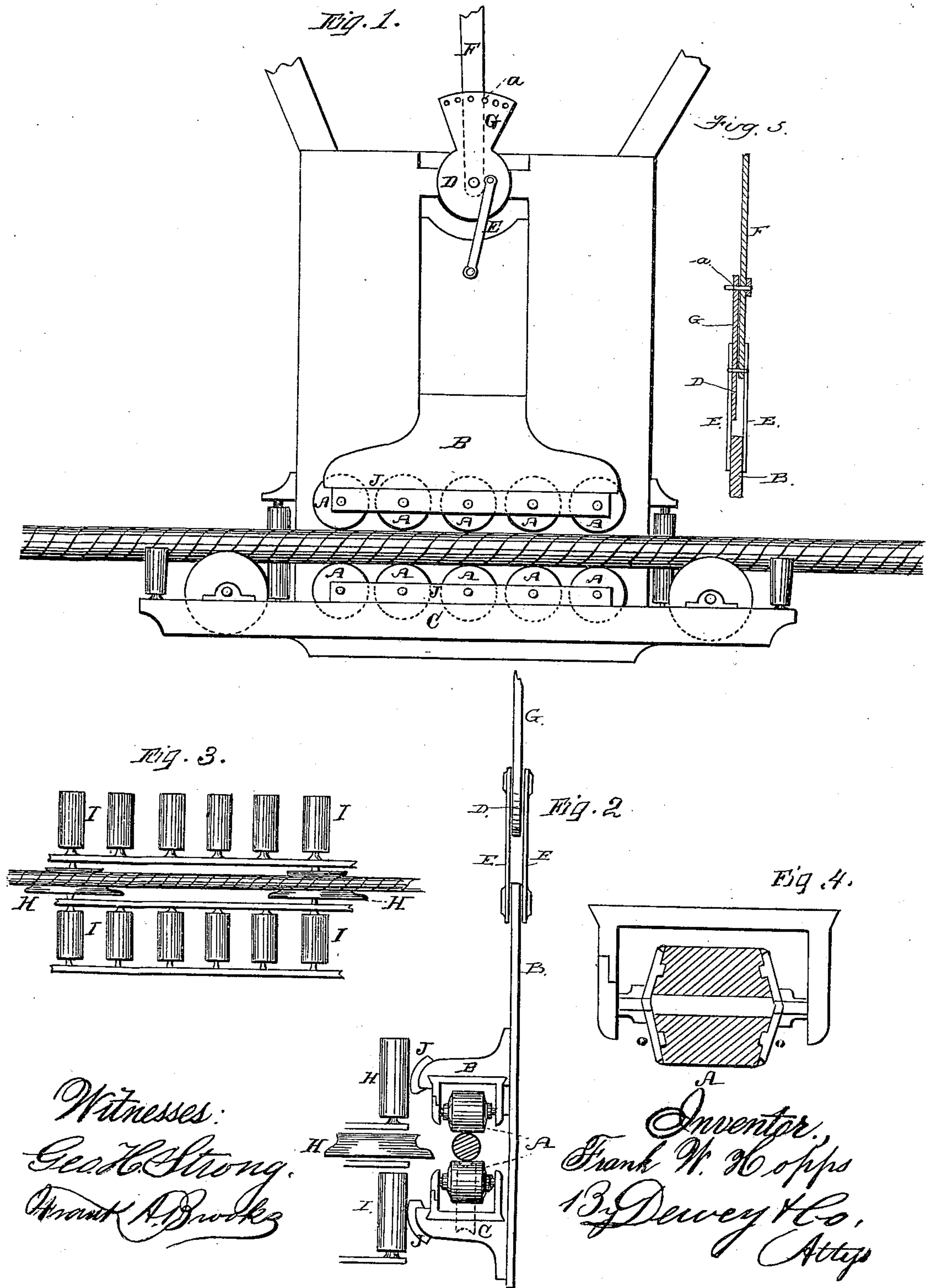


(No Model.)

F. W. HOPPS.
CABLE RAILWAY GRIPE.

No. 250,815.

Patented Dec. 13, 1881.



UNITED STATES PATENT OFFICE.

FRANK W. HOPPS, OF SAN FRANCISCO, CALIFORNIA.

CABLE-RAILWAY GRIPE.

SPECIFICATION forming part of Letters Patent No. 250,815, dated December 13, 1881.

Application filed March 26, 1881. (No model.)

To all whom it may concern:

Be it known that I, FRANK W. HOPPS, of the city and county of San Francisco, State of California, have invented an Improvement in
5 Cable-Railway Gripes; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to certain improvements in the gripes which are employed upon
10 railways on which the cars are propelled by connecting them with an endless traveling cable which is driven within a tunnel or tube beneath the track.

It consists in forming the gripe of two jaws,
15 which are made to approach or to recede from each other by any suitable mechanism, and in mounting on the meeting sides of said jaws a series of rubber or other tough elastic rollers, which are compressed upon the cable moving
20 between them by the forcing of the jaws together. These rollers first gripe the cable while still revolving with such a pressure as to start the car. They are placed so nearly together in their jaws that when they are considerably
25 compressed against the cable they will be caused to meet and bind against each other by the consequent flattening or elongation in that direction, and thus produce so much friction that they will hold the cable firmly enough to
30 cause the car to be moved by it.

My invention further consists in other details of construction.

Referring to the accompanying drawings for a more complete explanation of my invention,
35 Figure 1 is an enlarged view of my gripe. Fig. 2 is an end view of the gripe with a transverse view of the cable, showing the cable-supporting roller and the rollers over which the gripe passes when on a curve. Fig. 3 is a front view
40 of the cable and the rollers which guide the gripe when on a curve. Fig. 4 is a view of a single roller with its end plates. Fig. 5 is a sectional edge view of the griper, eccentric, and lever.

45 In the working of cable-railways considerable difficulty has been experienced on account of the rapid wear of the cables, caused by use of rigid metallic shoes upon the jaws of the gripes, which are connected with the cars and
50 by which they are set in motion. Where the duty is severe, as upon steep hills, these cables

are frequently stranded and worn so as to be unfit for use in from sixty to ninety days.

My invention is intended to preserve the cable from this wear, and I accomplish it by
55 the use of rubber or other soft, tough material which is used as shoes. In the present case I make these shoes in the form of cylinders or rollers A, which turn on journals in the jaws B C of the gripe. The ends of the rollers are pre-
60 ferably made conical, and fit into cup-shaped disks *o*, which have small projecting lugs to enter corresponding holes in the ends of the rollers. The disks fit over the axles of the roll-
65 ers, and are forced up so as to be compressed against the ends of the rollers. These rollers are mounted closely together in each jaw, and any
70 suitable number—as three, or five, or more—may be used. The space between the rollers is sufficient to allow them to rotate freely and
75 independent of each other when not greatly compressed; but when the jaws of the gripe are brought together, and the rollers compressed upon the cable, there will be a consid-
80 erable resistance to their rotation, which increases with the compression until it is sufficient to gradually start the car. The compression is then increased by forcing the jaws still
85 nearer together until the rollers are so flattened that those in each jaw meet by their ex-
90 tension sidewise, and the friction thus developed prevents any further rotation, and causes them to so gripe the cable as to move the car with all the power needed. The movable jaw
B of the gripe has a slide moving in guides in
95 the usual manner, and is operated by a cam, eccentric, or crank, D, which is connected with the slide by a rod, E.

The operating-lever F is fitted to the operating-eccentric D by a bolt, *i*, which passes
90 through a hole, *a*, in an arc, G. When the lever is thrown forward or back it is usually held in place by a curved rack and a pawl or similar device. When the parts become worn
95 so that the required gripe is not produced by throwing the lever to the usual point, the lever may be turned back a little by removing the bolt and putting it back one of the holes *a*. This keeps the adjustment properly regulated at all
100 times.

In passing around curves the cable is guided by horizontal rollers or pulleys H, and when

the gripe reaches the curve it is necessary that while holding the cable, it should travel in the exact curve of the slot in the roadway through which its shank passes, so as not to bind upon either side. For this purpose rollers I stand vertically above and below the horizontal cable-pulleys H, following the inside line of the curve.

Upon the upper and lower jaws of the gripe are bolted plates J, which curve outward, as shown in Fig. 2, and they extend the entire length of the front of the jaws. When the gripe arrives at the curve these plates will ride upon the vertical rollers I, extending across a sufficient number of them to ride evenly, and preserve an equal distance from the line of the slot, thus passing any curve without complicated mechanism.

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

1. The elastic or rubber rollers, A, mounted in the jaws of a cable-gripe, so as to be com-

pressed upon the cable and against each other, substantially as and for the purpose herein described.

2. In a cable-gripe having the jaws B and C moving toward each other by the action of a cam or eccentric, D, the lever F, having its lower end fixed to the eccentric, in combination with the arc having holes *a*, and the bolt passing through the lever and into said holes, substantially as herein described.

3. The elastic gripping-roller A, mounted upon axles supported in the movable jaws B C, in combination with the cup-shaped end plates, *o*, substantially as and for the purpose herein described.

In witness whereof I have hereunto set my hand.

FRANK W. HOPPS.

Witnesses:

S. H. NOURSE,
FRANK A. BROOKS.