

(No Model.)

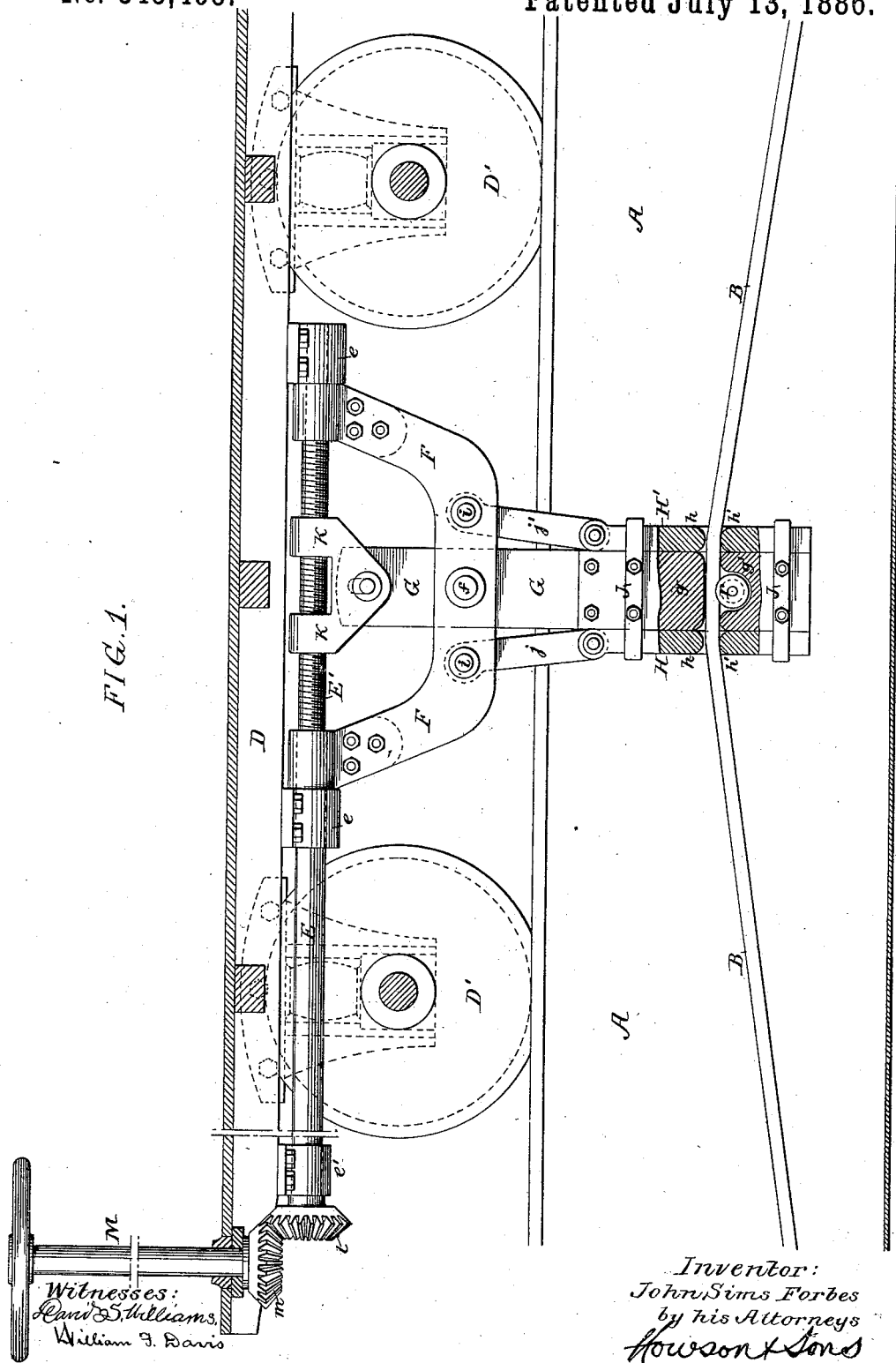
3 Sheets—Sheet 1.

J. S. FORBES.

CABLE GRIP.

No. 345,495.

Patented July 13, 1886.



(No Model.)

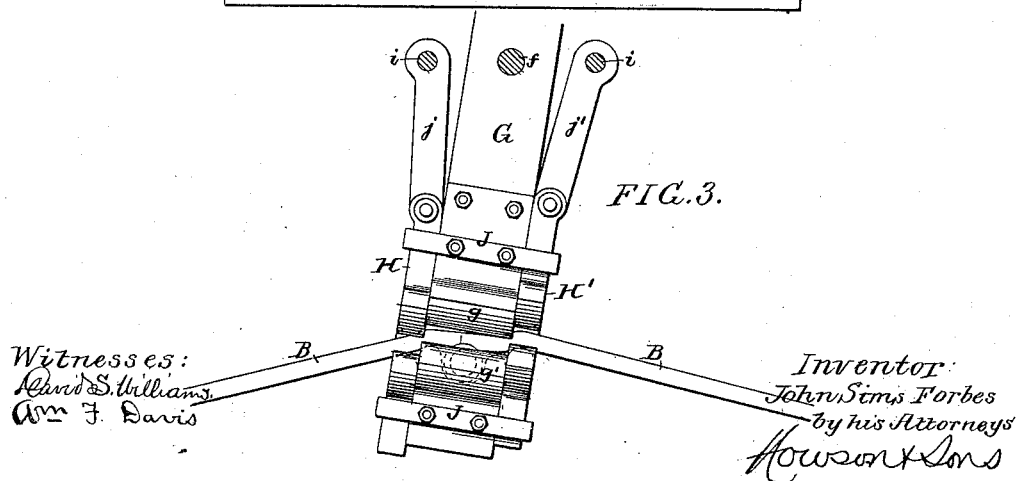
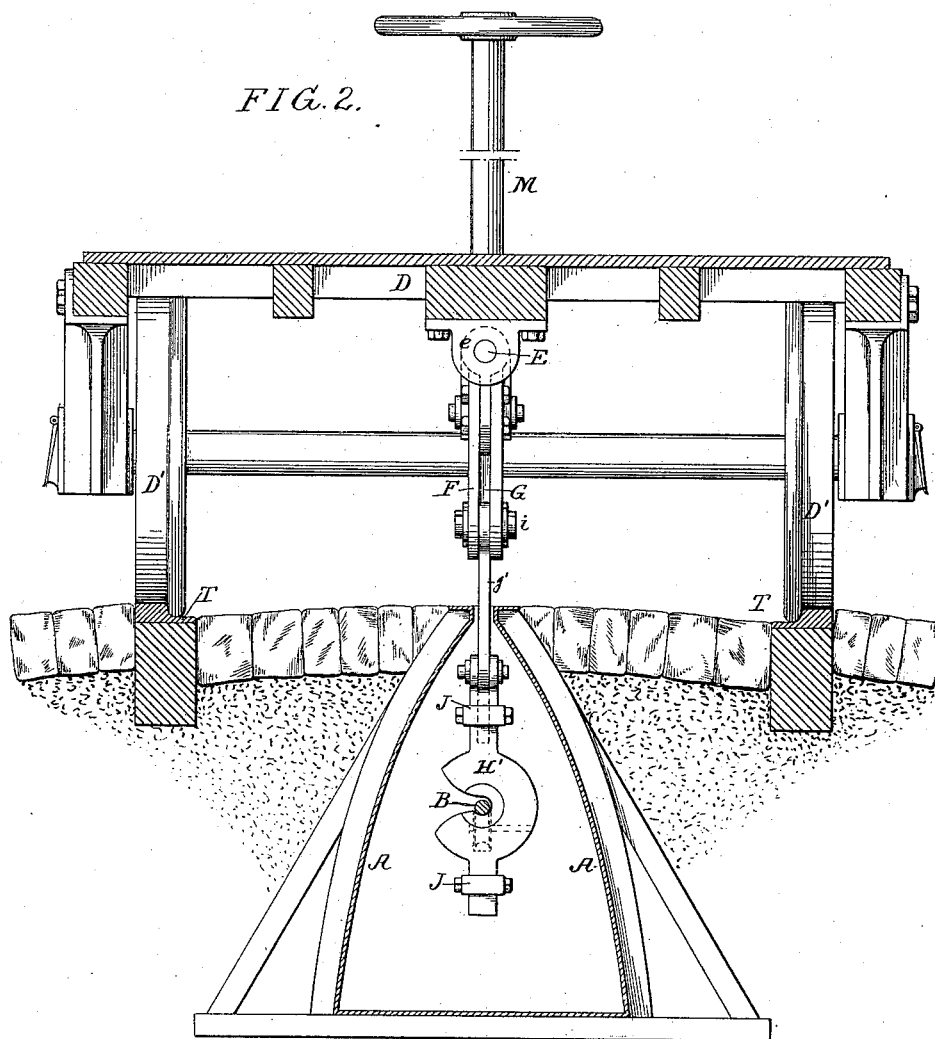
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Witnesses:  
David S. Williams  
Am. F. Davis

Inventor:  
John Sims Forbes  
by his Attorneys  
Howson & Sons

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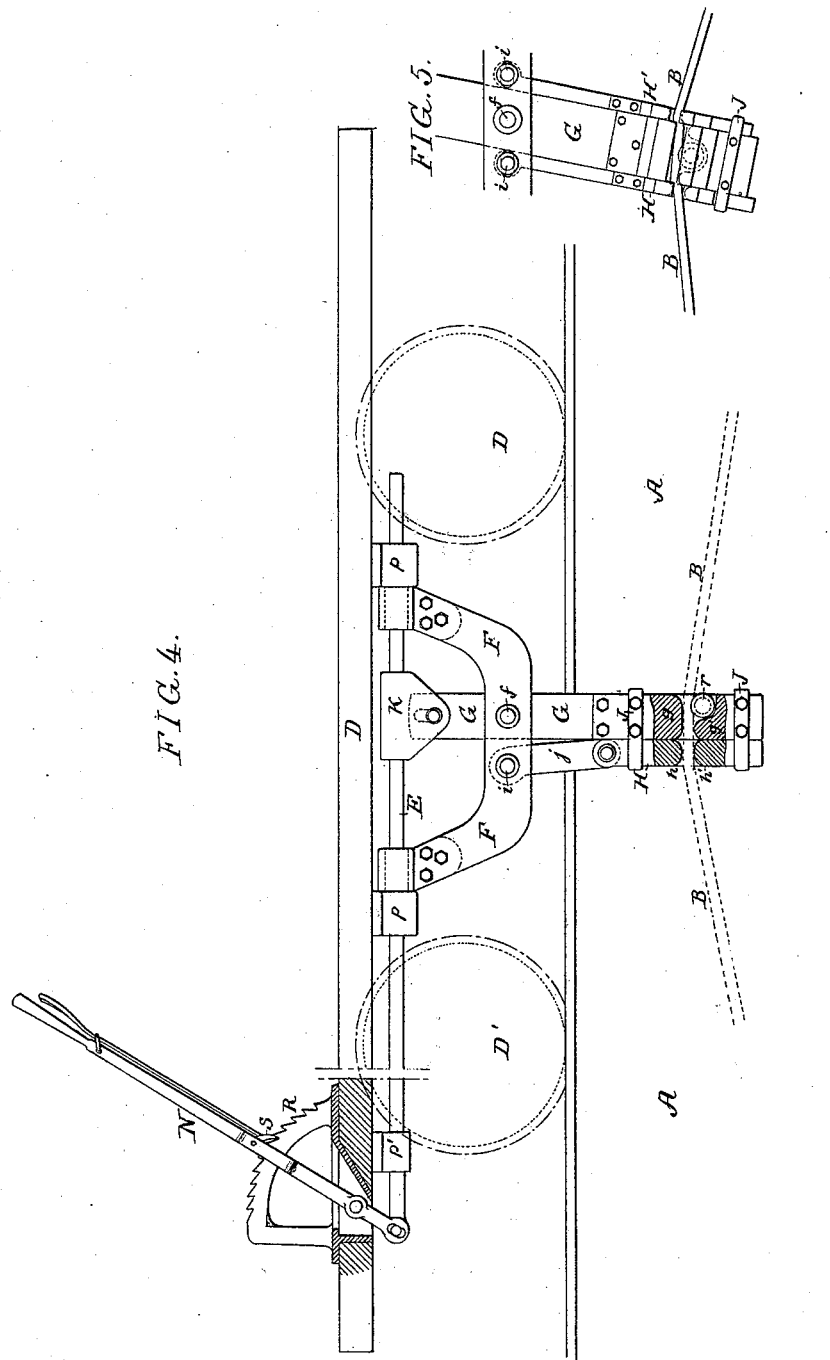
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# UNITED STATES PATENT OFFICE.

JOHN SIMS FORBES, OF PHILADELPHIA, PENNSYLVANIA.

## CABLE-GRIP.

● SPECIFICATION forming part of Letters Patent No. 345,495, dated July 13, 1886.

Application filed February 27, 1886. Serial No. 193,454. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN SIMS FORBES, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Cable-Grips, of which the following is a specification.

The object of my invention is to construct a simple and effective grip for cable railways, and this object I attain in the manner which I will now proceed to describe.

In the accompanying drawings, Figure 1 is a longitudinal section illustrating my improvements; Fig. 2, a transverse section through the car and the conduit. Fig. 3 is a detached view of the gripping devices, illustrating the manner of gripping the cable. Fig. 4 is a view of a modification, and Fig. 5 is a view of another modification.

A is the conduit, which may be of any suitable construction, and through which passes the cable B.

D is the frame of a car, mounted on wheels D', traveling upon the usual track-rails, T.

The gripping device is supported from a pendent frame or yoke, F, from the under side of the car, and consists of a gripping-bar, G, which is pivoted to the yoke or frame, and has an adjacent gripping bar or bars, H H', on one or both sides, all passing through the slot of the conduit. The grip is open and the cable is free to run through when the pairs of the adjacent gripping-jaws are in line, as shown in Fig. 1; but by swinging the bar G on its pivot, so as to throw the jaws out of line, as shown in Fig. 3, the cable will be gripped by the jaws of the adjacent bars.

In the construction shown in Figs. 1, 2, and 3 I have shown bars H H' on both sides of the central bar, G, and this is the construction I prefer. At the lower end of the bar G are the fixed gripping-jaws g g', the lower jaw being provided with a suitable roller, r, to facilitate the traversing of the cable therethrough when the grip is open. On opposite sides, or rather at the front and rear of the central bar, G, are the bars H H', carrying jaws h h', the space between the jaws of these bars H H', as also between the jaws g g', being just enough for the free passage of the cable. When the bar G is in the vertical position shown in Fig. 1, the jaws of the several gripping-bars are all

in line with each other, and the grip is open for the free passage of the cable. The side bars, H H', are confined to the central bar by straps J J, secured to the bar, but allowing the said side bars to slide on the central bar, and the upper ends of the two side bars, H H', are connected by links j j' to fixed points i i on the yoke F, on opposite sides of the central pivot, f, of the bar G, the three pivots i i and f being in line with each other.

When it is desired to cause the grip to close on the cable, motion is imparted to turn the bar G on its fulcrum f, so as to cause the bars H H' to slide upon the central bar, G, when the jaws will be thrown out of line, and opposite corners of adjoining jaws will grip the cable, as illustrated in Fig. 3. In order to avoid injury to the cable, however, the working-faces of the jaws are rounded off, as illustrated in Fig. 1.

In the modification shown in Fig. 4 I have illustrated a grip in which only two gripping-bars, G and H, are used, as will be understood without further explanation.

Nor do I wish to confine myself to the precise details of construction set forth, as various modifications may be made without departing from my invention. For instance, instead of connecting the bars H H' to the pendent yoke F by links j j', these gripping-bars may be continued up to the yoke and provided with pins adapted to horizontal slots in the yoke, which will allow of the desired movement of the bars in gripping the cable, as illustrated in the modification, Fig. 5.

Motion may be imparted to the gripping-bars to throw them into or out of action by various mechanical devices. In Figs. 1 and 2, for instance, I have shown a construction in which the bars are operated by a screw. To the upper end of the bar G is pivoted a threaded nut or sleeve, K, adapted to the threaded portion E' of a longitudinal shaft, E, which is mounted in bearings e e', secured to the under side of the car-frame, and from which the yoke or frame F is suspended, so as to be free to swing on the shaft when necessary. Rotary motion may be imparted to this screw-shaft by any suitable means, and in the drawings I have shown the shaft as provided at the front end with a bevel-wheel, l, gearing

into a bevel-wheel, *m*, on a vertical shaft, *M*, on the front platform of the car, and having a hand-wheel under the control of the gripman or driver of the car.

5 In the modification shown in Fig. 4 I have illustrated another means of operating the grip-bar. In this case the yoke or frame *F* is hung from hollow pintles *p p*, secured to the under side of the car, and through these hol-  
10 low pintles passes a sliding rod, *E*, connected by a sleeve, *K*, to the bar *G*, and also connected to an upright hand-lever, *N*, pivoted to the car-frame. This lever is provided with any suitable pawl, *S*, and ratchet *R*, or other  
15 retaining device which can be controlled by the gripman in moving the lever, and which retains the latter in the forward position, to which it may be moved to close the grip on the cable.

20 I claim as my invention—

1. The herein-described cable-grip, consisting of two or more adjacent bars having jaws in line with each other when the grip is open, but adapted to be thrown out of line to grip  
25 the cable, substantially as set forth.

2. The herein-described cable-grip, consisting of two or more adjacent gripping-bars having jaws, one of the said bars being pivoted, whereby, when the pivoted bar is moved  
30 on its fulcrum, the jaws will be thrown out of line to grip the cable, substantially as described.

3. The combination of the yoke or frame of

a car with a bar pivoted thereto and carrying jaws and adjacent bars having jaws and connected to the said frame, whereby the several  
35 jaws will be thrown out of line when the pivoted bar is moved on its fulcrum.

4. The combination of the yoke or frame and a pivoted bar, *G*, and jaws with sliding  
40 bars *H H'*, having jaws on opposite sides of the said central bar, and links connecting the said bars *H H'* to the frame, substantially as described.

5. The combination of a yoke or frame and  
45 bar *G*, pivoted thereto and having jaws, with sliding bars *H H'*, connected to the said yoke or frame, and also having jaws, and confining-straps *J*.

6. The combination of the screw-shaft *E'*  
50 and yoke or frame *F* with a bar, *G*, pivoted to the yoke or frame and carrying a nut adapted to said screw-shaft at its upper end, and having at its lower end gripping-jaws and adjacent gripping-bars, *H H'*, adapted to  
55 have their jaws thrown out of line with the jaws of the bar *G* when the latter is turned on its fulcrum, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of  
60 two subscribing witnesses.

JNO. SIMS FORBES.

Witnesses.

WILLIAM F. DAVIS,  
WILLIAM D. CONNER.