

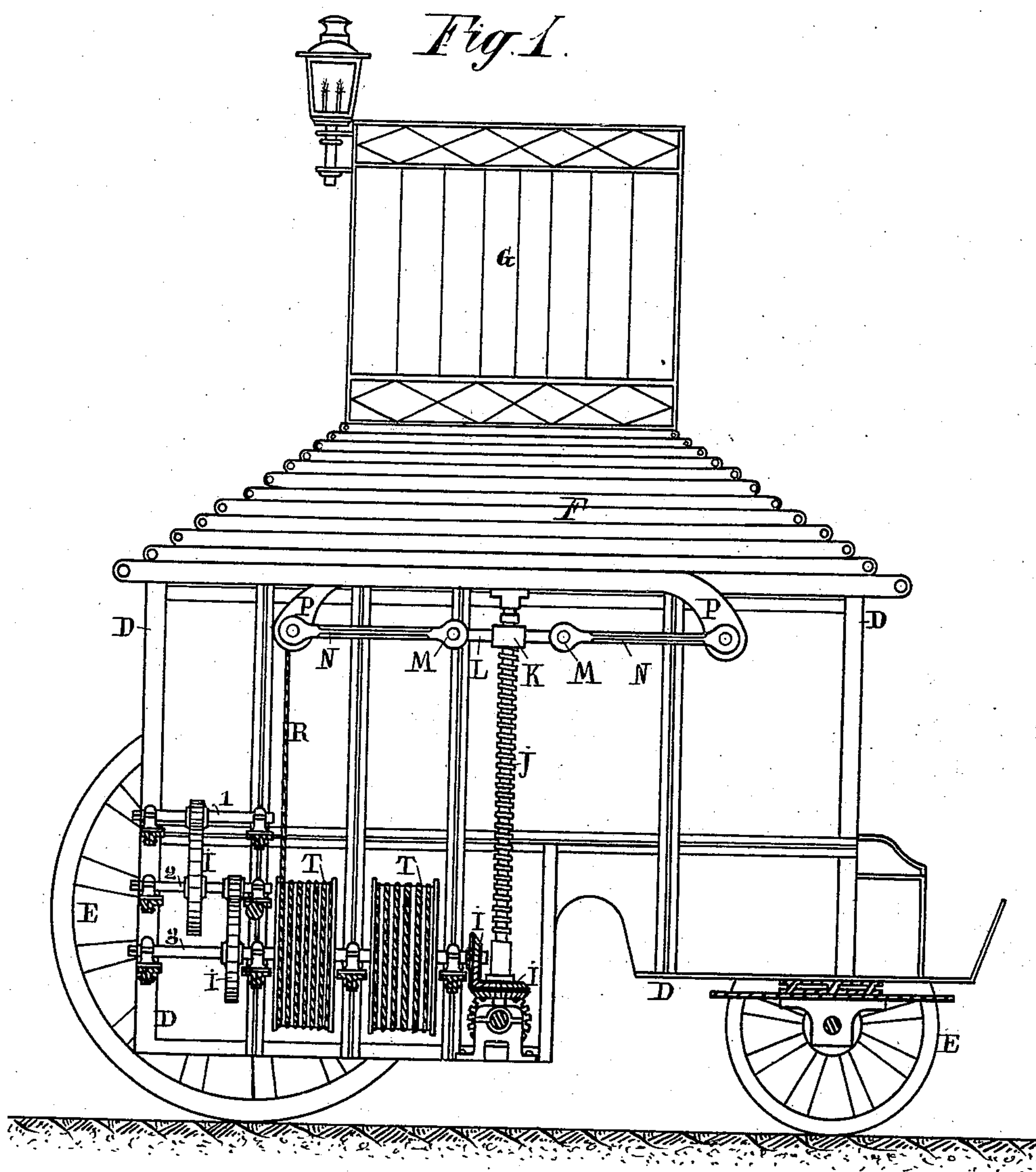
(No Model.)

4 Sheets—Sheet 1.

J. MANUEL DE AGUIRRE Y LIZAOLA.  
LIFT OR HOIST.

No. 337,049.

Patented Mar. 2, 1886.



Witnesses:

Will. I. Norton.

R. B. Washington.

Inventor.

Jose Manuel de Aguirre y Lizaola  
by John J. Halsted  
his Atty

(No Model.)

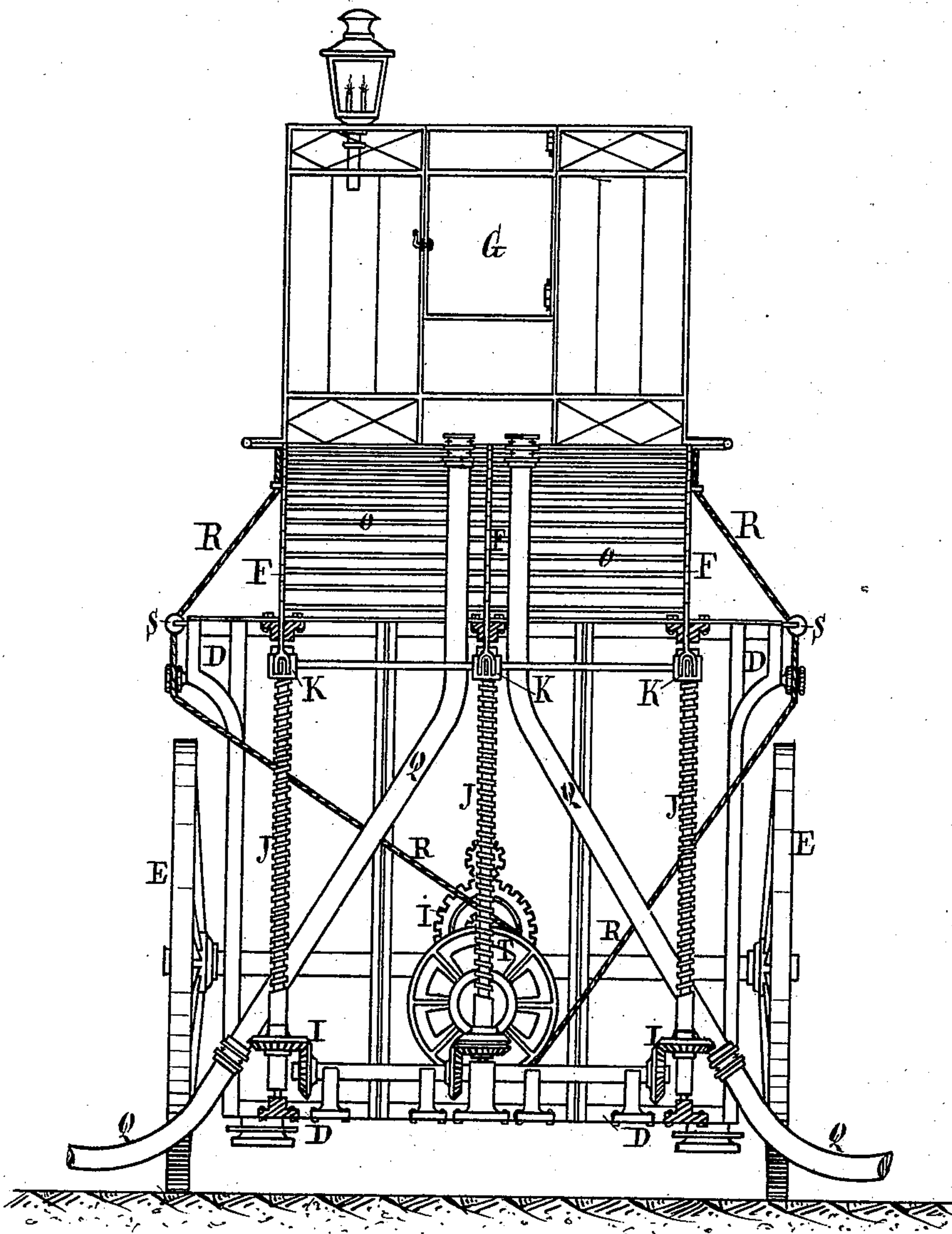
4 Sheets—Sheet 2.

J. MANUEL DE AGUIRRE Y LIZAOLA.  
LIFT OR HOIST.

No. 337,049.

Patented Mar. 2, 1886.

*Fig. 2.*



Witnesses  
Will T. Norton.  
R. H. Washington.

Inventor.  
Jose Manuel de Aguirre y Lizaola  
by John J. Halsted & Son  
his Attys

(No Model.)

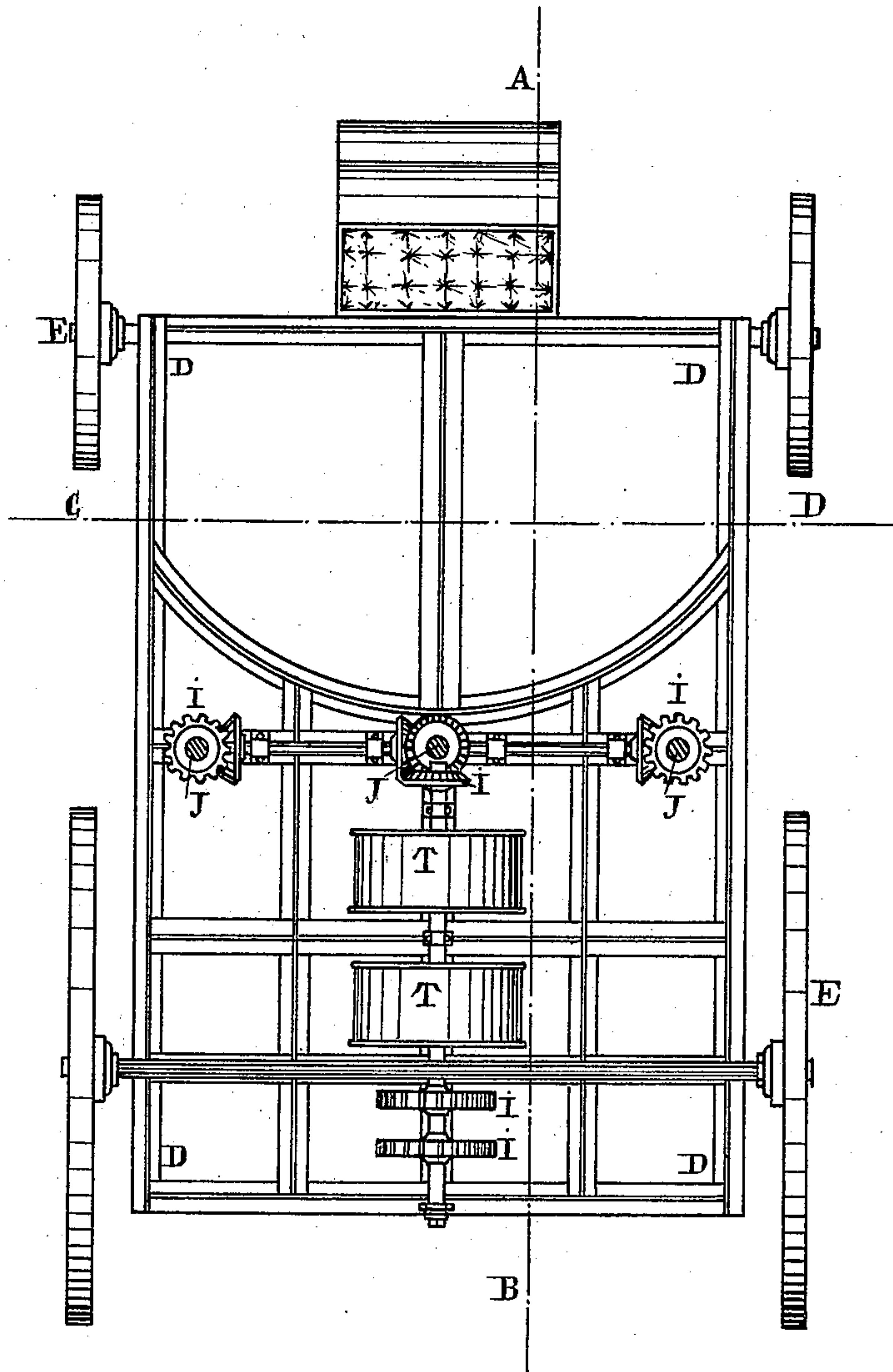
4 Sheets—Sheet 3.

J. MANUEL DE AGUIRRE Y LIZAOLA.  
LIFT OR HOIST.

No. 337,049.

Patented Mar. 2, 1886.

*Fig. 3.*



Witnesses  
Will. T. Norton.  
R. B. Washington,

Inventor  
Jose Manuel de Aguirre y Lizaola  
by John J. Ralsted, Esq.  
his Atty.



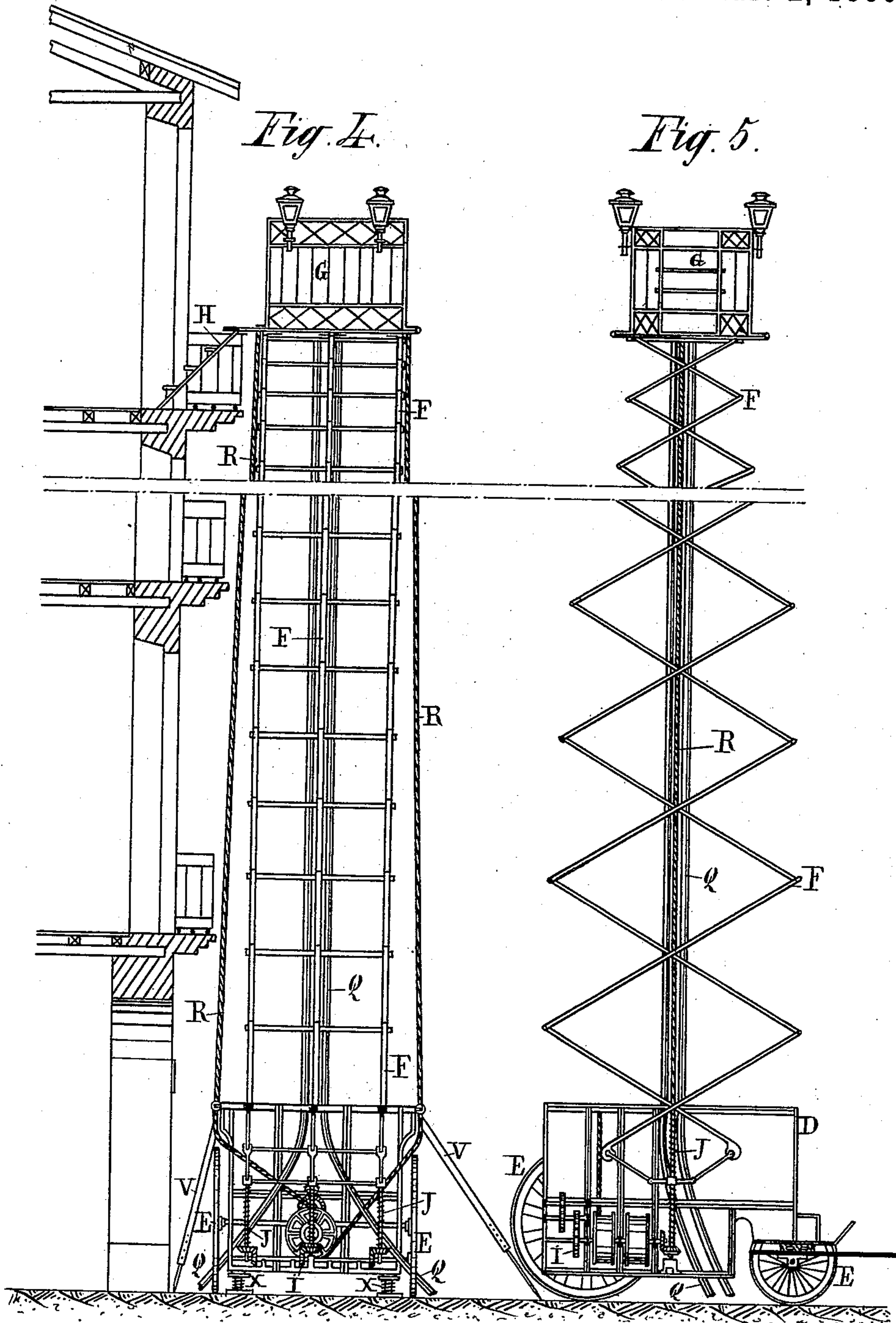
(No Model.)

4 Sheets—Sheet 4.

J. MANUEL DE AGUIRRE Y LIZAOLA.  
LIFT OR HOIST.

No. 337,049.

Patented Mar. 2, 1886.



Witnesses  
Mell T. Norton.  
R. B. Washington

Inventor  
Jose Manuel de Aguirre y Lizaola  
by John J. Halsted  
his Atty.



# UNITED STATES PATENT OFFICE.

JOSÉ MANUEL DE AGUIRRE Y LIZAOLA, OF BILBAO, SPAIN.

## LIFT OR HOIST.

SPECIFICATION forming part of Letters Patent No. 337,049, dated March 2, 1886.

Application filed December 16, 1885. Serial No. 185,860. (No model.)

*To all whom it may concern:*

Be it known that I, JOSÉ MANUEL DE AGUIRRE Y LIZAOLA, a subject of the King of Spain, residing at Bilbao, in the Kingdom of Spain, have invented new and useful Improvements in Lifts or Hoists, of which the following is a specification.

This invention relates to an improved lift or hoist, suitable also as a fire-escape.

10 The improved apparatus has for its object to effect a rapid raising or lowering to or from a great height.

15 The essential features of the apparatus are as follows: first, a firm supporting-point in the ground, which is obtained by an apparatus which establishes the level and by lateral struts, and, secondly, by an arrangement of jointed rods or bands which may be extended vertically.

20 In order to enable the invention to be fully understood, I will describe the same by reference to the accompanying drawings, in which—

Figure 1 is a section on line A B of Fig. 3. Fig. 2 is a section on line C D of Fig. 3. Fig. 3 is a plan. Fig. 4 shows the apparatus in its working position as applied to a house; and Fig. 5 is an elevation of the apparatus, showing the working of the jointed rods or bands. The apparatus is constructed of an iron carriage, D, mounted on four wheels, E, the axletrees of which are fixed and form part of the frame-work. On this carriage are three series of jointed bands or rods, F, of iron or other suitable metal, placed parallel with each other, to sustain between them a plane surface or floor having a balustrade or iron railing, G. Two parallel sides of this iron railing are movable, and are so arranged that they can be applied to any kind of balcony, and serve as a ladder to facilitate access to the upper platform of the apparatus from the house, as will be seen by reference to H, Fig. 4.

45 The movement of the bands P is produced by means of an arrangement of toothed wheels, I, placed in the interior of the carriage and in its rear half, some of which are spur-wheels and some bevel-wheels, for changing the movement. This arrangement of toothed wheels actuates three screws, J, placed vertically at the middle of the carriage. Each screw J works in a nut, K, to which are adapted rods L, jointed at their ends M with the arms N of

the jointed bands P. (Shown at Fig. 1.) The bands of the three series which correspond with each other are reunited by means of cross-pieces formed of iron rods placed in tubs O, Fig. 2, in order to maintain an equal distance between the jointed bands P.

When the apparatus is folded up, as shown at Fig. 1, the nuts K are at the upper part of the screws. When movement is imparted to them by means of the arrangement of toothed wheels above described, the nuts descend, and as they are connected to the outermost arms of the rods they force the latter to unfold or to become extended, and consequently raise the platform. When the nuts K have arrived at the end of their course, the jointed bands P have reached the extent of their travel, and the platform G is then at an altitude of twenty meters, which is a height more than sufficient in most cases.

The platform G can be placed and stopped at any desired height, as it depends on the spreading out of the rods, and consequently on the number of revolutions of the first pinion of the arrangement of wheels above described.

The apparatus is also provided with water-pipes Q, having the necessary connections or unions placed within the jointed bands, so that it is merely necessary, when the apparatus has arrived at the place where it is to be used, to connect the pipes with the water-supply and to give the water the required direction from the platform, raised to a suitable height.

For the purpose of facilitating the rapidity of the operations, the carriage is provided with receptacles for pipes, cranks, and other accessories for use at fires, two doors on each side of the carriage being provided to allow the pipes hanging from the platform to pass out.

In order to give greater stability to the apparatus, it is provided with two cables, R, hooked to the two sides of the upper platform, and which pass over two pulleys, S, and are coiled on two cylinders, T, placed on one of the axes of the arrangement of toothed wheels. The apparatus is also provided with two struts, V, placed at the sides of the carriage, as shown in Fig. 4.

As the streets of a town are not generally level, it is necessary to provide the apparatus



with four hand screws or screw-jacks, X, placed on the axes of the wheels, which allow of the apparatus being kept on a level position, even when the gradient is fifteen in one hundred.

5 To ascertain this level two spirit-levels are provided within the apparatus, placed perpendicularly to each other.

To facilitate access to the upper platform, the apparatus is provided at the rear portion 10 of the frame of the carriage with an iron ladder, H, Fig. 4, which can be folded up in the said frame when not required for use.

The apparatus having arrived at the scene of the fire, the wheels are wedged up, the 15 screw-jacks operated to make the apparatus level, and the struts are placed in position. The apparatus is then raised by means of cranks placed on the axes Nos. 1, 2, or 3, Fig. 1, according as it may be wished to raise the 20 apparatus more or less quickly. The platform being raised, the cables are tightened to firmly fix the apparatus, the pipes are joined, and the firemen can commence to work.

It is obvious that the apparatus may be modified by changing the materials which compose 25 the parts. Instead of three series of jointed bands, two, four, or more series can be employed.

Other mechanism than that of the toothed 30 wheels represented in the drawings can be

employed to effect the elevation of the platform. Any suitable motive power can be used for this purpose. A telephone or other signal can be employed as a means of communication between the persons on the platform 35 and those remaining below. Signal-lights may be provided above. The platform may be enveloped wholly or partly with metallic cloth as a shelter from the flames.

Having now particularly described and as- 40 certained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

The improved lift or hoist above described, and consisting of a carriage mounted on wheels, 45 which allow of it being fixed level on the ground by means of screw-jacks and struts, provided with an arrangement of toothed wheels which actuate screws, by means of which jointed bands or rods can be extended 50 or folded up, the rods raising or lowering a movable platform firmly maintained by means of cords, and carrying water-pipes and other accessories, for the purpose of rescuing persons, furniture, and goods, as described.

JOSÉ MANUEL DE AGUIRRE Y LIZAOLA.

Witnesses:

JUAN GARBACO,  
F. DEUFRENZ.