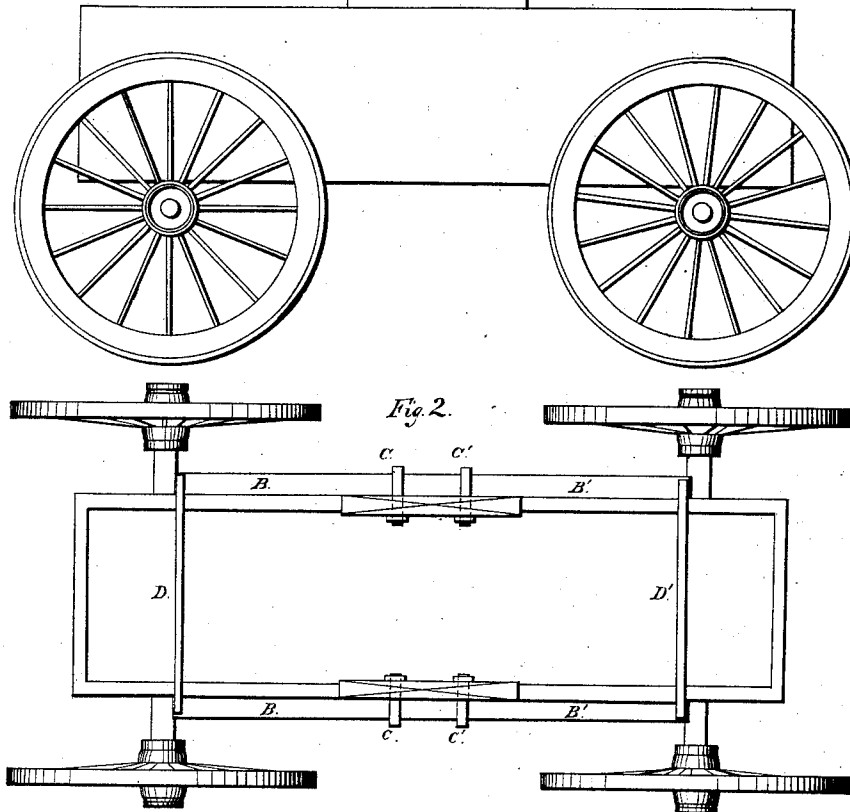
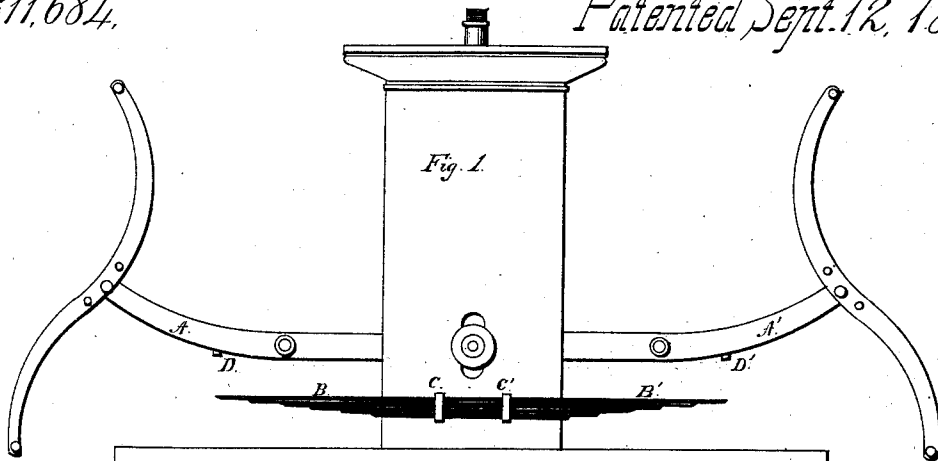


F. G. Smith

Fire Engine Spring,

No. 11,684.

Patented Sept. 12, 1854.



Witnesses:

*John D. Parsons
James R. McGraw.*

Inventor:

F. G. Smith

UNITED STATES PATENT OFFICE.

F. G. SMITH, OF COLUMBIA, TENNESSEE.

MODE OF OPERATING FIRE-ENGINES.

Specification of Letters Patent No. 11,684, dated September 12, 1854.

To all whom it may concern:

Be it known that I, FRANKLIN G. SMITH, of Columbia, in the county of Maury and State of Tennessee, have invented a new and useful Application of Springs for Working Fire-Engines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a lateral elevation, and Fig. 2 a plan, of an ordinary fire engine with my proposed springs attached.

In both figures, the same letters refer to like parts.

The brakes or levers of the engine, A, A', Fig. 1, are omitted in Fig. 2, that the remaining parts of the engine may be exhibited with greater distinctness.

In both the figures, the letters B, B', show the form and position of my arresting and re-acting springs, made fast to the central upright part of the engine by means of the clamps C, C'. These springs are represented in the drawings as being formed of successive plates of spring steel, after the manner of the elliptic springs for vehicles of every kind, with the difference that in the fire engine springs, the metallic plates are represented as being straight, rather than curved like the carriage springs.

The clamps C, C', confine the springs to the upright central part of the engine in such a manner that the clamps toward the ends of the springs which is struck by either of the bars D, D', serves as a fulcrum, on which that part of each spring is somewhat bent while resisting the blow given by the descending arm of the working lever. This adds perceptibly to the elastic force of the springs, by extending the range of their action.

The cross-bars, D, D', are made of wood or iron, as may be preferred. They connect the two sides of the working levers, reaching from one to the other, and are securely fastened upon the under side of those arms. An end view of these parts is shown at D, D', Fig. 1, and they are seen in plan in Fig. 2, at the same letters. As they reach a little beyond the levers, their ends im-

pinge upon the ends of the steel springs, (see Fig. 2,) as the descent of either arm brings the cross-piece D down into contact with the springs. The design of these springs is to prevent the great waste of power incurred in working the common fire engine, by causing the descending arm of the working lever, (instead of being arrested by some solid part of the machine,) to give over all its momentum to springs of such strength as easily to offer the requisite resistance to the blow, and of such elasticity as to give over nearly all of that power to the return stroke of the engine. In the form most commonly seen, every successive stroke of the fire engine starts from a dead rest, and the power with which the stroke ends, is totally lost in giving a blow to the frame of the engine, giving it a very injurious concussion, and causing painful shocks upon the arms of the firemen. The springs now proposed prevent all jar and concussion from the stroke of the levers, and, (supposing the springs to be perfect, that is, re-act without any loss of power from friction,) they convert the entire power with which the stroke was ended, into power acting in the opposite direction for beginning the next stroke.

In these drawings, the springs are represented as being made of successive plates of steel, merely because this is the usual form in which that metal is used for that purpose, and therefore the nature of my invention can be made more clearly intelligible by supposing this to be the form of spring used for the fire engine. But I do not restrict myself to any one form or material for these springs. They may be made of any shape and any material, so that they will arrest the whole momentum of each stroke, and re-act with energy in starting the succeeding stroke.

I claim—

Constructing fire engines with springs, in any manner substantially the same as herein before set forth, and for the purposes specified.

FRANKLIN G. SMITH.

Witnesses:

WM. H. PILLOW,
SAML. I. MCGAW.