

(No Model.)

J. TRENDLEY.
CAR BRAKE.

No. 486,801.

Patented Nov. 22, 1892.

Fig. 1.

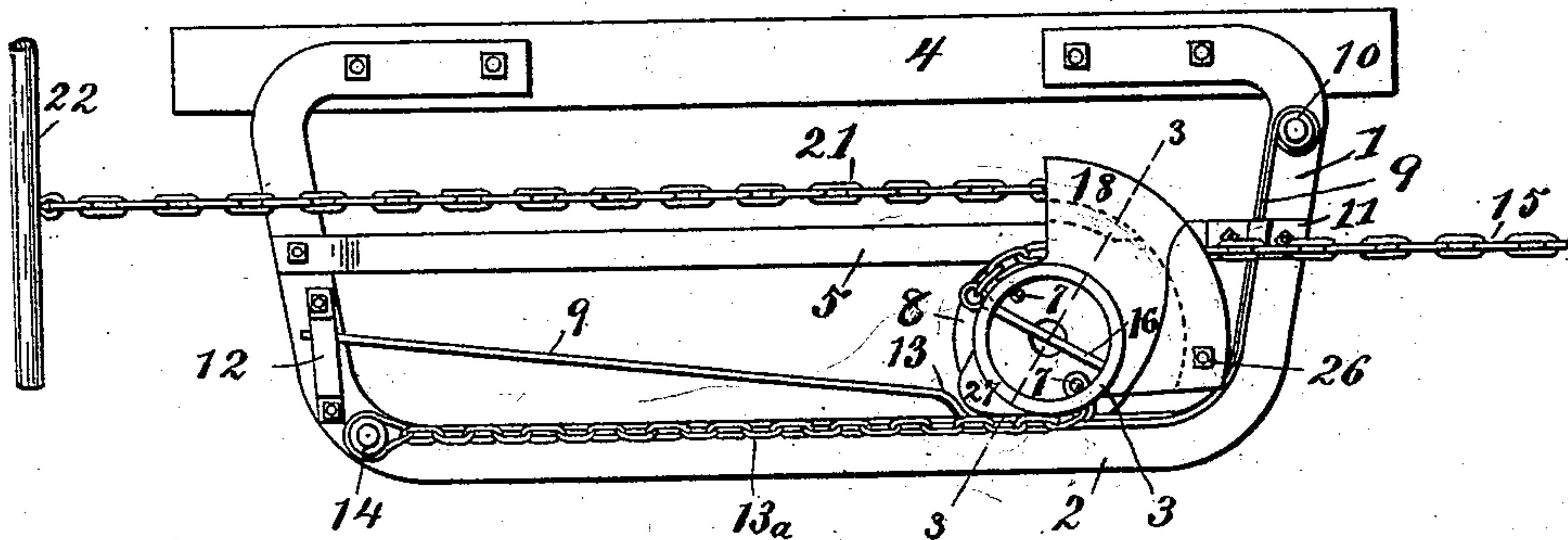


Fig. 2.

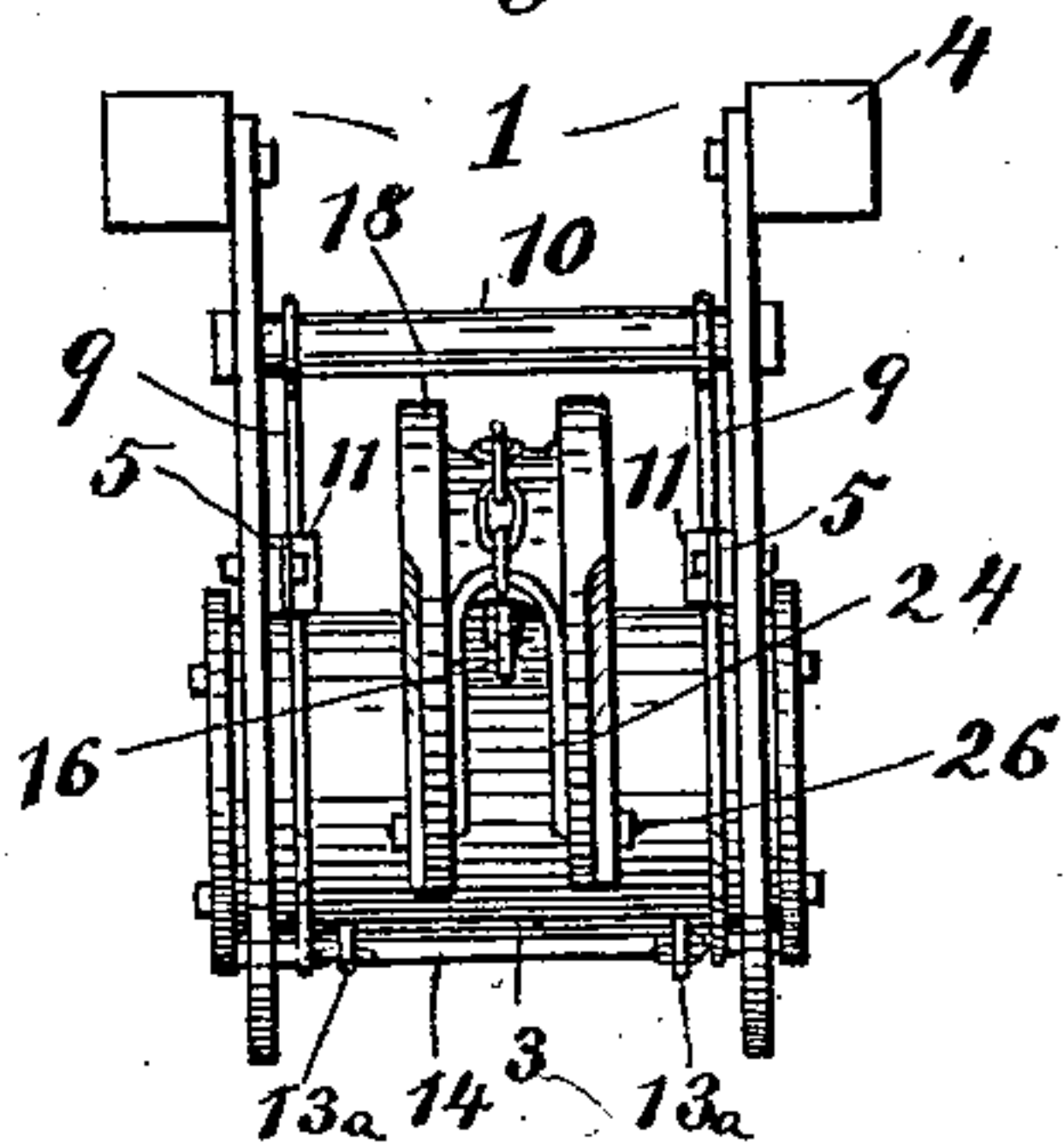


Fig. 3.

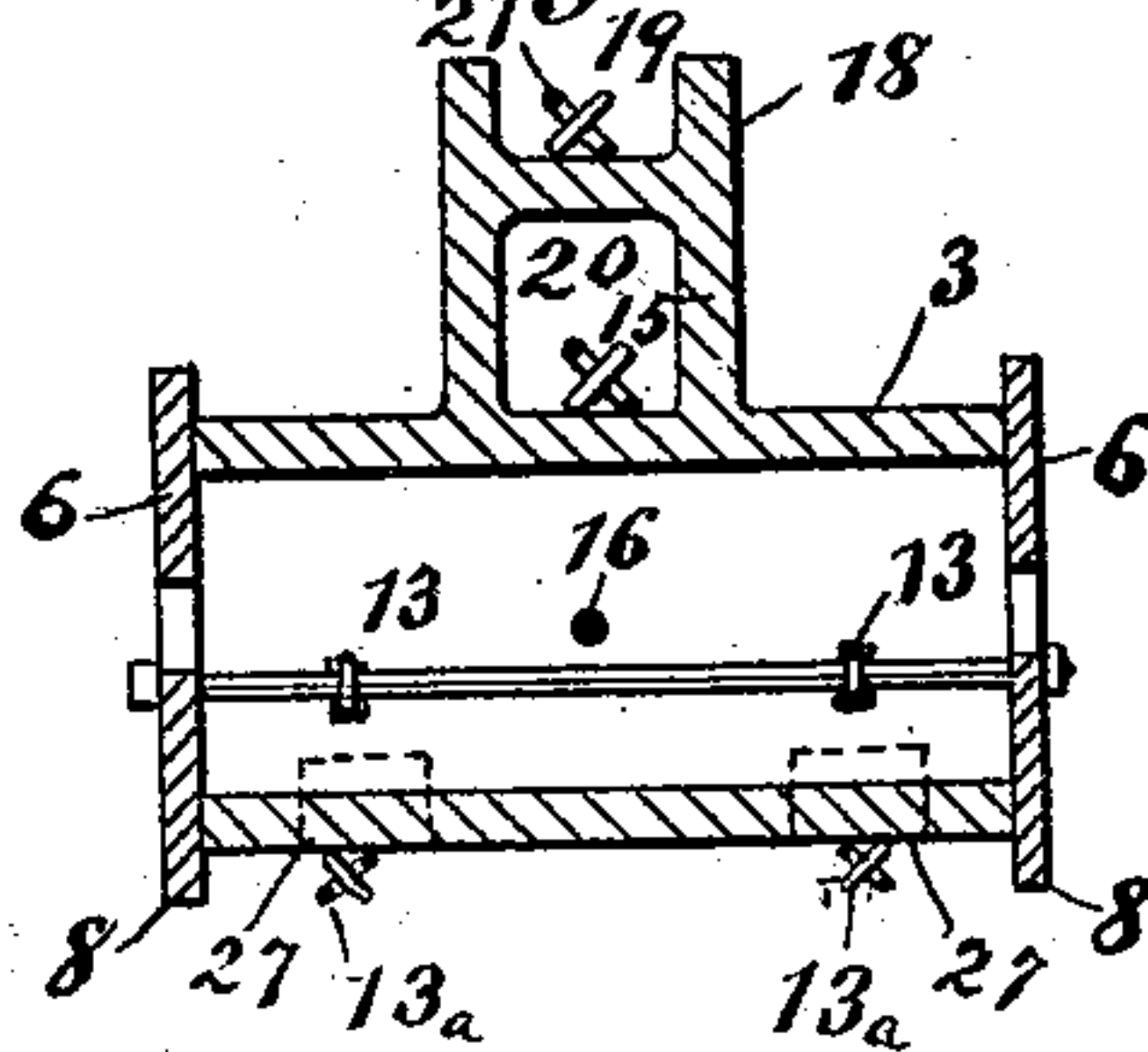


Fig. 4.

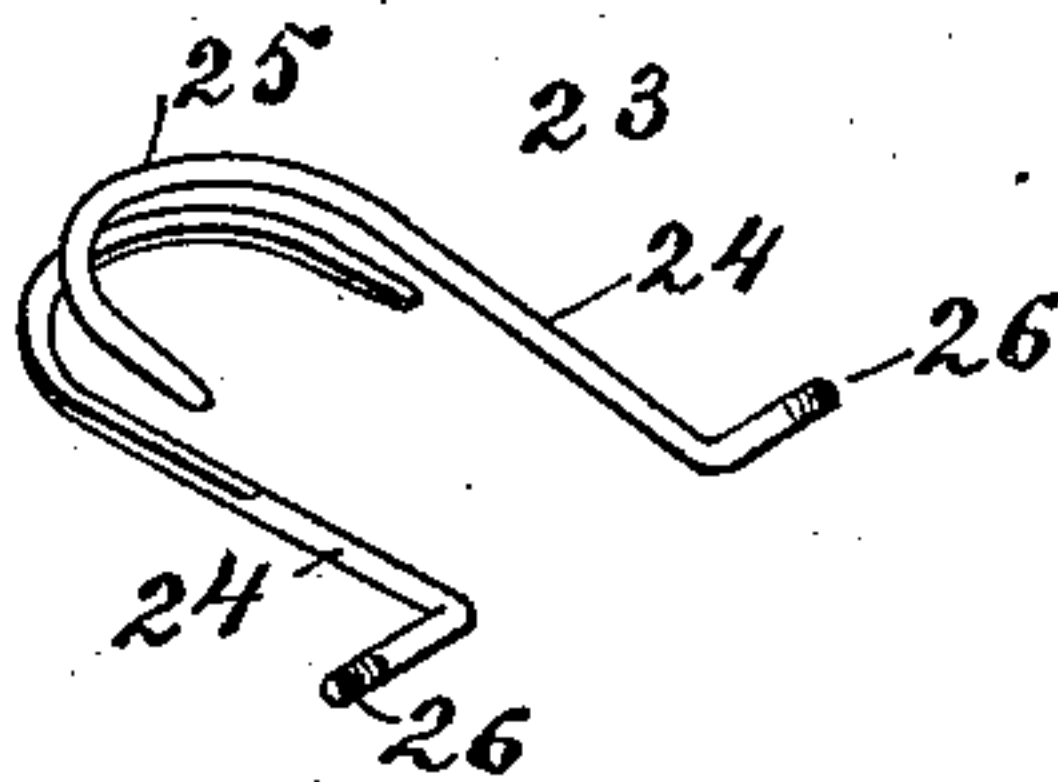
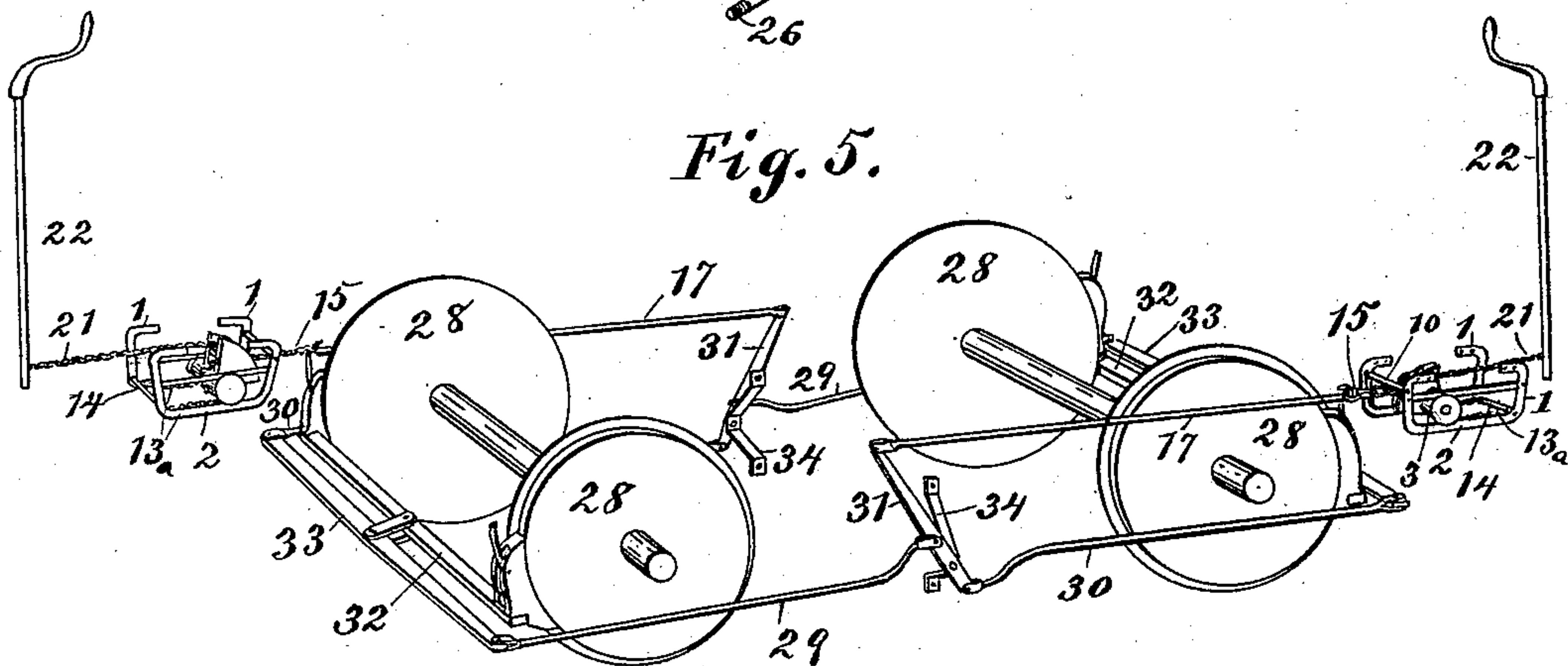


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN TRENDLEY, OF ST. LOUIS, MISSOURI, ASSIGNOR OF THREE-FOURTHS TO JOHN W. SCHORR, OTTO STIFEL, AND CHARLES NOLL, OF SAME PLACE.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 486,801, dated November 22, 1892.

Application filed July 30, 1892. Serial No. 441,706. (No model.)

To all whom it may concern:

Be it known that I, JOHN TRENDLEY, of the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Street-Car Brakes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part thereof.

My present invention relates to an improvement upon the class of brakes commonly known as "motor-car" brakes, one of which is shown and described in the United States Patent No. 464,596, granted to me and my assignees December 8, 1891.

The invention consists in certain novel arrangements and combinations of parts hereinafter fully set forth, and pointed out in the annexed claims.

In the drawings, Figure 1 is a detail side elevation of the winding mechanism applied to a portion of a car-frame, parts being broken away. Fig. 2 is an end elevation of same, looking from the right hand of Fig. 1. Fig. 3 is a section on line 3 3 of Fig. 1. Fig. 4 is a detail view, in perspective, of a split stirrup made use of in carrying out the invention. Fig. 5 is a perspective view showing the practical application of the invention to a motor-car.

A complete and independent winding mechanism, now to be described, is located at opposite ends of the car-frame at diagonally-opposite corners thereof, so that the brake may be applied from either platform, as indicated in my former patent above noted. Said winding mechanism as improved consists of two depending supporting-tracks 1, arranged with parallel ways 2, upon which a movable drum 3 is adapted to roll back and forth, and with vertical upturned ends which are provided with apertures, by means of which the tracks are secured to the car-frame 4.

5 indicates two upper guiding-tracks arranged immediately above the ways 2 and extending parallel therewith at such a distance therefrom as will permit the drum 3 to freely roll back and forth between the upper and lower tracks and be guided in such movement. Lateral displacement of the drum 3 is prevented by circular heads 6, one of which

is secured in place upon each end of said drum by means of one or more bolts 7, passing through the drum longitudinally and through the opposite heads. The diameter of said heads 6 is such that a flange 8 is formed at each end of the drum, which flange, engaging the outer surfaces of the upper and lower tracks as it does, prevents lateral displacement of the drum in its movements. The normal position of the drum 3 is that here shown, which is at or near to the inner terminals of the tracks 2 and 5, in which position it is normally held by means of a suitable spring. The form of spring used for this purpose is immaterial, but I prefer that which I here show, consisting of two long steel rods 9, one end of each of which is fixed to an upper cross-bar 10 by being bent around the same or otherwise secured. Said rods are then carried downward to a point about in a plane with the upper edges of the tracks 2 and then outward and upward at an incline, so that their outer terminals are located some distance above said tracks at the outer ends thereof.

To prevent the upper end of the rods 9 from turning upon the cross-bar 10, a short strap or yoke 11 is fixed over each rod at a point some distance below said cross-bar and fixes said rods from turning upon the bar and holds them with their outer ends elevated, so as to form a yielding inclined track in the path of the drum 3, the purpose of which track will be stated farther on. The free ends of the rods 9 are loosely guided in a vertical path by means of straps 12, which are placed over them and fixed to the outer vertical portions of the tracks 2. (See Fig. 1.)

To more securely hold the drum 3 in normal position at the inner terminal of the tracks, I provide one or each of the spring-rods 9 with a depression or other equivalent form of stop 13 at a point adjacent such terminal.

13^a indicates two stay-chains, the outer ends of which are secured to a lower cross-bar 14, and the inner ends of which are secured to the drum 3 by being passed through apertures in said drum and having one of their links mounted on the bolt 7, so that when said drum is in normal position said

chains will lie straightened out parallel with and alongside of the tracks 2. These stay-chains are adapted to be wound around said drum in the same direction, when the drum is rolled out of normal position, toward the outer end of the tracks 2, and their function is to stay and guide the drum during operation. These stay-chains 13^a are, as shown, located some distance from the center of the length of said drum, so as to be wound around the end portions thereof and leave a clear space between, around which the brake-chain 15 is adapted to be wound in a direction opposite to that in which said stay-chains are wound. The brake-chain 15 has its outer end secured to said drum in any suitable manner, preferably by means of an eyebolt 16, passed through apertures in the drum and having a link of said chain engaging its eye. (See Fig. 1.) The inner end of the brake-chain 15 is adjustably secured to a connecting-rod 17 of the brake mechanism. Mounted upon and preferably cast integral with the drum 3 is another and larger drum 18 in the form of a segment of a circle, having a groove 19 in its outer periphery and a passage 20 located in its body between said groove and said drum 3.

The brake-chain 15 operates in the passage 20, and the staff-chain 21 operates in the groove 19.

The staff-chain 21 has its outer end connected to the brake-staff 22, so as to be wound therearound, and its inner end connected to said segment 18, preferably in the following manner: A split stirrup 23, consisting of two hooks 24, having hooks 25 at one end reversely arranged and overlapping each other, and threaded ends 26, turned outwardly at the ends opposite said hooks, is located in the groove 19, with the threaded ends 26 engaging opposite apertures in the walls of said groove. The split stirrup 23 is mounted in the groove 19 at a point most closely adjacent the point of attachment of the stay-chains 13 to the drum 3, and the staff-chain 21 engages the hooks of said split stirrup.

27 indicates two enlargements or projections located or formed upon the drum 3 in the path of the stay-chains 13 at a point closely adjacent the point of attachment of said chains to said drum. The purpose of these enlargements is to form a sort of eccentric surface, upon which said chains are wound. Said enlargements, being located near to the point of attachment of said chains, act to increase the diameter of the drum at that point and quickly take up the "slack" of the brake connections at the beginning of the winding operation, as will be further referred to later on.

Two independent winding mechanisms, as above described, are located at either end of the motor-car at diagonally-opposite corners thereof on a longitudinal line exterior of the truck-wheels 28. This is done in order that the connections with the brake-beams shall

not extend across the space inclosed by the car-axles, which is usually in electric-motor cars occupied by the motors and their connections. The connecting-rods 17 are therefore located outside of the space between the wheels, as are also the rods 29 and 30 and the vertical levers 31. Connection with the brake-beams 32 is made by means of "evener-levers" 33, or it may be made in any other manner.

34 indicates brackets or some portion of the car-frame upon which the vertical levers 31 are mounted.

The operation is as follows: Upon winding the chain 21 upon either one of the brake-staffs 22 (at either end of the car) the drum 3 will be rolled outward upon the tracks 2, and the segment 18 will be carried with it. The staff-chain 21 will be unwound from the segment, while the brake-chain 15 and the stay-chains 13 will be wound upon said segment simultaneously in opposite directions. This movement of the brake-chain is at the beginning more rapid than it would be were the stay-chains wound directly upon said drum, for the reason that as the movement continues said stay-chains engage the enlargements 27 on the drum and act to increase the size thereof and accelerate the winding of said brake-chain until said stay-chains have been wound over them. This construction takes up the slack in the brake connections quicker than usual; but as soon as the stay-chains have been wound over said enlargements they engage the surface of the drum again and act to decrease the size of said drum and to throw the leverage back to normal, which, as is readily seen, is such that the brakes may be applied with great force, owing to the fact that the throw or radius of the segment 18 is considerably greater than the radius of the drum 3. The release of the brake-shoes is accomplished by releasing the chain 21 by permitting it to unwind from the staff 22. A spring (not shown) normally holds the brake-shoes out of contact with the treads of the wheels and draws the drum 3 back to normal position. In some cases, however, I have found such spring to be ineffectual for such purpose and have provided more efficient means in the spring-rods 9, forming a yielding track in the path of the winding-drum.

The drum 3 is prevented from rolling outward by coming in contact with the shoulder or stop 13 on each of said rods, except when forcibly moved by winding up the chain 21 on the brake-staff, in which case the inclined yielding tracks are depressed by contact therewith of said drum in its outward movement. When the drum is released in throwing off the brakes, it is rolled back to normal position by the means before described, and during its return movement toward such normal position the yielding tracks rise automatically to their normal position, which is that here shown. In rising to normal posi-

tion the yielding tracks also assist the drum 3 in returning to its normal position, as they afford a sort of incline, down which said drum rolls or is assisted in rolling. When it is desired to take up slack in the staff-chain 21, all that is necessary is to first detach the chain from the hook 25 of one of the hooks 24 of the split stirrup 23 by moving said chain in one direction and then detach said chain from the other hook by moving in an opposite direction, and then causing both of said hooks to engage a link of the chain that is nearer the brake-staff. The construction of the split stirrup 23 is such, as may readily be perceived, as to prevent inadvertent disconnection of the chain from its hooks and yet form a cheap and efficient means of coupling said chain to the winding-segment. It will be seen that the heads 6 of the drum 3 are readily removable.

What I claim is—

1. In a car-brake, the upper and lower tracks 2 and 5, provided with means for suspending them beneath a car-body, in combination with a drum 3, adapted to roll on said tracks 2 and carrying a segment 18, having a greater throw than said drum and provided with a peripheral groove 19 and a passage 20, located intermediate of said groove and the body of the drum, a chain 21, attached to and adapted to be wound on said segment in said groove, a brake-chain 15, attached to and constructed to be wound on said drum and located in said passage 20, and two stay-chains attached at one end to a stationary object and at the opposite end to said drum and constructed to be wound thereon in a direction opposite to the direction in which said brake-chain is to be wound, substantially as and for the purpose set forth.

2. In a car-brake of the class described, a drum 3, having a segment 18, stay-chains 13, attached to said drum, and enlargements 27,

formed on said drum and arranged to be engaged by said chains, substantially as and for the purpose set forth.

3. In a car-brake, a winding-drum 3, having another and larger drum in the form of a segment 18, mounted thereon and provided with a groove 19 and a passage 20, substantially as set forth.

4. In a car-brake having a winding-drum, a split stirrup 23, consisting of two hooks 24, having hooks 25 at one end reversely arranged and overlapping each other and mounted upon said drum in a groove therein, substantially as set forth.

5. In a car-brake, two parallel horizontal supporting-tracks 2, provided with means for attaching them to a car-frame, in combination with a rolling winding-drum, as 3, stay-chains 13, adapted to be wound upon said drum, brake-chain 15, also adapted to be wound on said drum, means for rolling said drum upon said supporting-tracks, and a yielding track, as 9, in the path of said drum and constructed to hold same at normal position and aid in returning said drum to such position after it has been removed therefrom, substantially as set forth.

6. In a car-brake having a rolling winding-drum constructed to roll upon supporting-tracks, two spring-bars 9, constituting a yielding track in the path of said drum, said bars having one end fixed and the opposite end free, a strap 12, arranged to guide the free end of said bars, and a stop, as 13, formed in or located upon said bars adjacent the normal position of said drum, substantially as and for the purpose set forth.

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

JOHN TRENDLEY.

Witnesses:

W. C. HOWLAND,
JNO. C. HIGDON.