(No Model.) 2 Sheets—Sheet 1.

H. DODS & F. HINDES.

RAILWAY CABLE GRIP.

No. 302,828. Patented July 29, 1884.

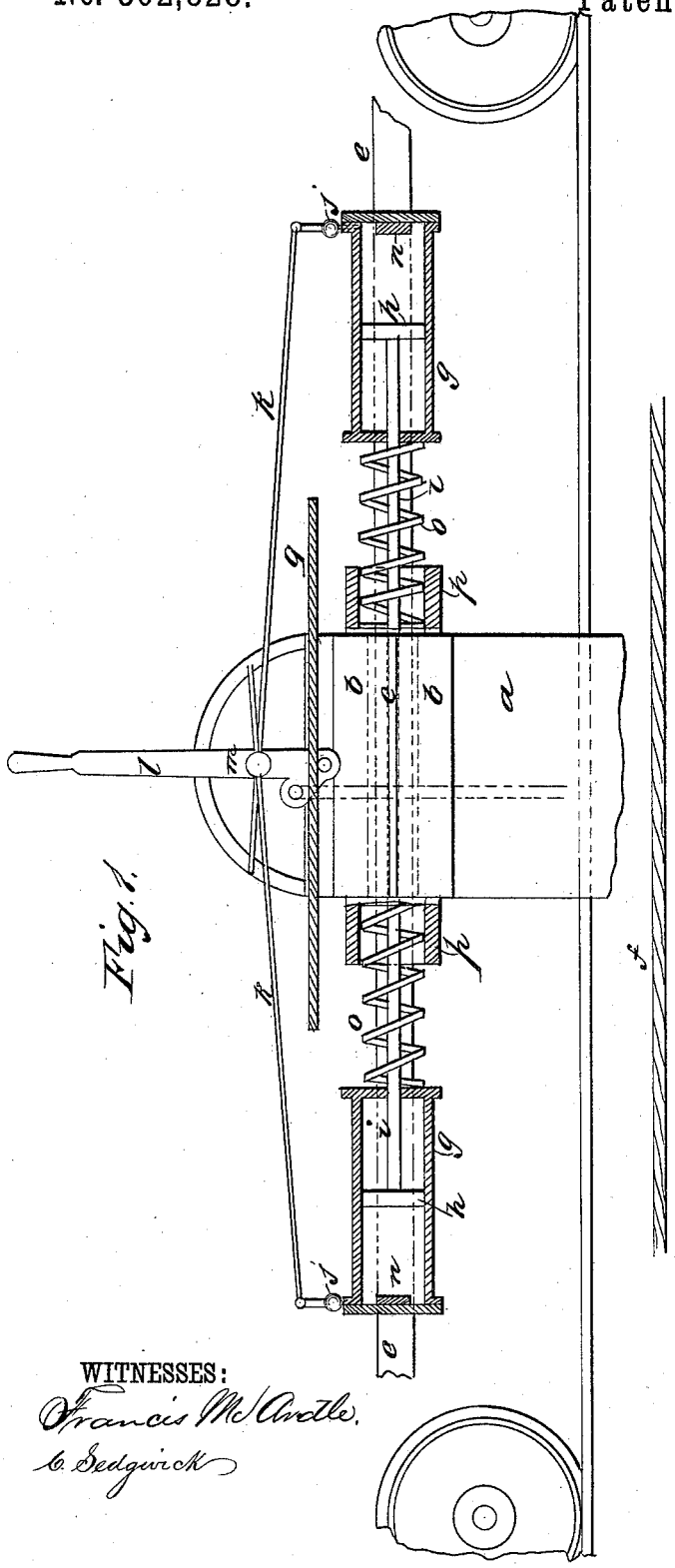

Fig. 1.

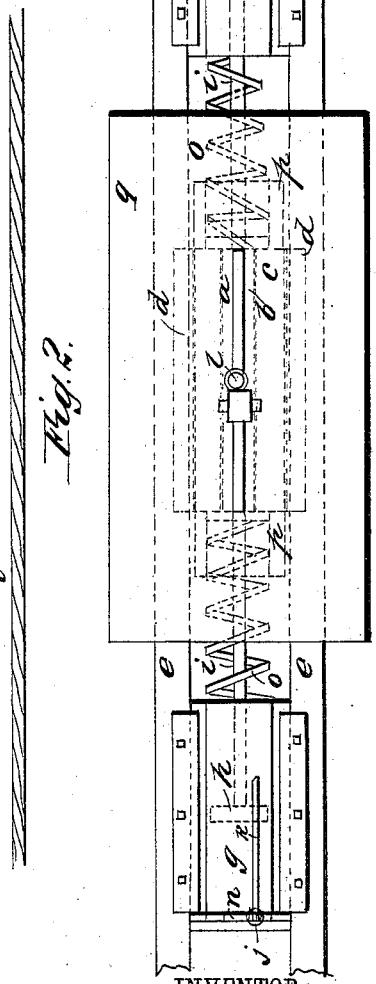

Fig. 2.

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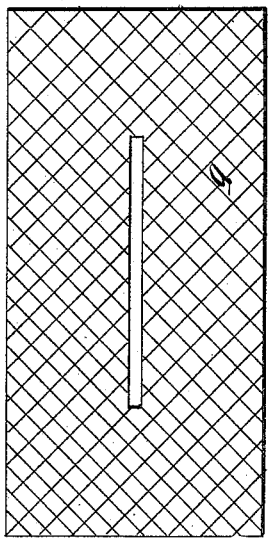
Fig. 6.



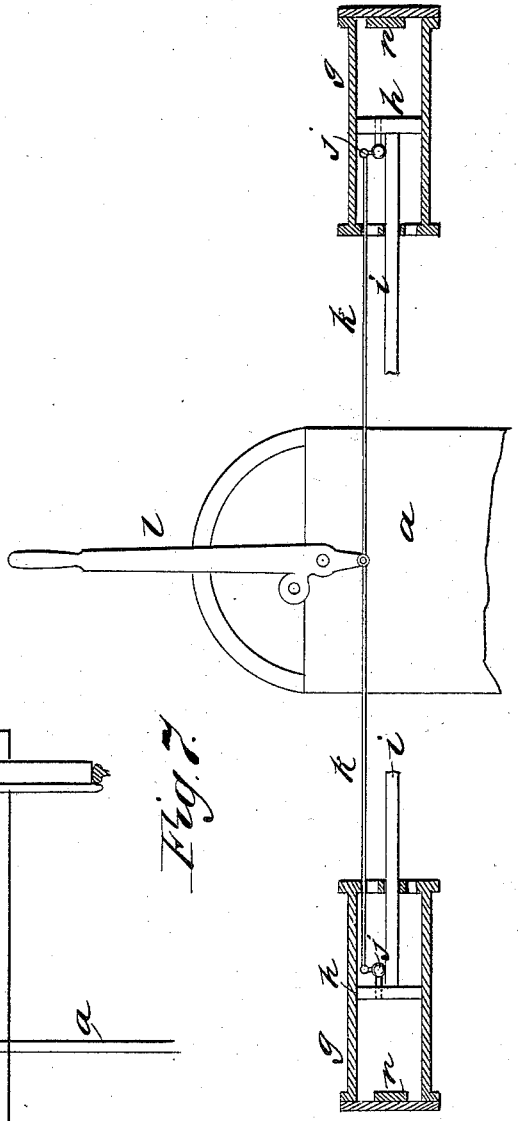


Fig. 7.

Fig. 5

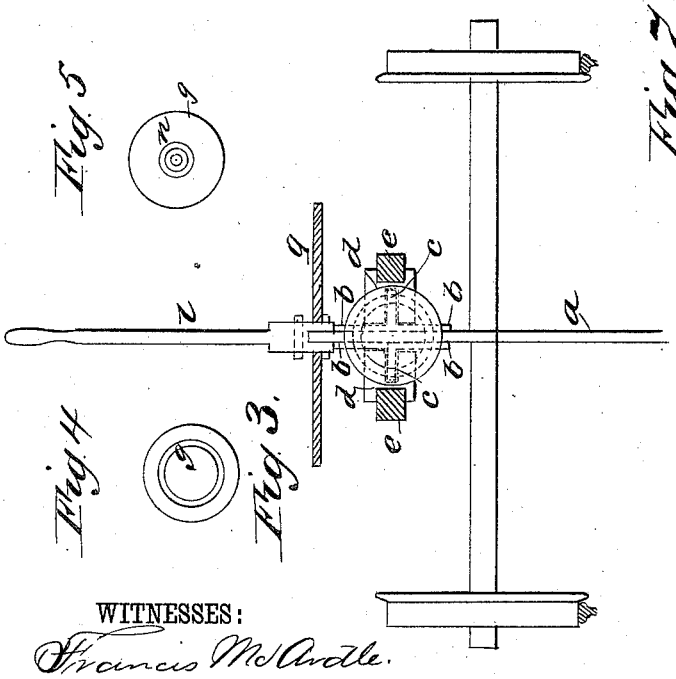


Fig. 4

Fig. 3.

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UNITED STATES PATENT OFFICE.

HENRY DODS AND FRANK HINDES, OF VIRGINIA CITY, NEVADA.

RAILWAY-CABLE GRIP.

SPECIFICATION forming part of Letters Patent No. 302,828, dated July 29, 1884.

Application filed November 13, 1883. (No model.)

To all whom it may concern:

Be it known that we, HENRY DODS and FRANK HINDES, of Virginia City, in the county of Storey and State of Nevada, have invented a new and Improved Railway-Cable Grip, of which the following is a full, clear, and exact description.

Our invention consists in the construction and combination of parts, as will be hereinafter fully described and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal sectional elevation of our improved pneumatic spring-grip device. Fig. 2 is a plan view. Fig. 3 is partly an end elevation and partly a transverse section. Fig. 4 is an open end view of one of the pneumatic cylinders. Fig. 5 is a closed end elevation of the same. Fig. 6 is a plan view of the operator's foot-board; and Fig. 7 is partly a side elevation and partly a longitudinal section of the grip device, showing a modified arrangement for working the cylinder-cocks.

We attach the boiler-plate *a*, that carries the grip, (not shown,) to the stock *b*, having flange sides *c*, arranged in grooves of the supports *d*, attached to the strong timber frame *e*, suitably attached to the car to enable the grip-plate *a* to shift ahead when the cable *f* is clutched, to be gradually arrested by the pneumatic springs, consisting of hollow cylinders *g* and pistons *h*, the cylinders being securely bolted to the frame *e*, and the pistons being connected to the stock *b* by the rods *i*. The cylinders are sufficiently open around the piston-rods to prevent cushioning the air between the pistons and the ends of the cylinders next to the grip-plate; but at the other ends said cylinders have passages controlled by the cocks *j*, which are connected by rods *k* with the grip-operating lever *l*, so that when said lever is shifted to apply the grip, the cocks will also be shifted and closed, so that one piston will be cushioned by compression and the other by expansion of the air. The rods *k* connect with the lever *l* by a stud, *m*, having the holes through which the rods pass lined and packed with leather or other friction material compressed on the rods in any suitable way, whereby said rods will be held with sufficient power to be worked by the lever for closing the cocks, but so that the rods will slide through the stud, or rather the stud will slide along them with the grip-plate when it shifts by the effect of clutching the cable. The cylinders *g* have a rubber cushion, *n*, at the back end for the pistons to strike against and prevent shocks in case the inertia of the load is greater than the air-cushions will overcome.

Between the stock *b* and the cylinders we have arranged coiled springs *o* around the piston-rods and in sockets *p*, attached to the stock, to bear against said stock and cylinder-heads, to return the grip-plate to the center position, when the grip is disconnected and the cocks *j* are opened, and to assist, also, in overcoming the inertia of the car. The grip-plate will partly recover its central position by the pneumatic springs after the car starts, but not entirely so as long as the car is being pushed by the cable, so that when the grip is disconnected and the air-spring destroyed by the opening of the cocks, the coiled springs take effect on the grip-plate and restore it to the center. In this example we have represented double-acting pneumatic springs—that is to say, the pistons occupy the middle of the cylinders when in the normal position, which enables the air-springs to work alike whichever way the car may run; but in a car that is to turn about and run only one way, the pistons will stand one at the back and the other at the inner end of the cylinders. The operator's foot-board *q* is attached to the plate *a*, to shift with it.

To dispense with the friction device for connecting the working-rods *k* of the cylinder-cocks, we may, if preferred, locate the cylinder-cocks on the pistons *h*, as represented in Fig. 7, which move in unison with the grip-plate *a*, and enable the rods to be connected positively with the lever. Said rods *k* will in this case extend into the cylinders through the cylinder-heads.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a cable-grip device for cars, the grip-plate arranged to shift along the car when

gripped to the cable, and provided at each end with piston rods and cylinders, and springs arranged on said pistons between the grip-plates and cylinder-heads, substantially as set forth.

2. The combination of the pneumatic cylinders *g*, pistons *h*, piston-rods *i*, cylinder-cocks *j*, and means for operating and closing said cylinder-cocks, with the grip-plate *a*, arranged to slide along the car when gripped to the cable, substantially as described.

3. The combination of the pneumatic cylinders *g*, pistons *h*, and the coiled springs *o*, with the grip-plate *a*, arranged to shift along the car when gripped to the cable, said pneumatic cylinders having suitable cocks, and means for working the same, substantially as described.

4. The pneumatic cylinders *g*, pistons *h*, rods *i*, cylinder-cocks *j*, and the rods *k*, in combination with the grip-plate *a* and grip-lever *l*, arranged to shift along the car when the cable is gripped, the said rods *k* being connected to the lever by a friction device, *m*, substantially as described.

5. The combination, in a cable-grip device arranged to shift along the car when the cable is gripped, of the pneumatic cylinders *g*, pistons *h*, and the rubber cushions *n*, said pistons *h* being connected to the grip-plate, substantially as described.

6. The grip-plate *a*, attached to the sliding stock *b*, connected to the piston-rods *i* of the pneumatic springs, said grip-plate having sockets *p*, connected with the coiled springs *o*, bearing against the pneumatic cylinders, substantially as described.

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