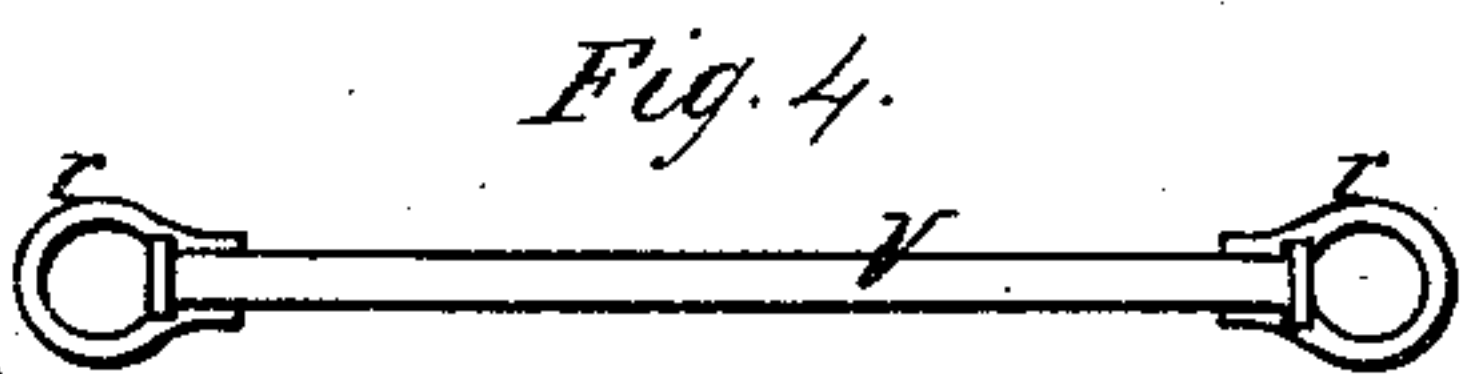
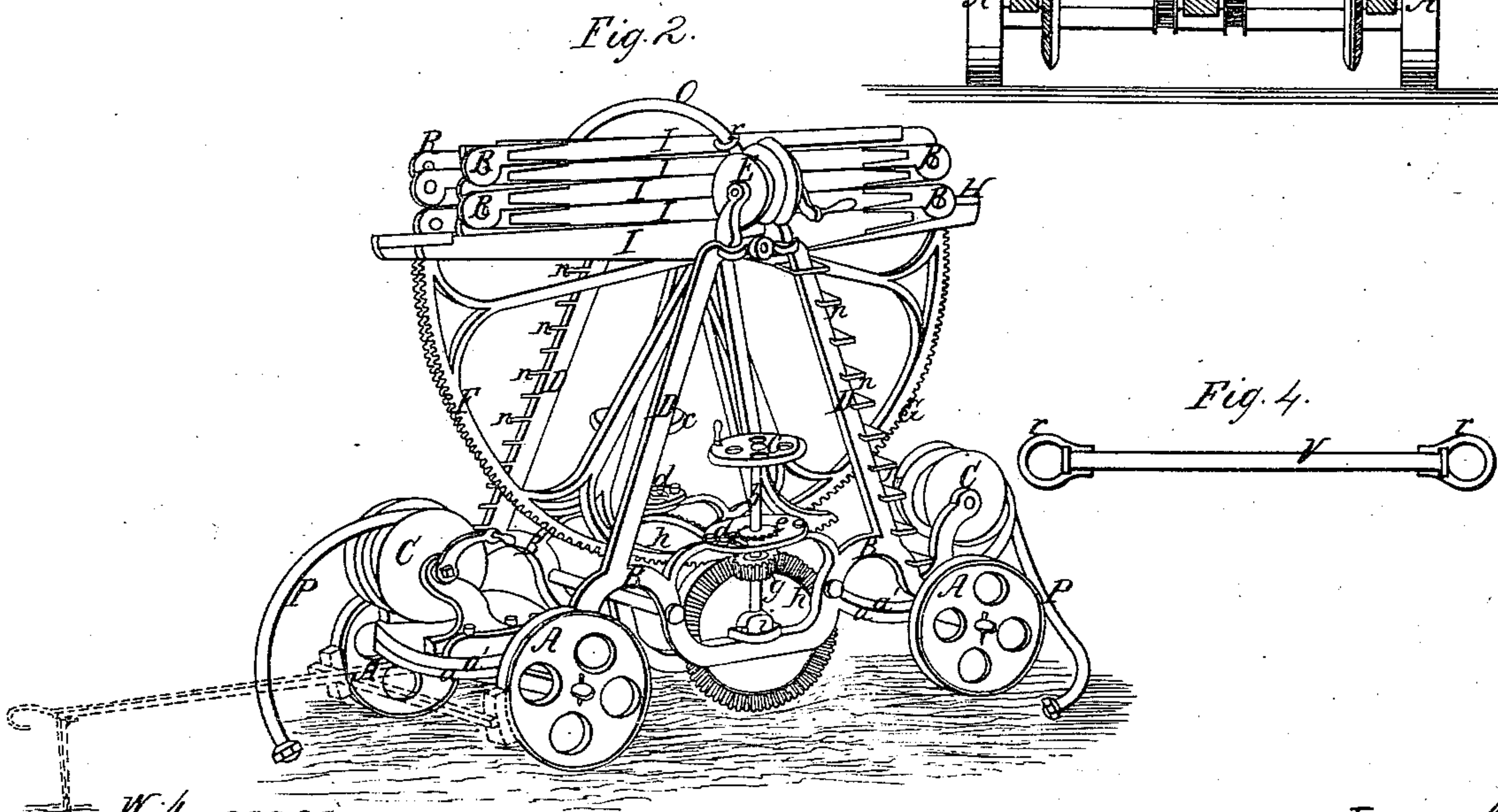
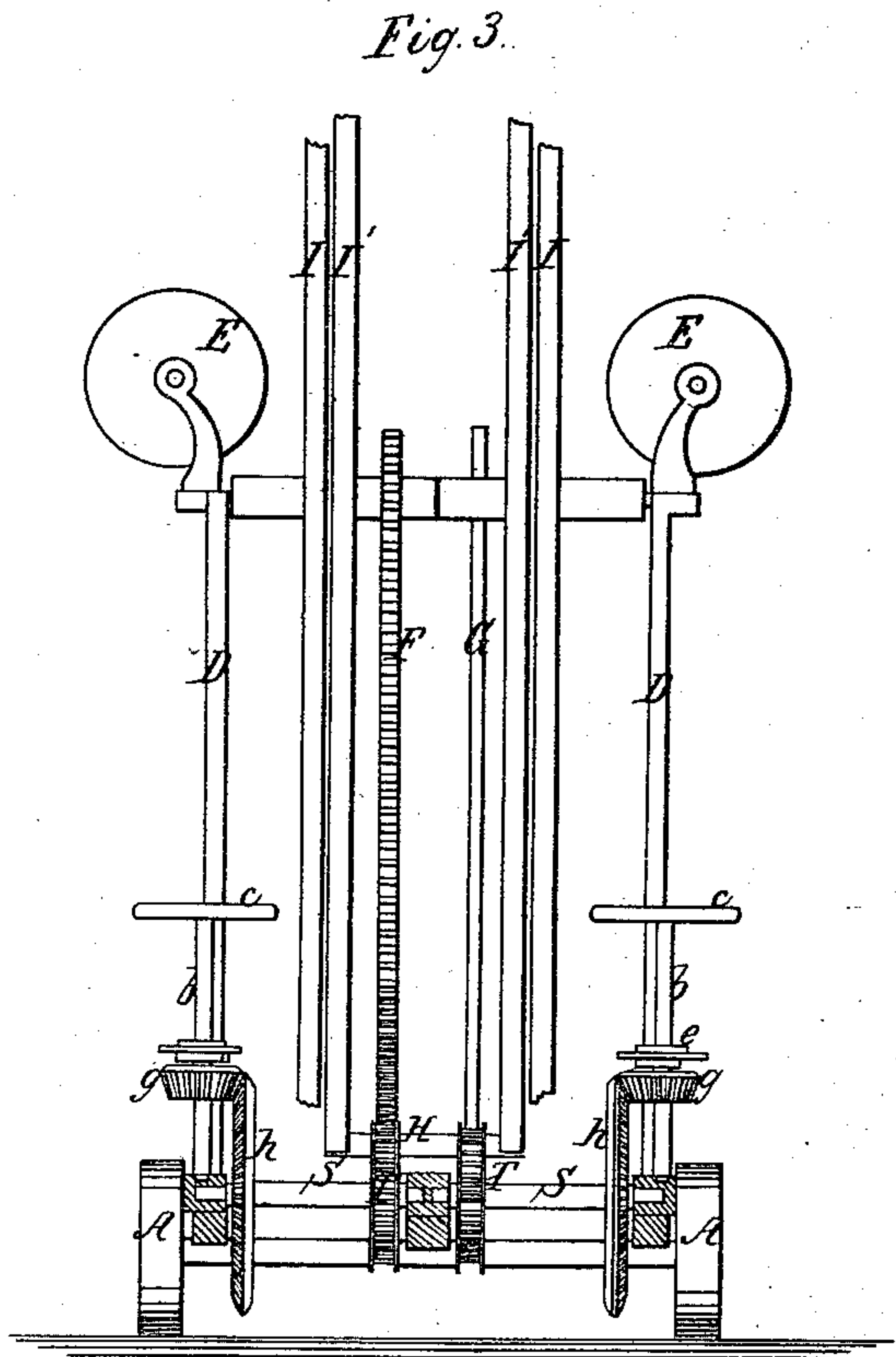
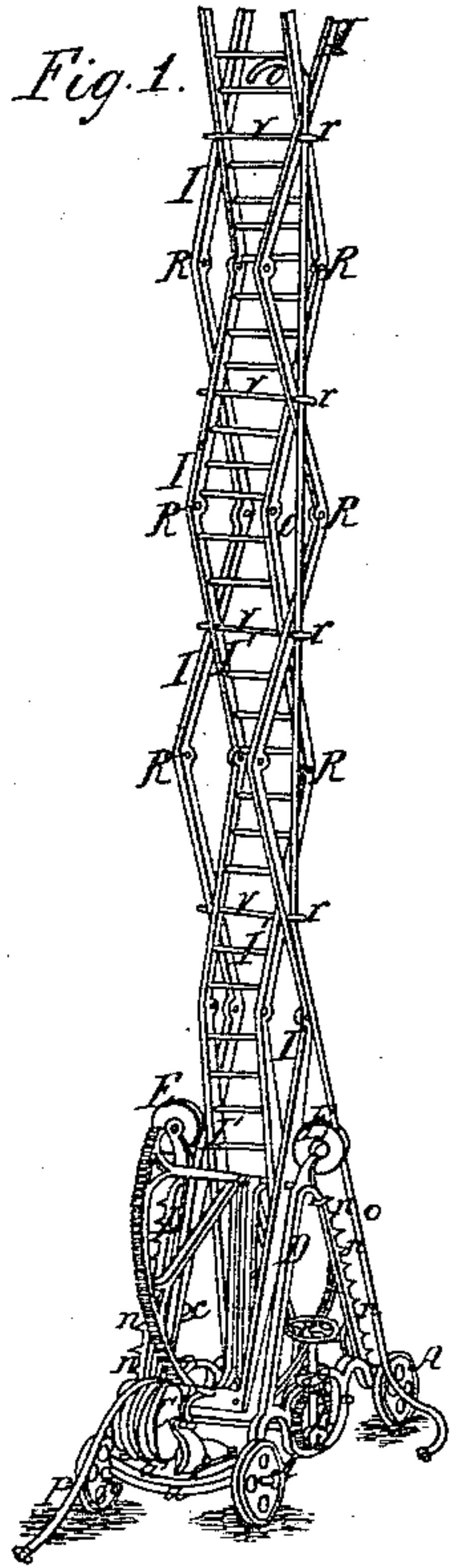


G. H. Foster.

Fire Escape.

N^o 64,212.

Patented Apr. 30, 1867.



Witnesses:
Geo. N. Strong
Geo. A. Manthey

Inventor;
George H. Foster

United States Patent Office

GEORGE KALE FOSTER, OF SAN FRANCISCO, CALIFORNIA.

Letters Patent No. 64,212, dated April 30, 1867.

IMPROVED FIRE-LADDER.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, GEORGE KALE FOSTER, of San Francisco city, San Francisco county, State of California, have invented a new and improved "Fire-Ladder and Hose-Carriage" combined; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention without further invention or experiment.

The nature of my invention is to provide a fire-ladder and hose-carriage combined, constructed in such a manner as to be easily and rapidly transported from place to place, to be very compact, and the ladders at the same time be capable of as great extension as may be necessary, or as is compatible with the strength of the material. To effect this object I construct a carriage with four wheels mounted on a suitable frame, and supporting two segmental racks. These racks are attached at one end to a number of ladders and braces, so fastened together as to form a series of knee-levers placed in opposition to each other, and raised from a horizontal position to one more or less angular, by the segmental racks, and a mechanism consisting of geared wheels to give motion to the racks. To more fully explain the construction and operation of my invention, reference is had to the accompanying drawings and the letters marked thereon, of which—

Figure 1 is a perspective view, showing the ladders elevated for use.

Figure 2 is a perspective view, in which the ladders are closed, and in a form to be transported.

Figure 3, a sectional elevation, showing more plainly the mechanism for raising the ladders.

Figure 4, one of the rods which holds the ladders together, showing the swivel joints more plainly.

Similar letters indicate like parts in each of the figures.

A^a A are wheels, upon which is placed the frame B, conveniently shaped to support the machinery and allow the wheels to be cramped sufficiently to turn short corners. D D are the standards which support the axis of the segmental racks, which are shown at F and G. Upon the axles of the wheels A A are fastened the plates *a a*, and upon these plates turn the plates *a' a'*, which are fastened to the frame B B, and steady the machine when turning. The plates *a'* and *a'* support the hose-reels C C. *c c* are hand-wheels to operate the upright shaft *b*, and its pinion, *g g*, or, if necessary, gear may be substituted to give greater power. The pinions *g* move the bevelled wheels *h h*, which are attached to the horizontal shafts S S. These shafts are moved in opposite directions to raise and lower the ladders, and carry the spur pinions T T. These pinions engage the teeth of the segmental racks F G. The segment G is attached at one end to the end of the lowest ladder I', while the segment F is attached to one end of the brace I which is opposite to it. The next ladder above is fastened to the upper end of the lower ladder by the joint R, and the corresponding brace is fastened in a similar manner to the lower brace or lever, and in the same manner as many ladders and their braces as may be necessary to gain a proper altitude, the whole forming a continuous ladder. The hinges R R are of a kind which will allow the apparatus to shut very closely together when not in use, the ladders I' I' I' I' being inside the braces I I I I. The ends of the rods or fulera V V have each a swivel joint, the outer end of which is a ring, *r r r*, and serves to support and carry up the hose from the reels E E. *e e* are ratchets fastened to the upright shafts *b b*, and are held in any place by the pawls *d d*. *i* is the step which supports the shaft *b*, *n n* are the steps on the standards D D by which to reach the ladders I'. My machine has a tongue, at the end of which is a folding-bar, which, when the machine is standing still, can be let down to support the end of the tongue. Below the tongue is the brake-bar. The brake-blocks press against the wheels below the level of the axle, so that by lifting the tongue they are brought into contact with the wheels.

To operate my machine after being placed in position, the hand-wheels *c*, or their equivalents, are turned by two or more men at each one, thus setting the shaft *b* and pinion *g* in motion. These in turn move the wheels *h h* and pinions T T. These pinions move in opposite directions, and draw the ends H H of the segments F and G, with their attached levers I and I', nearer to the centre. This raises the other ends, and these in turn raise the next pair, and in this manner the whole series is elevated to the proper height. They can then be moved to one side or the other, and rest on the roof or a window-seat of the building, or the apparatus may stand upright, and will be firm enough to support a man to direct the nozzle of the hose, or become the means of escape and ready descent to the inmates of a burning building when all other resources have been cut off. As a length of hose equal to the height of the ladder is carried up with it, there will be no difficulty about the angle of the ladders, and the lower end of the hose O can be coupled directly to the hose P, and with the engine

or hydrant. The swivel joints at the ends of the rods V allow the rings *r* to turn in any direction to accommodate themselves to the hose O, as the ladders are elevated or lowered. By constructing the ladders and braces with the hinges or rule joints, as described, great strength and firmness is given to the whole series.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The segmental racks F G and pinions T T, operated by the gear *h g* and hand-wheel *c*, substantially as described and for the purpose set forth.

2. I also claim, in combination with the ladder the swivel-joint rings *r r r*, on the ends of the fulcrum rods, to support and carry up the hose when the ladder is raised for use.

In witness whereof I have hereunto set my hand and seal.

GEORGE K. FOSTER. [L. S.]

Witnesses:

GEO. H. STRONG,

GUS. A. MANETY.