

(No Model.)

3 Sheets—Sheet 1.

J. N. SCARBOROUGH.

AUTOMATIC CAR BRAKE.

No. 413,564.

Patented Oct. 22, 1889.

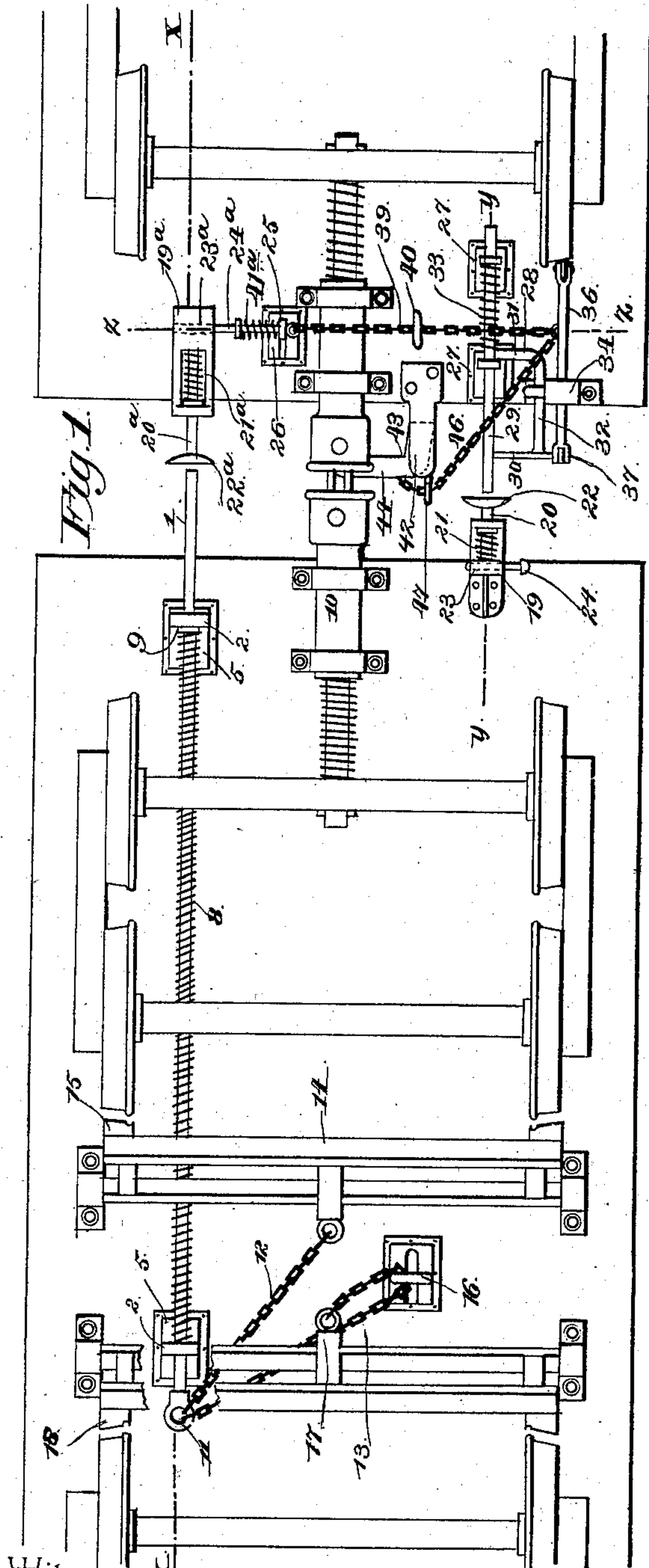


Fig. 1.

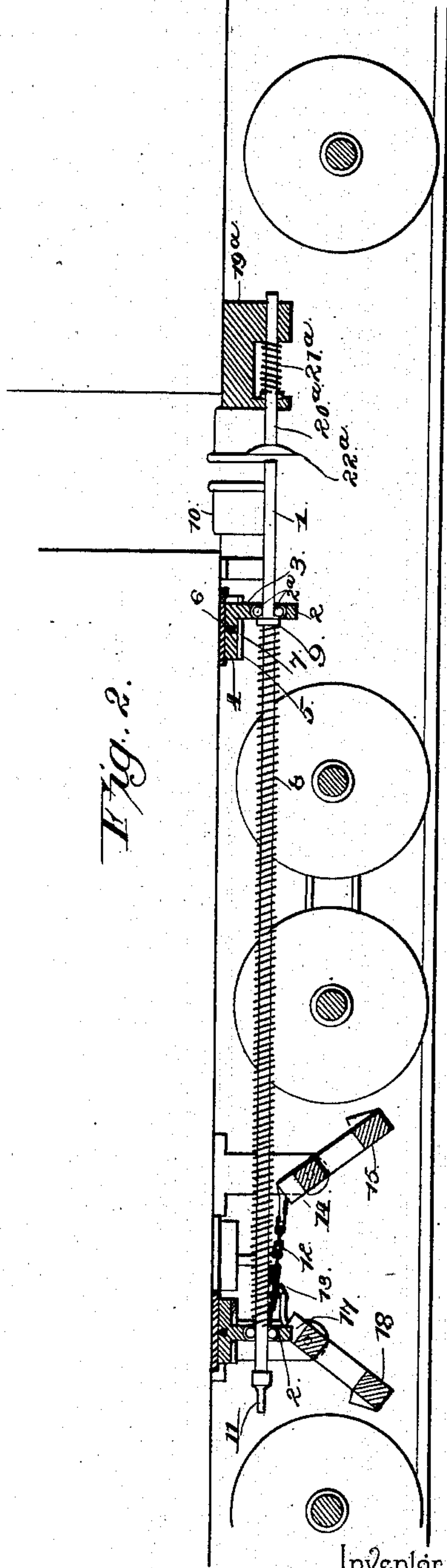


Fig. 2.

Witnesses

*Wm. Bagger*

By his Attorneys,

*Wm. Bagger*

*John N. Scarborough*

*CA Snow & Co.*

(No Model.)

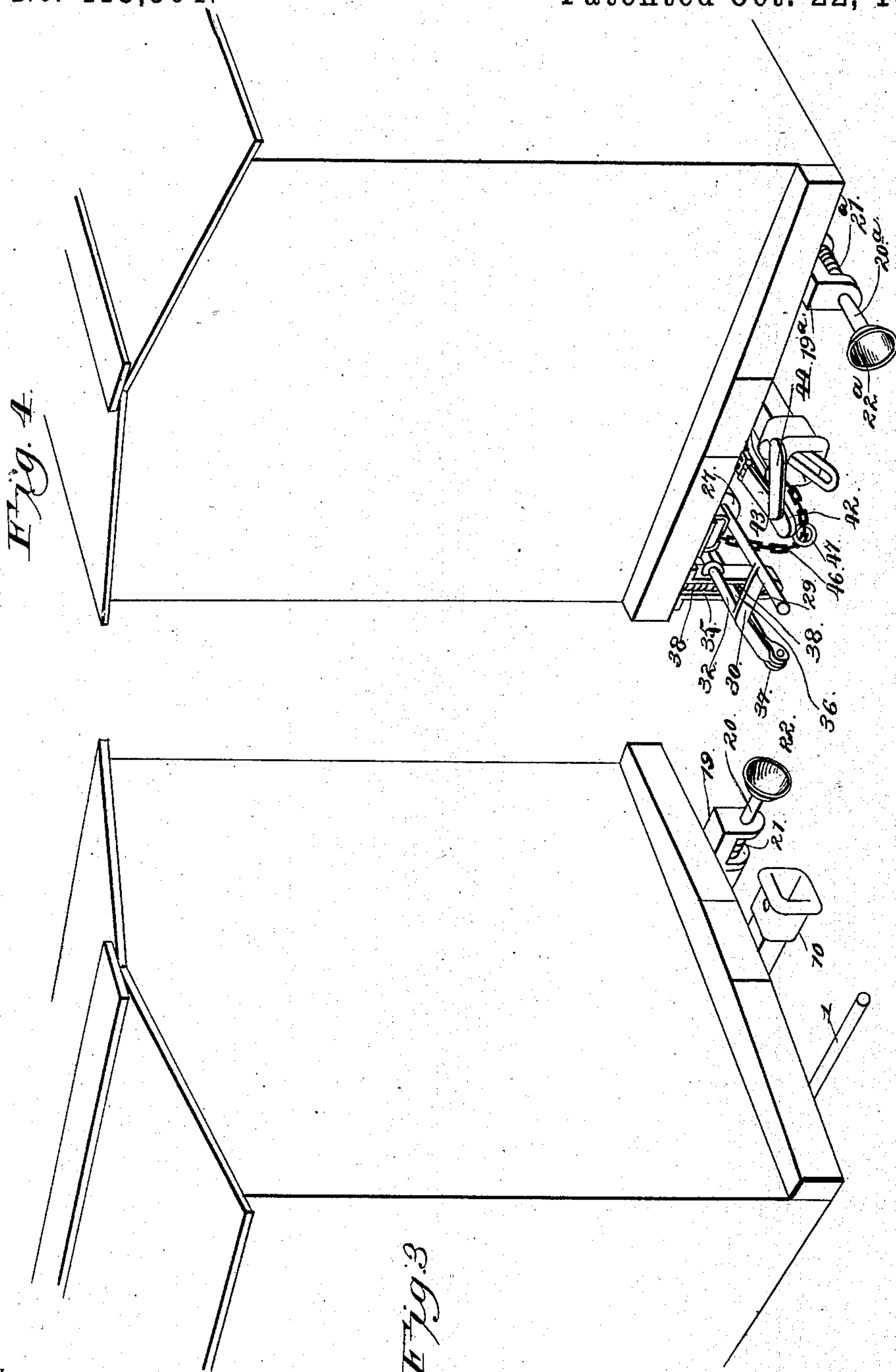
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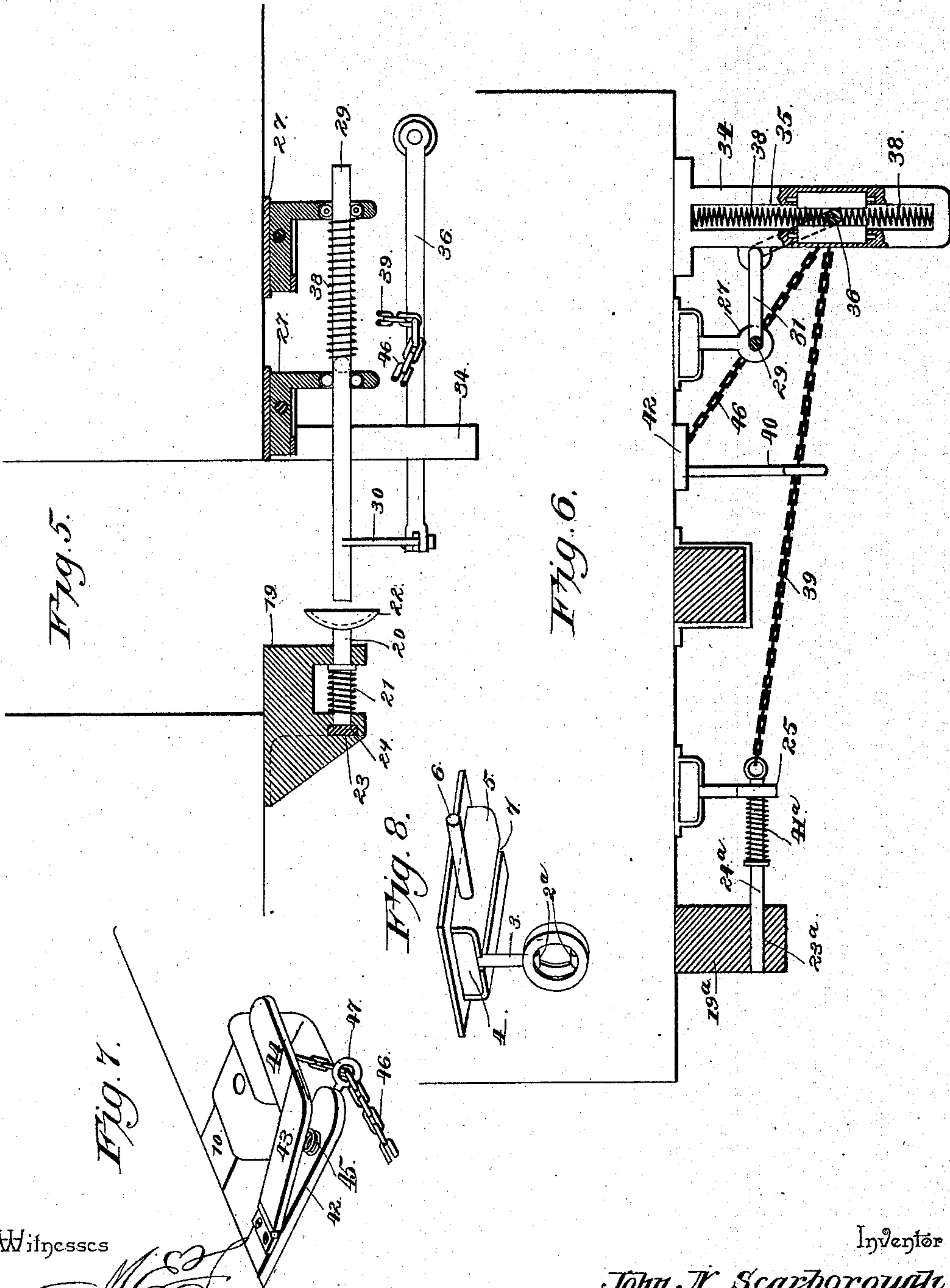
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# UNITED STATES PATENT OFFICE.

JOHN N. SCARBOROUGH, OF AMERICUS, GEORGIA.

## AUTOMATIC CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 413,564, dated October 22, 1889.

Application filed July 11, 1889. Serial No. 317,126. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN N. SCARBOROUGH, a citizen of the United States, residing at Americus, in the county of Sumter and State of Georgia, have invented a new and useful Automatic Car-Brake, of which the following is a specification.

This invention relates to that class of car-brakes which are operated automatically when the cars come together, as will be the case when the momentum is checked, either by the application of brakes to the engine or by the reversal of steam; and it has for its object to construct a brake mechanism of this class which shall be simple and effective, and which shall be so organized and arranged that when the cars come together in the act of backing the train the brakes shall not be applied, and consequently not interfere with or prevent the backing.

The construction of my invention will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings, Figure 1 is a bottom view showing the ends of two cars equipped with my improved brake mechanism. Fig. 2 is a longitudinal sectional view taken on the line  $x x$  in Fig. 1. Fig. 3 is a perspective view of the rear end of one car. Fig. 4 is a perspective view of the front end of the adjacent car. Fig. 5 is a longitudinal sectional view taken on the line  $y y$  in Fig. 1. Fig. 6 is a vertical transverse sectional view taken on the line  $z z$  in Fig. 1. Figs. 7 and 8 are details of my invention.

Like numerals of reference indicate like parts in all the figures.

To the under side of each railroad-car, directly above the forward truck and to one side of the draw-head, is attached a longitudinally-sliding rod 1, which is mounted in boxes or bearings 2 2, having upwardly-extending stems 3, provided at their upper ends with dovetailed plates 4, adapted to be fitted detachably in boxes 5, which are secured permanently to the under side of the car by means of screws or bolts. Friction-rollers 2<sup>a</sup>, supporting the rod 1, are journaled in the boxes 2. The dovetailed plates 4, with their attachments, are retained securely, but detachably, in the boxes 5 by means of trans-

verse pins or bolts 6, and the said boxes 5, which are open at one end, are provided on their under sides with longitudinal slots 7 to admit the shanks 3 of the rings or bearings 2. 55

8 designates a spring, which is coiled around the longitudinally-sliding rod 1, and which bears against a shoulder 9, formed upon the latter, which is thereby forced automatically in a forward direction. The front end of the said rod 1 projects beyond the front end of the car and some distance beyond the front end of the draw-head 10 of the car-coupling. The inner or rear end of the rod 1 is provided with an eye 11, to which a pair of chains 12 and 13 are suitably connected. The former of said chains has its outer end attached directly to the brake-lever 14 of the brakes 15, that operate against the inner sides of the rear wheels of the front truck. The chain 13, after passing through the ring or bearing 16, attached to the under side of the car, is likewise connected to the lever 17, operating the brakes 18, which bear against the inner wheels of the rear truck. It will thus be seen that when the rod 1 is pushed in a rearward direction under the body of the car the brakes will be automatically and simultaneously set or caused to bear against the wheels of both the front and rear trucks. 60 65 70 75 80

The front end of the car is provided on the side which is opposite to that where the longitudinally-sliding rod is located with a box or casing 19, in which is arranged a short longitudinally-sliding rod or buffer 20, which is forced in a forward direction by the action of a spring 21, arranged within the said box or casing, and the front end of which is provided with a disk or plate 22. The box or casing 19 is provided with a transverse opening 23, in which is fitted a pin or plate 24, which, when in position, prevents the buffer-stem 20 from moving in a rearward direction against the tension of the spring 21. 85 90

The rear end of the adjacent car is provided on the side diagonally opposite to the front end of the car already described with a casing 19<sup>a</sup>, similar to the casing 19, and provided with a longitudinally-sliding buffer-stem 20<sup>a</sup>, forced in a forward direction by a spring 21<sup>a</sup>, and having at its front end a disk 22<sup>a</sup>. The rear end of said casing is also pro- 95 100



vided with a transverse perforation 23<sup>a</sup> to receive the transverse pin or key 24<sup>a</sup>. The latter is arranged to slide transversely in a ring or bearing 25, which is mounted detach-  
5 ably in a casing 26, attached to the under side of the car.

It will be seen that when the cars come together the front end of the rod 1 will be engaged by the disk 22<sup>a</sup> at the front end of the  
10 buffer-stem 20<sup>a</sup>. The said rod will thus be forced in a rearward direction against the tension of the spring 8, and the brakes will thus be set.

The rear end of the car is provided on the  
15 side of the draw-head opposite to the casing 19<sup>a</sup> and its attachments with bearings 27 for a longitudinally-sliding frame 28, composed of a rod 29, laterally-extending arm 30, bracket 31, and rod 32, parallel to the rod 29, and connecting the bracket 31 with the arm 30. A  
20 spring 33, coiled around the inner end of the rod 29, serves to force the latter and its attachments in an outward direction. The extreme outer end of the rod 29 projects beyond  
25 the draw-head of the car and registers with the disk 22 of the buffer-stem 20 in the box or casing 19 of the adjacent car.

34 is a vertically-slotted box or casing attached to the under side of the rear end of  
30 the car adjacent to the outer side of the longitudinally-sliding frame 28. In the vertical slot 35 in the box 34, said sides having friction-rollers, is arranged a longitudinal rod or arm 36, the front end of which is provided  
35 with an eye 37, mounted pivotally upon the outer end of the arm 30 of frame 28. The rod 36 is interposed between a pair of springs 38 38, arranged in the vertically-slotted box 34, above and below the said rod, which is  
40 thereby enabled to move in an upward or downward direction, as occasion may require. The inner end of the rod 36 may be provided with a friction wheel or roller, which normally is in a position directly in rear of the  
45 adjacent car-wheel.

39 is a chain attached to the rod 36, and passing from thence through a ring or bearing 40, attached to the under side of the car, and to the inner end of the transversely-sliding  
50 pin or key 24<sup>a</sup>. A spring 41<sup>a</sup>, coiled around the latter, serves to force it normally in an outward direction.

Suitably attached to the rear end of the car adjacent to the draw-head thereof is a bracket  
55 42, having a hinged plate 43, provided with a laterally-extending block 44. A spring 45, arranged upon the bracket 42 below the arm 43, serves to hold the latter normally in a raised position and out of contact with the  
60 draw-head. When the arm 43 is lowered against the tension of the spring, however, the block or bracket 44 will be adjusted against the outer end of the draw-head, thus preventing the draw-head of the adjacent car from  
65 coming in contact therewith. Suitably attached to the outer end of the hinged arm 43 is a chain 46, which passes through a guide

or staple 47 at the outer end of the bracket 42, and thence in a downward direction to the inner end of the rod 36, to which it is  
70 made fast.

It will be seen from the foregoing that when the cars of a train equipped with my invention are traveling in a forward direction and the momentum is stopped either by reversing  
75 steam or by applying brakes to the engine, the cars will come together, and the front end of the longitudinally-sliding rod 1 of each car will be engaged by the buffer 22<sup>a</sup> at the rear end of the adjacent car, thereby forcing the rod  
80 1 in a rearward direction and setting the brakes. At the same time the buffer 22 at the front end of each car will engage the rod 29 of the longitudinally-sliding frame 28 at the rear end of the adjacent car, thus forcing  
85 the said train, and with it the longitudinally-sliding pivoted rod 36, in an inward direction, thereby bringing the inner end of the said rod 36 in contact with the ring of the adjacent wheel, which, revolving in a forward di-  
90 rection, will move the inner end of the rod 36 upwardly, thus slackening the chains 39 and 46, and consequently not disturbing the parts to which the said chains are attached. It will thus be seen that the effect of the cars  
95 coming together by the checking of the momentum will be simply to set the brakes.

When the train is being backed, either for the purpose of moving the train onto a siding or for any reason whatever, it is obvious that  
100 the cars will come together in a manner which would ordinarily have the effect of setting the brakes and thereby preventing the backing of the train. This will not be the case, however, for the reason that as soon as  
105 the adjacent cars approach each other in the act of backing, the rod 29 of the sliding frame 28 at the rear end of each car will be engaged by the buffer 22 at the front end of the adjacent car, thus forcing the inner end of the  
110 longitudinally-sliding pivoted rod 36 into engagement with the rim of the adjacent wheel, which, revolving in a rearward direction, will force the inner end of said rod 36 in a downward direction, thus pulling upon the chains  
115 39 and 46. The former of said chains, being attached to the transversely-sliding key 24<sup>a</sup>, will withdraw the latter from its casing against the tension of the spring 41, thereby enabling the buffer-spring 20<sup>a</sup> to move in an  
120 inward direction when it comes in contact with the rod 1 of the adjacent car. Said rod will consequently not be operated to set the brakes. The action of the chain 46 will be to force the hinged arm 43 in a downward di-  
125 rection against the tension of the spring 45, thus interposing the block 44 between the draw-heads of the approaching cars, which will thus be prevented from coming together sufficiently close to operate the brake-setting  
130 mechanism.

It will be seen from the foregoing that while the brake-setting mechanism will be operated automatically when the cars come



together while traveling in a forward direction the coming together of the cars when moving in a rearward direction will not operate the said brake-setting mechanism. It will also be seen that either the withdrawal of the key or pin 24<sup>a</sup> or the operation of the hinged arm 43, having the block 44, would by itself be sufficient to prevent the operation of the brake-setting mechanism—the former by causing the buffer-stem 20<sup>a</sup> to yield to the pressure of the rod 1, the latter by preventing the cars from coming together sufficiently close for the rod 1 to be operated to set the brakes; hence either of these devices might be dispensed with if in the practical construction of the device it shall be deemed advisable to do so.

The parts of the device which have been described as detachable rings or bearings are all to be constructed substantially in the same manner as the rings or bearings 2, in which the longitudinally-sliding rod 1 is mounted, and which will be readily understood from the foregoing description and drawings. The object in making these parts detachable is to enable parts of the device to be interchanged from one end of the car to the other.

In the practical construction of my improved automatic car-brake it may be found desirable to make various changes and alterations in the construction of the detailed parts thereof; and I would therefore have it understood that I do not limit myself to the precise construction herein described, but reserve the right to make any change and modifications which may be resorted to without departing from the spirit of my invention.

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

1. In an automatic car-brake, the combination, with the longitudinally-sliding brake-operating rod, of the rings or bearings for said rod, having upwardly-extending stems provided with blocks or plates at their upper ends, the boxes or casings having dovetailed recesses for the accommodation of said blocks or plates, and the pins or bolts to retain the said plates detachably in their respective boxes, substantially as set forth.

2. In an automatic car-brake, the combination, with the rings or bearings secured detachably to the under side of the car-body, of the longitudinally-sliding brake-setting rod mounted in said detachable bearings, the spring arranged to force the said rod automatically in a forward direction, and the chains connecting the rear end of said rod with the brake-levers, substantially as set forth.

3. In an automatic car-brake, the combination, with the brake-setting rod mounted to slide longitudinally under the front end of the car, of a buffer mounted to slide longitudinally under the rear end of the adjacent car and a transverse pin or key arranged de-

tachably at the inner end of the stem of said buffer to prevent it from sliding in an inward direction, substantially as set forth.

4. In an automatic car-brake, the combination of the brake-setting rod mounted to slide longitudinally under the front end of the car, a buffer arranged to slide longitudinally under the rear end of the adjacent car and adapted to engage the brake-setting rod when the cars come together while traveling in a forward direction, and mechanism to prevent the brake-setting rod being operated when the cars come together while traveling in a rearward direction, substantially as set forth.

5. In an automatic car-brake, the combination of a longitudinally-sliding frame arranged under the rear end of the car and having an outwardly-extended rod and a laterally-extending arm, a spring-buffer arranged under the front end of the adjacent car, a longitudinally-sliding rod mounted pivotally upon the laterally-extending rod of the longitudinally-sliding frame and extending inwardly to within a short distance of the rim of the adjacent car-wheel, and chains connecting the said longitudinally-sliding rod with mechanism for throwing the brake-setting mechanism out of gear by the tightening of said chains, caused by contact of the longitudinally-sliding rod with the car-wheel when traveling in a rearward direction, substantially as set forth.

6. In an automatic car-brake, the combination of a frame arranged to slide longitudinally in bearings mounted detachably under the rear end of the car, a spring to force the said frame in an outward direction, a buffer arranged under the front end of the adjacent car, a longitudinally-sliding rod mounted in a vertically-slotted casing and extending to within a short distance of the rim of the adjacent car-wheel, the front end of said rod being mounted pivotally upon an arm extending laterally from the sliding frame, springs arranged in the vertically-slotted casing above and below the said sliding rod, and chains connecting the said longitudinally-sliding rod with mechanism for throwing the brake-setting mechanism out of gear when the cars are traveling in a rearward direction, substantially as herein described, and for the purpose set forth.

7. In an automatic car-brake, the combination of the longitudinally-sliding frame arranged under the rear end of the car, the longitudinally-sliding rod connected pivotally to an arm extending laterally from said frame, said rod extending inwardly to within a short distance of the rim of the adjacent car-wheel, springs to support the said rod normally in an approximately-horizontal position, a longitudinally-sliding buffer arranged under the rear end of the car on the opposite end of the draw-head, a transversely-sliding pin or key arranged in rear of said longitudinally-sliding buffer, a spring to hold the said key in position, a chain



passing through suitable guide-eyes and connecting the said pin or key with the longitudinally-sliding rod, the brake-setting rod mounted to slide longitudinally under the front end of the adjacent car and adapted to engage the longitudinally-sliding buffer, and a buffer arranged under the front end of said adjacent car and adapted to engage the longitudinally-sliding frame, substantially as set forth.

8. In an automatic car-brake, a bracket attached to the car adjacent to the draw-head, an arm hinged to said bracket and having a block extending laterally in front of the draw-head, a spring to hold the said arm and block normally in a raised position, and mechanism adapted to be operated au-

tomatically by the movement of the car in a rearward direction for the purpose of lowering the said arm against the tension of the spring, so as to interpose the block extending laterally from the said arm between the draw-heads of the adjacent cars, which are thus prevented from coming together sufficiently close to operate the brake-setting mechanism, all combined and operating substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

JOHN N. SCARBOROUGH.

Witnesses:

W. M. JONES,

W. H. C. DUDLEY.