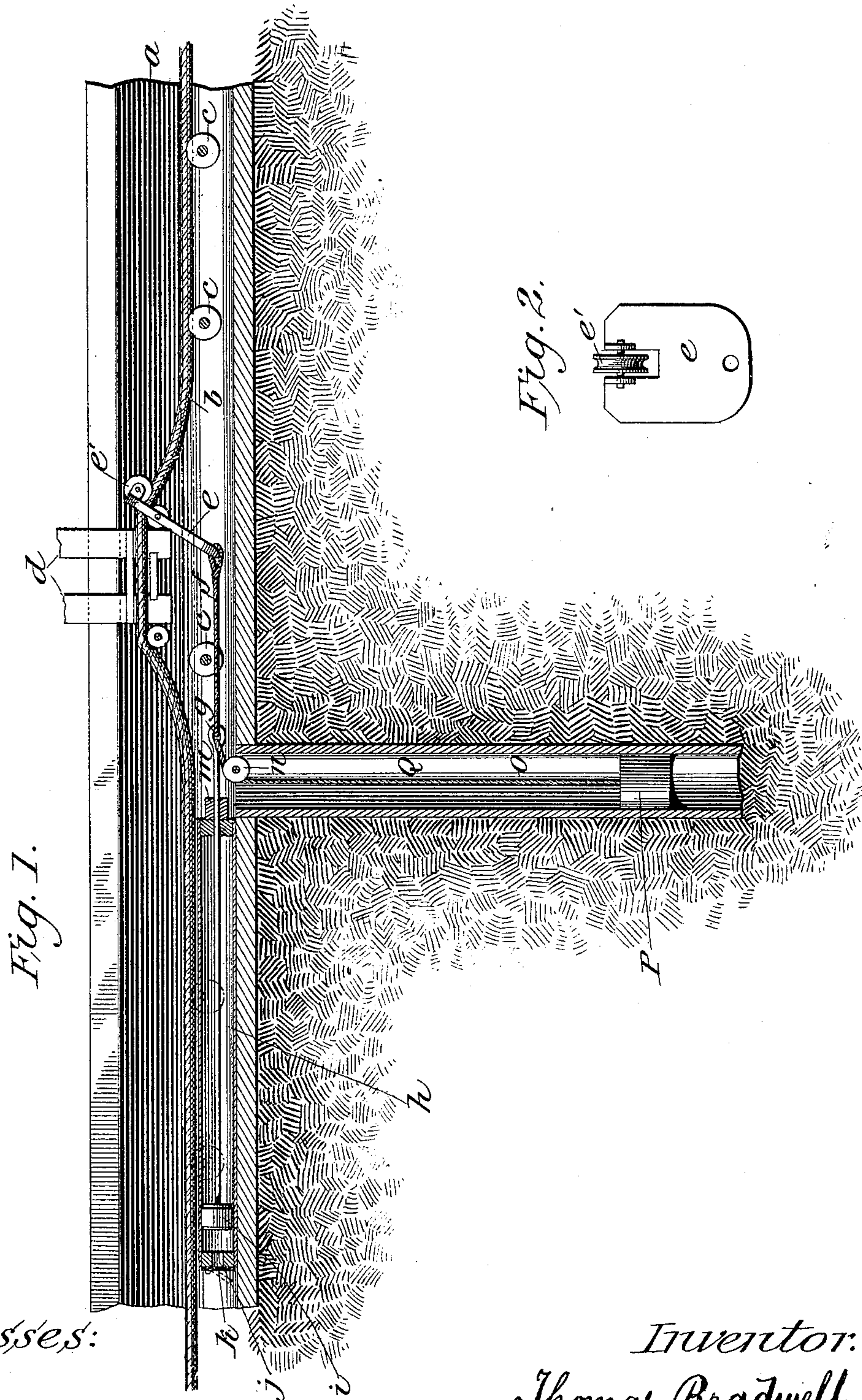


(No Model.)

T. BRADWELL.  
CABLE RAILWAY MECHANISM.

No. 403,512.

Patented May 21, 1889.



Witnesses:  
C. Vogel  
Anton Langner

Inventor:  
Thomas Bradwell,  
By Wm Zimmerman.



# UNITED STATES PATENT OFFICE.

THOMAS BRADWELL, OF CHICAGO, ILLINOIS.

## CABLE-RAILWAY MECHANISM.

SPECIFICATION forming part of Letters Patent No. 403,512, dated May 21, 1889.

Application filed January 12, 1889. Serial No. 296,214. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS BRADWELL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Cable-Railway Mechanism, which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part hereof, and in which—

Figure 1 shows a longitudinal central and vertical section of a cable-way and of the air-cylinder and well, the remaining part being shown in perspective or full outline. Fig. 2 is a front or full view of the plate *e* and its wheel *e'*, under which the cable passes.

Like letters of reference denote like parts throughout.

The object of my invention is to prevent the accidents to the cable and grip which so frequently occur in passing a car from one cable line or system to the other, and which, as is well known, must be done by dropping the cable from the grip at the moment a certain point in the line is reached. If the cable is dropped too soon, the car is liable to stop before the next cable system can be reached to pick up its cable; if too late, either the cable or grip, or both, must break, thereby causing serious delays and expensive repairs. To avoid such mishaps, I attach the mechanism herein shown and described, consisting of the following parts, namely:

The cable-way *a*, cable *b*, carrier-wheels *c*, and grip *d* are of the usual and well-known construction.

At a suitable point I place in the bottom of the cable-way or tunnel *a* an air-cylinder, *h*, provided with a piston, *i*, and piston-rod passing through any suitable guide, as *m*, and at the end of said piston-rod is formed a loop or joint, *g*, of any suitable form, to which are connected the ropes *f* and *o*, acting in opposite directions, the former advancing from the cylinder *h* and the latter toward it when performing work. The rope *f* is attached to the lower edge of a heavy iron plate or stop, *e*, which is provided with a slot in its upper edge, in which plays a grooved pulley, *e'*, which rides on the cable *b*, which passes through the plate under said pulley. This arrangement holds said plate in place, while at the same

time it allows free motion to the cable. The rope *o* passes over fixed pulley *n*, so placed as to allow said rope to pass into the center of the well *Q*, and to the lower end of said rope is attached a weight, *P*.

The operation of the said mechanism is as follows, namely: In case the cable is not discharged from the grip the plate *e* comes in contact with it and pushes it along, and thereby the weight is raised and the piston moved along in its cylinder, the elastic resistance of the air becoming greater and greater as the piston advances until finally the grip is brought to rest without injury to any of said machinery. The said cylinder may be either of the compressing or vacuum variety, as may be found most desirable. In this case the vacuum variety is shown, the air passing out through the hole *j* in the rear end of the cylinder, which is shown covered with a closed flap-valve, its open position being indicated by broken outlines. After the grip and car have been stopped and the cable dropped out of the grip, the weight *P* pulls the piston back to the end of the cylinder, and thus brings all said parts in position to act when the next failure to drop the cable at the right time happens. When the cable is dropped at its proper place, the grip passes over the plate *e*. The broken outlines under the grip *d* indicate the position of the cable when it is dropped out of the grip.

The relative proportion of the several parts here shown may of course be varied to suit the requirements, and the mechanism must be so placed that the plate *e* will bring the grip to rest before any injury can occur to the mechanism.

The well *Q* is here shown placed in the ground below the cable; but the weight may easily be arranged to act above the ground, and, in fact, automatic mechanism of any other kind to effect the same end might be substituted; but that is not necessary, only very convenient, as the piston and the several parts might also be forced back by hand or horse power or any other convenient and suitable mechanism.

The essential feature of my invention is the use of an elastic stop to the grip to cause its arrest when the cable has failed to pass off the grip.



As shown in the drawings, the cable has failed to pass out of the grip, which is just in contact with the stop *e* and has just started the piston *i*.

5 What I claim is—

1. In combination with a grip and cable of a cable railway, a stop, *e*, attached to an elastic resisting mechanism, whereby a grip carrying a cable may be stopped, substantially as  
10 specified.

2. In combination with a grip and cable of a cable railway, a stop, *e*, attached to the piston of an air-cylinder wherein the air is caused to form an elastic resisting medium,  
15 whereby a grip carrying a cable may be stopped, substantially as specified.

3. In combination with a grip and cable of a cable railway, a stop, *e*, attached to an elastic resisting mechanism, whereby a grip carrying  
20 a cable may be stopped, and mechanism, as set forth, whereby said parts may be returned to their starting-points automatically, substantially as specified.

4. In combination with a grip and cable of  
25 a cable railway, a stop, *e*, attached to the piston of an air-cylinder wherein the air is caused to form an elastic resisting medium, whereby a grip carrying a cable may be stopped, and a weight by means of which said

parts may be caused to return to their start- 30  
ing-points automatically, substantially as specified.

5. In combination with a grip and cable of a cable railway, a stop, *e*, provided with a pulley, *e'*, and said stop attached to an elastic  
35 resisting mechanism, whereby a grip carrying a cable may be stopped, substantially as specified.

6. In combination with a grip and cable of a cable railway, a stop, *e*, provided with a pulley, *e'*, and said stop attached to a piston of  
40 an air-cylinder wherein the air is caused to form an elastic resisting medium, whereby a grip carrying a cable may be stopped, substantially as specified.

7. In combination with a grip and cable of a cable railway, a stop, *e*, provided with a pulley, *e'*, and said stop attached to a piston of  
45 an air-cylinder wherein the air is caused to form an elastic resisting medium, whereby a grip carrying a cable may be stopped, and a weight whereby said parts may automatically be returned to their starting-points, substantially as specified.

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Witnesses:

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