(No Model.)

F. BYRNES.

APPARATUS FOR AERIAL TRANSIT BY WIRE ROPE, &c.

No. 305,422. Patented Sept. 23, 1884.

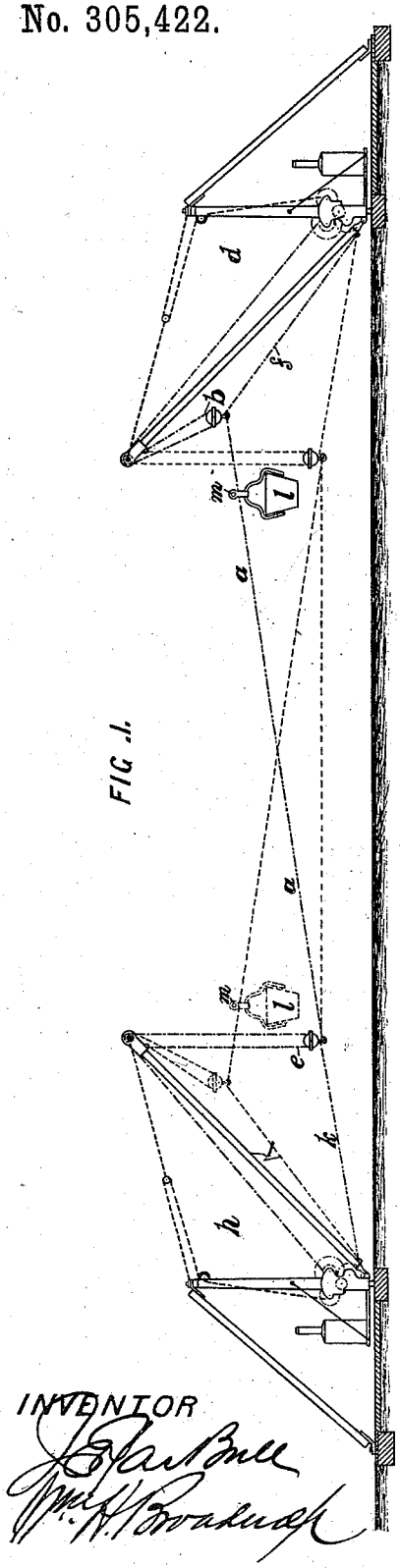

FIG. 1.

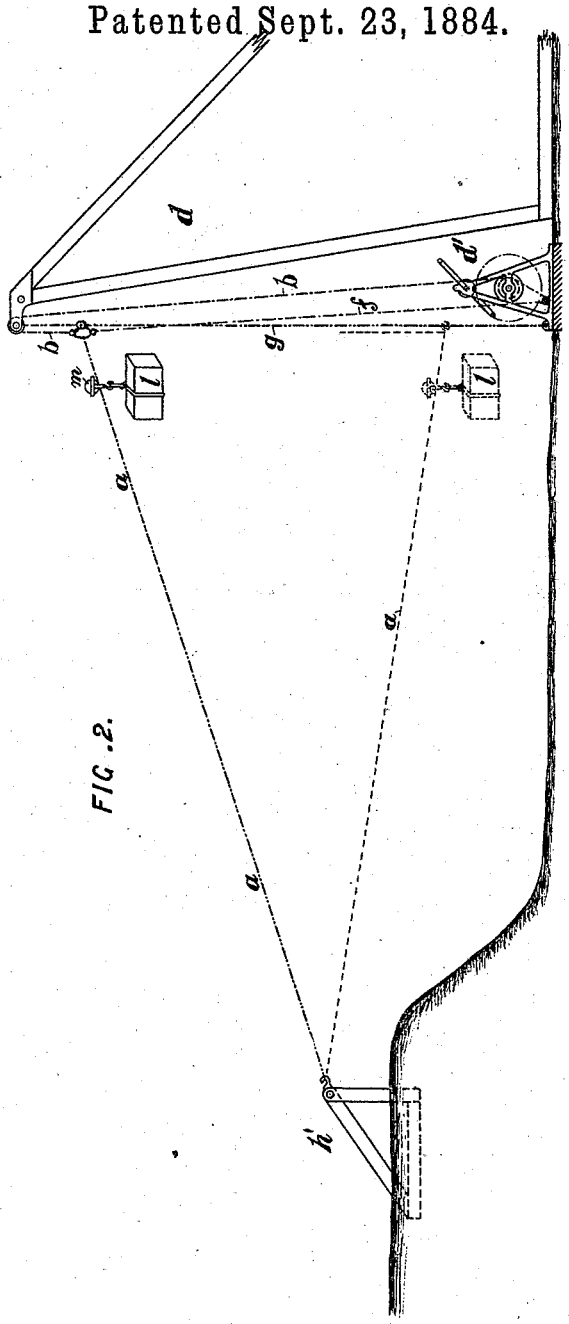

FIG. 2.

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UNITED STATES PATENT OFFICE.

FRANCIS BYRNES, OF LIVERPOOL, COUNTY OF LANCASTER, ENGLAND.

APPARATUS FOR AERIAL TRANSIT BY WIRE ROPE, &c.

SPECIFICATION forming part of Letters Patent No. 305,422, dated September 23, 1884.

Application filed November 21, 1883. (No model.) Patented in England October 4, 1883, No. 4,725.

To all whom it may concern:

Be it known that I, FRANCIS BYRNES, a subject of the Queen of Great Britain, and a resident of the city of Liverpool, in the county of Lancaster, in that part of the United Kingdom of Great Britain and Ireland called England, have invented certain new and useful Improved Means of and Apparatus for Aerial Transit by Wire Rope or like Cables; and I do hereby declare that the following is a description of my invention in such full, clear, and exact terms as to enable any one skilled in the art to which it appertains or is most nearly connected to put into practice and use the same, reference being had to the accompanying drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

My invention relates to the transportation of passengers, goods, substances, and materials by means of an incline wire rope or track; and it consists in providing a convenient and efficient means for adjusting the inclination of said track and to avoid sagging, said means being applicable to all forms of gravity transportation, whether between stations on the same or on different levels.

In the drawings, Figure 1 illustrates the application of my invention where the departure and arrival points are at the same or nearly the same levels, and Fig. 2 illustrates the application of my invention where the departure and arrival points are at different levels.

Similar letters of reference indicate corresponding parts in the figures of the drawings.

Upon reference to Fig. 1 it will be seen that *a* is a wire-rope cable, which is attached at one end of the block of the raising and lowering chain *b* of the derrick *d*, and is attached at the other end to the block of the raising and lowering chain *e* of the derrick *h*. The block of the chain *b* of the derrick *d* is provided with the back guy-rope *f*, and the block of the chain *e* of the derrick *h* is provided with the back guy-rope *k*.

l is the bucket or tub by which the material or substance is conveyed from the derrick *d* to the derrick *h*.

m is a hook or shackle, which is provided with a sheave or roller, and by which the bucket or tub *l* is suspended, and runs on the wire-rope cable *a*.

The drawing, Fig. 1, shows the tub *l* in the act of traveling from the derrick *d* to the derrick *h*, and the dotted lines show the tub *l* in the act of returning from the derrick *h* to the derrick *d*.

It will be seen that the guy-ropes *f* and *k* so draw in the derrick-chains *b* and *e* that the wire-rope cable *a* is prevented from sagging, and provides an inclined way from the derrick *d* to the derrick *h*, or from the derrick *h* to the derrick *d*, as required for forwarding or returning the tub *l*.

In operation the chain of the derrick *d* is raised by the winch of the derrick *d*, (the chain *e* of the derrick *h* being in its lowered position,) and draws up one end of the wire cable *a*, and with it the bucket *l*. The bucket *l* then runs down the inclined way formed by the cable *a*, and is delivered at the derrick *h*, the return of the bucket to the derrick *d* being effected by like action of the derrick *h*. The length of the guy-ropes *f* and *k* is adjusted by means of any suitable mechanism.

Where the departure and arrival points are at different levels, I use the arrangement shown at Fig. 2. In this case I only require the derrick *d* at one end, and I use the post *h'* in lieu of the derrick *h* at the higher level. The cable *a* travels on the guide rope or wire *g*, and is raised by the chain *b* from the winch *d'*.

The guy-rope *f*, adjusted by means of a suitable winch or windlass, prevents the cable *a* from sagging, as this is not completely effected by the guide *g*, which is a flexible rope. This guide-rope is not essential to the operation of the device; but in many places I prefer to use it. The full lines show the package *l* traveling from *d* to *h'*, and the dotted lines show the package *l* returning from *h'* to *d*. By this arrangement the whole working of the apparatus is effected from the departure end *d*.

It will be seen that my invention provides a ready means of transit across rivers and valleys and from one locality to another for general purposes, and is particularly applicable

for contractors' and mining work, as a means for removing material from one place to another and returning empty packages.

Having now described my invention, I claim—

1. In a gravity railway, an adjustable guy-rope, *f*, combined with the mechanism for raising and lowering the ends of the track, by means of which the track is held taut and sagging prevented, substantially as described.

2. In a gravity railway, a track, *a*, carriage *l*, and rope *b*, connected with mechanism for operating the same, and combined with an adjustable guy-rope, *f*, substantially as and for the purposes set forth.

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Witnesses:

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