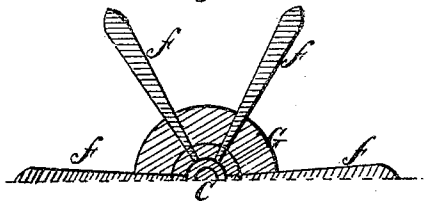
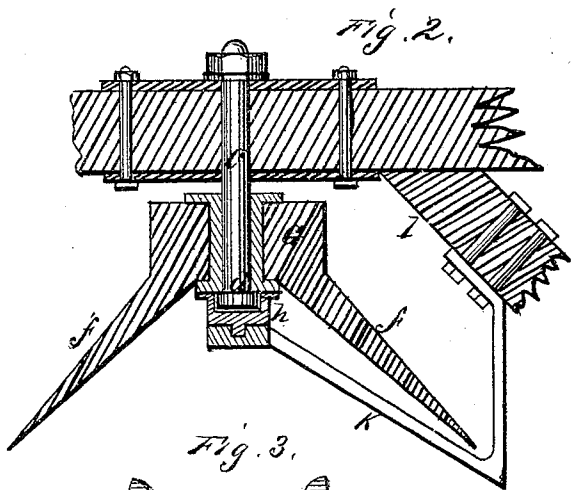
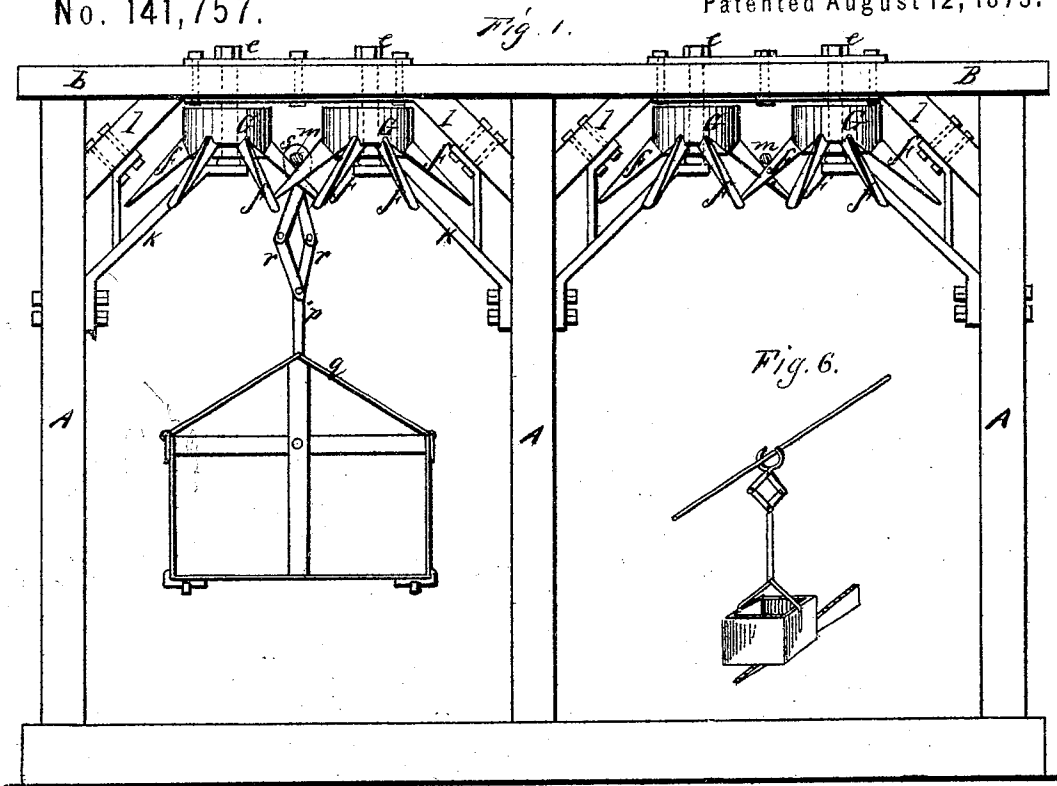


C. E. W. BUNSTER.
Elevated Wire-Ways.

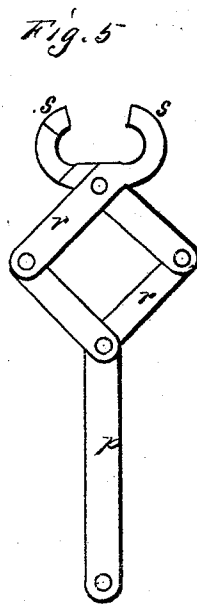
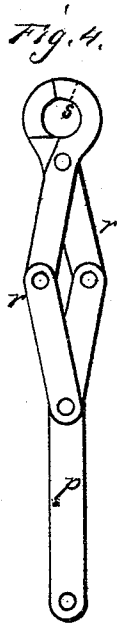
No. 141,757.

Patented August 12, 1873.



Witnesses

John L. Boone
Jackson Tennessee



Carlos Edwards Wilson Bunster
by Seweryn G
attys

UNITED STATES PATENT OFFICE.

CARLOS E. W. BUNSTER, OF VALPARAISO, CHILI.

IMPROVEMENT IN ELEVATED WIRE-WAYS.

Specification forming part of Letters Patent No. **141,757**, dated August 12, 1873; application filed June 6, 1873.

To all whom it may concern:

Be it known that I, CARLOS EDUARDO WILSON BUNSTER, of Valparaiso, Chili, have invented an Improved Aerial Tram-Way; 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 or improvement without further invention or experiment.

My invention relates to improvements on that system of transporting goods and other substances from one place to another which is known as the aerial endless wire-rope tram-way system. My improvement consists of an improved construction and arrangement of the wire-rope supports, by which the necessity of the ordinary saddle and bent rod for attaching the car to the rope is avoided, and the connection made by a directly-vertical attachment, so that the car can be worked at a right angle as easily as on a straight line.

In order to more fully illustrate and explain my invention, reference is had to the accompanying drawing forming a part of this specification, in which—

Figure 1 is an elevation showing my improved rope-support and the method of sustaining the car. Figs. 2 3 are enlarged views of one of the supports. Figs. 4 5 are views of the device for attaching the cars to the rope and for detaching them.

A A A are three upright parallel timbers of a frame, which will be set in the ground in the case of a land rope-way, and be firmly secured upon a lighter when it is desired to construct a tram-way over an extent of water for the purpose of discharging freight and passengers. B is the cross-timber, to which the rope-supports are secured. This frame-work will be properly braced to insure the required strength. C C are bolts which pass vertically through the cross-timber B, on each side of the middle point between each two of the uprights A A, a nut, *e*, on their upper end, bearing on the upper side of the timber. These bolts extend to a short distance below the timber B, and have each a strong head or flange, *d*, at their lower end. G is a hub which fits on the bolts C between the head *d* and the un-

der side of the timber B, so as to rest upon the head, and an inverted cap-piece, *h*, fits over the flange from below, and is bolted to the under edge of the hub, as shown, thus permitting the hubs to revolve horizontally about the bolt. The inverted cap-piece *h* also serves as a cup to contain oil or other unctuous substance for the purpose of lubricating the bearing of the hub on the flange. Arms *fff* are strongly secured in the hubs G, so as to stand at an angle of about forty-five degrees downward, more or less, so that the arms of each pair of hubs will interlock with each other in the manner represented at Fig. 1, crossing each other almost at right angles. K is a strong metal brace, which serves to support and steady the cap *h* and hub G from the diagonal braces *ll*. The endless wire-rope *m*, in its passage from one pulley to the other, rests in the angle formed by the crossing of the arms *ff*.

The frames A B, with their interlocking armed hubs G G, will be erected at stated intervals along the track of the rope, so that the rope will be supported at as many points as may be required, and the frames may be constructed either double or single, according to the distance apart it is desired for the ropes to travel in moving in opposite directions.

Figs. 4 and 5 represent the gripping device for attaching the car or cage to the rope. This device consists of a bar, *p*, the lower end of which is secured to the bails *q* of the car, and two crossed toggle-levers, *r r*, which operate a pair of grippers, *s s*, at its upper end. When the weight of the car draws down upon the cross-levers *r r* the grippers *s s* close tightly upon the rope, and securely fasten the cage to it, but as soon as the weight is removed the device falls to the position shown at Fig. 5, which releases the load. The combination of the hub G and arms *ff* form what may be called a spur-wheel, two of which are fixed in each open space of the upright frame in such a manner that, when the moving wire-rope passes between them, they will revolve and continually support it, and, at the same time, allow the pendent rod which suspends the car to pass between them without impediment or shock, and also preventing the rope

from escaping from the spur-wheels in the case of discharging or loading vessels in roadsteads during boisterous weather.

The car to be used on this rope-way can be varied according to the nature of the goods or other substance to be transported, or for passengers.

This system of aerial tram-way is applicable to any description of ground, however steep, broken, or crooked it may be, as it can be worked at a right angle as easily as in a straight line, and will be especially valuable for transporting ore through crooked tunnels.

The whole of this apparatus is operated either by steam, water, or horse power, as the economy, length, or nature of the line may require. The endless wire-rope passes around a horizontal gripe-pulley at each of its extension, and is supported between them by the apparatus above described. The horizontal grooved wheel or pulley is moved by a pair of beveled wheels in the usual way.

A special arrangement is made at each end of the line, consisting of an inclined plane, as shown in Fig. 6, which will receive the boxes or cars containing the cargo. These cars, upon arrival in ascending this inclined plane, become automatically detached from the rope by the inclined plane relieving the gripping device of the weight and forcing the bars *r r* apart, and are run off to the place of discharge.

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

1. The arrangement of the frames *A A B* with their horizontally-revolving rope-supports *G f*, substantially as and for the purpose above described.

2. The revolving hubs *G G*, with their interlocking angularly-attached arms *f f*, substantially as and for the purpose above described.

3. The bolts *C C*, with their heads *d*, in combination with the hub *G* and cap-plate *h*, substantially as and for the purpose above described.

4. The pendent rod or bar *p*, with its crossed lever-arms *r r* and grippers *s s*, by which the cars are attached to the rope, substantially as above described.

5. The bar *p*, with its crossed lever-arms *r r* and grippers *s s*, in combination with an inclined plane, whereby I am enabled to automatically detach the cars, substantially as above described.

In witness whereof I hereunto set my hand and seal, at Valparaiso, this 25th day of January, 1873.

CARLOS EDUARDO WILSON BUNSTER. [L. s.]
Witnesses:

JNO. Q. ROWETT,
R. G. BUNSTER.