

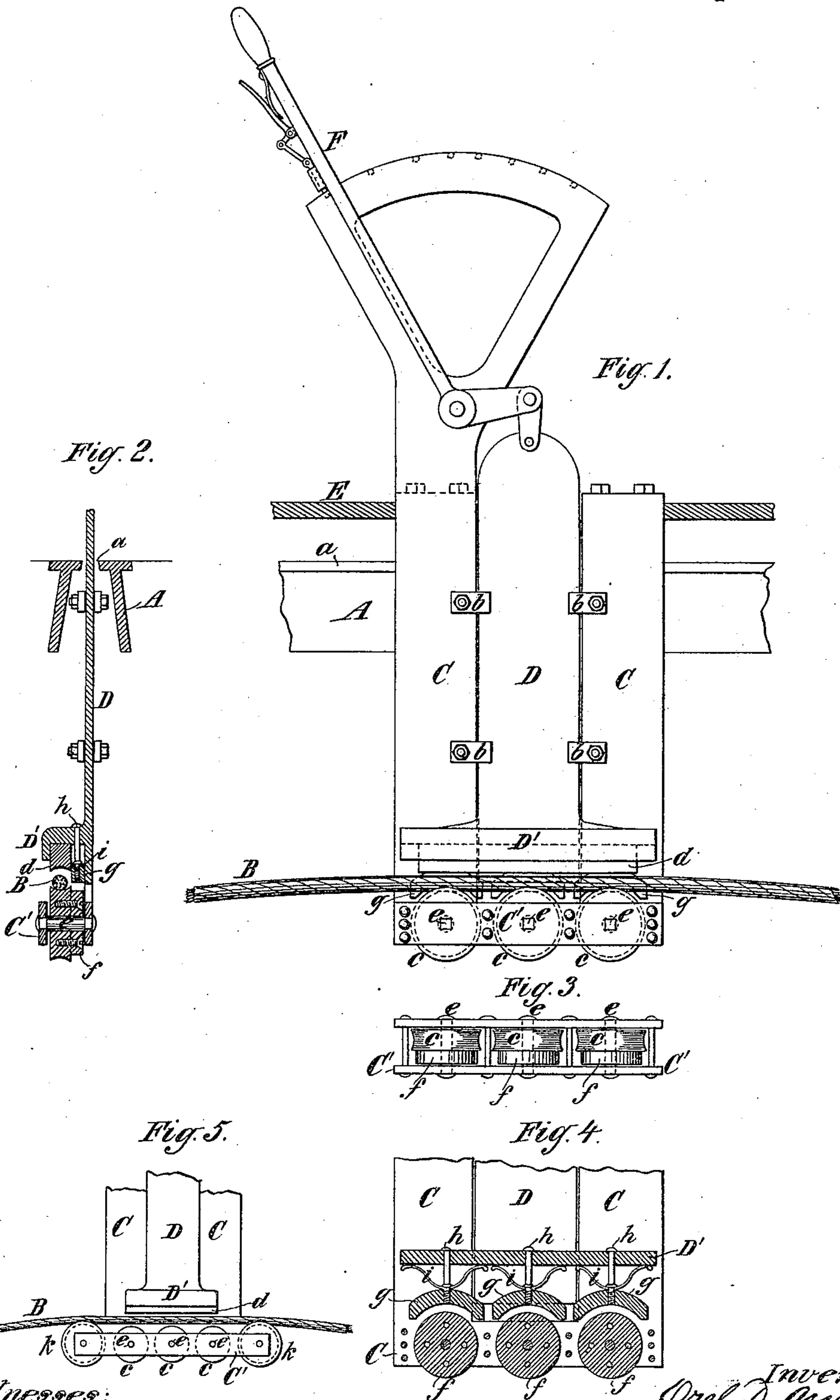
(No Model.)

O. D. ORVIS & N. B. ADAMS.

GRIP ATTACHMENT FOR CABLE RAILWAYS.

No. 304,547.

Patented Sept. 2, 1884.



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UNITED STATES PATENT OFFICE.

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GRIP ATTACHMENT FOR CABLE RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 304,547, dated September 2, 1884.

Application filed April 17, 1884. (No model.)

To all whom it may concern:

Be it known that we, OREL D. ORVIS and NELSON B. ADAMS, citizens of the United States, residing in the city and county of New York, in the State of New York, have invented a new and useful Improvement in Grip Attachments for Cable Railways, of which the following is a description, reference being had to the accompanying drawings.

The grip attachments heretofore used or devised for cable-traction have had the gripping-surfaces of their jaws variously constructed. Sometimes the gripping-surfaces of both jaws have been composed of dies, or, in other words, their gripping-surfaces have been fixed relatively to the jaws. Sometimes the said surfaces have both been composed of rollers, and, again, one jaw has been fitted with a die and the other with rollers. Sometimes, when rollers have been used in both jaws, friction devices or brakes have been applied to the rollers. These several kinds of grip attachments have their advantages and disadvantages. The dies have the advantage of great holding power; but the rollers have the advantage of taking hold gradually and starting the car without jerking.

The object of this invention is to combine the best qualities of the die-grip and the roller-grip.

In carrying out our invention we use a die in or on one jaw and rollers in the other jaw; and my invention consists in the combination, with one gripping-jaw furnished with a die or relatively-fixed gripping-surface and another gripping-jaw furnished with gripping-rollers, of brake-wheels or brake-surfaces attached to the said rollers and brake-shoes so attached to the jaw, which is furnished with the die or relatively-fixed gripping-surface, that by the pressure or force applied to press the jaws toward each other and make them grasp the cable the said brake-shoes are also pressed upon the said brake-wheels, for the purpose of checking and gradually stopping the revolution of the rollers produced by their contact with the moving cable.

In order to render the action of these brake-shoes upon the brake-wheels or brake-surfaces more gradual, and yet effective, our invention

consists in the combination, with the said brake-shoes, of springs through which a part of the force applied to press the jaws toward each other is transmitted to the said shoes.

The invention is applicable in connection with the system of sub-ways and cars which is the subject of our Letters Patent No. 285,657, dated September 25, 1884, as well as to the system of cable-traction now in use, in which the cars running on a surface-track are drawn by a cable in an underground tube or tunnel. It is also applicable to elevated railways having the cars drawn by a cable above the track.

The drawings represent the method of application adapted either to our said system or the said system in common use, in either of which cases the grip attachment passes through a slot in the top of the tube or sub-way.

Figure 1 is a side view of a grip attachment constructed according to our invention. Fig. 2 is a transverse vertical section of the same. Fig. 3 is an inverted plan of the roller-jaw. Fig. 4 is a section parallel with Fig. 1, showing the brake-wheels and brake-shoes. Fig. 5 is a view corresponding with Fig. 1, showing guide-wheels provided on the roller-jaw.

A represents the upper part of the sub-way or underground tube, in which is the slot *a*, communicating with the street-surface.

B is the cable placed underground in the tube or sub-way.

E is the bottom of the car, to which is rigidly secured the rigid hanger C, which passes through the said slot *a*. This hanger has constructed upon its lower part the frame C', in which are secured the axles *e e* of the rollers *c c*, the said frame and rollers constituting the lower and stationary jaw of the grip attachment. The said hanger also receives within it the upright sliding plate D, to the lower part of which is attached the upper or movable jaw, D', of the grip attachment, which is fitted with a die, *d*, which may be of hard or soft metal, wood, or other suitable material, and which may be so fitted as to be conveniently removable and renewable when worn out, the said die constituting a gripping-surface, which is fixed relatively to the jaw D. The sliding plate D works within guides *b b* on the hanger, and has connected with its upper end a hand-

lever, F, or other contrivance arranged in or on the car, for the purpose of applying pressure to the movable jaw to grasp the cable, or of raising the said jaw to release the cable.

5 Each of the rollers *c c* of the lower and stationary gripping-jaw, C', is furnished with a brake-wheel or rotary brake-surface, *f*, which is preferably made of a separate circular cast-iron plate bolted or otherwise removably at-
10 tached to the roller, so that when worn out, it may be removed and replaced by a new one.

Over the brake-wheels *f f* there are attached to the upper and movable gripping-jaw, D', separate brake-shoes *g g*—one for each brake-
15 wheel. These shoes are attached to the jaw D' by loose pins *h h*, or otherwise, in such manner as to permit them a certain amount of independent movement, and each has applied between it and the jaw a spring, *i i*, which
20 tends to press it toward its respective friction-wheel. When the jaw D' is depressed to grip the cable between its die and the rollers of the jaw C', the brake-shoes *g g* are brought into contact with the brake-wheels *f f*, and the
25 power applied to depress the said jaw C' acts to produce the grip of the jaws upon the cable, and at the same time to apply the brake-shoes to the brake-wheels, for the purpose of checking and gradually stopping the revolu-
30 tion of the rollers, and thereby producing gradually, yet surely and as promptly as desirable, a positive gripping action of the rollers on the cable, and the harder the grip is put on the tighter will the brake-shoes be applied.
35 The relation between the friction produced on the brake-wheels and the gripping-pressure applied to the jaw D' will depend on the strength of the springs *i*, and will have to be determined by practice. Without these springs
40 it would be hardly practicable to obtain a proper relation between the friction and pressure above mentioned, as with a rigid attachment of the brake-shoes to the said jaw, if the brake-wheels and brake-shoes should wear
45 more than the gripping-surfaces, or the reverse, either the shoes would fail to sufficiently check the rotation of the rollers or would check the said rotation without applying a proper degree of gripping-pressure. It may be here
50 mentioned that the rollers may be in the movable jaw and the die in the fixed jaw of the

grip, or that both the jaw containing the rollers and that furnished with the die might be movable toward and from each other; but in any case the brake-wheels will be attached to 55 gripping-rollers, and the brake-shoes will be attached to that jaw which contains the die.

In order that, while the gripping-jaws are open, the cable may be retained between them ready to be gripped for drawing the car 60 when desired, and that while the grip is out of operation its gripping-rollers *c c* and their axles may be relieved from wear, we provide in the lower jaw, C', as shown in Fig. 5, grooved guide-wheels *k k*, one at each end 65 of the jaw, such wheels being either larger than the rollers *c c*, or having their axles so arranged that their upper parts are so much higher than the upper parts of *c c* that the cable may be supported in their grooves out of 70 contact with the rollers *c c*, as shown in Fig. 5.

We do not claim, broadly, a grip attachment having rollers in one jaw and a die in another; nor do we claim the application of friction-brake devices to the gripping-rollers 75 of a grip attachment.

What we claim, and desire to secure by Letters Patent, is—

1. The combination, in a grip attachment for cable railways, of one jaw containing 8c gripping-rollers, which alone constitute its gripping-surfaces, an opposite jaw having only a gripping-die or relatively-fixed gripping-surface, brake-wheels attached to said gripping-rollers, and brake-shoes attached to 85 the jaw having the relatively-fixed gripping-surface, substantially as herein described.

2. The combination of the gripping-jaw having its gripping-surface composed entirely of rollers, the gripping-jaw having only a grip- 90 ping-die or relatively-fixed gripping-surface, brake-wheels attached to said gripping-rollers, brake-shoes attached to the jaw having the gripping-die, and springs applied between the latter jaw and the brake-shoes, substan- 95 tially as herein described.

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