(No Model.) 3 Sheets—Sheet 1.

M. E. ELLSWORTH.

APPARATUS FOR OPERATING CAR BRAKES.

No. 489,122. Patented Jan. 3, 1893.

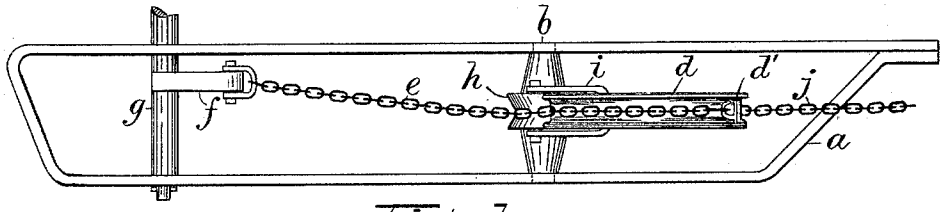

Fig. 1

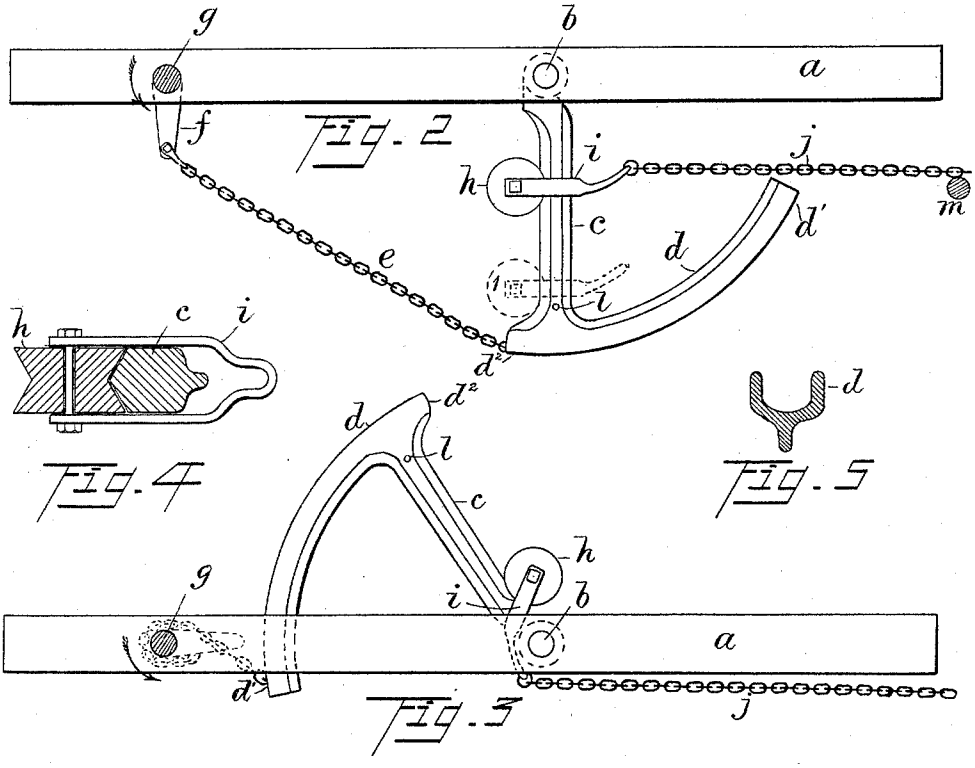

Fig. 2

Fig. 4

Fig. 5

Fig. 3

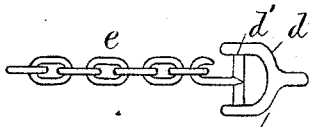

Fig. 6

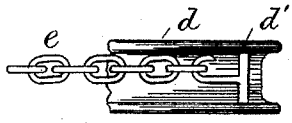

Fig. 7

Witnesses.
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Sextus Sloan.

Inventor.
M. E. Ellsworth
By W. H. Burridge Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No Model.)

3 Sheets—Sheet 2.

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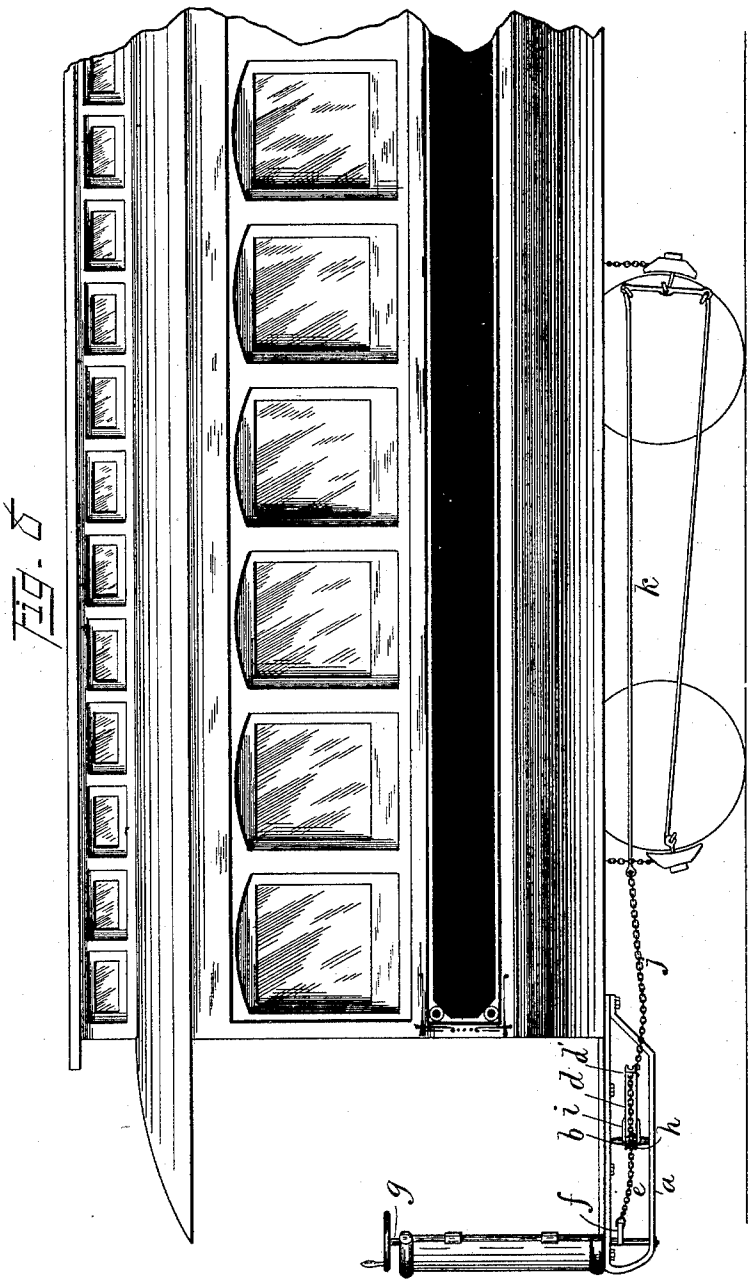
Fig. 6



Witnesses.
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(No Model.) 3 Sheets—Sheet 3.

M. E. ELLSWORTH.

APPARATUS FOR OPERATING CAR BRAKES.

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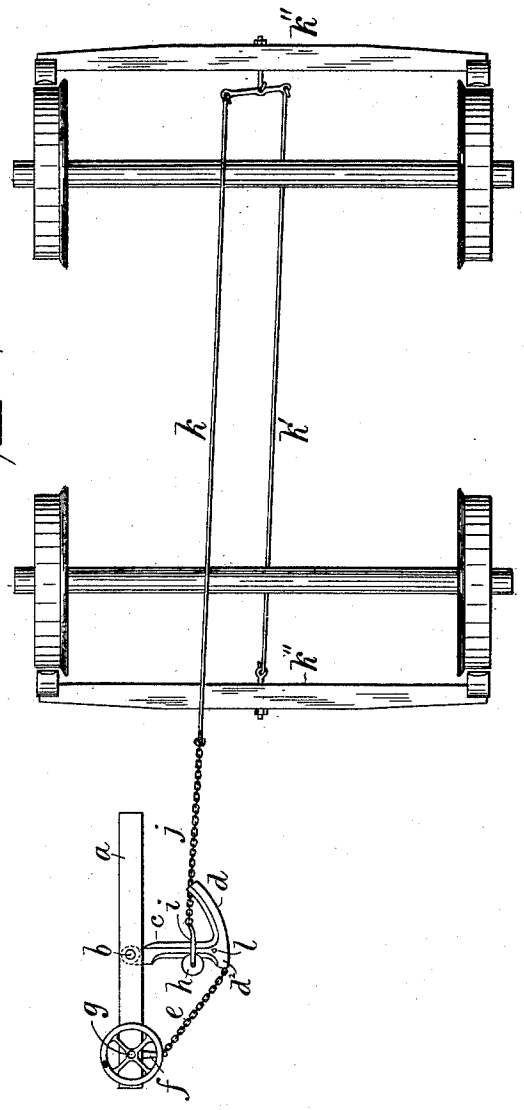
Fig. 7



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Inventor.
M. E. Ellsworth
By W. H. Burridge Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

MARCUS E. ELLSWORTH, OF HUDSON, OHIO.

APPARATUS FOR OPERATING CAR-BRAKES.

SPECIFICATION forming part of Letters Patent No. 489,122, dated January 3, 1893.

Application filed October 22, 1892. Serial No. 449,579. (No model.)

To all whom it may concern:

Be it known that I, MARCUS E. ELLSWORTH, a citizen of the United States, residing at Hudson, in the county of Summit and State of Ohio, have invented a certain new and Improved Apparatus for Operating Railway-Car Brakes, of which the following is a full, clear, and complete description.

My invention relates to devices arranged beneath the car in connection with the brake rod, and brake, said devices consisting of a radial arm having axled connection to a frame, and provided at its outer terminal with a segmental arm connected with an arm of the brake shaft by means of a chain, the radial arm provided with a roller or slide with a chain extending therefrom forward to the brake.

The object of the invention is to provide a simple appliance for attachment to the brake whereby said brake may be operated more quickly and effectually than by the use of the ordinary means.

That the invention may be seen and fully understood by others, reference will be had to the following specification and annexed drawings forming part thereof.

Figure 1 Plate 1 is a side elevation of my improved apparatus detached from a car. Fig. 2 is a plan view of same when the brake is off. Fig. 3 a plan view when the brake is set. Fig. 4 is an enlarged cross section of the roller and radial arm. Fig. 5 an enlarged cross section of the segmental arm. Figs. 6 and 7 are detached views of the segmental arm showing the manner of attaching the chain thereto. Fig. 8 Plate 2 is a partial view of a street car showing the application of the apparatus thereto. Fig. 9 Plate 3 is a plan view of the trucks and brake of a car showing the application of the apparatus thereto.

Like letters of reference designate similar parts in the drawings and specification.

The brake is one of the most essential appliances on a car and particularly so on a steam or street car, and a great many of the accidents so numerous now, could be avoided if the brake were under quicker control and more effectual. I accomplish this by the attachment of my apparatus to the brake.

To the underside of the body of the car is attached a frame *a* Figs 1. 2. 3. 8 and 9 of preferably the form shown. Pivoted to the frame *a* at *b* is a radial arm *c* having the grooved or channeled segmental arm *d* an integral part thereof at the outer or free terminal. To the segmental arm *d* at *d'* is attached a chain *e* the opposite terminal of said chain being attached to the arm *f* which is an integral part of or rigidly attached to the brake shaft *g*. A grooved wheel *h* travels on the radial arm *c* which has a ridge extending the length thereof corresponding to the groove in the wheel as shown in cross section in Fig. 4. The wheel *h* is pivoted to a bail *i* which clasps the arm *c* and has the chain *j* attached thereto, said chain being attached to the ordinary brake rod *k* making connection by a lever with rod *k'* by which connection is made with the brake bars *k''* which bars may be connected to the truck in the ordinary way or otherwise. Or the chain *j* may be attached directly to the brake bar *k''*.

In operation when the brake is off and the chain *e* unwound from the brake shaft *g* the wheel *h* will occupy about the position shown by dotted lines 1 Fig. 2. Upon turning the brake shaft *g* in direction of arrow in Figs. 2 and 3 the extended arm *f* will immediately take up the slack in the chain *e* and the arm *c* pass around and assume the position shown in Fig. 3. As soon as the chain *e* begins to move the segmental arm *d*, the wheel *h* will travel toward the center and is carried around the axle or shaft *b* causing the brakes to become set in the ordinary manner by the tension on the chain *j*. The segmental arm *d* is channeled as shown in cross section in Fig. 5 the chain bearing in the channel when in operation. The means for attaching the chain *e* to the segmental arm consists of a hook pivoted to said segmental arm near the terminal as shown. It will readily be seen that the chain may be attached to the hook when said hook is in the position shown in Fig. 6 and when turned to the position shown in Fig. 7 (the position when in operation) the chain cannot be removed from the hook owing to the contact of the hook with the side of the channel. I do not confine myself to this means of attachment as any suitable fastening may be used, but preferably the one herein mentioned.

In case it is desired to change the form of the segmental arm by leaving off the extended portion d^2 a stop pin l Figs. 2. 3 and 9 may be used in the radial arm.

The apparatus may be reversed so as to operate from either side or it may work perpendicular instead of horizontal without departing from the nature of my invention. I also wish it understood that I may use a plain faced wheel instead of the grooved wheel h, or a plain side may be used and still adhere to the invention.

In cases where it is found necessary a roller m Fig. 2 extends down from the body of the car forming a guide for the brake chain j.

It is found from actual experiment that the initial, or power required to operate the brake is much reduced while the secondary power, or power exerted on the brake is greatly increased according to the length of the radial arm d.

What I claim and desire to secure by Letters Patent is—

1. In an apparatus for operating railway car brakes, a radial arm c provided with a grooved segmental arm d having axle connection with a frame, in combination with the chain e attached to said segmental arm and brake shaft arm f, the roller h operating on said radial arm and provided with a bail connected with the brake chain substantially as and for the purpose specified.

2. In an apparatus for operating railway car brakes, a roller connected with the brake chain by means of a bail and operating on a radial arm, in combination with the brake shaft, an arm extending therefrom and a chain attached to said arm, substantially as and for the purpose set forth.

3. In combination with a railway car brake a radial arm pivoted to a frame and provided with a segmental arm at the free end thereof, a roller or its equivalent operating on said arm and provided with a bail connected with the brake chain in conjoint operation with a chain connected with the segmental arm and extending from the brake shaft substantially as and for the purpose set forth.

4. In combination with the brake shaft of a car an arm f extending therefrom and connected by means of a chain with a segmental arm at the end of a radial arm pivoted as described having connections with the brake substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

MARCUS E. ELLSWORTH.

Witnesses:

W. H. BURRIDGE,

HENRY FORD.