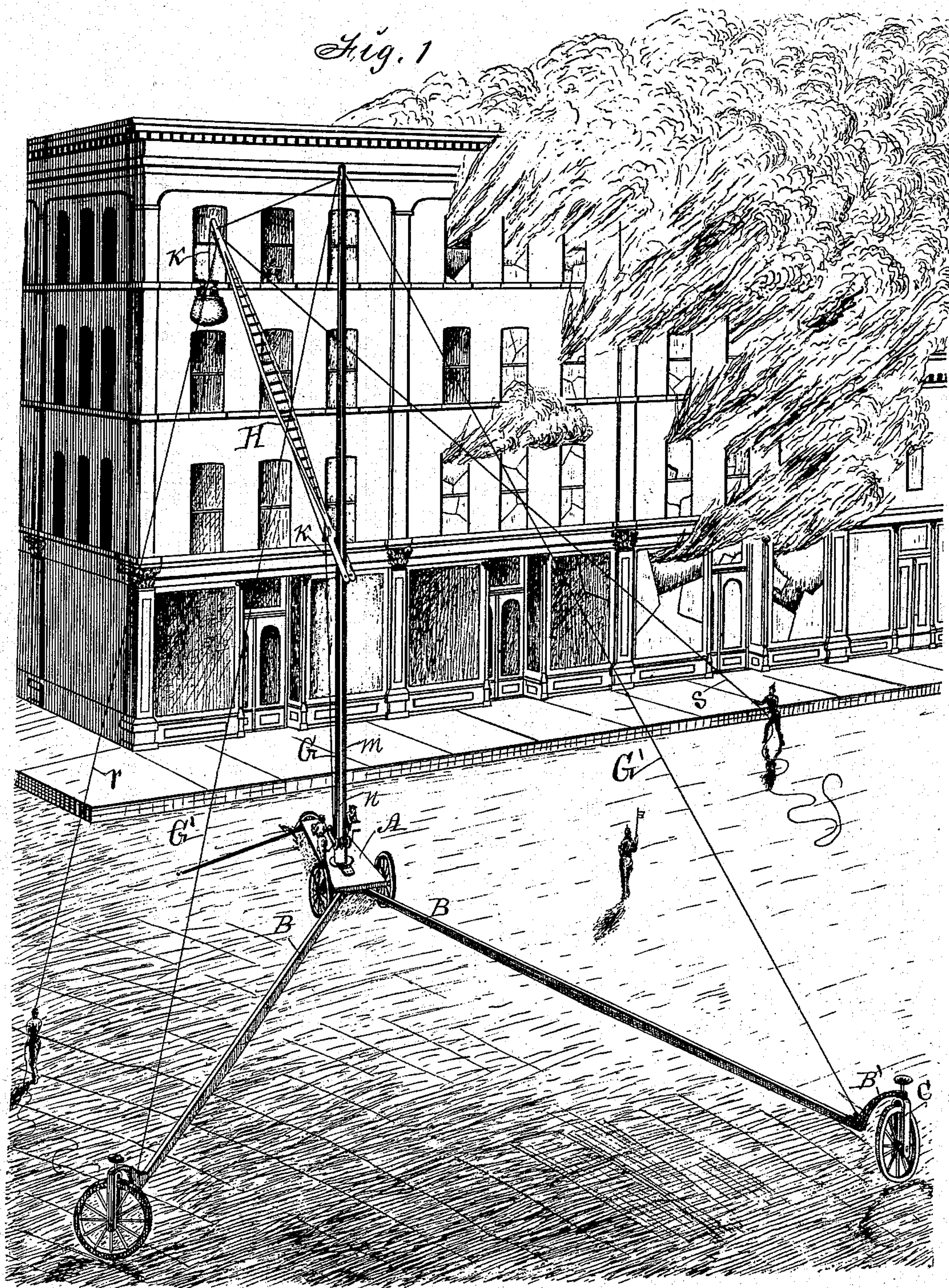


(No Model.)

3 Sheets—Sheet 1.

I. G. MORGAN.
FIRE ESCAPE AND HOOK AND LADDER CARRIAGE.
No. 291,481.
Patented Jan. 1, 1884.



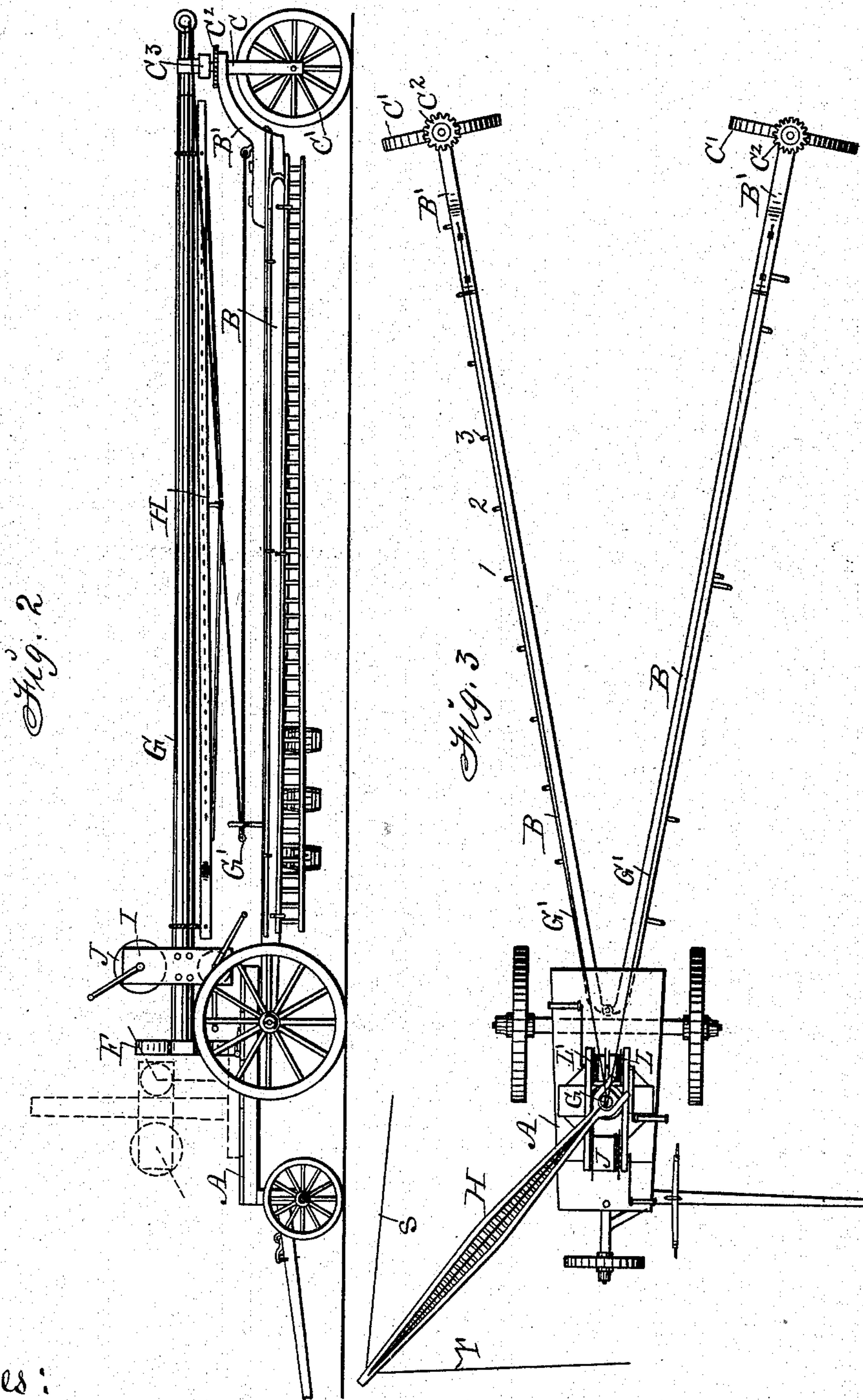
Witnesses:
E. W. Smith,
H. A. Holtenberg.

Inventor: Isaac G. Morgan,
By Thomas G. Orwig, Attorney.

(No Model.)

3 Sheets—Sheet 2.

I. G. MORGAN.
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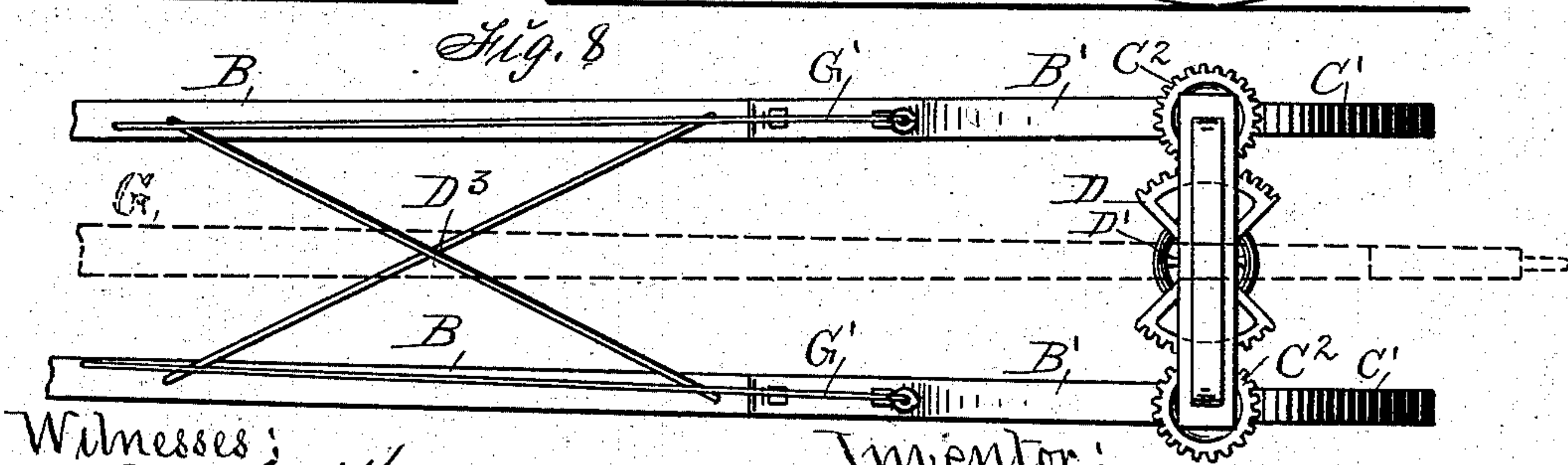
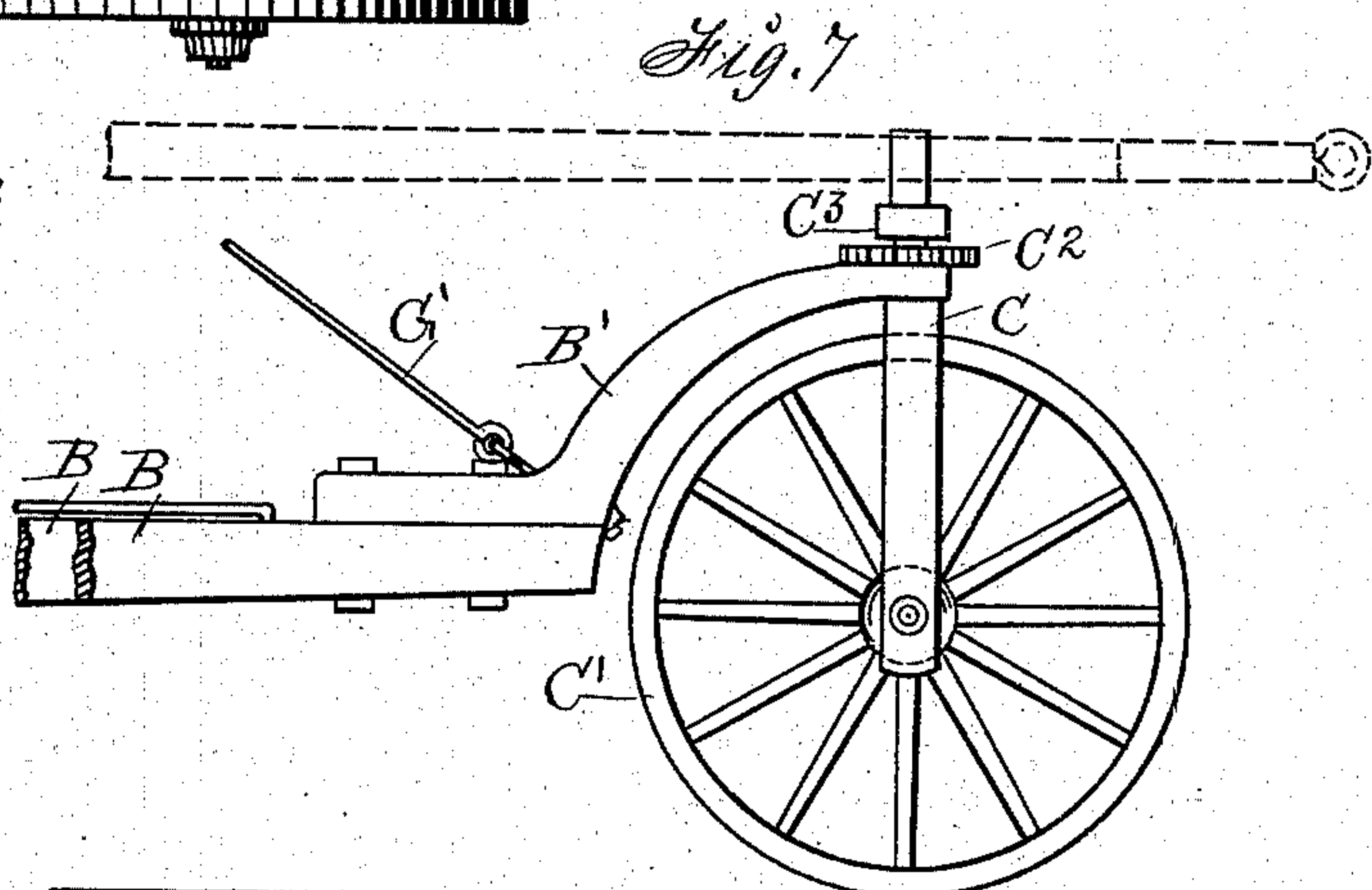
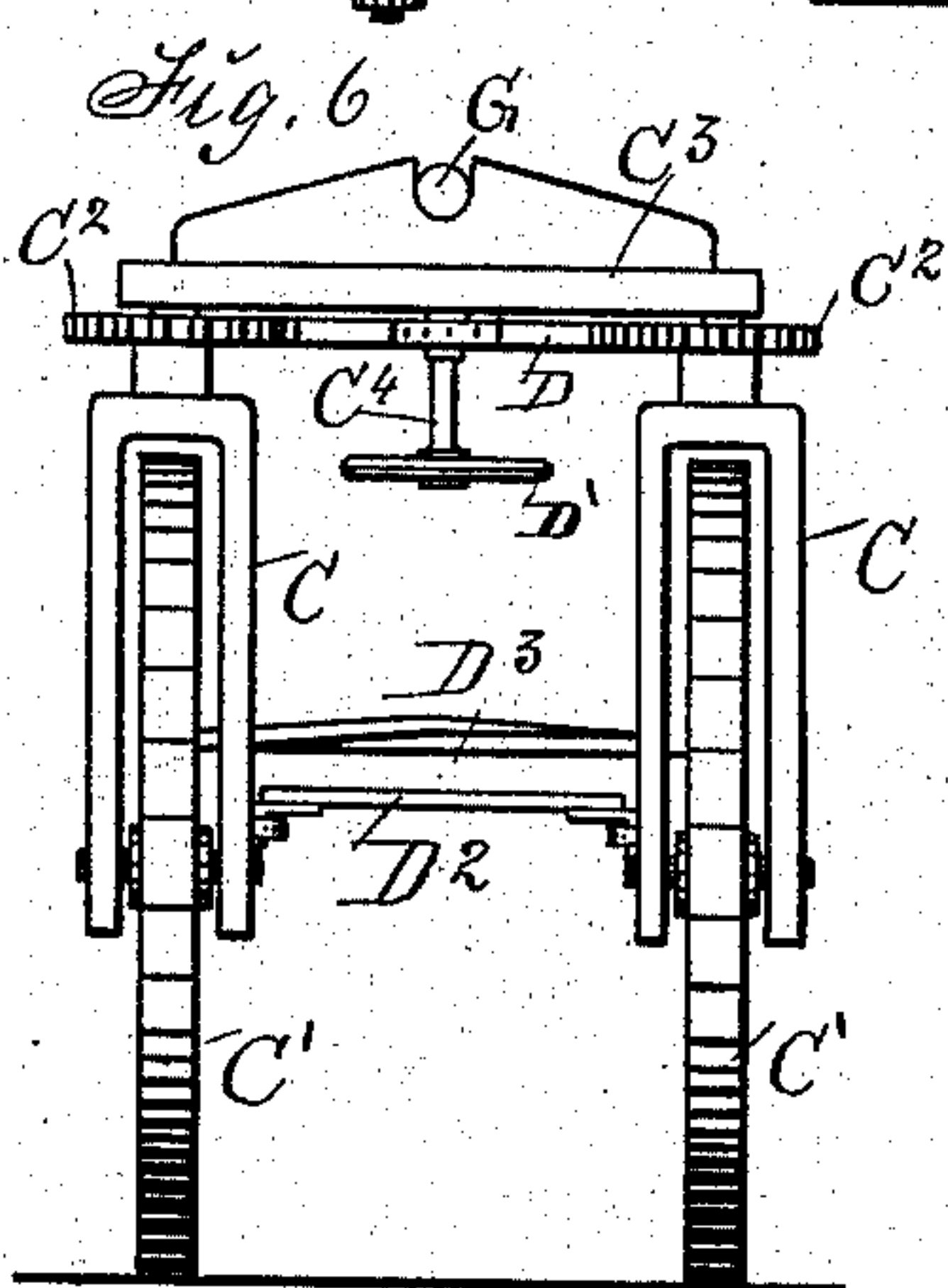
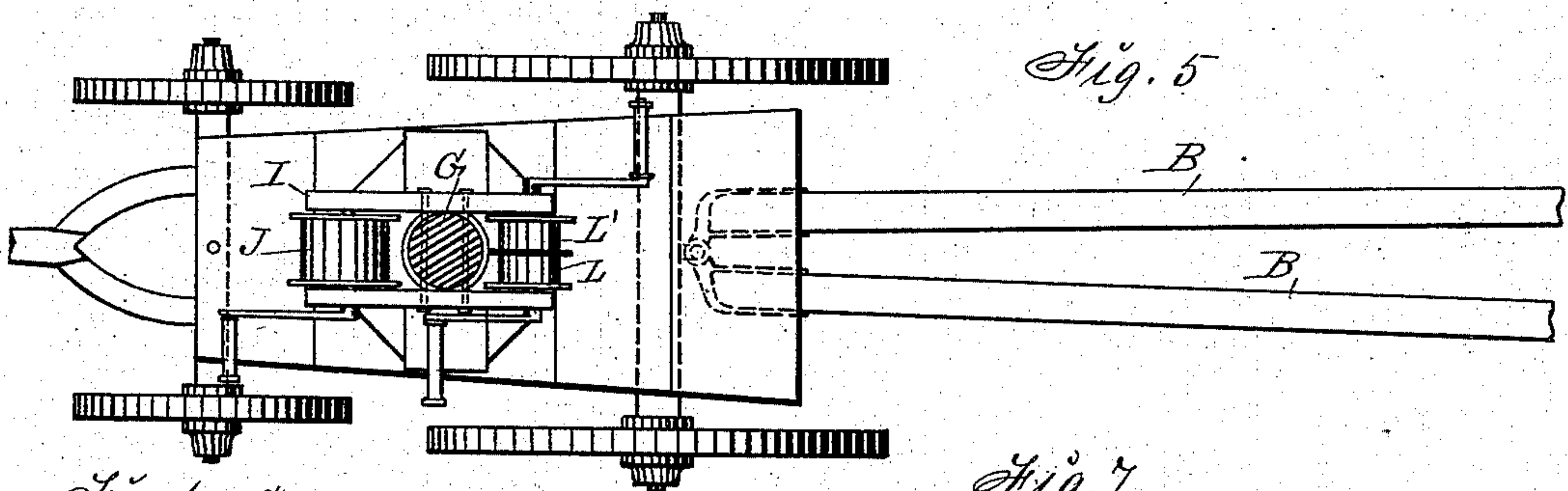
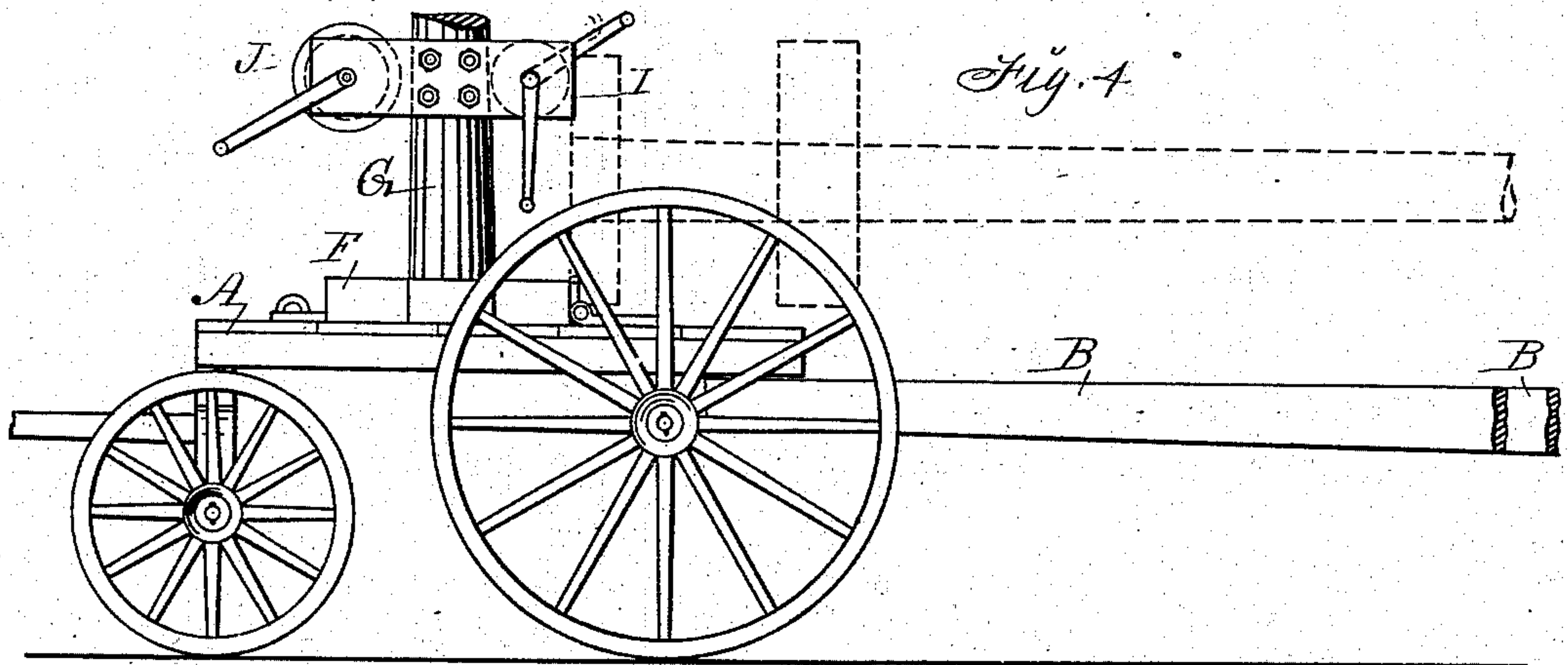
Witnesses:
E. W. Smith,
H. A. Hollenberg.

Inventor: Isaac G. Morgan,
By Thomas G. Orwig, attorney.

(No Model.)

3 Sheets—Sheet 3.

I. G. MORGAN.
FIRE ESCAPE AND HOOK AND LADDER CARRIAGE.
No. 291,481. Patented Jan. 1, 1884.



Witnesses:
E. W. Smith,
H. A. Hollenberg.

Inventor:
I. G. Morgan,
By Thomas G. Drwig, attorney.

UNITED STATES PATENT OFFICE.

ISAAC G. MORGAN, OF DES MOINES, IOWA.

FIRE-ESCAPE AND HOOK-AND-LADDER CARRIAGE.

SPECIFICATION forming part of Letters Patent No. 291,481, dated January 1, 1884.

Application filed February 21, 1883. (No model.)

To all whom it may concern:

Be it known that I, ISAAC G. MORGAN, of Des Moines, in the county of Polk and State of Iowa, have invented a Fire-Escape and Hook-and-Ladder Carriage, of which the following is a specification.

The object of my invention is to prevent the loss of life and property incident to the burning of buildings and the want of suitable mechanism for gaining access to and exit from the elevated portions of a building to throw water on the fire by means of hose, and to remove persons and property therefrom without placing ladders and pressure against walls that are liable to fall.

It consists in forming, arranging, and combining a four-wheeled truck adapted to be moved about by horses, a transformable two-wheeled carriage having two reaches adapted to connect and adjust the two wheels relative to the four-wheeled truck, a carriage-steering device, a hinged and adjustable pole-mast or post, a jib or crane-arm, winches, ropes, tackling-blocks, pulleys and guys, as hereinafter fully set forth, in such a manner that the complete apparatus is adapted for carrying hooks, ladders, buckets, &c., to a fire, the post adapted to be raised from a horizontal position to a vertical, the reaches and wheels of the transformable carriage adapted to be separated and placed in position to form a broad base for the complete apparatus while stationary, to serve as anchors for guys that support the post while the crane-arm is elevated and manipulated on the post, relative to the burning building, by means of the winches and ropes, as required to carry persons and property in a cage or basket to and from the building.

Figure 1 of my accompanying drawings is a perspective view of my apparatus in position as required for practical use. Fig. 2 is a side view, and Fig. 3 a top view, showing the four-wheeled truck and the two-wheeled transformable carriage combined. Fig. 4 is a side view, and Fig. 5 a top view, of the four-wheeled truck, showing the hinged post and winches combined therewith. Fig. 6 is a rear view, Fig. 7 a side view, and Fig. 8 a top view, of

the transformable carriage. Jointly considered, these figures clearly illustrate the construction and operation of my complete invention.

A represents the body and reach of a four-wheeled truck that may vary in form and size as desired. The front wheels are small, and the axle or gear to which they are attached is pivoted at its center to the front and center of the body A by means of a bolt, or in any suitable way, in such a manner that the front part of the truck can be turned at right angles to the rear part.

B B are long reaches, pivoted at their front ends to the rear and center portion of the four-wheeled truck.

B' are curved branches, preferably made of metal, bolted to the rear ends of the reaches B.

C C are frames or bifurcated wheel-bearers, that have bearings for the short axles of the traction-wheels C', formed in or fixed to their lower ends.

C² are gear-wheels fixed to the top ends of the bearers C.

C³ is a frame or cross-piece detachably connected with the top ends of the bearers, to combine the rear ends of the reaches B B', and to support the free end of a post hinged to the four-wheeled truck. The bearers C have journals at their top ends that enter bearings at the ends of the cross-piece C³ in such a manner as to allow the wheel-bearers to turn relative to the cross-piece and the reaches.

C⁴ is a shaft suspended from bearings formed in or fixed to the center of the cross-piece C³.

D is a duplex segmental gear fixed to the shaft C⁴ to engage the wheels C².

D' is a hand-wheel fixed to the shaft C⁴ in such a manner that the turning of the hand-wheel will cause the segmental gear D to simultaneously turn the gear-wheels C², wheel-bearers C, and traction-wheels C' as required in steering the direction of the rear carriage while advancing on the street and around corners.

D² is a detachable brace and platform or step flexibly connected with the lower portions of the wheel-bearers C by means of hooks and

eyes, or in any suitable way, to strengthen the carriage and to form a support for the person required to operate the steering device.

D^3 are detachable braces, that connect the central portions of the parallel reaches B.

1 2 3 represent series of hooks or brackets fixed to the reaches B to support ladders, fire-hooks, buckets, &c.

F represents a base-piece and socket for my pole-mast or post. It is hinged on the top and central portion of the body A of the truck in such a manner that it can be readily locked flat and rigidly to the truck, and also readily unlocked and turned rearward. It is preferably formed complete in one piece of cast metal, and may vary in size and shape as desired.

G is a post rigidly fixed to the base and socket F. It may be made of solid or tubular wood, or of a skeleton truss form composed of wood and metal, and vary in size and weight as desired.

G' G' are jointed or flexible guys flexibly connected with the top end of the post G and the rear ends of the reaches B B' in such a manner that they will steady the post when it is in a vertical position, and fold upon the post and reaches when the post is in a horizontal position.

H represents a jib or crane-arm detachably connected with the post G. It may be made of a solid or tubular piece of wood, or of skeleton truss form, as shown in Fig. 1, to adapt it to be used as a ladder whenever desired. It is bifurcated at its lower end to adapt it to engage and slip upon the post G, and also to be secured to the post by means of a bolt or clasp that extends from one of the forked branches of the bifurcated end to the other branch in such a manner that it may be readily raised and lowered on the post, adjusted to various angles relative to the post, and also swung around the post to serve as a crane-arm.

I is a frame fixed to the post G, or its hinged base F, to support winches.

J represents a winch on the front side of the post. A rope, k , extends from the winch and over a pulley attached to the lower end of the arm H, and from thence to a pulley or tackling-block carried at the upper end of the arm for the purpose of raising and lowering a cage or basket attached to its free end.

L and L' represent two distinct winches on the rear side of the post.

m is a rope that extends from the winch L over a pulley attached to the top of the post G, and from thence to the lower end of the crane-arm H, for the purpose of raising and lowering the arm on the post.

n is a rope that extends from the winch L' over a pulley attached to the top of the post, and from thence to the upper or free end of the arm H, for the purpose of raising and lowering the free end of the arm.

r and s are ropes attached to the free end

of the crane-arm H for the purpose of swinging the arm to and from a building, or holding the arm steady while raising and lowering persons and property to and from the upper stories of buildings.

In the practical operation of my invention, when placed aside of a burning building, I lift the detachable parts from the transformable carriage, and then spread the rear ends of the pivoted reaches apart, and lock or chock the traction-wheels carried thereby, to prevent them from rolling or slipping. I next raise the hinged post from its horizontal to a vertical position by means of a jack-screw, levers, ropes, and pulleys, or in any suitable way, and then elevate and operate the crane-arm on the post by means of the winches and ropes, as required to form an adjustable elevator and support for a person carried thereon, or in the cage or basket suspended therefrom, and as required to lift persons and property to and from the upper stories of a burning building without subjecting the walls to pressure.

The unitary actions and functions of the various elements and sub-combinations of my invention, as described in detail, will be obvious to firemen, and the practical operation and utility of the apparatus perceptible to all intelligent persons who may witness a demonstration of its use and advantages as a transformable hook-and-ladder carriage and portable elevator, crane, and fire-escape.

I claim as my invention—

1. The combination of two adjustable reaches, each having a traction-wheel at its rear end, with the rear portion of a carriage or truck, for the purposes specified.

2. The combination of two reaches, B B', two wheel-bearers, C, and a detachable cross-piece, C^3 , to produce a transformable rear carriage, substantially as and for the purposes set forth.

3. The cross-piece C^3 , carrying a duplex segmental gear or gear-wheel, the wheel-bearers C, having gear-wheels fixed thereto, and journals at their top ends, the traction-wheels C' , and the pivoted reaches B B', arranged and combined relative to each other, and a front carriage or truck, substantially as and for the purposes set forth.

4. The detachable brace, platform, or step D^2 , in combination with the wheel-bearers C, the detachable cross-piece C^3 , the shaft C^4 , the gear-wheel D, the hand-wheel D' , and the wheel-bearers C, having gear-wheels C^2 fixed thereto, substantially as shown and described, for the purposes specified.

5. The flexible or jointed guys G' , in combination with the hinged adjustable post G, and the pivoted reaches B B' of a transformable rear carriage, substantially as shown and described, for the purposes specified.

6. A post or post-base having a winch, J, and winches L L' attached thereto, a jib or crane-arm, H, adjustably connected with the

post, and ropes *k*, *m*, *n*, *r*, and *s*, arranged and combined upon a truck or carriage, substantially as and for the purposes set forth.

7. The portable fire-escape and hook-and-ladder carriage composed of the following elements, to wit: a truck or carriage having a post-support and body, A, and hinged post-base or post-socket F, two pivoted reaches, B B', two wheel-bearers, C, each carrying a traction-wheel, and a gear-wheel, C², a detachable frame or cross-piece, C³, carrying a shaft, C⁴,

gear-wheel or duplex segmental gear D, and a hand-wheel, D', a detachable brace, step, or platform, D³, an adjustable post, G, flexible or jointed guys G', winches J, L, and L', a jib or crane-arm, H, and ropes *k*, *m*, *n*, *r*, and *s*, substantially as shown and described, to operate in the manner set forth.

ISAAC G. MORGAN.

Witnesses:

THOMAS G. ORWIG,
B. W. MORGAN.