

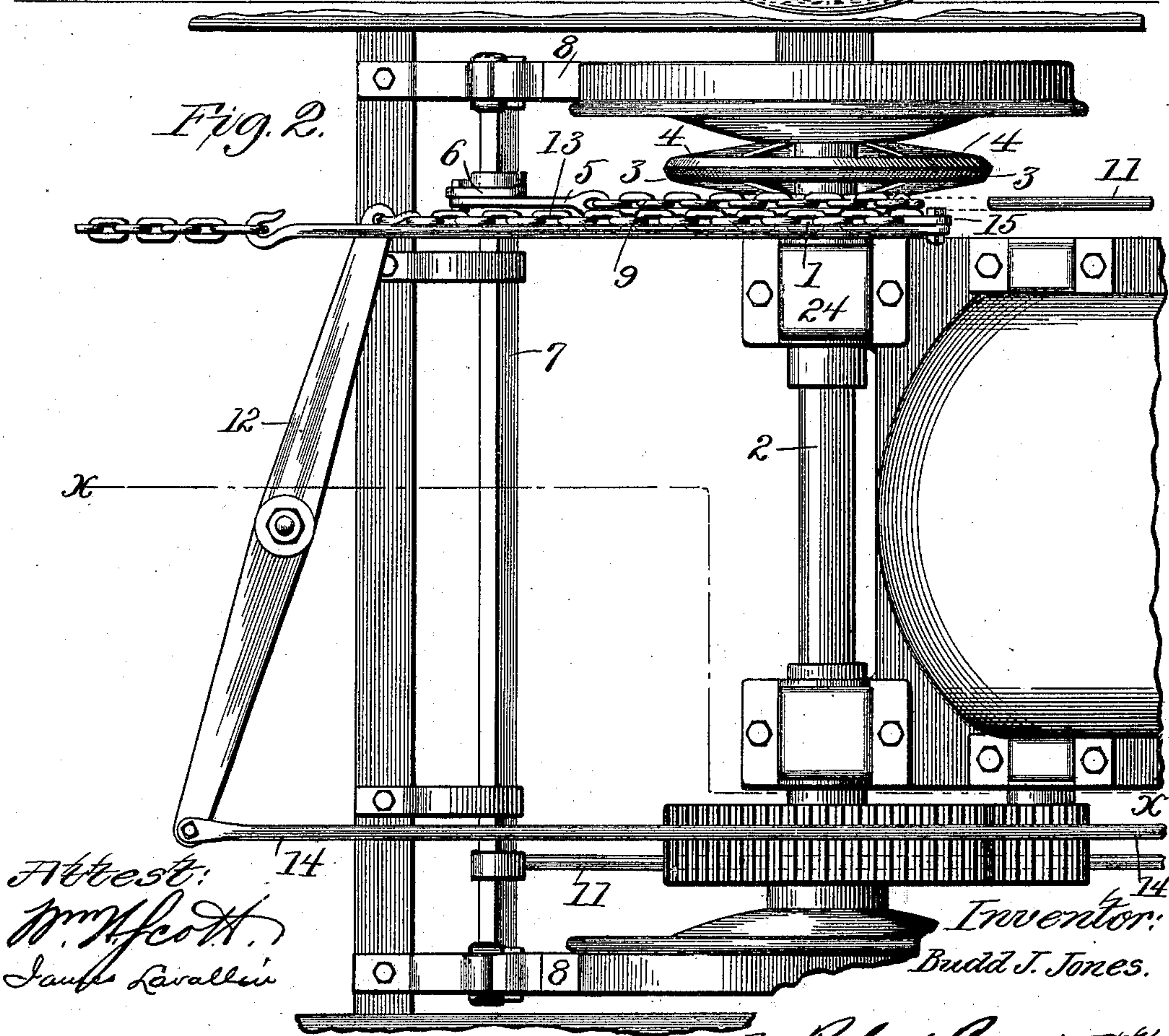
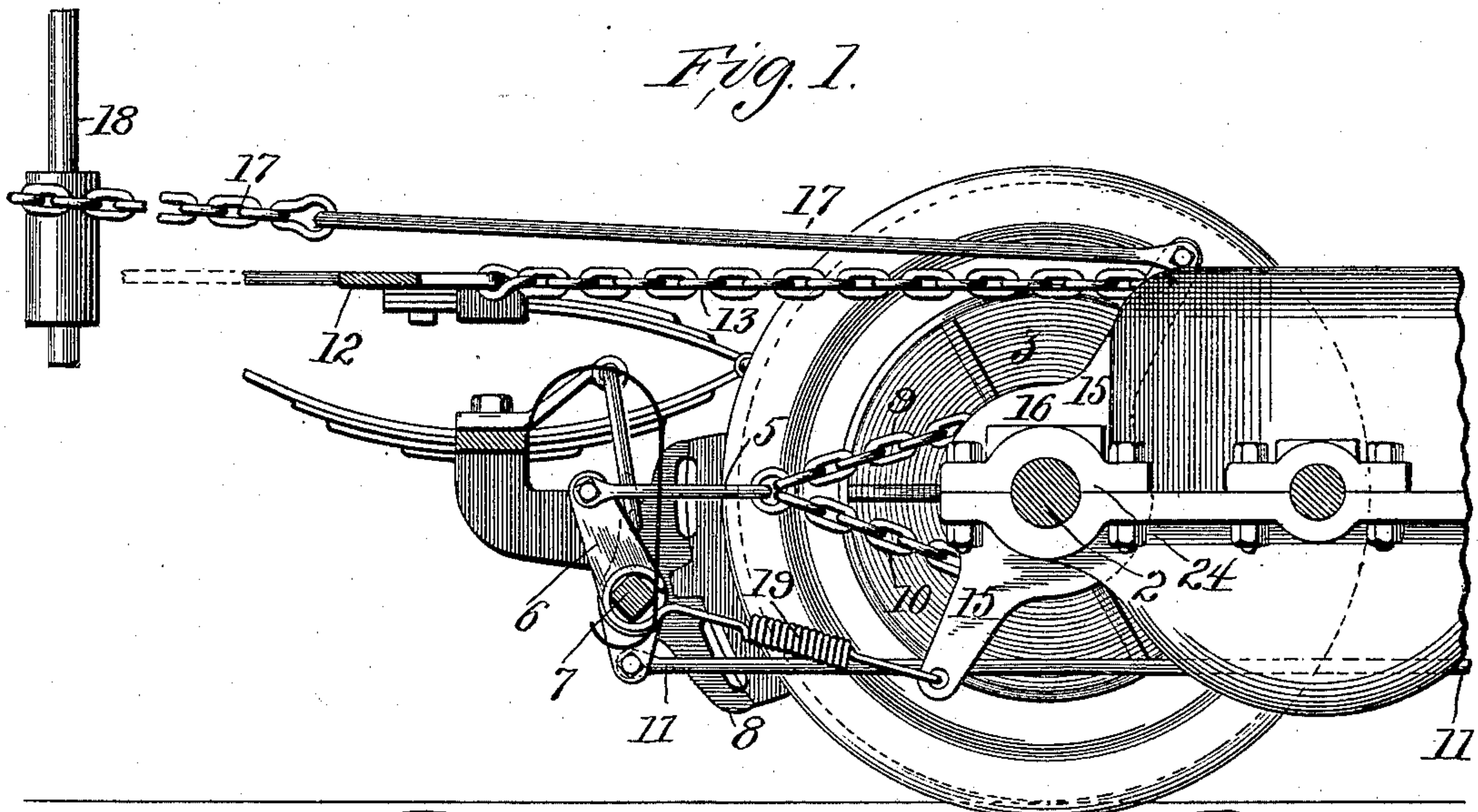
(No Model.)

2 Sheets—Sheet 1.

B. J. JONES.
STREET CAR BRAKE.

No. 578,675.

Patented Mar. 9, 1897.



Attest:
J. M. Scott,
Jas. L. Lavelle

Inventor:
Budd J. Jones.

By Robert Burns Hilly.

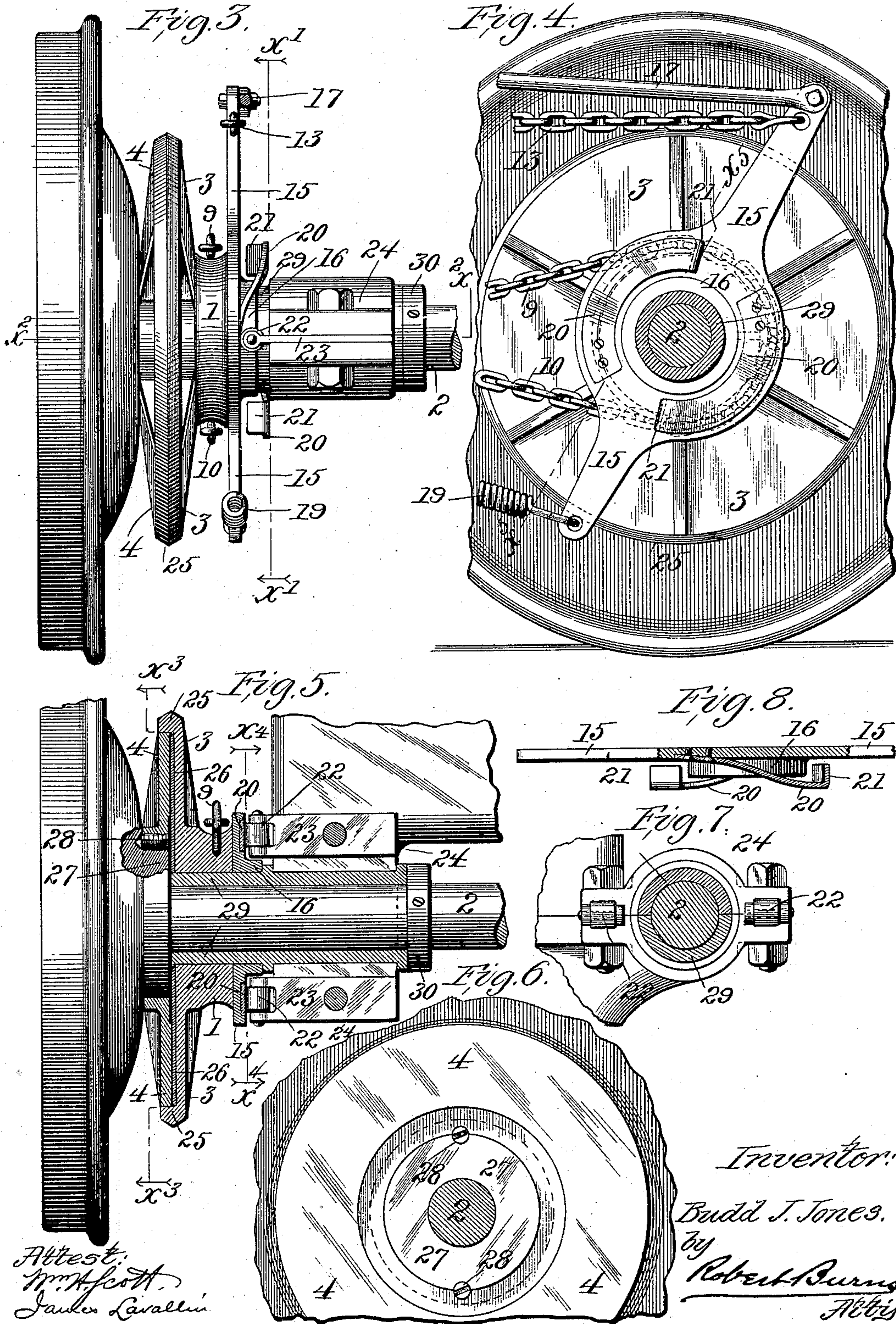
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Attest:
M. H. Scott,
Lawyer

Inventor:
Budd J. Jones.
By
Robert Burns
Atty.

UNITED STATES PATENT OFFICE.

BUDD J. JONES, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-THIRD TO
CHRIS T. POWELL, OF SAME PLACE.

STREET-CAR BRAKE.

SPECIFICATION forming part of Letters Patent No. 578,675, dated March 9, 1897.

Application filed January 2, 1897. Serial No. 617,818. (No model.)

To all whom it may concern:

Be it known that I, BUDD J. JONES, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Street-Car Brakes; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification.

The present invention relates to that type of street-car brakes in which the momentum of the car is utilized to brake the same, and more especially to that special form of such brakes in which a loose winding-drum having pull connections with the brake-beams is arranged loosely upon the car-axle and is adapted to be manually forced into frictional contact with the car-wheel or other fixed disk upon the car-axle, to cause said drum to wind up the aforesaid pull connections of the brake-beams and apply the brake-shoes to the rims of the car-wheels.

The object of the present invention is to provide a simple and efficient construction and arrangement of the brake mechanism parts whereby the application of the brakes is effected in a very gradual and yet rapid and effective manner, so that the car will be stopped in very quick order, and yet not so suddenly as to discommode the passengers; and which also embodies a very compact arrangement of parts, so as to be capable of use upon the axles of electric-motor cars, in which the space left upon the axle between the motor and the car-wheel is very restricted.

Another object of the present improvement is to provide a simple and efficient means whereby the friction and wear between the car-axle and the brake-applying drum that surrounds the same is entirely prevented.

I attain such objects by the construction and arrangement of parts illustrated in the accompanying drawings, in which—

Figure 1 is a detail longitudinal section at line $x x$, Fig. 2, illustrating one end of an electric-motor truck to which the present invention is applied; Fig. 2, a detail plan view of the same; Fig. 3, an enlarged detail front elevation of the brake-applying drum and its

operative connections; Fig. 4, a detail longitudinal section of the same at line $x' x'$, Fig. 3; Fig. 5, a detail horizontal section of the same at line $x^2 x^2$, Fig. 3; Fig. 6, a detail longitudinal section at line $x^3 x^3$, Fig. 5, illustrating the connection between the fixed friction-disk and the hub of the car-wheel; Fig. 7, a detail longitudinal section at line $x^4 x^4$, Fig. 5, illustrating the tubular extension-sleeve for supporting the brake-applying drum; Fig. 8, a detail transverse section at line $x^5 x^5$, Fig. 4, illustrating the arrangement of the yielding cam members on the operating-arm of the brake-applying drum.

Similar numerals of reference indicate like parts in the several views.

As illustrated in the drawings, the present invention involves the usual winding-drum 1, loosely mounted upon the car-axle 2 and arranged to have endwise movement upon the same, so that the friction head or disk 3 at one end of said drum may at the will of the operator be brought into frictional contact with a corresponding friction head or disk 4, fixed upon the car wheel or axle, as may be found most convenient, the construction being such that by such frictional engagement the winding or brake-applying drum will be caused to turn with the car-wheel to wind up the flexible pull connection 5, one end of which is attached to the periphery of said drum and the other end to the equalizing-lever 6 of the brake-beam 7, carrying the usual brake-shoes 8, that engage the rim of the car-wheel. As illustrated in the drawings, the flexible pull connection 5 will be of a forked nature, the ends of the respective forks or branches 9 10 being connected in opposite directions to the winding-drum 1, so that the rotation in either direction of said drum will actuate said pull connection to apply the brakes. The end of the equalizing-lever 6 opposite to that to which the pull connection 5 is attached is connected to a pull-rod 11, that connects in a direct manner with the brake-beam of the opposite pair of wheels of the car-truck.

The construction so far described, as well as the equalizing connection between the brake mechanism at one end of the car with

the brake mechanism at the other end of the same, in order that such duplicate mechanisms will operate in unison from either end of the car, will be substantially the same as that heretofore employed in the present type of brake mechanisms, and such equalizing connection between the brake mechanisms will comprise a pivoted equalizing-lever 12, pivoted on the truck-frame, with its opposite ends connected to the respective operating-arms of the duplicate brake mechanisms by flexible pull connections 13 and 14.

In the present invention one feature of novelty involves the following-described means for forcing the friction-disk 3 of the brake-applying drum 1 into frictional engagement with the friction-disk 4 of the car-wheel. In this, 15 is a lever arranged immediately adjacent to the end of the drum 1 opposite to the friction-disk 3, with its pivoted hub 16 surrounding the car-axle, as shown. One arm of this lever has flexible connection 17 with the platform brake-staff 18, by which the motorman is enabled to actuate and control the brake mechanism, while the opposite arm of said lever has connection with the free end of a spring 19, attached to any suitable part of the motor-truck, the tendency of such spring being to turn the brake-applying mechanism in a direction opposite the platform-actuating mechanism, the one being intended to release the brakes and the other to apply the same. One end of the hub 16 of the said lever 15 is provided with cam surfaces, that in my preferred construction, as shown in the drawings, are formed by cam-shaped segmental springs 20, that at one end are secured to said hub 16, and at the other end are provided with lateral extensions 21, that project toward said hub, the construction being such that after a proper degree of flexure of the cam-spring 20 toward the hub 16 comes in contact with the same to prevent further movement of the ends of such cam-springs, so that any further flexure of said springs must take place in the body portion of the same, the purpose of which construction will be more fully set forth in the description of the operation of the present improved brake mechanism.

The cam-springs 20, above described, constitute the movable member of the cam mechanism proper, by means of which endwise movement is imparted to the brake-applying drum 1 to bring the friction-disk 3 thereof into frictional contact with the friction-disk 4 of the car-wheel to effect a powerful application of the brakes, while the stationary members of such cam mechanism will have a stationary attachment on the frame of the car-motor or other non-revoluble part of the truck-frame, and will preferably consist of friction-rollers 22, having bearing against the cam-springs 20 and carried by bracket-pieces 23, that are secured to the axle-embracing yokes 24 of the electric motor of the car.

In the present improvement one of the friction-disks 3 4 will be provided with a marginal flange 25, that forms a receiving-recess for the removable wear-facing 26, of leather or like material, that is interposed between the adjacent faces of said disks, and into which recess the rim of the other disk fits snugly, so as to prevent in a measure the entrance of dust, &c., to the frictional contact-surfaces, such construction being clearly illustrated in Fig. 5 of the drawings.

As shown in Fig. 5 of the drawings, the friction-disk 4 is made separate from the car-wheel and is secured to an extension-hub 27 of said wheel by means of longitudinal screw-keys 28, so as to be readily detached when it is required to make repairs, &c.

Another feature of the present invention involves a construction whereby frictional wear between the car-axle and the brake-applying drum and its operating-lever is entirely avoided. In this, 29 is a lateral extension of the axle-embracing yoke 24 of the electric motor of the car or of the lining or bushing of said yoke, which extension is of a cylindrical nature and forms a bearing for the brake-applying drum 1 and the hub 16 of the drum-operating lever 15. In the construction shown the outer end of the sleeve extension 29 bears against the hub of the car-wheel, while the body portion has at its other end bearing against a fixed collar 30 on the car-axle, so that any tendency to an endwise movement of such sleeve upon the axle is entirely prevented.

In the operation of the present improved brake mechanism to brake or stop the car the motorman, by means of the platform brake-staff 18 or other usual well-known equivalent means, causes the pull connection 17 to draw forward upon the operating-lever 15 of the winding-drum 1 and impart a partial rotation to the cam-carrying hub 16 of said lever. With such movement the cam-springs 20 ride upon the rollers 22 with a tendency to force the friction-disk 3 of the winding-drum 1 into frictional contact with the friction-disk 4 of the car-wheel in order that the movement of the car-wheel will be utilized to turn said winding-drum and apply the brakes with a force corresponding to the momentum of the car.

With the present improved yielding construction of the cam-springs 20 the force employed to obtain the requisite frictional contact between the friction-disks 3 and 4 is applied in a very gradual and yet in a very effective manner, so that while the brakes will be applied to stop the car in very quick order, yet the stoppage will not be so sudden as to discommode the passengers nor strain or rack the motor-truck parts, &c.

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

1. In a car-brake mechanism, the combination with the brake-applying drum, and its

operative connections with the car-platform and with the brake-beams, of a moving cam portion at one end of said drum, a stationary cam portion attached to a non-rotary part of the car-truck, and a spring located between the abutment of the stationary cam portion and the point of frictional contact of the winding-drum and the car-wheel, substantially as set forth.

2. In a car-brake mechanism, the combination with the brake-applying drum and its operative connections with the car-platform and with the brake-beams, of a moving cam portion at one end of said drum, and a stationary cam portion attached to a non-rotary part of the car-truck, one of said cam portions having a resilient nature, so as to yield to an excess of force substantially as set forth.

3. In a car-brake mechanism, the combination with the brake-applying drum, and its operative connection with the car-platform and with the brake-beams, of a moving cam portion at one end of said drum, and a stationary cam portion attached to a non-rotary part of the car-truck, said movable cam por-

tion being formed by a series of segmental cam-shaped springs, substantially as set forth.

4. In a car-brake mechanism, the combination with the brake-applying drum, and its operative connections with the car-platform and with the brake-beams, of a moving cam portion at one end of said drum, and a stationary cam portion attached to a non-rotary part of the car-truck, said movable cam portion being formed by a series of segmental cam-shaped springs, having lateral end projections, substantially as set forth.

5. In a car-brake mechanism, the combination with the brake-applying drum, and its operative connections with the car-platform and with the brake-beams, of a sleeve extension on the axle embracing the yoke of the motor, that forms a bearing for said drum, substantially as set forth.

In testimony whereof witness my hand this 29th day of December, 1896.

BUDD J. JONES.

In presence of—

WM. H. SCOTT,
ROBERT BURNS.